HELICOPTER ACCESS PROVISIONS

FUSELAGE MAINTENANCE

EMPENNAGE MAINTENANCE

WINGS MAINTENANCE

NOSE GEARBOX FAIRING MAINTENANCE

FUSELAGE FAIRING MAINTENANCE

ENGINE NACELLE MAINTENANCE

EQUIPMENT AND FURNISHINGS MAINTENANCE

MAIN LANDING GEAR MAINTENANCE

WIRE STRIKE PROTECTION MAINTENANCE

TAIL LANDING GEAR MAINTENANCE

BRAKE SYSTEM MAINTENANCE

TECHNICAL MANUAL

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL

VOLUME 2 OF 9

HELICOPTER, ATTACK, AH-64A APACHE (NSN 1520-01-106-9519) (EIC: RHA)

CHAPTER 2
AIRFRAME

CHAPTER 3
LANDING GEAR SYSTEM

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*** This manual together with TM 1-1520-238-23-1, 16 May 1994, TM 1-1520-238-23-3, 16 May 1994, TM 1-1520-238-23-4, 16 May 1994, TM 1-1520-238-23-5, 16 May 1994, TM 1-1520-238-23-6, 16 May 1994, TM 1-1520-238-23-7-1, 16 May 1994, TM 1-1520-238-23-7-2, 16 May 1994, TM 1-1520-238-23-8, 16 May 1994, TM 1-1520-238-23-9, 16 May 1994, supersedes TM 55-1520-238-23-1, 7 June 1988, TM 55-1520- 238-23-2, 7 June 1988, TM 55-1520-238-23-3, 7 June 1988, TM 55-1520-238-23-4, 7 June 1988, TM 55-1520-238-23-5, 7 June 1988, TM 55 -1520-238-23-6, 7 June 1988, TM 55-1520-238-23-7, 7 June 1988, TM 55-1520-238-23-8, 7 June 1988, TM 55-1520-238-23-9, 7 June 1988, TM 55-1520-238-23-10, 7 June 1988, including all changes.**

HEADQUARTERS, DEPARTMENT OF THE ARMY
16 MAY 1994

CHANGE NO. 7

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 July 2001

Aviation Unit and Intermediate Maintenance Manual

HELICOPTER, ATTACK,
AH-64A APACHE
(NSN 1520-01-106-9519)
(EIC: RHA)

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Remove pages	Insert pages
A through D	A through E/(F blank)
2–35 and 2–36	2–35 and 2–36
2–107 through 2–110	2–107 through 2–110
2–274.5 and 2–274.6	2–274.5 and 2–274.6
2–313/(2–314 blank) through 2–318	2–313 through 2–318
2–383 and 2–384	2–383 and 2–384
2–389 and 2–390	2–389 and 2–390
2–454.3 and 2–454.4	2–454.3 and 2–454.4
2–455 and 2–456	2–455 and 2–456
2–465 and 2–466	2–465 and 2–466
2–475 and 2–476	2–475 and 2–476
3–5 and 3–6	3–5 and 3–6
3–15 through 3–18	3–15 through 3–18
3–21 through 3–24	3–21 through 3–24
3–27 and 3–28	3–27 and 3–28
3–67 and 3–68	3–67 and 3–68
3–125 and 3–126	3–125 and 3–126
3–169 through 3–172	3–169 through 3–172
3–175 and 3–176	3–175 and 3–176
3–176.1 and 3–176.2	3–176.1 and 3–176.2
3–177 through 3–180	(3–177 blank)/3–178 through 3–180
3–183 through 3–186	3–183 through 3–186
3–189 and 3–190	3–189 and 3–190
3–227 and 3–228	3–227 and 3–228
3–231 and 3–232	3–231 and 3–232
3–235 through 3–238	3–235 through 3–238
3–243 and 3–244	3–243 and 3–244
3–247 and 3–248	3–247 and 3–248
3–259 through 3–262	3–259 through 3–262
3–267 and 3–268	3–267 and 3–268
3–271 and 3–272	3–271 and 3–272

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TM 1–1520–238–23–2
C7

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AH-64A APACHE
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Remove pages	Insert pages
--------	A through D
2-5 and 2-6	2-5 and 2-6
2-35 and 2-36	2-35 and 2-36
2-41 and 2-42	2-41 and 2-42
2-267 and 2-268	2-267 and 2-268
2-333 and 2-334	2-333 and 2-334
2-339 and 2-340	2-339 and 2-340
2-343 and 2-344	2-343 and 2-344
2-347 and 2-348	2-347 and 2-348
2-350.5 and 2-350.6	2-350.5 and 2-350.6
2-361 and 2-362	2-361 and 2-362
2-383 and 2-390	2-383 and 2-390
---------	2-390.1 through 2-390.5/(2-390.6 blank)
2-391 and 2-392	(2-391 blank)/2-392
2-403 through 2-406	2-403 through 2-406
2-413 and 2-414	2-413 and 2-414
2-419 through 2-422	2-419 through 2-422
2-447 and 2-448	2-447 and 2-448
2-448.1 and 2-448.2	2-448.1 and 2-448.2
2-454.1 and 2-454.2	2-454.1 and 2-454.2
3-1 through 3-4	3-1 through 3-4
3-21 and 3-22	3-21 and 3-22
--------	3-26.1 through 3-26.8
3-35 and 3-36	3-35 and 3-36
---------	3-38.1 through 3-38.8
3-39 and 3-40	3-39 and 3-40
3-61 through 3-68	3-61 through 3-68
3-97 through 3-100	3-97 through 3-100
3-117 through 3-120	3-117 through 3-120
---------	3-120.1/(3-120.2 blank)
3-121 and 3-122	3-121 and 3-122
---------	3-176.1 through 3-176.8
3-177 and 3-178	(3-177 blank)/3-178

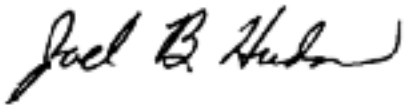
Remove pages	Insert pages
--------	3-190.1 through 3-190.5/(3-190.6 blank)
3-289 and 3-290	3-289 and 3-290
3-295 and 3-296	3-295 and 3-296

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2-5 through 2-8	2-5 through 2-8
2-21 and 2-22	2-21 and 2-22
2-357 through 2-360	2-357 through 2-360
2-360.1/(2-360.2 blank)	2-360.1 and 2-360.2
- - - -	2-360.3 through 2-360.5/(2-360.6 blank)
- - - -	2-362.1 through 2-362.5/(2-362.6 blank)
- - - -	2-454.9 through 2-454.12

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Remove pages	Insert pages
2-3 and 2-4	2-3 and 2-4
2-11 and 2-12	2-11 and 2-12
- - - -	2-12.1 and 2-12.2
2-43 and 2-44	2-43 and 2-44
2-93 and 2-94	2-93 and 2-94
- - - -	2-94.1 through 2-94.4
2-95 through 2-98	2-95 through 2-98
2-105 and 2-106	2-105 and 2-106
2-109 and 2-110	2-109 and 2-110
2-115 and 2-116	2-115 and 2-116
2-129 and 2-130	2-129 and 2-130
2-130.1 and 2-130.2	2-130.1 and 2-130.2
- - - -	2-132.1 through 2-132.4
2-147 through 2-150	2-147 through 2-150
2-191 and 2-192	2-191 and 2-192
2-267 and 2-268	2-267 and 2-268
2-269 and 2-270	2-269 and 2-270
2-273 and 2-274	2-273 and 2-274
2-274.3 through 2-274.6	2-274.3 through 2-274.6
- - - -	2-274.7/(2-274.8 blank)
2-303 and 2-304	2-303 and 2-304
2-311 through 2-316	2-311 through 2-316
2-381 and 2-382	2-381 and 2-382
2-397 through 2-400	2-397 through 2-400
2-421 and 2-422	2-421 and 2-422
2-433 and 2-434	2-433 and 2-434
2-559 and 2-560	2-559 and 2-560
2-593 and 2-594	2-593 and 2-594
2-687 through 2-692	2-687 through 2-692
3-1 through 3-4	3-1 through 3-4
3-27 through 3-30	3-27 through 3-30
3-59 through 3-68	3-59 through 3-68
- - - - -	3-70.1 through 3-70.4
3-71 and 3-72	(3-71 blank)/3-72

Remove pages	Insert pages
3-125 and 3-126	3-125 and 3-126
3-129 through 3-132	3-129 through 3-132
3-151 through 3-156	3-151 through 3-156
3-167 and 3-168	3-167 and 3-168
3-175 and 3-176	3-175 and 3-176
3-181 through 3-184	3-181 through 3-184
3-189 and 3-190	3-189 and 3-190
3-197 through 3-204	3-197 through 3-204
3-207 through 3-212	3-207 through 3-212
3-261 and 3-262	3-261 and 3-262
3-265 through 3-278	3-265 through 3-278

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Aviation Unit and Intermediate Maintenance Manual

HELICOPTER, ATTACK,
AH-64A APACHE
(NSN 1520-01-106-9519)
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2-3 through 2-6	2-3 through 2-6
2-11 and 2-12	2-11 and 2-12
2-59 and 2-60	2-59 and 2-60
2-103 through 2-110	2-103 through 2-110
2-113 through 2-116	2-113 through 2-116
2-127 through 2-130	2-127 through 2-130
- - - - - - - - - -	2-130.1 through 2-130.6
2-133 and 2-134	2-133 and 2-134
2-147 through 2-152	2-147 through 2-152
2-159 and 2-160	2-159 and 2-160
2-177 through 2-180	2-177 through 2-180
2-191 through 2-194	2-191 through 2-194
2-201 and 2-202	2-201 and 2-202
2-221 through 2-224	2-221 through 2-224
2-263 through 2-268	2-263 through 2-268
- - - - - - - - - - -	2-268.1 and 268.2
2-269 through 2-274	2-269 through 2-274
2-274.1 through 2-274.4	2-274.1 through 2-274.4
- - - - - - - - - - -	2-274.5 and 2-274.6
2-277 and 2-278	2-277 and 2-278
2-281 and 2-282	2-281 and 2-282
2-303 and 2-304	2-303 and 2-304
2-311 and 2-312	2-311 and 2-312
2-313 and 2-314	2-313
2-315 and 2-316	2-316
2-319 and 2-320	2-319 and 2-320
2-325 and 2-326	2-325 and 2-326
2-333 and 2-334	2-333 and 2-334
2-361 through 2-364	2-361 through 2-364
2-369 and 2-370	2-369 and 2-370
2-370.1/(2-370.2 blank)	2-370.1 and 2-370.2
2-373 and 2-374	2-373 and 2-374
2-383 and 2-384	2-383 and 2-384
2-387 and 2-388	2-387 and 2-388

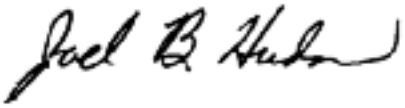
Remove pages	Insert pages
2-397 through 2-400	2-397 through 2-400
2-415 through 2-418	2-415 through 2-418
2-421 and 2-422	2-421 and 2-422
2-439 through 2-442	2-439 through 2-442
2-471 and 2-472	2-471 and 2-472
2-481 through 2-484	2-481 through 2-484
2-493 and 2-494	2-493 and 2-494
2-501 and 2-502	2-501 and 2-502
2-507 and 2-508	2-507 and 2-508
2-515 through 2-518	2-515 through 2-518
2-527 and 2-528	2-527 and 2-528
2-531 through 2-534	2-531 through 2-534
2-555 and 2-556	2-555 and 2-556
(2-557 blank)/2-558 through 2-560	(2-557 blank)/2-558 through 2-560
2-579 and 2-580	2-579 and 2-580
2-591 through 2-598	2-591 through 2-598
2-605 and 2-606	2-605 and 2-606
2-647 and 2-648	2-647 and 2-648
2-657 and 2-658	2-657 and 2-658
2-671 and 2-672	2-671 and 2-672
3-47 through 3-62	3-47 through 3-62
3-67 and 3-68	3-67 and 3-68
3-157 through 3-160	3-157 through 3-160
3-169 and 3-170	3-169 and 3-170
3-181 and 3-182	3-181 and 3-182
3-259 and 3-260	3-259 and 3-260
3-265 through 3-270	3-265 through 3-270
3-275 through 3-278	3-275 through 3-278
3-281 through 2-284	3-281 through 2-284
- - - - - - -	E-mail instruction page

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CHANGE

No. 2

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Aviation Unit and Intermediate Maintenance Manual

HELICOPTER, ATTACK, AH-64A APACHE (NSN 1520-01-106-9519) (EIC: RHA)

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Remove pages	Insert pages
2-3 through 2-14	2-3 through 2-14
2-37 and 2-38	2-37 and 2-38
2-45 and 2-46	2-45 and 2-46
- - - -	2-46.1 and 2-46.2
2-67 through 2-70	2-67 through 2-70
2-87 and 2-88	2-87 and 2-88
2-93 through 2-96	2-93 through 2-96
2-119 and 2-120	2-119 and 2-120
- - - -	2-120.1 and 2-120.2
2-121 and 2-122	2-121 and 2-122
- - - -	2-122.1 and 2-122.2
2-123 and 2-124	2-123 and 2-124
2-265 through 2-274	2-265 through 2-274
- - - -	2-274.1 through 2-274.4
2-301 and 2-302	2-301 and 2-302
2-316	2-316
2-317 through 2-324	2-317 through 2-324
2-327 and 2-328	2-327 and 2-328
2-331 through 2-334	2-331 through 2-334
2-337 through 2-348	2-337 through 2-348
– – – –	2-350.1 through 2-350.16
- - - -	2-368.1 through 2-368.8
2-369 and 2-370	2-369 and 2-370
- - - -	2-370.1/(2-370.2 blank)
2-387 and 2-388	2-387 and 2-388
2-391 through 2-396	2-391 through 2-396
2-399 and 2-400	2-399 and 2-400
2-403 through 2-406	2-403 through 2-406
2-409 and 2-410	2-409 and 2-410

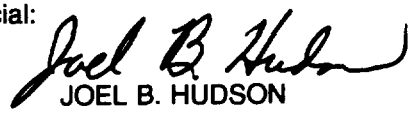
Remove pages	Insert pagees
- - - -	2-418.1 and 2-418.2
2-443 through 2-446	2-443 through 2-446
- - - -	2-448.1 through 2-448.10
2-449 and 2-450	(2-449 blank)/2-450
2-451 through 2-454	2-451 through 2-454
- - - -	2-454.1 through 2-454.8
2-475 through 2-480	2-475 through 2-480
2-497 through 2-502	2-497 through 2-502
2-555 and 2-556	2-555 and 2-556
- - - -	2-556.1 through 2-556.4
2-557 and 2-558	(2-557 blank)/2-558
- - - -	2-658.1 through 2-658.12
2-659 and 2-660	2-659 and 2-660
2-689 through 2-692	2-689 through 2-692
3-165 through 3-170	3-165 through 3-170
3-179 through 3-182	3-179 through 3-182
3-241 through 3-244	3-241 through 3-244
3-261 and 3-262	3-261 and 3-262
3-265 through 3-268	3-265 through 3-268

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HELICOPTER, ATTACK, AH-64A APACHE (NSN 1520-01-106-9519) (EIC: RHA)

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2-11 and 2-12	2-11 and 2-12
2-35 and 2-36	2-35 and 2-36
2-39 and 2-40	2-39 and 2-40
2-43 through 2-46	2-43 through 2-46
2-65 and 2-66	2-65 and 2-66
-----	2-66.1/(2-66.2 blank)
2-67 through 2-72	2-67 through 2-72
2-93 and 2-94	2-93 and 2-94
2-99 and 2-100	2-99 and 2-100
2-119 through 2-126	2-119 through 2-126
2-283 through 2-286	2-283 through 2-286
2-303 through 2-312	2-303 through 2-312
2-313 and 2-314	2-313
2-315 and 2-316	2-316
2-353 through 2-356	2-353 through 2-356
-----	2-356.1 and 2-356.2
2-357 through 2-360	2-357 through 2-360
-----	2-360.1/(2-360.2 blank)
2-377 and 2-378	2-377 and 2-378
2-383 through 2-402	2-383 through 2-402
2-429 through 2-436	2-429 through 2-436
2-451 through 2-456	2-451 through 2-456
2-459 and 2-460	2-459 and 2-460
2-463 and 2-464	2-463 and 2-464
2-545 and 2-546	2-545 and 2-546
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3-171 through 3-176	3-171 through 3-176
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3-213 and 3-214	3-213 and 3-214
3-219 and 3-220	3-219 and 3-220
3-237 through 3-242	3-237 through 3-242

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NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Date of issue for original and change pages are:

Original . . . . . 0 . . . . . 16 May 1994
Change . . . . . 1 . . . . . 17 May 1995
Change . . . . . 2 . . . . . 16 February 1996
Change . . . . . 3 . . . 30 September 1996
Change . . . . . 4 . . . . 19 December 1997
Change . . . . . 5 . . . . . 27 February 1998
Change . . . . . 6 . . . . . 10 May 2000
Change . . . . . 7 . . . . . 31 July 2001

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 1,152, CONSISTING OF THE FOLLOWING:

Page No.	*Change No.
Cover	0
Blank	0
A – E Added	7
F Blank Added	7
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2-3	4
2-4	3
2-5	5
2-6	6
2-7	5
2-8 – 2-9	2
2-10 – 2-11	0
2-12	4
2-12.1 – 2-12.2 Added	4
2-13	2
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3-295	6
3-296 – 3-297	0
3-298 Blank	0

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CHAPTER 2
AIRFRAME

CHAPTER OVERVIEW

Chapter 2 contains the maintenance instructions for the airframe.

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CPG Left Hand or Right Hand Armored Side Panel Removal/Installation	2.181B
Pilot Left Hand Upper Armored Side Panel Removal/Installation	2.181C
Armor Panel Seal Removal/Installation	2.181D
Pilot Scuff Plate Assembly Removal/Installation	2.182
CPG Scuff Plate Assembly Removal/Installation	2.183
CPG Map Stowage Compartment Removal/Installation	2.184
HDU Helmet Holster and Cover Assembly Removal/Installation	2.185
Pilot Boresight Reticle Unit (BRU) Mount Removal/Installation	2.186

CHAPTER INDEX – continued

Para Title	Para No.
Pilot Boresight Reticle Unit (BRU) Mount Adapter Removal/Installation	2.187
Pilot Boresight Reticle Unit (BRU) Mount Support Removal/Installation	2.188
Pilot/CPG Foot Guard Removal/Installation	2.189
CPG Rear View Mirror Assembly Removal/Installation	2.190
Sensor Surveying Unit (SSU) Mount Removal/Installation	2.191
Wire Strike Lower Deflector Extension Replacement (AVIM)	2.192
Wire Strike Protection Aircraft Cable Cutter Removal/Installation (AVIM)	2.193
Gun Wire Strike Protection Cutter and Deflector Removal/Installation	2.194
Wire Strike Protection Aircraft Cable Cutter Blades Replacement	2.195
Tailboom Utility Hydraulic Tubes Armor Channel Assemblies Removal/Installation	2.196
Tailboom Primary Hydraulic Tubes Armor Channels Removal/Installation	2.197
Tailboom Utility Low Level Shutoff Valve Armor Plate Removal/Installation	2.198

SECTION I. HELICOPTER ACCESS PROVISIONS

2.1. ACCESS PROVISIONS – INSPECTION/REPAIR

2.1.1. Description

This task covers: Inspection/Repair.

2.1.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

References:

TM 1-1500-204-23
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Personnel Required:

68G	Aircraft Structural Repairer

2.1.3. Inspection/Repair

a. **Inspect all access doors, covers, panels, and fairings shown in paragraphs 2.3 thru 2.7. Replace unit if any of the following repairs cannot be made.**

(1) Check for cracks, tears, or punctures. Repair metal material in accordance with (TM 1-1500-204-23), using sheet metal repair procedures. Repair kevlar (para 2.30).

(2) Check mating surfaces of panel and aircraft metal skin panels for loss of paint, scratches, and/or metal erosion caused by chafing. Repair mating surfaces (para 2.30).

(3) Check for delamination or debonding. Repair delamination or debonding (para 2.30).

(4) Check for corrosion. Remove corrosion (para 1.49).

(5) Check for damaged seals, if installed. Replace damaged seals (para 2.52).

(6) Check for damaged fasteners such as latches, turnlocks, or hinge butts. Repair damaged latches, turnlocks, or hinge butts (TM 1-1500-204-23).

(7) Check access provisions containing electrical connections and wire harnesses to ensure security of connectors (TM 55-1500-323-24).

(8) Check access provisions for chafing of connectors and wire harnesses, when installed (TM 55-1500-323-24).

GO TO NEXT PAGE

2.1. ACCESS PROVISIONS – INSPECTION/REPAIR – continued

NOTE

- Steps (9), (10), and (11), refer to aircraft equipped with EMI provisions.
- Damage orientations and categories contained in step (10), determine serviceability of the EMI conductive coating. The EMI conductive coating protection is divided into three (I,II, and III) categories of importance.

(9) Check for damage, cuts, tears, and punctures in EMI gasket. Repair damage (para 12.27).

(10) Check for damage, cuts, scratches, cracking, or peeling in EMI conductive coating. Repair damage (para 2.34).

(11) Check for damage, cracking, or peeling in EMI tape. Repair damage (para 2.28).

NOTE

- Category I areas should be repaired prior to flight operations in EMI environments of 200 volts/meter or higher.
- Category I areas include enclosures shielding critical equipment and wire harnesses. Shielding effectiveness: 60-40 db.

(a) EMI conductive coating Category I areas. Category I conductive coating areas are the most critical and should be in good condition (i.e. scratch free) with minimum defects.

1 Check mating surface of conductive coating to gasket or joining surface for contaminates and paint over spray. Conductive coating surface can be cleaned by carefully using a soft cloth dampened with isopropyl alcohol. Ensure conductive coating is not softened or damaged.

2 Scratched conductive coating around fasteners is allowable if gap is limited to one side of fastener and not wider than **0.25 INCH**.

NAME/ ACCESS NO.	ACCESS TO	PART NUMBER	NSN	CATEGORY
Door R90	Laser, PNVS, MUX, HF Remote	7-311111223-46		I
Door L90	IHADSS and PNVS Boxes and ICU	7-311111223-45		I
Fairing R60	Forward Avionics Bay Nose	7-311111223-606		I
Fairing L60	Forward Avionics Bay Nose	7-311111223-605		I
PNVS Shroud Assembly		13080400–039	5340-01–309-1338	I
Door R295	Aft Electronics Equipment	7-311113690-50		I

END OF TASK

2.1. ACCESS PROVISIONS – INSPECTION/REPAIR – continued

NAME/ ACCESS NO. (cont)	ACCESS TO (cont)	PART NUMBER (cont)	NSN (cont)	CATEGORY(cont)
Door L295	Aft Stowage Bay	7-311113690-61		I
Cover R40	Electronic Equipment	7-311111147-26		I
Cover L40	Electronic Equipment	7-311111147-25		I
Door B60	Cyclic Stick Controls	7-311111142-9		I
Door B65R	Flight Controls	7-311111211-9		I
Door B65L	Flight Controls	7-311111211-10		I

NOTE

Category II areas include enclosures shielding non-mission critical equipment and wire harnesses. Shielding effectiveness: 40-20 db.

(b) EMI conductive coating Category II areas. Conductive coating in these areas are non-mission critical equipment and wire harnesses.

1 Conductive coating paint will protect these areas up to 20 db. If coating is discovered missing in these areas, flight operations are permissible in E.M.I. environments. Repair these areas at next phase maintenance interval.

NAME/ ACCESS NO.	ACCESS TO	PART NUMBER	NSN	CATEGORY
Door L325	Walkway Access – Deck Area	7-311150126-33		II
Fairing R510	Vertical Stabilizer	7-311122620-48		II
Fairing L510	Vertical Stabilizer	7-311122620-47		II
Door B200	Ammunition Bay	7-311112420-17	1560-01-221-2946	II
Fairing L540	Tail Rotor Transmission	7-311122621-75		II

NOTE

Category III areas include enclosures incorporating shading techniques. Shielding effectiveness: 20-10 db.

(c) EMI conductive coating Category III areas. Conductive coating in these areas are least critical.

1 The conductive coating in these areas should protect up to 10 db. If the coating in these areas is damaged, it is permissible to operate the aircraft in E.M.I environments. The coating is to be repaired at the next phase maintenance interval.

2.1. ACCESS PROVISIONS – INSPECTION/REPAIR – continued

NAME/ ACCESS NO.	ACCESS TO	PART NUMBER	NSN	CATEGORY
Fairing L140	Ammunition Feed Mechanism (fwd)	7-311150140-153		III
Fairing T205R	Main Rotor Shaft	7-311150115-30		III
Fairing T205L	Main Rotor Shaft	7-311150115-29		III
Panel R200	Main Rotor Transmission	7-311150112-56		III
Panel L200	Main Rotor Transmission	7-311150112-55		III
Fairing R410	Tail Rotor Drive Shaft	7-311150130-45		III
Fairing R475	Tail Rotor Drive Shaft	7-311150131-47		III
Fairing L530	Vertical Stabilizer, Leading Edge	7-311122622-51		III
Fairing T355	Tail Rotor Shaft	7-311150110-43		III
Door T250R	Deck Area	7-311150146-91		III
Door T250R	Deck Area	7-311150146-89		III

(d) General Conductive Coating (Silver Paint) Criteria.

NOTE

Black silver oxide is acceptable with silver conductive paint. Black silver oxide occurs with the silver pigment in conductive paint and is highly conductive. Removal of black silver oxide is not required.

1 Contaminates on or near edges such as fuel, oils and dirt must be cleaned to prevent coating of gaskets and conductive paint.

2 Cracks for peeling of conductive coatings must be repaired by cleaning and re-coating of the damaged areas. Cuts or scratches that do not penetrate through the conductive coating is permissible.

2.2. ACCESS PROVISIONS

a. Paragraphs 2.3 thru 2.10 list access provisions for the helicopter. Illustrations show fastener removal and installation methods. These paragraphs identify areas of the helicopter:

PARAGRAPH	AREA	LOCATOR LETTER
2.3	Left Side Access	L
2.4	Right Side Access	R
2.5	Top Side Access	T
2.6	Bottom Side Access	B
2.7	Top Side Engine - Work Platform and Equipment Bay	T
2.8	Pilot Left and Right Console Panels	L/R
2.9	CPG Left and Right Console Panels	L/R
2.10	Cockpit Thermal Insulation, and Hook and Pile Fasteners	L/R

(1) Each access door, cover, panel, and fairing has a letter and a number. The number is the nearest fuselage station. The letter gives the location. Other letter-identified areas are:

Wing - W

Nacelle - N

Stabilator - S

(2) Use the helicopter locator in the illustration to find an access.

(3) Find the access number in the listing below the illustration.

(4) Remove or install each access item by the method listed, which is shown in the illustration.

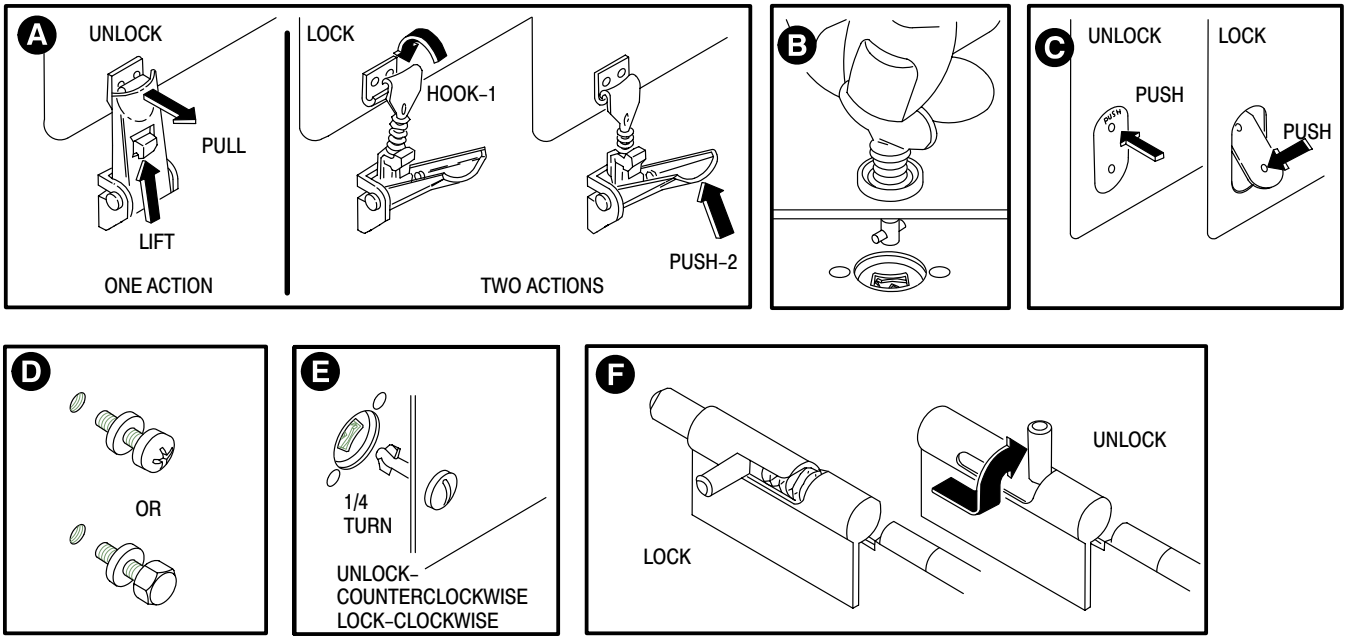
(5) An asterisk (*) after an access number indicates electrical connections.

(6) A pound sign (#) after an access number indicates a stress panel that must be installed during jacking or towing operations.

b. Each access/inspection item will be inspected in accordance with paragraph 2.1.

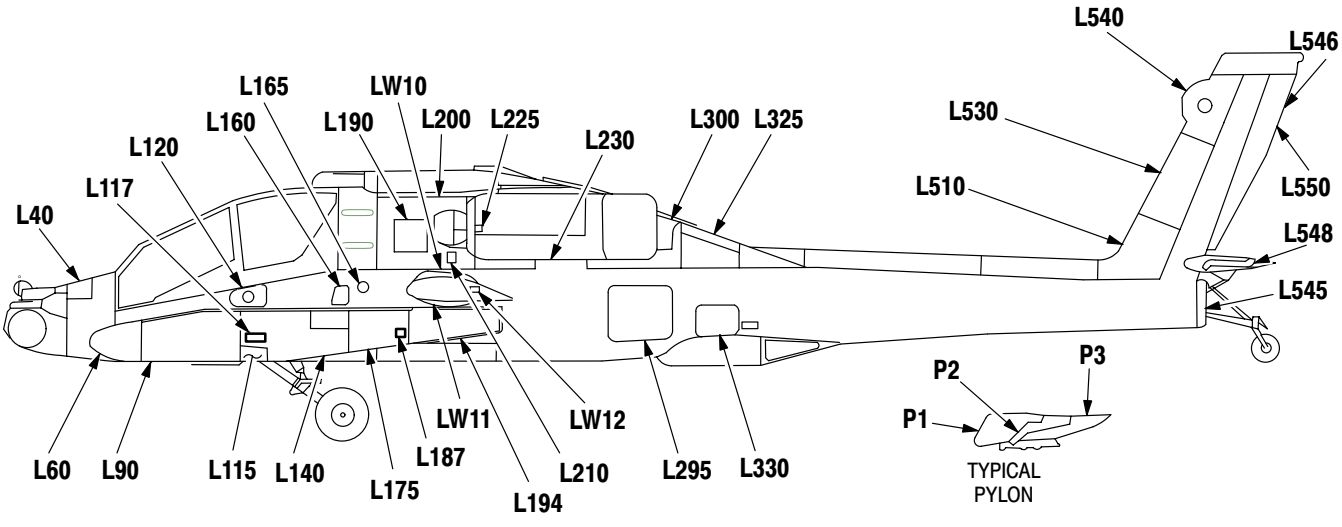
END OF TASK

2.3. ACCESS PROVISIONS – LEFT SIDE



NOTES:

- L = LEFT SIDE SIDE ACCESS
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2.1)



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2.3. ACCESS PROVISIONS – LEFT SIDE – continued

Access No.	Name	Access to	Remove and Install	Method
L40	Cover	Electronic Equipment	13 Turnlocks	E
L60 *	Fairing	Forward Avionics Bay Nose	47 Screws	D
L90	Door	IHADSS and PNVS Boxes and ICU	7 Latches	C
L115	Door	Mooring Lug	1 Latch, 2 Turnlocks	C, E
L117	Door	Rounds Counter	1 Turnlock	B
L120	Fairing	Shock Strut Attach Fitting	5 Screws, 2 Bolts	D
L140	Fairing	Ammunition Feed Mechanism (fwd)	11 Turnlocks	E
L160	Cover	Pilot Collective Bellcrank	17 Screws	D
L165	Cover	Rectifier	5 Screws	D
L175	Fairing	Ammunition Feed Mechanism (aft)	12 Turnlocks	E
L187	Door	Hydraulic Return Accumulator Manifold	1 Turnlock	E
L190	Door	Hydraulic Oil Level Sight Gage and Controls Access	3 Latches	C
L194	Fairing	Ammunition Feed Mechanism	14 Turnlocks	E
L200	Panel	Main Rotor Transmission	10 Turnlocks, 1 Latch	E, F
L210	Door	Main Transmission Oil Level Sight Gage	1 Turnlock	B
L225	Door	Oil Tank Level Viewing Glass	1 Turnlock	E
L230	Fairing	Hydraulic Heat Exchanger	14 Screws	D
L295	Door	Aft Stowage Bay	2 Latches	A
L300	Fairing	Environmental Control Unit Exhaust	37 Screws	D
L325	Door	Walkway Access – Deck Area	2 Latches	A
L330	Door	Fuselage Stowage Compartment	2 Latches	A

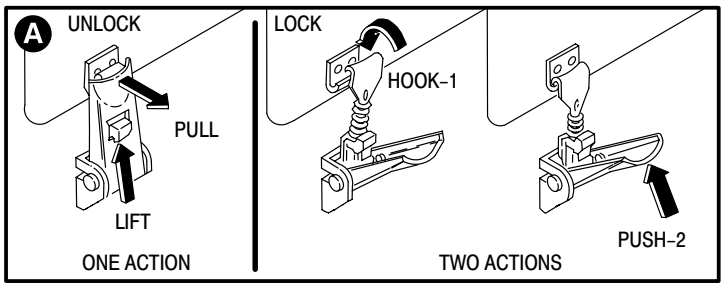
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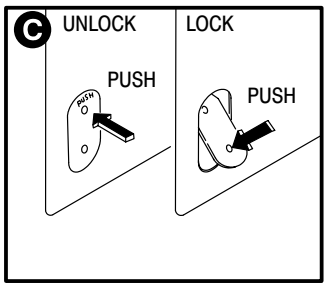
2.3. ACCESS PROVISIONS – LEFT SIDE – continued

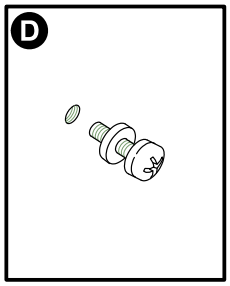
Access No.	Name	Access to	Remove and Install	Method
L510	Fairing	Vertical Stabilizer	17 Turnlocks	E
L530	Fairing	Vertical Stabilizer, Leading Edge	48 Screws	D
L540	Fairing	Tail Rotor Transmission	42 Turnlocks	E
L545	Cover	Tailboom	8 Screws	D
L546	Fairing	Tail Rotor Transmission	19 Screws	D
L548	Fairing	Stabilator Tip	8 Screws	D
L550	Fairing	Vertical Stabilizer, Trailing Edge	62 Screws	D
P1	Fairing	Pylon Nose	4 Turnlocks	E
P2	Fairing	Station Director	8 Screws	D
P3	Fairing	Extended Range Kit and Multiplexer	14 Turnlocks	E
LW10	Fairing	Wing (upper)	9 Screws	D
LW11	Fairing	Wing (lower)	9 Screws	D
LW12	Door	Maintenance Intercom	1 Latch	C

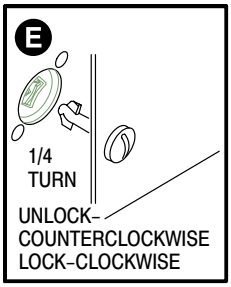
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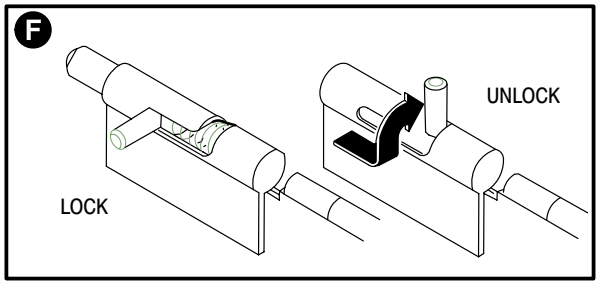
2.4. ACCESS PROVISIONS – RIGHT SIDE

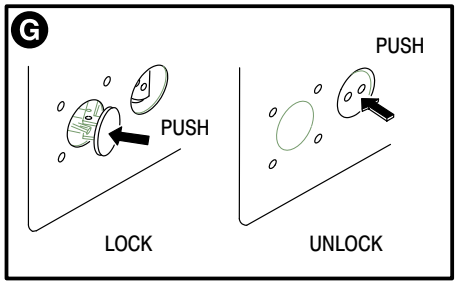


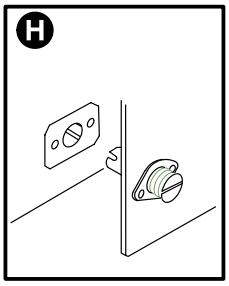






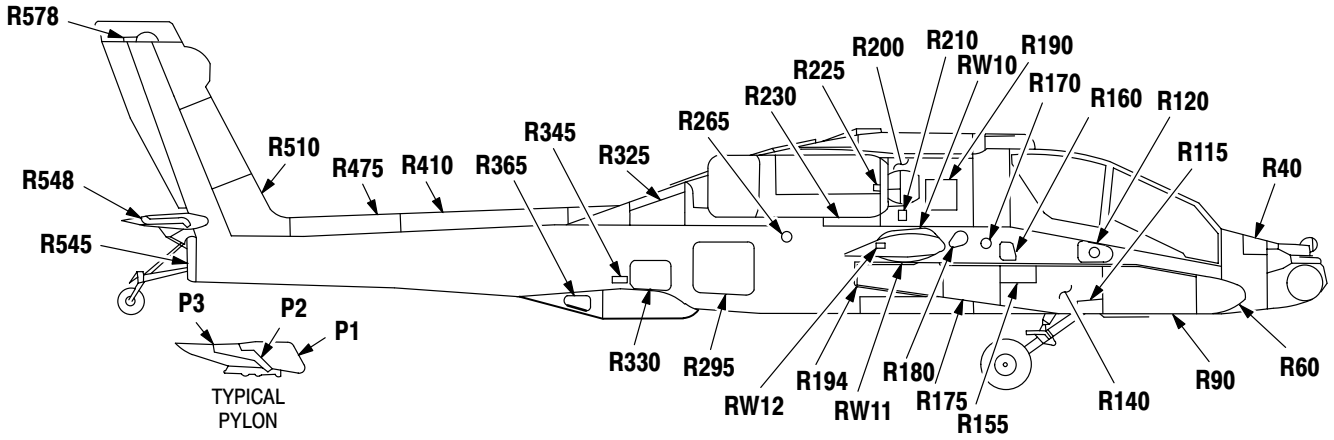






NOTES:

- R = RIGHT SIDE ACCESS
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2.1)



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2.4. ACCESS PROVISIONS – RIGHT SIDE – continued

Access No.	Name	Access to	Remove and Install	Method
R40	Cover	Electronic Equipment	13 Turnlocks	E
R60*	Fairing	Forward Avionics Bay Nose	47 Screws	D
R90	Door	Laser, PNVS, MUX, HF Remote	7 Latches	C
R115	Door	Mooring Lug	1 Latch, 2 Turnlocks	C, E
R120	Fairing	Shock Strut Attach Fitting	5 Screws, 2 Bolts	D
R140	Fairing	Ammunition Feed Mechanism (fwd) (R115 and R155 must be open)	13 Turnlocks	E
R155	Door	Fire Extinguisher	1 Latch	C
R160	Door	Refueling Controls	1 PB Latch	G
R170	Cap	Gravity Refueling (fwd)		
R175	Fairing	Ammunition Feed Mechanism (aft)	12 Turnlocks	E
R180	Cover	Pressure Refueling	3 PB Latches	G
R190	Door	Transmission Inspection	3 Latches	C
R194	Fairing	Ammunition Feed Mechanism	14 Turnlocks	E, F
R200	Panel	Main Rotor Transmission	10 Turnlocks, 1 Latch	E
R210	Door	Transmission Area	1 Turnlock	E
R225	Door	Engine	1 Turnlock	E
R230	Fairing	Hydraulic Heat Exchanger	14 Screws	D
R265	Cap	Gravity Refueling		
R295	Door	Aft Electronics Equipment	2 Latches	A
R325	Door	Hydraulic Equipment	2 Latches	A
R330	Door	Fuselage Stowage Compartment	2 Latches	A

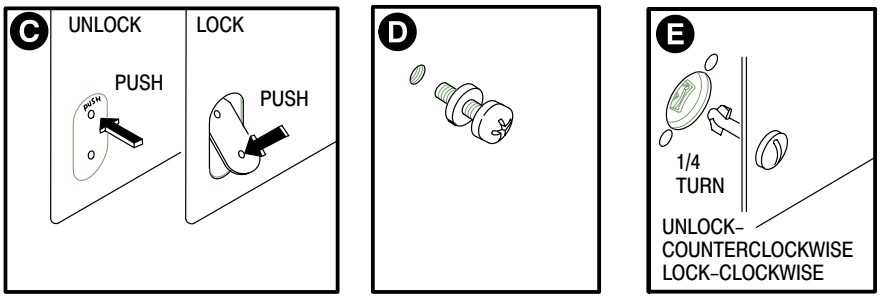
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2.4. ACCESS PROVISIONS – RIGHT SIDE – continued

Access No.	Name	Access to	Remove and Install	Method
R345	Door	External Power	1 Latch	C
R365	Panel	ADF Loop (ant)	7 Turnlocks	E
R410	Fairing	Tail Rotor Drive Shaft	7 Turnlocks	E
R475	Fairing	Tail Rotor Drive Shaft	6 Turnlocks	E
R510	Fairing	Vertical Stabilizer	32 Turnlocks	E
R545	Cover	Tailboom	8 Screws	D
R548	Fairing	Stabilator Tip	8 Screws	D
R578	Door	Antenna Connection	14 Screws	D
P1	Fairing	Pylon Nose	4 Turnlocks	H
P2	Fairing	Station Director (Strut must be removed at bottom)	10 Screws	D
P3	Fairing	Extended Range Kit and Multiplexer	14 Turnlocks	E
RW10	Fairing	Wing (upper)	9 Screws	D
RW11	Fairing	Wing (lower)	9 Screws	D
RW12	Door	Maintenance Intercom	1 Latch	C

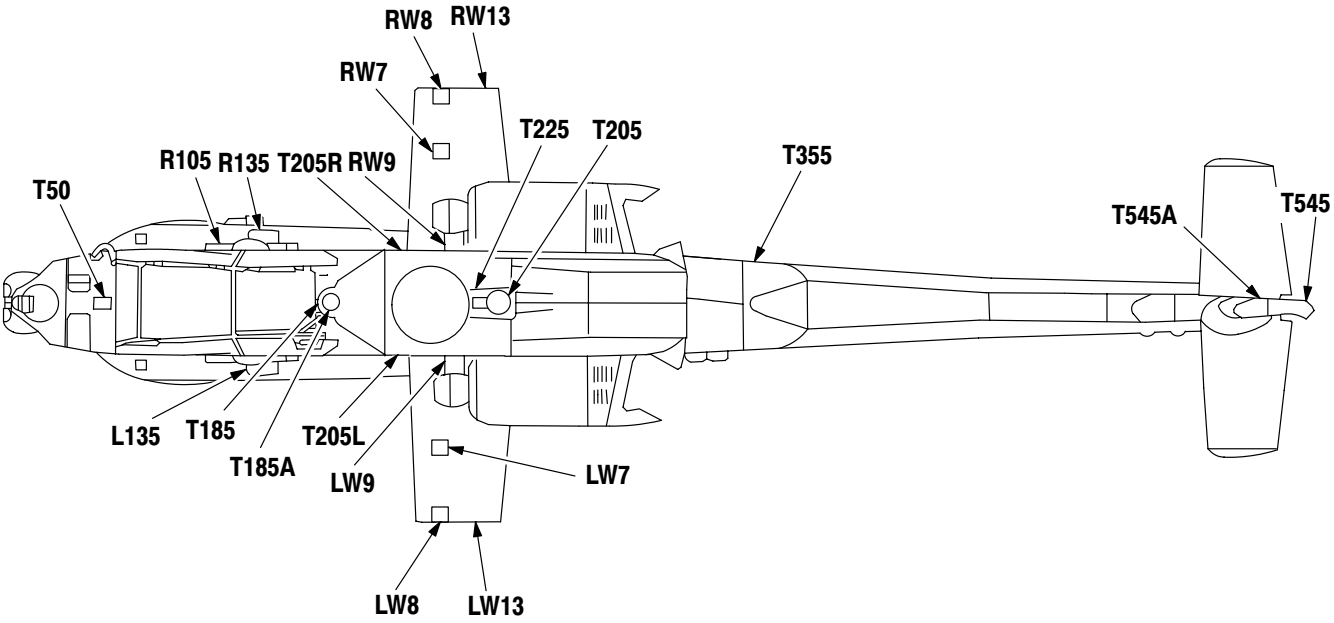
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2.5. ACCESS PROVISIONS – TOP SIDE



NOTES:

- T = TOP ACCESS
  L = LEFT
  R = RIGHT
  W = WING
  N = NACELLE
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2.1)



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2.5. ACCESS PROVISIONS – TOP SIDE – continued

Access No.	Name	Access to	Remove and Install	Method
L135	Door	Main Landing Gear Shock Strut	6 Screws, 2 Turnlocks	D, E
LW7	Cover	Pylon Connector	18 Screws	D
LW8	Cover	Pylon Connector	18 Screws	D
LW9	Cover	Hydraulic lines and Electrical Wiring	16 Screws	D
LW13	Fairing	Hydraulic and Pitot Lines and Electrical Wiring	68 Screws	D
R105	Fairing	Ammunition Chute (R fwd)	7 Screws	D
R135	Door	Main Landing Gear Shock Strut	4 Screws, 2 Turnlocks	D, E
RW7	Cover	Pylon Connector	18 Screws	D
RW8	Cover	Pylon Connector	14 Screws	D
RW9	Cover	Hydraulic lines and Electrical Wiring	14 Screws	D
RW13	Fairing	Hydraulic and Pitot Lines and Electrical Wiring	68 Screws	D
T50	Door	Canopy Emergency Release	1 Latch	C
T185	Fairing	Doghouse	4 Screws, 16 Turnlocks	D, E
T185A	Cover	Doghouse	11 Screws	D
T205	Cover	I/R Jammer	5 Turnlocks	D, E
T225	Fairing	Main Rotor Shaft	6 Screws, 6 Turnlocks	D, E
T355*	Fairing	Tail Rotor Shaft	24 Turnlocks	E
T205L	Fairing	Main Rotor Shaft (See paragraph 2.126E)	11 or 13 Screws, 6 Turnlocks	D, E

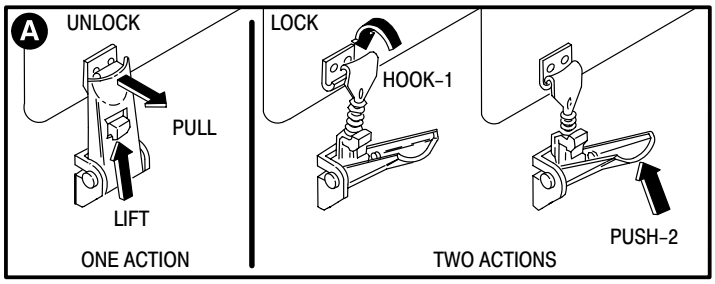
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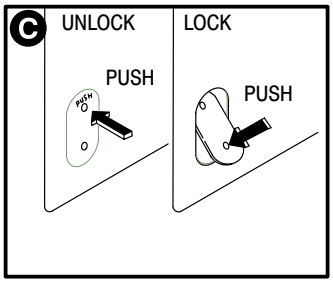
2.5. ACCESS PROVISIONS – TOP SIDE – continued

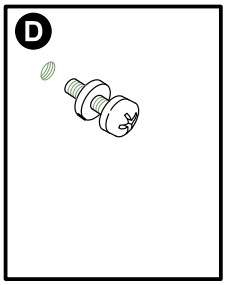
Access No.	Name	Access to	Remove and Install	Method
T205R	Fairing	Main Rotor Shaft (See paragraph 2.126E)	11 or 13 Screws, 5 Turnlocks	D, E
T545*	Fairing	Vertical Stabilizer	26 Screws	D
T545A	Fairing	Vertical Stabilizer	18 Screws	D

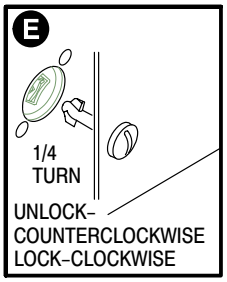
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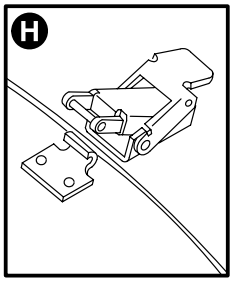
2.6. ACCESS PROVISIONS – BOTTOM SIDE





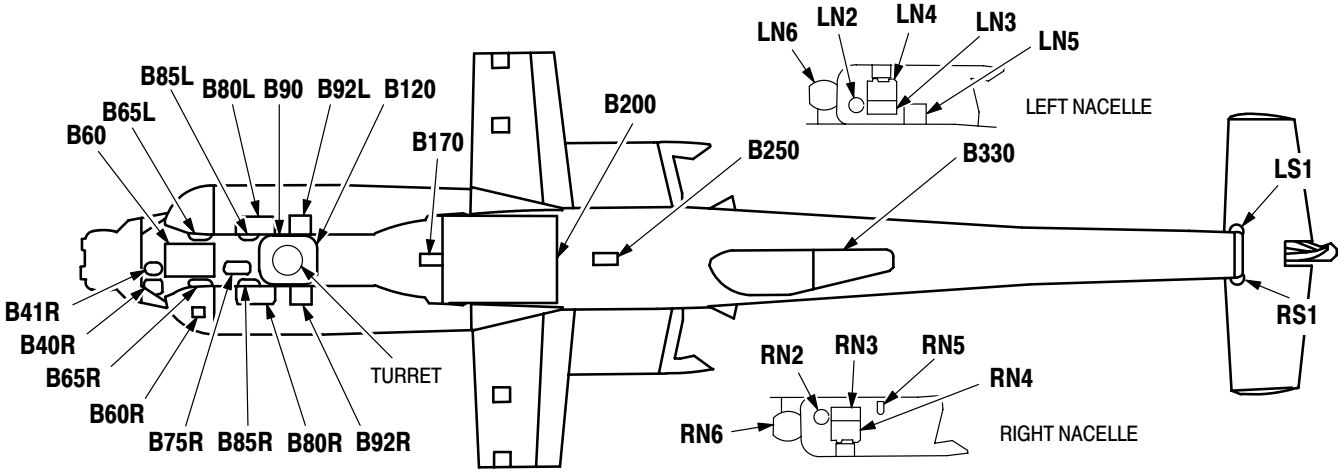






NOTES:

- B = BOTTOM ACCESS
  L = LEFT
  R = RIGHT
  N = NACELLE
  W = WING
  S = STABILATOR
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2.1)



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2.6. ACCESS PROVISIONS – BOTTOM SIDE – continued

Access No.	Name	Access to	Remove and Install	Method
B40R	Door	Flight Controls	11 Screws	D
B41R	Door	Flight Controls	11 Screws	D
B60#	Door	Cyclic Stick Controls	40 Screws	D
B60R	Door	Utility Light and Ground Power Receptacle	2 Turnlocks	E
B65L#	Door	Flight Controls	17 Screws	D
B65R#	Door	Flight Controls	17 Screws	D
B75R	Door	Cyclic Stick	22 Screws	D
B80L	Cover	FAB and Controls	21 Screws	D
B80R	Cover	FAB and Controls	21 Screws	D
B85L	Cover	Flight Controls	12 Screws	D
B85R	Cover	Flight Controls	21 Screws	D
B90	Fairing	Gun Turret Bay	12 Turnlocks	E
B92L	Cover	Flight Controls	12 Screws	D
B92R	Cover	Environmental Control System	12 Screws	D
B120	Fairing	Gun Turret Bay	14 Turnlocks	E
B170#	Door	Fuel Dump Valve	15 Screws	D
B200	Door	Ammunition Bay	8 Latches	A
B250#	Door	Fuel Dump Valve	8 Screws	D
B330*	Fairing	Doppler Radar and Radar Altimeters	15 Turnlocks 2 Screws	D, E
LN2*	Door	Water Wash	5 Turnlocks	E
LN3	Door	Engine	4 Turnlocks	E
LN4	Door	Engine	6 Turnlocks	E

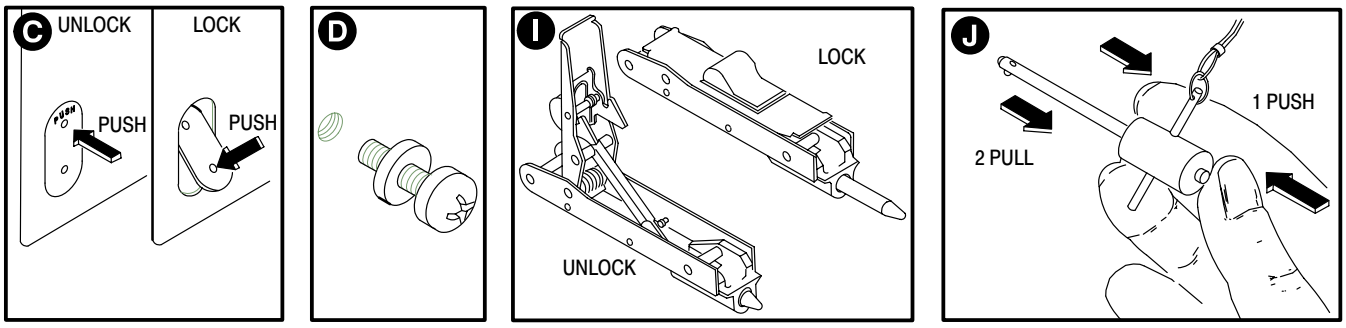
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2.6. ACCESS PROVISIONS – BOTTOM SIDE – continued

Access No.	Name	Access to	Remove and Install	Method
LN5	Door	Engine	1 Latch	C
LN6*	Fairing	Engine Nose Gearbox	4 Latches	H
RN2*	Door	Water Wash	5 Turnlocks	E
RN3	Door	Engine	4 Turnlocks	E
RN4	Door	Engine	6 Turnlocks	E
RN5	Door	Oil Tank Level Viewing Glass	1 Latch	C
RN6*	Fairing	Engine Nose Gearbox	4 Latches	H
LS1*	Door	Stabilator	4 Turnlocks	E
RS1*	Door	Stabilator	4 Turnlocks	E

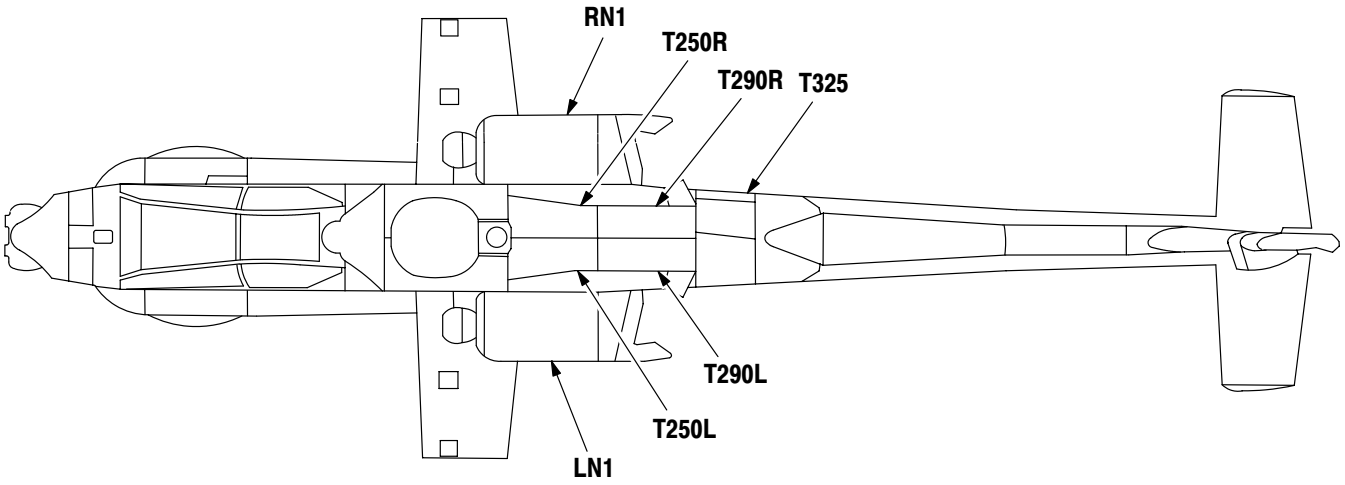
END OF TASK

2.7. ACCESS PROVISIONS – TOP SIDE ENGINE WORK PLATFORM AND EQUIPMENT BAY



NOTES:

- T = TOP ACCESS
  L = LEFT
  R = RIGHT
  W = WING
  N = NACELLE
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2.1)



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2.7. ACCESS PROVISIONS – TOP SIDE ENGINE WORK PLATFORM AND EQUIPMENT BAY – continued

WARNING

Weight on work platform is limited to 400 POUNDS. Damage to work platform and/or strut may occur and may result in injury to personnel. If injury occurs, seek medical help.

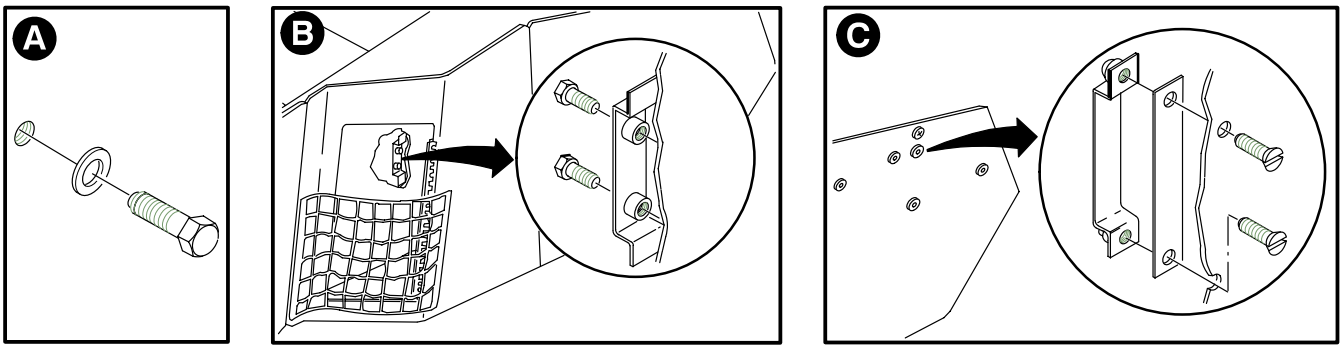
CAUTION

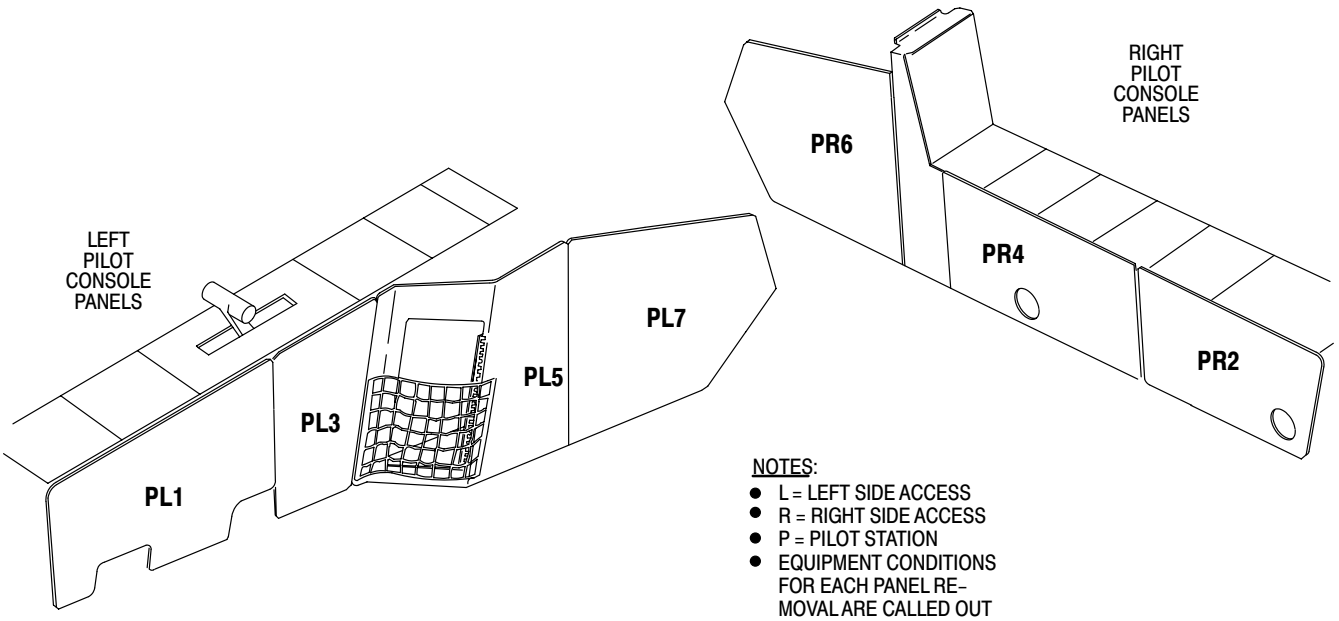
To prevent damage to engine nacelle, work platform shall not be used with wing removed from aircraft.

Access No.	Name	Access to	Remove and Install	Method
LN1	Door	Engine Work Platform	2 Latches	I
RN1	Door	Engine Work Platform	2 Latches	I
T250L	Door	Deck Area	3 Latches	C
T290L	Door	Deck Area	3 Latches	C
T250R	Door	Deck Area	2 Pins	J
T290R	Door	Deck Area	2 Pins	J
T325	Fairing	Deck Area	30 Screws	D

END OF TASK

2.8. PILOT LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION





NOTES:

- L = LEFT SIDE ACCESS
- R = RIGHT SIDE ACCESS
- P = PILOT STATION
- EQUIPMENT CONDITIONS FOR EACH PANEL REMOVAL ARE CALLED OUT IN THE EQUIPMENT CONDITION COLUMN OF EACH TASK
- INSPECT/REPAIR (PARA 2.1)

M04–3362–2

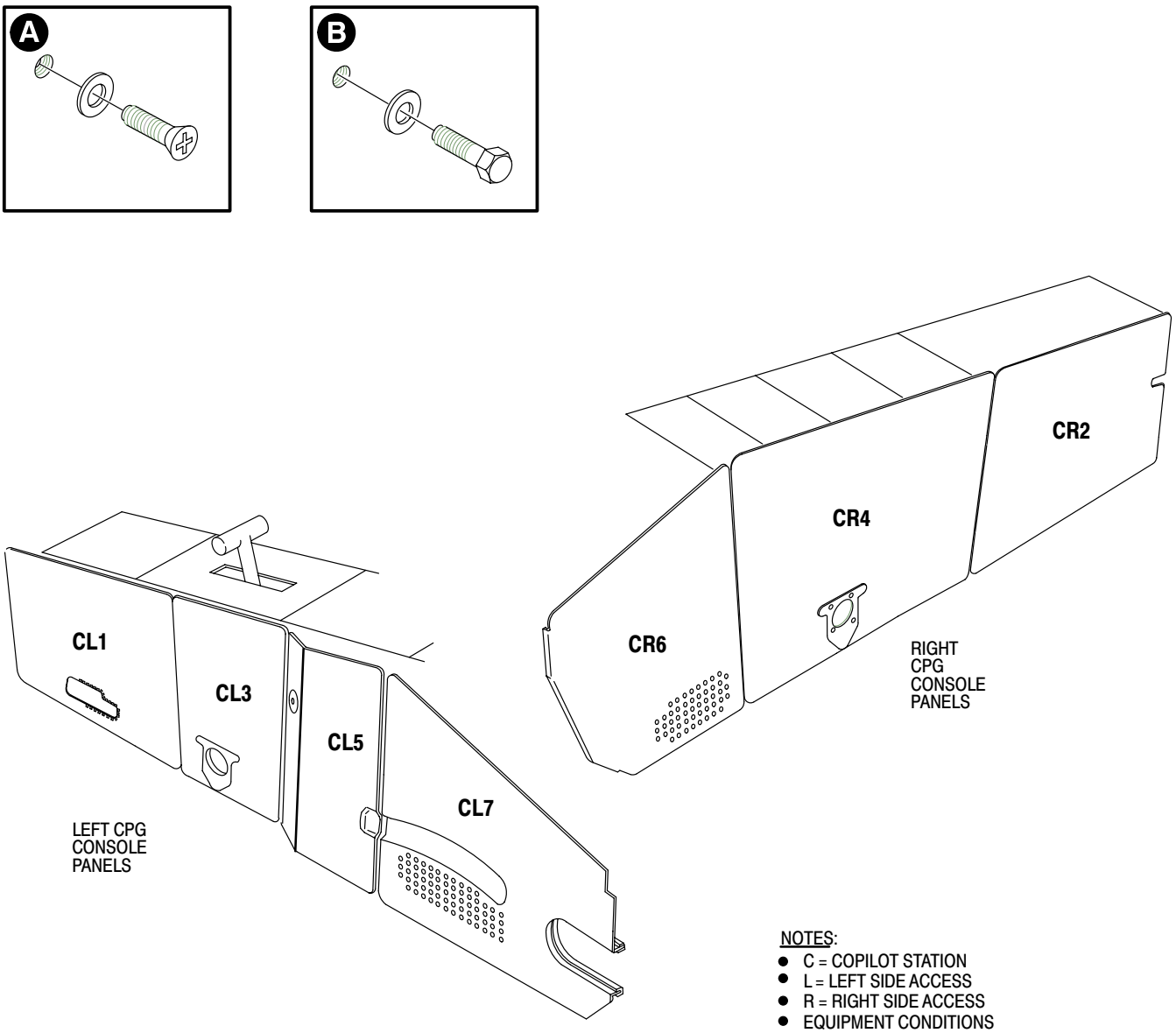
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2.8. PILOT LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION – continued

Access No.	Access	Reference Condition	Remove and Install	Method
PL1	Aft Console Panel	Pilot Armored Crew Seat Removed (para 2.161) Pilot Collective Cover Removed (para 11.44) ECS Crew Station Valves Removed (para 13.28)	9 Screws	A
PL3	Center Console Panel	---	10 Screws	A
PL5	Map Case Console Panel	---	17 Screws	A, B
PL7	Forward Console Panel	Pilot Scuff Plate Assembly Removed (para 2.182) CPG Armored Crew Seat Removed (para 2.161)	22 Screws, 3 Clamps	A, C
PR2	Forward Console Panel	Pilot Scuff Plate Assembly Removed (para 2.182) CPG Armored Crew Seat Removed (para 2.161)	14 Screws	A
PR4	Center Console Panel	ECS Duct Removed (para 13.28) Helmet Holster Removed (para 2.185)	13 Screws	A
PR6	Aft Console Panel	ECS Duct Removed (para 13.28)	9 Screws	A

END OF TASK

2.9. CPG LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION



NOTES:

- C = COPILOT STATION
- L = LEFT SIDE ACCESS
- R = RIGHT SIDE ACCESS
- EQUIPMENT CONDITIONS FOR EACH PANEL REMOVAL ARE IN THE EQUIPMENT CONDITION COLUMN OF EACH TASK
- INSPECTION/REPAIR (PARA 2.1)

M04–3363–1

2.9. CPG LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION – continued

Access No.	Access	Reference Condition	Remove and Install	Method
CL1	Aft Console Panel	CPG Armored Crew Seat Removed (para 2.161) CPG Collective Cover Removed (para 11.44)	9 Screws, 2 Bolts	A, B
CL3	Lower Aft Console Panel	ECS Crew Station Valve Removed (para 13.28)	13 Screws	A
CL5	Center Console Panel	---	15 Screws	A
CL7	Forward Console Panel	CPG Armored Crew Seat Removed (para 2.161) CPG Scuff Plate Assembly Removed (para 2.183) CPG ICS Foot Switch Removed (TM 11-1520-238-23-1)	22 Screws	A
CR2	Aft Console Panel	---	11 Screws	A
CR4	Center Console Panel	Helmet Holster Removed (para 2.185) ECS Valve Removed (para 13.15)	20 Screws	A
CR6	Forward Console Panel	CPG Armored Crew Seat Removed (para 2.161) CPG Scuff Plate Assembly Removed (para 2.183) CPG ICS Foot Switch Removed (TM 11-1520-238-23-1)	13 Screws	A

2.10. PILOT/CPG COCKPIT THERMAL INSULATION AND HOOK AND PILE FASTENER REMOVAL/INSTALLATION

2.10.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.10.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
12-inch bent trimmer shears (item 284, App H)

Personnel Required:

68G Aircraft Structural Repairer

Materials/Parts:

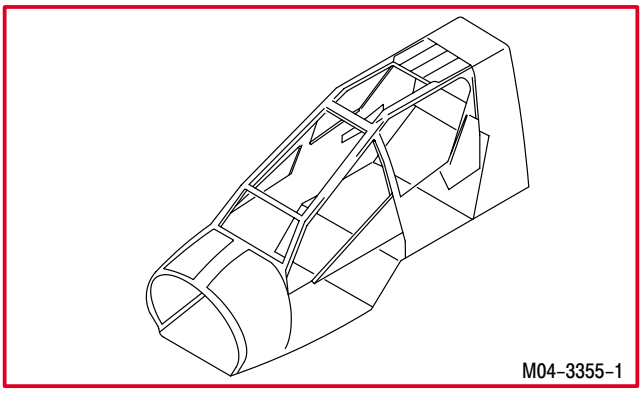
Adhesive (item 18, App F)
Brush (item 34, App F)
Naphtha (item 127, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

- This task is typical for removing and replacing thermal insulation panels.
- Some thermal insulation panels may have cutouts for electrical wiring, screw ECS outlets, or defog tubing.


M04-3355-1

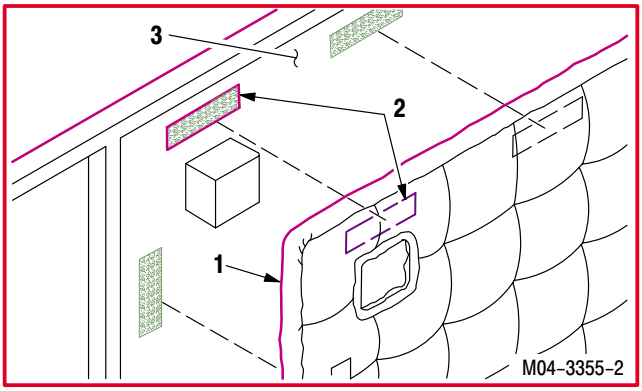
2.10.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove thermal insulation (1).**

(1) Separate hook and pile fasteners (2).

(2) Remove insulation (1) from bulkhead (3).



M04-3355-2

2.10.4. Cleaning

a. **Wipe insulation and bulkhead with a clean rag.**

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2.10. PILOT/CPG COCKPIT THERMAL INSULATION AND HOOK AND PILE FASTENER REMOVAL/INSTALLATION – continued

2.10.5. Inspection

a. **Check fasteners for tears and security of attachment.** Replace if torn or insecurely attached.

b. **Check insulation for tears or damage.** None allowed.

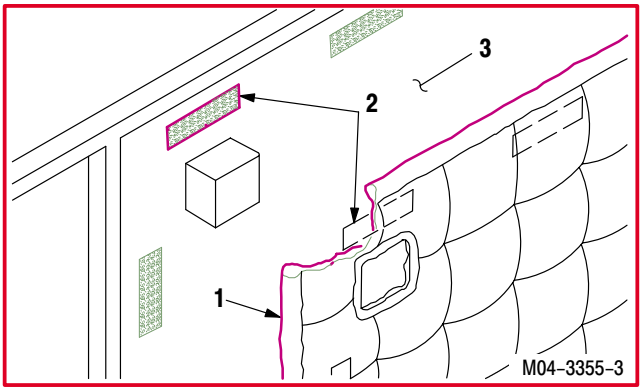
2.10.6. Repair



a. **Remove fasteners (2) from bulkhead (3) or insulation (1).**

(1) Apply naphtha (item 127, App F) to edges of fastener (2) with brush (item 34, App F). Peel off fastener (2).

(2) Thoroughly clean area of adhesive or residue. Use naphtha (item 127, App F) and rags.



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2.10. PILOT/CPG COCKPIT THERMAL INSULATION AND HOOK AND PILE FASTENER REMOVAL/INSTALLATION – continued



b. **Install fasteners (2).**

(1) Cut fastener (2) to desired length. Use shears.

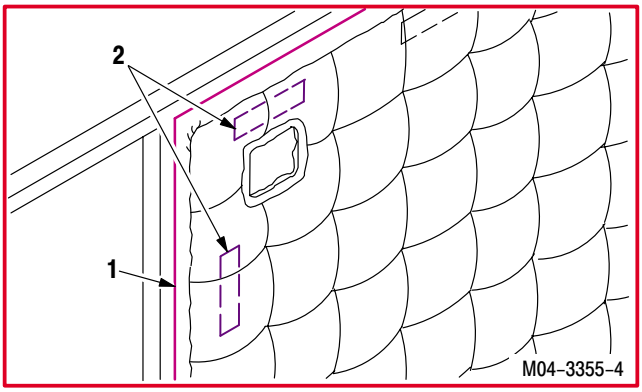
(2) Apply adhesive to back of fastener (2). Use adhesive (item 18, App F) and brush (item 34, App F).

(3) Allow adhesive to air dry **10 to 15 MINUTES**.

(4) Apply a second coat of adhesive and allow to dry. Use adhesive (item 18, App F) and brush (item 34, App F).

(5) Position fastener (2) in place and press firmly.

(6) Allow adhesive to cure **4 HOURS** before installing insulation (1).



2.10.7. Installation

a. **Install insulation (1) by working around ECS outlets, tubing, or electrical wiring.**

(1) Press fasteners (2) together.

END OF TASK

SECTION II. FUSELAGE MAINTENANCE

2.11. FUSELAGE INSPECTION

2.11.1. Description

This task covers: Fuselage. Cockpits. Transmission Deck. General (Fittings, Casting, Forging).

NOTE

- Refer to paragraph 2.12 for damage limits and corrective action.
- Refer to paragraph 1.49 for corrosion removal and treatment.
- Refer to paragraph 2.34 for EMI conductive coating application.
- If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

2.11.2. Fuselage

a. **Check skin panels, access covers, doors, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners, and EMI conductive coating damage**

b. **Check structural surfaces for EMI conductive coating damage.**

c. **Check honeycomb panels for cracks, tears, or punctures.**

d. **Check step assemblies for corrosion, cracks, and condition of anti-skid coating.**

e. **Check main landing gear cross tube for corrosion, scratches, or nicks.**

f. **Check structural attachment points for wear caused by movement.** None allowed.

g. **Check ammunition magazine strut assembly for dents, nicks, or scratches.**

h. **When electrical connectors are detached, check for foreign objects and corroded, bent, broken, loose, or missing pins.**

(1) Check connector operation for smooth, positive locking action.

(2) Check wire harnesses for chafing and loose installation. Refer to TM 55-1500-323-24 for wire and connector repair.

i. **Check fasteners, bearings, and bushings for damage.**

2.11.3. Cockpits

a. **Check transparent panel assemblies for scratches, pitting, cracks or delaminations.**

b. **Check pilot canted bulkhead for cracks, tears, or corrosion.**

c. **Check fittings, castings, and forgings for corrosion or cracks.**

GO TO NEXT PAGE

2.11. FUSELAGE INSPECTION

d. **Check nontransparent barrier armor assembly for cracks, tears, punctures, debonding, and delaminating.**

e. **Check structural attachment points for wear caused by movement.** None allowed.

2.11.4. Transmission Deck

a. **Check for corrosion, holes, cracks, tears, and loose or missing fasteners.**

b. **Check catwalk for corrosion, cracks, loose or missing fasteners, and condition of anti-skid coating.**

c. **Check structural attachment points for wear caused by movement.** None allowed.

d. **Check rotor support mast support base and transmission rotor support strut assemblies for damage or corrosion.**

e. **Check aft equipment bay area.**

(1) Open access doors L200, L325, R200, T250L, T250R, T290L, and T290R (para 2.2).

(2) Identify any leak source and repair.

(3) Clean area if fluid or dirt has accumulated in sufficient quantity to form pools, puddles, or excessive deposits (para 1.41).

NOTE

Spraying/misting is evidenced by a film of oil covering a general area. Film may be on upper or lower surfaces of an area. In general, oil leakage shall be kept to a minimum, if not completely stopped.

(4) Clean area if excessive oil/fuel is detected and source is unknown (para 1.47). Then conduct a **15 MINUTE** ground run. Immediately check for leaks. Any fuel leaks must be repaired prior to aircraft operation. Any oil leak, static or dynamic, causing pooling/puddling or spraying/misting must be repaired prior to next flight.

(5) Secure access doors L200, L325, R200, T250L, T250R, T290L, and T290R (para 2.2).

2.11.5. General (Fittings, Casting, Forging)

NOTE

- Nicks, scratches, and gouges which do not develop into cracks are generally acceptable if sharp edges can be blended and damage does not interfere with operational characteristics of affected components. If blending is required, remove minimal material to smooth off sharp edges.
- Cracks are generally not acceptable. Use approved nondestructive testing methods to determine if cracks exist.

END OF TASK

2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR

2.12.1. Description

This task covers: Damage Limits Categories. Types of Damage (Examples): Limits and Action. Corrosion. Impact or Fatigue Damage. Abrasion Damage.

2.12.2. Damage Limits Categories

The following damage limits categories are assigned to help you establish repairable limits for particular areas and parts. Applicable categories are listed only for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

2.12.3. Types of Damage (Examples): Limits and Action

Category	Limits	Action
a. Type: Skin Corrosion		
A	Less than **20 PERCENT** of skin thickness and no more than **25 PERCENT** of panel area.	Remove corrosion (para 1.49).
B	More than **20 PERCENT** of skin thickness and less than **50 PERCENT** of panel with no effect on adjacent structure.	Patch repair (TM 1-1500-204-23) not to exceed **25 PERCENT** of total panel.
C	More than **50 PERCENT** of skin thickness.	Replace affected area with patch repair (TM 1-1500-204-23).
b. Type: Skin or Sheet Metal Holes, Cracks, or Tears		
A	No negligible limits allowed.	-------
B	No minor limits allowed.	-------
C	No cracks or tears more than **25 PERCENT** of shortest skin panel dimension.	Clean up and patch repair (TM 1-1500-204-23).
	No holes greater than **3.00 INCHES** diameter (clean up can be no closer than **2.00 INCHES** to support structure).	Clean up and patch repair (TM 1-1500-204-23).

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR

2.12.4. Corrosion

Category	Limits	Action
a. Structural		
A	Less than **10 PERCENT** of material thickness across **25 PERCENT** of cross section.	Remove corrosion (para 1.49).
B	Greater than **10 PERCENT** of material thickness but less than **50 PERCENT** of cross section.	Patch repair (TM 1-1500-204-23) as long as area remaining allows attaching repair.
C	Greater than minor damage.	Replace.
b. Castings, Forgings		
A	Less than **25 PERCENT** of cross section and less than **10 PERCENT** of thickness or **0.040 INCH** depth.	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
c. Fasteners, Bearings, and Bushings		
A	Removable or allowed to remain without affecting size or function.	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
d. Covers and Doors		
A	Not applicable.	
B	Less than **10 PERCENT** of material thickness and less than **4.00 SQUARE-INCHES** after clean up.	Repair (TM 1-1500-204-23).
C	Exceeds B or repairs shall affect function.	Replace.
e. Step Assembly		
B	Less than **10 PERCENT** of wall thickness or **25 PERCENT** of tube circumference in length or width after clean up.	Repair (TM 1-1500-204-23).
C	Exceeds B.	Replace.

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
f. Main Landing Gear Cross Tube		
A	Less than **25 PERCENT** of cross section and less than **10 PERCENT** of thickness or **0.040 INCH** depth (whichever is less). (Damage must clear fastener holes or threads by **0.050 INCH** minimum.)	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
g. Engine Mount Supports		
A	Less than **25 PERCENT** of cross section and less than **10 PERCENT** of thickness or **0.040 INCH** in depth. (Damage must clear fillets and fastener holes or counterbores by **0.050 INCH** minimum.)	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
h. Mast Support Base Lightening Holes		
A	Maximum allowable depth for triangular cavity: Inboard curved walls are **0.265 INCH**; outboard curved walls are **0.265 INCH**; **1.00 INCH** from base of triangle to **3.10 INCHES** outboard is **0.265 INCH**; side walls are **0.125 INCH**. Use flashlight and mirror.	Perform impression inspection (para 2.88).
	Maximum allowable depth for circular cavity: Side walls are **0.125 INCH**; remaining inside walls and bottom of cavities are **0.265 INCH**. Use flashlight and mirror.	Perform impression inspection (para 2.88).
B	Exceeds A.	Replace.

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR

2.12.5. Impact or Fatigue Damage

Category	Limits	Action
a. Skin or Sheet Metal Holes, Cracks, or Tears		
B	Holes: less than **3.00 INCH** diameter. (Clean up can be no closer than **2.00 INCHES** to supporting structure and no more than **5 PERCENT** of skin area.)	Clean up and patch repair (TM 1-1500-204-23).
	Cracks or tears: no longer than **25 PERCENT** of shortest skin dimension.	Clean up and patch repair (TM 1-1500-204-23).
b. Skin or Sheet Metal Nicks or Scratches		
A	Less than **10 PERCENT** of material thickness.	Clean up (para 1.47). (Area cannot exceed **4.00 SQUARE-INCHES**.)
B	Deeper than **10 PERCENT** but less than **25 PERCENT** of material thickness.	Clean up (para 1.47). (Area can not exceed **5 PERCENT** of skin area and can be no closer than **2.00 INCHES** to supporting structure.)
C	Exceeds B.	Replace.
c. Skin Dents		
A	Smooth dents less than **0.25 INCH** deep.	Repair (TM 1-1500-204-23).
B	Dents with nicks or gouges or deeper than **0.25 INCH**.	Patch repair (TM 1-1500-204-23). (Treat dents as holes.)
C	Dents greater than **3.00 INCHES** in diameter (clean up can be no closer than **2.00 INCHES** to support structure and will not exceed **5 PERCENT** of skin area.)	Repair (TM 1-1500-204-23).
d. Aluminum Honeycomb Panel Cracks, Tears, or Punctures		
B	Less than **6.00 INCH** diameter in either direction after repair and clean up.	Repair (TM 1-1500-204-23).
C	Exceeds B or repair will hinder normal operation or function.	Replace.

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
e. Transparent Panel Surface Pitting, Scratches or Delaminations		
A	Pits: less than **0.010 INCH** deep and less than **0.25 SQUARE-INCH** in area.	Repair (TM 1-1500-204-23).
	Scratches: less than **0.010 INCH** deep and less than **5.00 INCHES** long.	Repair (TM 1-1500-204-23).
B	Exceeds A.	Repair (TM 1-1500-204-23).
C	Hinders or restricts flight crew vision.	Replace.

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued



Category	Limits	Action
f. Transparent Panels Cracks		
A	Cracks in nylon retainer which do not propagate into acrylic panel.	Seal with sealing compound (item 174, App F).
B	Less than **1.00 INCH** long within **2.00 INCHES** of panel edge and/or propagating from attachment bolt holes.	Repair by stop drilling crack (TM 1-1500-204-23).
C	Exceeds B or propagates beyond stop drilled hole.	Replace.
g. Glass Windshield		
C	Cracks and pitted or scratched areas that hinder or restrict flight crew vision.	Replace.
h. Cover and Door Cracks, Tears, and Punctures		
B	Less than **25 PERCENT** length of shortest dimension.	Repair (TM 1-1500-204-23).
C	Exceeds B.	Replace.
i. Main Landing Gear Shock Strut Support Flaws (Pits, Grooves, and Scratches)		
A	Flaws no deeper than **0.010 INCH** are allowed on shaft in area extending from base of strut support outward along shaft **0.25 INCH**.	-------
	Flaws no deeper than **0.020 INCH** are allowed on shaft in area extending from base of strut support outward along shaft **0.25 INCH**.	-------
B	Exceeds A.	Must be blended out at 20:1 ratio.
C	Cracks or a continuous groove extending around entire shaft surface are not allowed.	Perform magnetic particle inspection on strut support (TM 55-1500-335-23). Replace.

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
j. Main Landing Gear Cross Tube Scratches or Nicks		
B	Less than **0.75 INCH** in diameter and no deeper than **0.215 INCH** after clean up.	Repair (TM 1-1500-204-23).
C	Exceeds B.	Replace.
k. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: less than **25 PERCENT** length of shortest skin dimension.	Repair (para 2.30).
	Punctures: less than **2.00 INCHES** from supporting structure.	Repair (para 2.30).
C	Exceeds B or hinders normal operation or function.	Replace.
l. Kevlar/Epoxy Skin or Honeycomb Delamination		
B	No deeper than three plies or **0.050 INCH**, whichever is less. (Treat limit exceeding damages as crack, tear, or puncture repair.)	Repair (para 2.30).
m. Kevlar/Epoxy Skin or Honeycomb Delamination		
C	Greater than **6.00 INCHES** but less than **40 PERCENT** of panel area.	Replace if possibility of danger to crew or helicopter exists.
	Greater than **40 PERCENT** of panel area.	Replace panel.
n. Kevlar/Epoxy Fairings Debonding		
B	-------	Rebond where ribs, gussets, baffles, stiffeners, seals, and doublers have debonded.
o. Kevlar/Epoxy Bond Honeycomb Panels Cracks, Tears, or Punctures		
B	Cracks or tears: less than **6.00 INCHES** long. (Damage to core must not exceed **6.00 INCHES** in any direction after trimming and clean up).	Repair (para 2.30).
C	Exceeds B (cracks, tears, or punctures).	Replace item.

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
p. Kevlar/Epoxy Fairings Cracks		
B	No longer than **25 PERCENT** of shortest skin dimension.	Repair (para 2.30).
C	Exceeds B or extends from one end of part through other end.	Replace.
q. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers.	Repair (para 2.30).
r. Repair seal on armor side panel.		
A	Cracks, tears, punctures.	Replace.
s. Boron Carbide Cracks (e.g., nontransparent barrier)		
C	Any cracking.	Replace.
t. Area Weapon Support Structure (F.S. 91.7)		
A	Single crack less than **0.75 INCH**.	Repair (TM 1-1500-204-23).
B	Total of all cracks on one side of bulkhead - less than **1.75 INCHES**.	Repair (TM 1-1500-204-23).
	Total of all cracks on bulkhead - less than **1.75 INCHES**.	Repair (TM 1-1500-204-23).
	Single crack greater than **0.75 INCH**.	Ground helicopter until repaired.
	Total of all cracks on one side of bulkhead - greater than **1.75 INCHES**.	Ground helicopter until repaired.
	Total of all cracks on bulkhead - greater than **1.75 INCHES**.	Ground helicopter until repaired.
u. Fuselage Frame Assembly (F.S. 547.15) (includes attached stringers within **6 INCHES** of attachment to this frame.)		
A	Single crack less than **1.50 INCHES**.	Continue operation of helicopter - **INSPECT DAILY**.
B	Any crack greater than A.	Contact local LAR Representative for repair.
	Any crack within **0.25 INCH** of thin-to-thick wall transition flange.	Contact local LAR Representative for repair.
C	Greater than B.	Replace.

GO TO NEXT PAGE

2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
v. Rotor Support Mast Support Base Nicks, Scratches, or Gouges		
A	Not applicable.	-------
B	Maximum allowable depth for all areas not specified is **0.015 INCH**; for upper and lower flanges, and tapered ends is **0.050 INCH**; for mast bolt circle is **0.005 INCH**; and for lug ends is **0.150 INCH**.	Repair (TM 1-1500-204-23).
C	Exceeds B.	Replace.
w. Upper Transmission Rotor Support Struts Nicks or Scratches		
A	Not applicable.	-------
B	Maximum depth **0.005 INCH** (2 allowed per strut).	Must be blended out. Fluorescent penetrant inspect all blended area (TM 55-1500-335-23).
C	Radial scratches on cylindrical section or exceeds B.	Replace.
x. Lower Transmission Rotor Support Struts Nicks or Scratches		
A	Not Applicable.	-------
B	Maximum depth on clevis surface **0.010 INCH** (2 allowed per strut).	Must be blended out. Fluorescent penetrant inspect all blended areas (TM 55-1500-335-23).
	Maximum depth on lower attachment ear surface **0.040 INCH**.	Must be blended out. Fluorescent penetrant inspect all blended areas (TM 55-1500-335-23).
	Maximum depth at lower end of strut and edge of attachment ear **0.080 INCH**.	Must be blended out. Fluorescent penetrant inspect all blended areas (TM 55-1500-335-23).
C	Exceeds B.	Replace.
y. Ammunition Magazine Strut Nicks or Scratches (upper and lower attachment fittings/tubular section)		
A	Not applicable.	-------
B	Maximum depth **0.010 INCH**.	Must be blended out.
C	Exceeds B.	Replace.

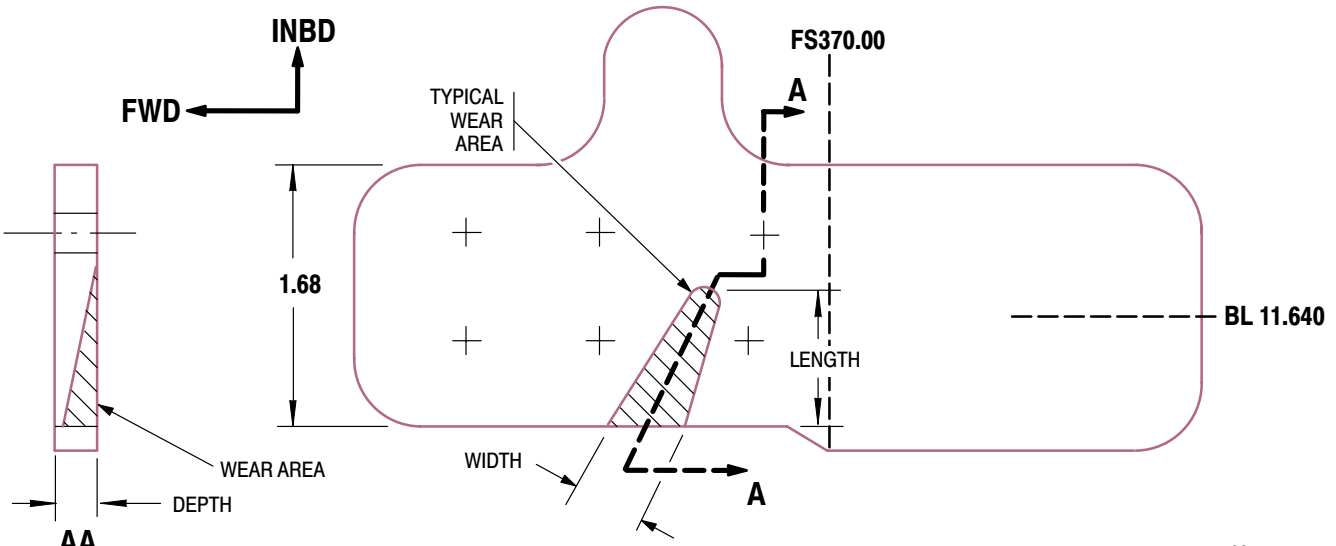
GO TO NEXT PAGE

2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR

Category	Limits	Action
z. Strut End Fittings Nicks or Scratches		
A	Not applicable.	-------
B	Maximum **0.005 INCH**.	Must be blended out.
C	Exceeds B.	Replace.

2.12.6. Abrasion Damage

Category	Limits	Action
a. Left Hand and Right Hand Tailboom Fuselage Stringer Splice Plate		
A	Abrasion length is less than **0.125 INCH** width is less than **0.125 INCH** and/or depth is less than **0.020 INCH**.	Blend abraded area of airframe splice plate to eliminate any sharp edges or sudden contour changes. Refinish plate blended area (TM 55-1500-345-23).
B	Abrasion length is more than **0.800 INCH** and depth is less than **0.060 INCH**.	Blend abraded area of airframe splice plate to eliminate any sharp edges or sudden contour changes. Refinish plate blended area (TM 55-1500-345-23).
	Abrasion width is less than **0.350 INCH** depth is less than **0.060 INCH** and/or length is less than **0.800 INCH**.	Blend abraded area of airframe splice plate to eliminate any sharp edges or sudden contour changes. Refinish splice blended area (TM 55-1500-345-23).

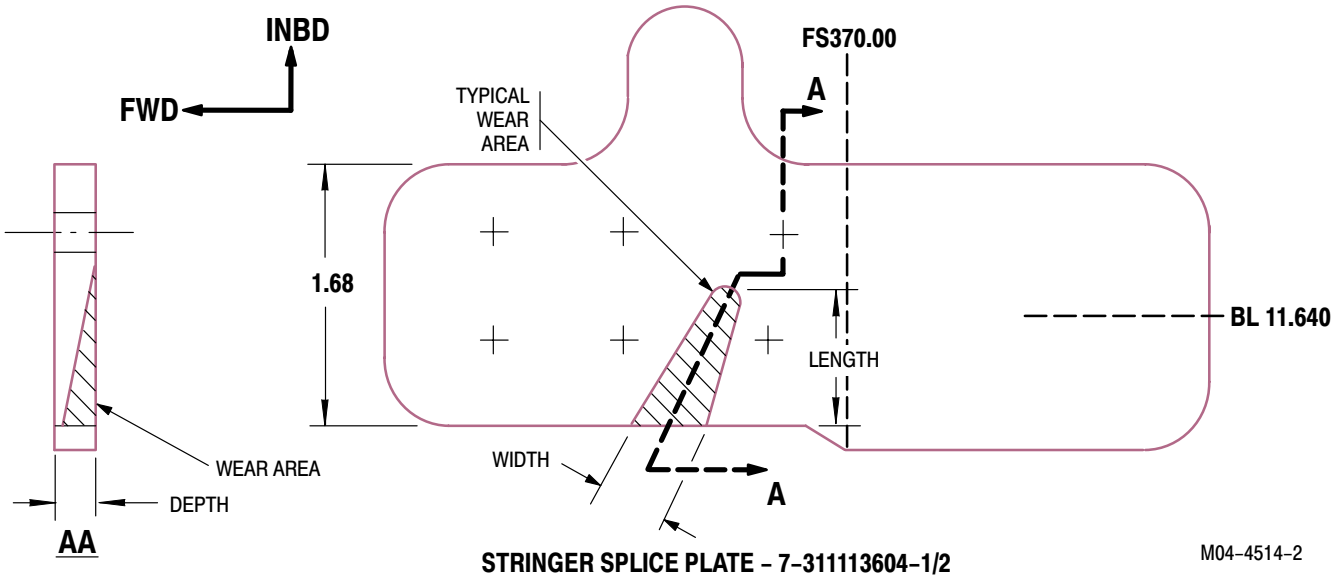


STRINGER SPLICE PLATE – 7-311113604-1/2

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2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued

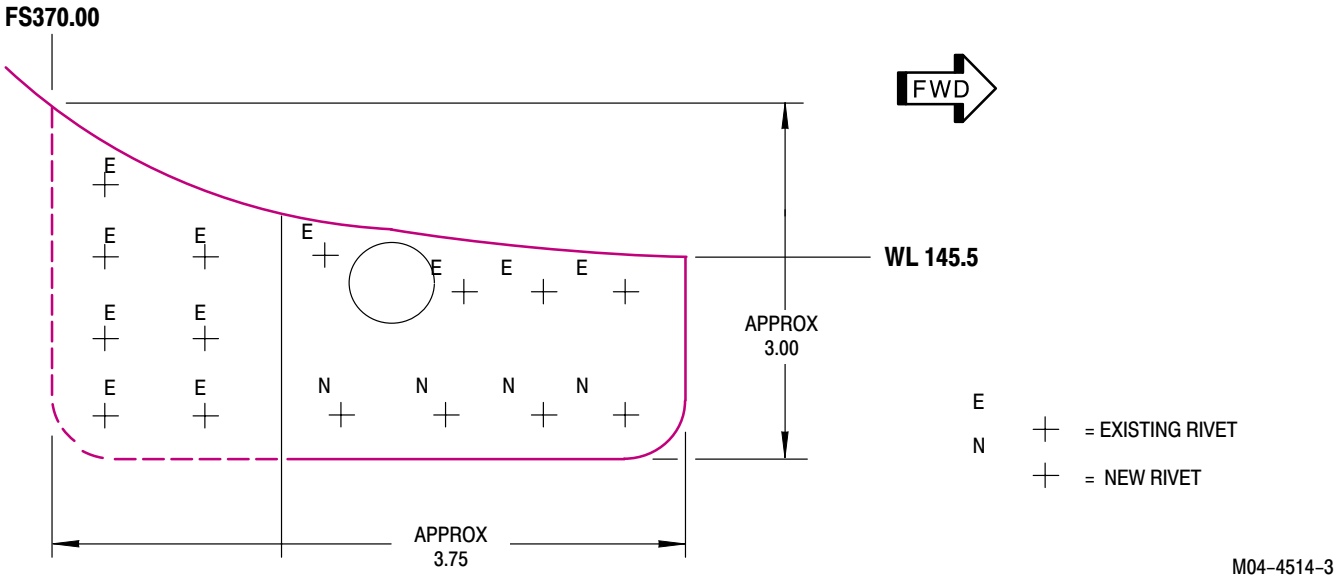
Category	Limits	Action
C	Cracked or abrasion length is more than **0.800 INCH** and depth is more than **0.060 INCH**.	Replace splice plate (TM 1-1500-204-23).
	Abrasion width is less than **0.350 INCH** depth is more than **0.060 INCH** and/or length is less than **0.800 INCH**.	Replace splice plate (TM 1-1500-204-23).



GO TO NEXT PAGE

2.12. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
b. Tailboom fuselage skin.		
C	Abrasion damage.	Repair by installing **0.032 INCH** aluminum alloy, QQ-A-205/4, T-3, doubler (TM 1-1500-204-23).



c. Tail Rotor Drive Shaft T355 Fairing Fasteners.		
C	Abrasion exceeds **0.010 INCH** deep.	Replace plate (para 2.21).

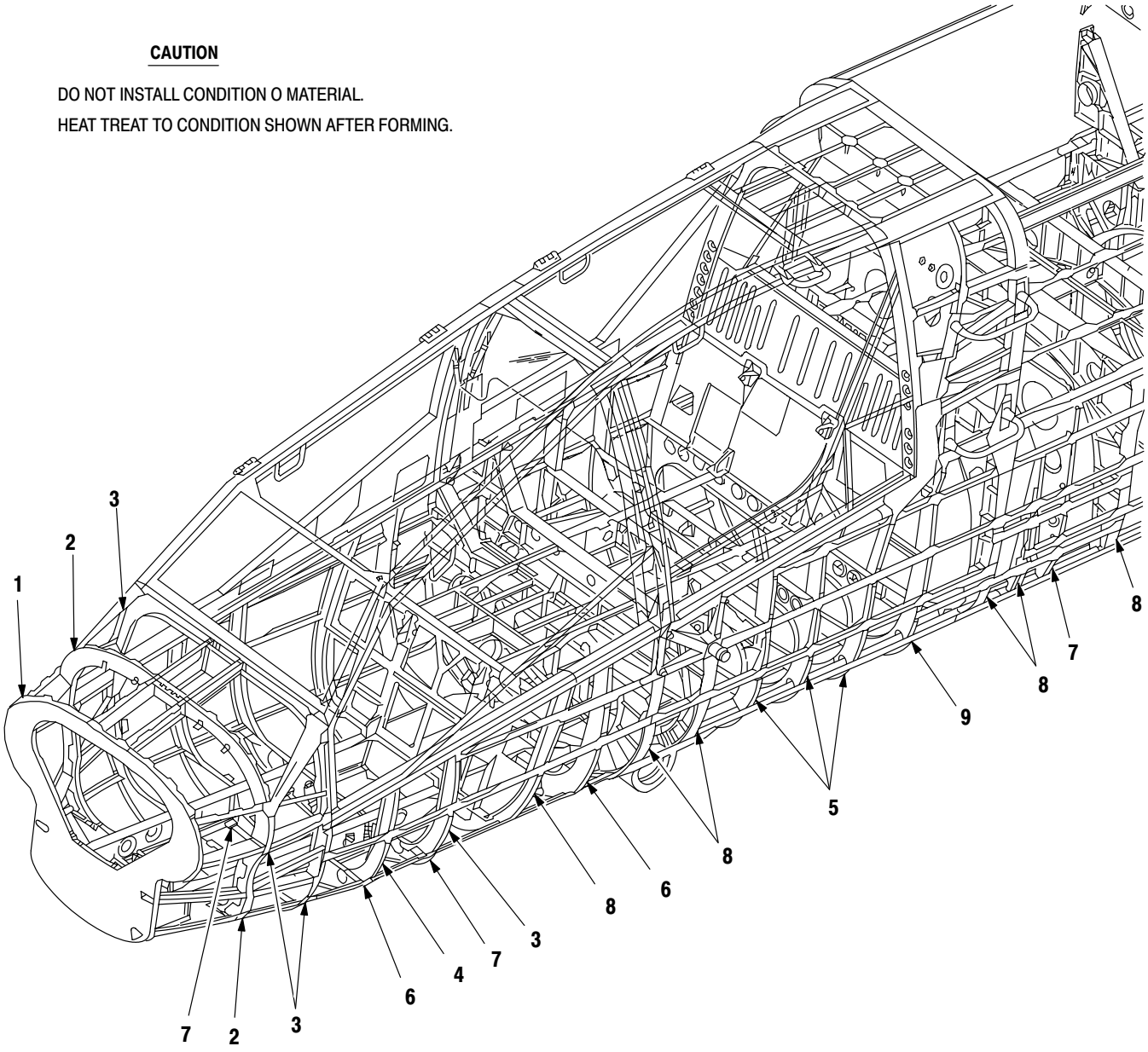
END OF TASK

2.13. FORWARD FUSELAGE FRAME STRUCTURE

CAUTION

DO NOT INSTALL CONDITION O MATERIAL.

HEAT TREAT TO CONDITION SHOWN AFTER FORMING.



M04–0007

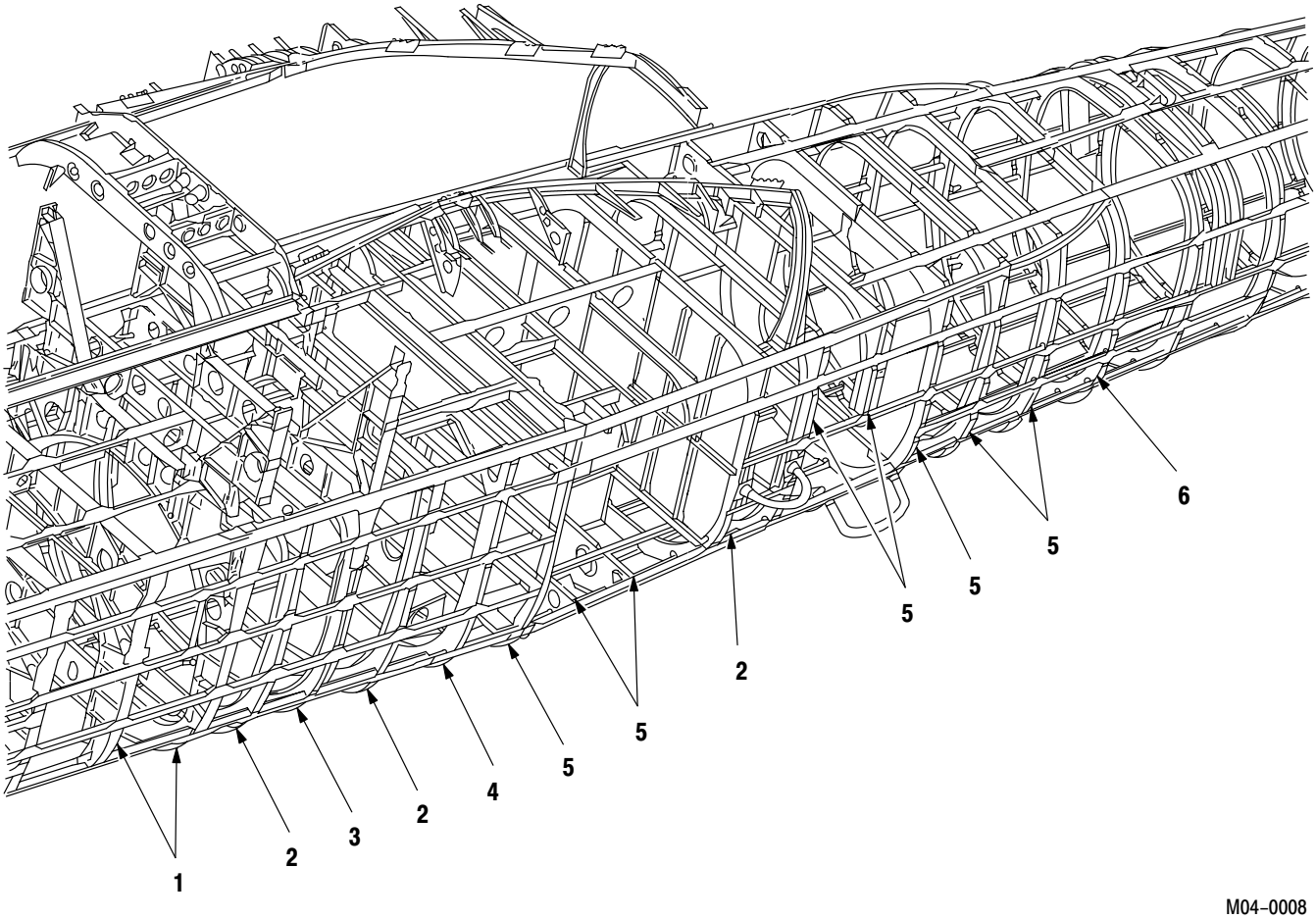
2.13. FORWARD FUSELAGE FRAME STRUCTURE – continued

Item	Material	Specification	Condition	Thickness (inches)
1	7075 AL CLAD	QQ-A-250/13	T6	0.040
2	7075 AL ALY	QQ-A-250/12	T6	0.040
3	7075 AL ALY	QQ-A-250/12	T6	0.080
4	7075 AL ALY	QQ-A-250/12	T6	0.071
5	2024 AL ALY	QQ-A-250/4	T42	0.050
6	2024 AL ALY	QQ-A-250/4	T6	0.040
7	2024 AL ALY	QQ-A-250/4	T42	0.040
8	Forging			
9	2042 AL ALY	QQ-A-250/4	T62	0.050

2.14. CENTER FUSELAGE FRAME STRUCTURE

CAUTION

DO NOT INSTALL CONDITION O MATERIAL.
HEAT TREAT TO CONDITION SHOWN AFTER FORMING.



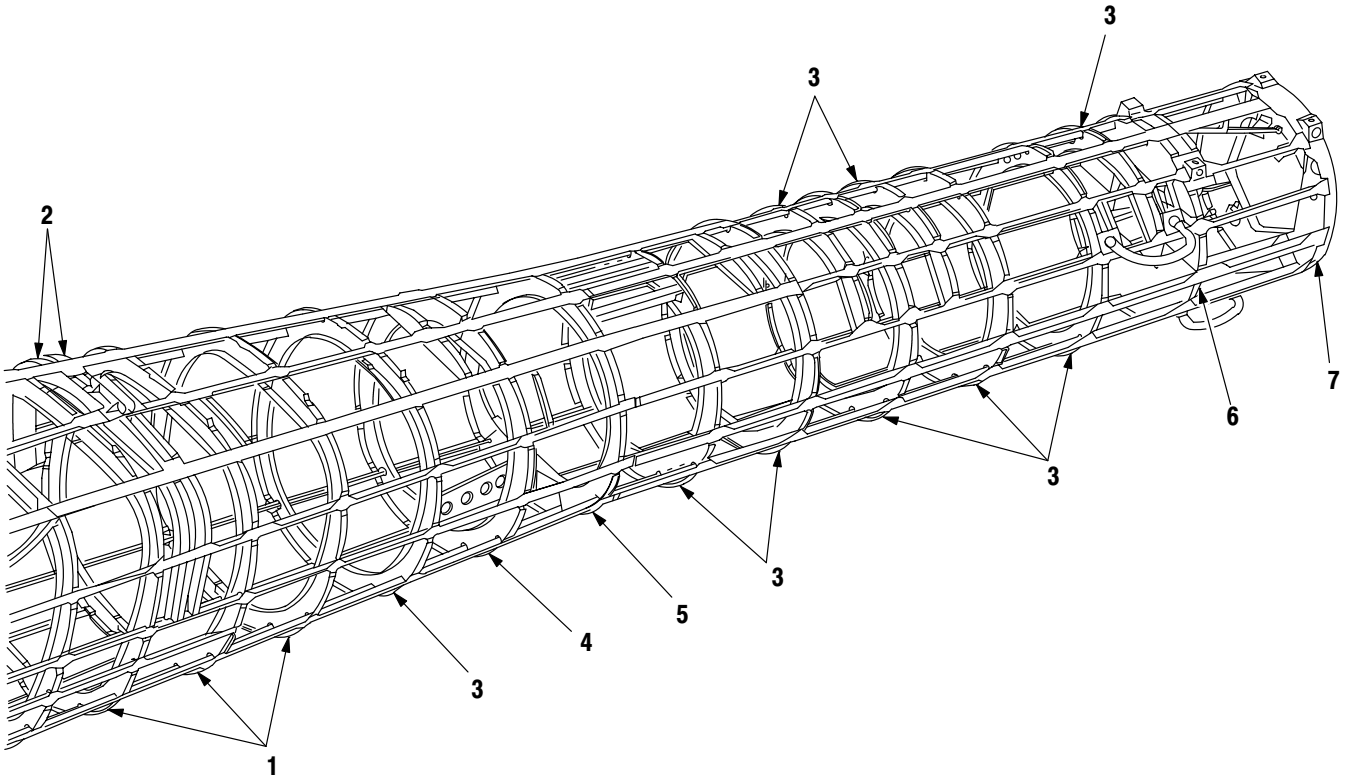
M04-0008

Item	Material	Specification	Condition	Thickness (inches)
1	Forging			
2	2024 AL ALY	QQ-A-250/4	T42	0.040
3	2024 AL ALY	QQ-A-250/4	T42	0.050
4	2024 AL ALY	QQ-A-250/4	T42	0.071
5	2024 AL ALY	QQ-A-250/4	T42	0.032
6	7075 AL ALY	QQ-A-250/12	T6	0.071

2.15. AFT FUSELAGE FRAME STRUCTURE

CAUTION

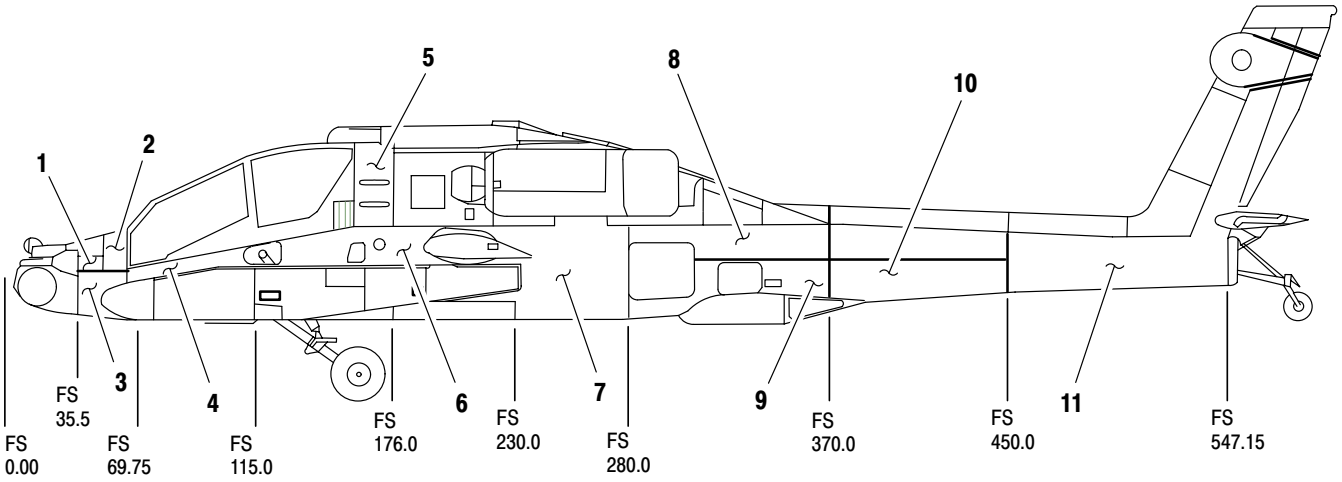
DO NOT INSTALL CONDITION O MATERIAL.
HEAT TREAT TO CONDITION SHOWN AFTER FORMING.



M04–0009

Item	Material	Specification	Condition	Thickness (inches)
1	2024 AL ALY	QQ-A-250/4	T42	0.032
2	2024 AL ALY	QQ-A-250/4	T42	0.040
3	7075 AL ALY	QQ-A-250/12	T6	0.040
4	7075 AL ALY	QQ-A-250/12	T6	0.050
5	7075 AL ALY	QQ-A-250/12	T6	0.100
6	2024 AL ALY	QQ-A-250/4	T42	0.071
7	Forging			

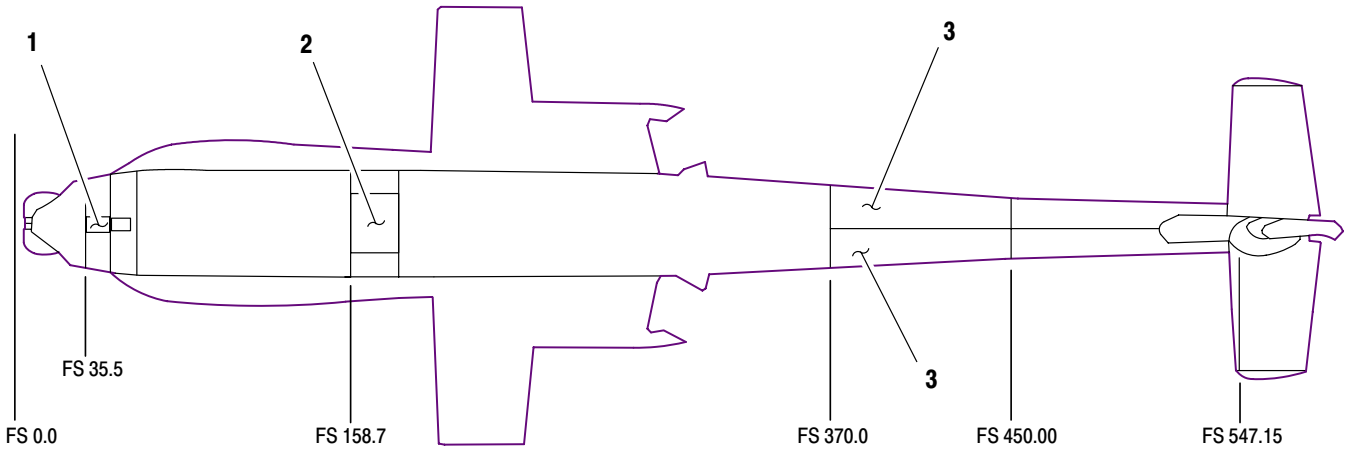
2.16. FUSELAGE SIDE SKIN PLATES



M04-0012

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T42	0.032	8.5	14.0
2	2024 AL CLAD	QQ-A-250/5	T42	0.032	11.0	80.0
3	2024 AL CLAD	QQ-A-250/5	T42	0.032	36.0	43.0
4	7075 AL CLAD	QQ-A-250/13	T6	0.050	48.0	50.0
5	2024 AL CLAD	QQ-A-250/5	T42	0.040	18.5	40.5
6	2024 AL CLAD	QQ-A-250/5	T3	0.071	59.0	116.0
7	2024 AL CLAD	QQ-A-250/5	T3	0.032	51.0	59.0
8	2024 AL CLAD	QQ-A-250/5	T42	0.032	33.5	91.0
9	2024 AL CLAD	QQ-A-250/5	T3	0.032	44.0	91.0
10	2024 AL CLAD	QQ-A-250/5	T3	0.032	27.0	34.5
11	2024 AL CLAD	QQ-A-250/5	T3	0.040	43.0	100.0

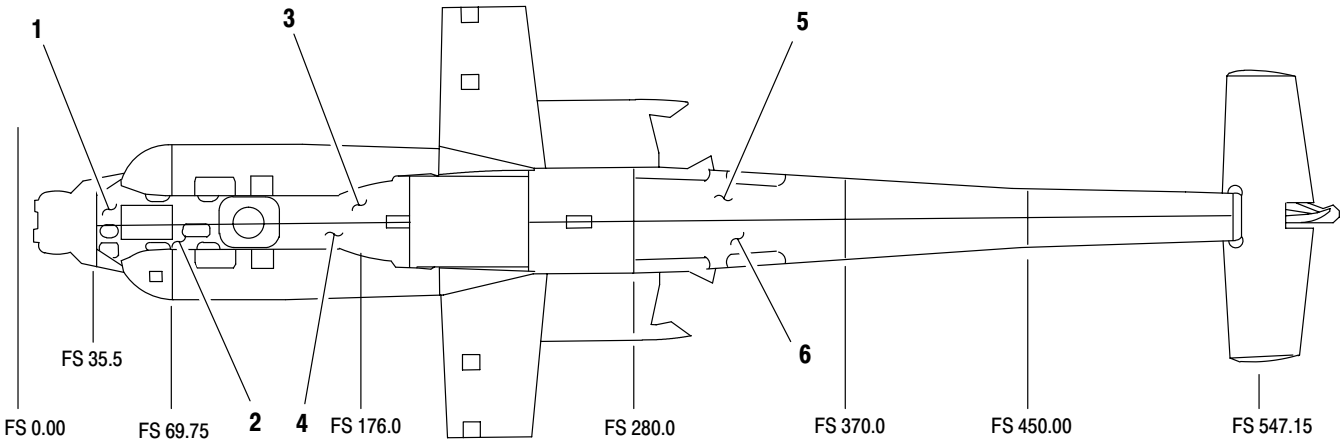
2.17. FUSELAGE TOP SKIN PLATES



M04-0013

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T3	0.032	8.0	12.3
2	2024 AL CLAD	QQ-A-250/5	T3	0.032	17.4	22.1
3	2024 AL CLAD	QQ-A-250/5	T3	0.032	18.0	34.5

2.18. FUSELAGE BOTTOM SKIN PLATES

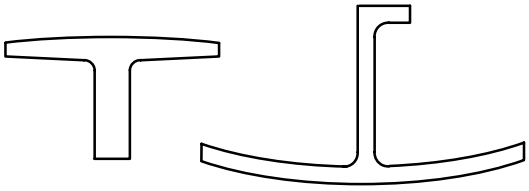


M04-0014

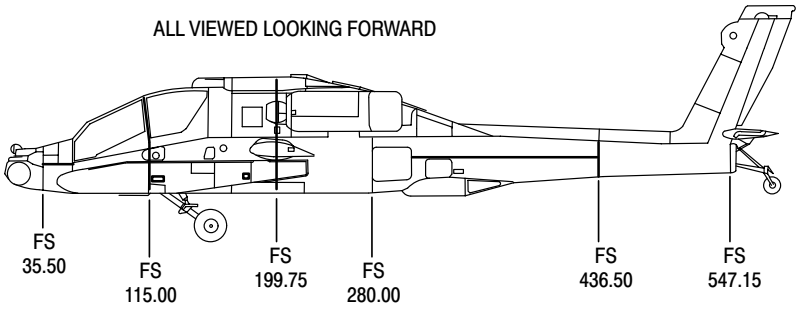
Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T42	0.032	36.0	43.0
2	2024 AL CLAD	QQ-A-250/5	T42	0.050	36.0	43.0
3	2024 AL CLAD	QQ-A-250/5	T3	0.071	59.0	116.0
4	2024 AL CLAD	QQ-A-250/5	T3	0.071	59.0	116.0
5	2024 AL CLAD	QQ-A-250/5	T3	0.032	44.0	91.0
6	2024 AL CLAD	QQ-A-250/5	T3	0.032	44.0	91.0

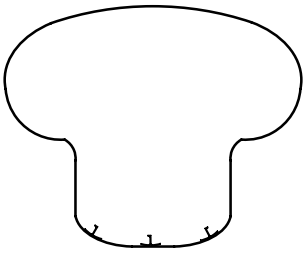
2.19. FUSELAGE STRINGERS

TYPE: EXTRUDED TEE
MATERIAL: 7075 ALUMINUM ALLOY
CONDITION: T6511

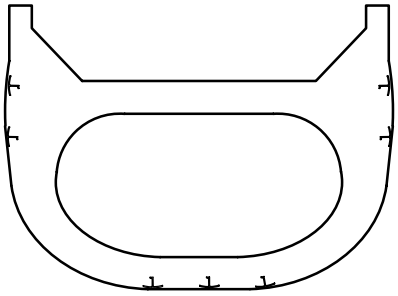


ALL VIEWED LOOKING FORWARD

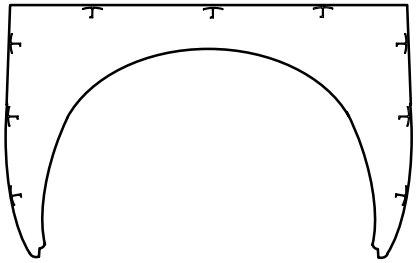




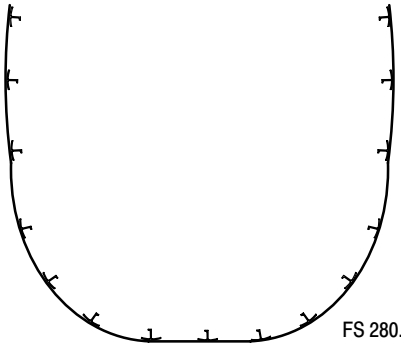
FS 35.50



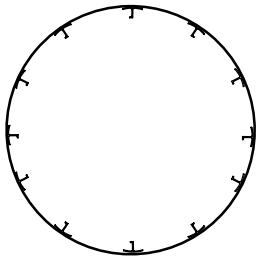
FS 115.00



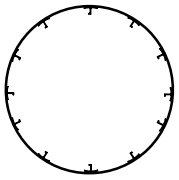
FS 199.75



FS 280.00



FS 436.50



FS 547.15

M04-0017

2.20. TURNLOCK RECEPTACLE REPLACEMENT

2.20.1. Description

This task covers: Removal. Installation.

2.20.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

References:

TM 1-1500-204-23

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

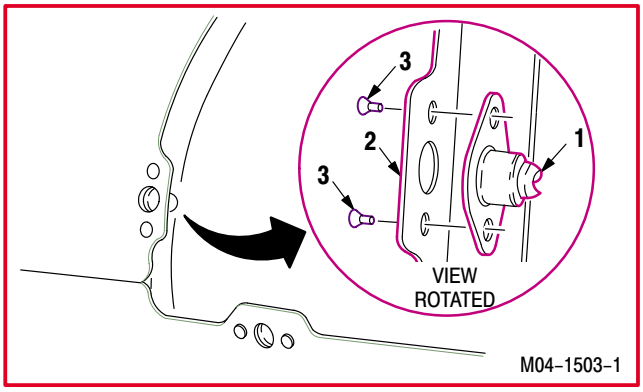
Ref	Condition
1.57	Helicopter safed

2.20.3. Removal

a. **Remove receptacle (1) from airframe (2).**

(1) Remove two rivets (3) from receptacle (1) and airframe (2) (TM 1-1500-204-23).

(2) Remove and discard receptacle (1).



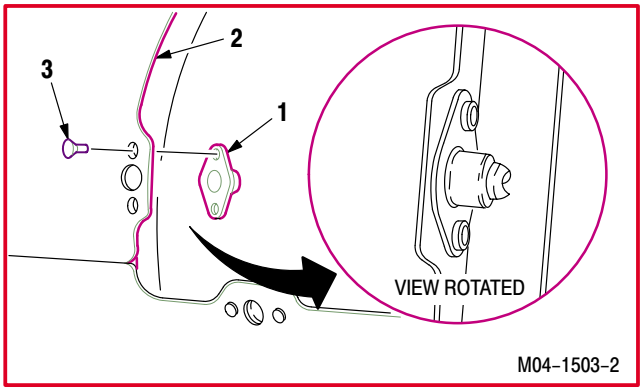
2.20.4. Installation

a. **Install new receptacle (1) on airframe (2).**

(1) Position receptacle (1) on airframe (2).

(2) Install two rivets (3) in receptacle (1) and airframe (2) (TM 1-1500-204-23).

b. **Inspect (QA).**



END OF TASK

2.21. TURNLOCK STUD REPLACEMENT

2.21.1. Description

This task covers: Removal. Installation.

2.21.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

Personnel Required:

68G Aircraft Structural Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.21.3. Removal

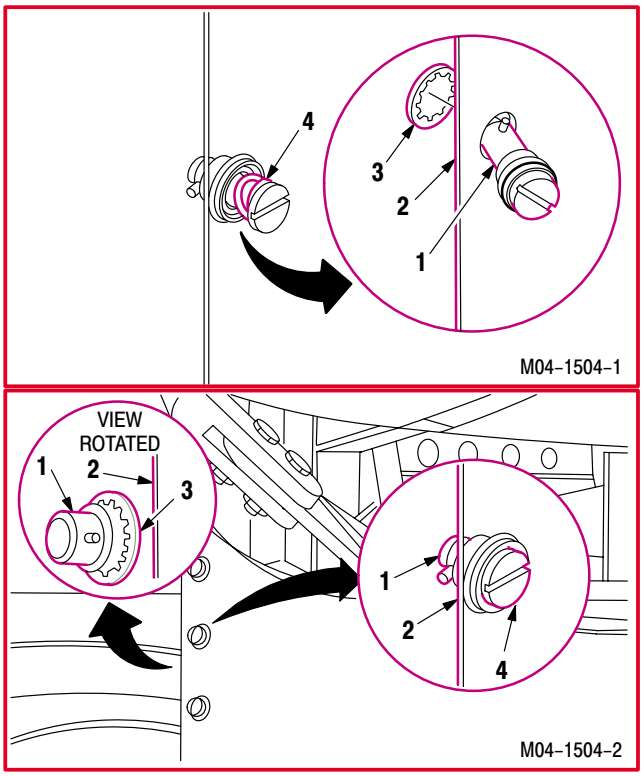
a. **Remove turnlock stud (1) from airframe (2).**

(1) Remove retainer washer (3) from stud (1).

(2) Compress spring (4) of stud (1).

(3) Tilt and remove stud (1) from airframe (2).

(4) Discard stud (1).



2.21.4. Installation

a. **Install new stud (1) on airframe (2).**

(1) Compress spring (4) of stud (1).

(2) Tilt and insert stud (1) in airframe (2).

(3) Install washer (3) on stud (1).

END OF TASK

2.22. TURNLOCK STUD (WITH PACKINGS) REPLACEMENT

2.22.1. Description

This task covers: Removal. Installation.

2.22.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

Personnel Required:

68G Aircraft Structural Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Materials/Parts:

Packing (2)

2.22.3. Removal

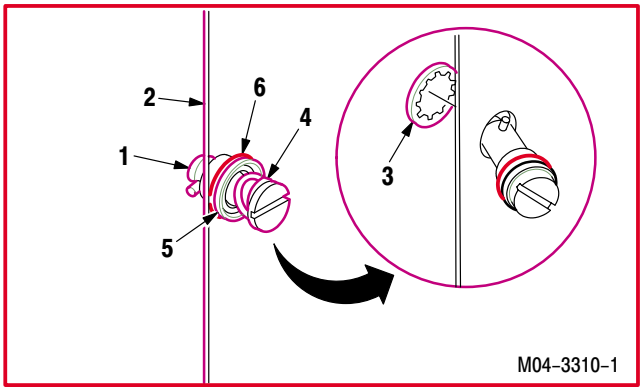
a. **Remove turnlock stud (1) from airframe (2).**

(1) Remove retainer washer (3) from stud (1).

(2) Compress spring (4) of stud (1).

(3) Tilt and remove stud (1) and packings (5) and (6) from airframe (2).

(4) Discard stud (1) and packings (5) and (6).



2.22.4. Installation

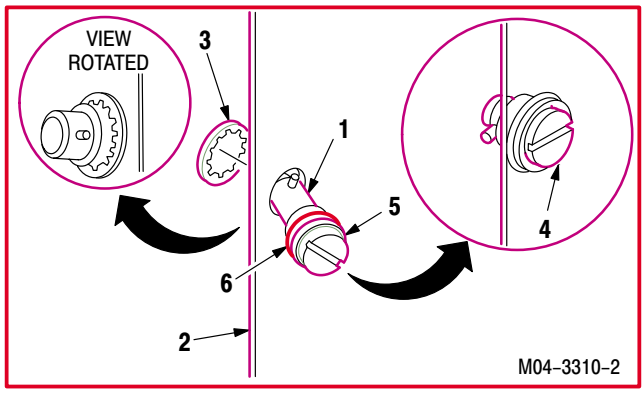
a. **Install new stud (1) on airframe (2).**

(1) Install new packings (5) and (6) on stud (1).

(2) Compress spring (4) of stud (1).

(3) Tilt and insert stud (1) in airframe (2).

(4) Install washer (3) on stud (1).



END OF TASK

2.23. NUTPLATE REPLACEMENT

2.23.1. Description

This task covers: Removal. Installation.

2.23.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

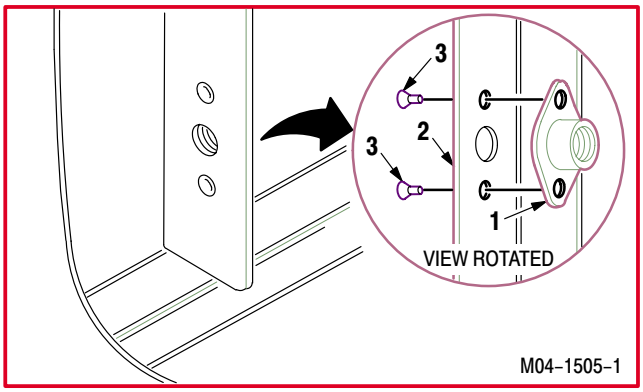
Ref	Condition
1.57	Helicopter safed

2.23.3. Removal

a. **Remove nutplate (1) from airframe (2).**

(1) Remove two rivets (3) from nutplate (1) and airframe (2) (TM 1-1500-204-23).

(2) Remove and discard nutplate (1) from airframe (2).



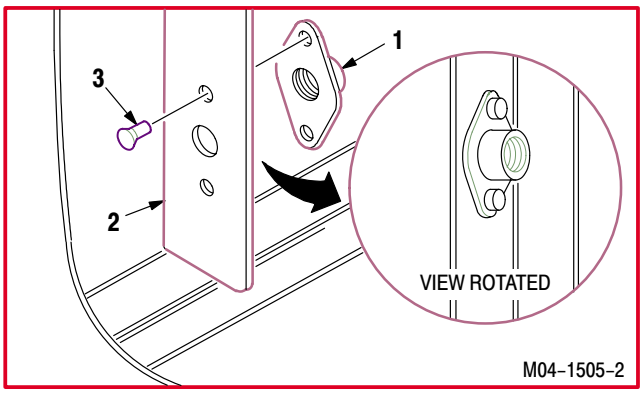
2.23.4. Installation

a. **Install new nutplate (1) on airframe (2).**

(1) Aline nutplate (1) on airframe (2).

(2) Install two rivets (3) in nutplate (1) and airframe (2) (TM 1-1500-204-23).

b. **Inspect (QA).**



END OF TASK

2.24. HINGE BUTT REPLACEMENT

2.24.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.24.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1500-204-23
TM 55-1500-345-23

Materials/Parts:

Cloth (item 52, App F)
Epoxy primer coating kit (item 78, App F)
Methyl ethyl ketone (item 124, App F)
Naphtha (item 127, App F)
Thinner (item 211, App F)

Personnel Required:

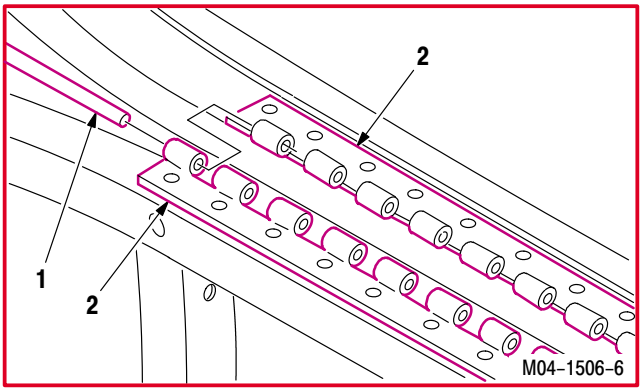
68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.24.3. Removal

a. **Remove and discard hinge pin (1) from hinge (2)** (TM 1-1500-204-23)**.**



2.24.4. Cleaning

a. **Wipe attaching parts and surfaces with a clean rag.**

2.24.5. Inspection

a. **Check door for cracks, distortion, and corrosion** (para 2.11)**.**

GO TO NEXT PAGE

2.24. HINGE BUTT REPLACEMENT – continued

2.24.6. Repair



a. **Repair door (3) by removing hinge (2).**

(1) Mark hinge (2) location on door (3).

(2) Remove rivets (4) from hinge (2) and door (3) (TM 1-1500-204-23).

(3) Remove and discard hinge (2) from door (3).

(4) Clean mounting surface of door (3). Use methyl ethyl ketone (item 124, App F), naphtha (item 127, App F), or thinner (item 211, App F), and cloth (item 52, App F).

2.24.7. Installation



a. **Install new hinge (2) on door (3).**

(1) Cut new hinge (2) to proper length. Use old hinge (2) for pattern.

(2) Aline hinge (2) with scriber marks on door (3).

(3) Clamp hinge (2) on door (3).

(4) Mark rivet (4) hole locations on hinge (2).

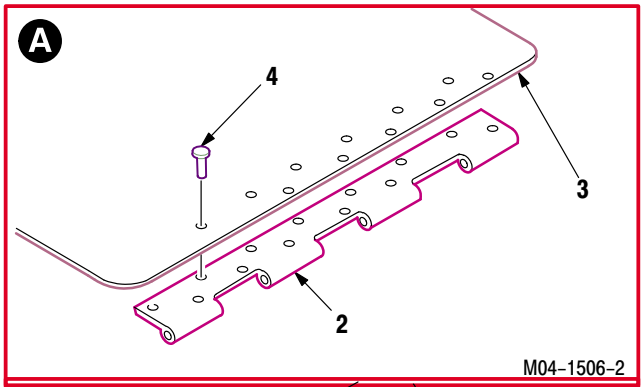
(5) Drill rivet (4) holes (TM 1-1500-204-23).

(6) Apply primer to hinge (2) holes. Allow to air dry. Use epoxy primer coating kit (item 78, App F).

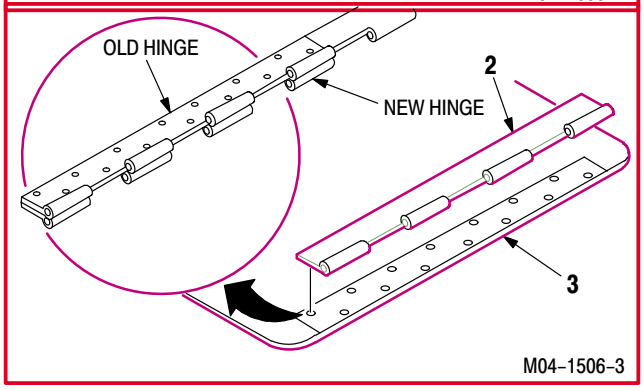
(7) Install rivets (4) in hinge (2) and door (3) (TM 1-1500-204-23).

b. **Touch up rivets** (TM 55-1500-345-23)**.**

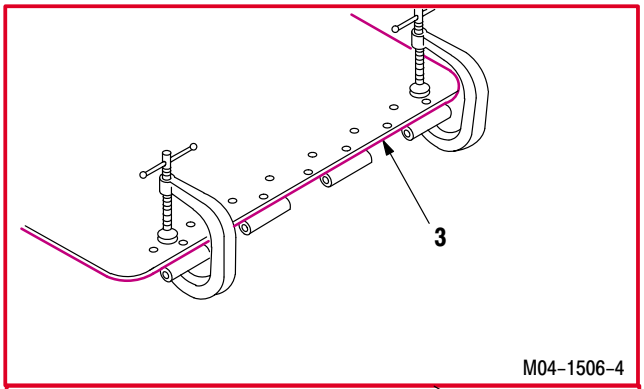
c. **Inspect (QA).**



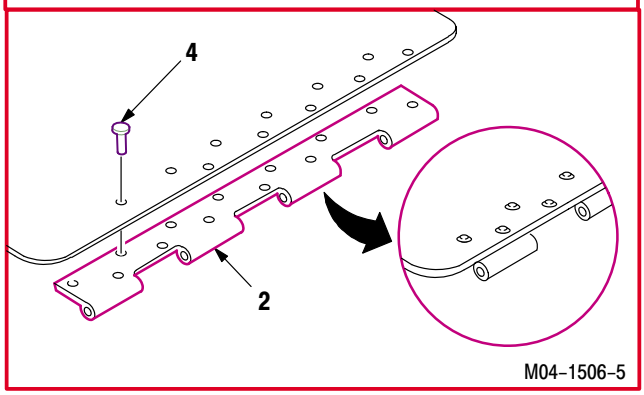
M04-1506-2



M04-1506-3



M04-1506-4



M04-1506-5

GO TO NEXT PAGE

2.24. HINGE BUTT REPLACEMENT – continued

NOTE

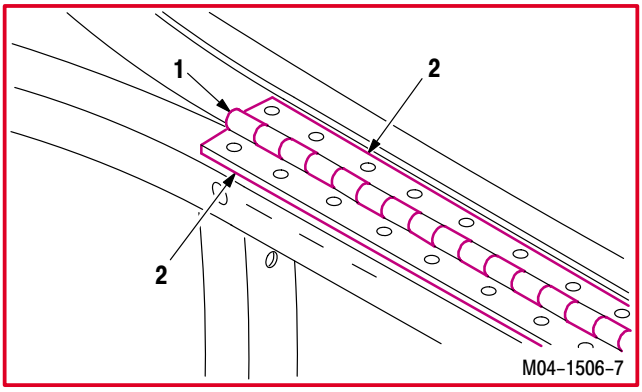
When hinge pin is being installed, pin length must be **1/8 to 3/16 INCH** shorter than hinge. If pin is too long, remove excess.

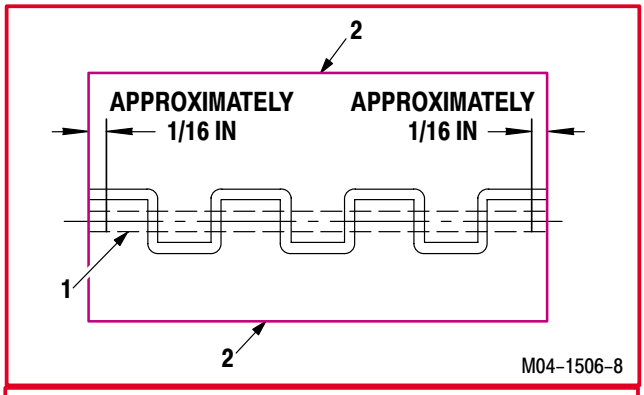
d. **Install new pin (1) in hinge (2).**

(1) Aline hinge halves (2).

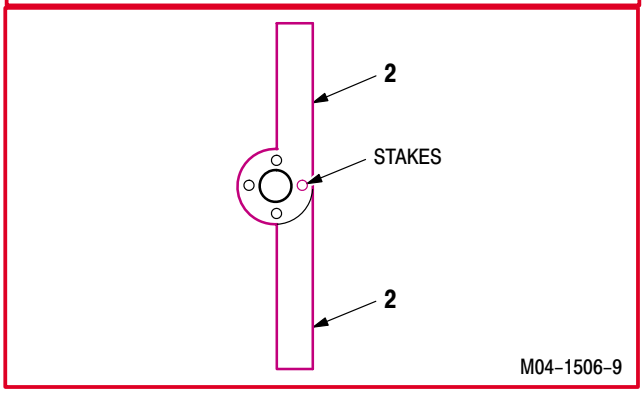
(2) Install pin (1) in hinge (2) (TM 1-1500-204-23).

(3) Pin (1) must be centered in hinge (2) approximately **1/16 INCH** from end of hinge (2).

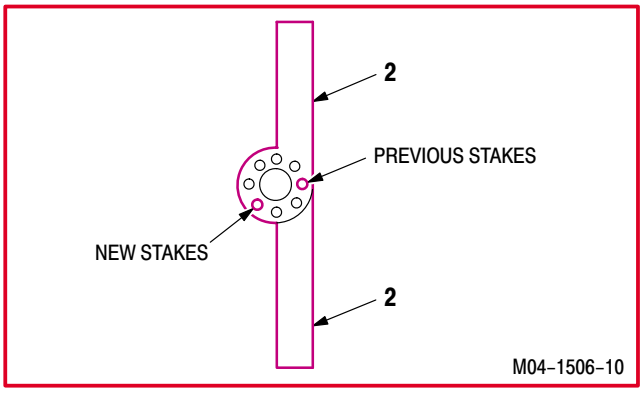




(4) Stake hinge (2) in four places.



(5) If hinge (2) has been previously staked, rotate stakes 90 degrees.



e. **Inspect (QA).**

END OF TASK

2.25. WING BARREL NUT REPLACEMENT

2.25.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.25.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23
TM 9-1090-208-23

Equipment Conditions:

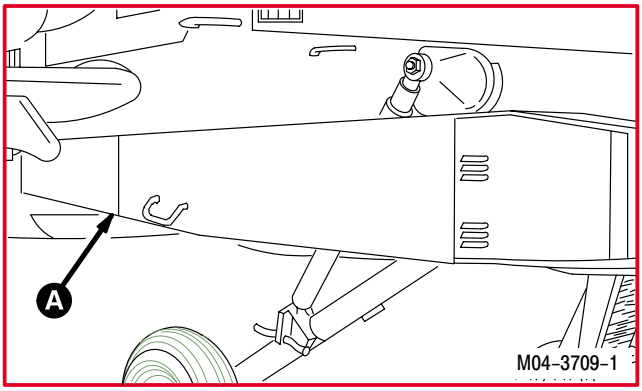
Ref	Condition
1.57	Helicopter safed
2.120	Wing removed
TM 9-1090-208-23	Ammunition storage magazine removed

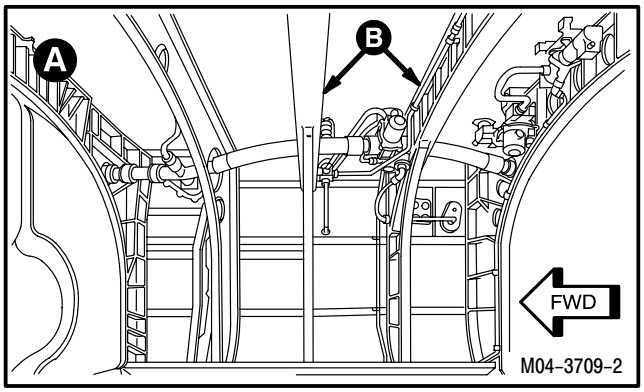
Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for left and/or right wing barrel nut replacement.





GO TO NEXT PAGE

2.25. WING BARREL NUT REPLACEMENT – continued

2.25.3. Removal

a. **Remove and discard self-locking barrel nut (1) and nut retainer (2) from fuselage support holes (3).**

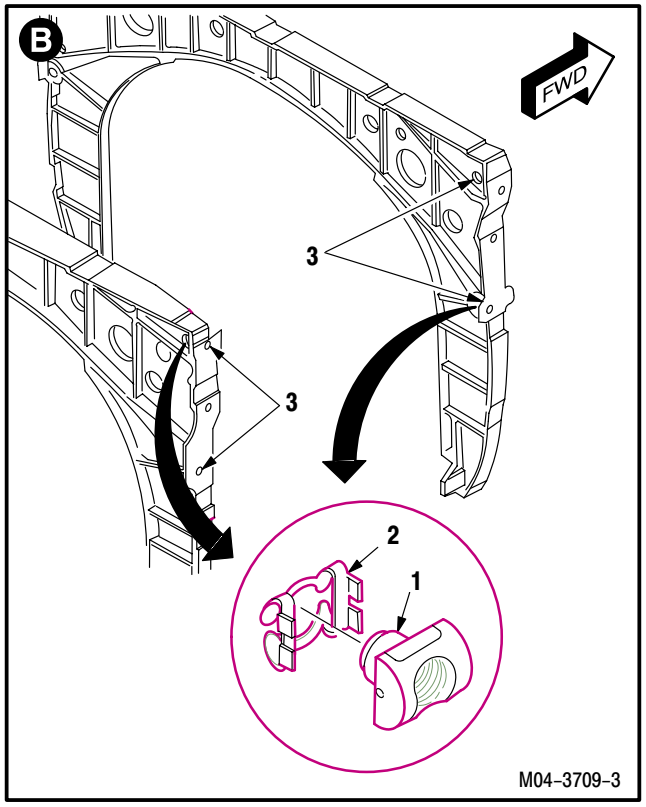
2.25.4. Cleaning

a. **Wipe support holes with a clean rag.**

2.25.5. Inspection

a. **Check support holes for cracks** (TM 1-1500-204-23)**.**

b. **Check support holes for corrosion** (para 1.49)**.**



GO TO NEXT PAGE

2.25. WING BARREL NUT REPLACEMENT – continued

CAUTION

- Do not mix bolts or barrel nuts.
- For two upper fuselage holes: when using HS5482-10 bolts, barrel nut HS5483-1018 and retainer NAS578-10B must be used. When using HS4441-10 bolts, barrel nut HS4504-10 and retainer NAS578-10B must be used.
- For two lower fuselage holes: when using HS5482-10 bolts, barrel nut HS5483-820 and retainer NAS578-8B must be used. When using HS4441-08 bolts, barrel nut HS4504-8 and retainer NAS578-8B must be used.

2.25.6. Installation

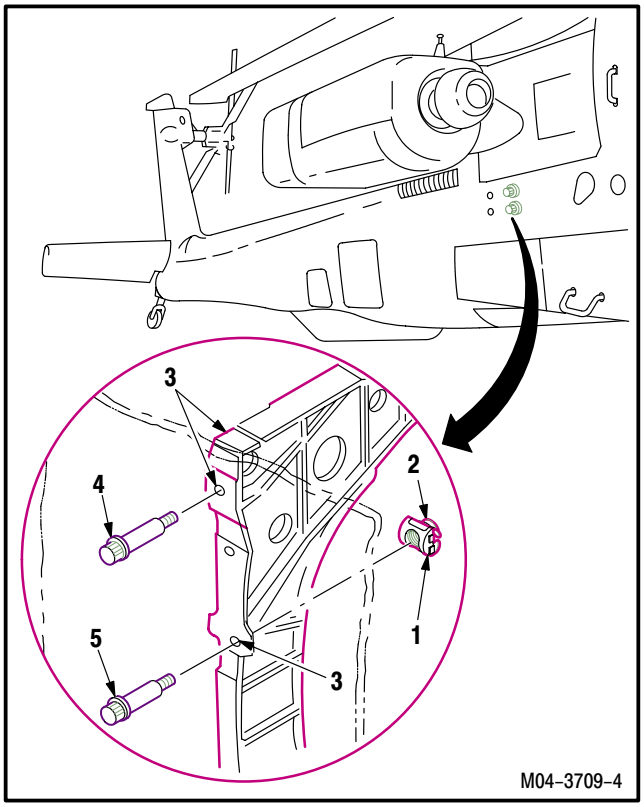
a. **Install new barrel nut (1) and retainer (2) in support holes (3).** Lightly tap in place.

b. **Thread bolts (4) and/or (5) in barrel nut (1) and retainer (2) to ensure proper barrel nut (1) and wing alinement.**

c. **Inspect (QA).**

d. **Install ammunition storage magazine** (TM 9-1090-208-23)**.**

e. **Install wing** (para 2.121)**.**



END OF TASK

2.26. GROUNDING JACK REPLACEMENT

2.26.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.26.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 55-1500-323-24

Materials/Parts:

Brush (item 34, App F)
Sealing compound (item 175, App F)

Personnel Required:

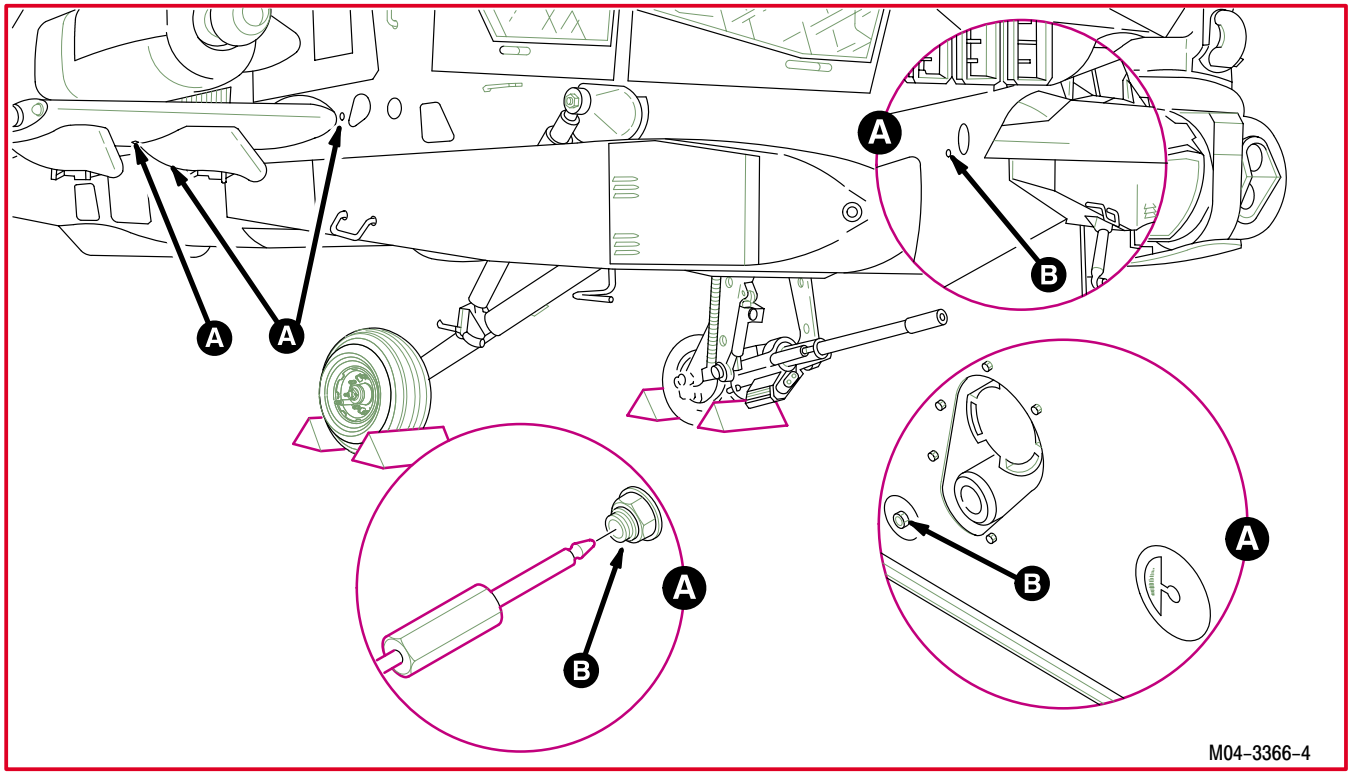
67R	Attack Helicopter Repairer
68X	Armament/Electrical System Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel R200 removed (as required)
2.122	L/H or R/H wing trailing edge removed (as required)
10.28	Forward fuel cell removed (as required)

GO TO NEXT PAGE

2.26. GROUNDING JACK REPLACEMENT – continued



NOTE

This task is typical for all grounding jacks.

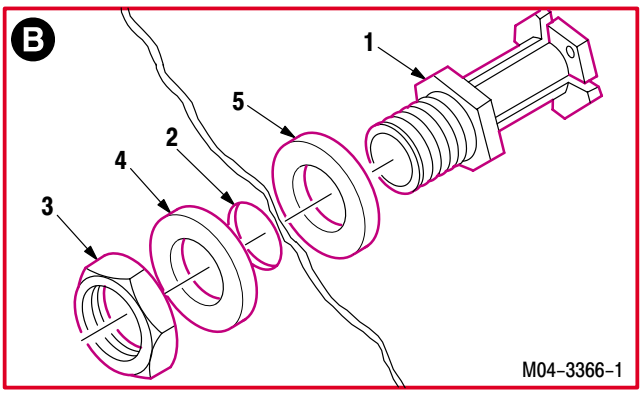
2.26.3. Removal

a. **Remove grounding jack (1) from fuselage (2).**

(1) Remove nut (3) and washer (4) from jack (1).

(2) Remove jack (1) and washer (5) from fuselage (2).

(3) Discard jack (1).



2.26.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

GO TO NEXT PAGE

2.26. GROUNDING JACK REPLACEMENT – continued

2.26.5. Inspection

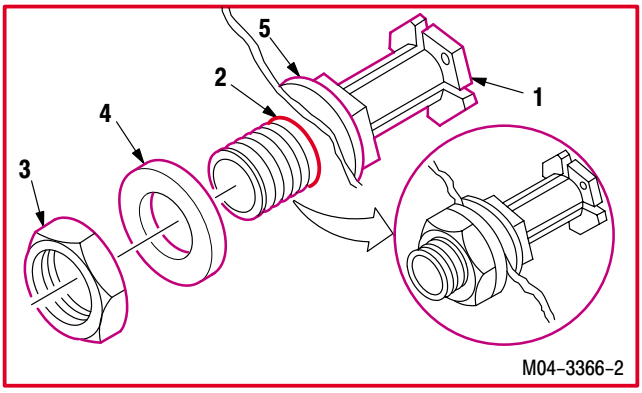
a. **Check fuselage for cracks and corrosion** (para 2.11)**.**

2.26.6. Installation

a. **Install new jack (1) in fuselage (2).**

(1) Install jack (1) through washer (5) and fuselage (2).

(2) Hold jack (1). Install washer (4) and nut (3).

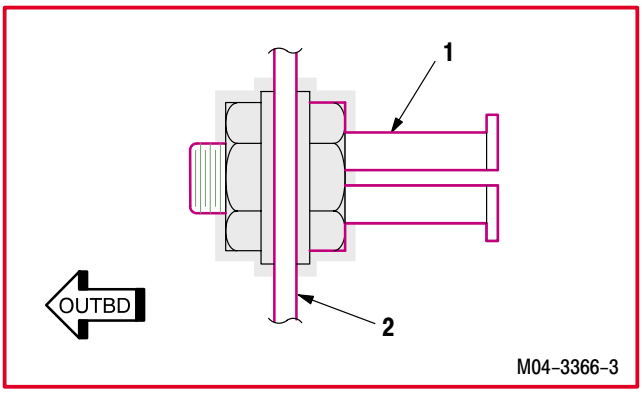


b. **Perform electrical bond check on jack** (TM 55-1500-323-24)**.**

(1) Bond shall be **1.00 OHM** or less. Use multimeter.



c. **Apply sealing compound at mounting surface of jack (1) and fuselage (2).** Use brush (item 34, App F) and sealing compound (item 175, App F).



d. **Inspect (QA).**

e. **Install forward fuel cell if removed** (para 10.28)**.**

f. **Install L/H or R/H wing trailing edge if removed** (para 2.122)**.**

g. **Install access panel R200 if removed** (para 2.2)**.**

END OF TASK

2.27. ELECTROMAGNETIC INTERFERENCE (EMI) GASKET REPAIR

10.27.1. Description

This task covers: Cuts. Tears and Punctures. Repair.

10.27.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Gasket 7-311150131-65 (table D-137, App D)
Silicone adhesive (item 23, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Sealing compound (item 156A, App F)
Syringe (item 196, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

- This task is typical for all EMI gasket installations except gaskets on drive shaft fairings.
- For gasket repair on fairings R410 and R475, go to paragraph 10.27.5.
- For surfaces finished with EMI conductive coating, go to paragraph 2.34.

10.27.3. Cuts



CAUTION

Do not allow adhesive to come in contact with exposed surfaces of gasket material. Adhesive is nonconductive and will render gasket material nonconductive.

NOTE

Damage less than **0.125 INCH** wide that does not remove any gasket material can be repaired by bonding gasket together at separation.

a. **Apply sealing compound to damaged area.** Use sealing compound (item 156A, App F) and syringe (item 196, App F).

GO TO NEXT PAGE

12.27. ELECTROMAGNETIC INTERFERENCE (EMI) GASKET REPAIR – continued



b. **Remove excess sealing compound from section of repair area** (para 1.47)**.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

10.27.4. Tears and Punctures



CAUTION

Do not allow sealing compound to come in contact with exposed surfaces of gasket material. Adhesive is nonconductive and will render gasket material nonconductive.

NOTE

Tears or punctures in gasket that are **0.125 to 0.375 INCH** wide may be repaired by bonding rough edges of gasket back together.

a. **Apply sealing compound to damaged area.** Use sealing compound (item 156A, App F) and syringe (item 196, App F).

b. **Remove excess sealing compound from section of repair area** (para 1.47)**.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

10.27.5. Repair

NOTE

- Damage to eyebrow gasket or electrical access door gasket that exceeds **0.375 INCH** requires replacement of entire gasket.
- Damage to gasket that exceeds **0.375 INCH** requires replacement of damaged section of gasket.

GO TO NEXT PAGE

12.27. ELECTROMAGNETIC INTERFERENCE (EMI) GASKET REPAIR – continued

a. **Remove damaged section of gasket.**

NOTE

Remove a minimum of **1.00 INCH** section of gasket.

(1) Cut gasket on both sides of damage.

(2) Cut perpendicular to edge of gasket.

(3) Clean excess sealing compound from section of repair (para 1.47).

(4) Cut a new piece of gasket the exact length of section removed.



b. **Apply adhesive to surface of repair area.** Use adhesive (item 23, App F) and syringe (item 196, App F).

c. **Install new section of gasket.**



CAUTION

Do not allow adhesive to come in contact with exposed surfaces of gasket material. Adhesive is nonconductive and will render gasket material nonconductive.

NOTE

Maximum width of bond line is **0.030 INCH**.

d. **Bond gaps at repair separation with sealing compound.** Use sealing compound (item 156A, App F) and syringe (item 196, App F).



e. **Clean excess sealing compound from section of repair area** (para 1.47)**.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

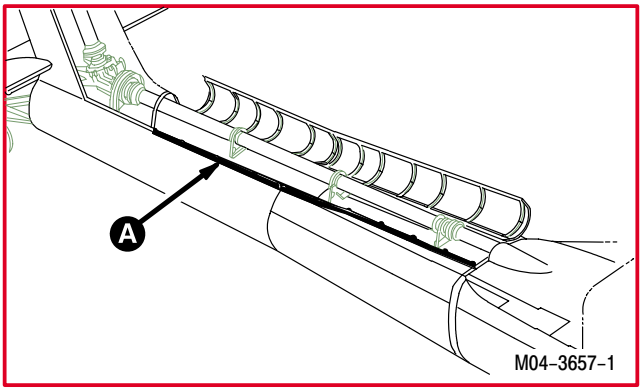
f. **Inspect (QA).**

GO TO NEXT PAGE

12.27. ELECTROMAGNETIC INTERFERENCE (EMI) GASKET REPAIR – continued

NOTE

This repair is for tail rotor drive shaft fairings R410 and R475 EMI gasket.



g. **Remove damaged section of gasket (1).**

(1) Remove minimum of **1.00 INCH** section of gasket (1).

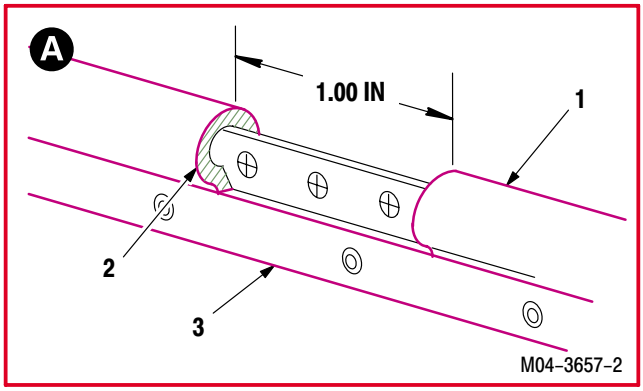
(2) Cut gasket (1) on each side of damaged area.

(3) Cut perpendicular to edge of gasket (1).

(4) Lift gasket (1) section to expose underside of gasket (1).

(5) Cut gasket (1) horizontally along base of bulb (2) above retainer (3).

(6) Cut repair section of gasket (1) to match cut on base of bulbed gasket (2).

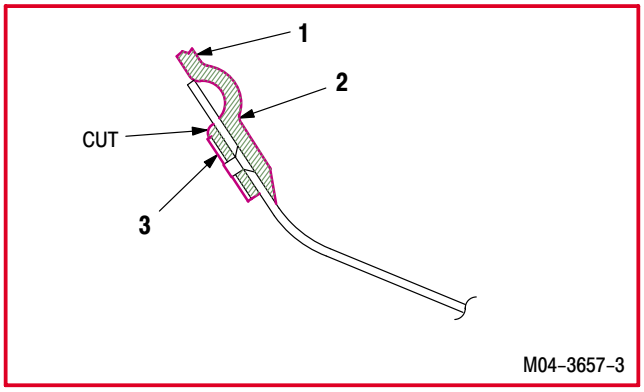


h. **Clean mating surfaces prior to installing gasket** (para 1.47)**.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

NOTE

Do not allow adhesive to fill bulb of gasket.





i. **Apply adhesive to mating surfaces of gasket (1) and bulb (2).** Use adhesive (item 23, App F) and syringe (item 196, App F).

j. **Bond new section of gasket (1) above retainer (3).**

k. **Inspect (QA).**

END OF TASK

2.28. ELECTROMAGNETIC INTERFERENCE (EMI) TAPE REPAIR

2.28.1. Description

This task covers: Removal. Cleaning. Repair. Replacement.

2.28.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Tape (item 198, App F)
Tape (item 199, App F)
Tape (item 209, App F)
Tape (item 210, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.28.3. Removal

CAUTION

To prevent damage to conductive paint surface, remove tape carefully.

a. **Remove damaged section of tape.**

2.28.4. Cleaning

a. **Mask ends of remaining EMI tape to prevent damage.**



CAUTION

To prevent damage to conductive surface, do not allow isopropyl alcohol to come in contact with remaining tape.

b. **Clean area of removed tape.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

GO TO NEXT PAGE

2.28. ELECTROMAGNETIC INTERFERENCE (EMI) TAPE REPAIR – continued

2.28.5. Repair

NOTE

- For silver-coated tape go to step a.
- For aluminum tape go to step b.
- For aluminum tape repair on other than tailboom surfaces, go to paragraph 2.34 and apply EMI conductive coating.

a. **Cut new section of tape long enough to overlap nonconductive cuff 0.260 INCH minimum on each end.** Use tape (item 209, App F) or tape (item 210, App F).

(1) Round corners on replacement tape section before removing protective backing. Use scissors.

(2) Apply new tape section to repair area. Ensure tape overlaps repair area sufficiently.

b. **Cut new section of tape long enough to overlap repair area 0.260 to 0.500 INCH.** Use tape (item 198, App F) or tape (item 199, App F).

(1) Round corners on replacement tape section before removing protective backing. Use scissors.

(2) Apply new tape section to repair area. Ensure tape overlaps repair area sufficiently.

c. **Inspect (QA).**

2.28.6. Replacement

a. **If entire length of tape must be replaced, use same procedures as above.**

END OF TASK

2.29. ANTI-ABRASION PROVISION REPAIR

2.29.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.29.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cloth (item 48, App F)
Coating kit (item 60, App F)
Epoxy primer coating kit (item 78, App F)
Tape (item 208, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

- This task is not for helicopters equipped with back-up control system (BUCS).
- This task is typical for all applications of anti-abrasion provisions.

2.29.3. Removal

a. **Remove loose, torn, or damaged anti-abrasion tape.** Use plastic or wooden scraper as required.

2.29.4. Cleaning

a. **Clean adhesive residue from surface** (para 1.47)**.**

2.29.5. Inspection

a. **Check structure for damage and corrosion** (para 2.12)**.**

GO TO NEXT PAGE

2.29. ANTI-ABRASION PROVISION REPAIR – continued

2.29.6. Installation

NOTE

- To install Teflon coating, perform steps a. thru e.
- To install tape, perform steps f. and g.



a. **Before applying Teflon coating, abrade surface.** Use cloth (item 48, App F).

b. **Clean abraded surface** (para 1.47)**.**



c. **Apply a thin coat of primer to surface.** Use epoxy primer coating kit (item 78, App F). Allow primer to air dry **1 HOUR** minimum.



d. **Apply layers of Teflon coating to a maximum thickness of 10 MILS** (TM 55-1500-345-23)**.** Allow **20 MINUTES** between coats. Use coating kit (item 60, App F).

e. **Allow coating to air dry 12 HOURS at 65 °F (18.3 °C) minimum temperature.**

NOTE

It may be necessary to apply primer before applying tape.

f. **Apply tape to surface of helicopter.** Use tape (item 208, App F).

CAUTION

To prevent damage to helicopter, do not cut tape against structure.

g. **Trim tape to required length.**

h. **Inspect (QA).**

END OF TASK

2.30. KEVLAR REPAIR

2.30.1. Description

This task covers: Small Cracks. Large Cracks. Surface Laminates Erosion Damage. Small Delaminated Areas. Large Delaminated Areas. Debonded Seals. Debonded Stiffeners. Chafed Panels.

2.30.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
3-inch C clamp (item 60, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
Adjustable air filtering respirator (item 262, App H)
12-inch bent trimmer shears (item 284, App H)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Seal
Wooden strips
Adhesive (item 5, App F)
Adhesive (item 14, App F)
Brush (item 34, App F)
Cellophane (item 41, App F)
Cloth (item 56, App F)
Paper (item 135, App F)
Syringe (item 196, App F)
Tape (item 205, App F)
Tape (item 207, App F)

References:

TM 1-1500-204-23
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



CAUTION

Exposed fibers must be repaired before they absorb moisture. If moisture enters stable resin, it will result in further degradation of the structure.

GO TO NEXT PAGE

2.30. KEVLAR REPAIR – continued

2.30.3. Small Cracks



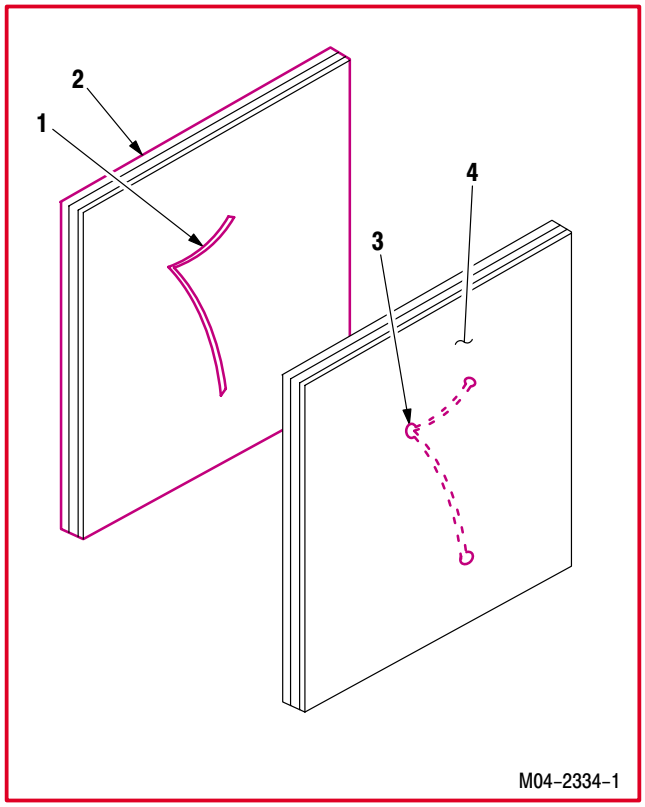
a. **Repair crack (1) in Kevlar fabric of less than 2 INCHES with edges remaining closed and crack not extending through all laminations (2).**

(1) Stop drill (3) crack (1) at each end.

(2) Sand through crack (1) to an undamaged lamination (4). Use paper (item 135, App F).

(3) Lightly sand away paint from area approximately **1.00 INCH** around crack (1). Use paper (item 135, App F).

b. **Clean damaged area** (para 1.47)**.**



GO TO NEXT PAGE

2.30. KEVLAR REPAIR – continued

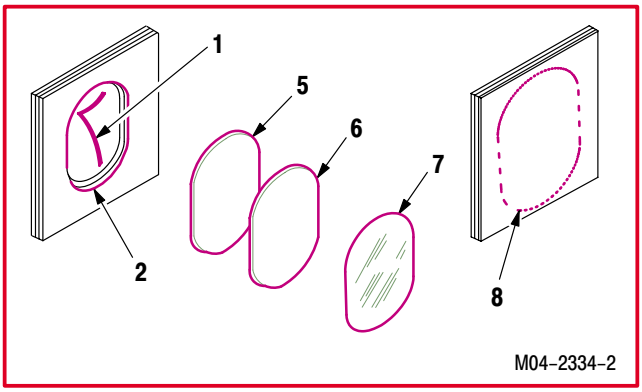


c. **Fabricate patch.**

(1) Cut cloth piece (5) to extend **0.50 INCH** around crack (1). Use cloth (item 56, App F) and shears.

(2) Cut cloth pieces (6) **0.50 INCH** larger than piece (5) to equal number of laminates (2) sanded away. Use cloth (item 56, App F) and shears.

(3) Place smallest cloth piece (5) over damaged area, then place other cloth pieces (6) over area until original thickness is restored.





WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

d. **Complete repair.**

(1) Place cellophane (7) over fabric patch (8) and press into place. Remove all air pockets. Use cellophane (item 41, App F).

(2) Remove cellophane (7) from patch (8).

(3) Apply a coat of adhesive over patch (8). Use brush (item 34, App F) and adhesive (item 5, App F).

(4) Cure patch (8) until surface is hard and tack-free. Use heater.

e. **Inspect (QA).**

GO TO NEXT PAGE

2.30. KEVLAR REPAIR – continued

2.30.4. Large Cracks



a. **Repair large crack (9) through all laminations (10).**

NOTE

A dent in Kevlar will cause a break in the material.

(1) Cut away damaged material to form an oval hole (11) that has a 15 to 30 degree edge taper toward inside of fabric.

(2) Lightly sand away paint from area **1.50 INCHES** all around hole (11). Use paper (item 135, App F).

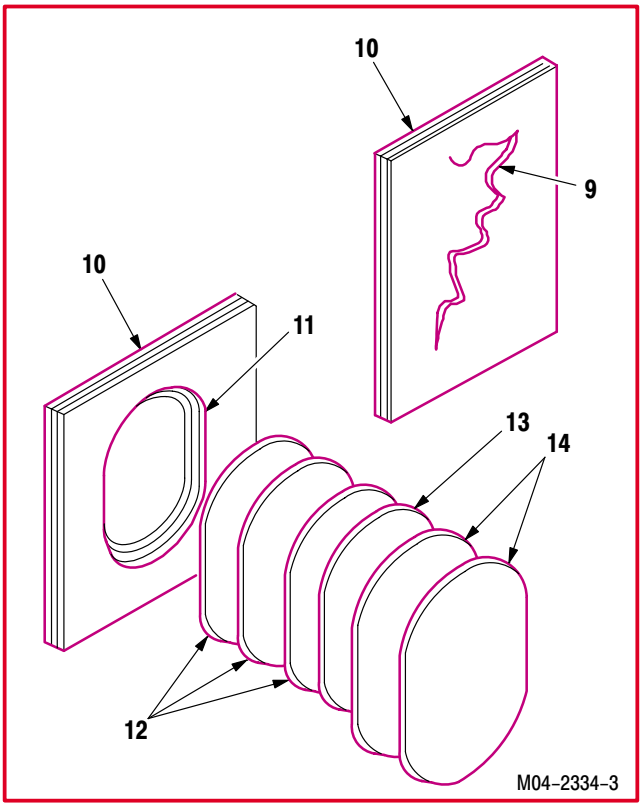
b. **Clean damaged area** (para 1.47)**.**



c. **Fabricate patch.**

(1) Cut cloth pieces (12) to diameter of large side of tapered hole (11). Cut enough cloth pieces (12) to equal original thickness. Use cloth (item 56, App F) and shears.

(2) Cut cloth pieces to form doublers (13), with one cut **1.00 INCH** larger than first pieces (12). Cut doublers (14) to overlap first doubler (13) by **0.50 INCH**. Cut enough doublers to equal original thickness. Use cloth (item 56, App F) and shears.



GO TO NEXT PAGE

2.30. KEVLAR REPAIR – continued



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

d. **Complete repair.**

(1) Tape cellophane covered support (15) to conform to original contour on inner side of fairing behind hole (11). Use cellophane (item 41, App F) and tape (item 205, App F).

(2) Place smaller cloth pieces (12) in hole (11) against support (15). Place doubler (13) over last cloth piece (12), then center two doublers (14) over one another.

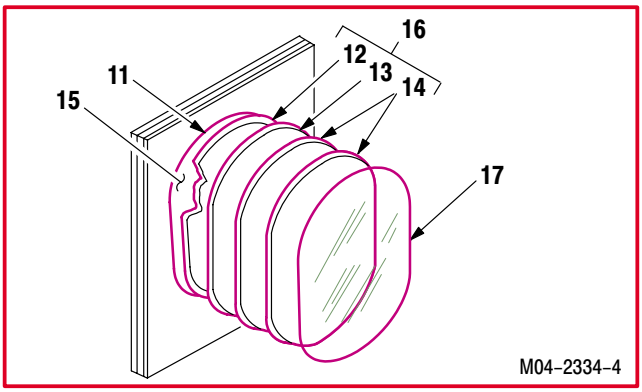
(3) Place cellophane (17) over patch (16) and press into place. Remove all air pockets. Use cellophane (item 41, App F).

(4) Remove cellophane (17) from patch (16).

(5) Apply a coat of adhesive over patch (16). Use brush (item 34, App F) and adhesive (item 5, App F).

(6) Cure patch (16) until surface is hard and tack-free. Use heater.

(7) Remove support (15).



e. **Inspect (QA).**

GO TO NEXT PAGE

2.30. KEVLAR REPAIR – continued

2.30.5. Surface Laminates Erosion Damage

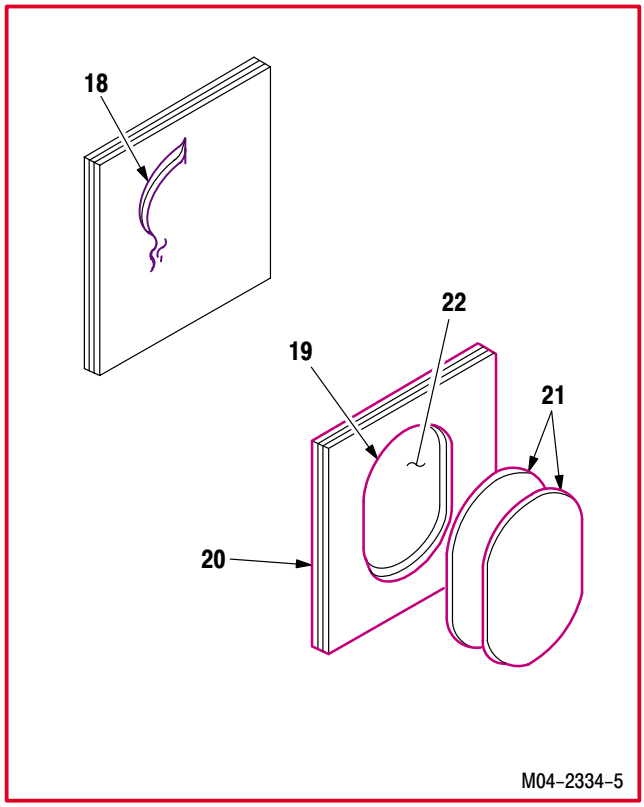


a. **Repair erosion damage which has affected surface laminates (18) only.**

(1) Cut oval (19) around defective material deep enough to remove damaged layers only. Do not damage laminates (20) unaffected by erosion.

(2) Peel off damaged layers (18).

(3) Sand exposed layers and **0.50 INCH** overlap to remove excess resin and paint. Use paper (item 135, App F).



b. **Clean damaged area** (para 1.47)**.**



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

c. **Fabricate patch.**

(1) Cut cloth pieces (21) to overlap exposed area (22) by **0.50 INCH**. Cut enough cloth pieces (21) to restore original thickness. Use cloth (item 56, App F) and shears.

(2) Center and overlap edges of cloth pieces (21) on exposed areas (22).

GO TO NEXT PAGE

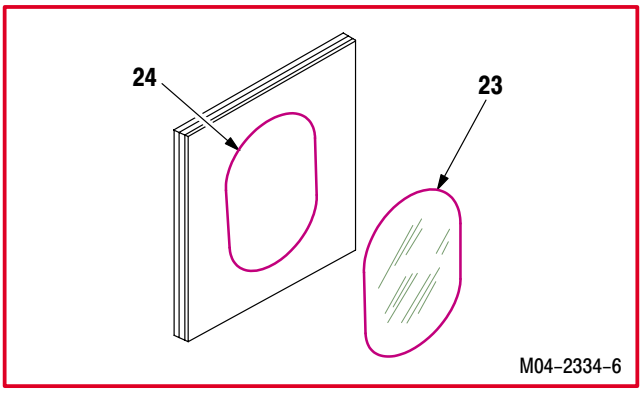
2.30. KEVLAR REPAIR – continued

(3) Press cellophane (23) into place over patch (24). Remove all air pockets. Use cellophane (item 41, App F).

(4) Remove cellophane (23) from patch (24).

(5) Apply a coat of adhesive over patch (24). Use brush (item 34, App F) and adhesive (item 5, App F).

(6) Cure patch (24) until surface is hard and tack-free. Use heater.



d. **Inspect (QA).**

2.30.6. Small Delaminated Areas



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

a. **Repair small delaminated areas (25) under 2 INCHES long in any direction.**

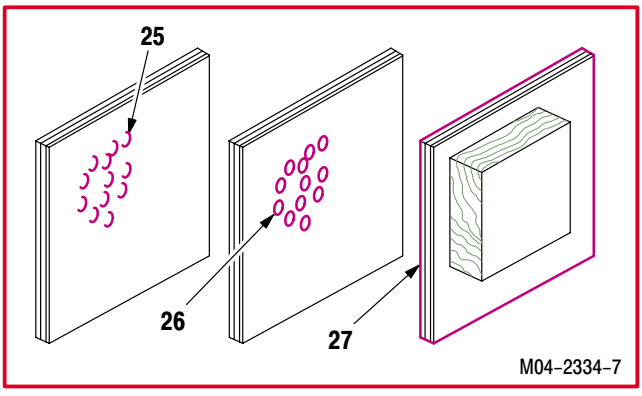
(1) Drill several small holes (26) into (not through) delaminated areas (25).

(2) Inject adhesive into holes (26). Use syringe (item 196, App F) and adhesive (item 5, App F).

(3) Apply pressure on repaired area with backing block (27).

(4) Remove backing block (27).

(5) Cure at 205 °F (96 °C) **45 MINUTES**. Use heater.



GO TO NEXT PAGE

2.30. KEVLAR REPAIR – continued

(6) Remove excess resin. Use paper (item 135, App F).

b. **Inspect (QA).**

2.30.7. Large Delaminated Areas



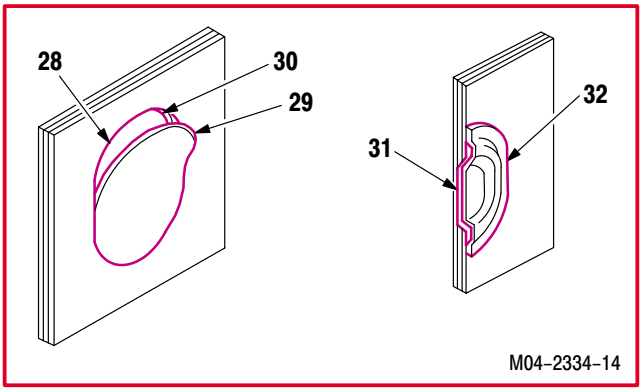
a. **Repair large delaminated areas.**

(1) Cut oval (28) around delaminated area deep enough to remove first layer (29) only.

(2) Peel off layer (29).

(3) Cut off succeeding damaged layers (30) one at a time, leaving **0.25 INCH** edge margin from each previous layer.

(4) Sand exposed layers (31) plus **0.50 INCH** overlap of first layer (32) to remove excess resin and paint. Use paper (item 135, App F).



b. **Clean exposed area** (para 1.47)**.**

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2.30. KEVLAR REPAIR – continued



c. **Fabricate patch.**

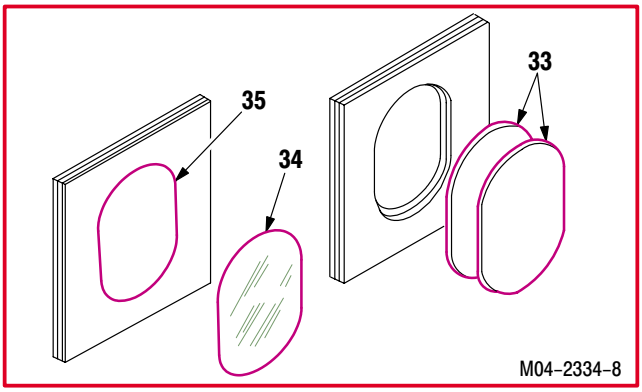
(1) Cut cloth pieces (33) to fit each laminate opening plus **0.50 INCH** overlap. Use cloth (item 56, App F) and shears.

(2) Fit each piece (33) into its respective opening until all are in place.



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.



d. **Complete repair.**

(1) Place cellophane (34) over patch (35) and press into place. Remove all air pockets. Use cellophane (item 41, App F).

(2) Remove cellophane (34) from patch (35).

(3) Apply a coat of adhesive over patch (35). Use brush (item 34, App F) and adhesive (item 5, App F).

(4) Cure patch (35) until surface is hard and tack-free. Use heater.

e. **Inspect (QA).**

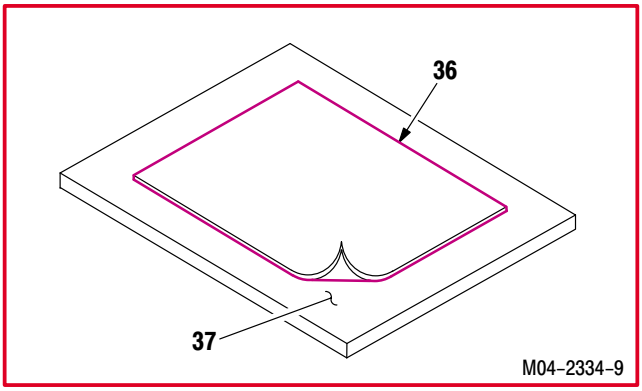
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2.30. KEVLAR REPAIR – continued

2.30.8. Debonded Seals

a. **Remove and discard debonded seal (36).**

b. **Clean adhesive from fairing surface (37)** (para 1.47)**.**





c. **Install new seal (36).**

(1) Apply a thin coat of adhesive to completely cover fairing surface (37) and all seal (36) surfaces. Use adhesive (item 14, App F).

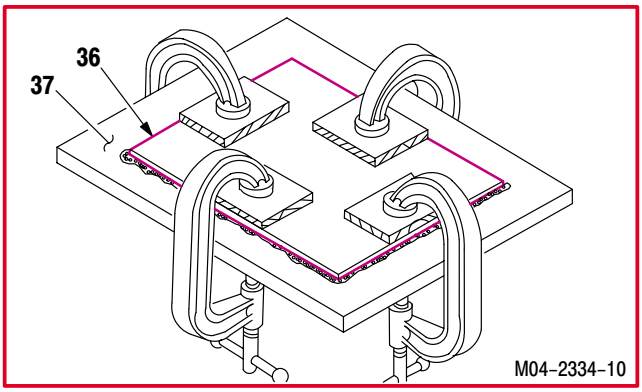
(2) Aline and join surfaces of new seal (36) and fairing (37).

(3) Maintain contact pressure on seal (36) with C clamp and small strips of wood.

(4) Ensure excess adhesive is visible at all mating edges of seal (36) and fairing surface (37). Remove excess adhesive to form a smooth, no gaps bead on edges.

(5) Apply even bead of adhesive on corners of mating surface of seal (36) and fairing (37). Use adhesive (item 14, App F).

(6) Cure **45 MINUTES** until surface is tack-free.



d. **Inspect (QA).**

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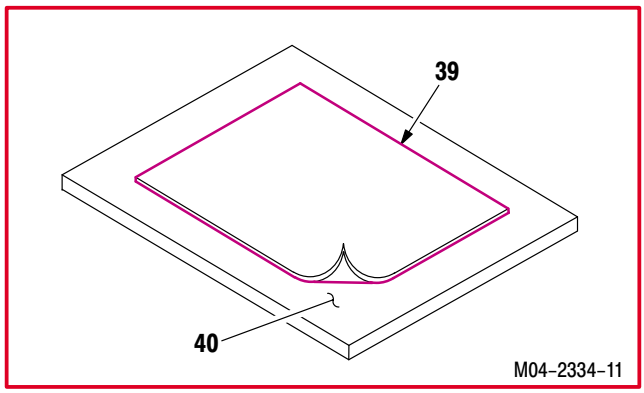
2.30. KEVLAR REPAIR – continued

2.30.9. Debonded Stiffeners

a. **Remove and discard debonded stiffener (39) from fairing surface (40).**

b. **Clean adhesive from fairing surface (40)** (para 1.47)**.**





c. **Install new stiffener (39).**

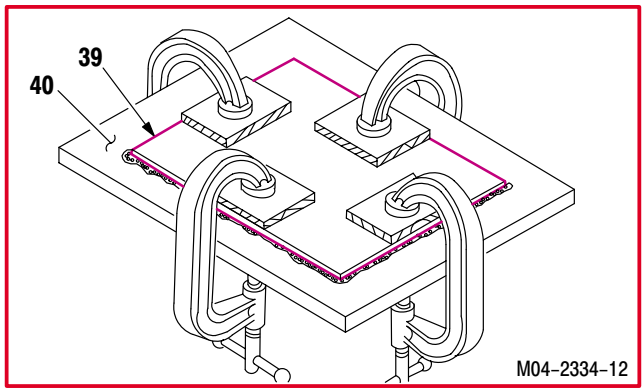
(1) Apply a thin coat of adhesive to completely cover fairing surface (40) and all stiffener surfaces (39). Use adhesive (item 14, App F).

(2) Aline and join surfaces of stiffener (39) and fairing (40).

(3) Maintain contact pressure on stiffener (39) with C clamp and small strips of wood. Apply weight in center section of stiffener (39).

(4) Ensure excess adhesive is visible at all mating edges of stiffener (39) and fairing surface (40). Remove excess adhesive to form a smooth, no gap bead on edges.

(5) Cure **45 MINUTES** until surface is tack-free.



d. **Inspect (QA).**

GO TO NEXT PAGE

2.30. KEVLAR REPAIR – continued

2.30.10. Chafed Panels

a. **Remove chafed panel** (para 2.2)**.**

b. **Repair loss of materials** (TM 1-1500-204-23)**.**

NOTE

- Pressure sensitive tape will not properly adhere to surfaces unless thorough cleaning has been accomplished.
- Replace any loose or missing pressure sensitive tape.

c. **Clean attaching surface of any oil, film, or tape adhesive residue** (para 1.47)**.**

d. **Touch up surface** (TM 55-1500-345-23)**.**

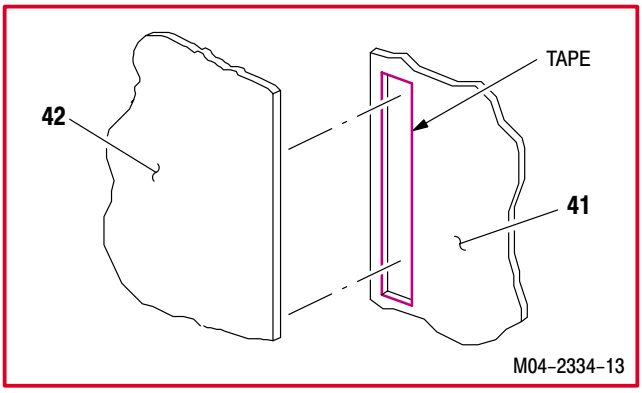
CAUTION

Do not score structure when cutting or trimming tape.

e. **Apply tape to metal surfaces (41) which mate with fabric (42).** Use tape (item 207, App F).

f. **Install repaired panels** (para 2.2)**.**

g. **Inspect (QA).**



END OF TASK

2.31. ELECTROSTATIC DISCHARGER REPLACEMENT

2.31.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.31.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

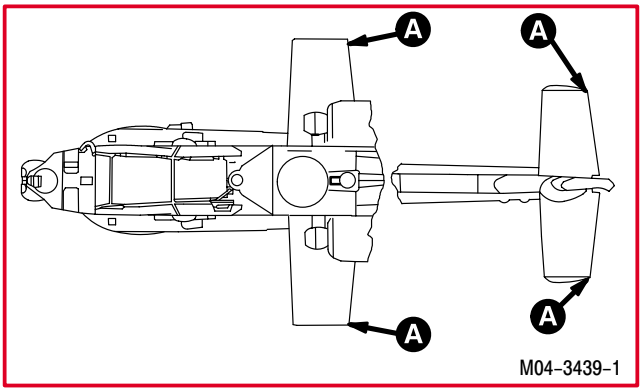
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right wing trailing edge and stabilator tip.



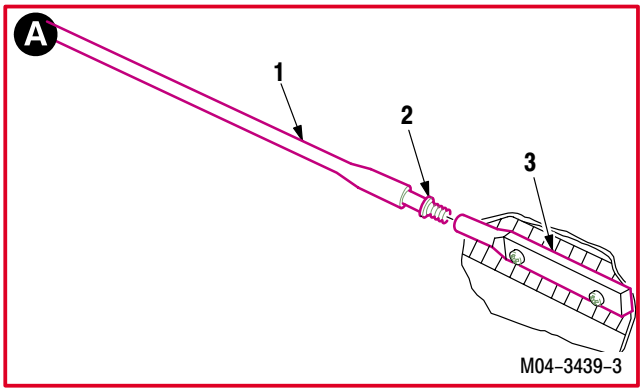
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2.31. ELECTROSTATIC DISCHARGER REPLACEMENT – continued

2.31.3. Removal

a. **Remove electrostatic discharger (1) and lockwasher (2) from electrostatic discharger holder (3).**

(1) Discard discharger (1).



2.31.4. Cleaning

a. **Wipe mounting surface with a clean rag.**

2.31.5. Inspection

a. **Check mounting surface for cracks and corrosion** (para 2.11)**.**

b. **Check electrostatic discharger for fraying.** None allowed.

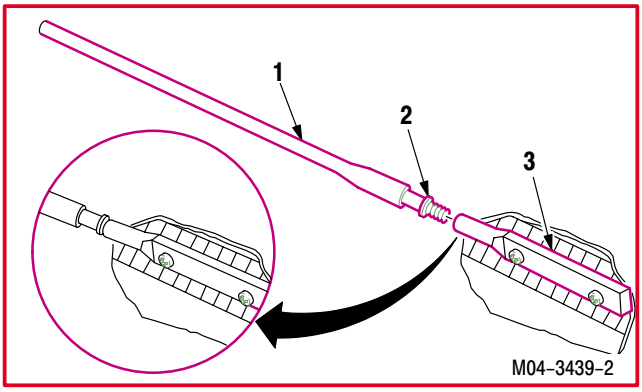
2.31.6. Installation

NOTE

Remove and discard plastic nut before installing electrostatic discharger.

a. **Install new discharger (1) and lockwasher (2) in holder (3).**

b. **Inspect (QA).**



END OF TASK

2.32. ELECTROSTATIC DISCHARGER HOLDER REPLACEMENT

2.32.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.32.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

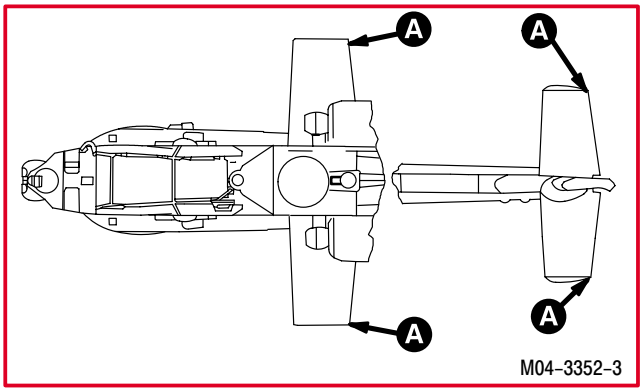
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.31	Electrostatic discharger removed

NOTE

This task is typical for left and/or right wing trailing edge and stabilator tip.



2.32.3. Removal

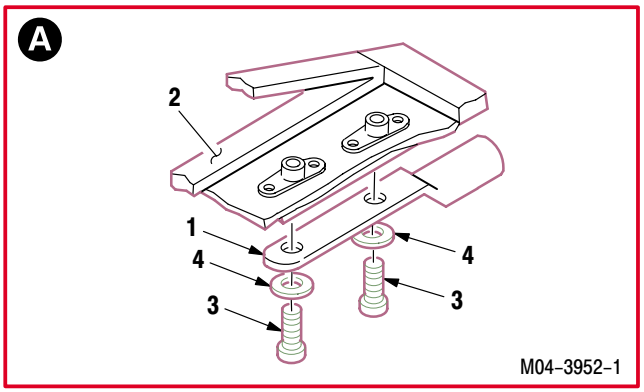
a. **Remove electrostatic discharger holder (1) from mount (2).**

NOTE

Wing installation does not include washers.

(1) Remove two screws (3) and washers (4) from holder (1) and mount (2).

(2) Remove and discard holder (1) from mount (2).



GO TO NEXT PAGE

2.32. ELECTROSTATIC DISCHARGER HOLDER REPLACEMENT – continued

2.32.4. Cleaning

a. **Wipe mounting surface with a clean rag.**

2.32.5. Inspection

a. **Check mounting surface for cracks and corrosion** (para 2.12)**.**

2.32.6. Installation

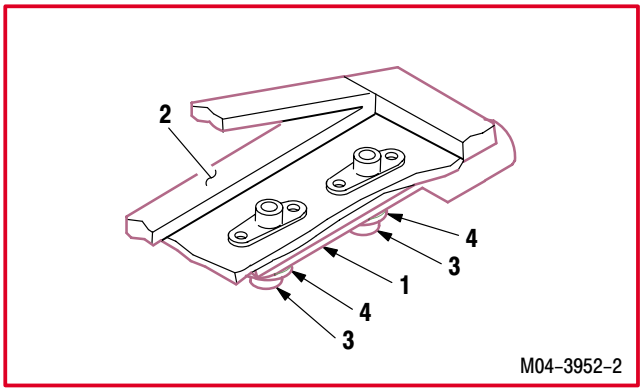
a. **Install new holder (1) on mount (2).**

(1) Position holder (1) on mount (2).

NOTE

Wing installation does not include washers.

(2) Install two screws (3) through washers (4) in holder (1) and mount (2).



b. **Inspect (QA).**

c. **Install electrostatic discharger** (para 2.31)**.**

END OF TASK

2.33. ACCESS DOOR LATCH REPLACEMENT

2.33.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.33.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Personnel Required:

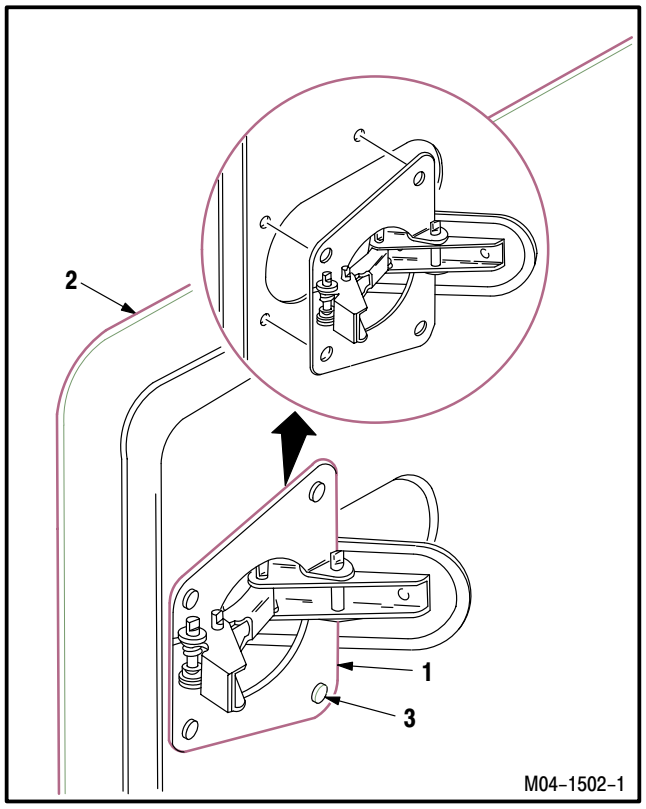
68G Aircraft Structural Repairer

2.33.3. Removal

a. **Remove latch (1) from access door (2).**

(1) Remove four rivets (3) from latch (1) and door (2) (TM 1-1500-204-23).

(2) Remove and discard latch (1) from door (2).



2.33.4. Cleaning

a. **Wipe mounting surface with a clean rag.**

2.33.5. Inspection

a. **Check mounting surface for cracks and corrosion** (para 2.11)**.**

GO TO NEXT PAGE

2.33. ACCESS DOOR LATCH REPLACEMENT – continued

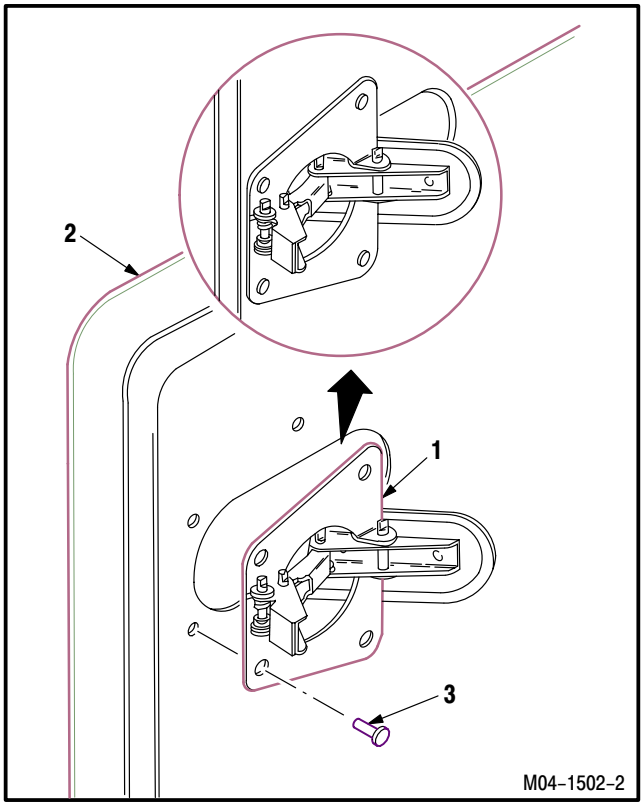
2.33.6. Installation

a. **Install new latch (1) on door (2).**

(1) Position latch (1) on door (2).

(2) Install rivets (3) in latch (1) and door (2) (TM 1-1500-204-23).

b. **Inspect (QA).**



END OF TASK

2.34. ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION

2.34.1. Description

This task covers: Preparation. Application. Touch-Up. Repair.

2.34.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Spray gun paint cup (item 102, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
1 1/4-inch blade putty knife (item 199, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)
0.0 - 10.0-pound weighing scale (item 272, App H)
Paint spray gun (item 339, App H)

Materials/Parts:

Brush (item 36, App F)
Cloth (item 48, App F)
Cloth (item 52, App F)
Corrosion resistant coating (item 65, App F)
Corrosion resistant coating (item 66, App F)
Epoxy primer coating kit (item 78, App F)
Depressor (item 70, App F)
Isopropyl alcohol (item 106, App F)
Methyl ethyl ketone (item 124, App F)
Primer coating (item 147, App F)
Tape (item 205, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-345-23
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Fairings, panels, doors, and covers removed/opened as required

NOTE

- This task is typical for preparation and application of EMI conductive coating material.
- EMI conductive coating material is being used to replace EMI tape on structural, door, and fairing surfaces. Tailboom fairing interface surfaces are not included.
- EMI conductive coating may be applied over existing primer coating on composite and metallic panels, providing that the primer is sufficiently abraded and cleaned for proper conductive coating adhesion.

GO TO NEXT PAGE

2.34. ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION – continued

2.34.3. Preparation



CAUTION

To prevent damage to conductive paint surfaces, remove tape carefully.

a. **Conductive coating surfaces.**

(1) Lightly sand surface to be conductive coated. Use cloth (item 48, App F).

(2) Mask parts and/or area requiring conductive coating material. Use tape (item 205, App F).

(3) Clean entire surface of part and/or area to which conductive coating will be applied. Use cloth (item 52, App F) dampened with methyl ethyl ketone (item 124, App F).

(4) Aluminum surfaces that are scratched and/or have corrosion protective coating damage, shall have a chemical conversion coating applied (TM 55-1500-344-23). Use corrosion resistant coating (item 66, App F).

2.34.4. Application



a. **Mix parts of conductive coating kit.**

NOTE

- When mixing quantities less than a kit, mix in same weight proportions to obtain thickness specified in paragraph 2.34.4.b.
- Mix coating material to a smooth consistency. Ensure coating material is free of dirt, grit, skins, lumps and jelled particles.

(1) Thoroughly mix individual components before combining. Use depressor (item 70, App F).

(2) Weigh base. Add catalyst to base at 9.8 parts by weight, then add solvent at 38.4 parts by weight to mixture. Mix thoroughly in a suitable container. Use scale.

(3) Pour corrosion resistant coating (item 65, App F) into paint cup.

GO TO NEXT PAGE

2.34. ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION – continued



b. **Apply conductive coating.** Use corrosion resistant coating (item 65, App F).

NOTE

Paint shall be applied with a pressure of **10** to **20 PSI**. It is important to agitate paint mixture every 2 to 3 minutes to keep the conductive fillers suspended in the paint solution.

(1) Spray one uniform coat of corrosion resistant coating (item 65, App F) to a thickness of **2.00 to 4.00 MILS**. Use spray gun.

(2) Check coated surface for correct thickness (TM 55-1500-345-23).

c. **Inspect (QA).**

d. **Remove tape.**

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

e. **Cure conductive coating.**

NOTE

- Conductive coating will cure tack free in **4 HOURs** at room temperature. Conductive coating will obtain 90% of coating's properties within **24 HOURS**.
- A minimum of **7 DAYS** is required for conductive coating to cure at room temperature before coating obtains electrical properties.

(1) Force curing may be accomplished by the following methods:

(a) Cure composite parts **4 HOURS** at room temperature. Then heat **4 HOURS** at 130 °F (54 °C). Use heater.

(b) Cure aluminum parts **4 HOURS** at room temperature. Then heat **1 HOUR** at 250 °F (121 °C). Use heater.

(2) Perform electrical resistance check on surface (TM 55-1500-323-24). The surface resistance reading shall be **1.00 OHM** or less.

(a) Place electrical leads 1 inch apart on conductive coating. If surface resistance exceeds **1.00 OHM**, re-coat surface. Use multimeter.

f. **Inspect (QA).**

GO TO NEXT PAGE

2.34. ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION – continued

2.34.5. Touch-up



a. **Touch up aluminum parts.**

NOTE

Do not touch up surfaces longer than **6.00 INCHES**. If longer, reapply conductive coating to entire surface.

(1) Aluminum surfaces that are scratched and/or have corrosion protective coating damage, shall have chemical conversion coating applied (TM 55-1500-344-23). Use corrosion resistant coating (item 66, App F).

(2) Mask off conductive coated material **0.25 INCH** beyond damaged area. Use tape (item 205, App F).

CAUTION

Ensure not to soften or damage existing coating during cleaning.

(3) Clean area to which conductive coating will be applied. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(4) Apply a coat of chemical conversion coating. Use brush (item 36, App F) and corrosion resistant coating (item 66, App F).

(5) Remove tape and lightly sand surface next to chemical coated area. Use cloth (item 48, App F).

(6) Clean sanded area. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F). Ensure all tape adhesive has been removed.

(7) Brush the surface with conductive coating material. Overlap edge of damaged area a minimum of **0.75 INCH** where possible. Use brush (item 36, App F) and corrosion resistant coating (item 65, App F).

(8) Cure conductive coating **1 HOUR**.

(9) Apply a second coat of conductive coating.

(10) Apply curing criteria in paragraph 2.34.4.e.

b. **Inspect (QA).**

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2.34. ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION – continued



c. **Touch up composite parts.**

NOTE

Do not touch up surfaces larger than **6 SQUARE-INCHES**. If larger, reapply conductive coating to entire surface.

(1) Lightly sand the damaged area. Use cloth (item 48, App F).

CAUTION

Ensure not to soften or damage existing coating during cleaning.

(2) Clean sanded area and **2.00 INCHES** beyond edge of damaged area. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(3) Mask off a minimum of **0.25 INCH** beyond edge of damaged area. Use tape (item 205, App F).

(4) Apply a coat of primer to surface. Use brush (item 36, App F) and epoxy primer coating kit (item 78, App F).

(5) Cure primer at room temperature **1 HOUR**.

(6) Remove tape and clean any remaining tape adhesive. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(7) Brush surface with conductive coating material. Overlap edge of damaged area a minimum of **0.75 INCH** where possible. Use brush (item 36, App F) and corrosion resistant coating (item 65, App F).

(8) Cure conductive coating **1 HOUR**.

(9) Apply a second coat of conductive coating.

(10) Apply curing criteria in paragraph 2.34.4.e.

d. **Inspect (QA).**

GO TO NEXT PAGE

2.34. ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION

2.34.6. Repair



a. **Repair aluminum parts.**

NOTE

- This repair procedure is for existing conductive coatings on aluminum surfaces in need of repair.
- Do not touch up surfaces longer than **6.00 INCHES**. If longer, reapply conductive coating to entire surface.

(1) Aluminum surfaces that are scratched and/or have corrosion protective coating damage, shall have chemical conversion coating applied (TM 55-1500-344-23). Use corrosion resistant coating (item 66, App F).

NOTE

Do not leave more than **0.25 INCH** of conductive paint exposed around the perimeter of the repair area.

(2) Mask off conductive paint to protect it from chemical conversion coating. Use tape (item 205, App F).

CAUTION

Ensure not to soften or damage existing coating during cleaning.

(3) Clean area to which conductive coating will be applied. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(4) Apply a coat of chemical conversion coating. Use brush (item 36, App F) and corrosion resistant coating (item 66, App F).

(5) Dry surface with cloth, then wipe with a alcohol dampened cloth to accelerate drying process. Allow surface to dry. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(6) Remove tape and lightly sand paint surface next to the surface exposed to the chemical conversion coating. Use cloth (item 48, App F).

(7) Clean sanded area. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F). Ensure all tape adhesive has been removed.

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2.34 ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION – continued

(8) Mask areas adjacent to surface to be coated with conductive coating. Ensure that surrounding areas are protected from drips or over-spray.

NOTE

- Conductive coating must be thoroughly mixed before combining due to high conductive filler content. The mix ratios shall be in accordance with the manufacturers instructions.
- Coating material shall be thinned in accordance with the manufacture's instructions for spraying or brushing. The coating shall be within **2 HOURS** after mixing.
- Brush application of the conductive coating should be limited to minor touch-up repairs. The E.M.I. properties of the paint may be reduced, due to surface irregularities caused by brushing.
- If brush application of the conductive coating is required, go to step (9). If spray applications of the conductive coating is required, go to step (11).

(9) Brush application: Brush the surface with conductive coating material. Overlap edge of damaged area approximately **0.75 INCH** where possible (first pass should completely wet the surface). Allow **2** to **10 MINUTES** before re-painting to complete the first coat. Dry for **30 MINUTES** to 2 **HOURS** before applying a second coat. Use brush (item 36, App F) and corrosion resistant coating (item 65, App F).

(10) Apply a second coat of conductive coating. Use corrosion resistant coating (item 65, App F). Proceed to step (12).

NOTE

Paint shall be applied with a pressure of **10** to **20 PSI**. It is important to agitate paint mixture every 2 to 3 minutes to keep conductive fillers suspended in the paint solution.

(11) Spray application: Apply a uniform coat of conductive coating by spraying four to five even passes over component surface from a distance of **6** to **10 INCHES**. Use corrosion resistant coating (item 65, App F).

(12) Apply curing criteria in paragraph 2.34.4.e.

b. **Inspect (QA).**

GO TO NEXT PAGE

2.34 ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION – continued



c. **Repair composite parts.**

NOTE

- Do not touch up surfaces larger than **6 SQUARE-INCHES**. If larger, reapply conductive coating to entire surface.
- This repair procedure is for existing conductive coatings on composite surfaces in need of repair.

(1) Damaged areas penetrating through the conductive coating shall be primed before application of conductive coating. Use primer coating (item 147, App F).

(2) Lightly sand the damaged area. Use cloth (item 48, App F).

(3) Clean sanded area and **2.00 INCHES** beyond edge of damaged area. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(4) Mask off a minimum of **0.25 INCH** beyond edge of damaged area and apply primer to surface. Use tape (item 205, App F) and primer coating (item 147, App F). Allow primer to dry for **1 HOUR**.

(5) Apply a coat of primer to surface. Use brush (item 36, App F) and epoxy primer coating kit (item 78, App F).

(6) Cure primer at room temperature **1 HOUR**.

(7) Remove tape and clean any remaining tape adhesive. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(8) Mask areas adjacent to surface to be coated with conductive coating. Ensure that surrounding areas are protected from drips or over-spray.

NOTE

- Conductive coating must be thoroughly mixed before combining due to a high conductive filler content. The mix ratios shall be in accordance with the manufacturers instructions.
- Coating material shall be thinned in accordance with the manufacture's instructions for spraying or brushing. The coating shall be within **2 HOURS** after mixing.
- Brush application of the conductive coating should be limited to minor touch-up repairs. The E.M.I. properties of the paint may be reduced, due to surface irregularities caused by brushing.
- If brush application of the conductive coating is required, go to step (9). If spray applications of the conductive coating is required, go to step (11).

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2.34 ELECTROMAGNETIC CONDUCTIVE COATING APPLICATION – continued

(9) Brush application: Brush the surface with conductive coating material. Overlap edge of damaged area approximately **0.75 INCH** where possible (first pass should completely wet the surface). Allow **2** to **10 MINUTES** before re-painting to complete the first coat. Dry for **30 MINUTES** to **2 HOURS** before applying a second coat. Use brush (item 36, App F) and corrosion resistant coating (item 65, App F).

(10) Apply a second coat of conductive coating. Use corrosion resistant coating (item 65, App F). Proceed to step (12).

NOTE

Paint shall be applied with a pressure of **10** to **20 PSI**. It is important to agitate paint mixture every 2 to 3 minutes to keep the conductive fillers suspended in the paint solution.

(11) Spray application: Apply a uniform coat of the conductive coating by spraying four to five even passes over component surface from a distance of **6** to **10 INCHES**. Use corrosion resistant coating (item 65, App F).

(12) Apply curing criteria in paragraph 2.34.4.e.

d. **Inspect (QA).**

END OF TASK

2.35. ANTI-ABRASIVE COATING APPLICATION

2.35.1. Description

This task covers: Preparation. Application.

2.35.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 36, App F)
Cloth (item 47, App F)
Cloth (item 52, App F)
Coating kit (item 60, App F)
Depressor (item 70, App F)
Epoxy primer coating kit (item 78, App F)
Isopropyl alcohol (item 106, App F)
Tape (item 205, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-345-23

Equipment Conditions:

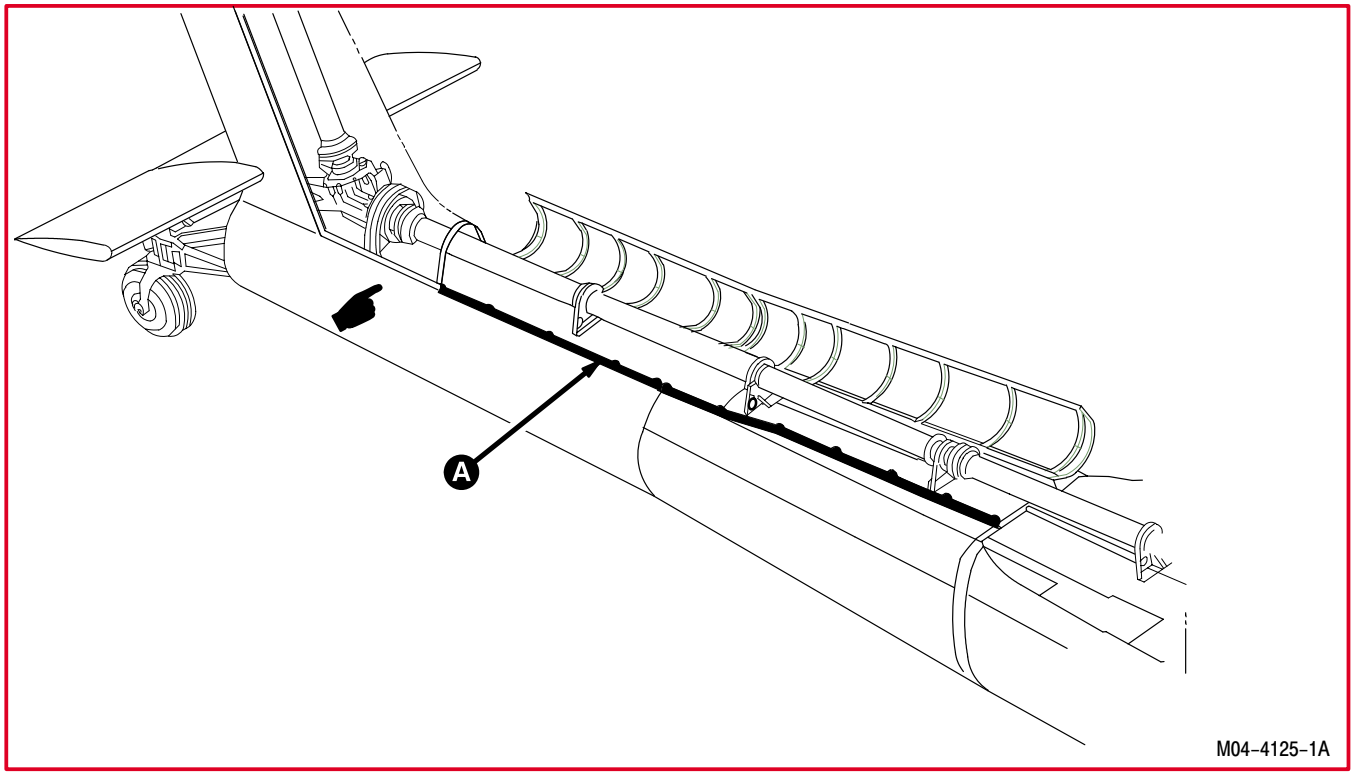
Ref	Condition
1.57	Helicopter safed
2.2	Tail rotor drive shaft covers R410 and R475 opened

NOTE

- This task is typical for preparation and application of anti-abrasive coating material in drive shaft area.
- Use anti-abrasive coating material to replace EMI gasket material.

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2.35. ANTI-ABRASIVE COATING APPLICATION – continued



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2.35. ANTI-ABRASIVE COATING APPLICATION – continued

2.35.3. Preparation



a. **Surfaces requiring anti-abrasive material recoating.**

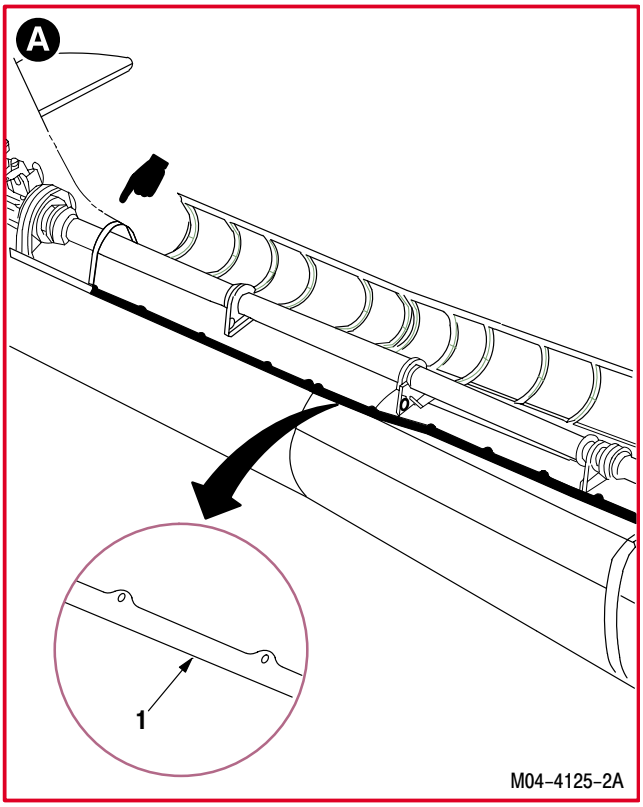
(1) Lightly sand surface to be anti-abrasive coated. Use cloth (item 47, App F).

(2) Clean sanded surfaces. Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

(3) Mask off angle (1). Use tape (item 205, App F).

(4) Apply a coat of primer to surface. Use brush (item 36, App F) and epoxy primer coating kit (item 78, App F).

(5) Cure primer **1 HOUR** at room temperature.



2.35.4. Application



a. **Prepare anti-abrasive coating material.**

NOTE

- Mix only amount to be used within usable working life of mixed coating.
- The usable working life after adding catalyst is **2 HOURS** at 70 °F (21 °C), **1 HOUR** at 80 °F (27 °C), and **30 MINUTES** at 90 °F (32 °C).

b. **Mix three parts by volume of pigmented resin base (part A) with one part by volume of catalyst (part (B).**

(1) Add catalyst (part B) to resin (part A) while stirring. Mix thoroughly. Use suitable container, depressor (item 70, App F), and coating kit (item 60, App F).

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2.35. ANTI-ABRASIVE COATING APPLICATION – continued



c. **Apply anti-abrasive coating material.**

NOTE

Discard excess coating. Do not return unused portion of coating to original containers.

(1) Apply full wet coats to produce a total top coat dry film thickness of **0.005 to 0.010 INCH**. Allow **20 MINUTES** between coats. Use brush (item 36, App F) and coating kit (item 60, App F).

(2) Check coated surface for correct thickness (TM 55-1500-345-23).

(3) Remove tape.

d. **Inspect (QA).**

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

e. **Cure anti-abrasive coating material.**

(1) Cure a minimum of **12 HOURS** at room temperature.

(2) Force curing may be accomplished by the following method:

(a) Cure composite parts **1 HOUR** at room temperature. Then heat **2.5 HOURS** at 130 °F (54 °C). Use heater.

f. **Inspect (QA).**

g. **Secure tail rotor drive shaft covers R410 and R475** (para 2.2)**.**

END OF TASK

2.36. ANTI-SKID COATING APPLICATION

2.36.1. Description

This task covers: Preparation. Application.

2.36.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Coating compound (item 58, App F)
Corrosion resistant coating (item 66, App F)
Depressor (item 70, App F)
Methyl ethyl ketone (item 124, App F)
Primer coating (item 147, App F)
Tape (item 207, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.36.3. Preparation



a. **Mask off area to be resurfaced.** Use tape (item 207, App F).

b. **Clean area to be resurfaced.** Allow area to air dry. Use cloth (item 52, App F) and methyl ethyl ketone (item 124, App F).

c. **Apply corrosion resistant coating to bare metal and rinse with water.** Use corrosion resistant coating (item 66, App F) and brush (item 34, App F).

d. **Apply a coat of primer to surface.** Allow primer to air dry. Use primer coating (item 147, App F) and brush (item 34, App F).

GO TO NEXT PAGE

2.36. ANTI-SKID COATING APPLICATION – continued

2.36.4. Application



a. **Prepare anti-skid coating.**

NOTE

- Thoroughly mix base component before adding catalyst.
- Mix only amount to be used within usable working life of mixed coating. Before using, allow mixture to react chemically for **15 MINUTES**.
- Usable working life after adding catalyst is **4 HOURS.**

(1) Mix 3 parts by volume of base with 1 part by volume of catalyst. Add 30 parts of grit by weight to catalyzed mixture. Use suitable container, depressor (item 70, App F), and coating compound (item 58, App F).

b. **Apply anti-abrasive coating material.**

(1) Apply coating to area to be resurfaced. If necessary, a second coat shall be applied. Allow **30 MINUTES** between coats. Use brush (item 34, App F) and coating compound (item 58, App F).

(2) Remove tape (item 207, App F).

c. **Cure anti-skid coating for 24 HOURS.**

d. **Inspect (QA).**

END OF TASK

SECTION III. FORWARD FUSELAGE MAINTENANCE

2.37. GUN AND AMMO SUPPORT AFT MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM)

2.37.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.37.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
1/2 x 4-inch long driftpin (item 112, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
1 3/4 & 2 3/4-inch rubber mallet (item 213, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

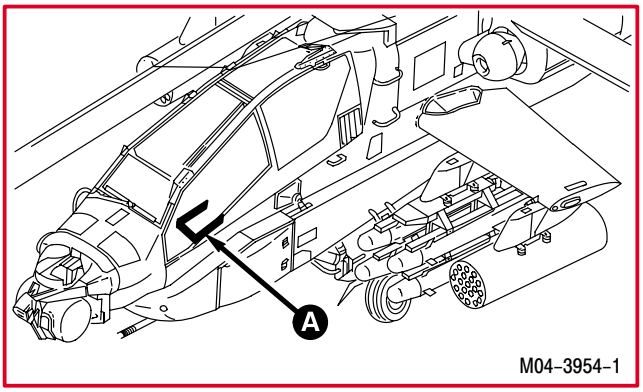
Brush (item 34, App F)
Carbon dioxide (item 40, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Naphtha (item 127, App F)
Primer coating (item 147, App F)
Thinner (item 211, App F)

References:

TM 9-1090-208-23-1

NOTE

This task typical for all four sleeve bushings in forward fuselage gun and ammo support aft mount pads.

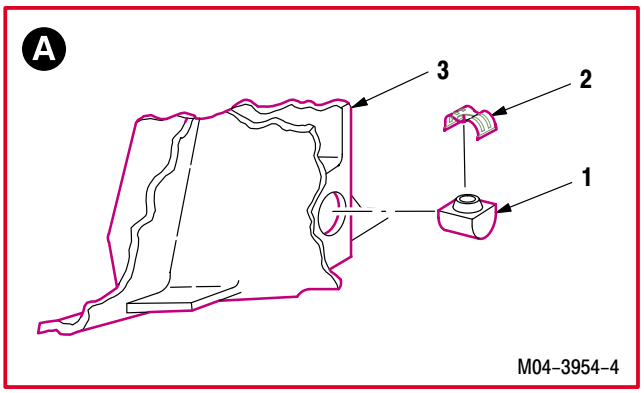


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2.37. GUN AND AMMO SUPPORT AFT MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM) – continued

2.37.3. Removal

a. **Remove and discard self-locking barrel nut (1) and nut retainer (2) from fuselage support (3).**



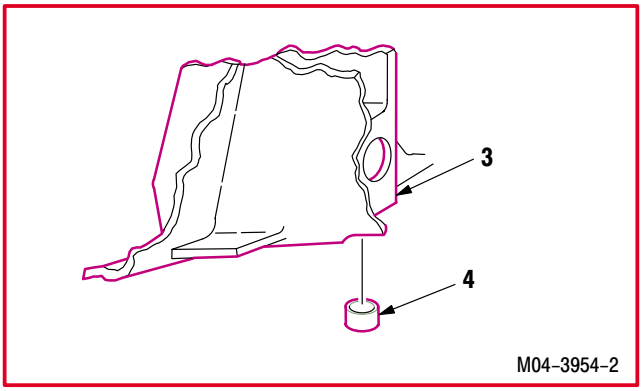
WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

CAUTION

Do not heat bushing bore area over 200 °F (98 °C) or damage may result.

b. **Remove sleeve bushing (4) from forward fuselage gun and ammo support (3).**



(1) Heat support (3) bore area. Use heater.

(2) Remove and discard bushing (4) from support (3). Use driftpin and mallet.

GO TO NEXT PAGE

2.37. GUN AND AMMO SUPPORT AFT MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM)

2.37.4. Cleaning



a. **Clean bushing bore.** Use methyl ethyl ketone (item 124, App F), naphtha (item 127, App F), or thinner (item 211, App F), and cloth (item 52, App F) (para 1.47).

2.37.5. Inspection

a. **Check support bushing bore for cracks.** None allowed.

b. **Check support bushing bore for scoring, nicks, and scratches.**

c. **Scoring, nicks, and scratches are acceptable if less than 0.025 INCH deep.**

d. **Check support surface for corrosion** (para 1.49)**.**

e. **Check support bushing bore diameter.**

(1) Maximum allowable diameter **0.5000 INCH**.

2.37.6. Installation



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

CAUTION

Do not heat bushing bore area over 200 °F (98 °C) or damage may result.

Do not allow primer or paint to enter bushing bore or bushing damage may result.

GO TO NEXT PAGE

2.37. GUN AND AMMO SUPPORT AFT MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM) – continued

a. **Install new bushing (4) in support (3).**

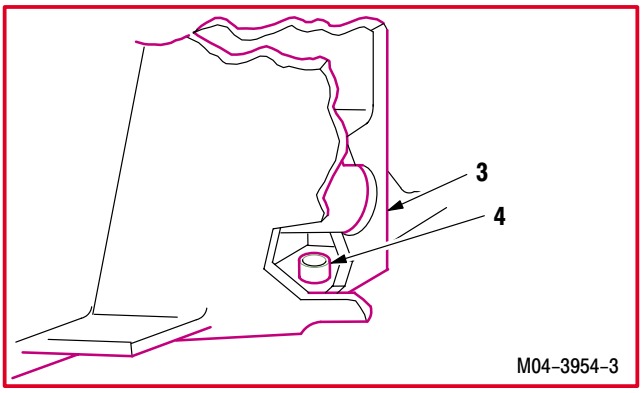
(1) Place bushing (4) in carbon dioxide (item 40, App F) for **5 MINUTES**.

(2) Heat support (3) bushing bore. Use heater.

(3) Coat outside of bushing (4) and support (3) bushing bore. Use primer coating (item 147, App F) and brush (item 34, App F).

(4) Press bushing (4) in support (3) bushing bore until seated and pressed flush with mating surface.

(5) Allow parts to return to room temperature.

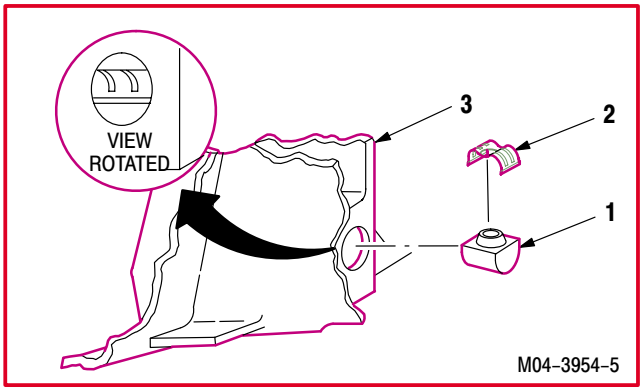


b. **Inspect (QA).**

c. **Install new nut (1) and retainer (2) into fuselage support (3).** Lightly tap in place.

d. **Inspect (QA).**

e. **Install gun turret** (TM 9-1090-208-23-1)**.**



END OF TASK

2.38. GUN AND AMMO SUPPORT FORWARD MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM)

2.38.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.38.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
0.20 - 1.00-inch inside micrometer caliper (item 50, App H)
1/2 x 4-inch long driftpin (item 112, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
1 3/4 & 2 3/4-inch rubber mallet (item 213, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

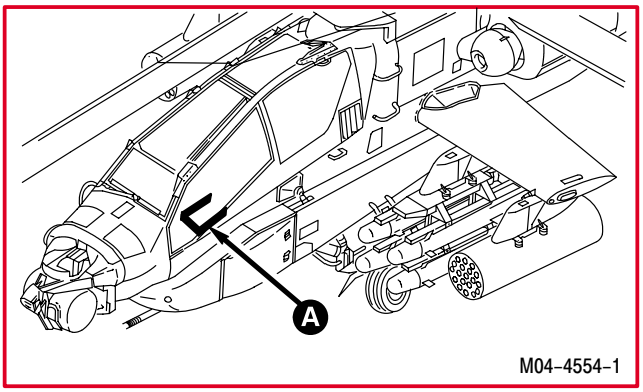
Brush (item 34, App F)
Carbon dioxide (item 40, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Naphtha (item 127, App F)
Primer coating (item 147, App F)
Thinner (item 211, App F)

References:

TM 1-1500-204-23
TM 1-1520-264-23

NOTE

This task typical for all oversized sleeve bushings in forward fuselage gun and ammo support forward mount pads.



GO TO NEXT PAGE

2.38. GUN AND AMMO SUPPORT FORWARD MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM) – continued

2.38.3. Removal

WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

CAUTION

Do not heat bushing bore area over 200 °F (98 °C) or damage may result.

a. **Remove self-locking nutplate (1) and plate spacer (2) from forward fuselage gun and ammo support (3).**

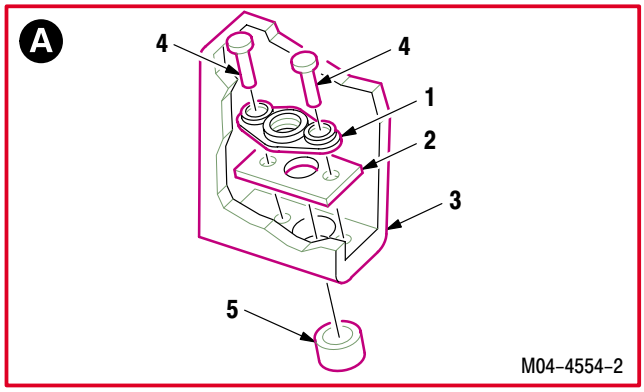
(1) Remove and discard two blind rivets (4) from nutplate (1) (TM 1-1500-204-23).

(2) Remove nutplate (1) and spacer (2).

b. **Remove sleeve bushing (5) from support (3).**

(1) Heat support (3) bore area. Use heater.

(2) Remove and discard bushing (5) from support (3). Use driftpin and mallet.



GO TO NEXT PAGE

2.38. GUN AND AMMO SUPPORT FORWARD MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM) – continued

2.38.4. Cleaning



a. **Clean support bushing bore.** Use methyl ethyl ketone (item 124, App F), naphtha (item 127, App F), or thinner (item 211, App F) and cloth (item 52, App F) (para 1.47).

2.38.5. Inspection

a. **Check support bushing bore for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

b. **Check support bushing bore for scoring, nicks, and scratches.**

(1) Scoring, nicks, and scratches are acceptable if less than **0.025 INCH** deep.

c. **Measure support bushing bore diameter** (use caliper**).**

(1) Minimum diameter, 0.377 inch, maximum diameter 0.379 inch.

d. **Check support surface for corrosion** (para 1.49)**.**

2.38.6. Installation

a. **Measure diameter of support bore surface and select appropriate bushing.**



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

CAUTION

- Do not heat bushing bore area over 200 °F (98 °C) or damage may result.
- Do not allow primer or paint to enter bushing bore or bushing damage may result.

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2.38. GUN AND AMMO SUPPORT FORWARD MOUNT PADS SLEEVE BUSHING REPLACEMENT (AVIM) – continued

b. **Install new bushing (5) in support (3).**

(1) Place bushing (5) in carbon dioxide (item 40, App F) for **5 MINUTES**.

(2) Apply heat to support (3) bushing bore area. Use heater.

(3) Coat outside of bushing (5) and support (3) bushing bore. Use primer coating (item 147, App F) and brush (item 34, App F).

(4) Press bushing (5) in support (3) bushing bore until seated or pressed flush with mating surface.

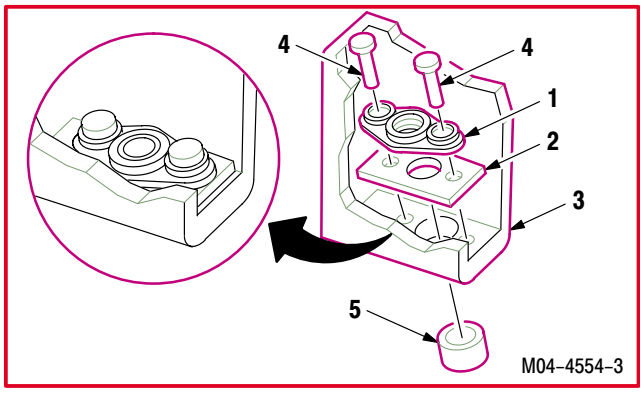
(5) Allow parts to return to room temperature.

c. **Install nutplate (1) and spacer (2) in support (3).**

(1) Position nutplate (1) and spacer (2) in support (3).

(2) Install two new rivets (4) through nutplate (1), spacer (2), and support (3) (TM 1-1500-204-23)

d. **Inspect (QA).**



END OF TASK

2.39. CPG BORESIGHT MOUNT FITTING REMOVAL/INSTALLATION

2.39.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.39.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

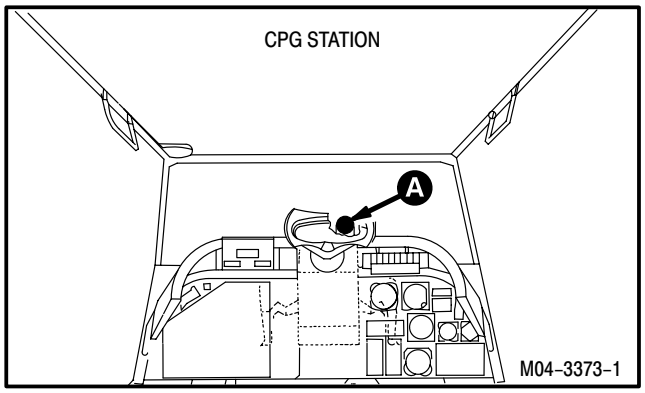
TM 9-1270-221-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 9-1270-221-23	CPG boresight reticle unit (BRU) removed

Personnel Required:

67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector



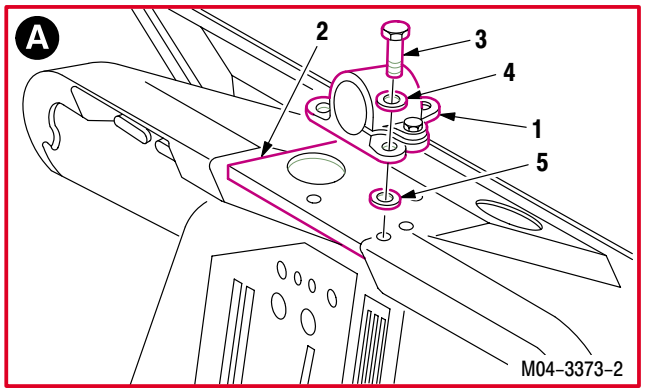
2.39.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove CPG boresight mount fitting (1) from CPG boresight support fitting (2).**

(1) Remove three bolts (3) and washers (4).

(2) Remove mount fitting (1) and three laminated washers (5) from support fitting (2).



2.39.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

GO TO NEXT PAGE

2.39. CPG BORESIGHT MOUNT FITTING REMOVAL/INSTALLATION – continued

2.39.5. Inspection

a. **Check mount fitting and support fitting for cracks and corrosion** (para 2.11)**.**

2.39.6. Installation

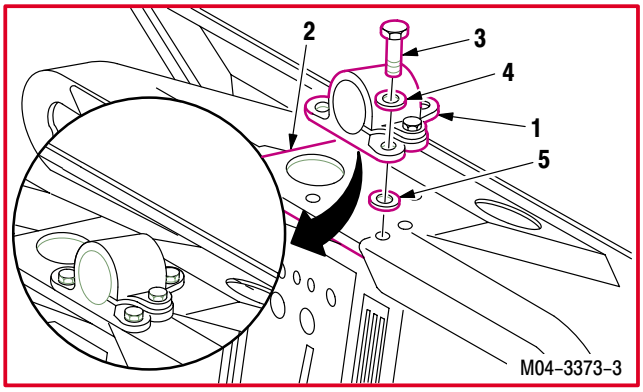
a. **Install mount fitting (1) on support fitting (2).**

(1) Aline three laminated washers (5) and mount fitting (1) with support fitting (2).

(2) Install three bolts (3) and washers (4).

b. **Inspect (QA).**

c. **Install CPG boresight reticle unit (BRU)** (TM 9-1270-221-23)**.**



END OF TASK

2.40. CANOPY JETTISON ACCESS DOOR SEAL REPLACEMENT

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.40.1. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
2-inch wide hand roller (item 270, App H)

Personnel Required:

67R Attack Helicopter Repairer
68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

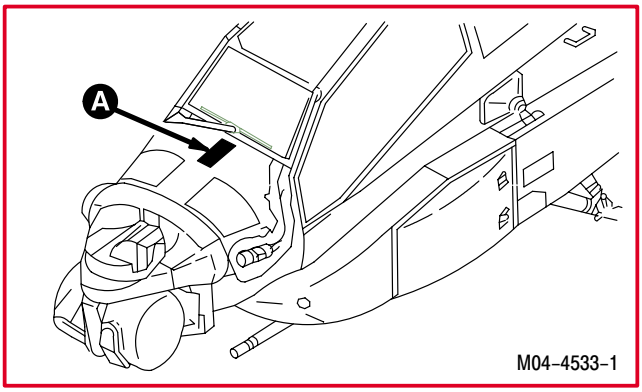
Seal (table D-84, App D)
Brush (item 34, App F)
Cloth (item 52, App F)
Estane cement (item 79, App F)
Estane cement accelerator (item 80, App F)
Methyl ethyl ketone (item 124, App F)
Methyl isobutyl ketone (item 125, App F)
Naphtha (item 127, App F)

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



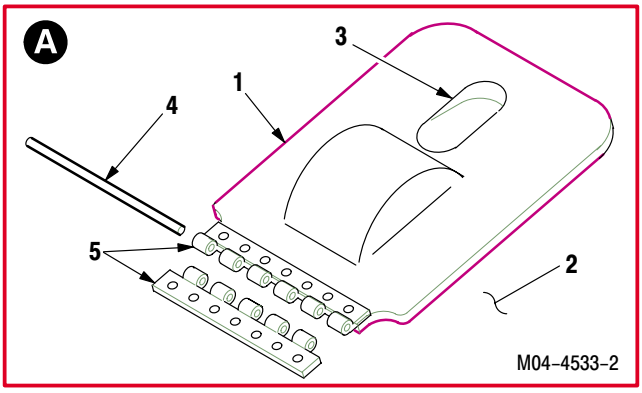
2.40.2. Removal

a. **Remove canopy jettison access door (1) from airframe (2).**

(1) Release thumb latch (3) on door (1).

(2) Remove straight pin (4) from hinge halves (5) (TM 1-1500-204-23).

(3) Remove door (1).



GO TO NEXT PAGE

2.40. CANOPY JETTISON ACCESS DOOR SEAL REPLACEMENT – continued

2.40.3. Cleaning

a. **Wipe attaching parts and surfaces with a clean rag.**

2.40.4. Inspection

a. **Check door for cracks, distortion, and corrosion** (para 2.11)**.**

b. **Check hinge for damage** (TM 1-1500-204-23)**.**

c. **Check door latch for damage.** None allowed.

2.40.5. Repair

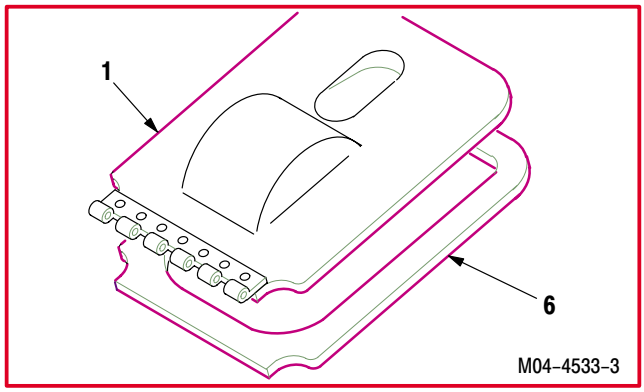


a. **Remove seal (6) from door (1).**

(1) Remove and discard as much of old seal (6) as possible from door (1).

(2) Clean residue remaining on sealing surface of door (1). Use naphtha (item 127, App F) and cloth (item 52, App F) (para 1.47).

(3) Clean mounting surface of door (1). Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F) (para 1.47).



NOTE

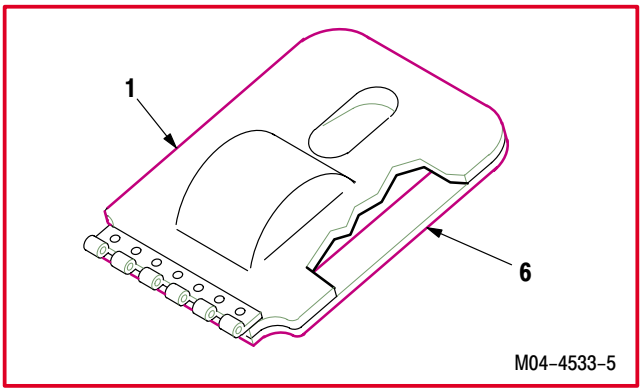
Protect cleaned door surfaces from contamination until new seal is installed.

GO TO NEXT PAGE

2.40. CANOPY JETTISON ACCESS DOOR SEAL REPLACEMENT – continued



b. **Install new seal (6) on door (1).**



(1) Apply a coat of cement to surfaces of door (1) and seal (6). Use estane cement (item 79, App F), estane cement accelerator (item 80, App F), and brush (item 34, App F).

(2) Apply a coat of MIBK over cement to make surfaces tacky. Use methyl isobutyl ketone (item 125, App F) and cloth (item 52, App F).

(3) Carefully mate surfaces of seal (6) and door (1).

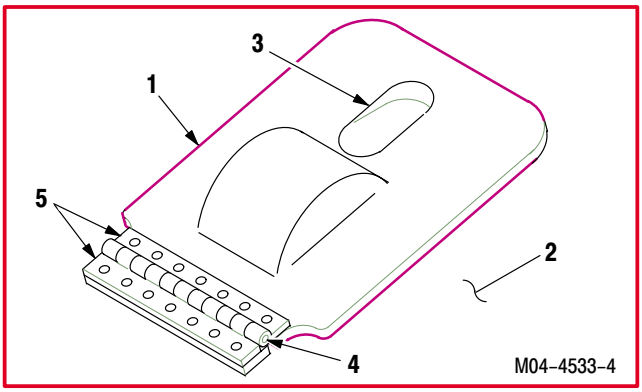
(a) Start at one edge and work across bonding area. Apply pressure to avoid formation of bubbles. Use hand roller.

(4) Clean excess cement from door (1). Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

c. **Inspect (QA).**

2.40.6. Installation

a. **Install door (1) on airframe (2).**



(1) Install pin (4) in hinge halves (5) (TM 1-1500-204-23).

(2) Secure latch (3) on door (1).

b. **Inspect (QA).**

END OF TASK

2.41. CANOPY DOOR AND WINDSHIELD DRAIN TUBE REPLACEMENT

2.41.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.41.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

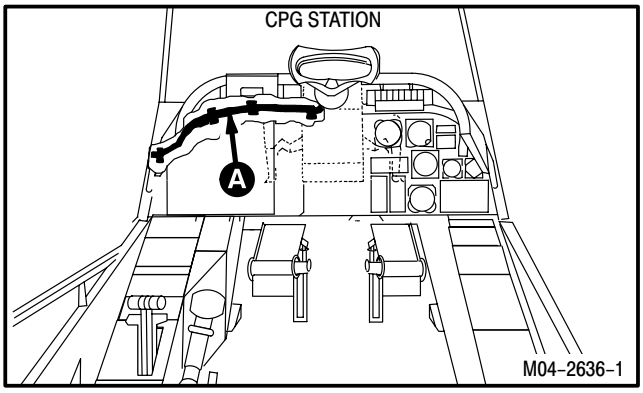
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel . If injury occurs, seek medical aid.



2.41.3. Removal

a. **Enter CPG station** (para 2.2)**. Observe all safety precautions.**

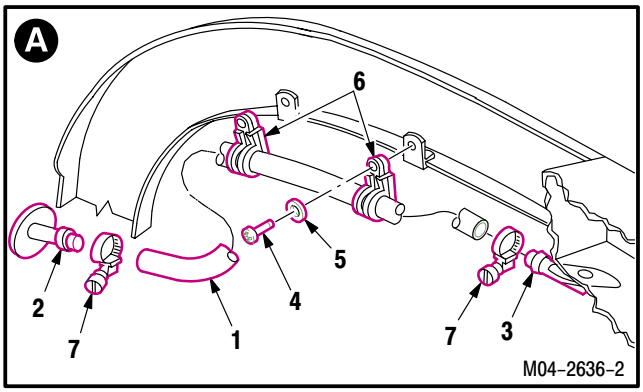
b. **Remove drain tube (1) from drain outlets (2) and (3).**

(1) Remove two screws (4) and washers (5) from loop clamps (6).

(2) Remove two clamps (6) from tube (1).

(3) Loosen two hose clamps (7).

(4) Remove and discard tube (1) from outlets (2) and (3).



GO TO NEXT PAGE

2.41. CANOPY DOOR AND WINDSHIELD DRAIN TUBE REPLACEMENT – continued

2.41.4. Cleaning

a. **Wipe outlets with a clean rag.**

2.41.5. Inspection

a. **Check outlets for damage.** None allowed.

2.41.6. Installation

a. **Install new tube (1) on outlets (2) and (3).**

(1) Install two clamps (7) on tube (1).

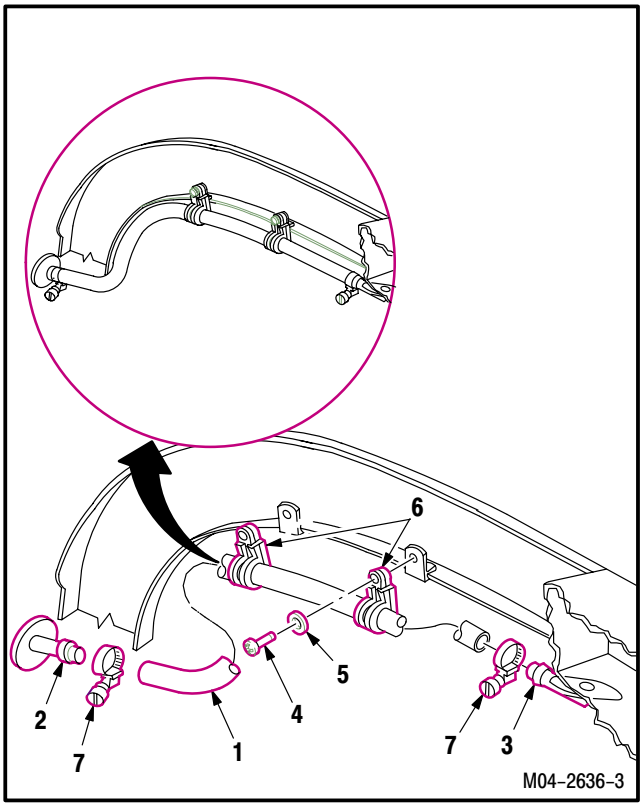
(2) Install tube (1) on outlets (2) and (3).

(3) Slide two clamps (7) in place and tighten.

(4) Install two clamps (6) on tube (1).

(5) Install two screws (4) through washers (5) and clamps (6).

b. **Inspect (QA).**



END OF TASK

2.42. FORWARD AVIONICS BAY NOSE FAIRING ASSEMBLY SEAL REPLACEMENT (AVIM)

2.42.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.42.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Adhesive (item 13, App F)
Cloth (item 52, App F)
Depressor (item 70, App F)
Methyl ethyl ketone (item 124, App F)

NOTE

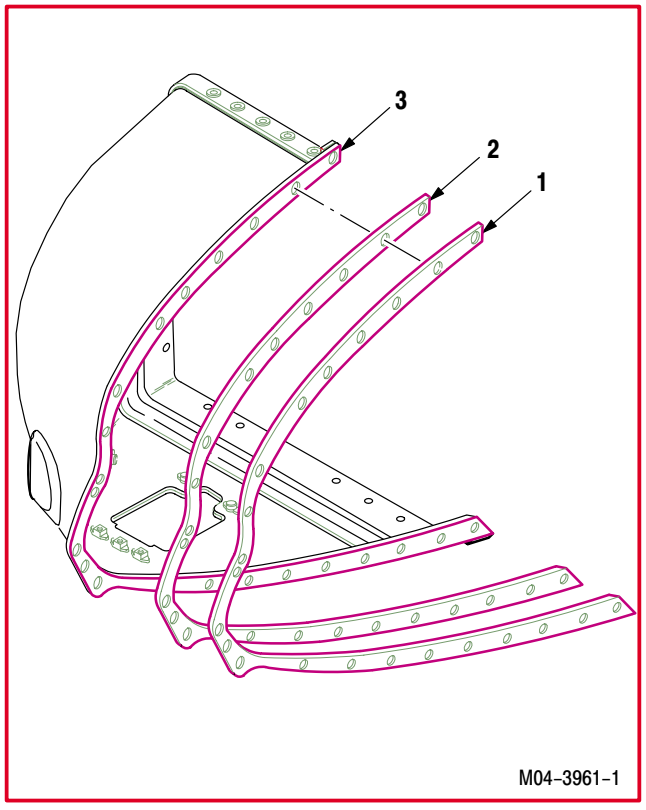
This task is typical for left and/or right forward avionics bay nose fairing seals.

2.42.3. Removal

NOTE

There may be more than one seal installed.

a. **Remove and discard seals (1) and (2) from EMI gasket (3).**



GO TO NEXT PAGE

2.42. FORWARD AVIONICS BAY NOSE FAIRING ASSEMBLY SEAL REPLACEMENT (AVIM) – continued

2.42.4. Cleaning



a. **Remove residue remaining on EMI gasket.** Use cloth (item 52, App F) moistened with methyl ethyl ketone (item 124, App F).

b. **Wipe surface dry before solvent evaporates.** Use cloth (item 52, App F).

(1) Make repeated applications of solvent and wiping until no visible soiling appears on cloth.

c. **Protect cleaned surfaces from contamination until replacement seal is installed.**

2.42.5. Inspection

a. **Check fairing for corrosion** (para 1.49)**.**

b. **Check fairing for loose or damaged EMI gasket** (para 2.1)**.**

c. **Check fairing and mating surface for damaged EMI conductive coating.** Repair door and fairing mating surface (para 2.34).

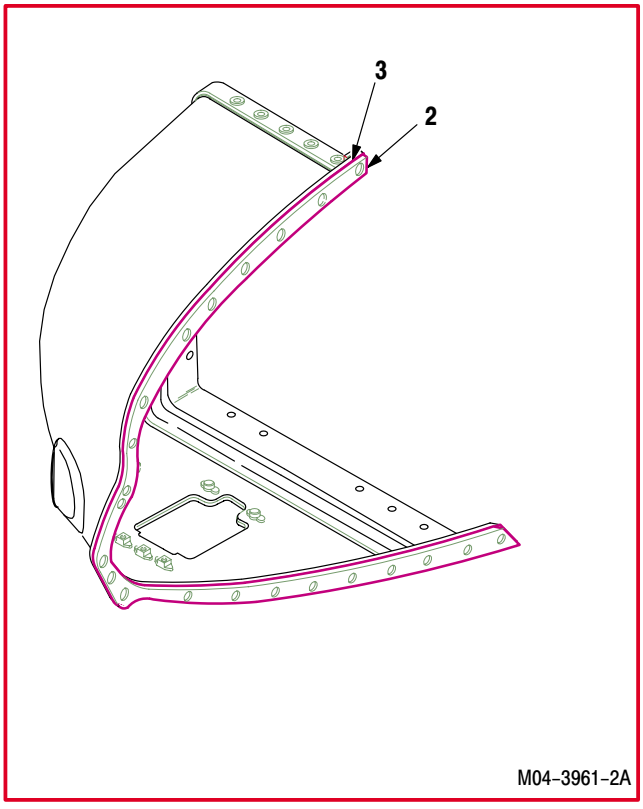
2.42.6. Installation



a. **Install new seal (2) on EMI gasket (3).**

(1) Apply adhesive to mating surfaces EMI gasket (3) and seal (2). Work out bubbles. Spread adhesive to uniform thickness of **0.015 INCH**. Use adhesive (item 13, App F).

(2) Aline faying surfaces of seal (2) on EMI gasket (3) with all holes and cutouts aligned. Apply firm, uniform pressure. Do not shift sealed surfaces.



GO TO NEXT PAGE

2.42. FORWARD AVIONICS BAY NOSE FAIRING ASSEMBLY SEAL REPLACEMENT (AVIM) – continued

NOTE

More than one seal may be required to eliminate gaps at fuselage/fairing interface.



b. **Install new seal (1) on seal (2).**

(1) Apply adhesive to seal (1) and seal (2) surfaces to be joined. Work out bubbles. Spread sealant to uniform thickness of **0.015 INCH**. Use adhesive (item 13, App F).

(2) Aline faying surfaces of seal (1) on seal (2) with all holes and cutouts alined. Maintain constant pressure on seals. Use C-clamps and small strips of wood placed at several points along length of seals (1) and (2). Use depressor (item 70, App F)

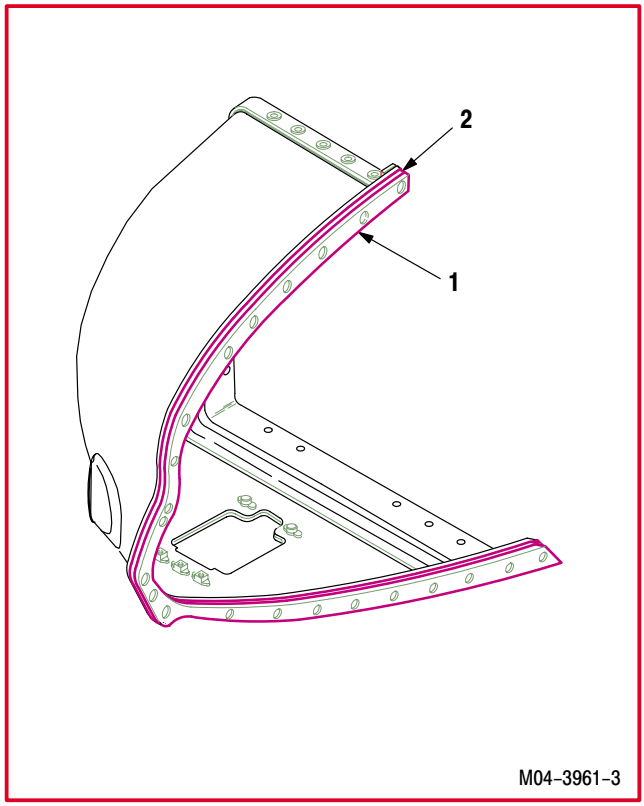
(3) Ensure that excess adhesive is visible at all edges of seals (1) and (2).

(4) Remove excess adhesive while forming a smooth no gap bead around edges. Use cloth (item 52, App F) moistened with methyl ethyl ketone (item 124, App F).

(5) Apply an even bead of adhesive at corners and splices. Use adhesive (item 13, App F).

(6) Cure **1 HOUR** or until adhesive is tack-free to touch.

(7) Trim seals (1) and (2) as required to eliminate gaps at fuselage/fairing interface.



c. **Inspect (QA).**

END OF TASK

2.42A. GROUND SERVICE ACCESS DOOR B60R REMOVAL/INSTALLATION

2.42A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.42A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

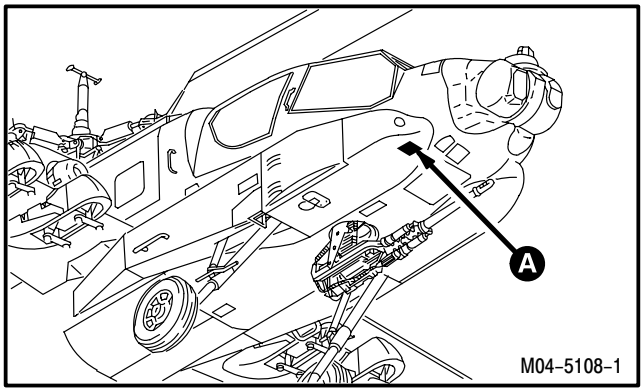
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



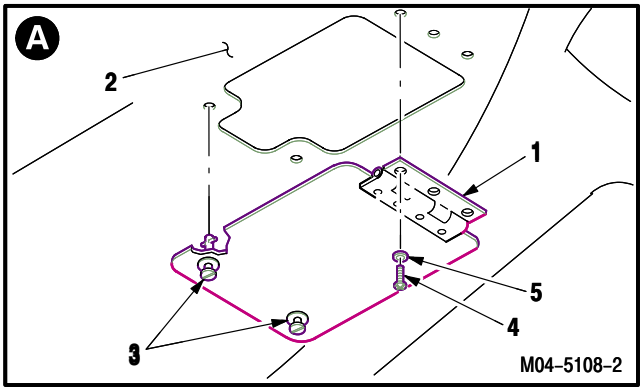
2.42A.3. Removal

a. **Remove ground service access door (1) from nose-forward avionics bay fairing (2).**

(1) Unlock two fasteners (3) from fairing (2).

(2) Remove three screws (4) and washers (5) from door (1) and fairing (2).

(3) Remove door (1).



GO TO NEXT PAGE

2.42A. GROUND SERVICE ACCESS DOOR B60R REMOVAL/INSTALLATION – continued

2.42A.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

2.42A.5. Inspection

a. **Check fairing nutplates for loose or missing rivets and stripped or cracked threads** (TM 1-1500-204-23)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

c. **Check removed and attaching parts for cracks.** None allowed.

d. **Check door and fairing mating surface for damaged EMI conductive coating.** Repair door and fairing mating surface (para 2.34).

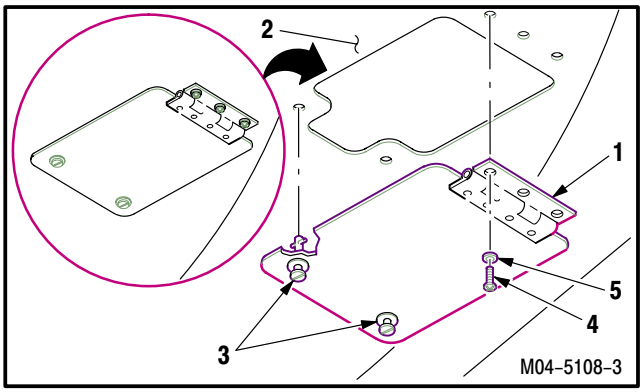
2.42A.6. Installation

a. **Install door (1) on fairing (2).**

(1) Install three screws (4) and washers (5) through door (1) in fairing (2).

(2) Lock two fasteners (3) in fairing (2).

b. **Inspect (QA).**



END OF TASK

2.43. FORWARD AVIONICS BAY ACCESS DOOR REMOVAL/INSTALLATION

2.43.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.43.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

References:

TM 1-1500-204-23

Personnel Required:

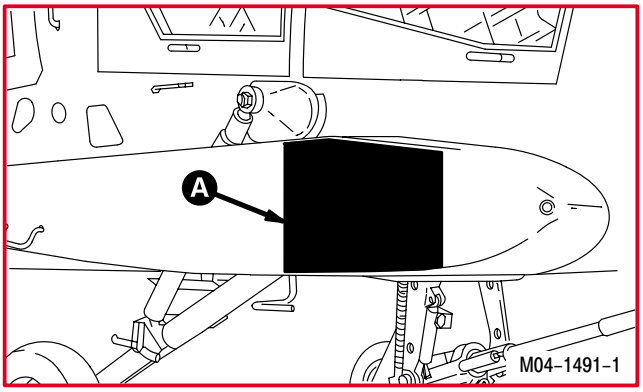
68G Aircraft Structural Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for L90 and/or R90 avionics bay access door.



GO TO NEXT PAGE

2.43. FORWARD AVIONICS BAY ACCESS DOOR REMOVAL/INSTALLATION – continued

2.43.3. Removal

a. **Remove access door (1) from forward avionics bay (2).**

(1) Remove hinge pin (3) from hinge (4) (TM 1-1500-204-23).

(2) Unfasten seven thumb latches (5) and remove door (1).

2.43.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.43.5. Inspection

a. **Check door for loose or damaged hinge** (TM 1-1500-204-23)**.**

b. **Check door for corrosion** (para 1.49)**.**

NOTE

Steps c and d refer to aircraft equipped with EMI provisions.

c. **Check door and mating surface for loose or damaged EMI gasket** (para 2.1)**.**

d. **Check door and avionics bay mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

2.43.6. Installation

a. **Install door (1) on avionics bay (2).**

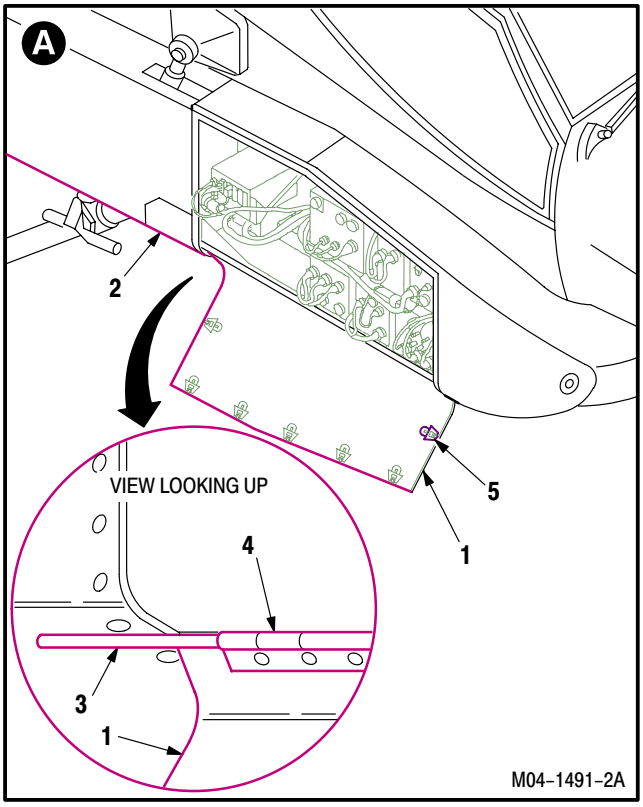
(1) One person aline and hold door (1) in position.

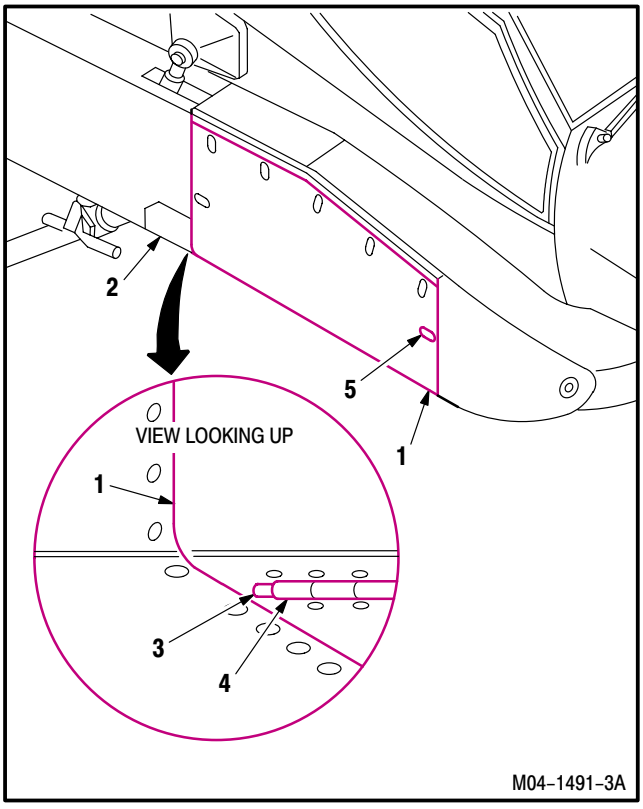
(2) Install pin (3) in hinge (4) (TM 1-1500-204-23).

(3) Fasten seven latches (5) on door (1).

b. **Inspect (QA).**

END OF TASK





2.43A. MOORING LUG DOOR L115 OR R115 REMOVAL/INSTALLATION

2.43A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.43A.2. Initial Setup

Tools:

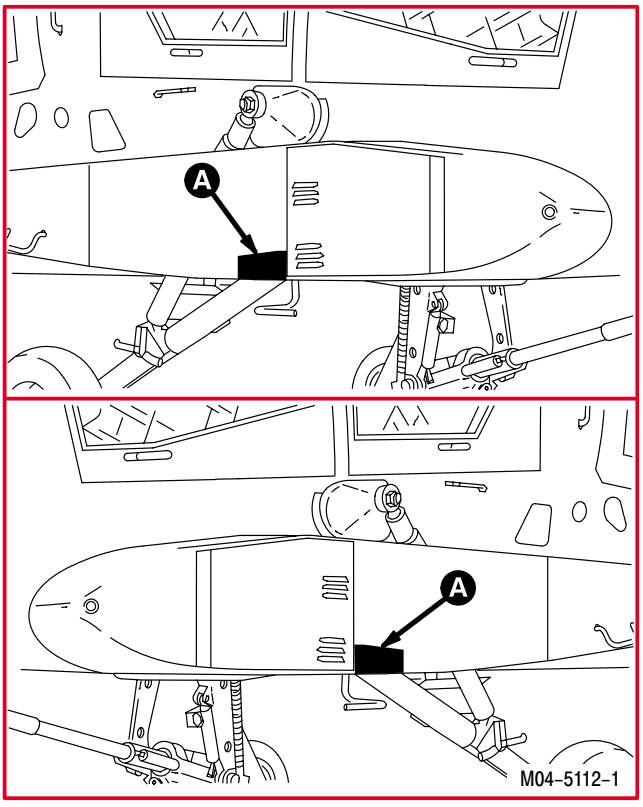
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for mooring lug access doors L115 and R115.



GO TO NEXT PAGE

2.43A. MOORING LUG DOOR L115 OR R115 REMOVAL/INSTALLATION – continued

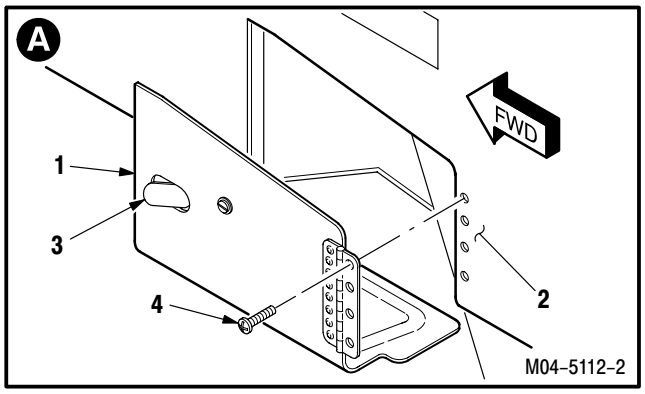
2.43A.3. Removal

a. **Remove mooring lug door (1) from ammunition feed mechanism fairing (2).**

(1) Unlock latch (3) on door (1).

(2) Remove four screws (4) from door (1) and fairing (2).

(3) Remove door (1).



2.43A.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.43A.5. Inspection

a. **Check fairing nutplates.**

(1) Check for loose or missing rivets, and stripped threads (TM 1-1500-204-23).

(2) Check for cracks. None allowed.

(3) Check for corrosion (para 1.49).

b. **Check door and fairing for corrosion** (para 1.49)**.**

c. **Check door and fairing mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

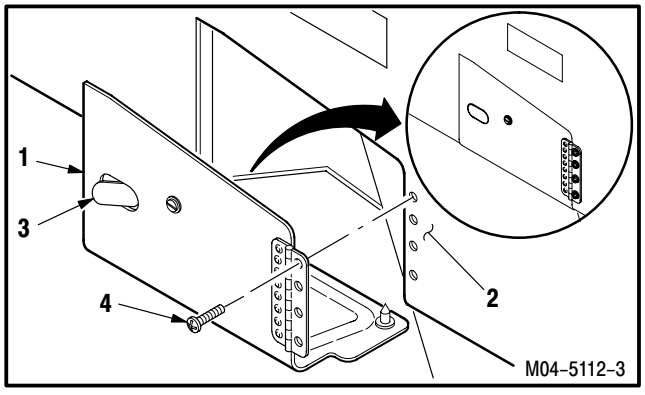
2.43A.6. Installation

a. **Install door (1) on fairing (2).**

(1) Install four screws (4) through door (1) in fairing (2).

(2) Lock latch (3) on door (1).

b. **Inspect (QA).**



END OF TASK

2.44. ACCESS DOOR ADJUSTABLE TENSION THUMB LATCH AND HOOK REPLACEMENT/ADJUSTMENT

2.44.1. Description

This task covers: Removal. Cleaning. Inspection. Installation. Adjustment.

2.44.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

References:

TM 1-1500-204-23

Materials/Parts:

Shim (Figure D-141, App D)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

- This task is typical for all thumb latches (para 2.2).
- For latch adjustment only, go to paragraph 2.44.7.

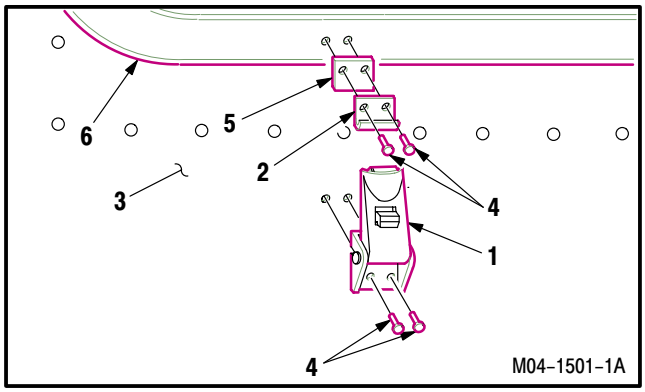
2.44.3. Removal

a. **Remove thumb latch (1) and hook (2) from airframe (3).**

(1) Remove two rivets (4) from thumb latch (1) and airframe (3) (TM 1-1500-204-23).

(2) Remove latch (1) from airframe (3).

(3) Remove two rivets (4), door hook (2), and shim (5), if installed, from door (6) (TM 1-1500-204-23).



2.44.4. Cleaning

a. **Wipe mounting surfaces with a clean rag.**

GO TO NEXT PAGE

2.44. ACCESS DOOR ADJUSTABLE TENSION THUMB LATCH AND HOOK REPLACEMENT/ADJUSTMENT – continued

2.44.5. Inspection

a. **Check mounting surface for cracks or damage** (para 2.11)**.**

2.44.6. Installation

NOTE

If EMI gasket is installed and mismatch exists between latch and hook, install shim if required.

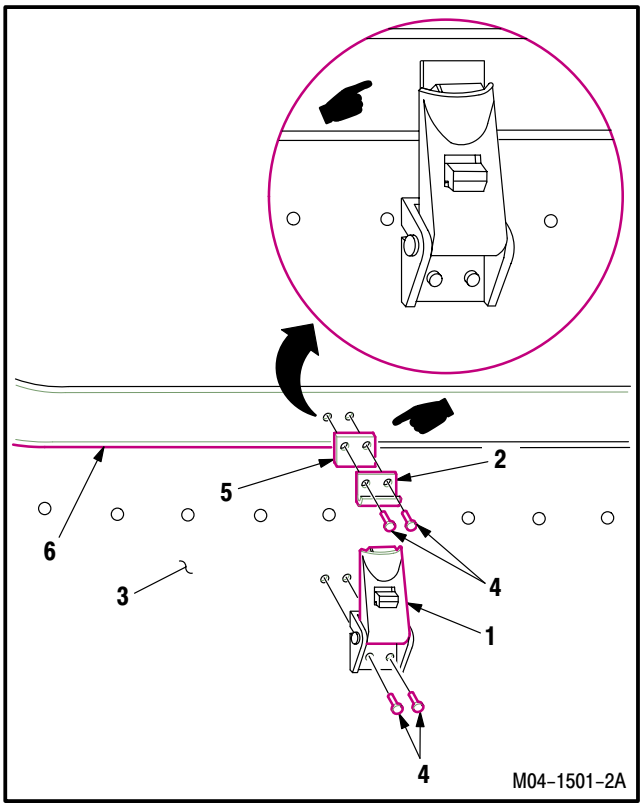
a. **Install new latch (1) and hook (2) on airframe (3).**

(1) Position new latch (1) on airframe (3).

(2) Install two rivets (4) through latch (1) and airframe (3) (TM 1-1500-204-23).

(3) Position new hook (2) and shim (D-141) (5), if required, on door (6). Use shim (Figure D-141, App D).

(4) Install two rivets (4) through hook (2), shim (5) if required, and door (6) (TM 1-1500-204-23).



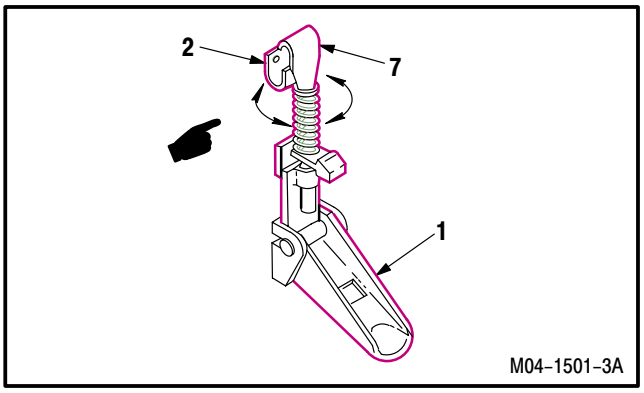
2.44.7. Adjustment

a. **Adjust latch (1) on airframe (3).**

(1) Disengage latch (1) from door hook (2).

(2) Turn drawhook (7) clockwise to increase tension or counterclockwise to decrease tension.

b. **Inspect (QA).**



END OF TASK

2.45. FORWARD AVIONICS BAY AIRFRAME STEP ASSEMBLY REMOVAL/INSTALLATION

2.45.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.45.2. Initial Setup

Tools:

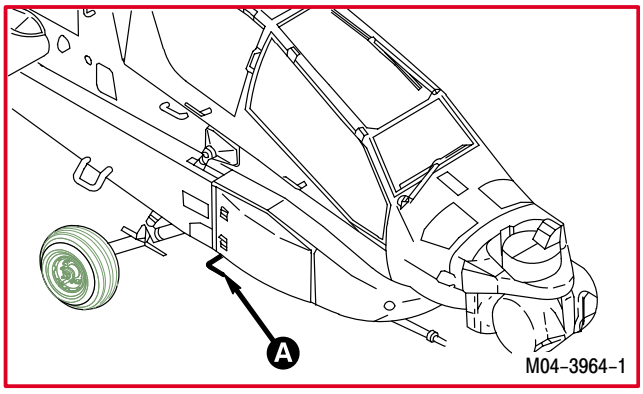
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R115 opened



GO TO NEXT PAGE

2.45. FORWARD AVIONICS BAY AIRFRAME STEP ASSEMBLY REMOVAL/INSTALLATION – continued

2.45.3. Removal

a. **Remove step assembly (1) from support (2).**

(1) Remove quick release pin (3) from step (1) and support (2).

(2) Remove retaining ring (4) from step (1).

(3) Remove step (1) from support (2).

2.45.4. Cleaning

a. **Wipe mounting surface with a clean rag.**

2.45.5. Inspection

a. **Check mounting surface for cracks and corrosion** (para 2.12)**.**

b. **Check step assembly for corrosion** (para 1.49)**.**

c. **Check step assembly for missing anti-skid coating** (para 2.36)**.**

2.45.6. Installation

a. **Install step (1) in support (2).**

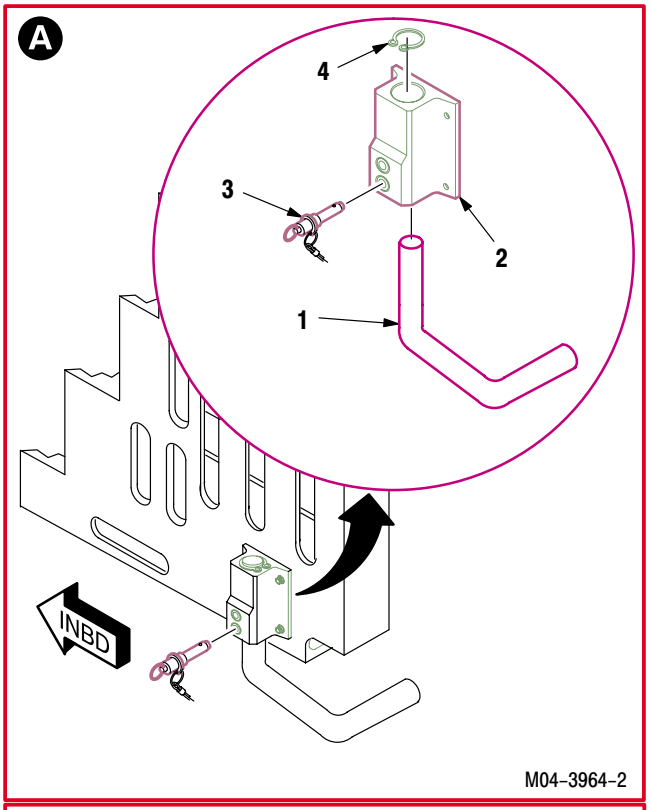
(1) Position step (1) in support (2).

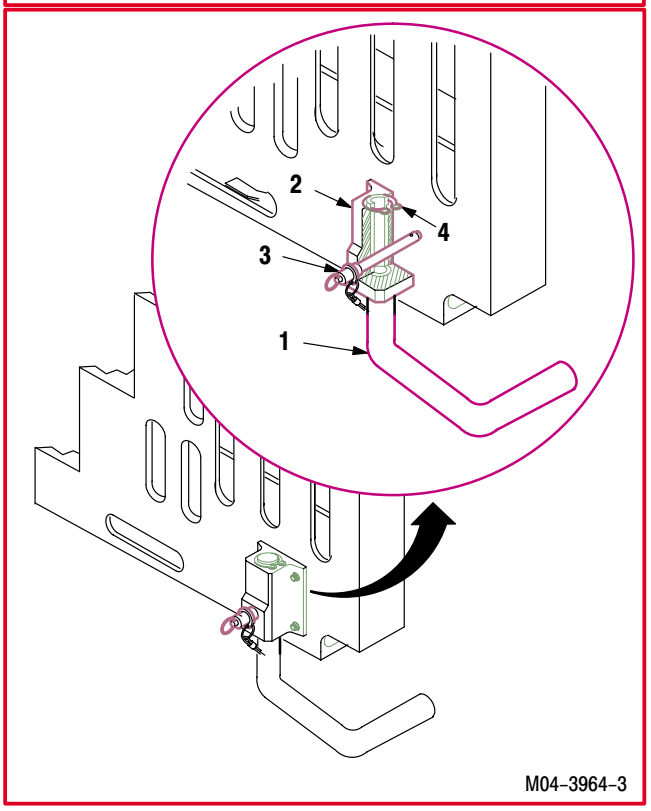
(2) Install retaining ring (4) on step (1).

(3) Install quick release pin (3) in step (1) and support (2).

b. **Secure access door R115** (para 2.2)**.**

c. **Inspect (QA).**





END OF TASK

2.46. FORWARD AVIONICS BAY STRUCTURE FRAME ASSEMBLY FORWARD STEP SLEEVE BUSHING REPLACEMENT

2.46.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.46.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Hand operated arbor press (item 234, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Naphtha (item 127, App F)
Primer coating (item 147, App F)
Thinner (item 211, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

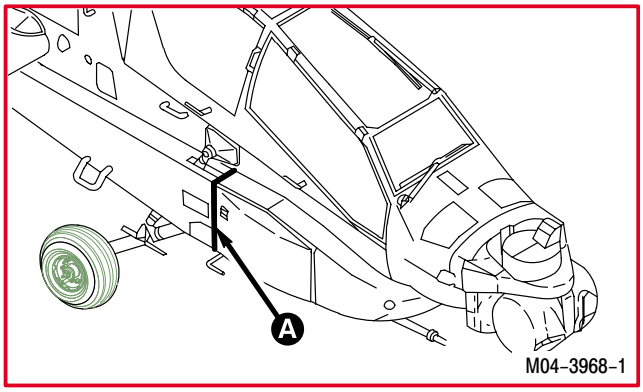
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.45	Forward avionics bay airframe step assembly removed

NOTE

This task is typical for upper forward and aft and lower forward and aft sleeve bushings.



GO TO NEXT PAGE

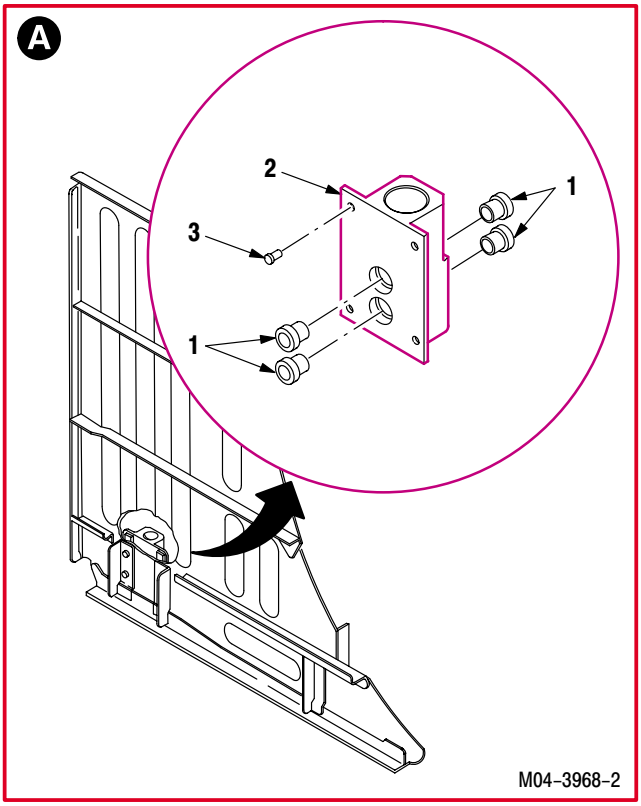
2.46. FORWARD AVIONICS BAY STRUCTURE FRAME ASSEMBLY FORWARD STEP SLEEVE BUSHING REPLACEMENT – continued

2.46.3. Removal

a. **Remove sleeve bushing (1) from support (2).**

(1) Remove four pin rivets (3) from support (2). (TM 1-1500-204-23).

(2) Remove and discard bushing (1) from support (2). Use arbor press.



2.46.4. Cleaning



a. **Clean support bushing bore.** Use methyl ethyl ketone (item 124, App F), naphtha (item 127, App F), or thinner (item 211, App F), and cloth (item 52, App F) (para 1.47).

2.46.5. Inspection

a. **Check support for cracks.** None allowed.

b. **Check support bushing bore for scoring, nicks, and scratches.**

(1) Scoring, nicks, and scratches are acceptable if less than **0.025 INCH** deep.

c. **Check support for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

2.46. FORWARD AVIONICS BAY STRUCTURE FRAME ASSEMBLY FORWARD STEP SLEEVE BUSHING REPLACEMENT – continued

2.46.6. Installation



CAUTION

- Do not allow primer or paint to enter bushing bore or bushing damage may result.
- Do not exceed maximum ram load of **188 POUNDS** or support surface damage may result.

a. **Install new bushing (1) in support (2).**

(1) Coat outside of bushing (1) and support (2) bushing bore. Use primer coating (item 147, App F) and brush (item 34, App F).

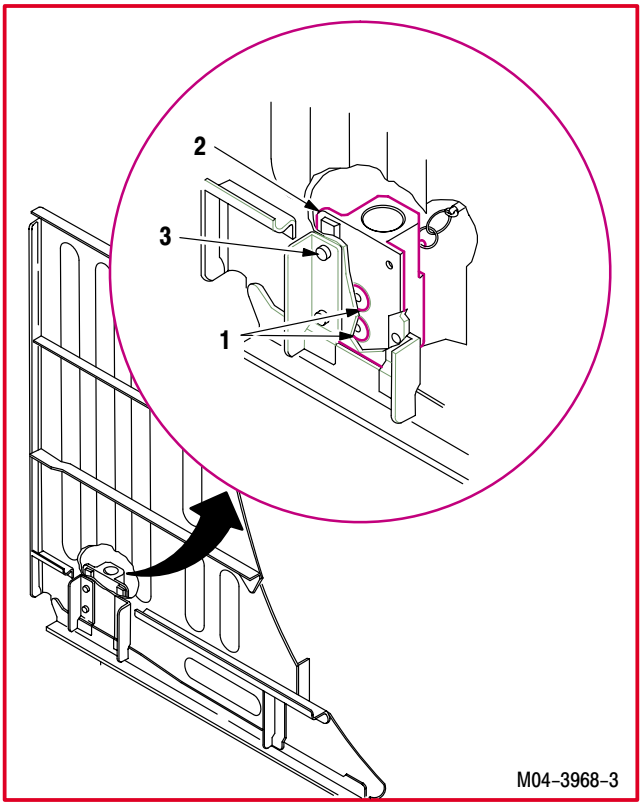
(2) Press bushing (1) in support (2) bushing bore until seated or pressed flush with mating surface. Use arbor press.

(3) Form a fillet of primer **0.125 INCH** thick around edges of bushing (1). Remove excess. Use primer coating (item 147, App F) and brush (item 34, App F).

(4) Install four rivets (3) in support (2) (TM 1-1500-204-23).

b. **Inspect (QA).**

c. **Install forward avionics bay airframe step assembly** (para 2.45)**.**



END OF TASK

2.46A. TADS/PNVS SUPPORT CONTROL SURFACE SLEEVE BUSHING REPLACEMENT (AVIM)

2.46A.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.46A.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
Universal puller kit (item 245A, App H)
Bulkhead bushing repair kit (item 259, App H)
Adjustable air filtering respirator (item 262, App H)
Bushing driver set (item 279, App H)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1270-476-20
TM 55-1500-345-23

Materials/Parts:

Bolts (M83461/1-012 for installation) (3)
Washers (MS20002C5 for installation) (3)
Cloth (item 52, App F)
Corrosion resistant coating (item 64A, App F)
Epoxy primer coating kit (item NO TAG, App F)
Methyl ethyl ketone (item 124, App F)

Equipment Conditions:

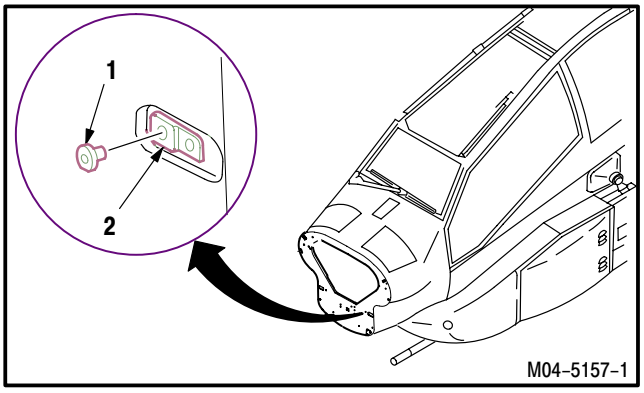
Ref	Condition
1.57	Helicopter safed
TM 1-1270-476-20	TADS/PNVS assembly removed

NOTE

This task is typical for either left or right bushing.

2.46A.3. Removal

a. **Remove bushing (1) from support fitting (2).** Use puller kit.



GO TO NEXT PAGE

2.46A. TADS/PNVS SUPPORT CONTROL SURFACE SLEEVE BUSHING REPLACEMENT (AVIM)

2.46A.4. Cleaning



a. **Clean fitting bore.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F) (para 1.47).

2.46A.5. Inspection

a. **Check fitting bore for galling and elongation.** None allowed. If galled or elongated, repair in accordance with para 2.46A.6.

b. **Check fitting bore diameter.** Maximum bore diameter is **0.4172 INCH**. If greater than **0.4172 INCH**, repair in accordance with para 2.46A.6.

c. **Check fitting for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

2.46A. TADS/PNVS SUPPORT CONTROL SURFACE SLEEVE BUSHING REPLACEMENT (AVIM) – continued

2.46A.6. Repair

NOTE

- The bulkhead bushing repair kit comes with locating and reaming bushings.
- Select first oversize (OVS 1) dimensions before second oversize (OVS 2) dimensions whenever possible.

a. **Determine which oversize dimensions to use.**

(1) Measure fitting bore diameter and compare it to dimensions in Table 2-1A.

b. **Install repair fixture (3) on bulkhead (4).**

(1) Install three locating bushings (5) from the bulkhead bushing repair kit in fixture (3). Tighten lock screws (6).

(2) Install fixture (3) on bulkhead (4).

(3) Install three bolts (7) and washers (8). Use M83461/1-012 bolts and MS20002C5 washers.

(3) Install appropriate size ream bushing (9) in discrepant fitting bore. Tighten lock screws (10).

c. **Ream fitting bore to minimum oversize (OVS) diameter per Table 2-1A.**

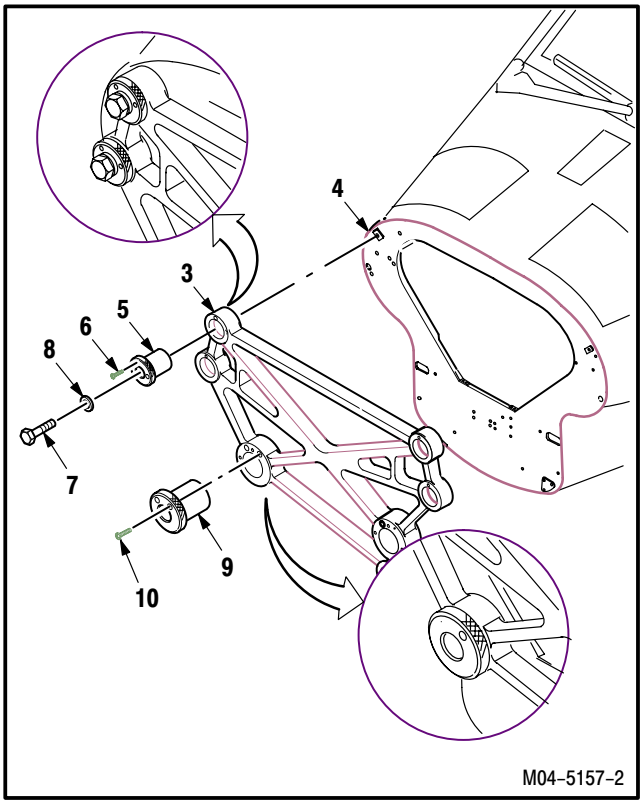
d. **Remove fixture (3) from bulkhead (4).**

(1) Loosen lock screws (10) and remove ream bushing (9).

(2) Remove three bolts (7) and washers (8) from bulkhead (4) and fixture (3).

(3) Remove fixture (3).

(4) Loosen lock screws (6). Remove three locating bushings (5) from fixture (3).



GO TO NEXT PAGE

2.46A. TADS/PNVS SUPPORT CONTROL SURFACE SLEEVE BUSHING REPLACEMENT (AVIM) – continued

e. **Inspect (QA).**

2-1A. TADS/PNVS Support Control Surface Sleeve Bushing Replacement Data

Size (Note 1)	PN	Fitting bore diameter (Note 2)		Bushing OD (Note 2)		Bushing ID (Note 2)		Footnote
		min	max	min	max	min	max	
Basic	7-311111185	0.4165	0.4172	0.4177	0.4181	0.240	0.260	a
OVS 1	HS 5501-1	0.4218	0.4223	0.4228	0.4234			
OVS 2	HS 5501-2	0.4375	0.4380	0.4385	0.4391			

Notes:
1. OVS 1-first oversize, OVS 2-second oversize
2. All dimensions in inches

Footnotes:
a. Interference fit required: 0.0005/0.0016 inch

2.46A.7. Installation

a. **Select appropriate bushing from Table 2-1A.**

GO TO NEXT PAGE

2.46A. TADS/PNVS SUPPORT CONTROL SURFACE SLEEVE BUSHING REPLACEMENT (AVIM) – continued



WARNING

- **Frostbite or freezing of tissue can occur from improper handling of chilled parts. If a burning sensation is felt, seek medical aid.**
- **Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.**
- **Use proper protective gloves because of elevated temperature involved.**

b. **Using the temperature differential method, install bushing (1) in fitting (2).**

(1) Freeze bushing (1) by placing in freezer at 0 °F (-18 °C), or below for a minimum of **3 HOURS**.

(2) Apply corrosion resistant coating to bore of fitting (2). Use corrosion resistant coating (item 64A, App F).

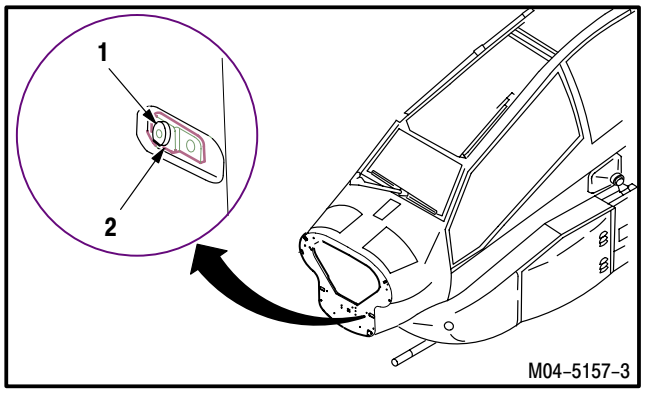
(3) Coat exterior of frozen bushing (1). Use epoxy primer coating kit (item NO TAG, App F).

(4) Heat fitting (2) to a maximum of 200 °F (93 °C). Use heater.

(5) Install bushing (1) in fitting (2). Use bushing driver set.

(6) Allow bushing (1) and fitting (2) to return to room temperature.

(7) Check for movement, with finger pressure. None allowed.



GO TO NEXT PAGE

2.46A. TADS/PNVS SUPPORT CONTROL SURFACE SLEEVE BUSHING REPLACEMENT (AVIM) – continued

c. **Inspect (QA).**

NOTE

Do not paint bushing bore or flange surface.

d. **Apply paint touchup** (TM 55-1500-345-23)**.**

e. **Install TADS/PNVS assembly** (TM 1-1270-476-20)**.**

END OF TASK

2.47. FIRE EXTINGUISHER MOUNTING BRACKET REMOVAL/INSTALLATION

2.47.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.47.2. Initial Setup

Tools:

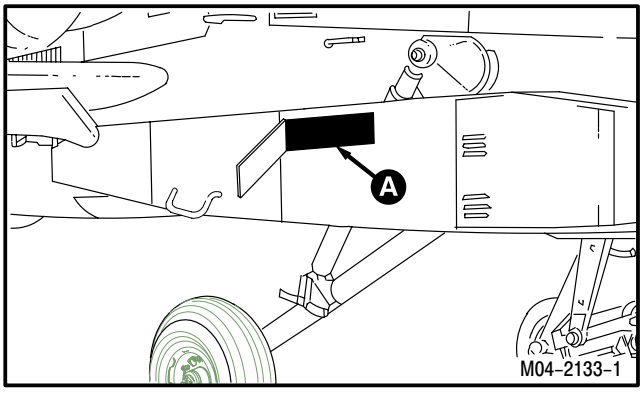
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R155 opened



GO TO NEXT PAGE

2.47. FIRE EXTINGUISHER MOUNTING BRACKET REMOVAL/INSTALLATION – continued

2.47.3. Removal

a. **Remove fire extinguisher mounting bracket (1) from channel (2).**

(1) Remove four screws (3) and washers (4).

(2) Remove bracket (1) from channel (2).

2.47.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.47.5. Inspection

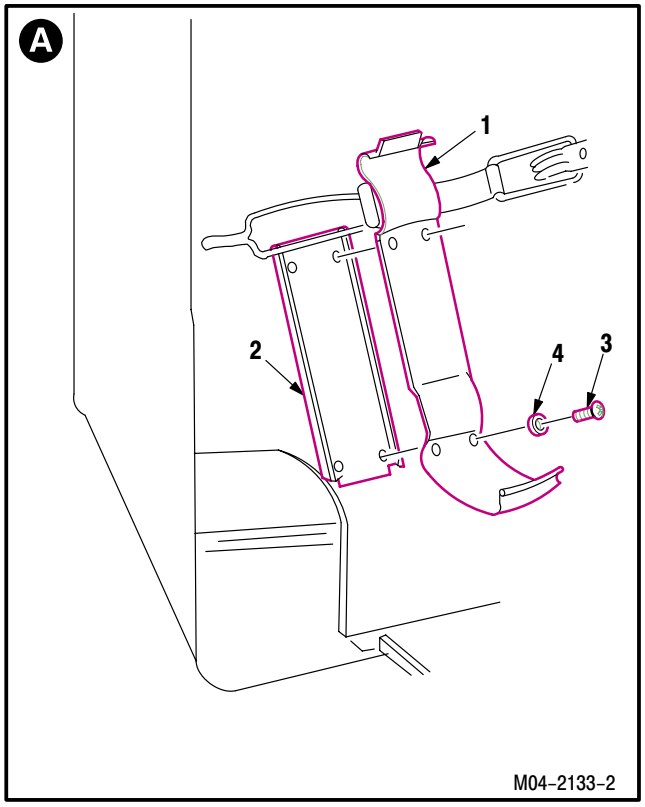
a. **Check bracket and channel for damage.** None allowed.

2.47.6. Installation

a. **Install bracket (1) on channel (2).**

(1) Install four washers (3) and screws (2).

b. **Secure access door R155** (para 2.2)**.**



END OF TASK

2.47A. FORWARD FUEL CELL RETAINER PANEL REMOVAL/INSTALLATION

2.47A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.47A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

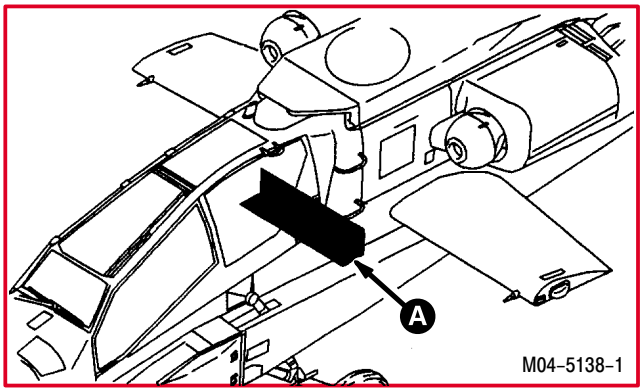
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
10.28	Forward fuel cell removed

Materials/Parts:

Tape (item 208, App F)



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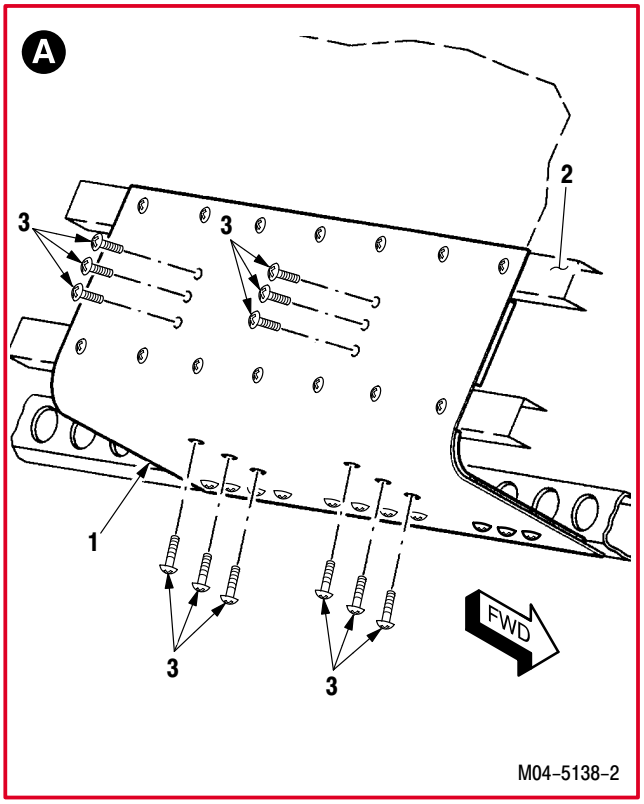
2.47A. FORWARD FUEL CELL RETAINER PANEL REMOVAL/INSTALLATION – continued

2.47A.3. Removal

a. **Remove forward fuel cell retainer panel (1) from frame assembly (2).**

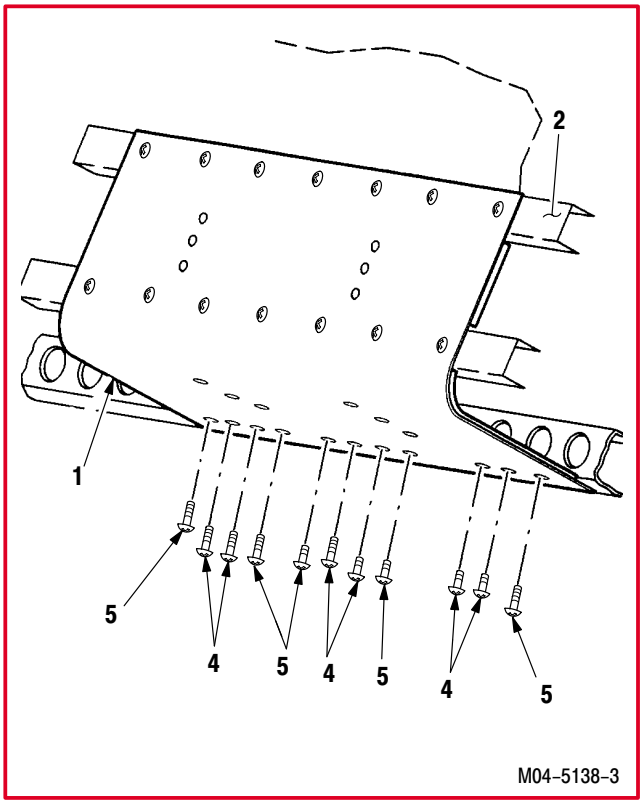
(1) Remove tape from all screws.

(2) Remove 12 screws (3) from panel (1) and frame (2).



(3) Remove six screws (4) from panel (1) and frame (2).

(4) Remove five screws (5) from panel (1) and frame (2).



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2.47A. FORWARD FUEL CELL RETAINER PANEL REMOVAL/INSTALLATION – continued

(5) Remove three screws (6) from panel (1) and frame (2).

(6) Remove four screws (7) from panel (1) and frame (2).

(7) Remove seven screws (8) from panel (1) and frame (2).

(8) Remove panel (1).

2.47A.4. Cleaning

a. **Clean tape and adhesive residue from screws and panel** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.47A.5. Inspection

a. **Check panel and frame for corrosion** (para 1.49)**.**

b. **Check panel and frame for distortion and cracks.** None allowed.

c. **Check frame for loose, missing, or damaged hardware** (TM 1-1500-204-23)**.**

d. **Check frame pressure sensitive adhesive film for looseness, cuts, and gouges.** None allowed.

2.47A.6. Installation

a. **Install panel (1) on frame (2).**

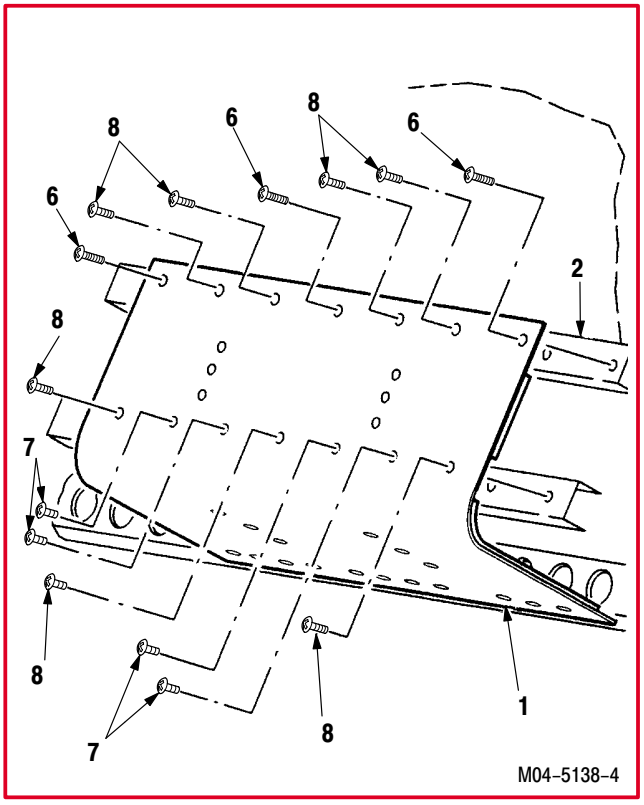
(1) Position panel (1) on frame (2).

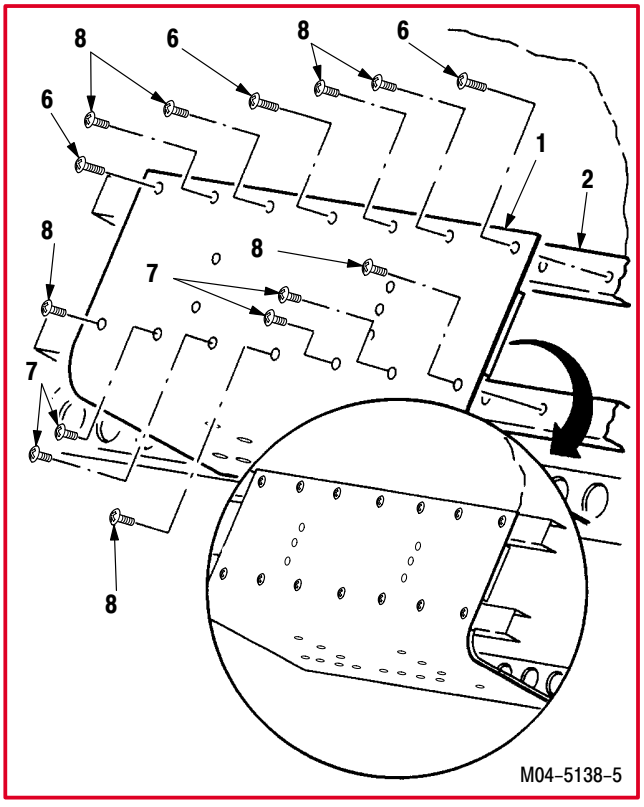
(2) Install seven screws (8) through panel (1) in frame (2).

(3) Install four screws (7) through panel (1) in frame (2).

(4) Install three screws (6) through panel (1) in frame (2).

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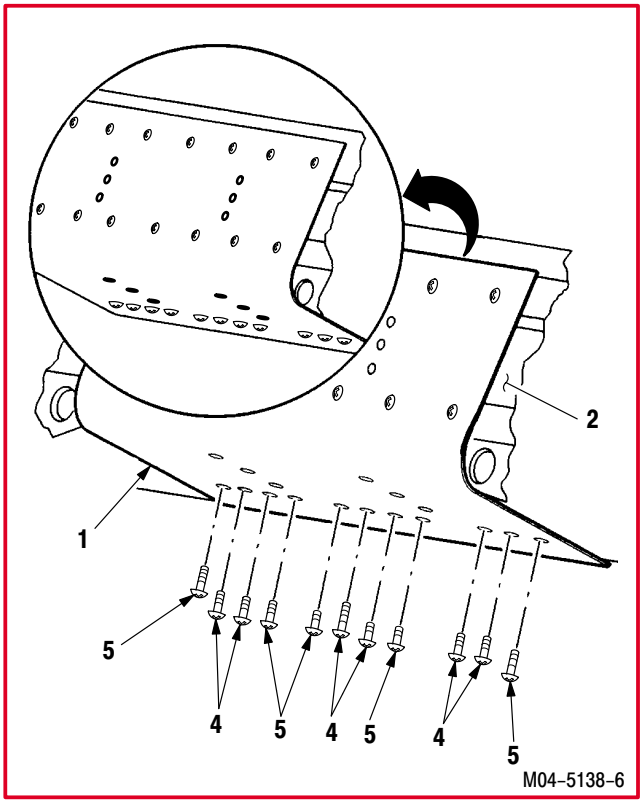




2.47A. FORWARD FUEL CELL RETAINER PANEL REMOVAL/INSTALLATION – continued

(5) Install five screws (5) through panel (1) in frame (2).

(6) Install six screws (4) through panel (1) in frame (2).

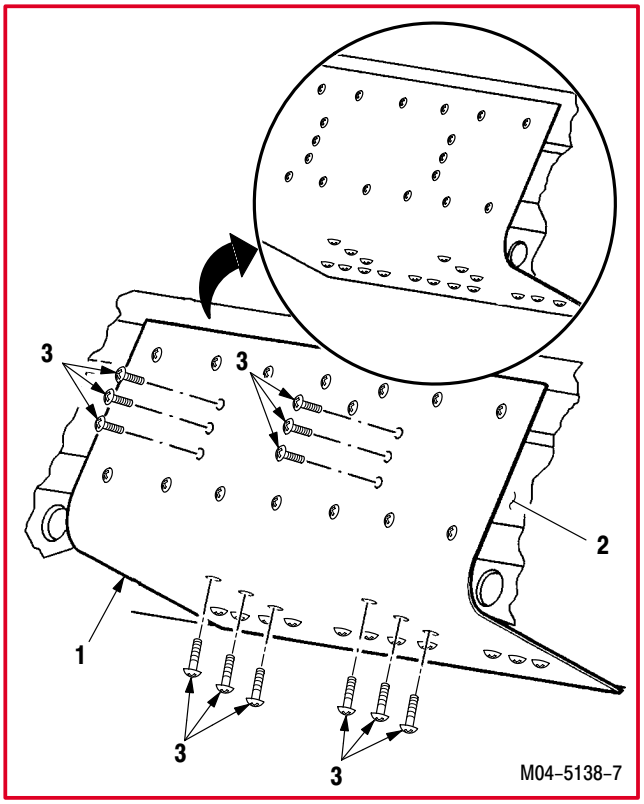


(7) Install 12 screws (3) through panel (1) in frame (2).

b. **Cover all screws with tape.** Use tape (item 208, App F).

c. **Inspect (QA).**

d. **Install forward fuel cell** (para 10.29)**.**



END OF TASK

SECTION IV. CANOPY MAINTENANCE

2.48. COCKPIT SEALING

2.48.1. Description

This task covers: Cleaning. Transparent Panel Sealing. Canopy Door Area Sealing. Fillet Sealing. Void, Gap, and Joggle Sealing. Tape Sealing.

2.48.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 177, App F)
Tape (item 206, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.48.3. Cleaning



a. **Clean area to be sealed.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

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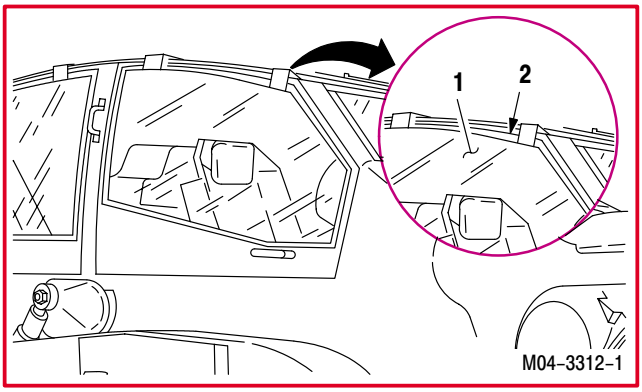
2.48. COCKPIT SEALING – continued

2.48.4. Transparent Panel Sealing



a. **Apply a bead of sealing compound along edge of transparent panel (1) and structure (2).** Remove excess. Use sealing compound (item 177, App F).

b. **Inspect (QA).**



2.48.5. Canopy Door Area Sealing

a. **Adjust inboard striker plates** (para 2.60)**.**

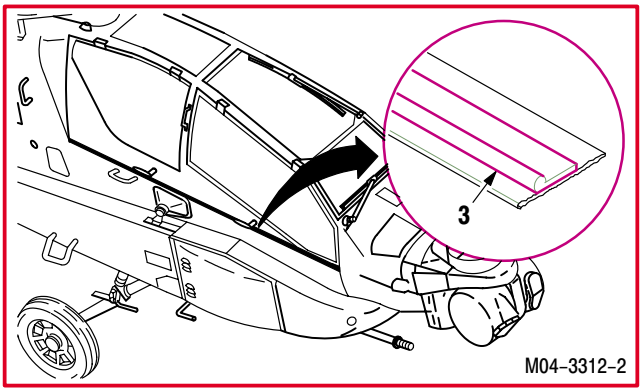


b. **If leakage persists, apply sealing compound to bumper (3) for added compression.**

(1) Apply sealing compound to bumper (3) until adequate seal compression is obtained. Use sealing compound (item 177, App F).

(2) Sealing compound must be smooth and faired out gradually at ends.

c. **Inspect (QA).**



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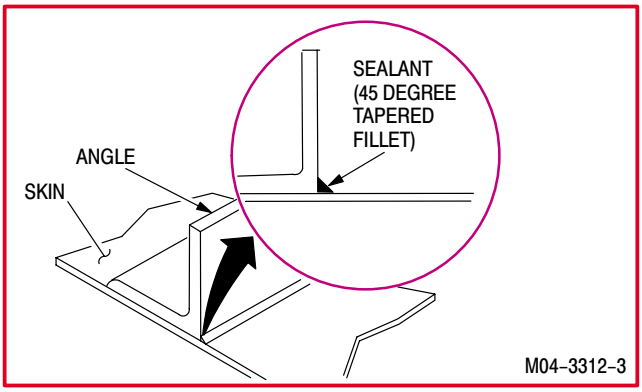
2.48. COCKPIT SEALING – continued

2.48.6. Fillet Sealing



a. **Apply a bead of sealant to form a 45 degree tapered fillet.** Remove excess. Use sealing compound (item 177, App F).

b. **Inspect (QA).**

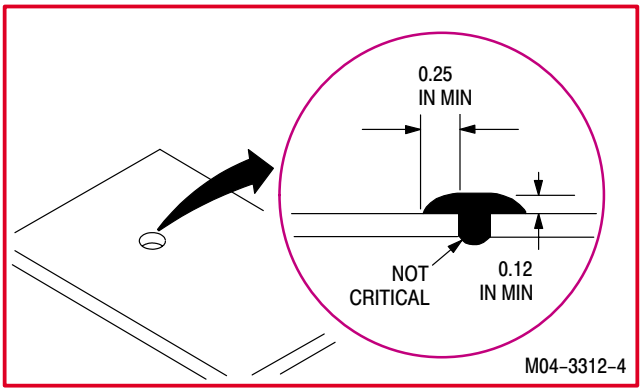


2.48.7. Void, Gap, and Joggle Sealing



a. **Apply sealing compound to void to form a 0.12 INCH minimum dome shaped retainer overlapping at edges 0.25 INCH minimum.** Use sealing compound (item 177, App F).

b. **Inspect (QA).**



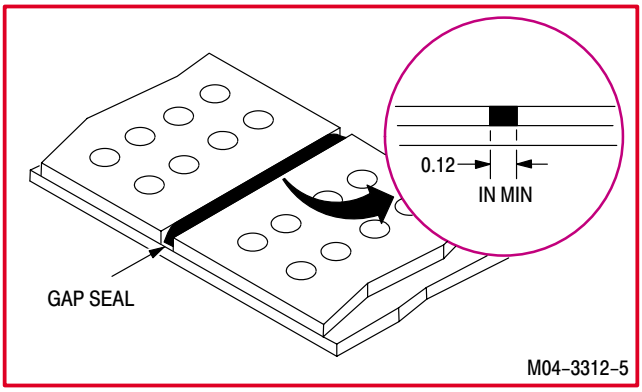


c. **Seal gaps greater than 0.12 INCH wide as follows:**

(1) Apply sealing compound to gap until sealant protrudes slightly above edges of seams. Use sealing compound (item 177, App F).

(2) Smooth surface.

(3) Verify that no voids or bubbles exist in sealant after application.



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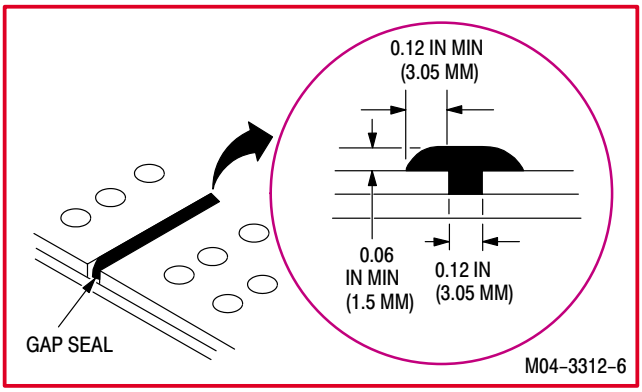
2.48. COCKPIT SEALING – continued



d. **Seal gaps smaller than 0.12 INCH wide as follows:**

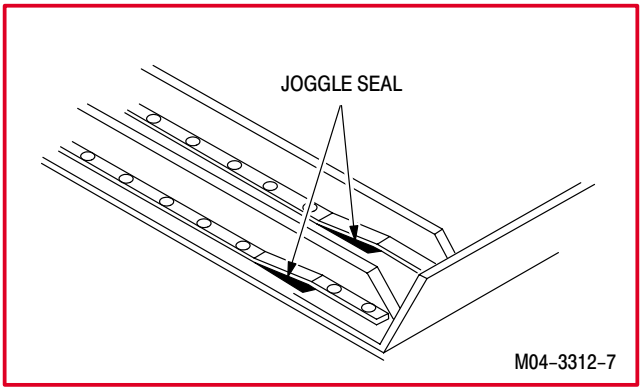
(1) Apply sealing compound to gap so that sealant overlaps edge of material. Use sealing compound (item 177, App F).

(2) Verify that no voids or bubbles exist in sealant after application.



e. **Apply sealing compound under joggle until sealant fills joggle and extrudes from each side of joggle area.** Remove excess. Use sealing compound (item 177, App F).

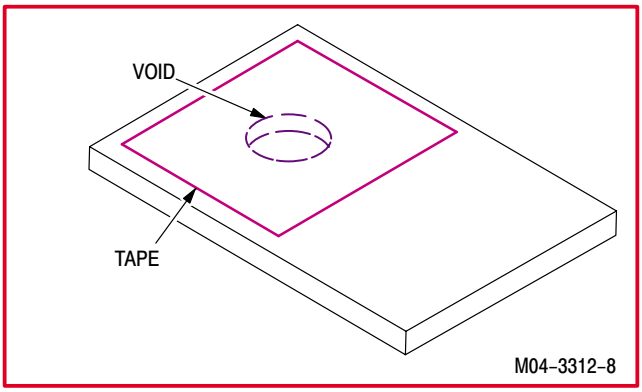
f. **Inspect (QA).**



2.48.8. Tape Sealing

a. **Tape over voids with pressure sensitive tape.** Use tape (item 206, App F).

b. **Inspect (QA).**



END OF TASK

2.49. BOW BEAM HANDLE REMOVAL/INSTALLATION

2.49.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.49.2. Initial Setup

Tools:

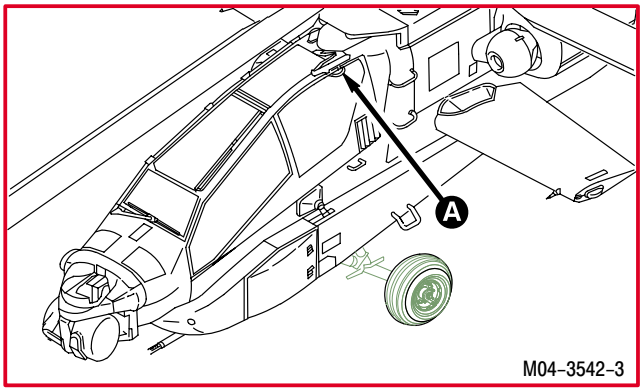
Aircraft mechanic's tool kit (item 376, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

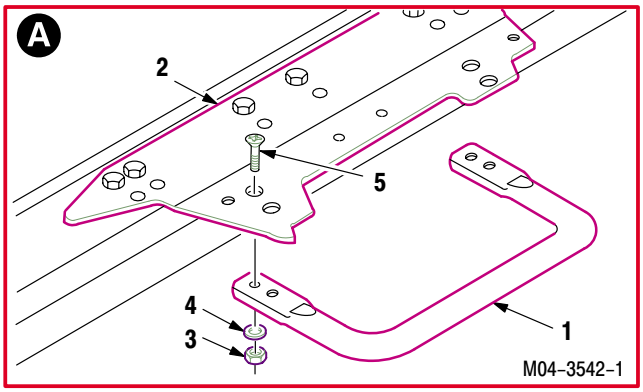
Ref	Condition
1.57	Helicopter safed
2.193	Wire strike protection aircraft cable cutter blade removed



2.49.3. Removal

a. **Remove bow handle (1) from upper bow beam mounting bracket (2).**

(1) Remove four nuts (3), washers (4), screws (5), and handle (1) from bracket (2).



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2.49. BOW BEAM HANDLE REMOVAL/INSTALLATION – continued

2.49.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.49.5. Inspection

a. **Check mounting bracket for cracks.** None allowed.

b. **Check mounting bracket for corrosion** (para 1.49)**.**

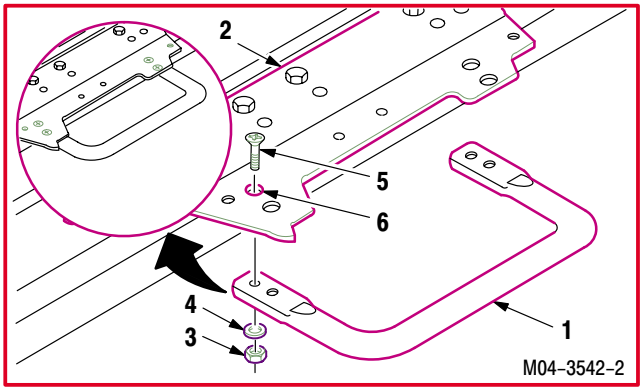
2.49.6. Installation

a. **Install handle (1) on bracket (2).** Torque four nuts (3) to **32 INCH-POUNDS**.

(1) Position handle (1) on bracket (2) with mounting holes (6) alined.

(2) Install four screws (5), washers (4), and nuts (3).

(3) Torque four nuts (3) to **32 INCH-POUNDS**. Use torque wrench.



b. **Inspect (QA).**

c. **Install wire strike protection aircraft cable cutter blade** (para 2.193)**.**

END OF TASK

2.50. CANOPY VENT HANDLE ASSEMBLY REMOVAL/INSTALLATION

2.50.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.50.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23

Materials/Parts:

Cotter pin

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.50.3. Removal

a. **Place canopy vent handle assembly (1) in the closed position.**

b. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

c. **Remove handle (1) from vent (2).**

(1) Remove and discard cotter pin (3) from straight headed pin (4).

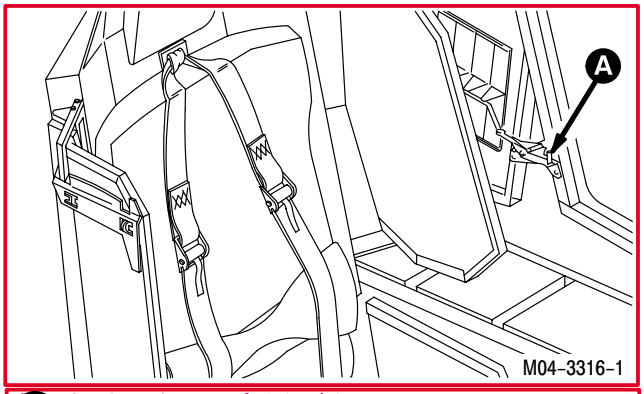
(2) Remove pin (4) from rod end clevis (5) on handle (1) and connecting rod (6) on vent (2).

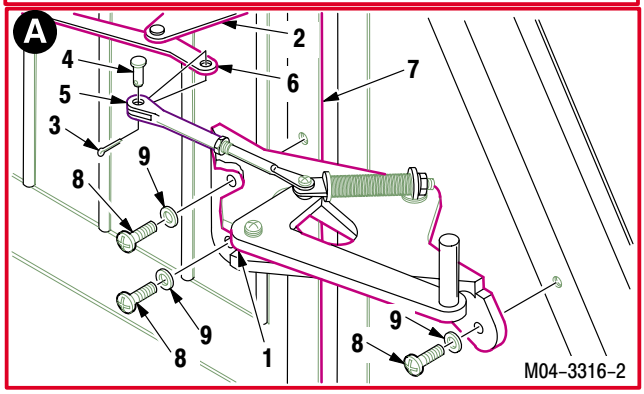
(3) Remove handle (1) from vent (2).

d. **Remove handle (1) from airframe (7).**

(1) Remove three screws (8) and washers (9).

(2) Remove handle (1) from airframe (7).





2.50.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

GO TO NEXT PAGE

2.50. CANOPY VENT HANDLE ASSEMBLY REMOVAL/INSTALLATION – continued

2.50.5. Inspection

a. **Check airframe for cracks, dents, and corrosion** (para 2.12)**.**

b. **Check airframe for stripped or damaged nutplates** (TM 1-1500-204-23)**.**

c. **Check handle for corrosion** (para 1.49)**.**

d. **Check handle for cracks, warps, dents, and gouges.** None allowed.

e. **Check handle for a broken spring.** None allowed.

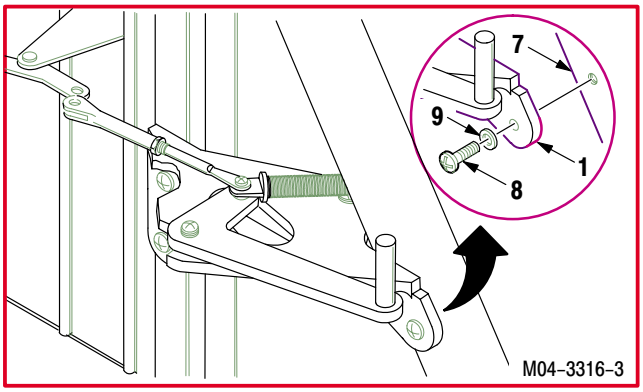
f. **Check handle for loose or missing hardware.** None allowed.

2.50.6. Installation

a. **Install handle (1) on airframe (7).**

(1) Aline handle (1) with airframe (7) mounting holes.

(2) Install three screws (8) and washers (9).

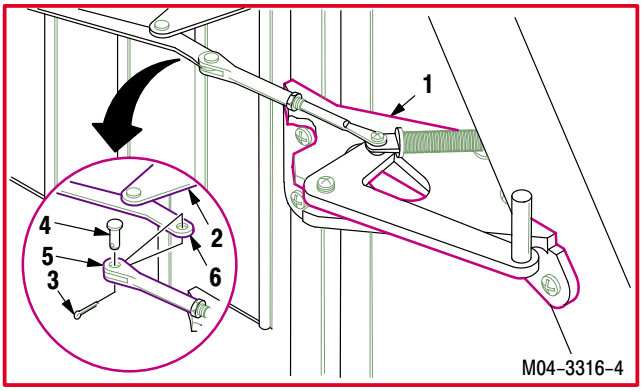


b. **Install handle (1) on vent (2).**

(1) With vent (2) closed, adjust clevis (5) to aline mounting holes in clevis (5) and connecting rod (6).

(2) Install pin (4) through mounting hole in clevis (5) and connecting rod (6).

(3) Install new cotter pin (3) in pin (4).



c. **Inspect (QA).**

END OF TASK

2.51. PILOT/CPG STATION ACCESS DOOR CANOPY PAWL FASTENER REMOVAL/INSTALLATION

2.51.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.51.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
7/8 x 3/8-inch drive open end socket wrench crowfoot attachment (item 100, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Materials/Parts:

Sealing compound primer (item 146, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

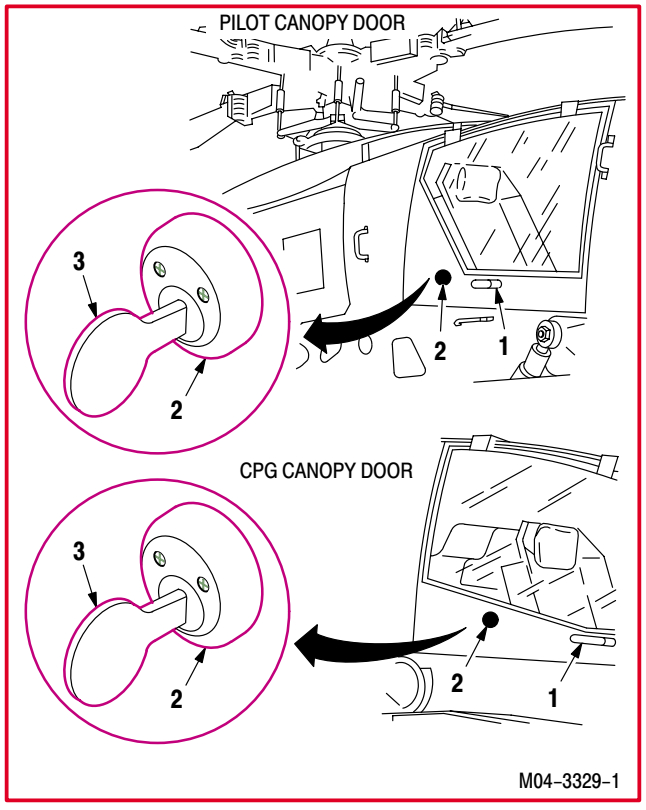
- Before installing a new pawl fastener it must be re-keyed, by an approved locksmith, to the aircraft code carried in the aircraft DA form 2408-15.
- The following task is typical for pilot and/or CPG door canopy pawl fasteners except where noted.
- Pilot and CPG door canopy pawl fastener and door handle locations differ.

2.51.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

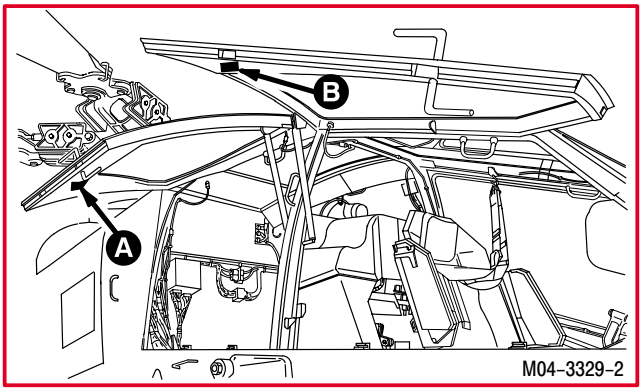
b. **Verify canopy access door handle (1) is set to the closed position.**

c. **Set canopy installation pawl fastener (2) to lock position using door key (3).**



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2.51. PILOT/CPG STATION ACCESS DOOR CANOPY PAWL FASTENER REMOVAL/INSTALLATION – continued



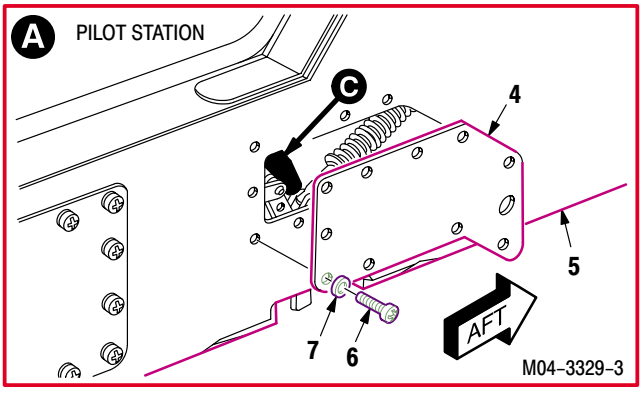
NOTE

Perform step d for pilot door canopy pawl fastener removal. Perform step e for CPG door canopy pawl fastener removal.

d. **Remove access cover (4) from pilot station access door (5).**

(1) Remove 10 screws (6) and washers (7).

(2) Remove cover (4) from door (5).



e. **Remove access cover (8) from CPG station access door (9).**

(1) Remove 13 screws (10) and washers (11).

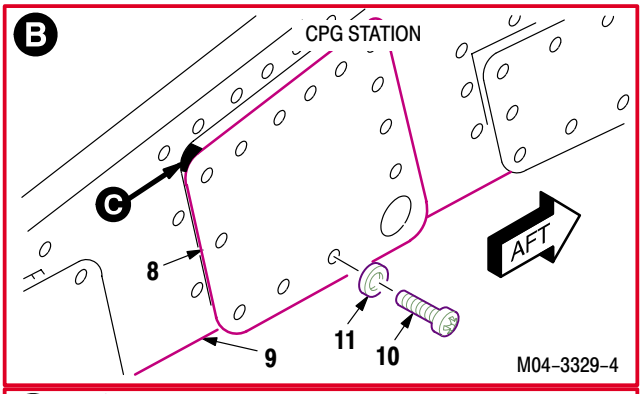
(2) Remove cover (8) from door (9).

f. **Remove fastener (2) from door doubler (12).**

(1) Remove two screws (13), cam plate (14), and lock lever (15).

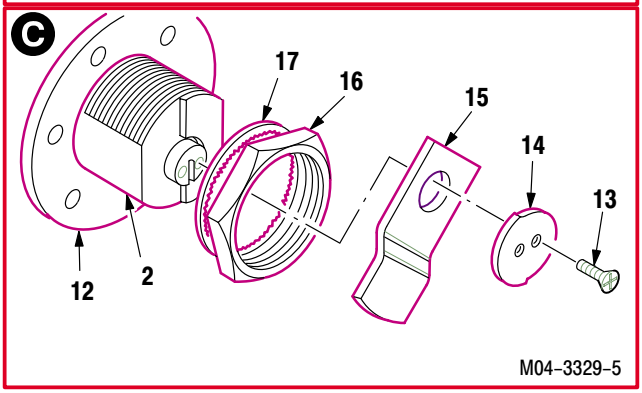
(2) Remove nut (16) and lockwasher (17). Use crowfoot.

(3) Remove fastener (2) from doubler (12).



2.51.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**



2.51.5. Inspection

a. **Check mounting surface for dents, cuts, cracks, and corrosion** (para 2.12)**.**

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2.51. PILOT/CPG STATION ACCESS DOOR CANOPY PAWL FASTENER REMOVAL/INSTALLATION – continued

2.51.6. Installation



NOTE

- Before installing a new pawl fastener it must be re-keyed, by an approved locksmith, to the aircraft code carried in the aircraft DA form 2408-15.
- Lock alinement key must face up for proper lock operation.

a. **Install fastener (2) on doubler (12).** Torque nut (16) to **25 INCH-POUNDS**.

(1) Install fastener (2), lockwasher (17), and nut (16).

(2) Torque nut (16) to **25 INCH-POUNDS**. Use crowfoot and torque wrench.

NOTE

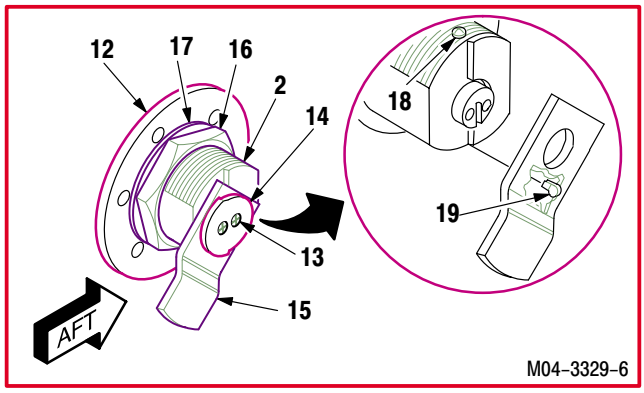
To prevent improper pawl fastener operation, aline lock lever with raised half of lever angled down and index key against lower raised section of pawl fastener.

(3) Install lever (15) angled down and index tab (18) against lower raised section of fastener (2).

(4) Install plate (14) with smaller radius facing aft.

(5) Apply primer to threads of two screws (13). Use sealing compound primer (item 146, App F).

(6) Install two screws (13).



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2.51. PILOT/CPG STATION ACCESS DOOR CANOPY PAWL FASTENER REMOVAL/INSTALLATION – continued

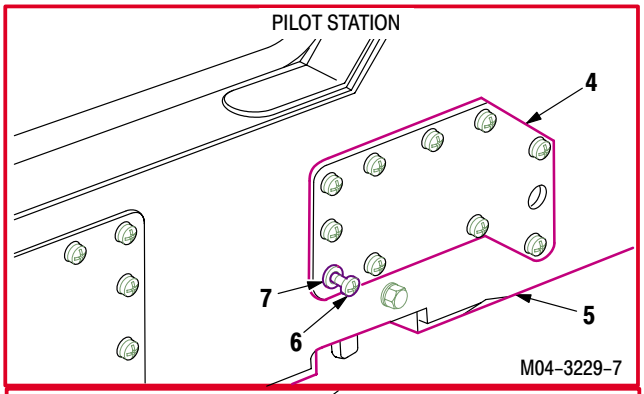
NOTE

Perform step b to install pilot door canopy pawl fastener installation. Perform step c to install CPG door canopy pawl fastener.

b. **Install cover (4) on door (5).**

(1) Aline cover (4) with door (5) mounting holes.

(2) Install 10 screws (6) and washers (7).

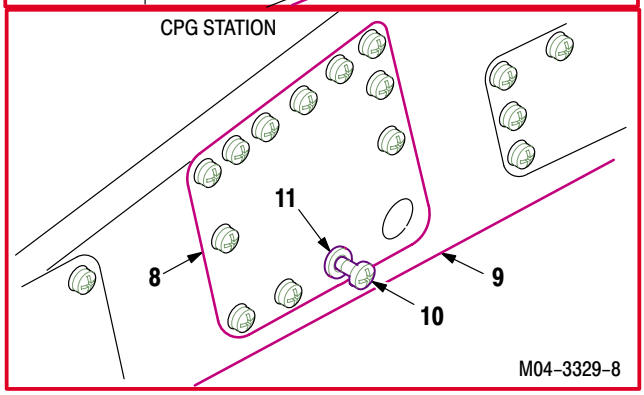


c. **Install cover (8) on door (9).**

(1) Aline cover (8) with door (9) mounting holes.

(2) Install 13 screws (10) and washers (11).

d. **Inspect (QA).**



END OF TASK

2.52. CANOPY TRANSPARENT PANEL ASSEMBLY SEAL REPLACEMENT

2.52.1. Description

This task covers: Removal. Installation.

2.52.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
2-inch wide hand roller (item 270, App H)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Adhesive (item 14, App F)
Brush (item 34, App F)
Cloth (item 52, App F)
Epoxy primer coating kit (item 78, App F)
Naphtha (item 127, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.52.3. Removal

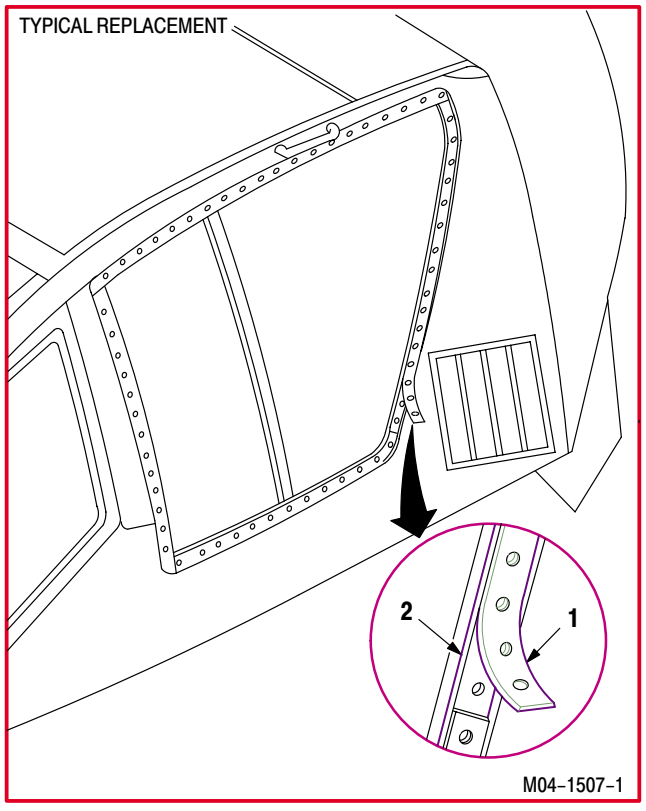


a. **Remove seal (1) from airframe (2).**

(1) Remove and discard as much of old seal (1) as possible from airframe (2).

(2) Clean residue remaining on sealing surface of airframe (2). Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

(3) Protect cleaned airframe (2) surfaces from contamination until new seal (1) is installed.



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2.52. CANOPY TRANSPARENT PANEL ASSEMBLY SEAL REPLACEMENT – continued

2.52.4. Installation



NOTE

Canopy transparent panel seals are sectional and consist of four, five, or six sections depending upon application.

a. **Install new seal (1) on airframe (2).**

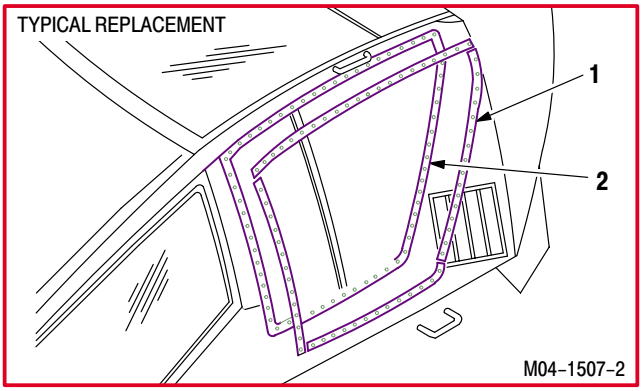
(1) Apply a thin, even coat of primer to sealing surfaces of airframe (2) and allow to dry. Use epoxy primer coating kit (item 78, App F).

(2) Apply adhesive to mating surfaces of seal (1) and airframe (2). Spread sealant to uniform thickness of **0.015 INCH**. Work out bubbles. Use adhesive (item 14, App F) and brush (item 34, App F).

(3) Position seal (1) in airframe (2) cavity with all holes and cutouts alined. Apply firm uniform pressure. Do not shift sealed surfaces.

(4) Clean excess adhesive around joints and seams. Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

(5) Do not move joined components for **1 HOUR** after applying adhesive (or until adhesive is tack-free to the touch).



b. **Inspect (QA).**

END OF TASK

2.53. CPG DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION

2.53.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.53.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
8-ounce hand sealant gun (item 160, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Adhesive (item 14, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Sealing compound (item 176, App F)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.54	CPG station access door removed

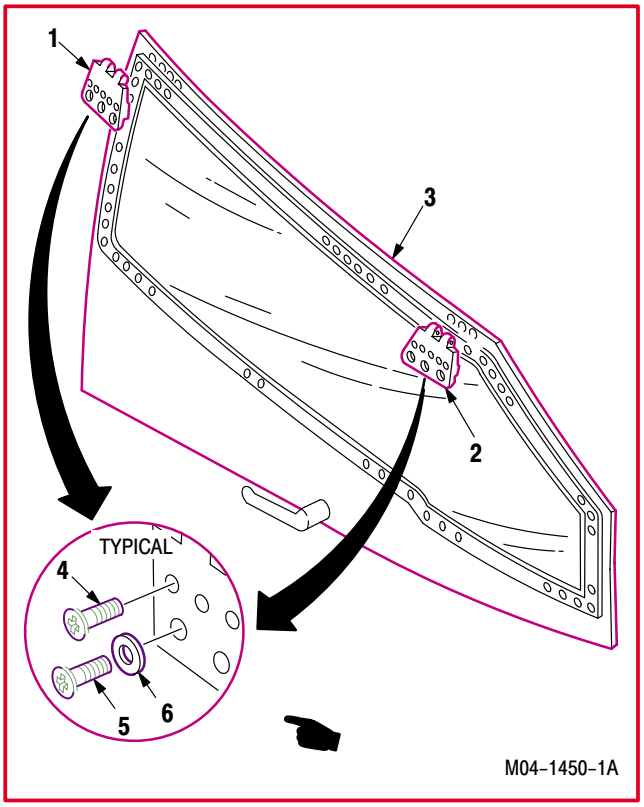
2.53.3. Removal

a. **Remove hinge butts (1) and (2) from door (3).**

(1) Remove 10 screws (4) from hinge butts (1) and (2).

(2) Remove six screws (5) and washers (6) from hinge butts (1) and (2).

(3) Remove hinge butts (1) and (2) from door (3).



GO TO NEXT PAGE

2.53. CPG DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

WARNING

Fixed canopy is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

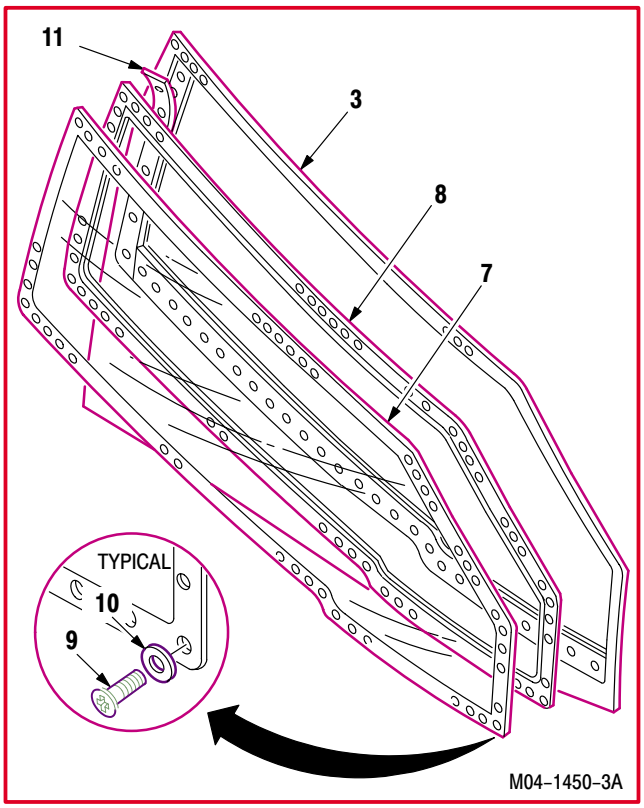
b. **Remove windshield panel (7) and fixed canopy (8) from door (3).**

(1) Remove 68 screws (9) and washers (10) from door (3).

(2) Remove panel (7) and canopy (8) from door (3).

(3) Remove canopy (8) from panel (7).

c. **Remove six sections of rubber special seal (11) from door (3).**



2.53.4. Cleaning

a. **Clean adhesive residue from door** (para 1.47)**.**

b. **Wipe door and fixed canopy with a clean rag.**

c. **Clean protective latex coating from replacement panel if it does not peel off cleanly.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

GO TO NEXT PAGE

2.53. CPG DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

2.53.5. Inspection

a. **Check door and fixed canopy for cracks and wear** (para 2.11)**.**

b. **Check door for corrosion** (para 1.49)**.**

c. **Check door for damaged screw holes** (TM 1-1500-204-23)**.**

d. **Check for discrepant screws.**

(1) 25 percent of screws may be discrepant if scattered randomly. Maximum of three consecutive bad screws allowed.

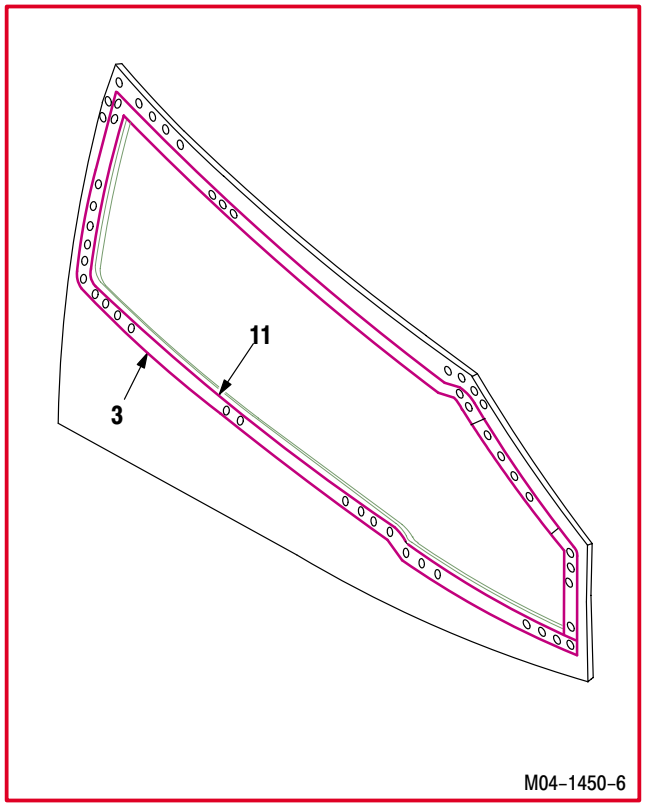
e. **Check for loose or damaged nutplates.** Replace if found (TM 1-1500-204-23).

2.53.6. Installation



a. **Apply a 0.125 INCH bead of adhesive around door (3) cavity.** Use adhesive (item 14, App F).

b. **Install six sections of seal (11) in door (3) cavity** (para 2.52)**.**



GO TO NEXT PAGE

2.53. CPG DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

WARNING

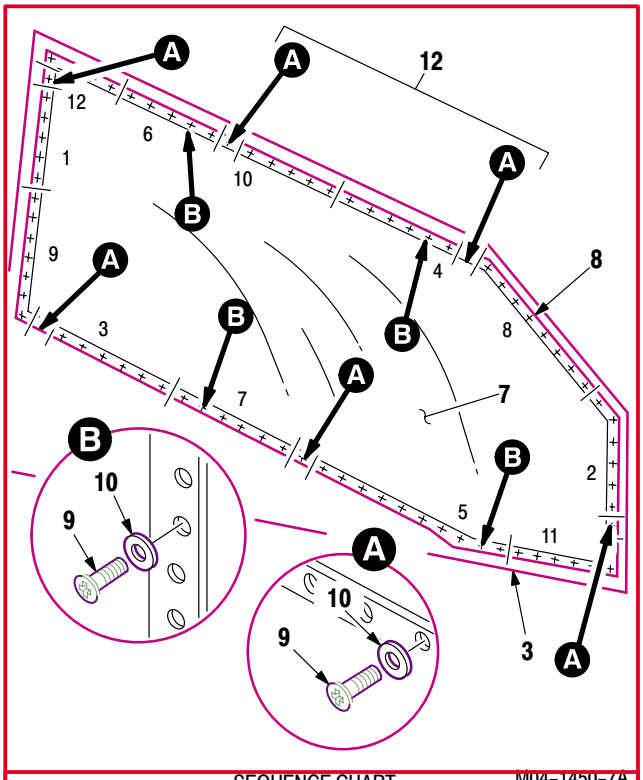
Fixed canopy is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

c. **Install canopy (8) and panel (7) on door (3).**

(1) Position panel assembly (12) in door (3) cavity.

(2) Install six screws (9) and washers (10) in locations shown in illustration. Do not tighten.

(3) Install 62 screws (9) and washers (10) in group sequence shown in illustration. Do not tighten.



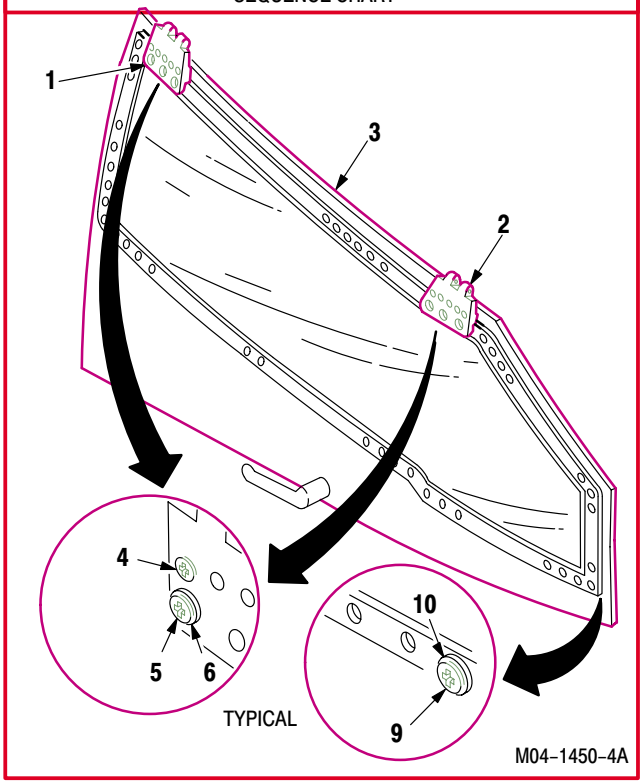
d. **Install hinge butts (1) and (2) on door (3).**

(1) Aline hinge butts (1) and (2) with door (3) mounting holes.

(2) Apply sealant to threads of 10 screws (4) and six screws (5). Use sealing compound (item 176, App F).

(3) Install 10 screws (4). Do not tighten.

(4) Install six screws (5) and washers (6). Do not tighten.



GO TO NEXT PAGE

2.53. CPG DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

e. **Tighten six screws (9) in sequence A, B, C, D, E, and F shown in illustration, until screws are snug against washers (10).**

f. **Tighten 62 screws (9) in group sequence shown in illustration, until screws are snug against washers (10).**

g. **Torque six screws (9) to 5 INCH-POUNDS in sequence A, B, C, D, E, and F shown in illustration.** Use torque wrench.

NOTE

Torque sequence groups 4 and 12 require different torques in each group.

h. **Torque 62 screws (9) to 5 INCH-POUNDS and six screws (5) to 15 INCH-POUNDS in group sequence shown in illustration.** Use torque wrench.

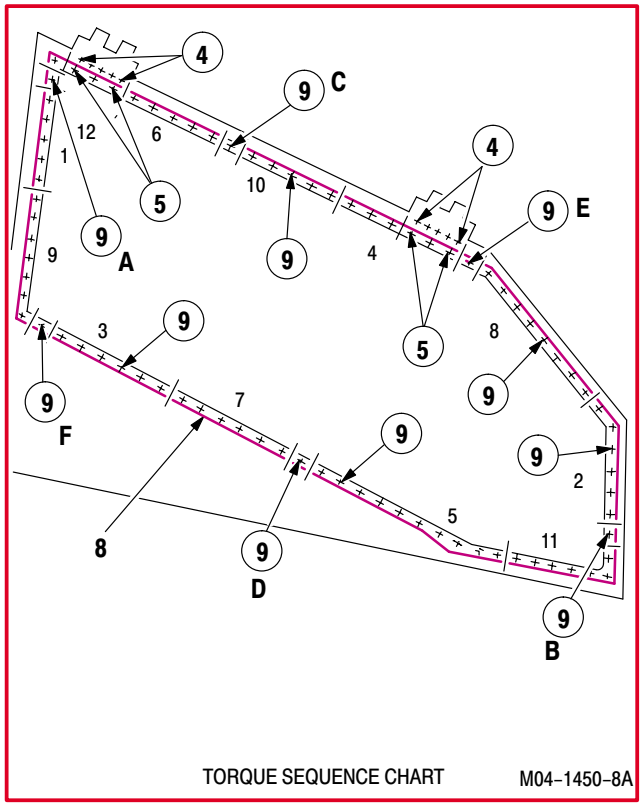
i. **Torque 10 screws (4) to 20 INCH-POUNDS.** Use torque wrench.



j. **Seal around panel (7).** Use sealing compound (item 176, App F) and sealant gun.

k. **Inspect (QA).**

l. **Install CPG station access door** (para 2.54)**.**



END OF TASK

2.54. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION

2.54.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.54.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Personnel Required:

68G Aircraft Structural Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Cotter pin (2)
Packing
Cloth (item 52, App F)
Petrolatum (item 138, App F)
Tape (item 201, App F)
Tape (item 203, App F)
Wire (item 225, App F)

Equipment Conditions:

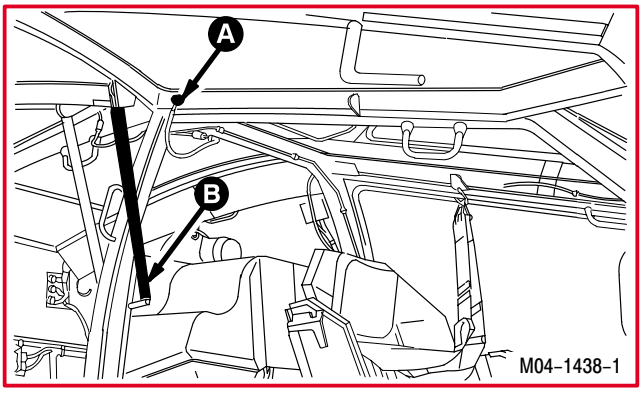
Ref	Condition
1.57	Helicopter safed

NOTE

Position one person to support access door during removal/installation.

2.54.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



GO TO NEXT PAGE

2.54. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

Remove detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

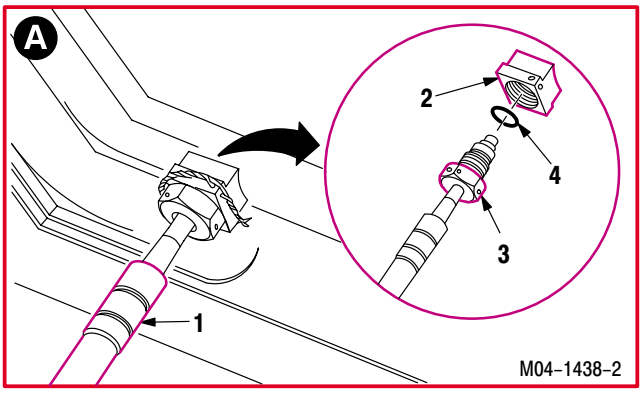
b. **Remove detonating cord (1) from severance device (2).**

(1) Remove lockwire from severance device (2) and nipple (3).

(2) Hold severance device (2). Remove nipple (3).

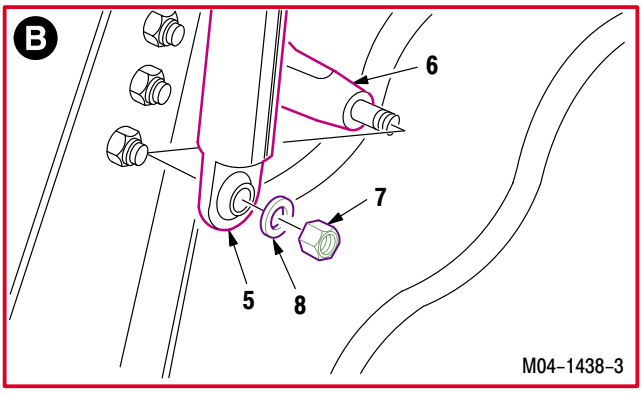
(3) Remove and discard packing (4) from nipple (3).

(4) Cover severance device (2) and nipple (3). Use cloth (item 52, App F) and tape (item 203, App F).



c. **Remove door cylinder assembly (5) from rod anchor (6).**

(1) Remove nut (7) and washer (8). Secure cylinder (5). Use tape (item 201, App F).



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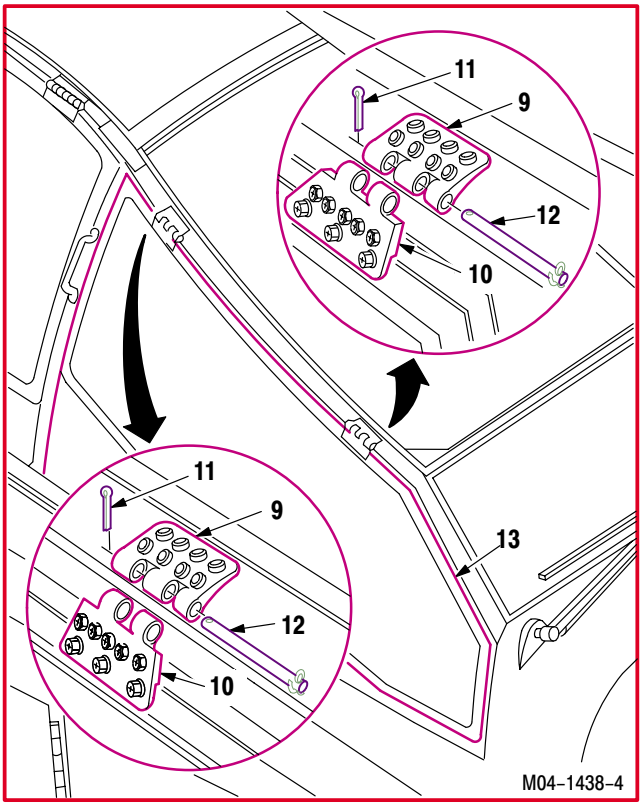
2.54. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

d. **Separate hinge halves (9) and (10).**

(1) Remove and discard two cotter pins (11).

(2) Remove two hinge pins (12) from hinge halves (9) and (10).

e. **Remove CPG access door (13).**



2.54.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

b. **Clean severance device and nipple** (para 1.47)**.**

2.54.5. Inspection

a. **Check cord for damage.** Any break in cord requires replacement.

b. **Check door for cracks, dents, or scratches** (para 2.11)**.**

c. **Check severance device and nipple for damaged threads.** None allowed.

d. **Check frame for cracks and corrosion** (para 2.12)**.**

GO TO NEXT PAGE

2.54. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

2.54.6. Installation

a. **Position door (13) in access opening.**

(1) Install two hinge pins (12) in hinge halves (9) and (10).

NOTE

- If installing original door, perform step i.
- If installing replacement door, perform step b.
- If interference contact between hinge halves exists, perform step d.

b. **Secure door cylinder assembly** (para 2.59)**.**

c. **Loosen lower hinge bolts (14) to allow movement of door (13).**

d. **If required, relieve interference between hinge halves and bow beam** (para 2.59)**.**

e. **Position door (13) to float on rubber seal in opening.** Remove any contact between door (13) bumper and airframe bumper (para 2.59).

NOTE

Minimum gap between door skin and airframe is **0.030 INCH**.

f. **If required, trim door skin to obtain acceptable gap.**

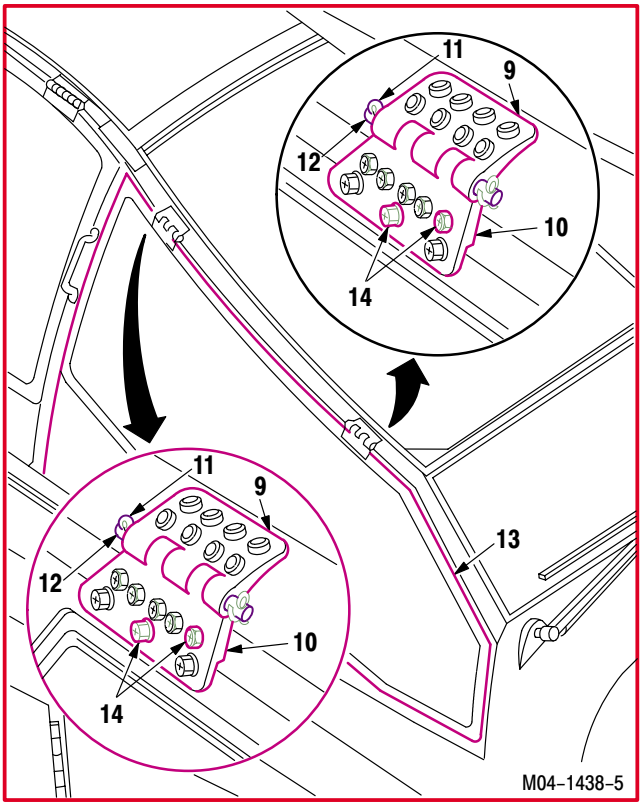
NOTE

Lower hinge bolts must be removed, cleaned, and new sealant applied before installation.

g. **Install lower hinge bolts** (para 2.58)**.**

h. **Release door cylinder assembly** (para 2.59)**.**

i. **Install two new cotter pins (11).**

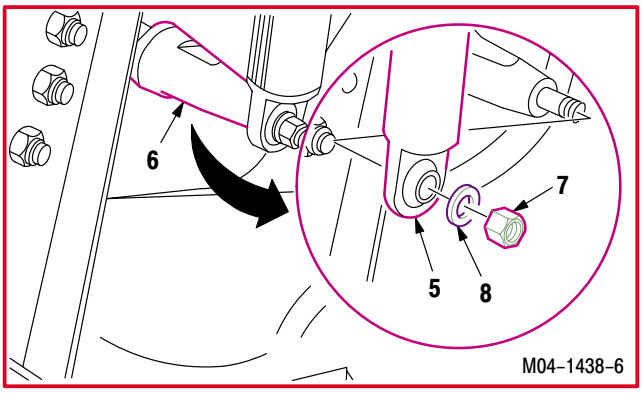


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2.54. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

j. **Install cylinder (5) on anchor (6).**

(1) Install washer (8) and nut (7).





WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

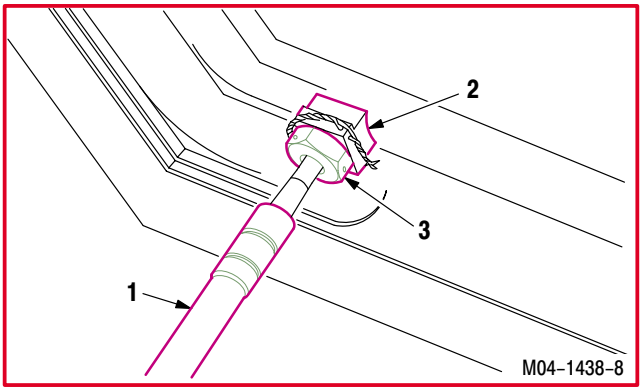
Install detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

k. **Install cord (1) on severance device (2).** Torque nipple (3) to **80 INCH-POUNDS**.

(1) Lubricate new packing (4). Use petrolatum (item 138, App F).

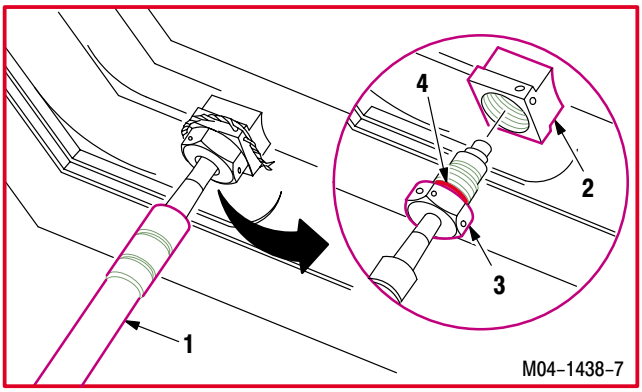
(2) Install packing (4) on nipple (3).

(3) Install nipple (3) on severance device (2).



(4) Hold severance device (2). Torque nipple (3) to **80 INCH-POUNDS**. Use torque wrench.

(5) Lockwire nipple (3) to severance device (2). Use wire (item 225, App F).



l. **Inspect (QA).**

END OF TASK

2.55. CPG STATION ACCESS DOOR ADJUSTMENT

2.55.1. Description

This task covers: Adjustment.

2.55.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

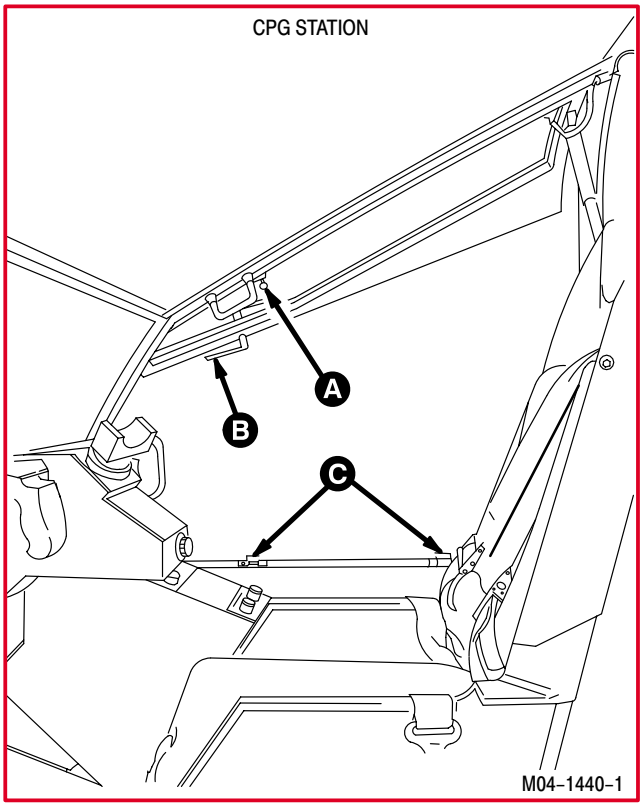
TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.55.3. Adjustment

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



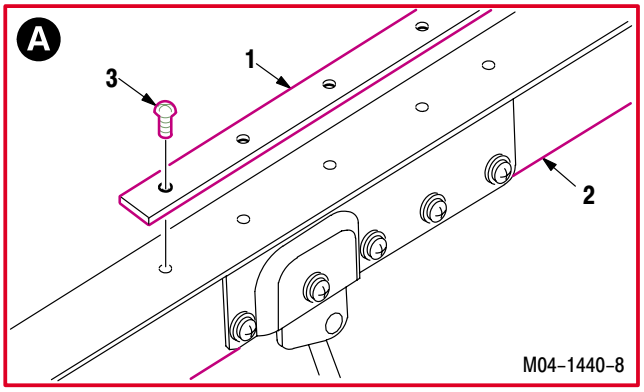
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2.55. CPG STATION ACCESS DOOR ADJUSTMENT – continued

b. **Remove retainer seal (1) from CPG station access door (2).**

(1) Remove five screws (3) from retainer (1).

(2) Remove retainer (1) from door (2).



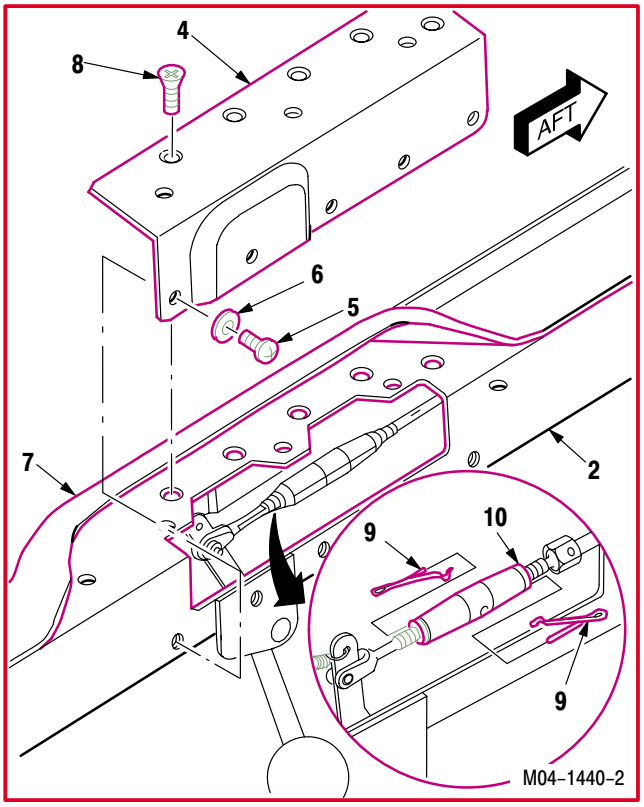
c. **Remove cover (4) from door (2).**

(1) Remove five screws (5) and washers (6) from cover (4).

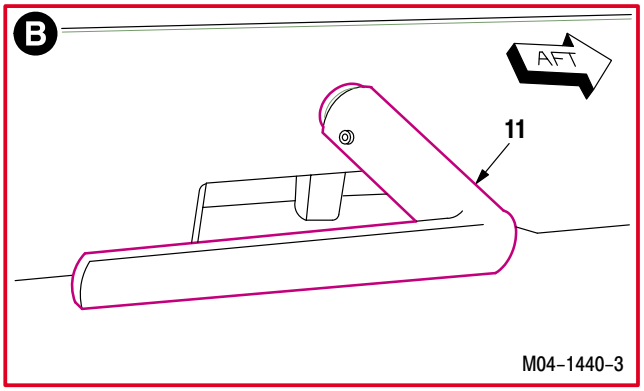
(2) Hold rubber seal (7) back. Remove five screws (8) from cover (4).

(3) Remove cover (4) from door (2).

d. **Remove two retaining clips (9) from turnbuckle body (10).**



e. **Place door handle (11) in full closed and locked position.**

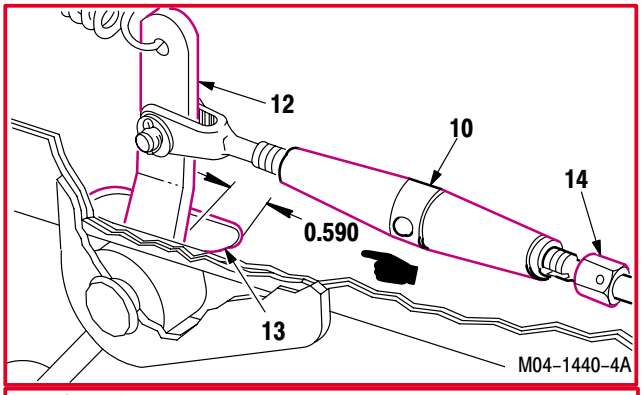


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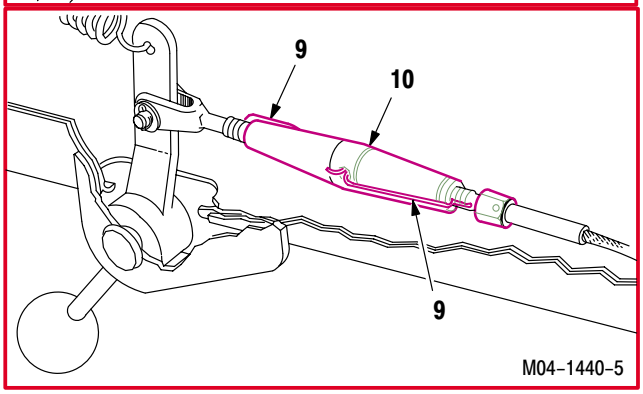
2.55. CPG STATION ACCESS DOOR ADJUSTMENT – continued

f. **Adjust canopy release lever (12) to 0.590 INCH from fwd stop (13).**

(1) Hold cable (14). Rotate turnbuckle (10) until lever (12) is **0.590 INCH** from fwd stop (13).



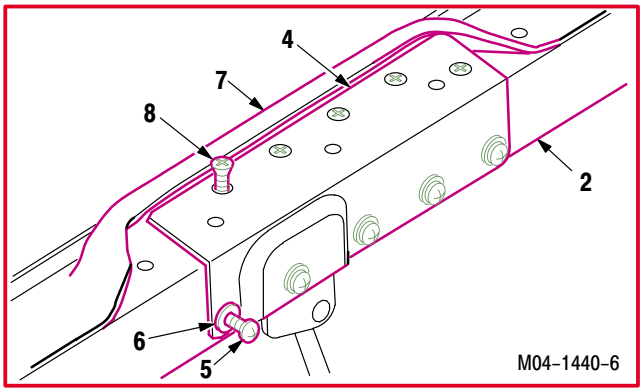
g. **Install two clips (9) in turnbuckle (10).**



h. **Install cover (4) on door (2).**

(1) Hold seal (7) back. Install five screws (8) on cover (4).

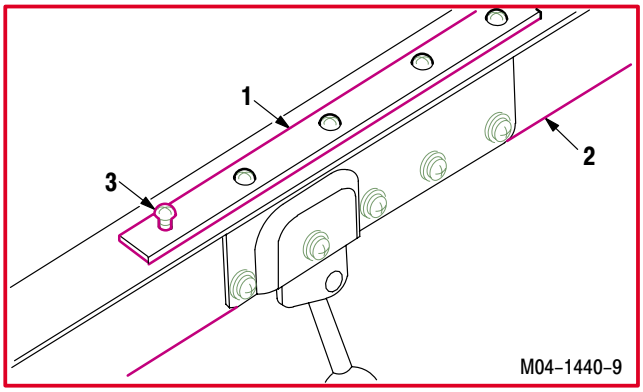
(2) Install five screws (5) and washers (6) on cover (4).



i. **Install retainer (1) on door (2).**

(1) Position retainer (1) on door (2).

(2) Install five screws (3) on retainer (1).



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2.55. CPG STATION ACCESS DOOR ADJUSTMENT – continued

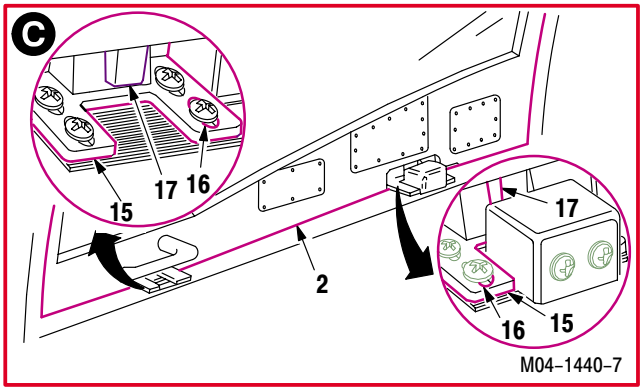
j. **Adjust two door catch strikers (15).**

(1) Loosen eight screws (16) on two strikers (15).

(2) Hold door (2) closed. Position two strikers (15) against door locking bars (17).

k. **Inspect (QA).**

l. **Perform pilot caution and warning system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM)

2.56.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.56.2. Initial Setup

Tools:

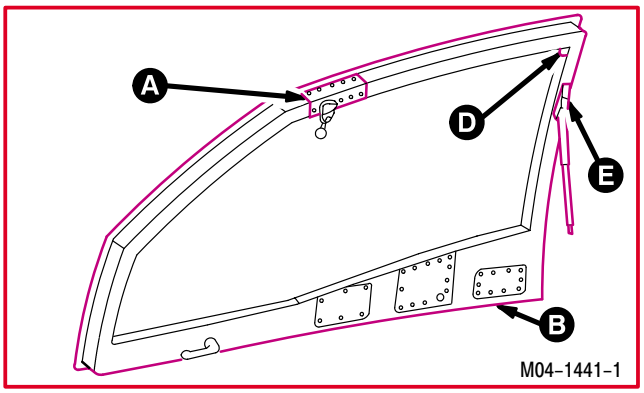
Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
1/4 x 1 7/16 dowel (item 109, App H)
3/16 x 5/16 dowel (item 111, App H)
0.002 - 0.040-inch gap setting gage (item 147, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
Retention tool (figure D-447, App D)

Materials/Parts:

Cotter pin (10)
Spring pin (2)
Lubricant (item 116, App F)
Sealing compound (item 169, App F)
Wire (item 228, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

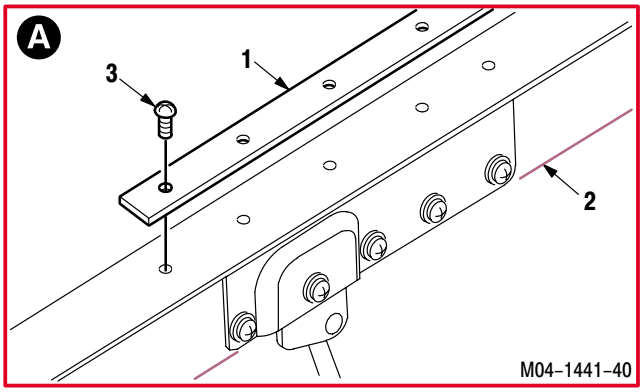


2.56.3. Removal

a. **Remove seal retainer (1) from CPG station access door (2).**

(1) Remove five screws (3) from retainer (1).

(2) Remove retainer (1) from door (2).



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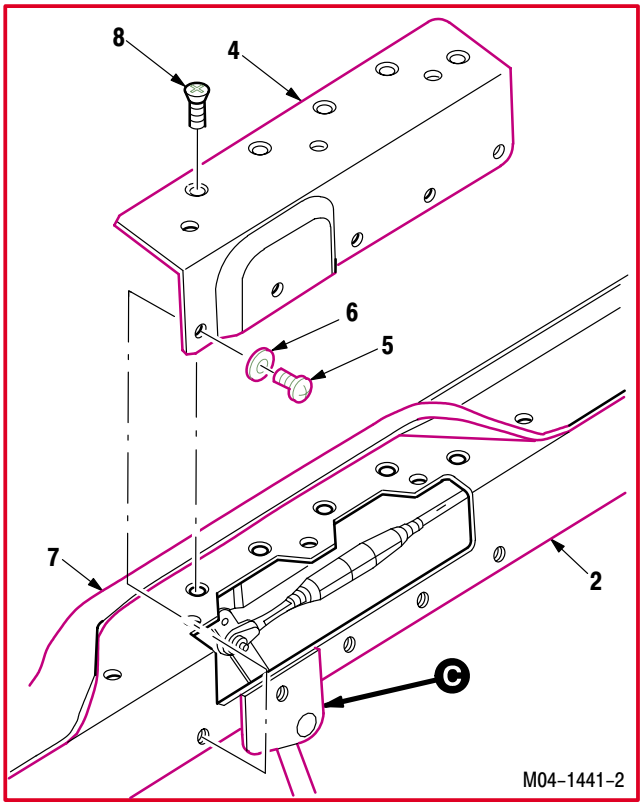
2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

b. **Remove cover (4) from door (2).**

(1) Remove five screws (5) and washers (6) from cover (4).

(2) Hold rubber seal (7) back. Remove five screws (8) from cover (4).

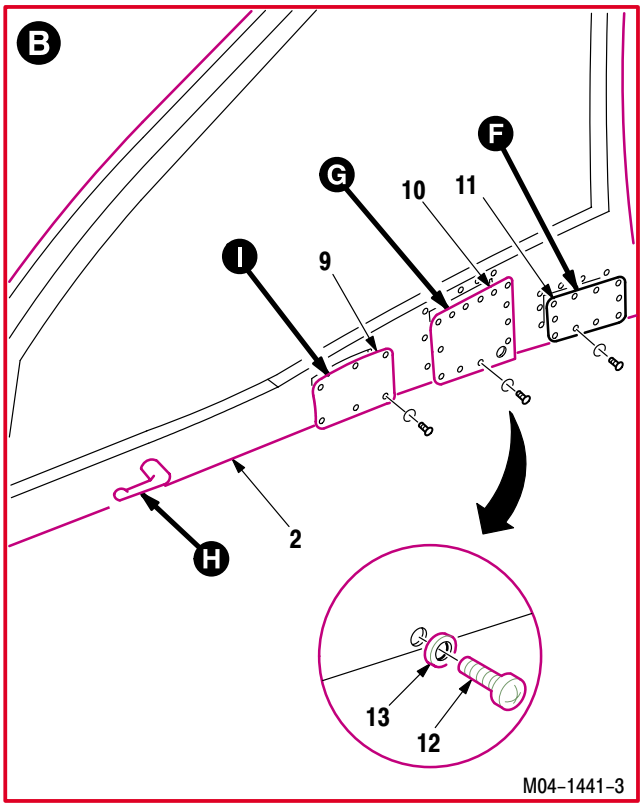
(3) Remove cover (4) from door (2).



c. **Remove three covers (9), (10), and (11) from door (2).**

(1) Remove 29 screws (12) and washers (13) from covers (9), (10), and (11).

(2) Remove covers (9), (10), and (11) from door (2).



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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

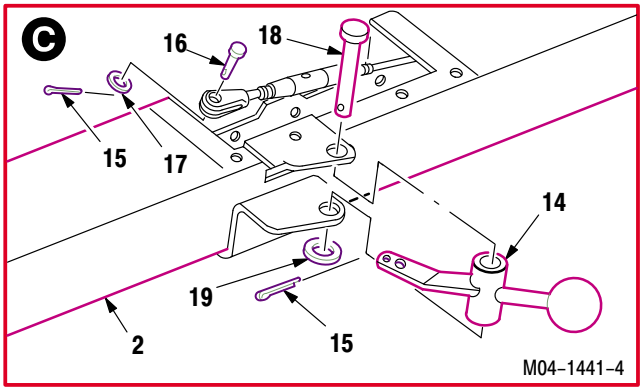
d. **Remove canopy release lever (14) from door (2).**

(1) Remove and discard two cotter pins (15).

(2) Remove straight headed pin (16) and washer (17) from lever (14).

(3) Remove straight headed pin (18) and washer (19) from lever (14).

(4) Remove lever (14) from door (2).

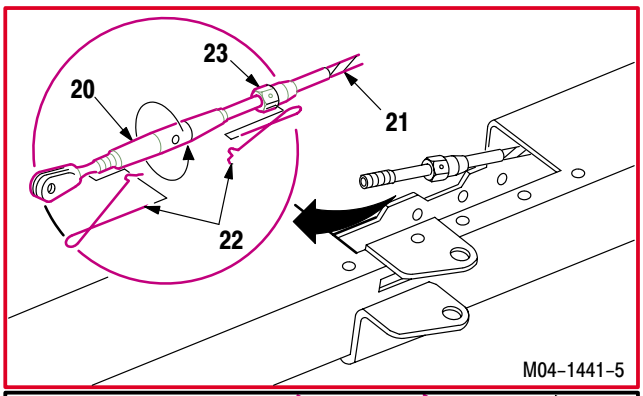


e. **Remove turnbuckle body (20) from cable (21).**

(1) Remove two locking clips (22) from turnbuckle (20).

(2) Hold cable (21) on flats (23). Rotate turnbuckle (20) counterclockwise.

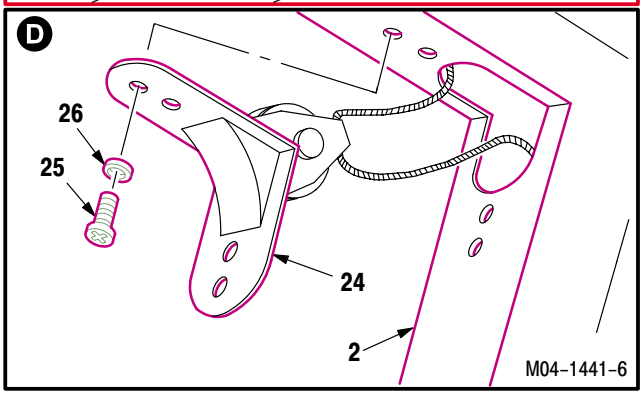
(3) Remove turnbuckle (20) from cable (21).



f. **Remove bracket (24) from door (2).**

(1) Remove four screws (25) and washers (26) from bracket (24).

(2) Remove bracket (24) from door (2).



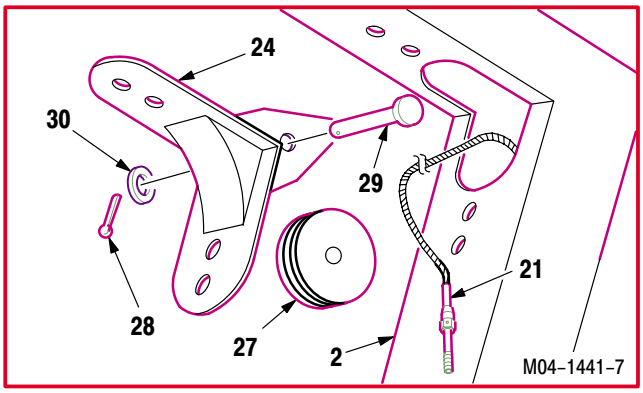
g. **Remove groove pulley (27) from bracket (24).**

(1) Remove and discard cotter pin (28).

(2) Remove straight headed pin (29) and washer (30) from bracket (24).

(3) Remove pulley (27) from bracket (24).

(4) Pull cable (21) through door (2) free of bracket (24).



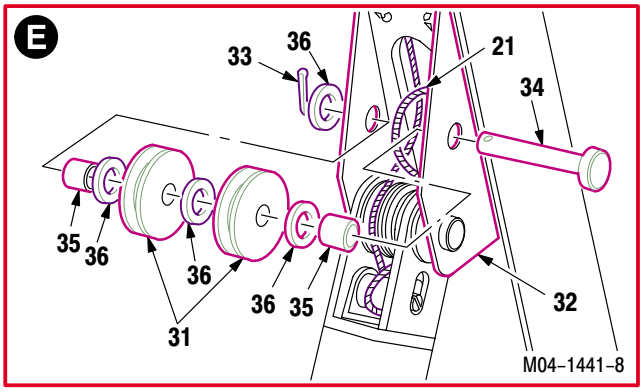
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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

h. **Remove two groove pulleys (31) from bracket (32).**

(1) Remove and discard cotter pin (33).

(2) Remove straight headed pin (34), two pulleys (31), sleeve bushings (35), four washers (36), and cable (21) from bracket (32).

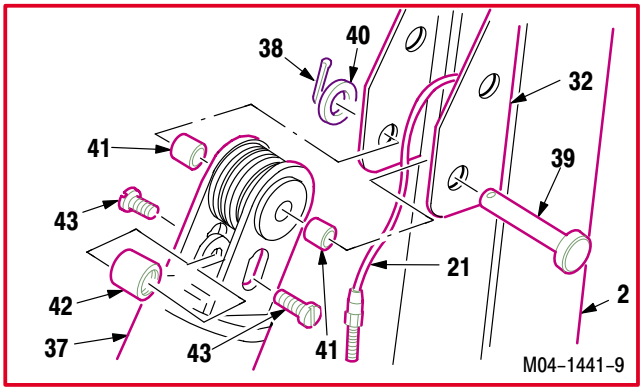


i. **Remove cylinder assembly (37) from bracket (32).**

(1) Remove and discard cotter pin (38).

(2) Remove straight headed pin (39), washer (40), and two sleeve bushings (41) from bracket (32).

(3) Remove cylinder (37) from bracket (32).

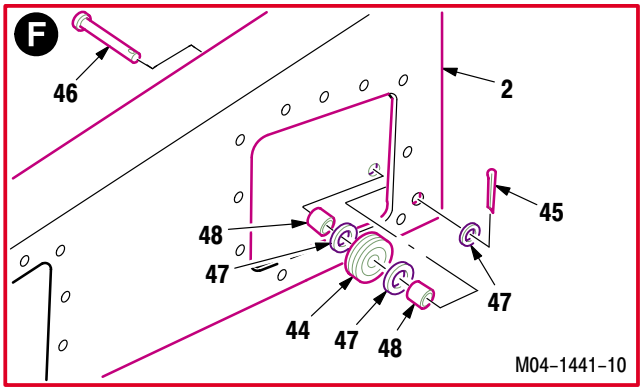


j. **Remove door strut pulley (42) and cable (21) from cylinder (37).**

(1) Remove two screws (43) from cylinder (37).

(2) Remove strut pulley (42) from cylinder (37) and cable (21).

(3) Pull cable (21) through door (2) and free from cylinder (37).

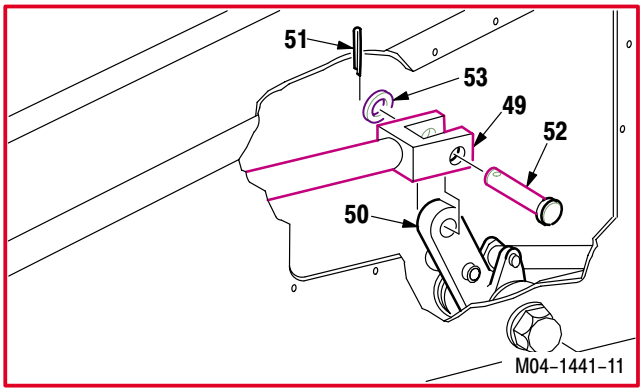


k. **Remove pulley (44) from door (2).**

(1) Remove and discard cotter pin (45).

(2) Remove straight headed pin (46), three washers (47), and two sleeve bushings (48) from pulley (44).

(3) Remove pulley (44) from door (2).



l. **Remove connecting link (49) from aft locking bar (50).**

(1) Remove and discard cotter pin (51).

(2) Remove straight headed pin (52) and washer (53) from link (49) and bar (50).

GO TO NEXT PAGE

2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

m. **Remove bar (50) from door (2).**

(1) Install retention tool on bar mechanism (54).

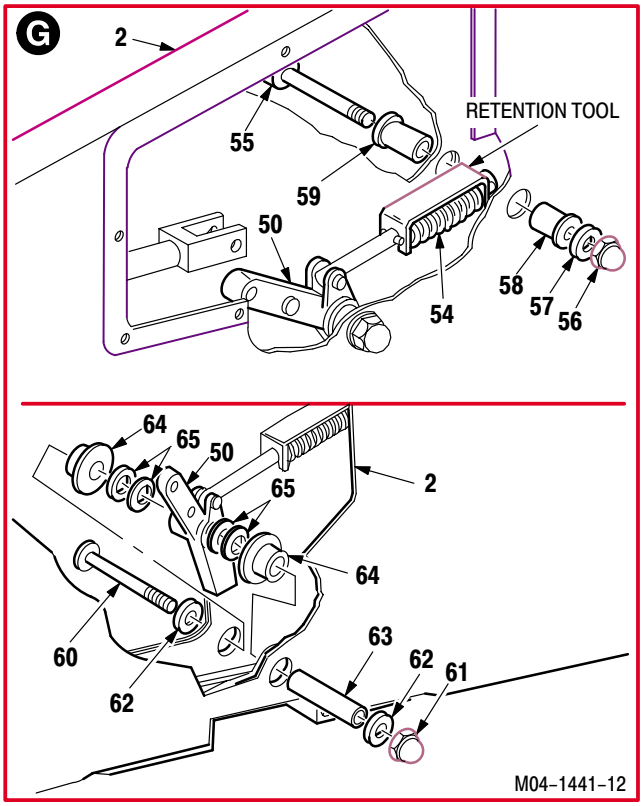
(2) Hold clevis bolt (55). Remove self-locking cap nut (56), washer (57), and sleeve bushing (58) from bar mechanism (54).

(3) Remove bolt (55) and sleeve bushing (59) from bar mechanism (54).

(4) Hold bolt (60). Remove self-locking cap nut (61).

(5) Remove bolt (60), two washers (62), sleeve bushing (63), two sleeve bushings (64), and four washers (65).

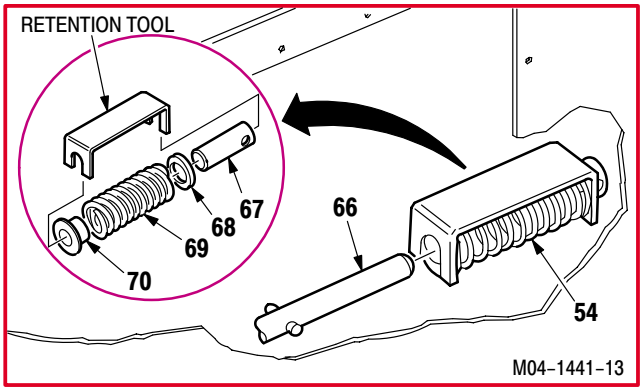
(6) Remove bar (50) from door (2).



n. **Remove aft locking bar mechanism (54) from locking bar (66).**

(1) Remove retainer (67), washer (68), helical spring (69), and spring keeper (70) from bar mechanism (54). Use retention tool.

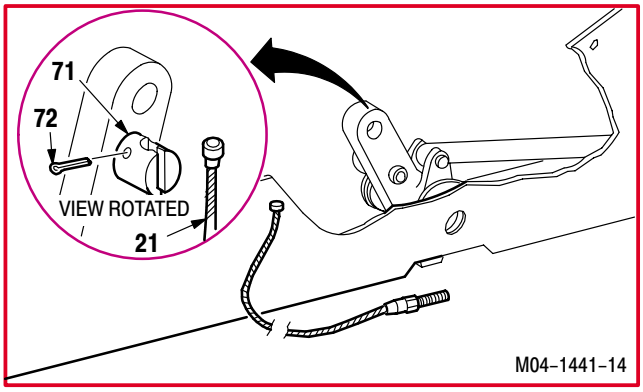
(2) Remove bar mechanism (54) from bar (66).



o. **Remove cable (21) from cable end adapter (71).**

(1) Remove and discard cotter pin (72).

(2) Remove cable (21) from adapter (71).



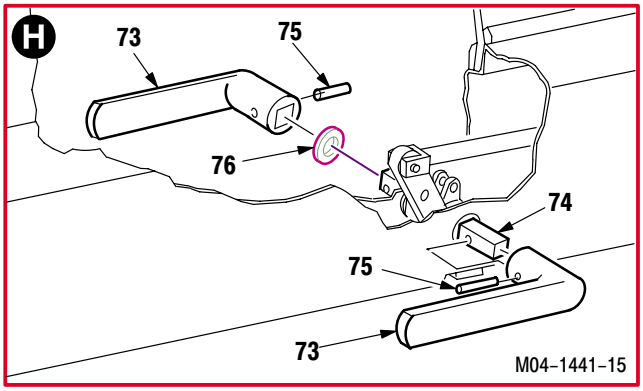
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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

p. **Remove two door handles (73) from shaft (74).**

(1) Remove and discard two spring pins (75).

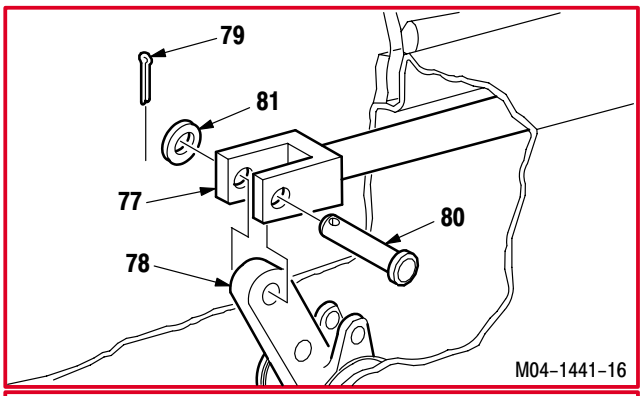
(2) Remove two handles (73) and washer (76) (outboard handle only) from shaft (74).



q. **Remove connecting link (77) from forward locking bar (78).**

(1) Remove and discard cotter pin (79).

(2) Remove straight headed pin (80) and washer (81) from link (77) and bar (78).

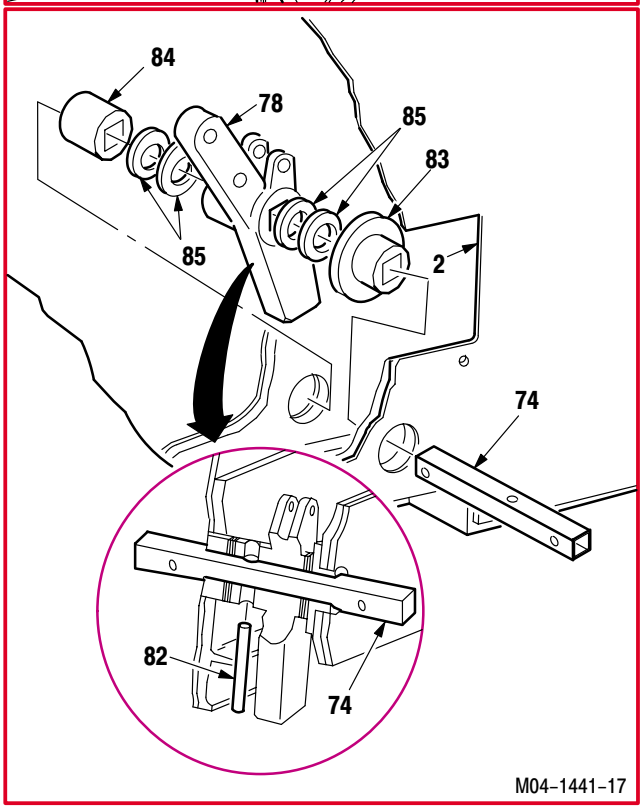


r. **Remove bar (78) from door (2).**

(1) Remove spring pin (82) from handle shaft (74).

(2) Remove shaft (74), sleeve bushings (83) and (84), and four washers (85).

(3) Remove bar (78) from door (2).



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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

s. **Remove links (49) and (77) from door (2).**

2.56.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

2.56.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check removed and attaching parts for cracks.** None allowed.

c. **Check door for cracks and corrosion** (para 2.11)**.**

2.56.6. Installation



a. **Lubricate removed parts.** Use lubricant (item 116, App F).

b. **Install links (49) and (77) as one unit in push rod guide (86).**

(1) Aline clevis ends (87) and (88).

c. **Install locking bar (78) in door (2).**

NOTE

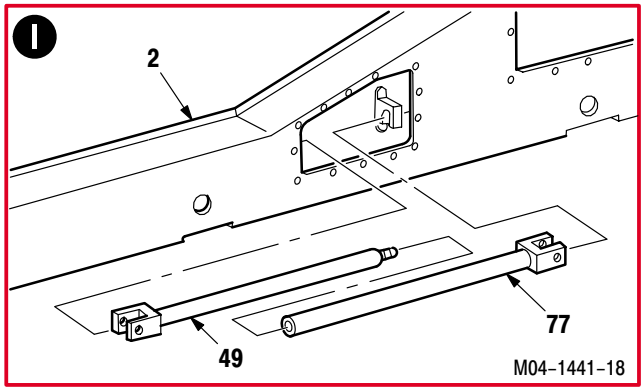
Install required amount of washers to achieve **0.002 to 0.020 INCH** gap between bushing (84) and washer (85).

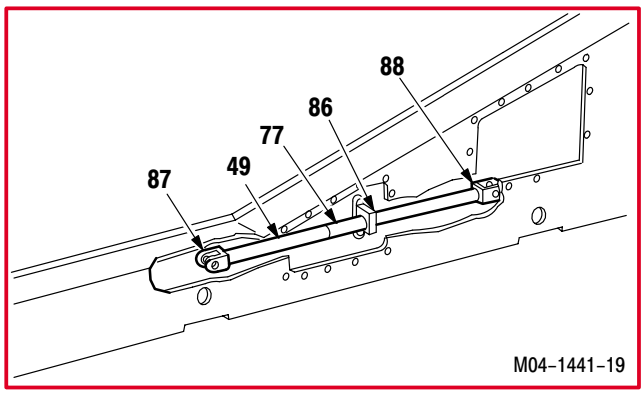
(1) Install shaft (74) through door (2), bushing (83), washers (85), bar (78), washers (85), bushing (84), and door (2).

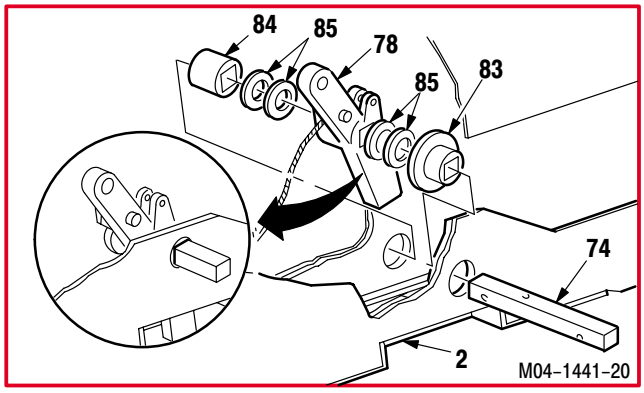
(2) Aline hole (89) in shaft (74) with hole (90) in bar (78).

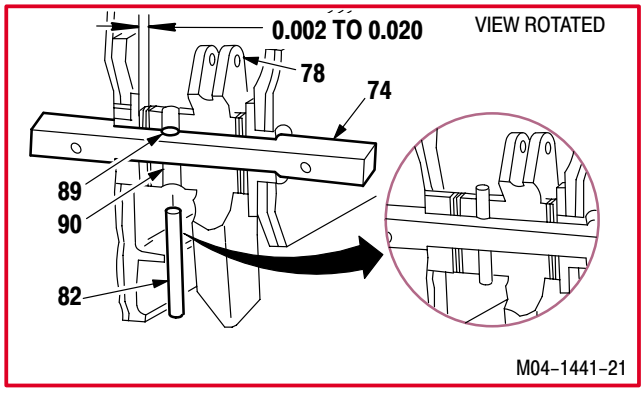
(3) Install pin (82) through alined holes (89) and (90).

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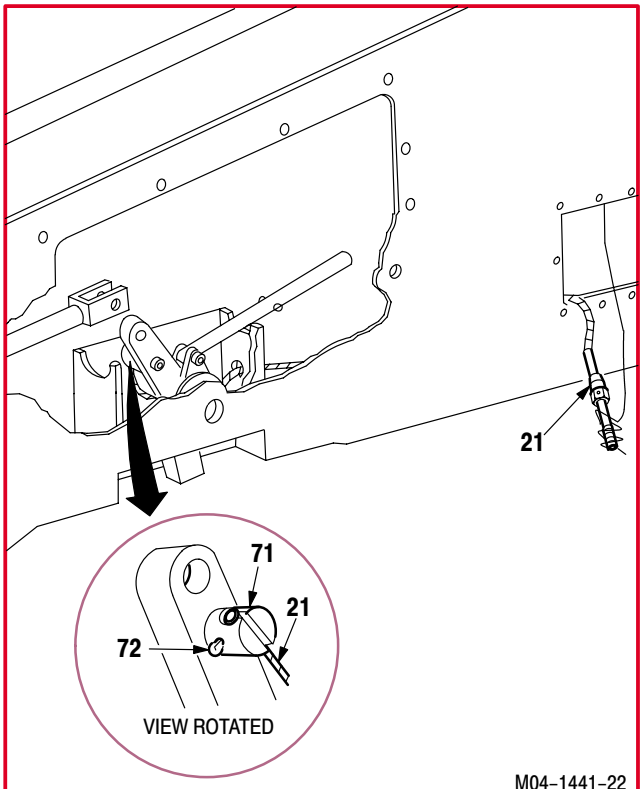
2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

d. **Install cable (21) on adapter (71).**

(1) Install cable (21) on adapter (71).

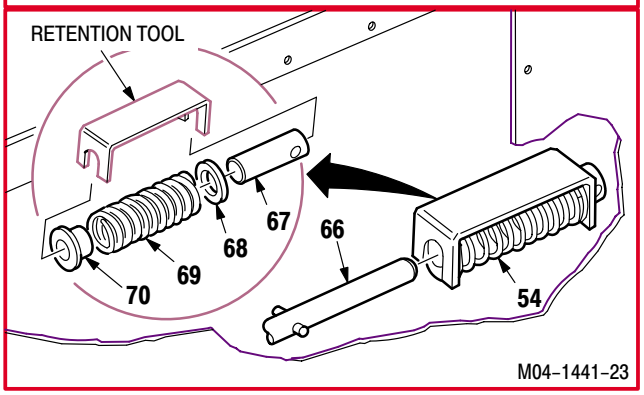
(2) Install new pin (72) through adapter (71).

(3) Attach lockwire to loose end of cable (21) to aid in installation. Use wire (item 228, App F).



e. **Install bar mechanism (54) on bar (66).**

(1) Stack and hold keeper (70), spring (69), washer (68), and retainer (67) on bar (66). Use retention tool.



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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

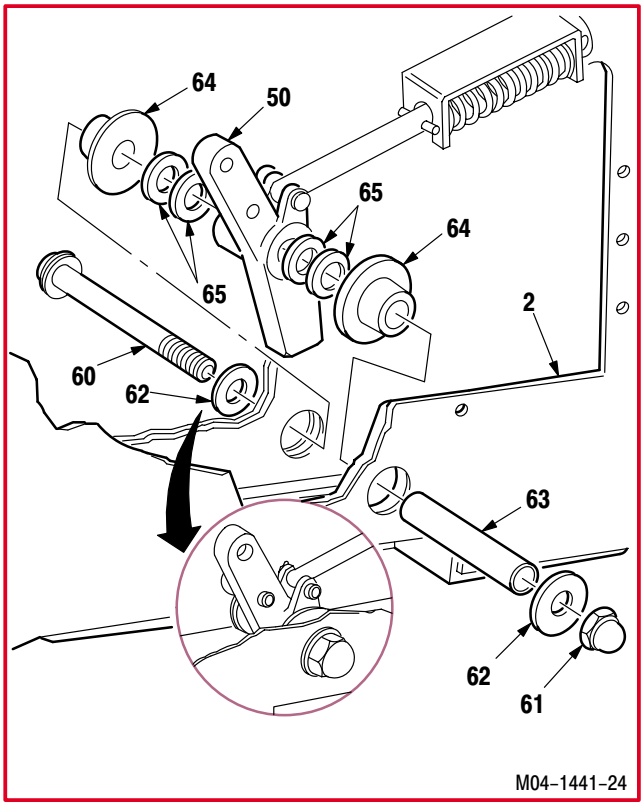
f. **Install bar (50) in door (2).**

NOTE

Use washers (65) as required to shim bar installation.

(1) Install bolt (60) through washer (62), door (2), bushing (64), two washers (65), bushing (63), bar (50), two washers (65), bushing (64), and door (2).

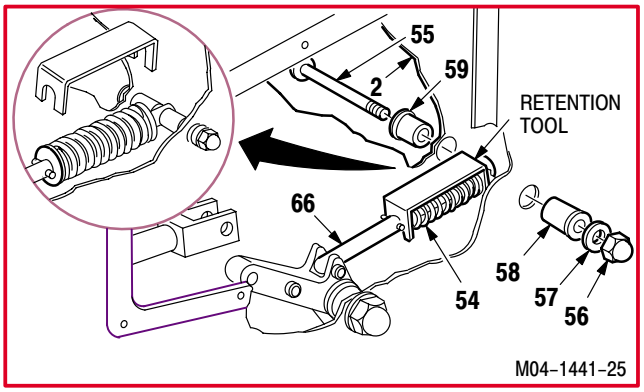
(2) Hold bolt (60). Install washer (62) and self-locking cap nut (61).



(3) Install bolt (55) through bushing (59), door (2), bar (66), and bushing (58).

(4) Hold bolt (55). Install washer (57) and nut (56).

(5) Remove retention tool from bar mechanism (54).

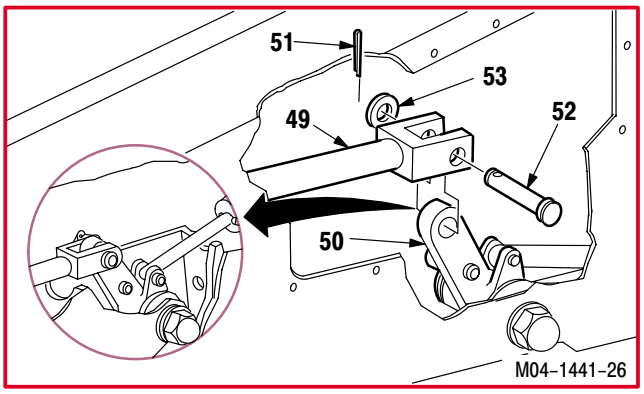


g. **Install link (49) on bar (50).**

(1) Aline link (49) with bar (50).

(2) Install pin (52) through link (49) and bar (50).

(3) Install washer (53) and new cotter pin (51).



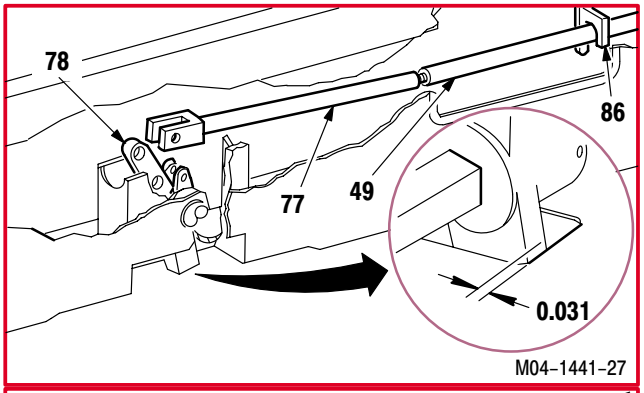
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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

h. **Install link (77) on bar (78).**

(1) Turn link (77) counterclockwise to lengthen or clockwise to shorten until link (77) is **0.031 INCH** from stop. Use gap setting gage.

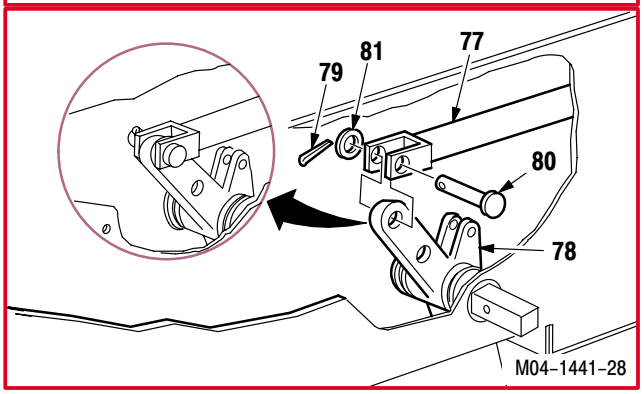
(2) Install link (49) in guide (86).



(3) Aline link (77) with bar (78).

(4) Install pin (80) and washer (81).

(5) Install new cotter pin (79).



i. **Install pulley (44) in door (2).**

(1) Feed cable (21) through door (2) to upper area and out bracket (32).

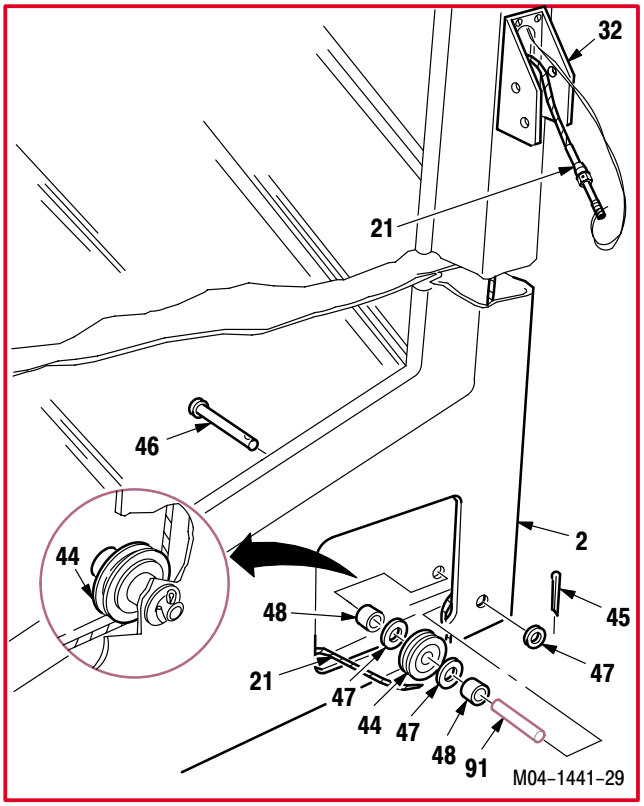
(2) Stack bushing (48), washer (47), pulley (44), washer (47), and bushing (48) on 1/4 inch dowel (91). Use dowel.

(3) Install cable (21) on pulley (44) and in door (2).

(4) Insert pin (46) pushing 1/4 inch dowel (91) through.

(5) Install washer (47) on pin (46).

(6) Install new cotter pin (45).



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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued



j. **Install strut pulley (42) with cable (21) on cylinder (37).**

(1) Feed cable (21) into cylinder (37).

(2) Aline strut pulley (42) with cylinder (37).

(3) Apply sealing compound to threads of screw (43). Use sealing compound (item 169, App F).

(4) Install two screws (43) through strut pulley (42) and cylinder (37).

k. **Install cylinder (37) on bracket (32).**

(1) Install cylinder (37) and two bushings (41) in bracket (32).

(2) Install pin (39) through bracket (32), two bushings (41), cylinder (37), and washer (40).

(3) Install new cotter pin (38).

l. **Install two pulleys (31) on bracket (32).**

(1) Stack bushing (35), washer (36), pulley (31), washer (36), pulley (31), washer (36), and bushing (35) on 3/16 dowel (92). Use dowel.

(2) Feed cable (21) to upper pulley area.

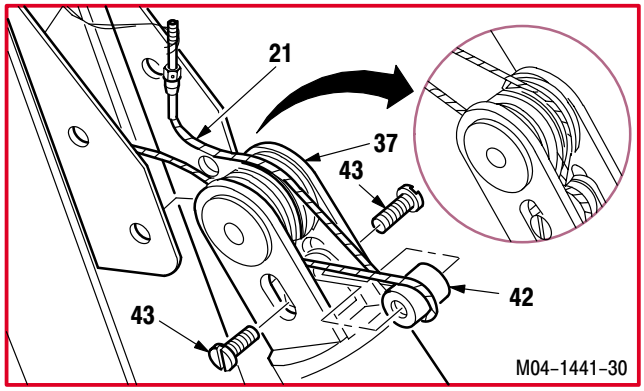
(3) Install cable (21) around two pulleys (31).

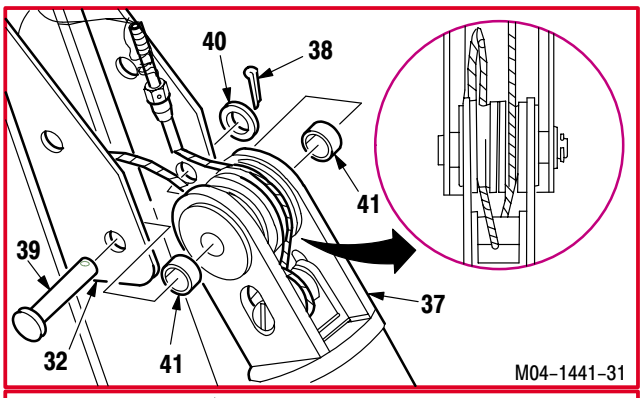
(4) Install two pulleys (31), three washers (36), and two bushings (35) in bracket (32).

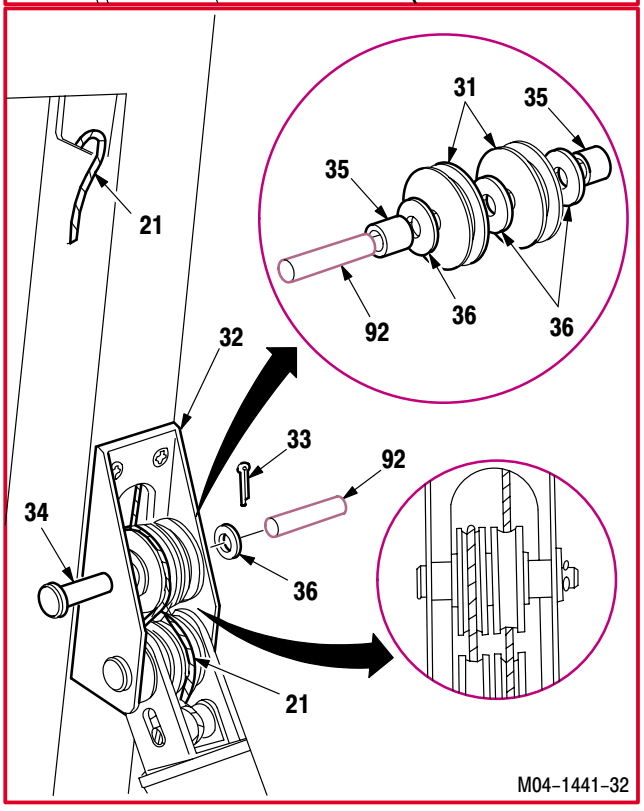
(5) Install pin (34). Push dowel pin through.

(6) Install washer (36) on pin (34).

(7) Install new cotter pin (33).







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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

m. **Install pulley (27) on bracket (24).**

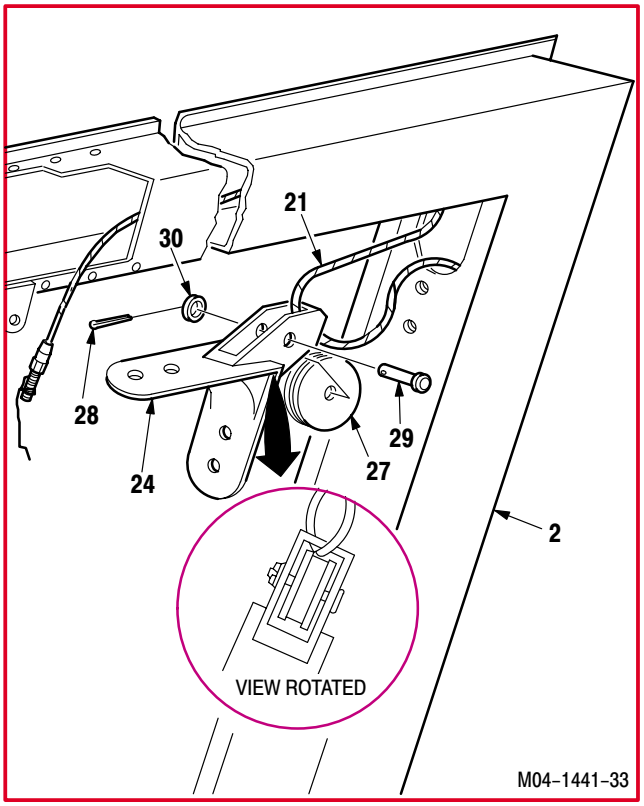
(1) Feed cable (21) through bracket (24) and door (2) to top forward area.

(2) Install pulley (27) on cable (21) and bracket (24).

(3) Install pin (29) through bracket (24) and pulley (27).

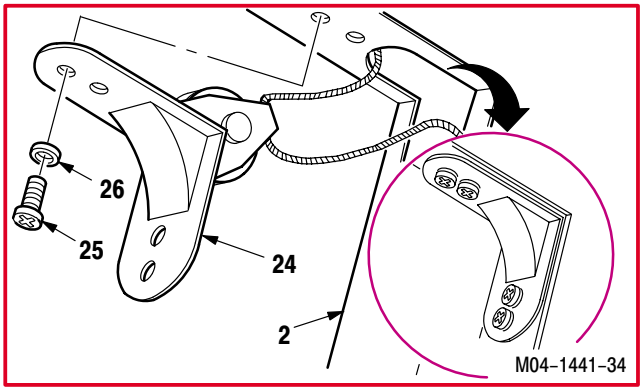
(4) Install washer (30) on pin (29).

(5) Install new cotter pin (28).



n. **Install bracket (24) on door (2).**

(1) Install four screws (25) through washers (26), bracket (24), and door (2).



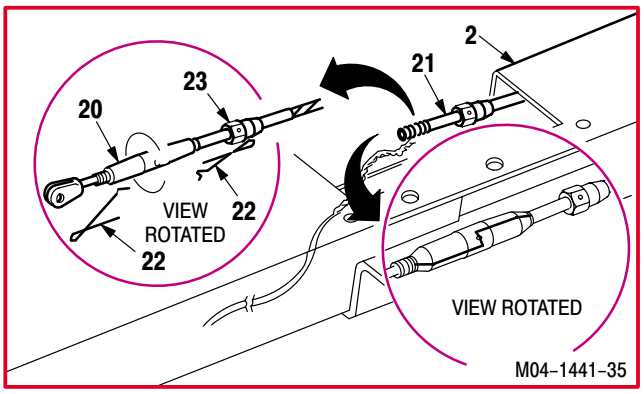
o. **Install turnbuckle (20) on cable (21).**

(1) Remove lockwire (90) from cable (21).

(2) Hold cable (21) on flats (23). Screw turnbuckle (20) on cable (21).

p. **Adjust door lock** (para 2.55)**.**

q. **Install two clips (22) on turnbuckle (20).**



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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

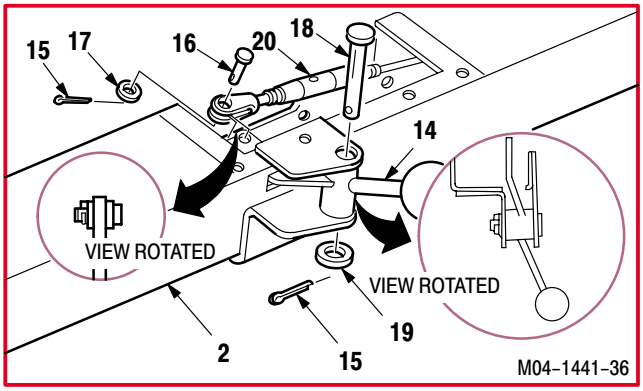
r. **Install lever (14) on door (2).**

(1) Position lever (14) on door (2).

(2) Install pin (18) through door (2), lever (14), and washer (19).

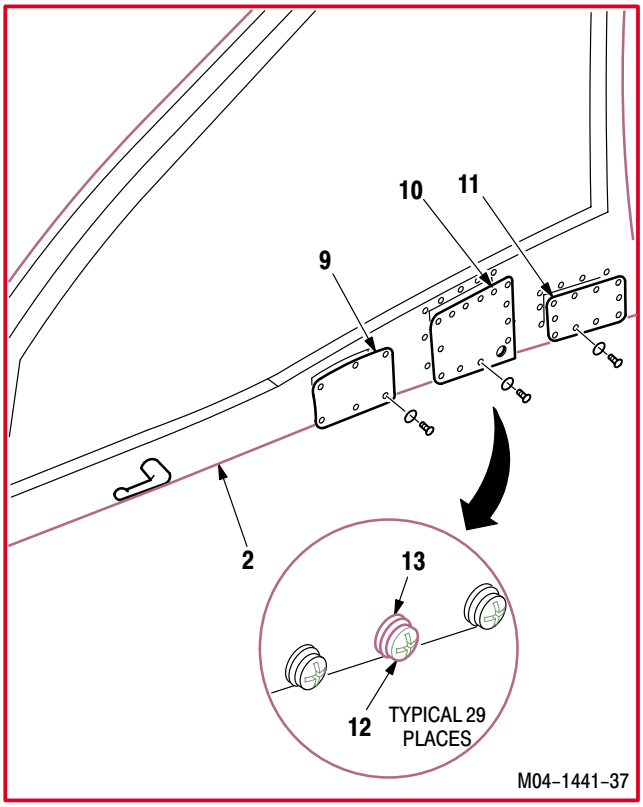
(3) Install pin (16) through turnbuckle (20), lever (14), and washer (17).

(4) Install two new cotter pins (15).



s. **Install covers (9), (10), and (11) on door (2).**

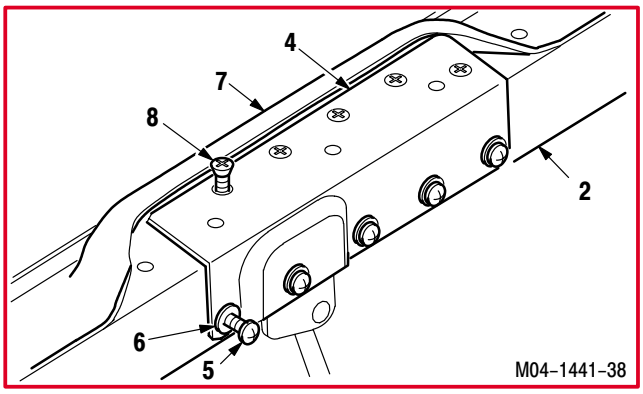
(1) Install 29 screws (12) through washers (13), covers (9), (10), and (11), and door (2).



t. **Install cover (4) on door (2).**

(1) Hold seal (7) back. Install five screws (8) through cover (4) and door (2).

(2) Install five screws (5) through washers (6), cover (4), and door (2).



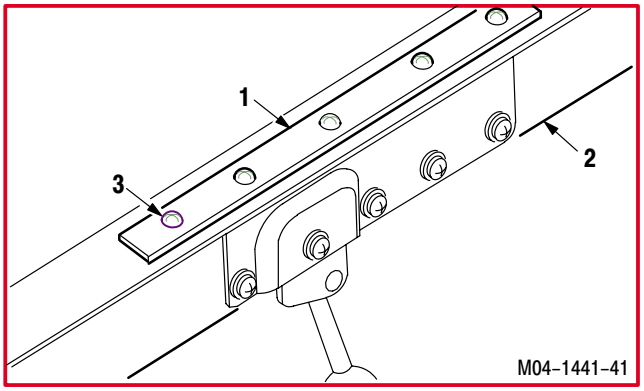
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2.56. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

u. **Install retainer (1) on door (2).**

(1) Aline retainer (1) on door (2).

(2) Install five screws (3) through retainer (1) and door (2).



CAUTION

To prevent door opening in flight, ensure spring-back motion of door handle with pilot/CPG door open.

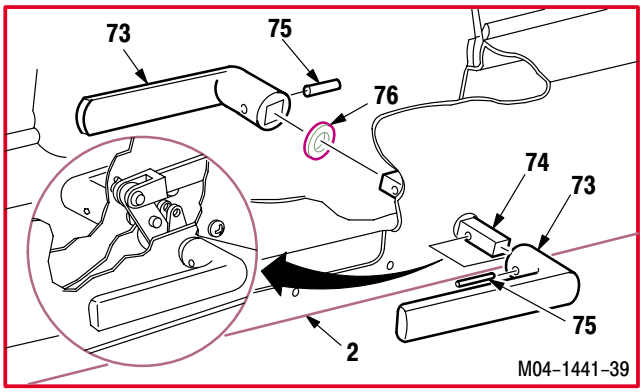
v. **Install two door handles (73) on door (2).**

(1) Install handle (73) on shaft (74) on inboard side of door (2).

(2) Install pin (75) through handle (73) and shaft (74).

(3) Install washer (76) and handle (73) on shaft (74) on outboard side of door (2).

(4) Install pin (75) through handle (73) and shaft (74).



w. **Inspect (QA).**

END OF TASK

2.57. CPG STATION ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION

2.57.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.57.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Sealing compound (item 169, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

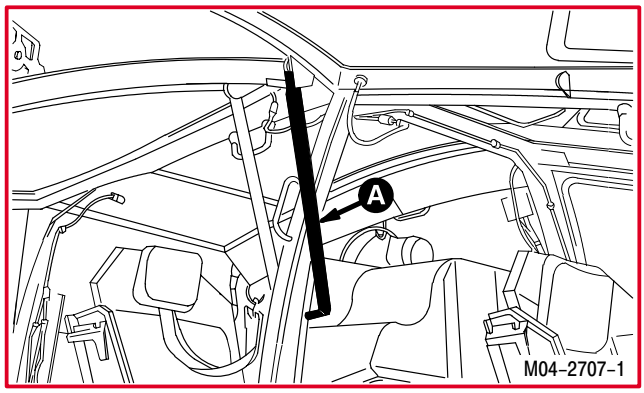
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.57.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

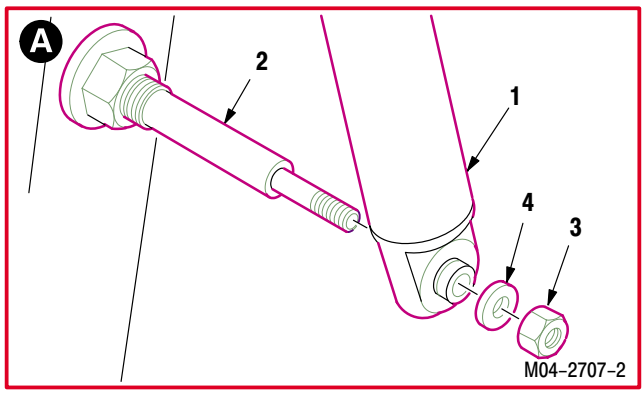
b. **Prop CPG access door open.**



c. **Remove door cylinder assembly (1) from anchor rod (2).**

(1) Remove nut (3) and washer (4) from rod (2).

(2) Remove cylinder (1) from rod (2).



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2.57. CPG STATION ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION – continued

d. **Remove nut (5) and screw (6) from cylinder (1).**

e. **Swing out strut pulley (7) and remove from twisted cable (8) and cylinder (1).**

2.57.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

b. **Wipe removed and attaching parts with a clean rag.**

2.57.5. Inspection

a. **Check attaching points of cylinder for excessive wear** (para 2.11)**.**

2.57.6. Installation

a. **Install pulley (7) in cylinder (1).**

(1) Install pulley (7) in twisted cable (8).

(2) Swing pulley (7) into cylinder (1).



b. **Install screw (6) and nut (5) in cylinder (1).**

(1) Apply sealing compound to threads of screw (6). Use sealing compound (item 169, App F).

(2) Install screw (6) and nut (5) in cylinder (1).

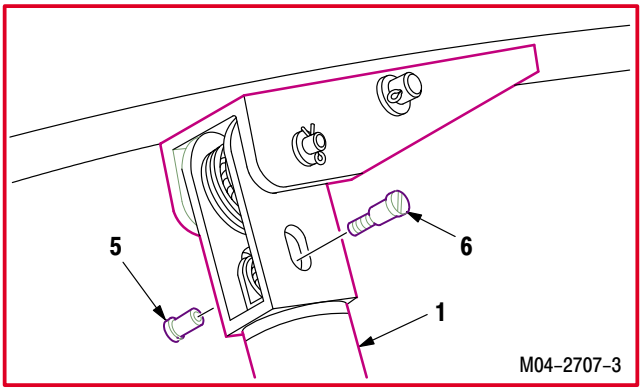
c. **Install cylinder (1) on rod (2).**

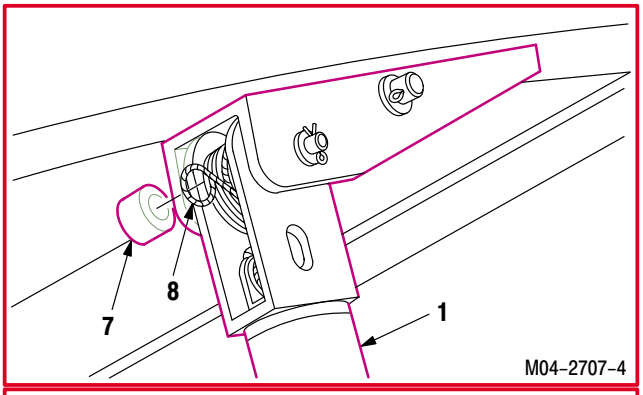
(1) Install cylinder (1), washer (4), and nut (3) on rod (2).

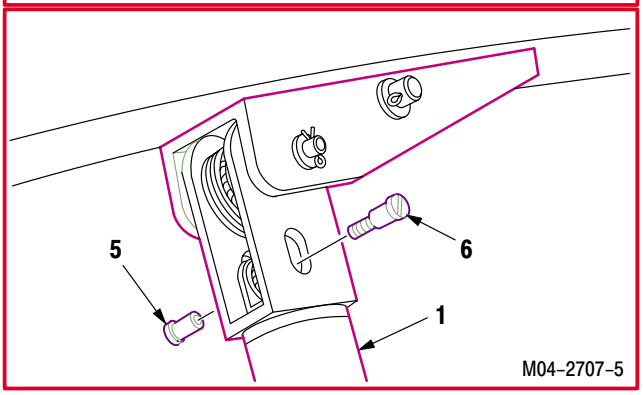
d. **Close CPG station access door.**

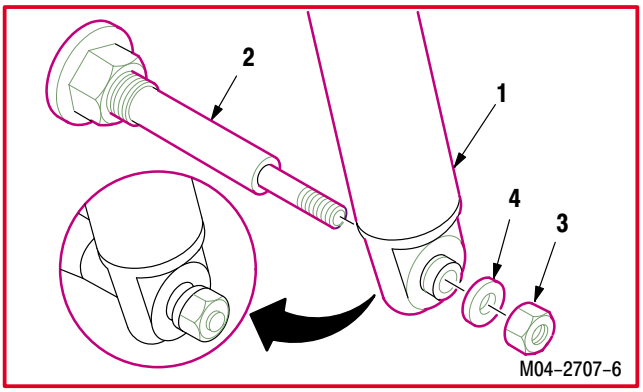
e. **Inspect (QA).**

END OF TASK









2.58. CPG STATION ACCESS DOOR LOWER HINGE BUTT REMOVAL/INSTALLATION

2.58.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.58.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Cotter pin
Brush (item 34, App F)
Sealing compound (item 176, App F)

Personnel Required:

68G Aircraft Structural Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

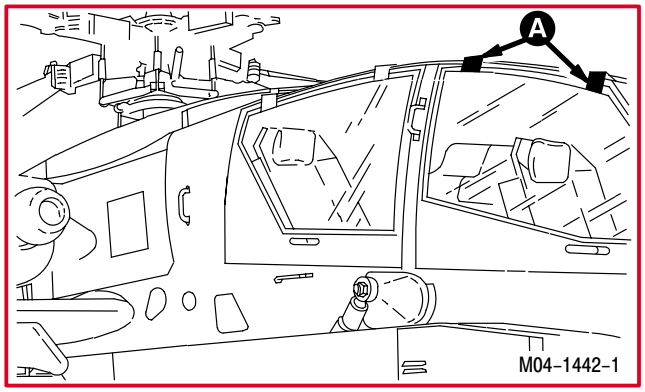
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right CPG station lower hinge half removal/ installation.



2.58.3. Removal

a. **Close and latch CPG station access door (1).**

b. **Remove lower hinge butt (2) from CPG station access door (1).**

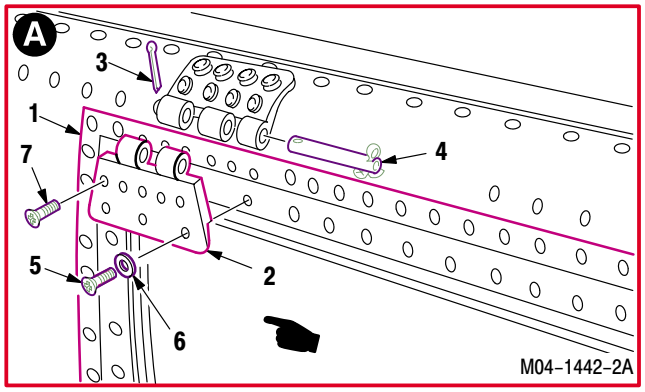
(1) Remove and discard cotter pin (3) from hinge pin (4).

(2) Remove hinge pin (4) (TM 1-1500-204-23).

(3) Remove three screws (5) and washers (6).

(4) Remove five screws (7).

(5) Remove hinge (2) from door (1).



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2.58. CPG STATION ACCESS DOOR LOWER HINGE BUTT REMOVAL/INSTALLATION – continued

2.58.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.58.5. Inspection

a. **Check hinge for damage** (TM 1-1500-204-23)**.**

b. **Check mounting surfaces for cracks and corrosion** (para 2.12)**.**

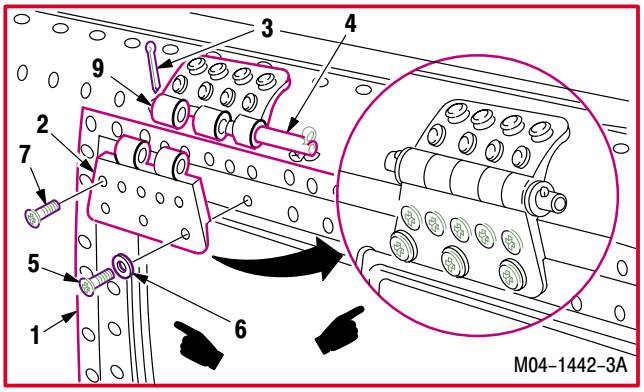
c. **Check relative play across hinge pin.**

(1) Maximum allowable play is **0.010 INCH**.

2.58.6. Installation

a. **Ensure door (1) is closed and latched.**





b. **Install hinge (2) on door (1).**

(1) Aline hinge halves (2) and (9).

(2) Install hinge pin (4) (TM 1-1500-204-23).

(3) Locate and mark eight hole locations on hinge (2) (TM 1-1500-204-23).

(4) Remove hinge pin (4) and lower hinge (2).

(5) Drill eight holes **0.313 to 0.319 INCH** in diameter through hinge (2).

(6) Apply sealant to threads of five screws (7) and three screws (5). Use sealing compound (item 176, App F) and brush (item 34, App F).

(7) Install five screws (7) finger tight.

(8) Install three screws (5) and washers (6) finger tight.

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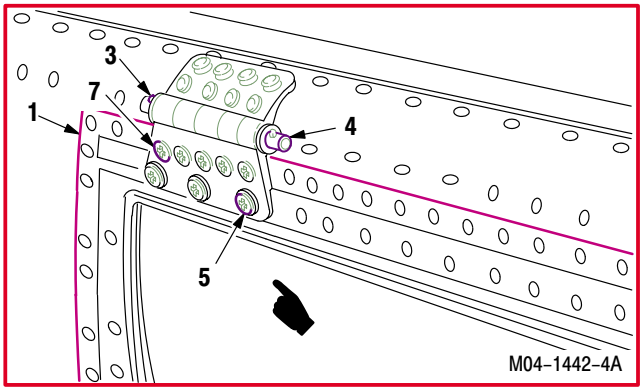
2.58. CPG STATION ACCESS DOOR LOWER HINGE BUTT REMOVAL/INSTALLATION – continued

(9) Install hinge pin (4).

(10) Install new cotter pin (3).

c. **Position CPG door (1) in frame** (para 2.54)**.**

d. **Torque five screws (7) to 20 INCH-POUNDS.** Use torque wrench.



CAUTION

To prevent damage to windshield panel, do not over-torque screws.

e. **Torque three screws (5) to 15 INCH-POUNDS.** Use torque wrench.

f. **Inspect (QA).**

END OF TASK

2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION

2.59.1. Description

This task covers: Removal. Cleaning. Inspection. Alinement. Repair. Installation.

2.59.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Adhesive (item 14, App F)
Adhesive (item 19, App F)
Shim (item 181, App F)
Tape (item 201, App F)
Wire (item 225, App F)

Personnel Required:

68G Aircraft Structural Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-345-23

Equipment Conditions:

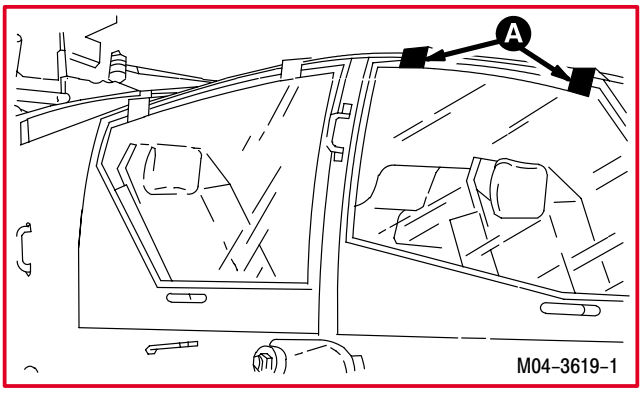
Ref	Condition
1.57	Helicopter safed
2.54	CPG station access door removed

CAUTION

To prevent damage to canopy transparent panels when performing maintenance in or around CPG station, use protective covering.

NOTE

This task is typical for CPG left and/or right upper hinge butts.



GO TO NEXT PAGE

2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

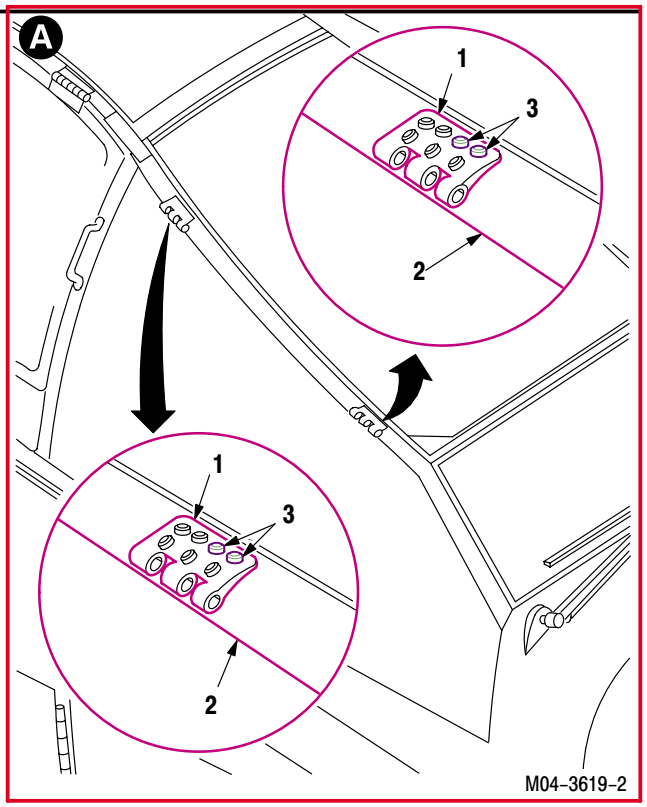
2.59.3. Removal

CAUTION

- To prevent damage to bow beam and shim (if installed), use caution when removing hinge.
- To prevent debris from entering CPG station, mask opening before drilling.

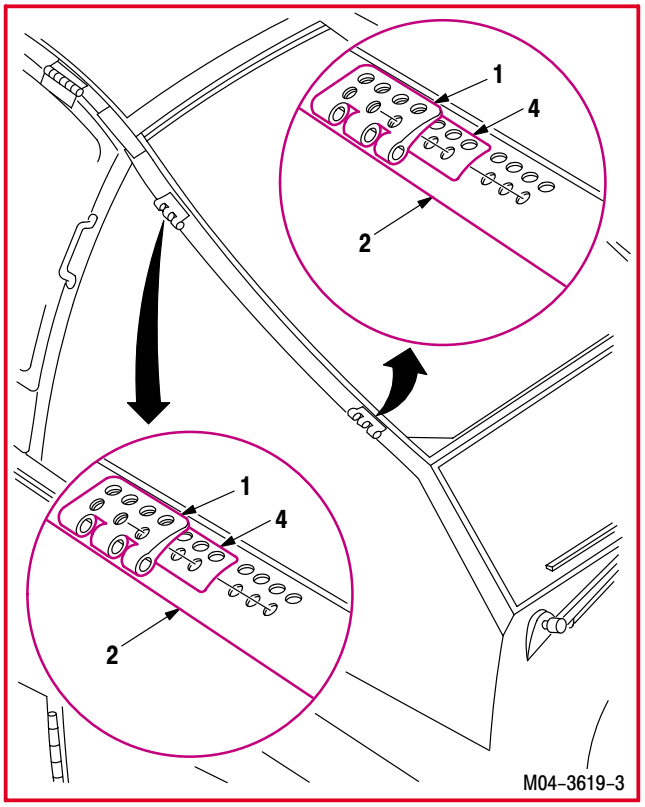
a. **Remove upper hinge butt (1) from bow beam (2).**

(1) Remove seven rivets (3) (TM 1-1500-204-23).



b. **Break adhesive seal between hinge (1), shim (4) (if installed), and bow beam (2).** Use putty knife.

(1) Remove and discard hinge (1). Retain shim (4) (if installed).



2.59.4. Cleaning

a. **Clean adhesive from bow beam** (para 1.47)**.** Buffing may be necessary.

2.59.5. Inspection

a. **Check rollover structure for cracks or damage** (para 2.11)**.**

b. **Check rivet holes for elongation** (TM 1-1500-204-23)**.**

c. **Touch up paint** (TM 55-1500-345-23)**.**

GO TO NEXT PAGE

2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

2.59.6. Alinement

CAUTION

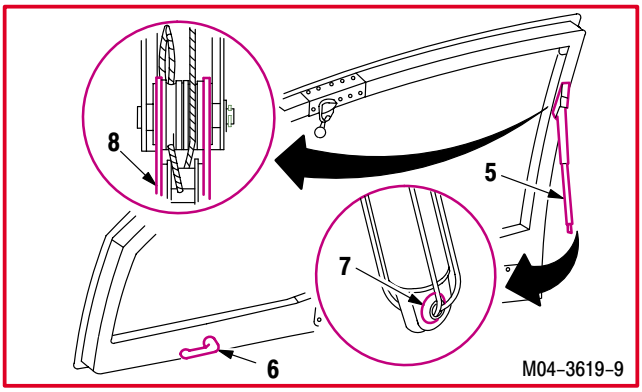
To prevent damage to helicopter, door cylinder assembly must be secured before positioning door.

a. **Secure door cylinder assembly (5).**

(1) Compress cylinder (5) and turn door handle (6) to latched position to hold cylinder (5).

(2) Install lockwire through lower cylinder bearing (7) and upper strut bracket (8). Use wire (item 225, App F).

(3) Cover cylinder (5) and lockwire with tape to prevent damage to helicopter. Use tape (item 201, App F).



CAUTION

To prevent damage to rubber door seal, avoid pinching between door skin and airframe.

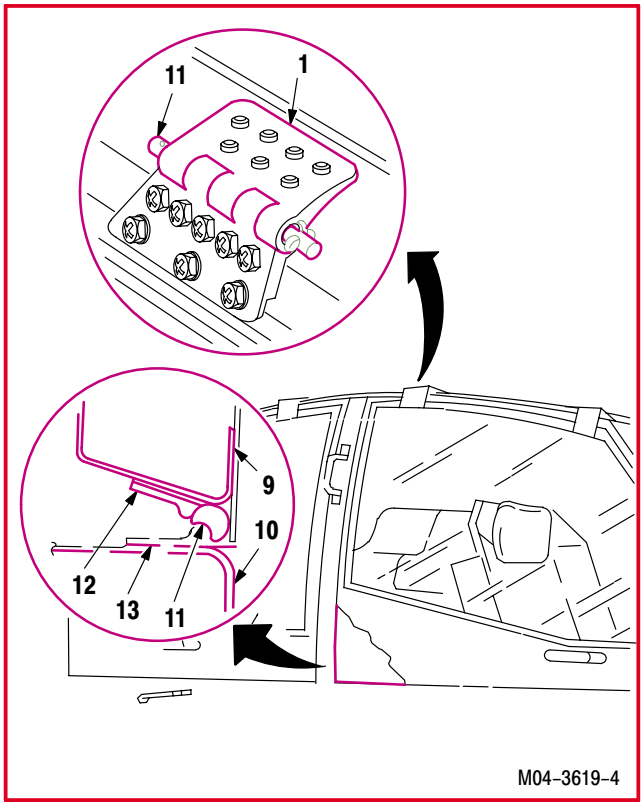
b. **Position CPG station access door (9) in airframe (10).**

(1) Install hinge pins (11) in undamaged hinge (1) (if applicable).

(2) Press top of door (9) into airframe (10) to obtain compression of rubber seal (11).

(3) While holding pressure at top of door (9), engage door handle (6) latch.

(4) Position door (9) to float on seal (11) in opening. Contact between door bumper (12) and airframe bumper (13) is not acceptable.



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2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

NOTE

Minimum gap between door skin and airframe is **0.030 INCH**.

c. **Trim door skin minimum required to obtain acceptable gap.**

d. **Attach new upper hinge (1) to lower hinge butt (14).**

(1) Install two hinge pins (11) in hinge halves (1) and (14).

(2) If lower hinge (14) contacts bow beam (2) causing interference, go to paragraph 2.59.7.b.

(3) If interference does not exist, go to step e.

e. **With door (9) latched, check for gap between hinge (1) and bow beam (2).**

(1) If gap of **0.020 INCH** or less exists, go to step f.

(2) If gap greater than **0.020 INCH** exists, position original shim (4) in gap.

(3) If original shim (4) is not available or does not fill gap, go to paragraph 2.59.7.a.

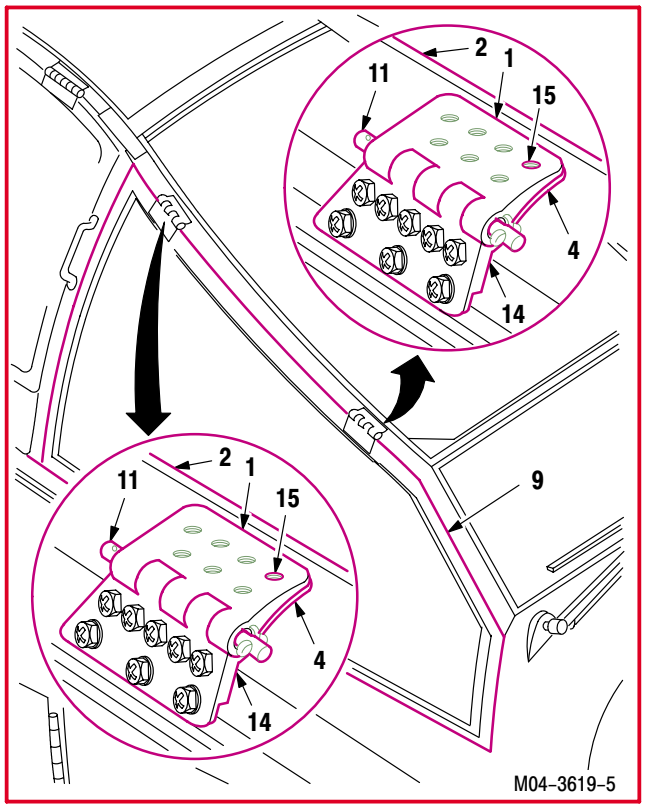
f. **Locate, mark, and drill seven rivet holes (15) on hinge (1) and shim (4) (if required) to match holes in bow beam (2)** (TM 1-1500-204-23)**.**

g. **Remove door (9) from bow beam (2).**

(1) Remove two hinge pins (11) from hinge halves (1) and (14).

(2) Remove door (9) from bow beam (2).

(3) Store door (9) to prevent damage.



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2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

2.59.7. Repair

a. **Make new shim (4) to eliminate gap between upper hinge (1) and bow beam (2).**

(1) Make shim (4) as shown, thickness determined by paragraph 2.59.6.e. Use 2024T3 aluminum.

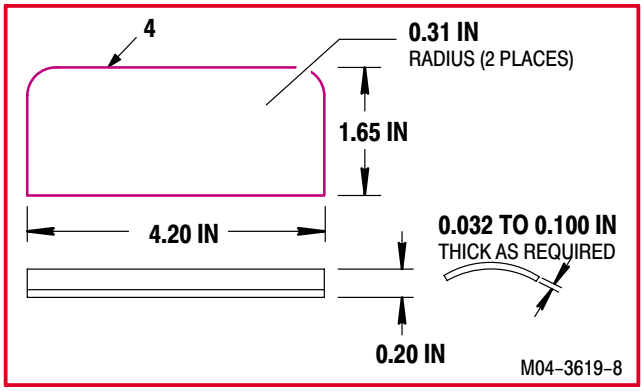
(2) Roll form shim (4) to match contour of hinge (1).

(3) Taper shim (4) as required to fill gap.

(4) Apply chemical film solution (TM 55-1500-345-23).

(5) Touch up paint (TM 55-1500-345-23).

(6) Go to paragraph 2.59.6.f.

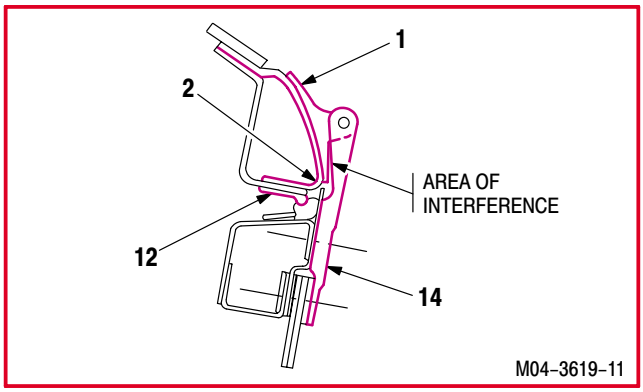


b. **Relieve interference between hinge halves (1) and (14) and bow beam (2).**

(1) Mill inboard side of hinge (12) to **0.030 INCH** maximum (TM 1-1500-204-23).

(2) Touch up paint (TM 55-1500-345-23).

(3) Go to paragraph 2.59.6.e.



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2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

2.59.8. Installation



a. **Install upper hinge (1) and shim (4) (if required) on bow beam (2).**

NOTE

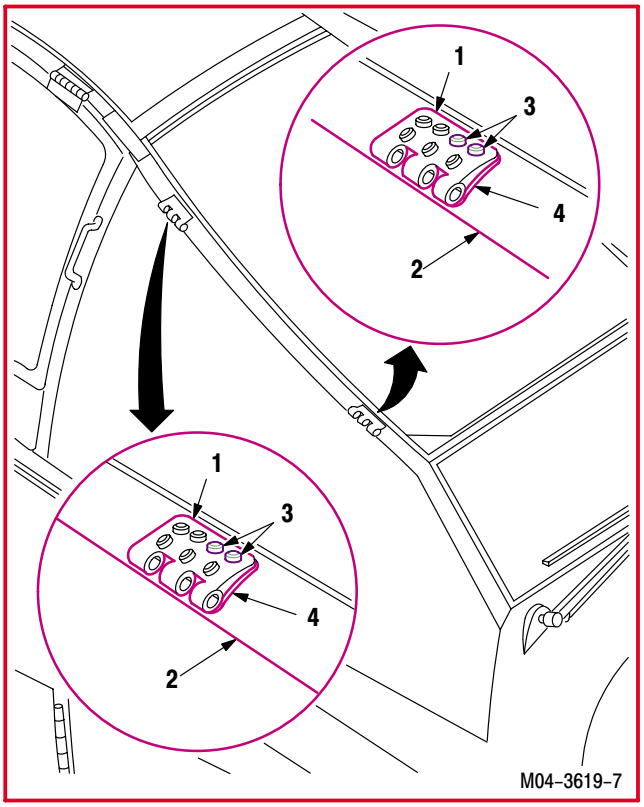
Shim adhesive is applied to all mating surfaces, **0.020 INCH** maximum thickness.

(1) Apply thin layer of shim adhesive to hinge (1) and shim (4) (if required). Use shim (item 181, App F).

(2) Position hinge (1) and shim (4) (if required) to aline with rivet holes in bow beam (2).

(3) Install seven rivets (3) through hinge (1) and shim (4) (if required) in bow beam (2) (TM 1-1500-204-23).

(4) Wipe excess shim adhesive from bow beam (2).



WARNING

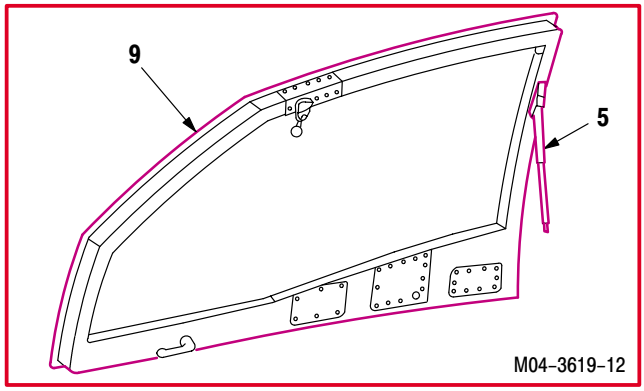
To prevent injury, two persons should disengage lockwire on door cylinder.

b. **Release door cylinder (5).**

(1) Remove tape from cylinder (5).

(2) One person hold cylinder (5). Second person hold door (9).

(3) Hold lower end of cylinder (5) to prevent rapid extension when lockwire is cut. Cut lockwire.



c. **Install CPG station access door** (para 2.54)**.**

GO TO NEXT PAGE

2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

d. **Check perimeter of door (9) for weather seal gaps.**

(1) Enter CPG station (para 1.56). Observe all safety precautions.

(2) Close and latch door (9).

(3) Person on outside of door shine flashlight around perimeter.

(4) Identify and mark gaps.

(5) If no gaps are visible, go to step g.

(6) If gaps are visible, go to step e. or f. as required.



e. **Adjust door seal (11).**

(1) Remove rivets from door bumper (12) (TM 1-1500-204-23).

(2) Clean seal (11) and mating surface (para 1.47).

NOTE

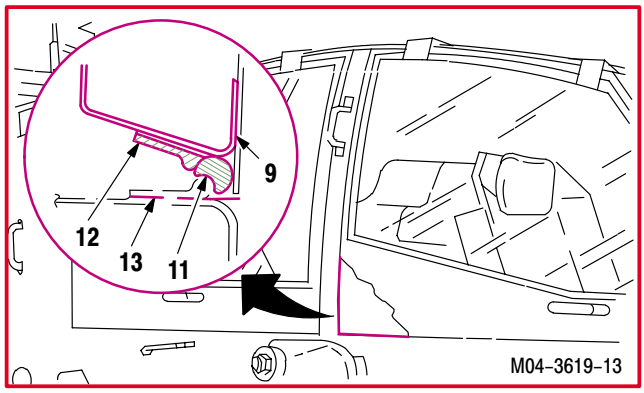
Door seal can be adjusted to eliminate gaps, except in corners.

(3) Position seal (11) and apply sealant. Use adhesive (item 14, App F).

(4) Install rivets in door bumper (12) (TM 1-1500-204-23).



f. **Apply adhesive to airframe bumpers (13) to eliminate gaps in corners.** Use adhesive (item 19, App F).



GO TO NEXT PAGE

2.59. CPG STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

g. **Touch up paint** (TM 55-1500-345-23)**.**

h. **Install CPG station access door** (para 2.54)**.**

i. **Inspect (QA).**

END OF TASK

2.60. FORWARD DOOR CATCH STRIKER REMOVAL/INSTALLATION

2.60.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.60.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

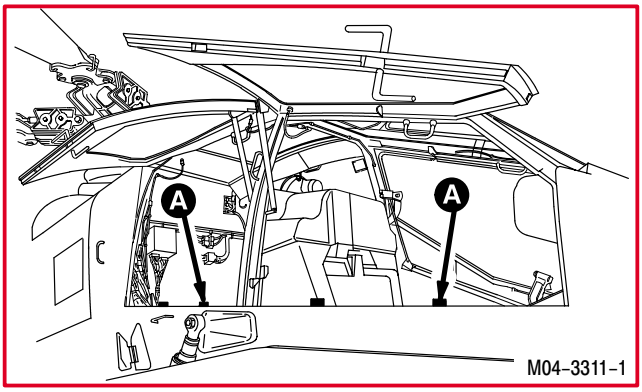
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.56	Pilot or CPG door opened

NOTE

This task is typical for pilot and/or CPG forward door catch strikers.

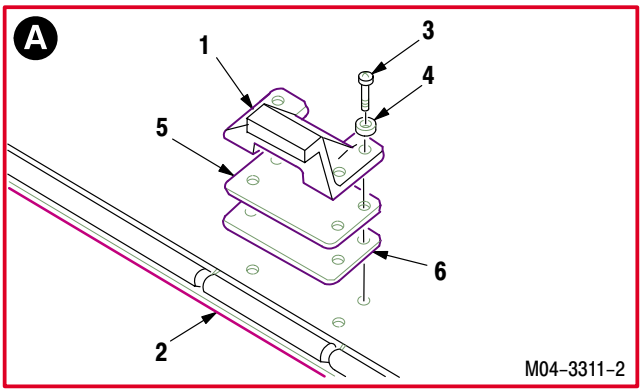


2.60.3. Removal

a. **Remove forward door catch striker (1) from airframe (2).**

(1) Remove four screws (3) and washers (4).

(2) Remove striker (1), latching plate (5), and shim (6) from airframe (2).



2.60.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

GO TO NEXT PAGE

2.60. FORWARD DOOR CATCH STRIKER REMOVAL/INSTALLATION – continued

2.60.5. Inspection

a. **Check airframe for cracks and corrosion** (para 2.11)**.**

b. **Check removed and attaching parts for cracks.** None allowed.

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

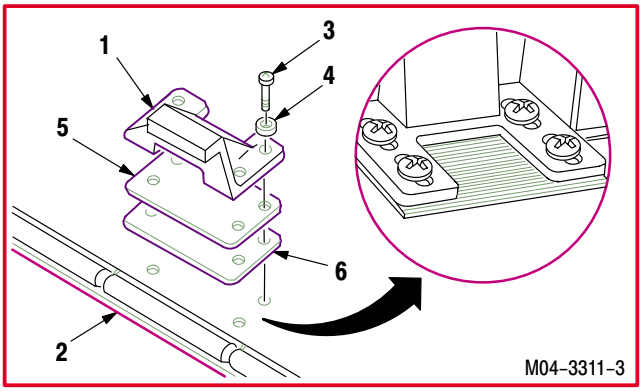
2.60.6. Installation

a. **Install forward door catch striker (1) on airframe (2).**

(1) Aline mounting holes of shim (6), plate (5), and striker (1) with holes in airframe (2).

(2) Install four screws (3) through washers (4), striker (1), plate (5), and shim (6) in airframe (2).

b. **Adjust door strikers** (para 2.55 or 2.63)**.**



END OF TASK

2.61. PILOT DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION

2.61.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.61.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
8-ounce hand sealant gun (item 160, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Adhesive (item 14, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Sealing compound (item 176, App F)

Personnel Required:

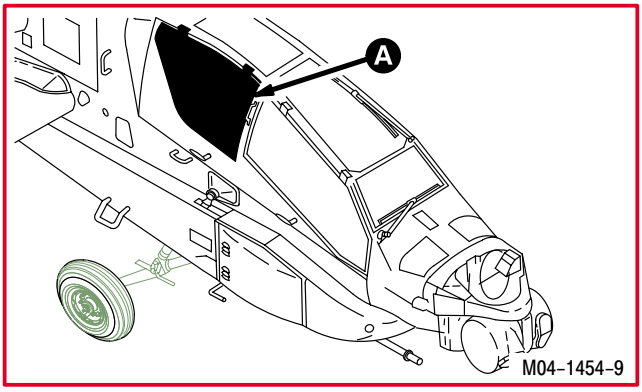
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.62	Pilot station access door removed



GO TO NEXT PAGE

2.61. PILOT DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

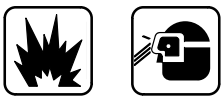
2.61.3. Removal

a. **Remove hinge butts (1) and (2) from door (3).**

(1) Remove eight screws (4) from hinge butts (1) and (2).

(2) Remove six screws (5) and washers (6) from hinge butts (1) and (2).

(3) Remove hinge butts (1) and (2).



WARNING

Fixed canopy is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

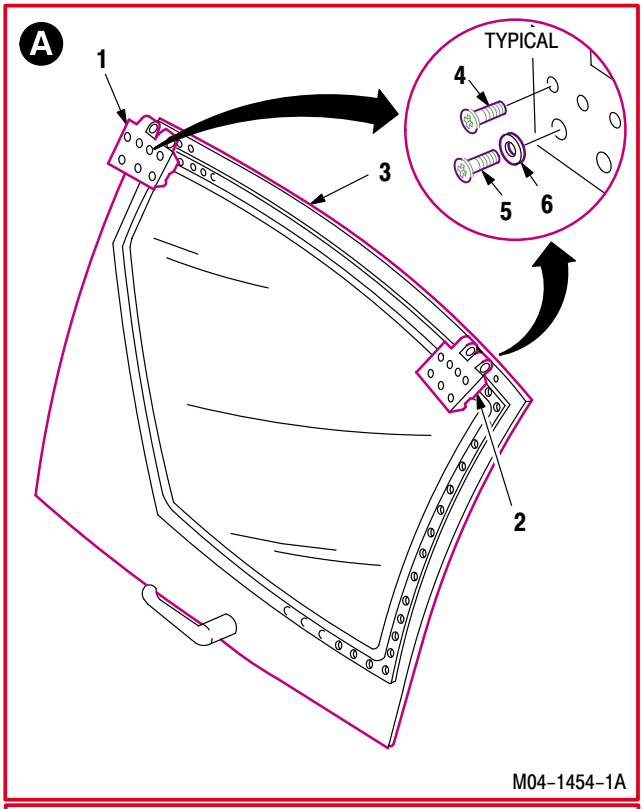
b. **Remove windshield panel (7) and fixed canopy (8) from door (3).**

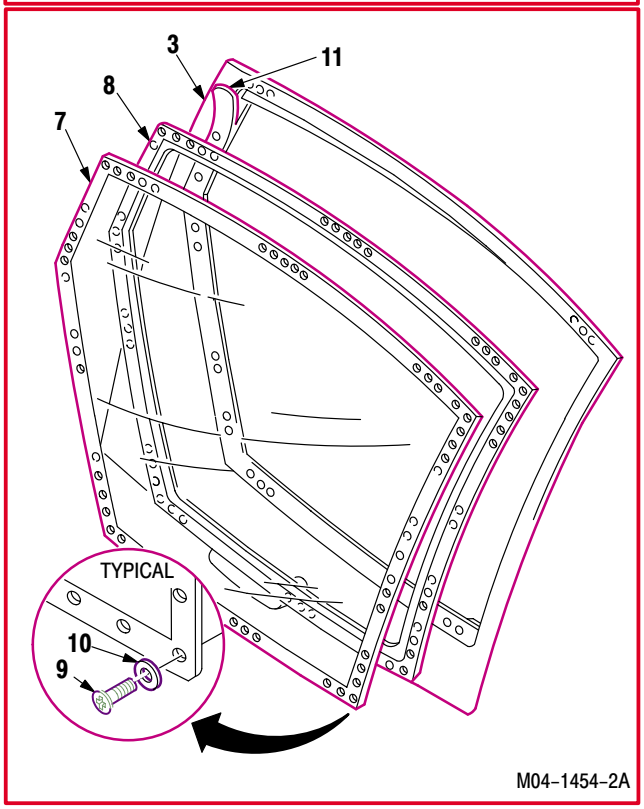
(1) Remove 59 screws (9) and washers (10) from door (3).

(2) Remove panel (7) and canopy (8) from door (3).

(3) Remove canopy (8) from panel (7).

c. **Remove four sections of rubber special seal (11) from door (3).**





GO TO NEXT PAGE

2.61. PILOT DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

2.61.4. Cleaning

a. **Clean adhesive residue from door** (para 1.47)**.**

b. **Wipe door and fixed canopy with a clean rag.**



c. **Clean protective latex coating from replacement panel if it does not peel off cleanly.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

2.61.5. Inspection

a. **Check door and fixed canopy for cracks and wear** (para 2.12)**.**

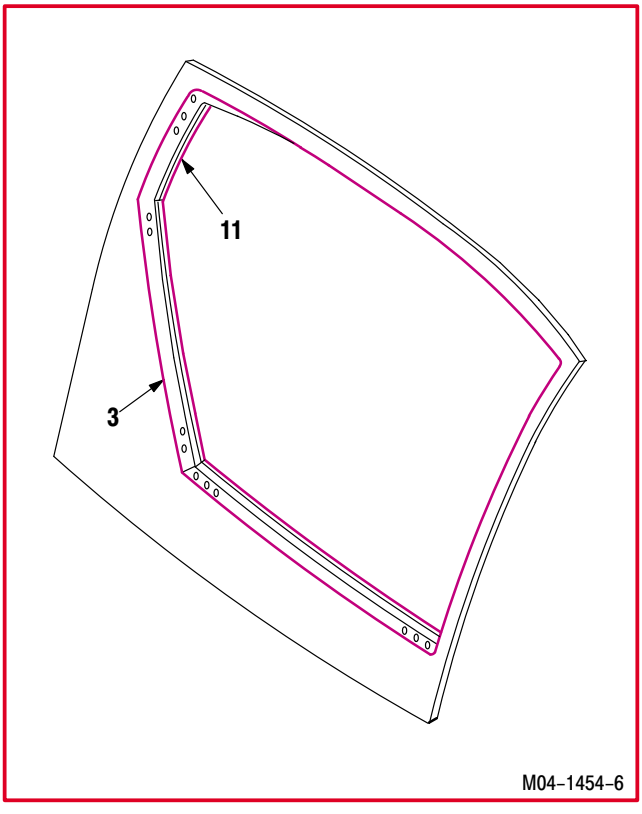
b. **Check door for corrosion** (para 1.49)**.**

c. **Check door for damaged screw holes** (TM 1-1500-204-23)**.**

d. **Check for discrepant screws.**

(1) 25 percent of screws can be discrepant if scattered randomly. Maximum of three consecutive bad screws allowed.

e. **Check for loose or damaged nutplates.** Replace if found (TM 1-1500-204-23).



2.61.6. Installation



a. **Apply a 0.125 INCH wide bead of adhesive around door (3) cavity.** Use adhesive (item 14, App F).

b. **Install four sections of seal (11) in door (3) cavity** (para 2.52)**.**

GO TO NEXT PAGE

2.61. PILOT DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

WARNING

Fixed canopy is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

c. **Install canopy (8) and panel (7) on door (3).**

(1) Position panel assembly (12) in door (3) cavity.

(2) Install four screws (9) and washers (10) in locations shown in illustration. Do not tighten.

(3) Install 55 screws (9) and washers (10) in group sequence shown in illustration. Do not tighten.

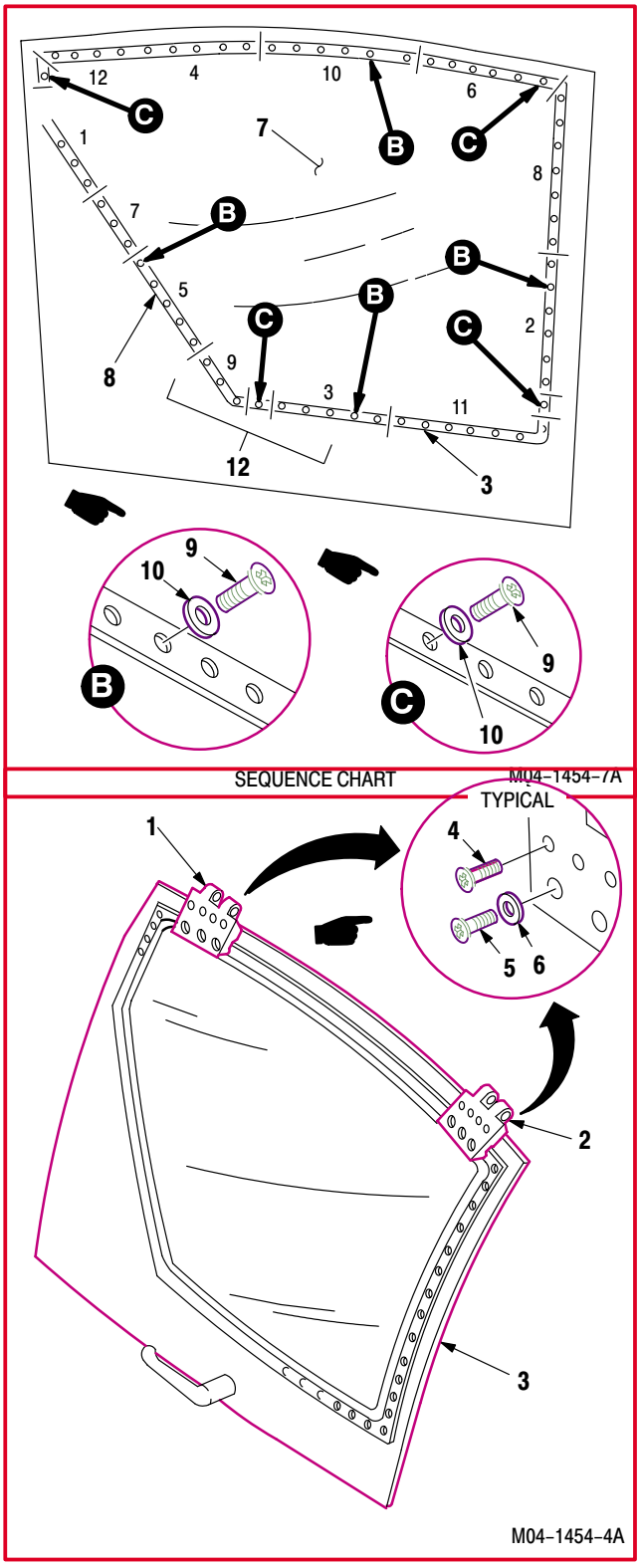
d. **Install hinge butts (1) and (2) on door (3).**

(1) Aline hinge butts (1) and (2) with door (3) mounting holes.

(2) Apply sealant to threads of eight screws (4) and six screws (5). Use sealing compound (item 176, App F).

(3) Install eight screws (4). Do not tighten.

(4) Install six screws (5) and washers (6). Do not tighten.



GO TO NEXT PAGE

2.61. PILOT DOOR TRANSPARENT PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

e. **Tighten four screws (9) in sequence A, B, C, and D as shown in illustration, until screws (9) are snug against washers (10).**

f. **Tighten 55 screws (9) in group sequence shown in illustration, until screws (9) are snug against washers (10).**

g. **Torque four alinement screws (9) to 5 INCH-POUNDS in sequence A, B, C, and D as shown in illustration.** Use torque wrench.

NOTE

Torque sequence groups 6 and 12 require different torques in each group.

h. **Torque 55 screws (9) to 5 INCH-POUNDS. Torque six screws (5) to 15 INCH-POUNDS in group sequences shown in illustration.** Use torque wrench.

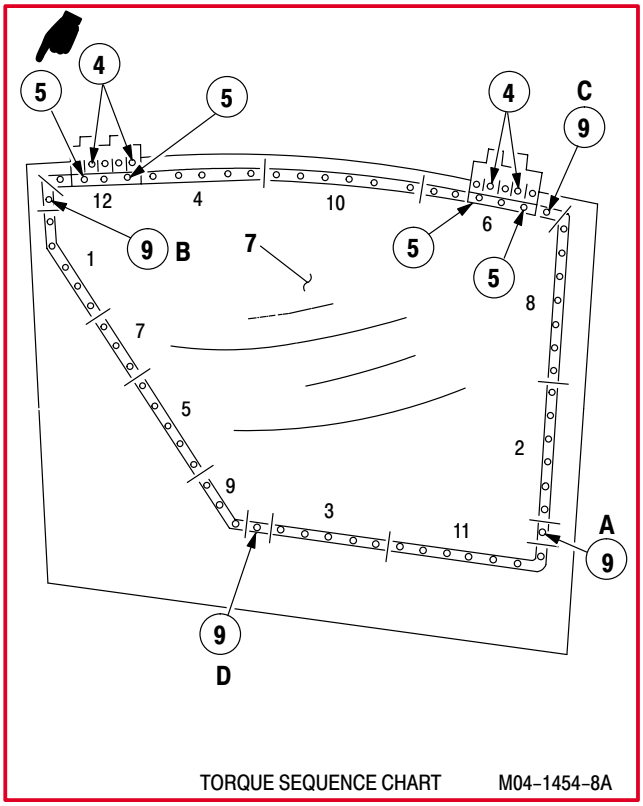
i. **Torque eight screws (4) to 20 INCH-POUNDS.** Use torque wrench.



j. **Seal around panel (7).** Use sealing compound (item 176, App F) and sealant gun.

k. **Inspect (QA).**

l. **Install pilot station access door** (para 2.62)**.**



TORQUE SEQUENCE CHART M04–1454–8A

END OF TASK

2.62. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION

2.62.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.62.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Personnel Required:

68G Aircraft Structural Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

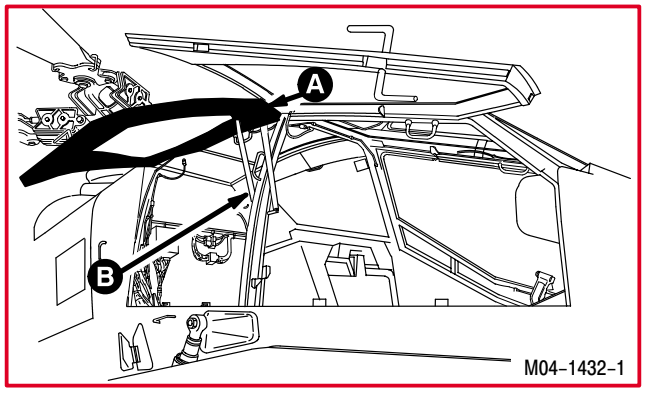
Cotter pin (2)
Packing
Cloth (item 52, App F)
Petrolatum (item 138, App F)
Tape (item 201, App F)
Tape (item 203, App F)
Wire (item 226, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
13.45	Pilot right air mixer removed

NOTE

Position one person to support access door during removal/installation.



2.62.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

GO TO NEXT PAGE

2.62. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

Remove detonating cord assembly with care. Do not twist cord or damage booster cup on end of cord assembly. Damage to cord or cup may affect performance of severance assembly.

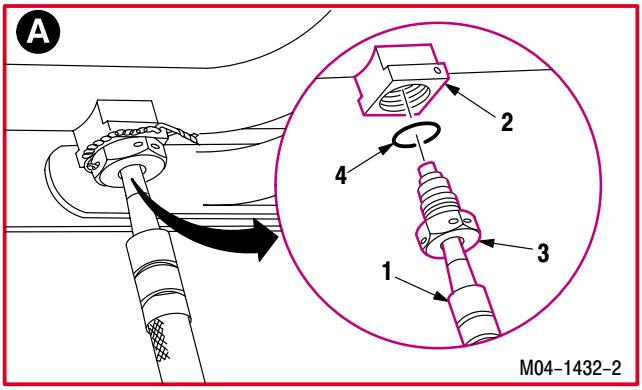
b. **Remove detonating cord (1) from canopy severance device (2).**

(1) Remove lockwire from severance device (2) and nipple (3).

(2) Hold severance device (2). Remove nipple (3).

(3) Remove and discard packing (4) from nipple (3).

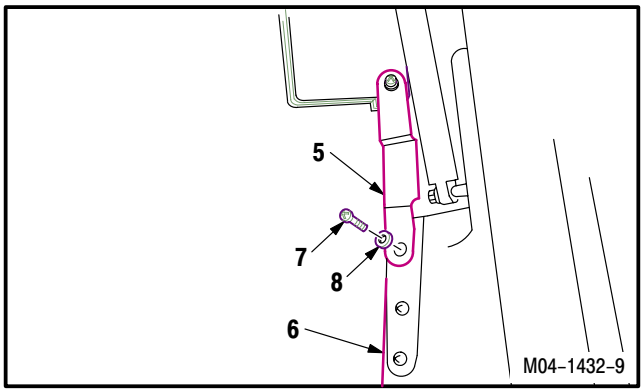
(4) Cover severance device (2) and nipple (3). Use cloth (item 52, App F) and tape (item 203, App F).



c. **Remove glareshield clip (5) from glareshield (6).**

(1) Remove two screws (7) and washers (8).

(2) Remove clip (5) from glareshield (6).



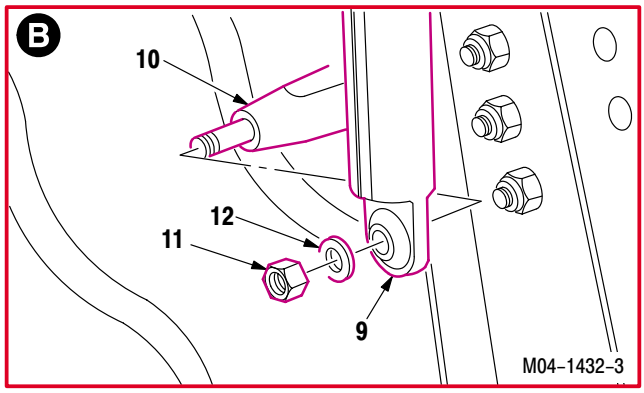
GO TO NEXT PAGE

2.62. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

d. **Remove door cylinder assembly (9) from rod anchor (10).**

(1) Remove nut (11) and washer (12).

(2) Secure cylinder (9). Use tape (item 201, App F).

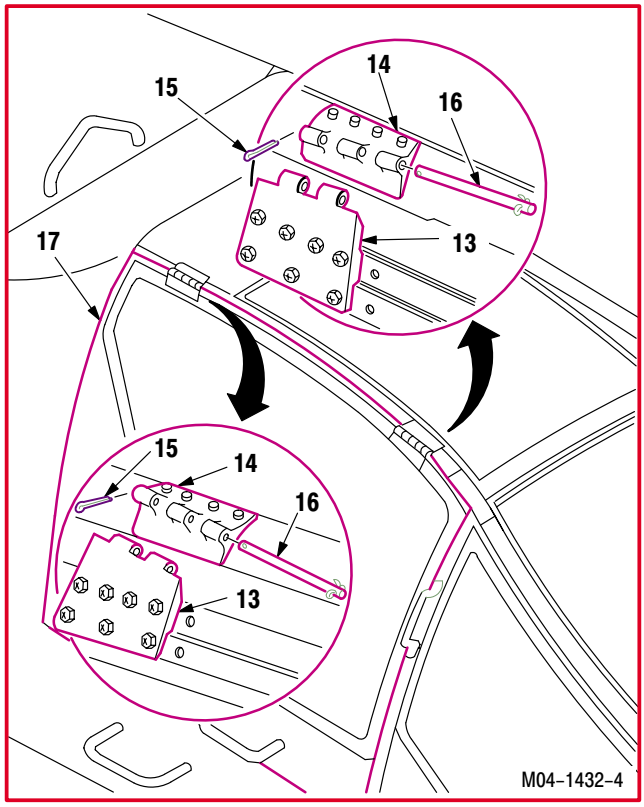


e. **Separate hinge halves (13) and (14).**

(1) Remove and discard two cotter pins (15).

(2) Remove two hinge pins (16) from hinge halves (13) and (14).

f. **Remove pilot access door (17).**



2.62.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

b. **Clean severance device and nipple** (para 1.47)**.**

2.62.5. Inspection

a. **Check cord for damage.** Any break in cord requires replacement.

b. **Check door for cracks, dents, or scratches** (para 2.11)**.**

c. **Check severance device and nipple for damaged threads.** None allowed.

d. **Check frame for cracks and corrosion** (para 2.11)**.**

GO TO NEXT PAGE

2.62. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

2.62.6. Installation

a. **Position door (17) in access opening.**

(1) Install two hinge pins (16) in hinge halves (13) and (14).

NOTE

- If installing original door, perform step i.
- If installing replacement door, perform step b.
- If interference contact between hinge halves exists, perform step d.

b. **Secure door cylinder assembly** (para 2.67)**.**

c. **Loosen lower hinge bolts (18) to allow movement of door.**

d. **If required, relieve interference between hinge halves and bow beam** (para 2.67)**.**

e. **Position door (17) to float on rubber seal in opening.** Remove any contact between door (17) bumper and airframe bumper (para 2.67).

NOTE

Minimum gap between door skin and airframe is **0.030 INCH**.

f. **If required, trim door skin to obtain acceptable gap.**

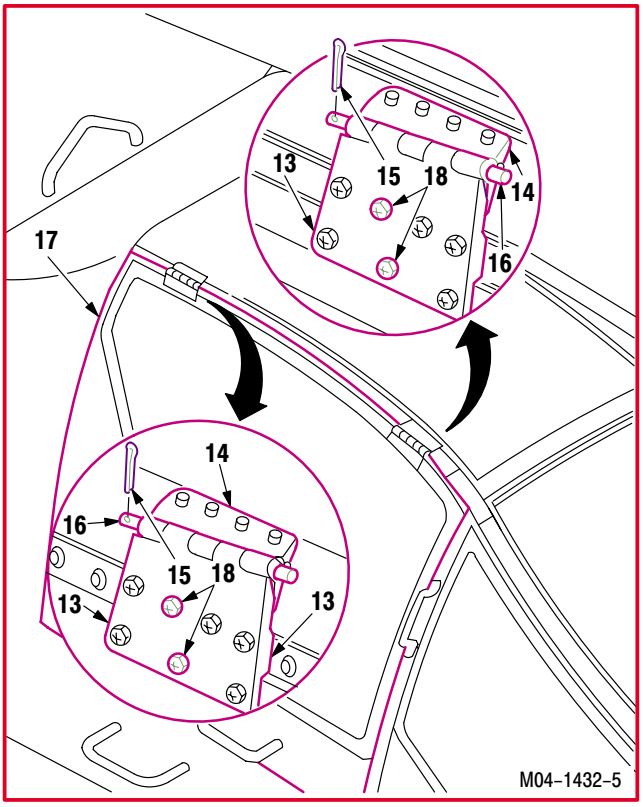
NOTE

Lower hinge bolts must be removed, cleaned, and new sealant applied before installation.

g. **Install lower hinge bolts** (para 2.66)**.**

h. **Release door cylinder assembly** (para 2.67)**.**

i. **Install two new cotter pins (15).**

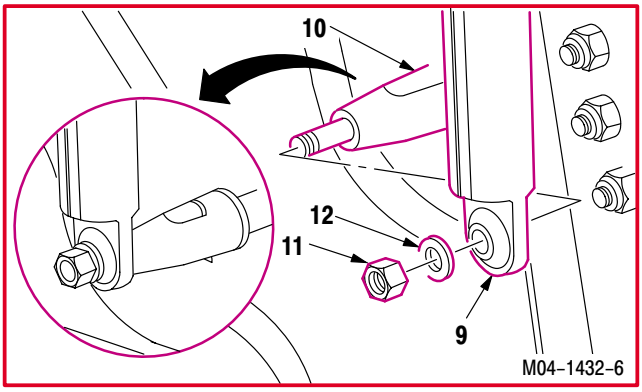


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2.62. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

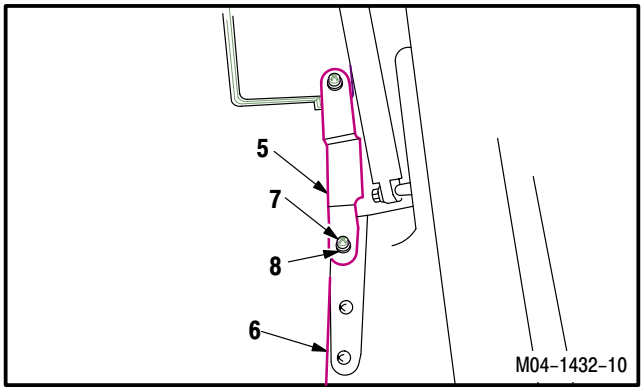
j. **Install cylinder (9) to anchor (10).**

(1) Install washer (12) and nut (11).



k. **Install clip (5) on glareshield (6).**

(1) Install two screws (7) and washers (8).





WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

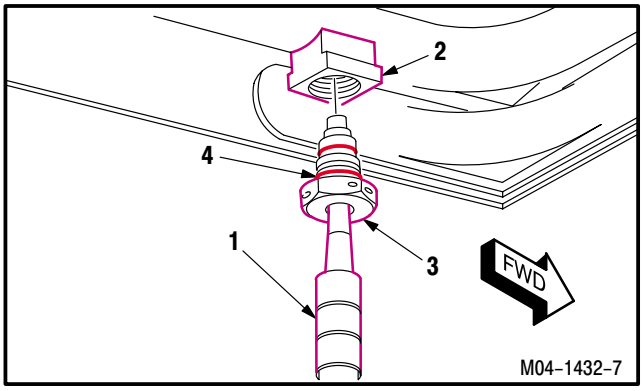
Install detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

l. **Install cord (1) in severance device (2).** Torque nipple (3) to **80 INCH-POUNDS**.

(1) Lubricate packing (4). Use petrolatum (item 138, App F).

(2) Install new packing (4) on nipple (3).

(3) Install nipple (3) in severance device (2).



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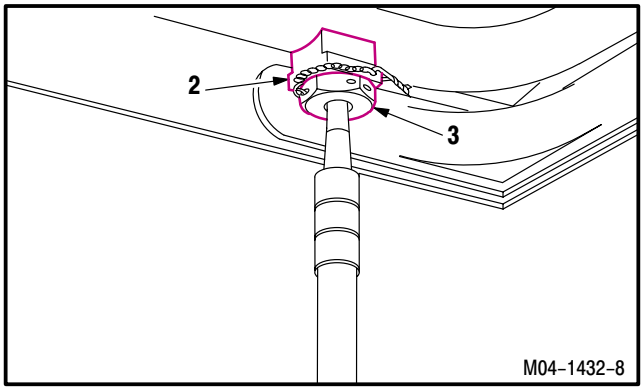
2.62. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION – continued

(4) Hold severance device (2). Torque nipple (3) to **80 INCH-POUNDS**. Use torque wrench.

(5) Lockwire nipple (3) to severance device (2). Use wire (item 226, App F).

m. **Inspect (QA).**

n. **Install pilot right air mixer** (para 13.45)**.**



END OF TASK

2.63. PILOT STATION ACCESS DOOR ADJUSTMENT

2.63.1. Description

This task covers: Adjustment.

2.63.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

References:

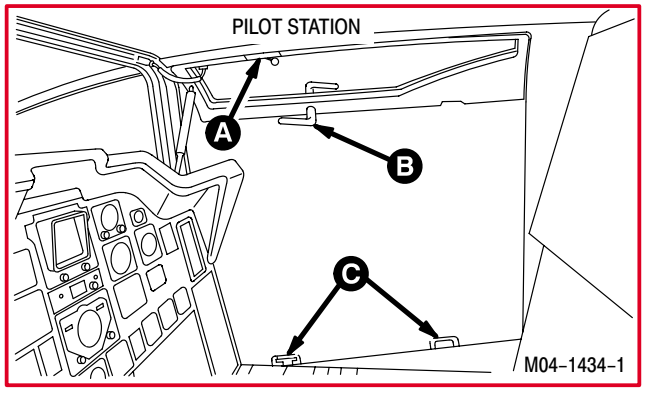
TM 1-1520-238-T

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



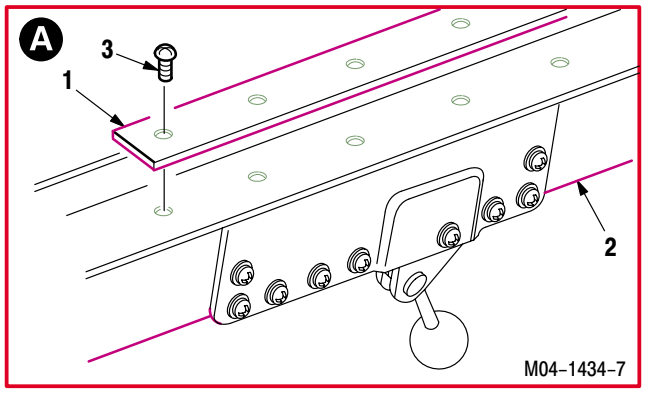
2.63.3. Adjustment

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove retainer seal (1) from pilot station access door (2).**

(1) Remove five screws (3) from retainer (1).

(2) Remove retainer (1) from door (2).



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2.63. PILOT STATION ACCESS DOOR ADJUSTMENT – continued

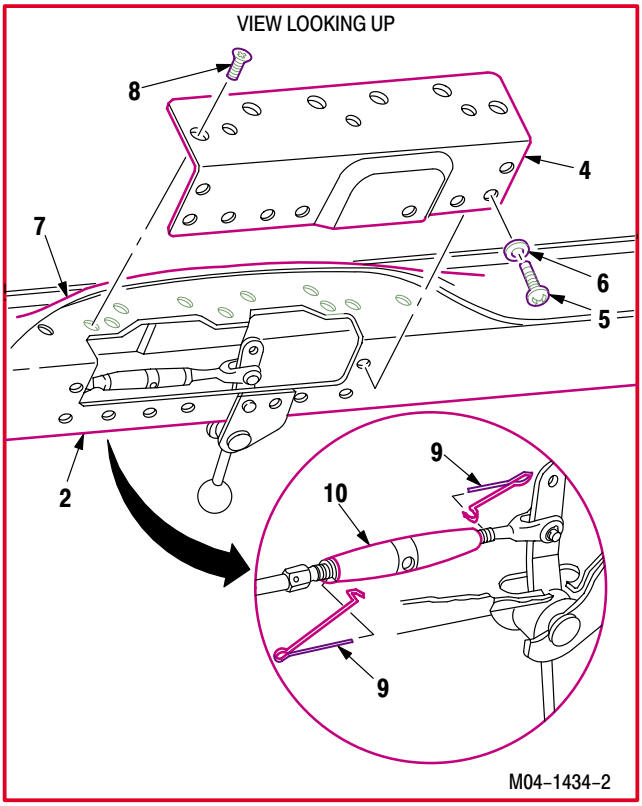
c. **Remove cover (4) from door (2).**

(1) Remove nine screws (5) and washers (6) from cover (4).

(2) Hold rubber seal (7) back. Remove six screws (8) from cover (4).

(3) Remove cover (4) from door (2).

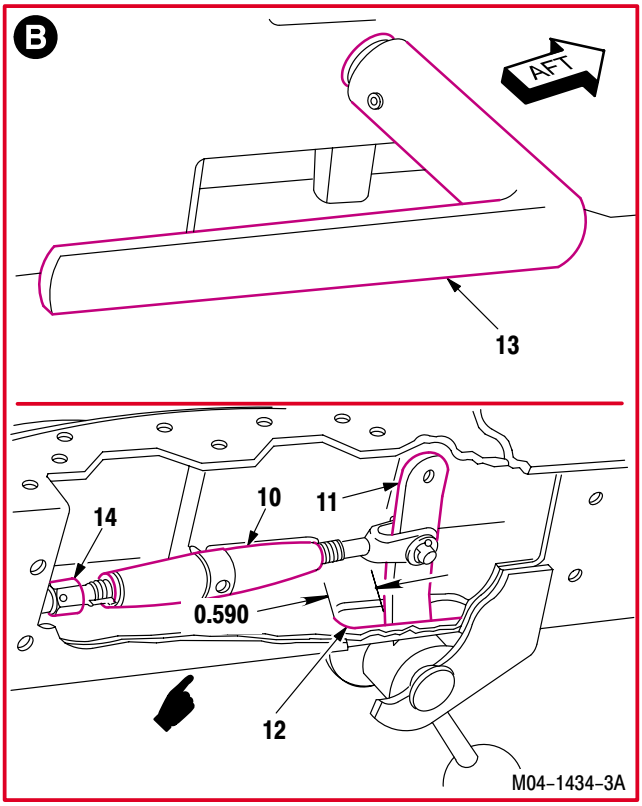
d. **Remove two retaining clips (9) from turnbuckle body (10).**



e. **Adjust canopy release lever (11) to 0.590 INCH from aft stop (12).**

(1) Place door handle (13) in fully closed and locked position.

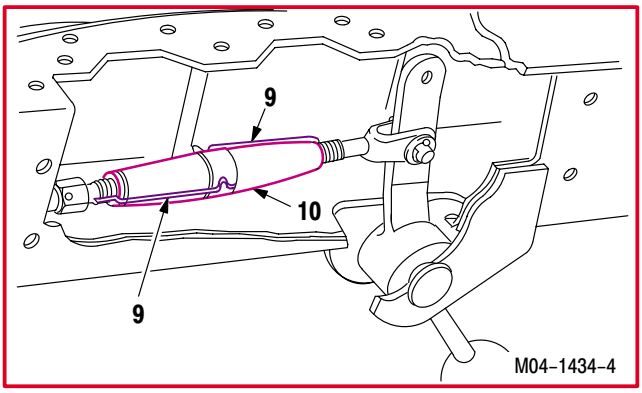
(2) Hold cable (14). Rotate turnbuckle (10) until lever (11) is **0.590 INCH** from aft stop (12).



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2.63. PILOT STATION ACCESS DOOR ADJUSTMENT – continued

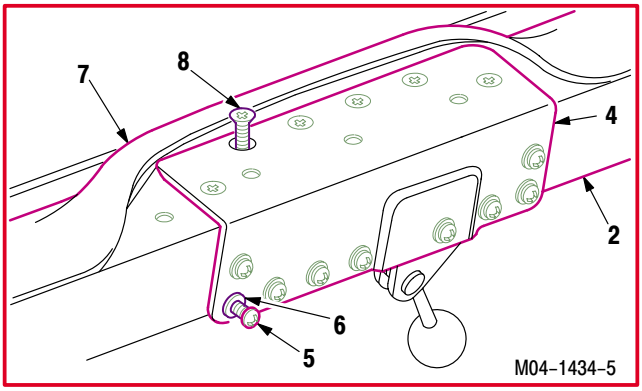
f. **Install two clips (9) in turnbuckle (10).**



g. **Install cover (4) on door (2).**

(1) Hold seal (7) back. Install six screws (8) on cover (4).

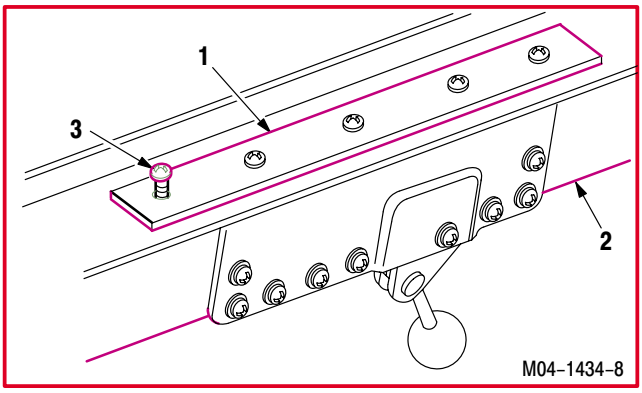
(2) Install nine screws (5) and washers (6) on cover (4).



h. **Install retainer (1) on door (2).**

(1) Position retainer (1) on door (2).

(2) Install five screws (3) on retainer (1).



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2.63. PILOT STATION ACCESS DOOR ADJUSTMENT – continued

i. **Adjust two door catch strikers (15).**

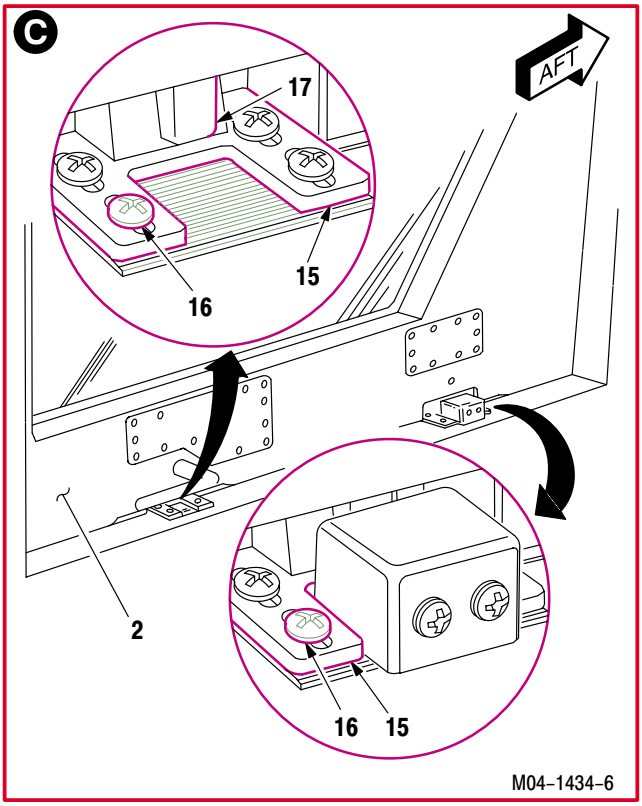
(1) Loosen eight screws (16) on two strikers (15).

(2) Hold door (2) closed. Position two strikers (15) against door locking bars (17).

j. **Torque eight screws (16) to 20 INCH–POUNDS.** Use torque wrench.

k. **Inspect (QA).**

l. **Perform pilot caution and warning system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM)

2.64.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.64.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
3/16 x 5/16 dowel (item 111, App H)
0.002 - 0.040-inch gap setting gage (item 147, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
Retention tool (figure D-447, App D)

Personnel Required:

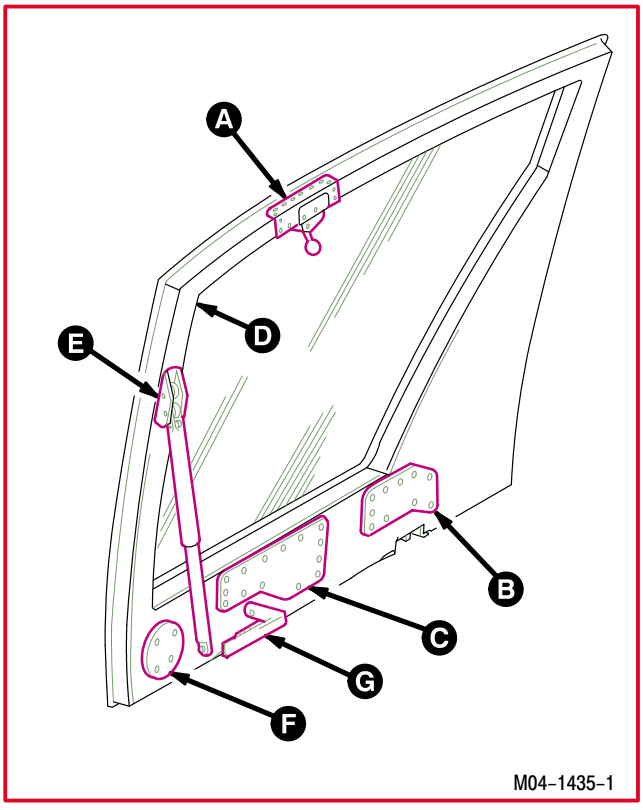
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Cotter pin (10)
Spring pin (2)
Lubricant (item 116, App F)
Wire (item 228, App F)

Equipment Conditions:

Ref	Condition
2.61	Pilot door transparent panel assembly removed



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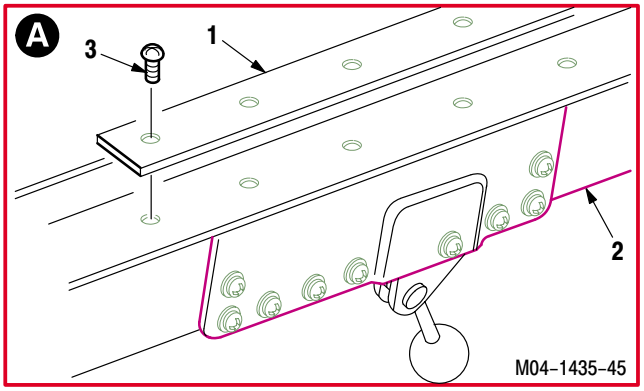
2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

2.64.3. Removal

a. **Remove seal retainer (1) from pilot station access door (2).**

(1) Remove five screws (3) from retainer (1).

(2) Remove retainer (1) from door (2).

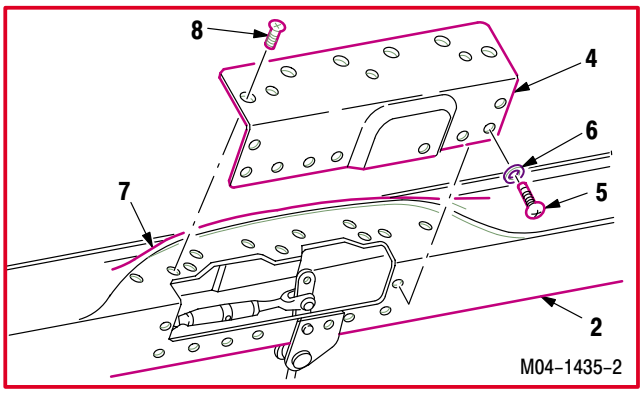


b. **Remove cover (4) from door (2).**

(1) Remove nine screws (5) and washers (6) from cover (2).

(2) Hold rubber seal (7) back. Remove six screws (8) from cover (4).

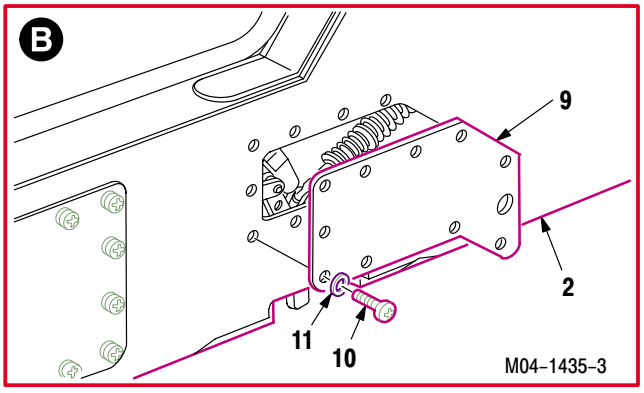
(3) Remove cover (4) from door (2).



c. **Remove cover (9) from door (2).**

(1) Remove 10 screws (10) and washers (11).

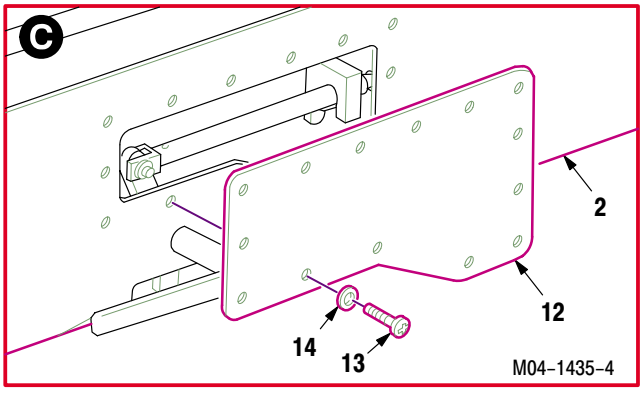
(2) Remove cover (9) from door (2).



d. **Remove cover (12) from door (2).**

(1) Remove 14 screws (13) and washers (14) from door (2).

(2) Remove cover (12) from door (2).



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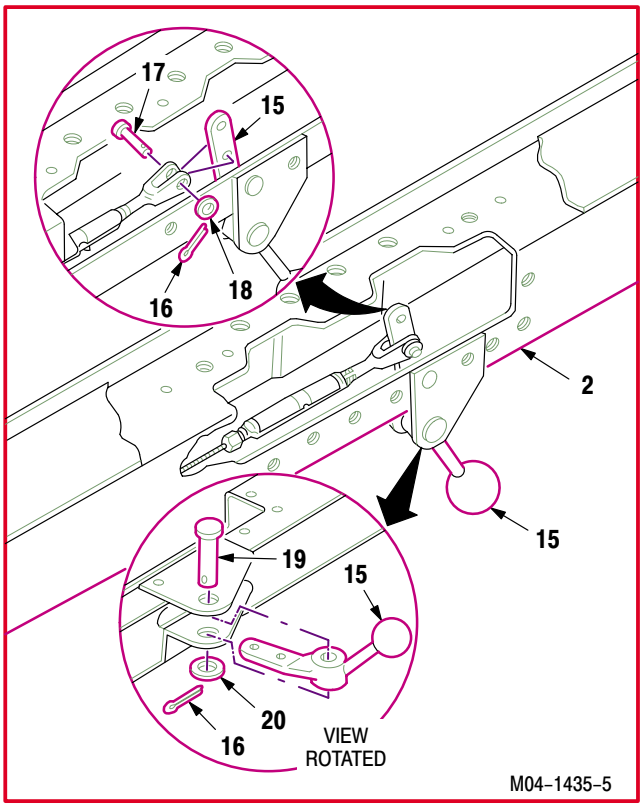
2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

e. **Remove canopy release lever (15) from door (2).**

(1) Remove and discard two cotter pins (16).

(2) Remove straight headed pin (17) and washer (18) from lever (15).

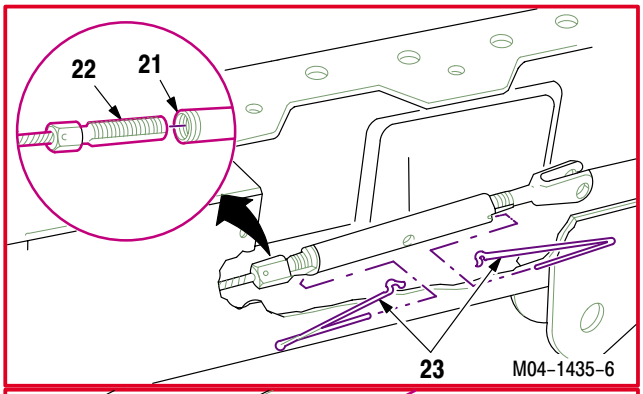
(3) Remove straight headed pin (19), washer (20), and lever (15) from door (2).



f. **Remove turnbuckle body (21) from cable (22).**

(1) Remove two retaining clips (23).

(2) Hold cable (22). Rotate turnbuckle (21) until free of cable (22).

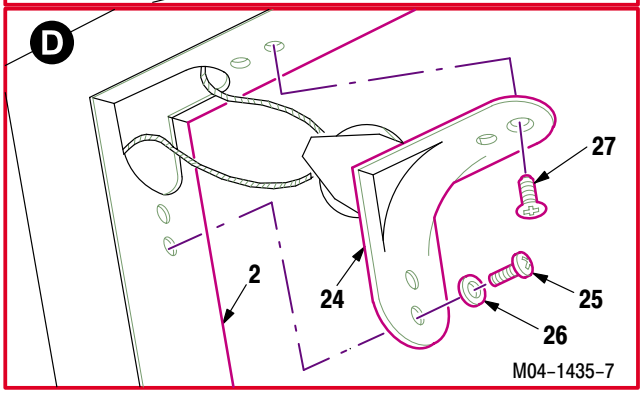


g. **Remove bracket (24) from door (2).**

(1) Remove three screws (25) and washers (26) from bracket (24).

(2) Remove flush screw (27) from bracket (24).

(3) Remove bracket (24) from door (2).



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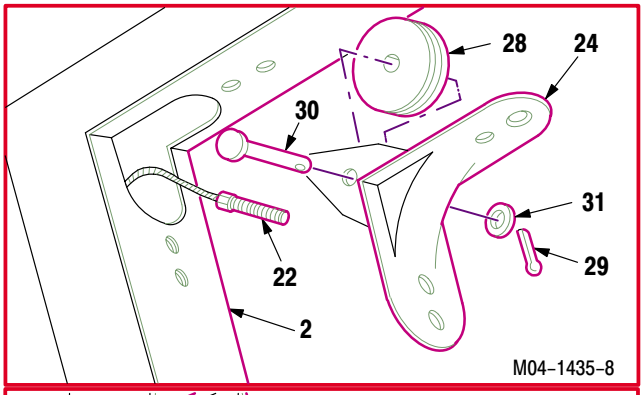
2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

h. **Remove groove pulley (28) from bracket (24).**

(1) Remove and discard cotter pin (29).

(2) Remove straight headed pin (30), washer (31), and pulley (28) from bracket (24).

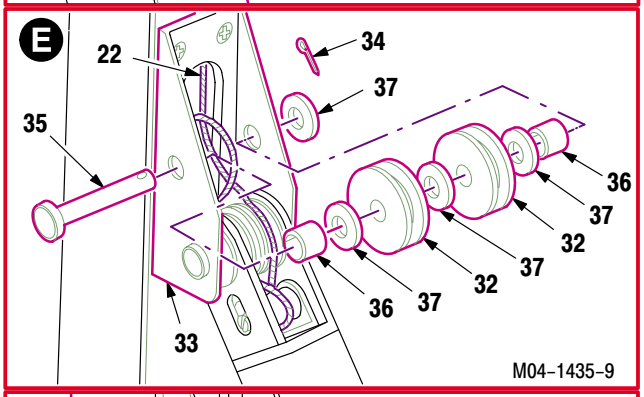
(3) Pull cable (22) through door (2) free of bracket (24).



i. **Remove two groove pulleys (32) from bracket (33).**

(1) Remove and discard cotter pin (34).

(2) Remove straight headed pin (35), two pulleys (32), sleeve bushings (36), and four washers (37) from cable (22) and bracket (33).



j. **Remove cylinder assembly (38) from bracket (33).**

(1) Remove and discard cotter pin (39).

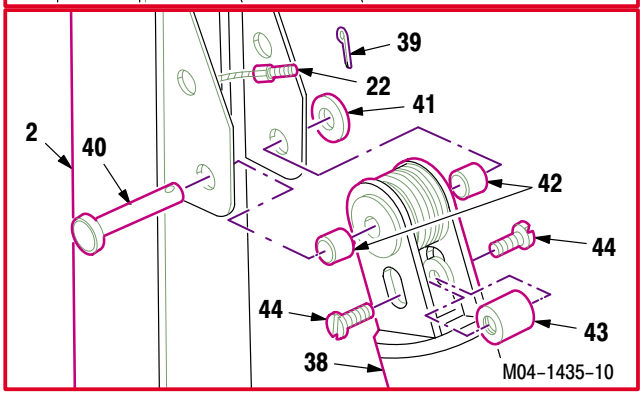
(2) Remove straight headed pin (40), washer (41), and two sleeve bushings (42) from cylinder (38).

k. **Remove door strut pulley (43) and cable (22) from cylinder (38).**

(1) Remove two shoulder screws (44) from spool (43).

(2) Remove strut pulley (43) from cylinder (38) and cable (22).

(3) Pull cable (22) through door (2). Remove from cylinder (38).



GO TO NEXT PAGE

2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

l. **Remove bracket (45) from door (2).**

(1) Remove four screws (46) and washers (47) from bracket (45).

(2) Remove bracket (45) from door (2).

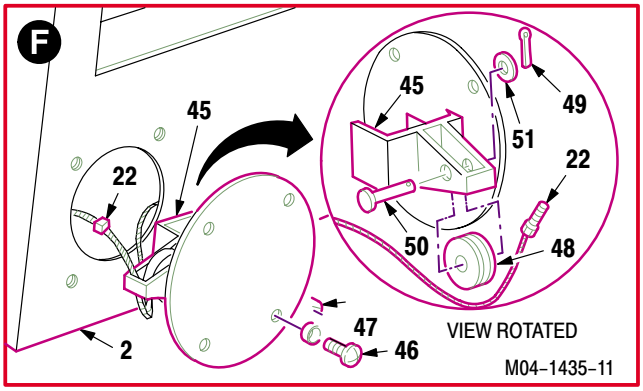
m. **Remove groove pulley (48) from bracket (45).**

(1) Remove and discard cotter pin (49).

(2) Remove straight headed pin (50), washer (51), and pulley (48) from bracket (45).

(3) Pull cable (22) through door (2) and free of bracket (45).

(4) Remove pulley (48) from bracket (45).

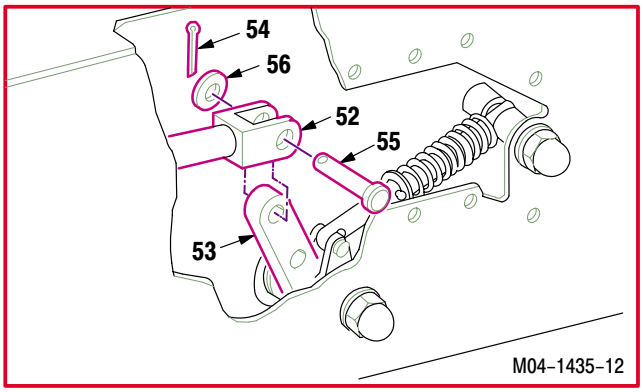


n. **Remove connecting link (52) from aft locking bar (53).**

(1) Remove and discard cotter pin (54).

(2) Remove straight headed pin (55) and washer (56).

(3) Remove link (52) from bar (53).

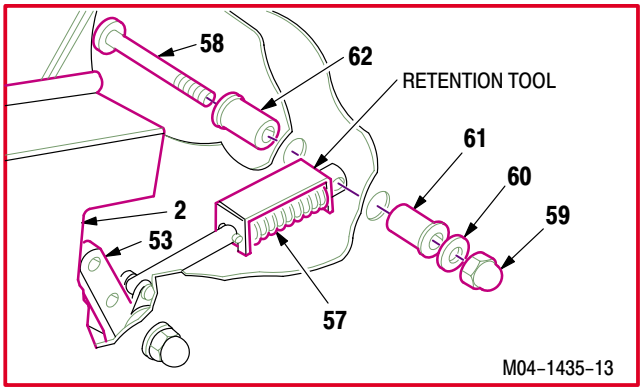


o. **Remove bar (53) from door (2).**

(1) Install retention tool on locking bar mechanism (57).

(2) Hold clevis bolt (58). Remove nut (59), washer (60), and sleeve bushing (61).

(3) Remove bolt (58) and sleeve bushing (62).



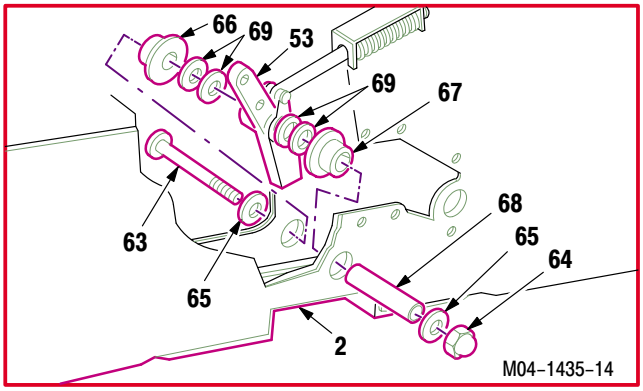
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2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

(4) Hold bolt (63). Remove nut (64) and washer (65).

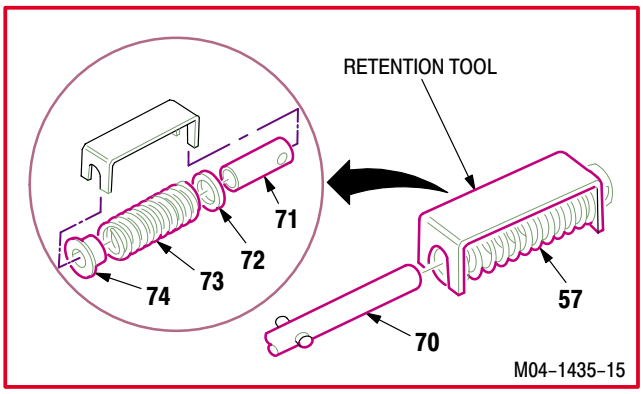
(5) Remove bolt (63), two washers (65), three sleeve bushings (66), (67), and (68), and four washers (69).

(6) Remove bar (53) from door (2).



p. **Remove locking bar mechanism (57) from aft locking bar (70).**

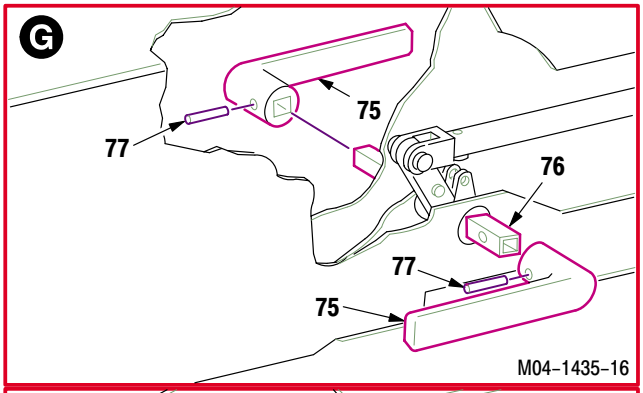
(1) Slide retainer (71), washer (72), helical spring (73), and spring keeper (74) from bar (70). Use retention tool.



q. **Remove two door handles (75) from shaft (76).**

(1) Remove and discard two spring pins (77).

(2) Remove two handles (75) and washer (76).

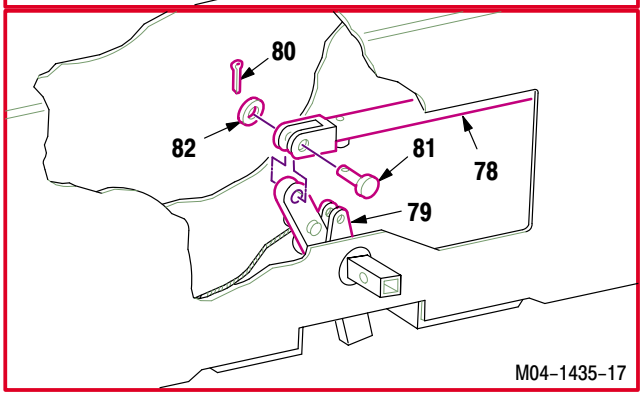


r. **Remove connecting link (78) from forward locking bar (79).**

(1) Remove and discard cotter pin (80).

(2) Remove straight headed pin (81) and washer (82).

(3) Remove link (78) from bar (79).



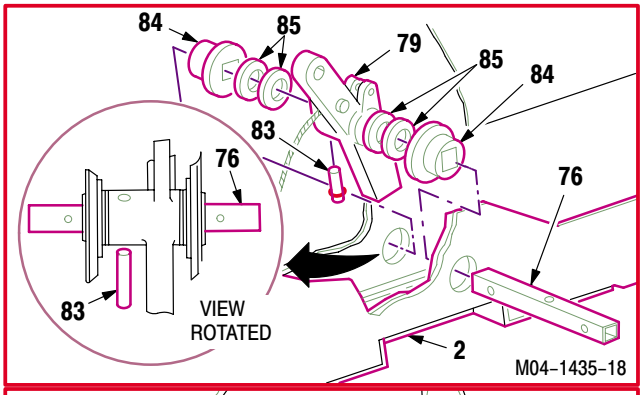
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2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

s. **Remove bar (79) from door (2).**

(1) Remove spring pin (83) from shaft (76).

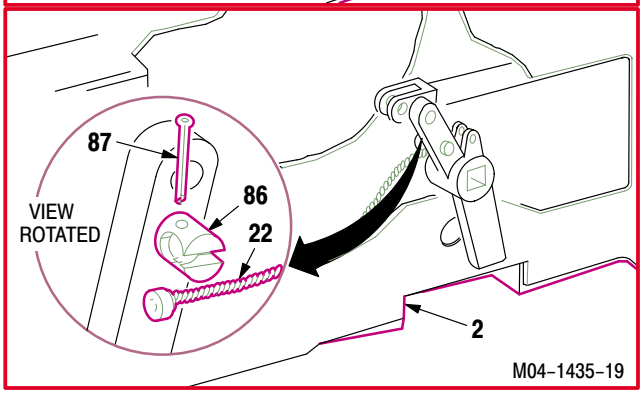
(2) Remove shaft (76), two sleeve bushings (84), four washers (85), and bar (79) from door (2).



t. **Remove cable (22) from adapter (86).**

(1) Remove and discard cotter pin (87).

(2) Remove cable (22) from adapter (86).



u. **Remove links (52) and (78) from door (2).**

2.64.4. Cleaning

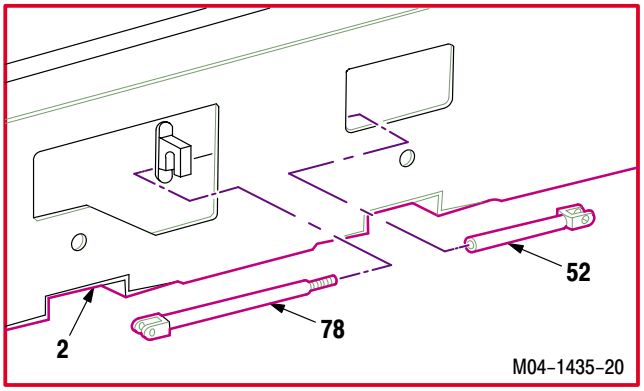
a. **Clean removed and attaching parts** (para 1.47)**.**

2.64.5. Inspection

a. **Check door for cracks and corrosion** (para 2.12)**.**

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

c. **Check removed and attaching parts for cracks.** None allowed.

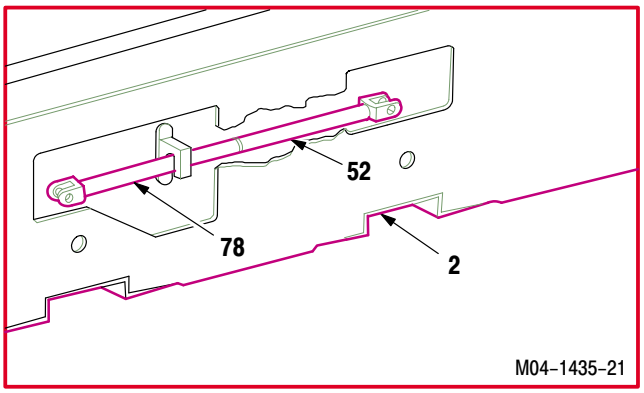


2.64.6. Installation



a. **Lubricate removed parts.** Use lubricant (item 116, App F).

b. **Install links (52) and (78) as one unit in door (2).**



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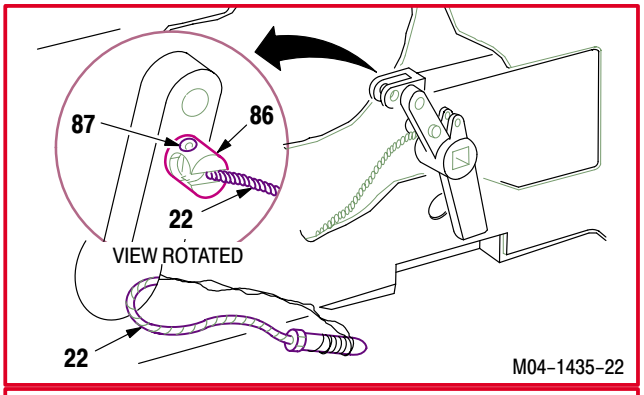
2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

c. **Install cable (22) on adapter (86).**

(1) Install cable (22) on adapter (86).

(2) Install new cotter pin (87).

(3) Attach lockwire to loose end of cable (22) to aid in installation. Use wire (item 228, App F).

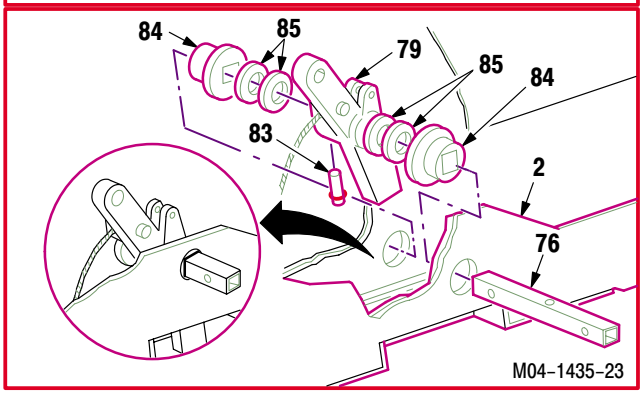


d. **Install bar (79) in door (2).**

NOTE

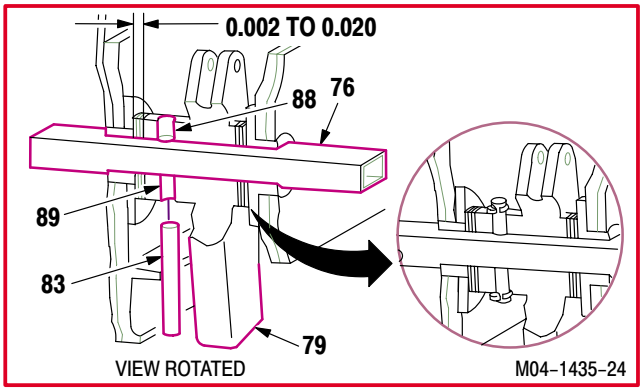
Install required amount of washers to achieve a **0.002 to 0.020 INCH** gap.

(1) Install shaft (76) through door (2), bushing (84), required washers (85), bar (79), washers (85), bushing (84), and door (2).



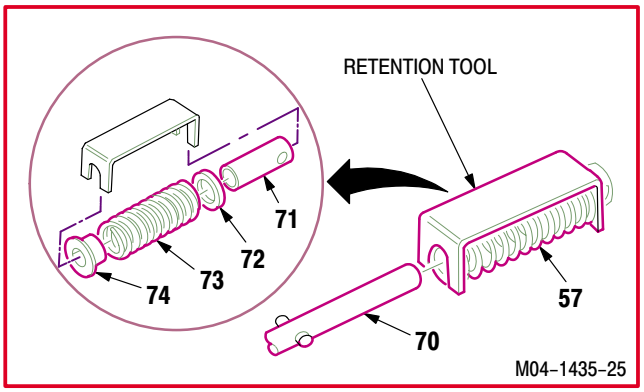
(2) Aline hole (88) in shaft (76) with hole (89) in bar (79).

(3) Install pin (83) through alined holes (88) and (89).



e. **Install bar mechanism (57) on bar (70).**

(1) Stack and hold keeper (74), spring (73), washer (72), and retainer (71) on bar (70). Use retention tool.



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2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

f. **Install bar (53) in door (2).**

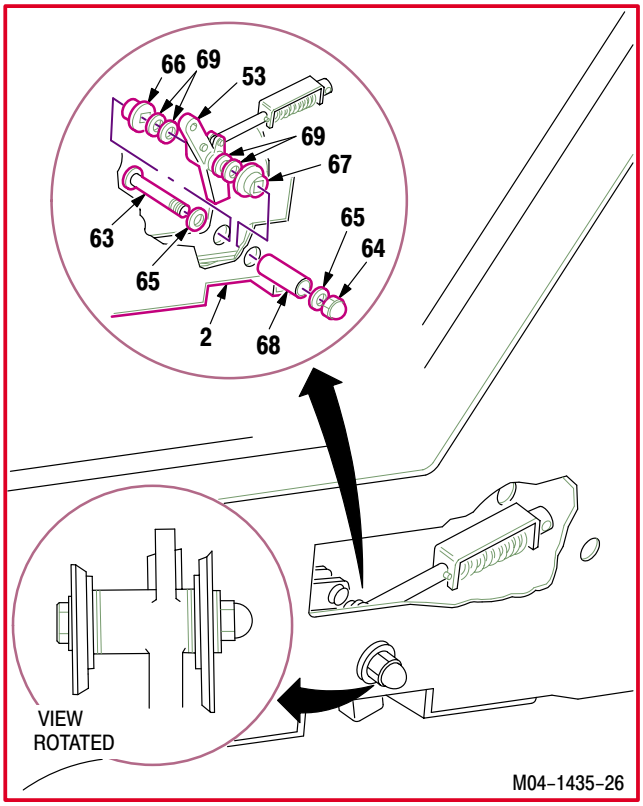
NOTE

Shim as required.

(1) Install bushing (68) through door (2), bushing (67), two washers (69), bar (53), two washers (69), bushing (66), and door (2).

(2) Install bolt (63) through washer (65) and bushing (68).

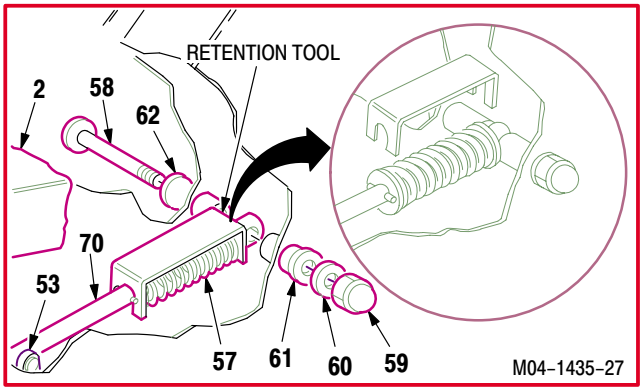
(3) Hold bolt (63). Install washer (65) and nut (64).



(4) Install bolt (58) through door (2), bushing (62), bar (70), and bushing (61).

(5) Hold bolt (58). Install washer (60) and nut (59).

(6) Remove retention tool from locking bar mechanism (57).

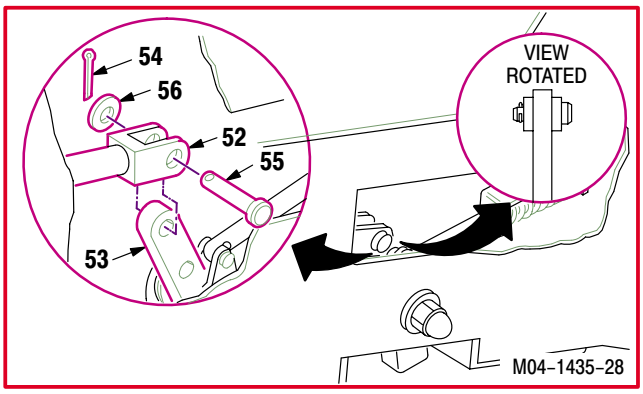


g. **Install link (52) on bar (53).**

(1) Install link (52) on bar (53).

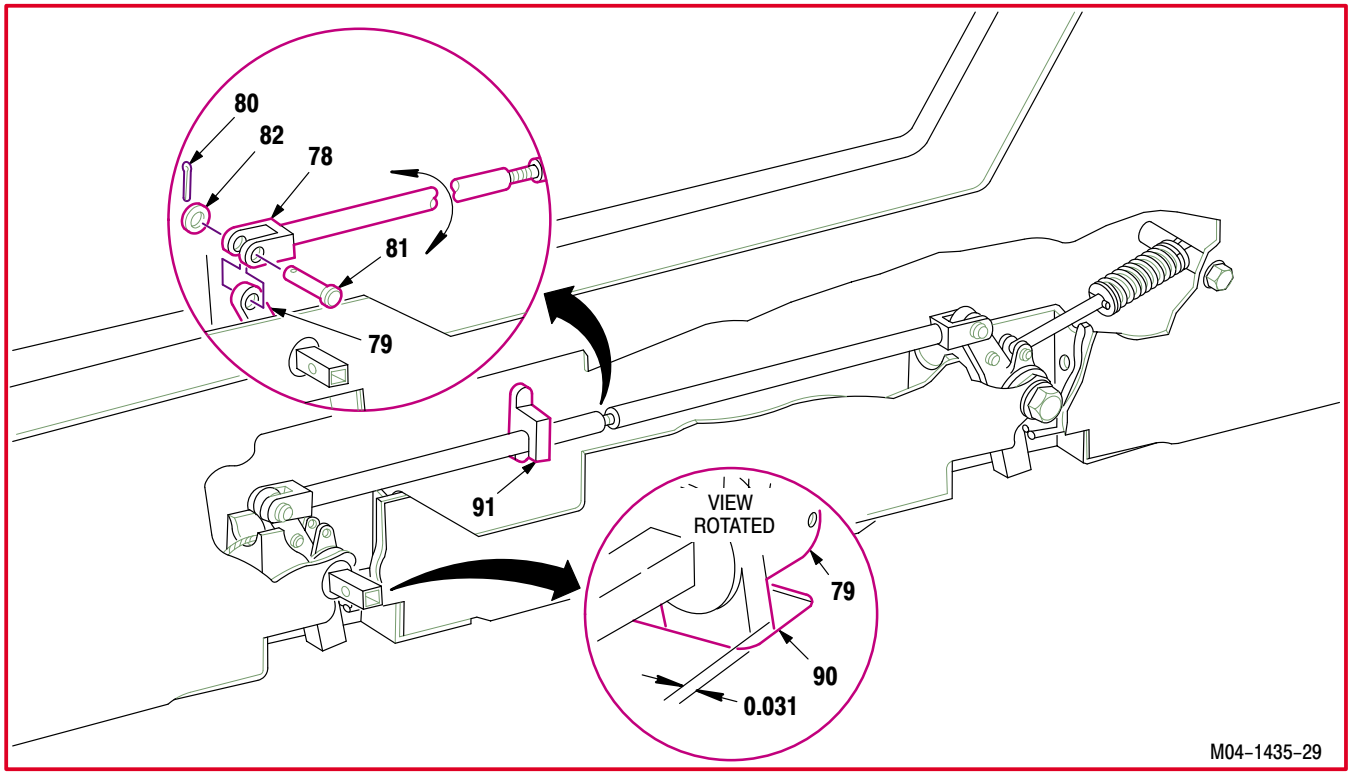
(2) Install pin (55) through washer (56), link (52), and bar (53).

(3) Install new cotter pin (54).



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2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued



h. **Install link (78) on bar (79).**

(1) Adjust link (78) so that bar (79) is **0.031 INCH** from stop (90). Use gap setting gage.

(2) Turn link (78) counterclockwise to lengthen.

(3) Install link (78) on guide (92).

(4) Install link (78) on bar (79).

(5) Install pin (81) and washer (82).

(6) Install new cotter pin (80).

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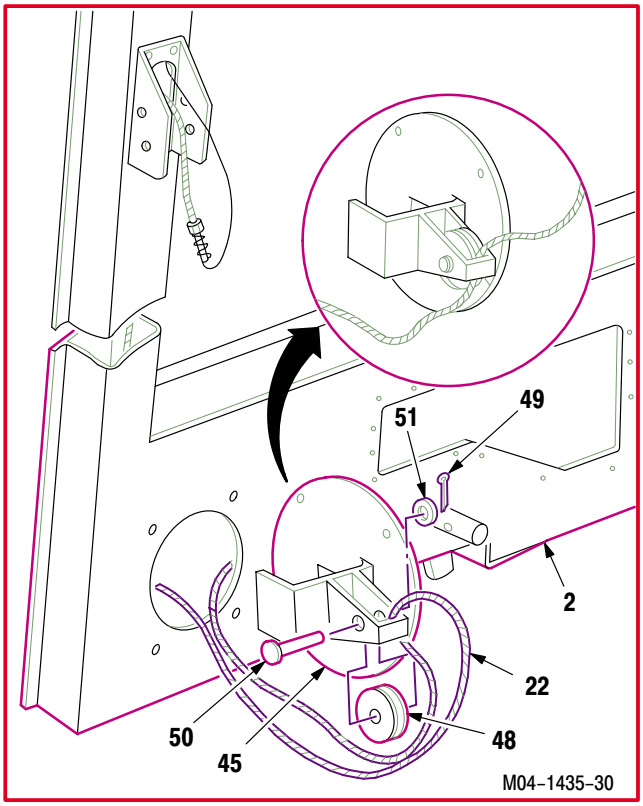
2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

i. **Install pulley (48) on bracket (45).**

(1) Feed cable (22) through bracket (45) and door (2).

(2) Install pin (50) through bracket (45), pulley (48), and washer (51).

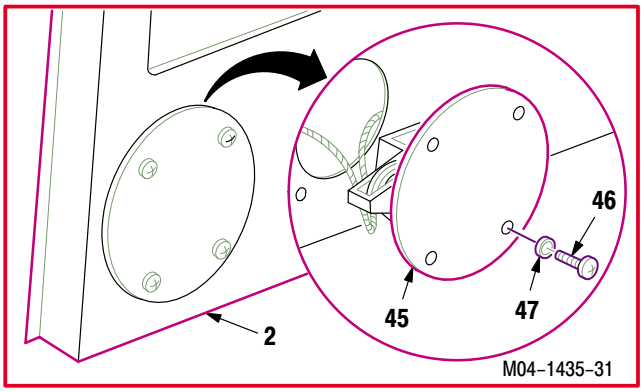
(3) Install new cotter pin (49).



j. **Install bracket (45) on door (2).**

(1) Position bracket (45) on door (2).

(2) Install four screws (46) and washers (47).

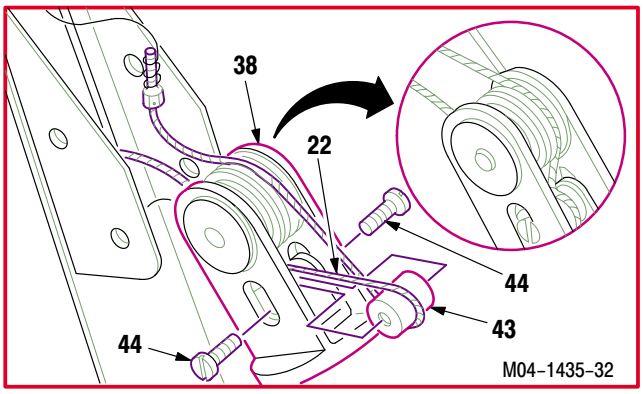


k. **Install cable (22) and strut pulley (43) on cylinder (38).**

(1) Feed cable (22) in cylinder (38).

(2) Aline strut pulley (43) in strut (38).

(3) Install two screws (44) through cylinder (38) and strut pulley (43).



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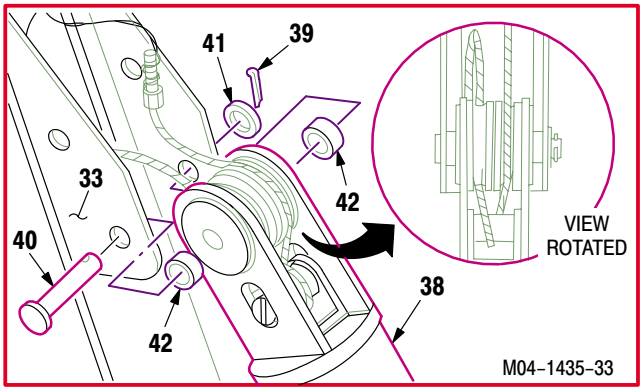
2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

l. **Install cylinder (38) on bracket (33).**

(1) Install cylinder (38) and two bushings (42) in bracket (33).

(2) Install pin (40) through bracket (33), bushing (42), cylinder (38), bushing (42), bracket (33), and washer (41).

(3) Install new cotter pin (39).



m. **Install two pulleys (32) on bracket (33).**

(1) Stack two pulleys (32), three washers (37), and two bushings (36) on 3/16 inch dowel (92). Use dowel.

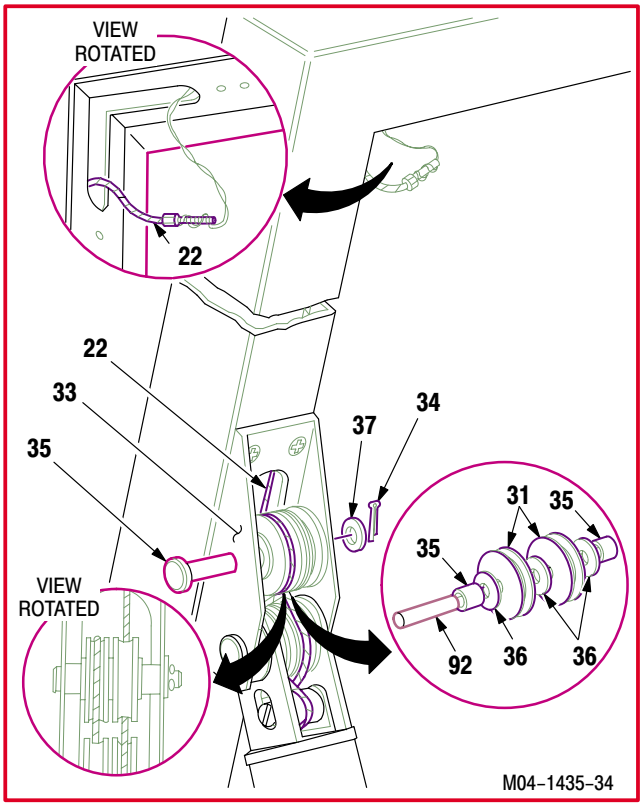
(2) Feed cable (22) to pulley area.

(3) Position cable (22) around two pulleys (32).

(4) Position two pulleys (32), three washers (37), and two bushings (36) in bracket (33).

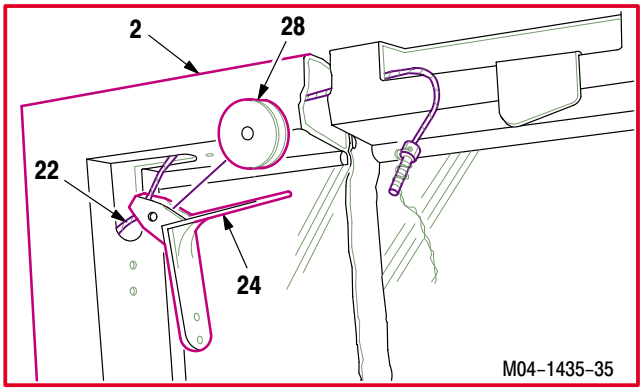
(5) Insert pin (35) through bracket (33), two bushings (36), four washers (37), and two pulleys (32) pushing 3/16 inch dowel (92) through.

(6) Install new cotter pin (34).



n. **Install pulley (28) on bracket (24).**

(1) Feed cable (22) through bracket (24) and door (2).



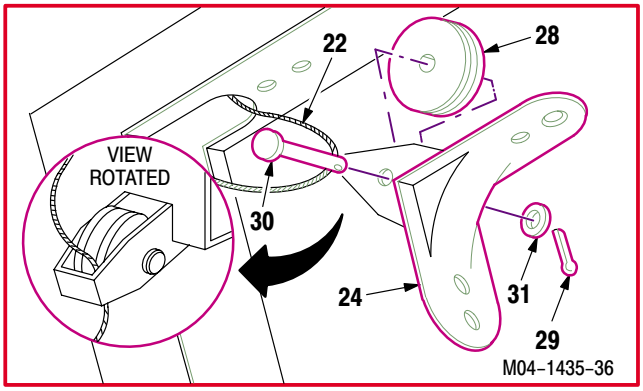
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2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

(2) Install pulley (28) on cable (22) and in bracket (24).

(3) Install pin (30) through bracket (24), pulley (28), and washer (31).

(4) Install new cotter pin (29).

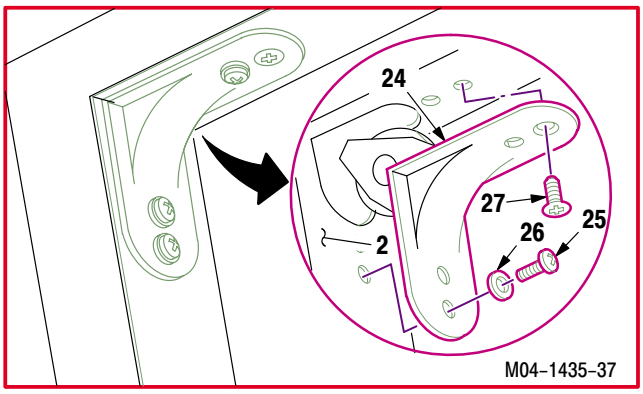


o. **Install bracket (24) on door (2).**

(1) Install bracket (24) on door (2).

(2) Install three screws (25) and washers (26) on bracket (24).

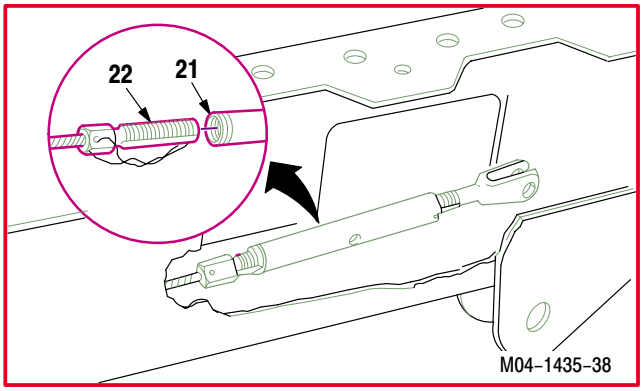
(3) Install screw (27) on bracket (24).



p. **Install turnbuckle (21) on cable (22).**

(1) Remove lockwire from cable (22).

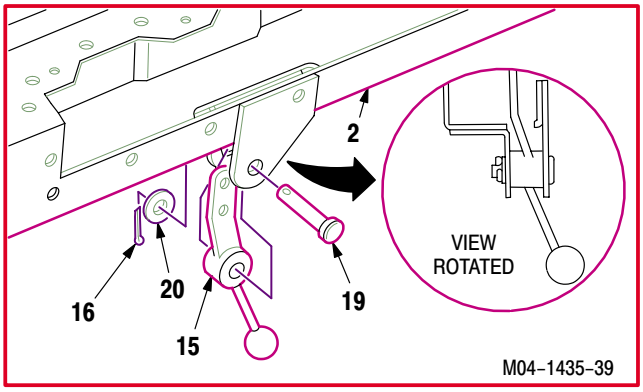
(2) Hold cable (22). Rotate turnbuckle (21) on cable (22).



q. **Install lever (15) on door (2).**

(1) Install pin (19) through door (2), lever (15), and washer (20).

(2) Install new cotter pin (16).



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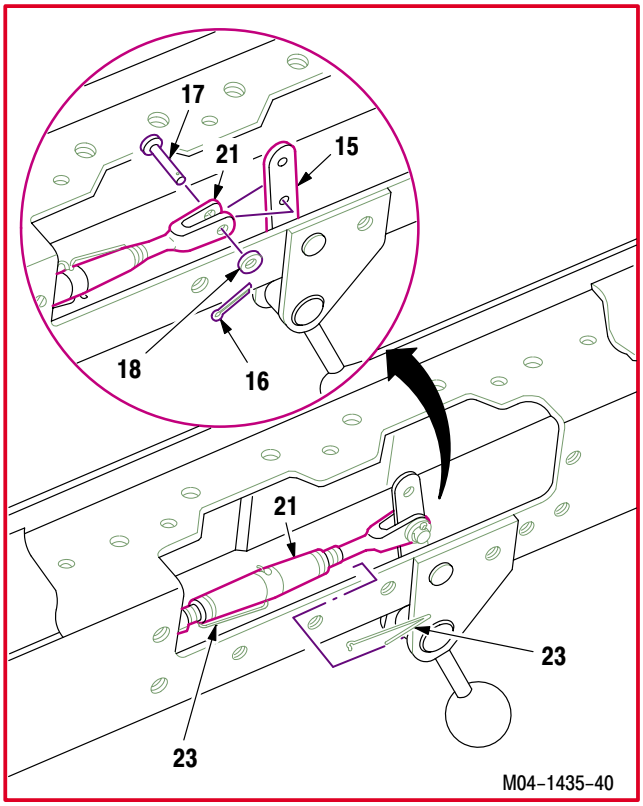
2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

(3) Install pin (17) through turnbuckle (21), lever (15), and washer (18).

(4) Install new cotter pin (16).

r. **Adjust door lock** (para 2.63)**.**

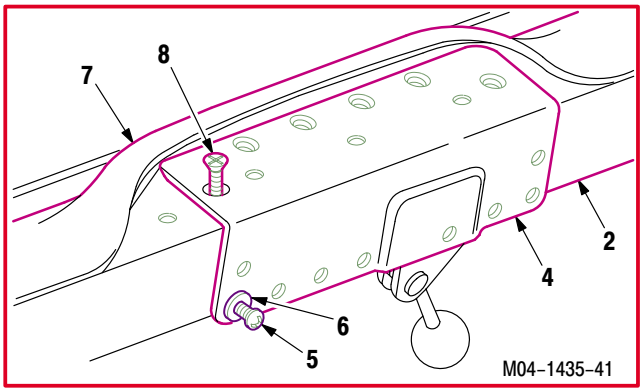
s. **Install two clips (23) on turnbuckle (21).**



t. **Install cover (4) on door (2).**

(1) Hold seal (7) back. Install six screws (8) on cover (4).

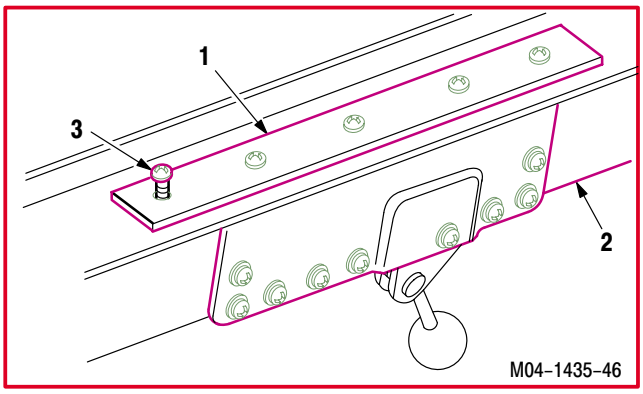
(2) Install nine screws (5) and washers (6) on cover (4).



u. **Install retainer (1) on door (2).**

(1) Position retainer (1) on door (2).

(2) Install five screws (3) on retainer (1).

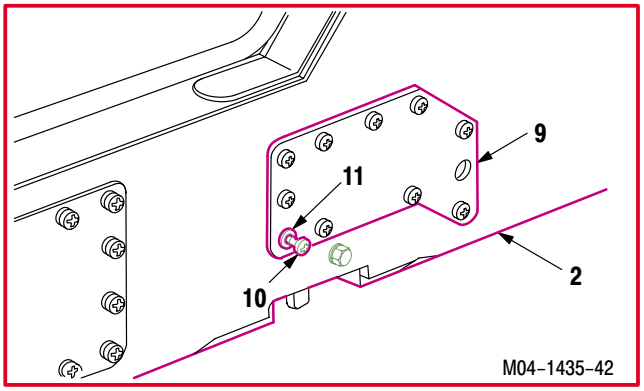


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2.64. PILOT STATION ACCESS DOOR MECHANISM REPAIR (AVIM) – continued

v. **Install cover (9) on door (2).**

(1) Install 10 screws (10) and washers (11) on cover (9).

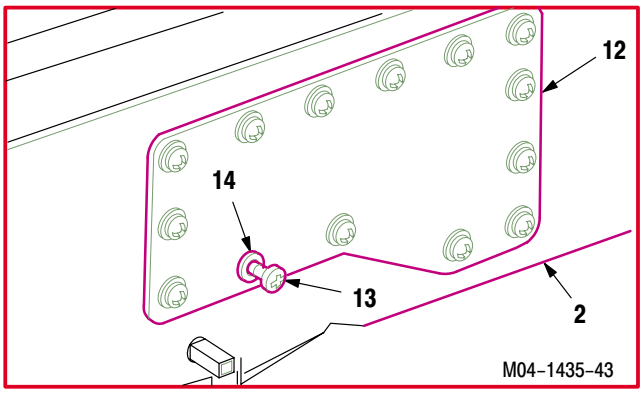


w. **Install cover (12) on door (2).**

(1) Install 14 screws (13) and washers (14) on cover (12).

CAUTION

To prevent opening of door in flight, ensure spring-back motion of door handle with pilot/CPG door open.



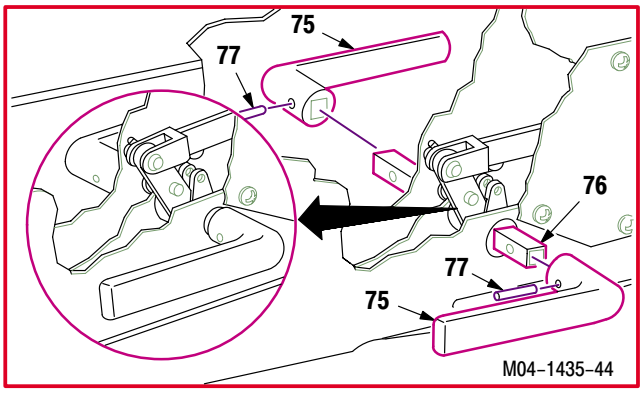
x. **Install two door handles (75) on shaft (76).**

(1) Install two door handle (75) on shaft (76).

(2) Install two pins (77) through handles (75).

y. **Install pilot door transparent panel assembly** (para 2.61)**.**

z. **Inspect (QA).**



END OF TASK

2.65. PILOT STATION ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION

2.65.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.65.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Sealing compound (item 169, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.65.3. Removal

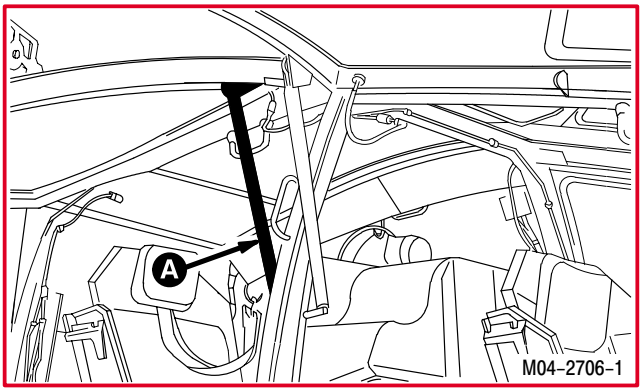
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

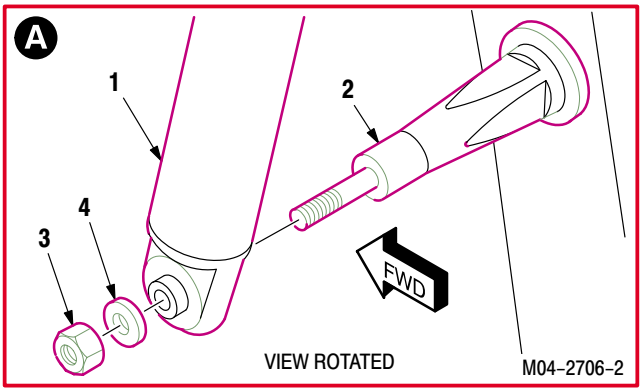
b. **Prop pilot access door open.**

c. **Remove door cylinder assembly (1) from anchor rod (2).**

(1) Remove nut (3) and washer (4) from rod (2).

(2) Remove cylinder (1) from rod (2).





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2.65. PILOT STATION ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION – continued

d. **Remove nut (5) and screw (6) from cylinder (1).**

e. **Swing out strut pulley (7) and remove from twisted cable (8) and cylinder (1).**

2.65.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

b. **Wipe attaching areas of cylinder with a clean rag.**

2.65.5. Inspection

a. **Check attaching points of cylinder for excessive wear** (para 2.11)**.**

2.65.6. Installation

a. **Install strut pulley (7) in cylinder (1).**

(1) Install pulley (7) in twisted cable (8).

(2) Swing pulley (7) into cylinder (1).



b. **Install screw (6) and nut (5) in cylinder (1).**

(1) Apply sealant to threads of screw (6). Use sealing compound (item 169, App F).

(2) Install screw (6) and nut (5) in cylinder (1).

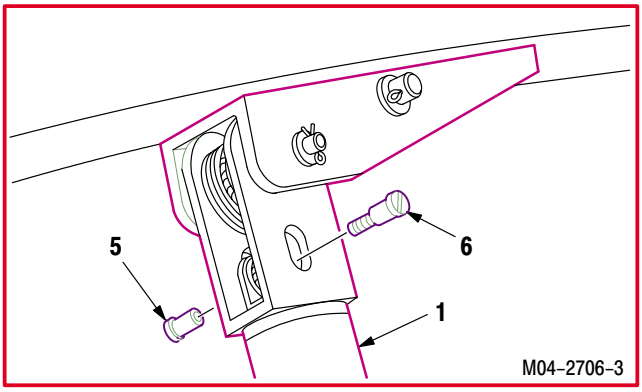
c. **Install cylinder (1) on rod (2).**

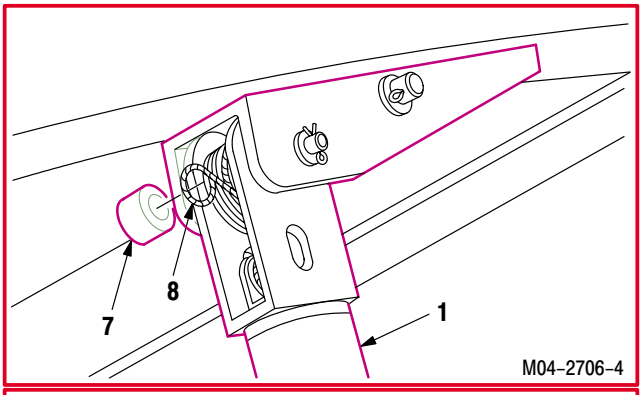
(1) Install cylinder (1), washer (4), and nut (3) on rod (2).

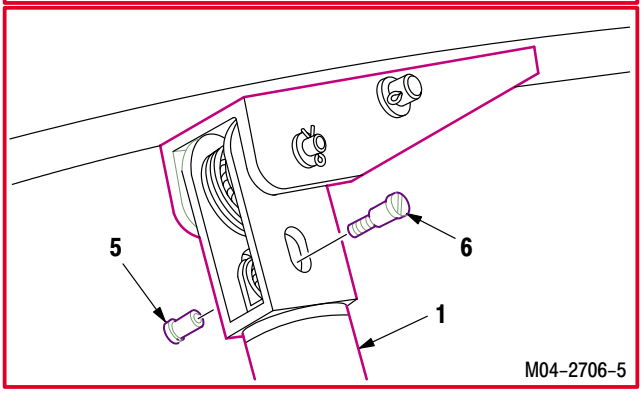
d. **Close pilot station access door.**

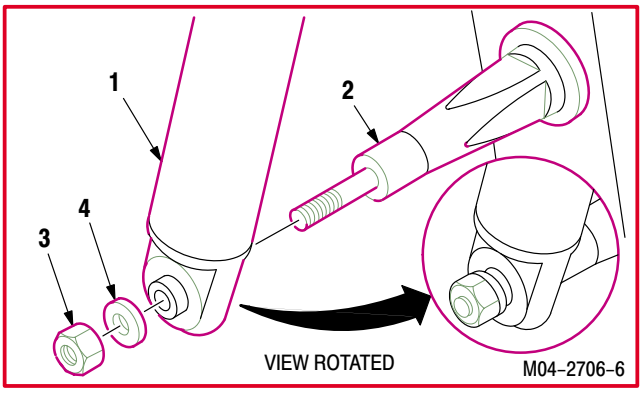
e. **Inspect (QA).**

END OF TASK









2.66. PILOT STATION ACCESS DOOR LOWER HINGE BUTT REMOVAL/INSTALLATION

2.66.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.66.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Cotter pin
Brush (item 34, App F)
Sealing compound (item 176, App F)

Personnel Required:

68G Aircraft Structural Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

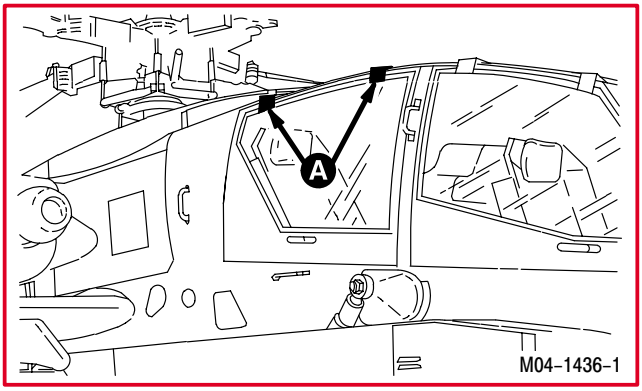
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right pilot station lower hinge butts.



2.66.3. Removal

a. **Close and latch pilot station access door (1).**

b. **Remove lower hinge butt (2) from pilot station access door (1).**

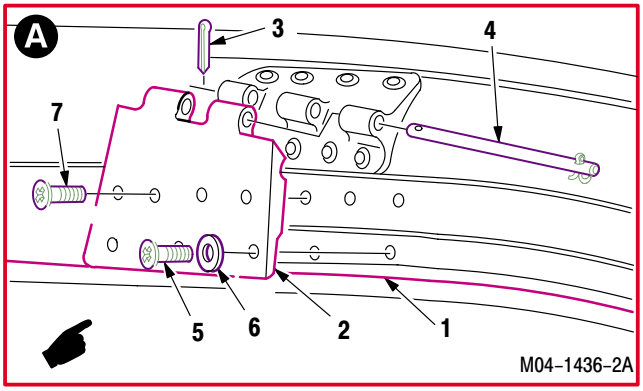
(1) Remove and discard cotter pin (3) from hinge pin (4).

(2) Remove hinge pin (4) (TM 1-1500-204-23).

(3) Remove three screws (5) and washers (6).

(4) Remove four screws (7).

(5) Remove hinge (2) from door (1).



GO TO NEXT PAGE

2.66. PILOT STATION ACCESS DOOR LOWER HINGE BUTT REMOVAL/INSTALLATION – continued

2.66.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.66.5. Inspection

a. **Check mounting surface for cracks and corrosion** (para 2.11)**.**

b. **Check hinge for damage** (TM 1-1500-204-23)**.**

c. **Check relative play across hinge pin.**

(1) Maximum allowable play is **0.010 INCH**.

2.66.6. Installation

a. **Ensure door (1) is closed and latched.**



b. **Install hinge (2) on door (1).**

(1) Aline hinge halves (2) and (8).

(2) Install hinge pin (4) (TM 1-1500-204-23).

(3) Locate and mark seven hole locations on hinge (2) (TM 1-1500-204-23).

(4) Remove hinge pin (4) and lower hinge (2).

(5) Drill seven holes **0.313 to 0.319 INCH** in diameter through hinge (2).

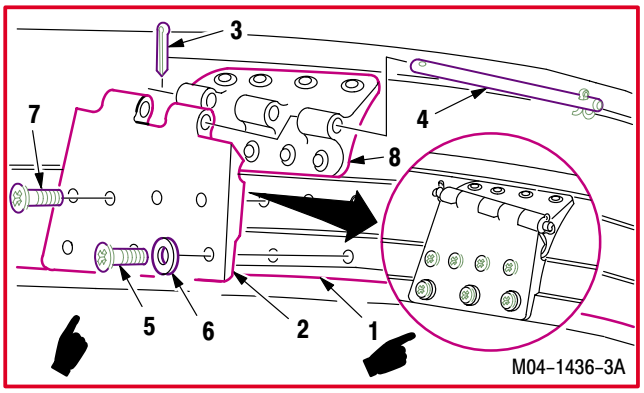
(6) Apply sealant to threads of four screws (7) and three screws (5). Use sealing compound (item 176, App F) and brush (item 34, App F).

(7) Install four screws (7) finger tight.

(8) Install three screws (5) and washers (6) finger tight.

(9) Install hinge pin (4).

(10) Install new cotter pin (3).



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2.66. PILOT STATION ACCESS DOOR LOWER HINGE BUTT REMOVAL/INSTALLATION – continued

c. **Position pilot door in frame** (para 2.62)**.**

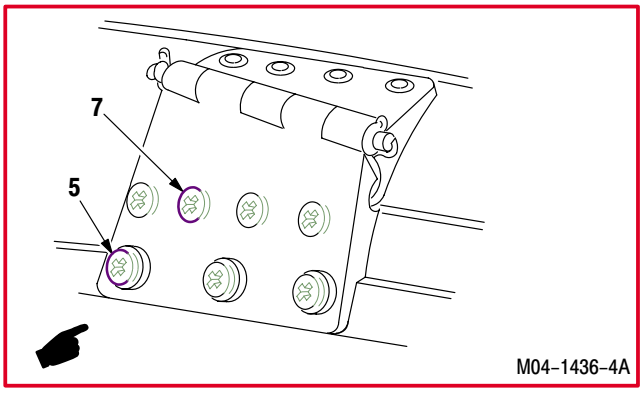
d. **Torque four screws (7) to 20 INCH-POUNDS.** Use torque wrench.

CAUTION

To prevent damage to windshield panel, do not over-torque screws.

e. **Torque three screws (5) to 15 INCH-POUNDS.** Use torque wrench.

f. **Inspect (QA).**



END OF TASK

2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION

2.67.1. Description

This task covers: Removal. Cleaning. Inspection. Alinement. Repair. Installation.

2.67.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

68G Aircraft Structural Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-345-23

Materials/Parts:

Adhesive (item 14, App F)
Adhesive (item 19, App F)
Shim (item 181, App F)
Tape (item 201, App F)
Wire (item 225, App F)

Equipment Conditions:

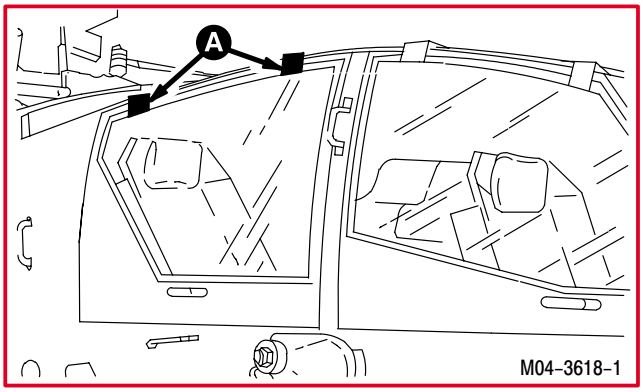
Ref	Condition
1.57	Helicopter safed
13.45	Pilot right air mixer removed
2.62	Pilot station access door removed

CAUTION

To prevent damage to canopy transparent panels when performing maintenance in or around pilot station, use protective covering.

NOTE

This task is typical for pilot left and/or right upper hinge butts.



GO TO NEXT PAGE

2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

2.67.3. Removal

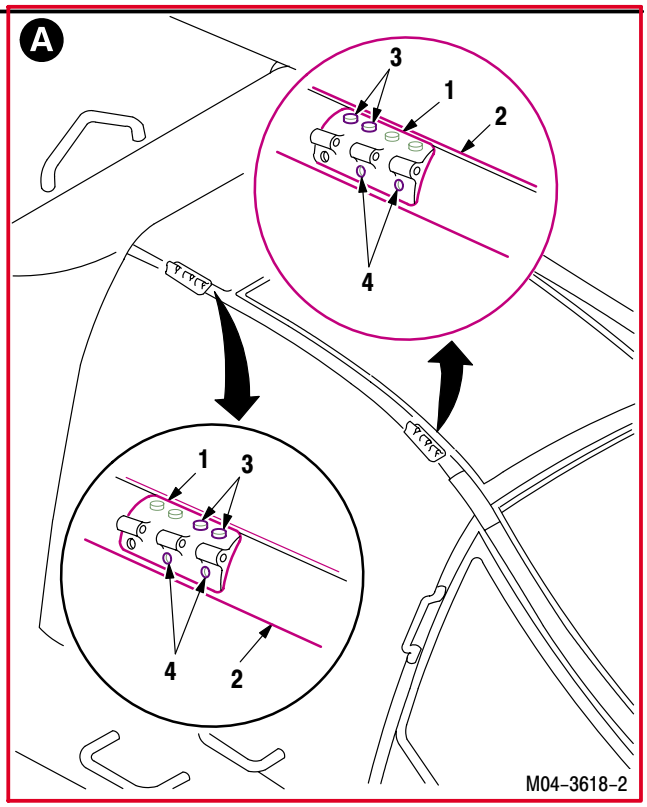
CAUTION

- To prevent damage to bow beam and shim (if installed), use caution when removing hinge.
- To prevent debris from entering pilot station, mask opening before drilling.

a. **Remove upper hinge butt (1) from bow beam (2).**

(1) Remove four upper rivets (3) (TM 1-1500-204-23).

(2) Remove three lower rivets (4) (TM 1-1500-204-23).



b. **Break adhesive seal between hinge (1), shim (5) (if installed), and bow beam (2).** Use putty knife.

(1) Remove and discard hinge (1). Retain shim (5) (if installed).

2.67.4. Cleaning

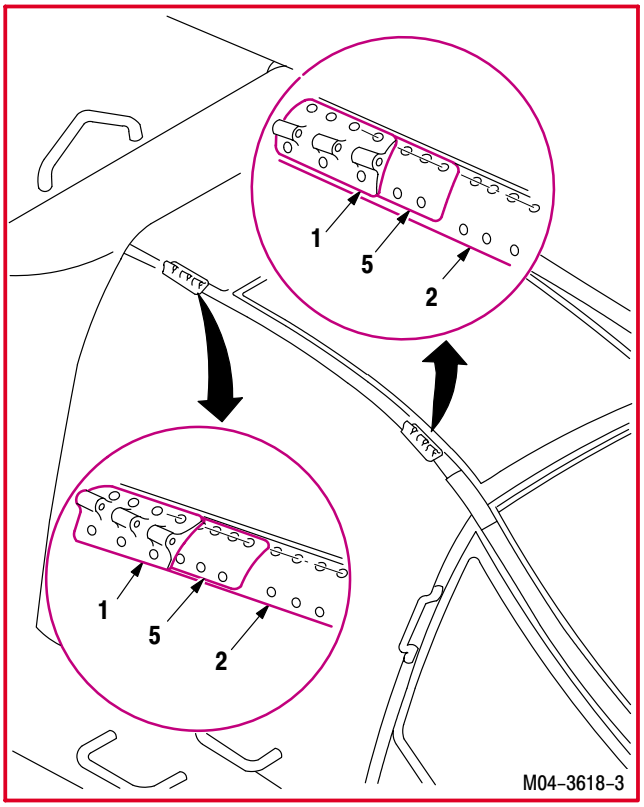
a. **Clean adhesive from bow beam** (para 1.47)**.** Buffing may be necessary.

2.67.5. Inspection

a. **Check rollover structure for cracks or damage** (para 2.12)**.**

b. **Check rivet holes for elongation** (TM 1-1500-204-23)**.**

c. **Touch up paint** (TM 55-1500-345-23)**.**



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2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

2.67.6. Alinement

CAUTION

To prevent damage to helicopter, door cylinder assembly must be secured before positioning door.

a. **Secure door cylinder assembly (6).**

(1) Compress cylinder (6) and turn door handle (7) to latched position to hold cylinder (6).

(2) Install lockwire through lower cylinder bearing (8) and upper cylinder bracket (9). Use wire (item 225, App F).

(3) Cover cylinder (6) and lockwire with tape to prevent damage to helicopter. Use tape (item 201, App F).

CAUTION

To prevent damage to rubber seal, avoid pinching between door skin and airframe.

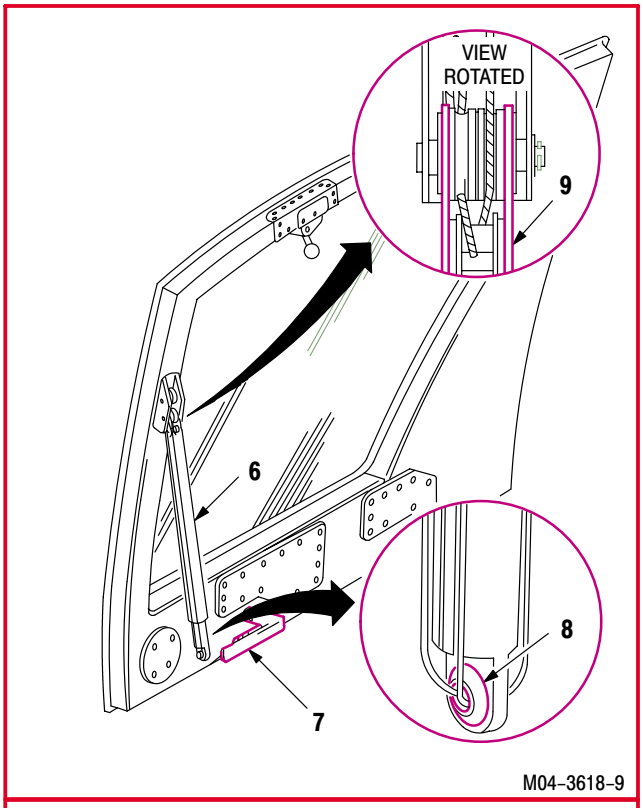
b. **Position pilot door (10) in airframe (11).**

(1) Install hinge pin (12) in undamaged hinge (1) (if applicable).

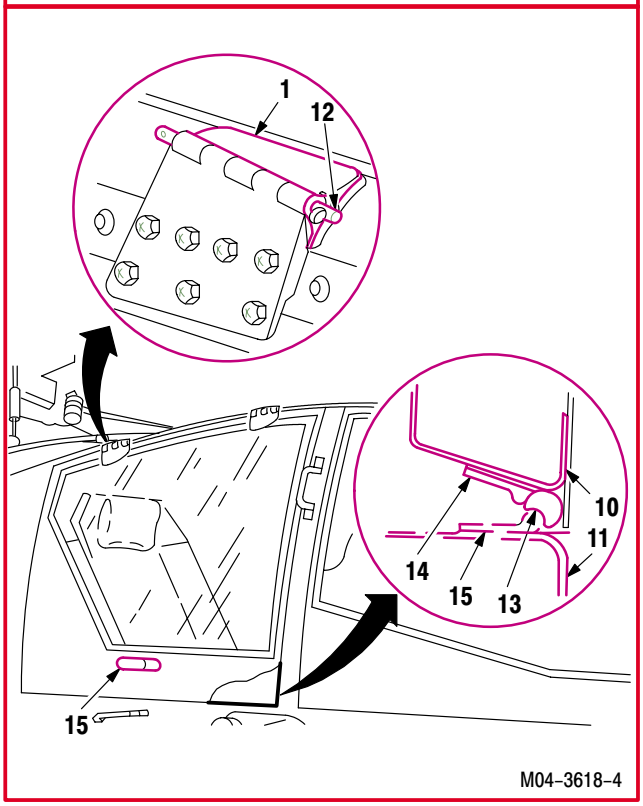
(2) Press top of door (10) into airframe (11) to obtain compression of rubber seal (13).

(3) While holding pressure at top of door, engage door handle (7) latch.

(4) Position door (10) to float on seal (13) in opening. Contact between door bumper (14) and airframe bumper (15) is not acceptable.



M04-3618-9



M04-3618-4

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2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

NOTE

Minimum gap between door skin and airframe is **0.030 INCH**.

c. **Trim door skin minimum required to obtain acceptable gap.**

d. **Attach new upper hinge (1) to lower hinge half (16).**

(1) Install two hinge pins (12) in hinge halves (1) and (16).

(2) If lower hinge (16) contacts upper hinge (1) causing interference, go to paragraph 2.67.7.b.

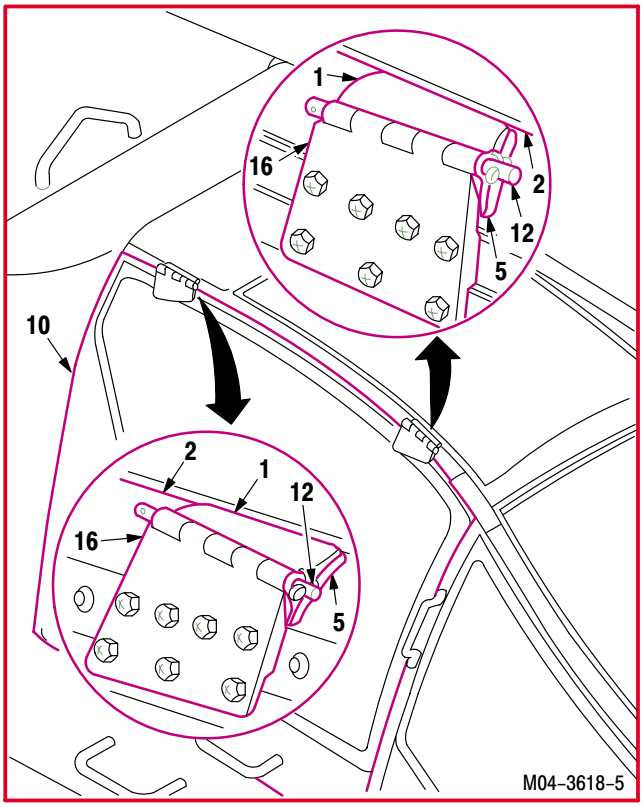
(3) If interference does not exist, go to step e.

e. **With door (10) latched, check for gap between hinge (1) and bow beam (2).**

(1) If gap of **0.020 INCH** or less exists, go to step f.

(2) If gap greater than **0.020 INCH** exists, position original shim (5) in gap.

(3) If original shim is not available, or does not fill gap, go to paragraph 2.67.7.a.



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2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

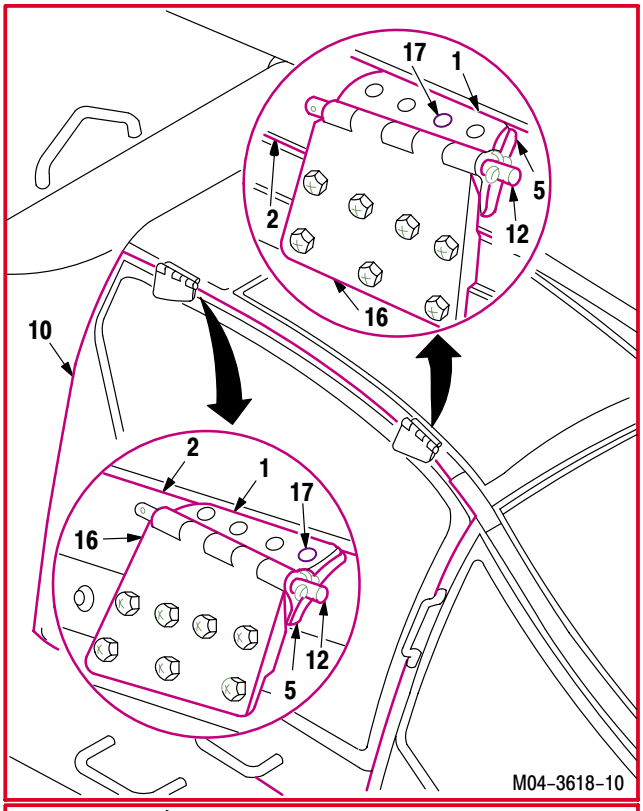
f. **Locate, mark, and drill four rivet holes (17) on hinge (1) and shim (5) (if required) to match holes in bow beam (2)** (TM 1-1500-204-23)**.**

g. **Remove door (10) from bow beam (2).**

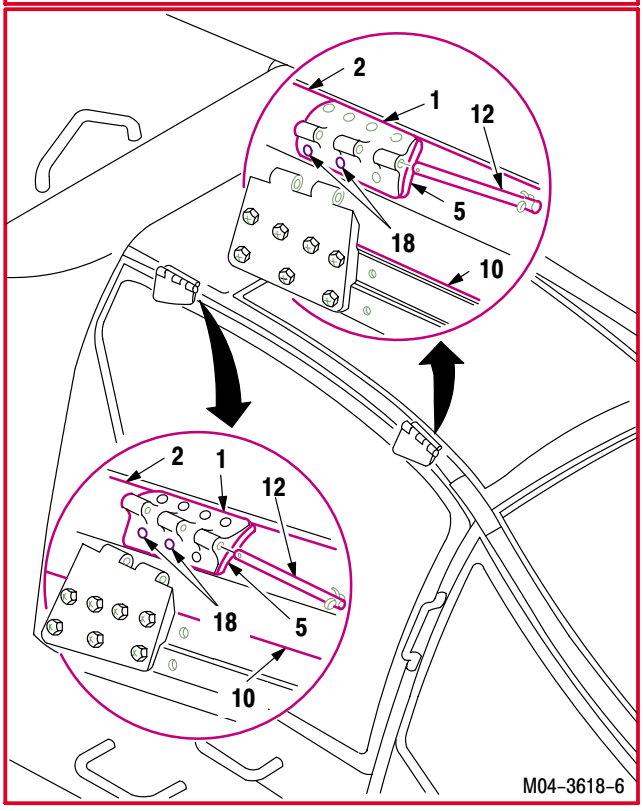
(1) Remove two hinge pins (12) from hinge halves (1) and (16).

(2) Remove door (10) from bow beam (2).

(3) Store door (10) to prevent damage.



h. **Locate, mark, and drill three rivet holes (18) on hinge (1) and shim (5) (if required) to match holes in bow beam (2)** (TM 1-1500-204-23)**.**



GO TO NEXT PAGE

2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

2.67.7. Repair

a. **Make new shim (5) to eliminate gap between upper hinge (1) and bow beam (2).**

(1) Make shim (5) as shown, thickness determined by 2.67.6.e. Use 2024T3 aluminum.

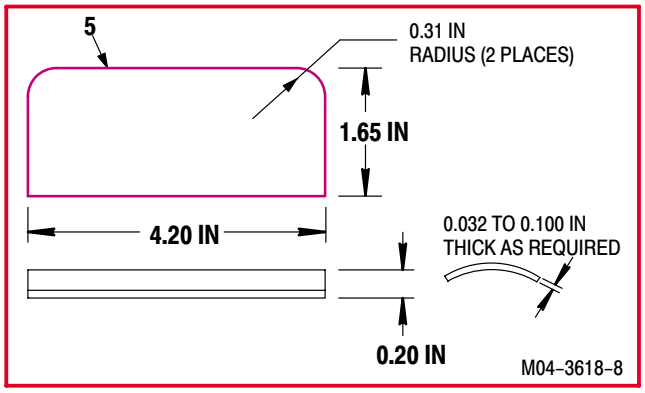
(2) Roll form shim (5) to match contour of hinge (1).

(3) Taper shim (5) as required to fill gap.

(4) Apply chemical film solution (TM 55-1500-345-23).

(5) Touch up paint (TM 55-1500-345-23).

(6) Go to paragraph 2.67.6.f.

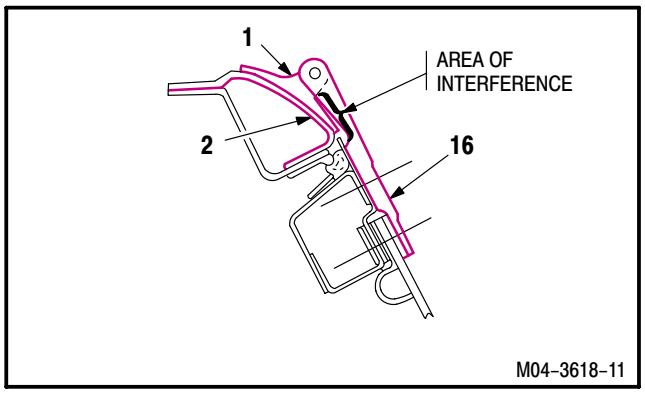


b. **Relieve interference between hinge halves (1) and (16) and bow beam (2).**

(1) Mill inboard surface of hinge (16) **0.030 INCH** maximum (TM 1-1500-204-23).

(2) Touch up paint (TM 55-1500-345-23).

(3) Go to paragraph 2.67.6.e.



GO TO NEXT PAGE

2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

2.67.8. Installation



a. **Install upper hinge (1) and shim (5) (if required) on bow beam (2).**

NOTE

Shim adhesive is applied to all mating surfaces, **0.020 INCH** maximum thickness.

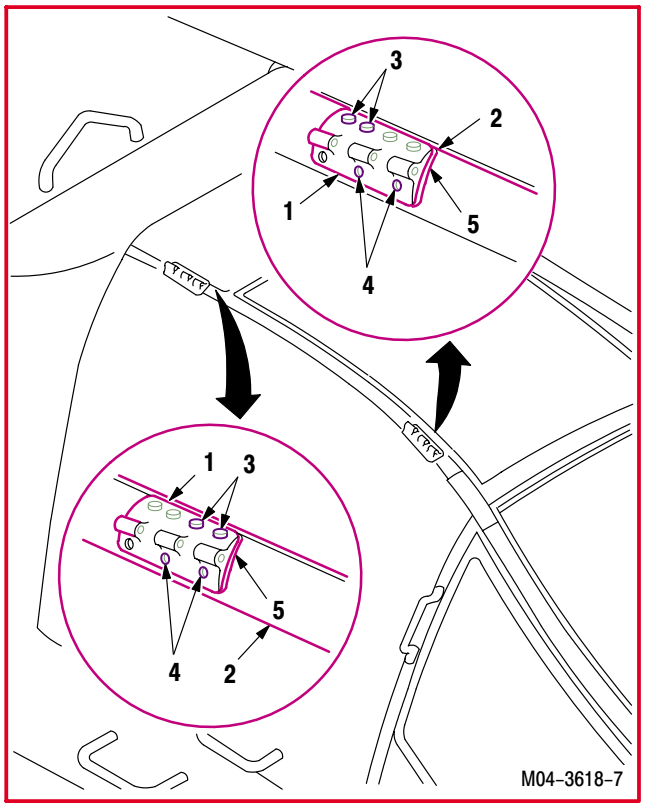
(1) Apply thin layer of adhesive to hinge (1) and shim (5) (if required). Use shim (item 181, App F).

(2) Position hinge (1) and shim (5) (if required) to aline with rivet holes in bow beam (2).

(3) Install four rivets (3) through hinge (1) and shim (5) (if installed) on bow beam (2) (TM 1-1500-204-23).

(4) Install three rivets (4) through hinge (1) and shim (5) (if installed) on bow beam (2) (TM 1-1500-204-23).

(5) Wipe excess adhesive from bow beam (2).



WARNING

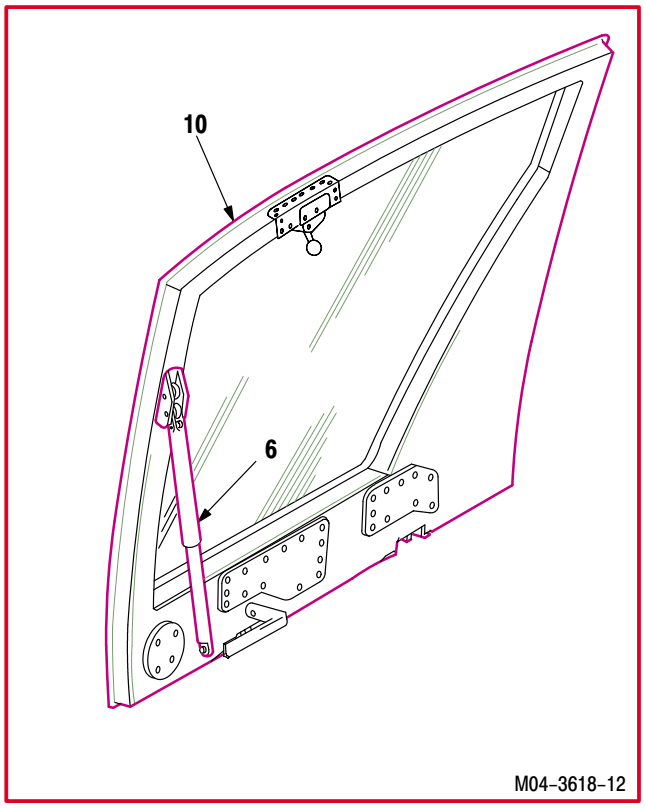
To prevent injury, two persons should disengage lockwire on door cylinder.

b. **Release door cylinder (6).**

(1) Remove tape from cylinder (6).

(2) One person hold cylinder (6). Second person hold door (10).

(3) Hold lower end of cylinder (6) to prevent rapid extension when lockwire is cut. Cut lockwire.



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2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

c. **Install pilot station access door** (para 2.62).

d. **Check perimeter of door (10) for weather seal gaps.**

(1) Enter pilot station (para 1.56). Observe all safety precautions.

(2) Close and latch door (10).

(3) Person on outside of door shine flashlight around perimeter.

(4) Identify and mark gaps.

(5) If no gaps are visible, go to step g.

(6) If gaps are visible, go to steps e or f as required.



e. **Adjust door seal (13).**

(1) Remove rivets from door bumper (14) (TM 1-1500-204-23).

(2) Clean seal (13) and mating surface (para 1.47).

NOTE

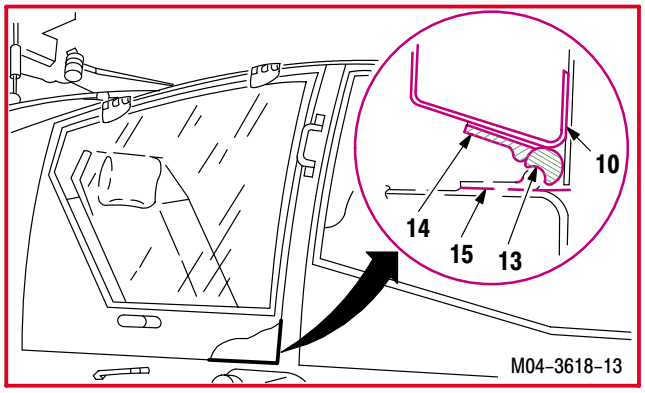
Door seal can be adjusted to eliminate gaps, except in corners.

(3) Position seal and apply sealant. Use adhesive (item 14, App F).

(4) Install rivets in door bumper (14) (TM 1-1500-204-23).



f. **Apply adhesive to airframe bumpers (15) to eliminate gaps in corners.** Use adhesive (item 19, App F).



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2.67. PILOT STATION ACCESS DOOR UPPER HINGE BUTT REMOVAL/INSTALLATION – continued

g. **Touch up paint** (TM 55-1500-345-23)**.**

h. **Install pilot right air mixer** (para 13.45)**.**

i. **Install pilot station access door** (para 2.62)**.**

j. **Inspect (QA).**

END OF TASK

2.68. CANOPY DOOR ANCHOR STRUT ROD REMOVAL/INSTALLATION

2.68.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.68.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

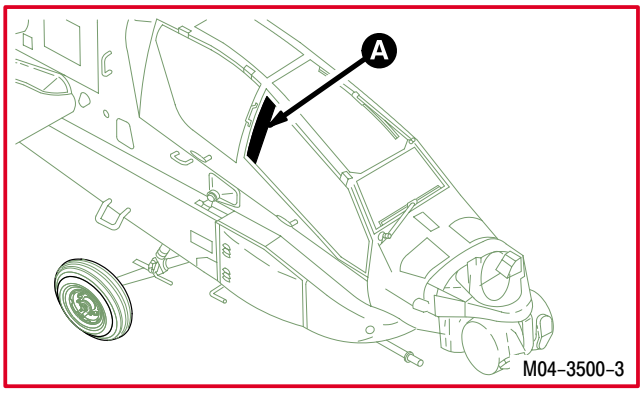
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.54	CPG station access door removed
	or
2.62	Pilot station access door removed
2.156	Pilot fixed glareshield removed (for pilot station access door)

NOTE

This task is typical for pilot and/or CPG canopy door anchor strut rods.



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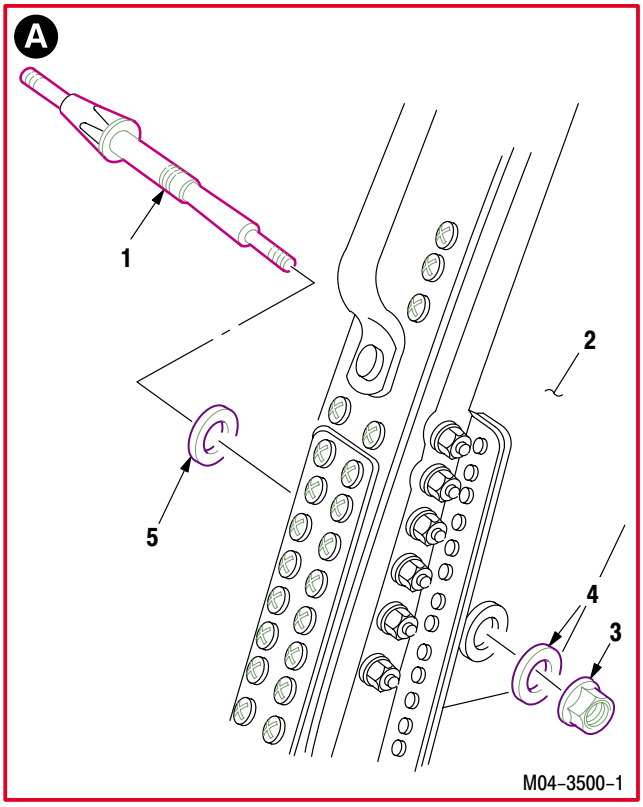
2.68. CANOPY DOOR ANCHOR STRUT ROD REMOVAL/INSTALLATION – continued

2.68.3. Removal

a. **Remove anchor strut rod (1) from transparent barrier (2).**

(1) Hold anchor (1). Remove nut (3) and washer (4).

(2) Remove anchor (1) and washer (5) from aft side of barrier (2).



2.68.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.68.5. Inspection

a. **Check anchor for damage.** None allowed.

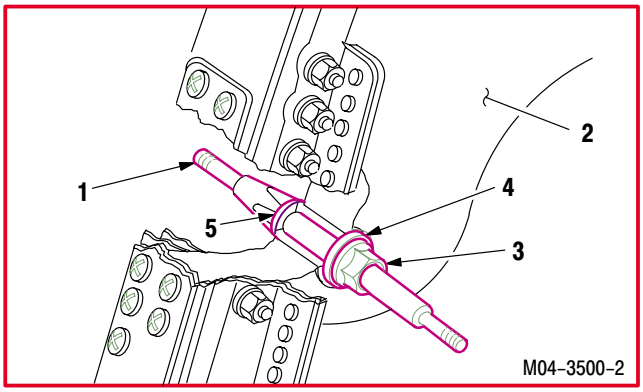
b. **Check barrier for scratches, pitting, or cracks** (para 2.12)**.**

2.68.6. Installation

a. **Install anchor (1) on barrier (2).**

(1) Install anchor (1) through washer (5) and barrier (2).

(2) Hold anchor (1). Install washer (4) and nut (3).



b. **Inspect (QA).**

c. **Install pilot fixed glareshield** (para 2.156)**.**

d. **Install CPG station access door** (para 2.54) **or install pilot station access door** (para 2.62)**.**

END OF TASK

2.69. AFT DOOR LATCH STRUCTURAL PLATE AND CANOPY LOCK SWITCH REMOVAL/INSTALLATION

2.69.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.69.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.56	Pilot or CPG door opened

Materials/Parts:

Self-locking nut (2)

NOTE

This task is typical for pilot and/or CPG aft door latch structural plates and canopy lock switches.

2.69.3. Removal

a. **Remove aft door latch structural plate (1) with canopy lock switch assembly (2) from airframe (3).**

(1) Remove four screws (4) and washers (5) from plate (1).

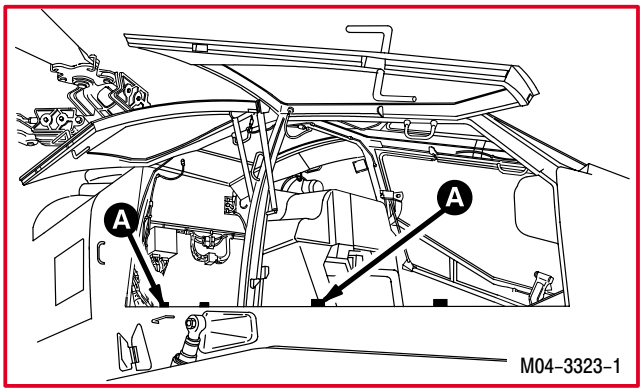
(2) Lift plate (1) with switch (2).

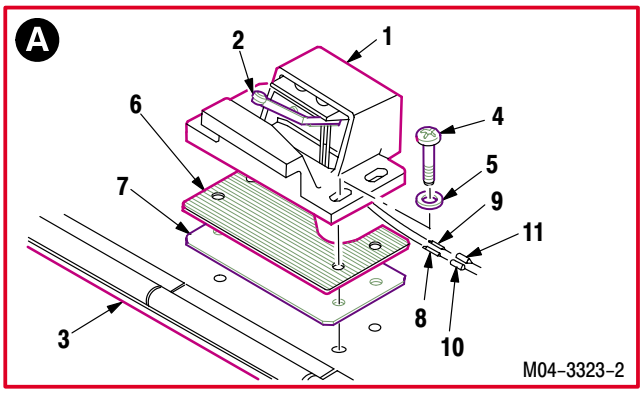
(3) Remove latching plate (6) and shim (7) from airframe (3).

(4) Identify and tag wires (8) and (9).

(5) Detach wires (8) and (9) from splices (10) and (11).

(6) Remove plate (1) with switch (2) from airframe (3).





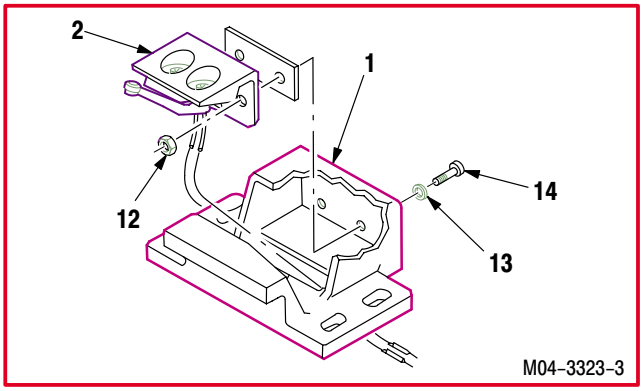
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2.69. AFT DOOR LATCH STRUCTURAL PLATE AND CANOPY LOCK SWITCH REMOVAL/INSTALLATION – continued

b. **Remove switch (2) from plate (1).**

(1) Remove two self-locking nuts (12), washers (13), and screws (14). Discard nuts (12).

(2) Remove switch (2) from plate (1).



2.69.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.69.5. Inspection

a. **Check airframe for cracks, nicks, gouges, and corrosion** (para 2.11)**.**

b. **Check plates and shim for damage.** None allowed.

c. **Check switch for cracked bracket, burned contacts, and chafed wires.** None allowed.

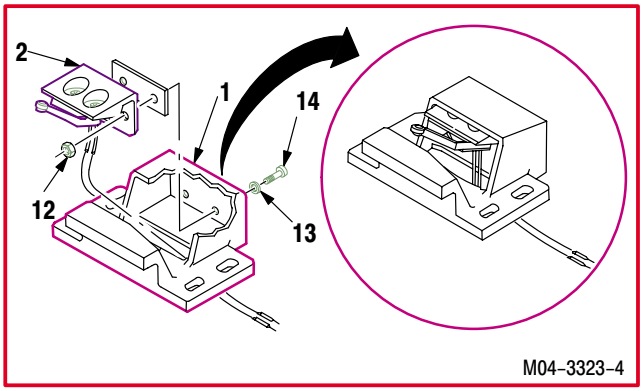
2.69.6. Installation

a. **Install switch (2) on plate (1).**

(1) Insert two wires (8) and (9) through striker plate (1).

(2) Aline mounting holes in bracket of switch (2) with mounting holes in plate (1).

(3) Install two washers (13), screws (14), and new nuts (12).



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2.69. AFT DOOR LATCH STRUCTURAL PLATE AND CANOPY LOCK SWITCH REMOVAL/INSTALLATION – continued

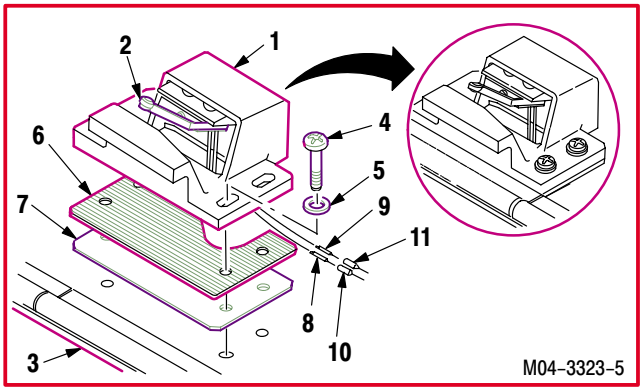
b. **Install plate (1) and switch (2) on airframe (3).**

(1) Attach wire (8) to splice (10). Remove identification.

(2) Attach wire (9) to splice (11). Remove identification.

(3) Install shim (7), plate (6), and plate (1) on airframe (3).

(4) Install four screws (4) through washers (5), plate (1), plate (6), shim (7), and airframe (3).



c. **Adjust access door** (para 2.55 or 2.63)**.**

d. **Inspect (QA).**

END OF TASK

2.70. LEFT FORWARD CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION

2.70.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.70.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
8-ounce hand sealant gun (item 160, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Personnel Required:

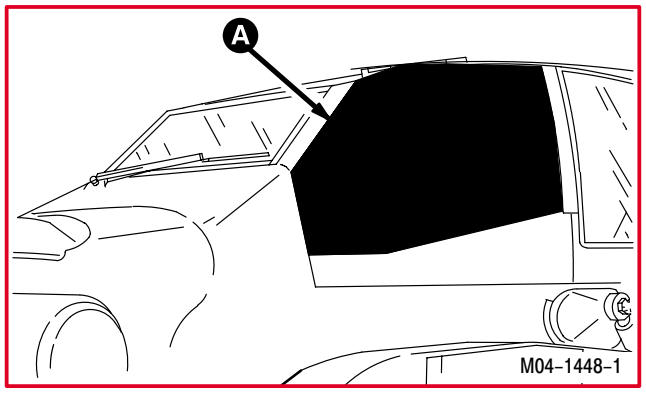
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Packing
Adhesive (item 14, App F)
Cloth (item 48, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Petrolatum (item 138, App F)
Sealing compound (item 176, App F)
Tape (item 205, App F)
Wire (item 226, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

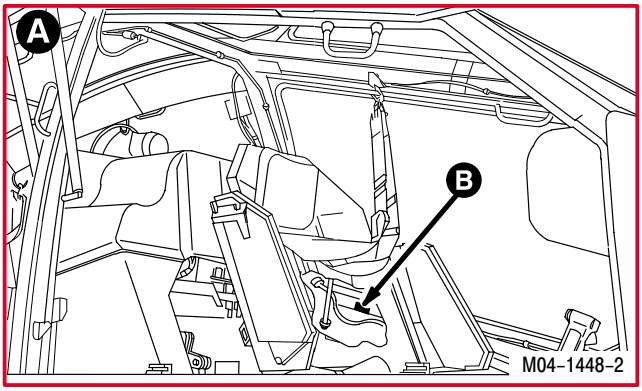


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2.70. LEFT FORWARD CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

2.70.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



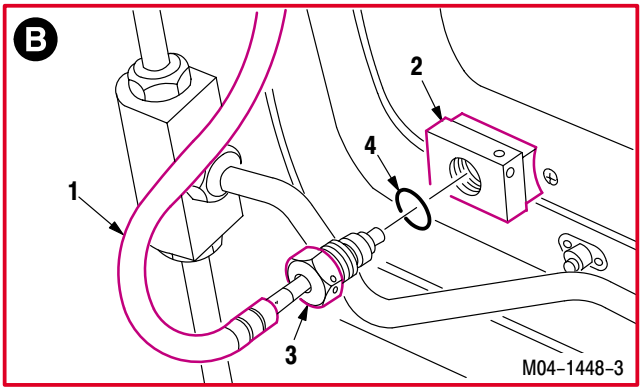
WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

Remove detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

b. **Remove detonating cord (1) from canopy severance device (2).**



(1) Remove lockwire from severance device (2) and nipple (3).

(2) Hold severance device (2). Remove nipple (3).

(3) Remove and discard packing (4) from nipple (3).

(4) Cover severance device (2) and nipple (3). Use cloth (item 52, App F) and tape (item 205, App F).

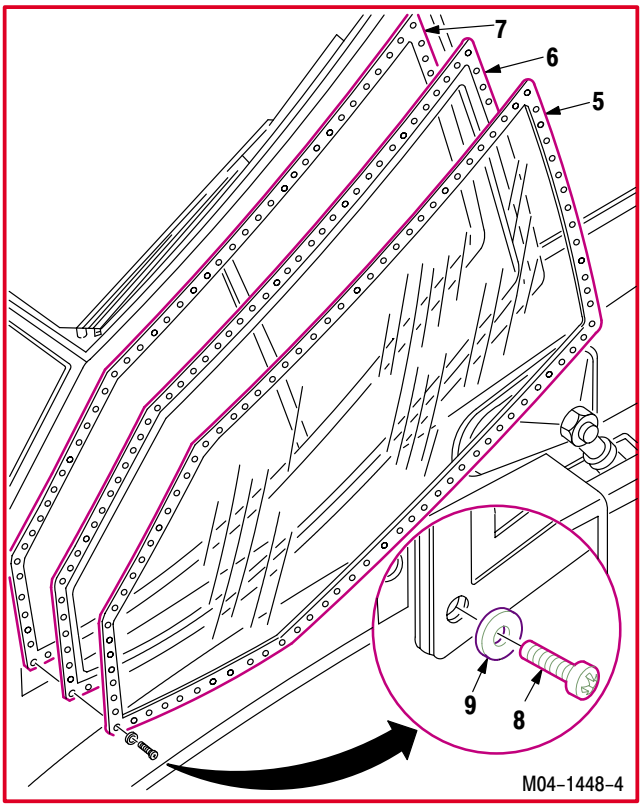
GO TO NEXT PAGE

2.70. LEFT FORWARD CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

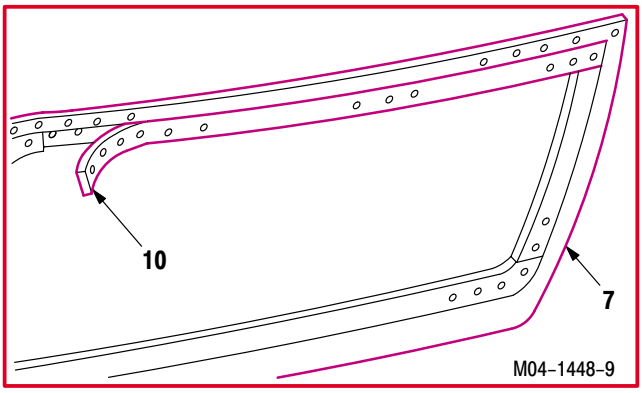
c. **Remove windshield panel (5) and fixed canopy (6) from canopy frame (7).**

(1) With one person supporting panel (5) and fixed canopy (6), remove 81 screws (8) and washers (9).

(2) Remove panel (5) and fixed canopy (6) from frame (7).



d. **Remove six sections of seal (10) from frame (7).**



GO TO NEXT PAGE

2.70. LEFT FORWARD CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

2.70.4. Cleaning

a. **Clean adhesive residue from frame** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**



c. **Clean protective latex coating from replacement panel if it does not peel off cleanly.** Use isopropyl alcohol (item 106, App F) and cloth (item 48, App F).

2.70.5. Inspection

a. **Check frame for cracks and corrosion** (para 2.11)**.**

b. **Check panel for cracks, pitting, and scratches** (para 2.12)**.**

c. **Check severance device and nipple for damaged threads.** None allowed.

d. **Check for discrepant screws.**

(1) 25 percent of screws can be discrepant if scattered randomly. Maximum of three consecutive bad screws allowed.

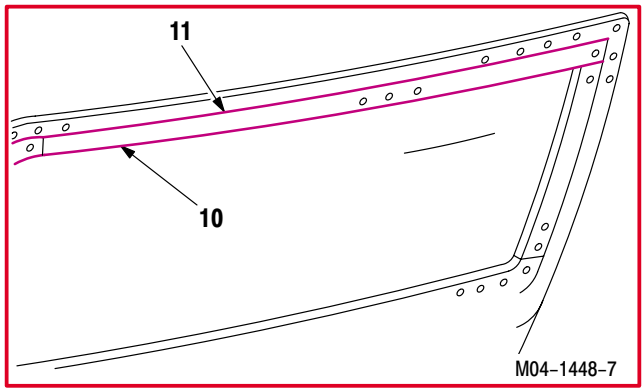
e. **Check cord for damage.** Any break in cord requires replacement.

2.70.6. Installation



a. **Apply a 0.125 INCH bead of adhesive around window cavity (11).** Use adhesive (item 14, App F).

b. **Install seal (10) in window cavity (11)** (para 2.52)**.**



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2.70. LEFT FORWARD CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

c. **Install fixed canopy (6) and panel (5) in frame (7).**

(1) With one person to assist, position and hold panel assembly (12) in frame (7).

(2) Install six screws (8) with washers (9) in locations shown in illustration. Do not tighten.

(3) Install 75 washers (9) and screws (8) in group sequence 1 thru 15 shown in illustration. Do not tighten.

(4) Tighten six screws (8) in sequence a, b, c, d, e, and f shown in illustration, until screws (8) are snug against washers (9).

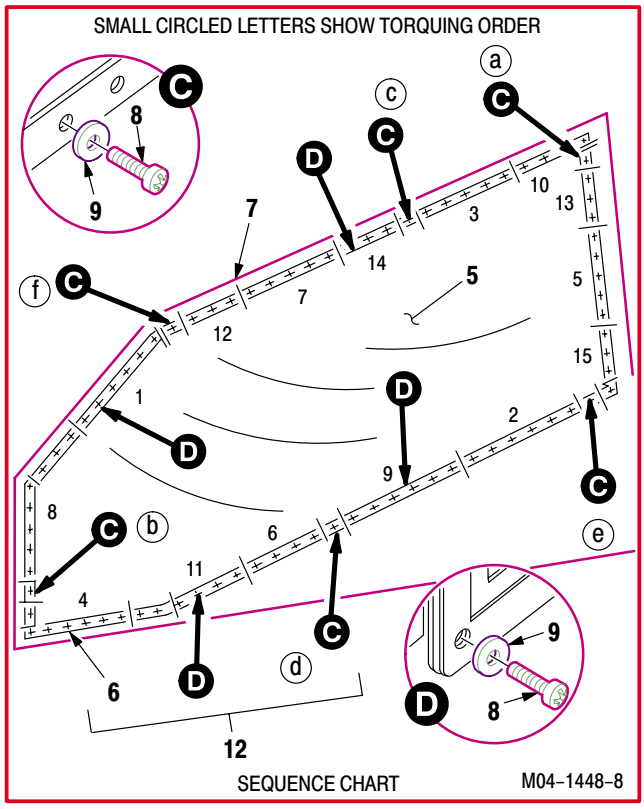
(5) Tighten 75 screws (8) in group sequence 1 thru 15 shown in illustration, until screws (8) are snug against washers (9) and panel (12) is in complete contact with frame (7).

d. **Torque six screws (8) to 5 INCH-POUNDS in sequence a, b, c, d, e, and f shown in illustration.** Use torque wrench.

e. **Torque 75 screws (8) another 5 INCH-POUNDS in group sequence 1 thru 15 shown in illustration.** Use torque wrench.



f. **Seal around panel (5).** Use sealing compound (item 176, App F) and sealant gun.



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2.70. LEFT FORWARD CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

g. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

Install detonating cord with care. Do not damage cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

h. **Install cord (1) in severance device (2).** Torque nipple (3) to **80 INCH-POUNDS**.

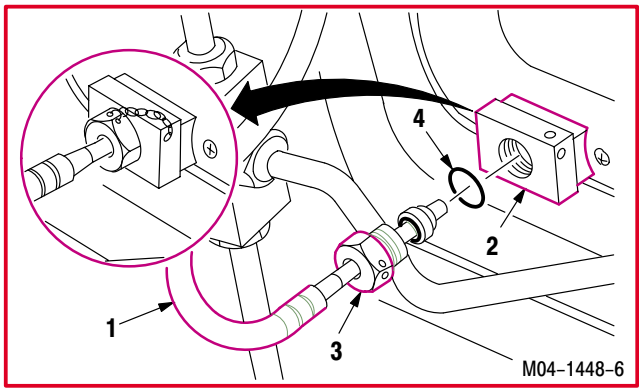
(1) Lubricate packing (4). Use petrolatum (item 138, App F).

(2) Install new packing (4) on nipple (3).

(3) Install nipple (3) in severance device (2).

(4) Hold severance device (2). Torque fitting (3) to **80 INCH-POUNDS**. Use torque wrench.

(5) Lockwire nipple (3) to severance device (2). Use wire (item 226, App F).



i. **Inspect (QA).**

END OF TASK

2.71. LEFT AFT CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION

2.71.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.71.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
8-ounce hand sealant gun (item 160, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

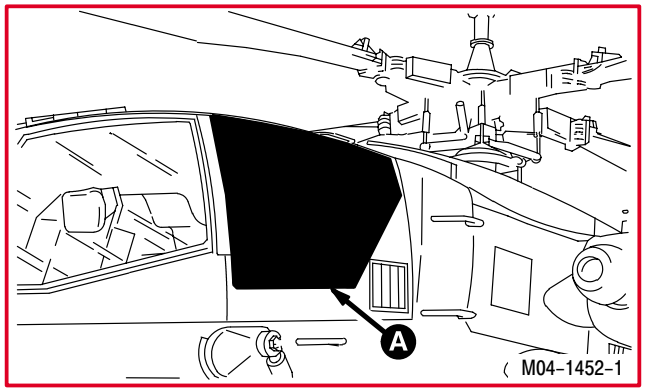
Packing
Adhesive (item 14, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)
Sealing compound (item 176, App F)
Tape (item 205, App F)
Wire (item 226, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.49	Bow beam handle removed
2.193	Wire strike protection aircraft cutter removed

2.71.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



GO TO NEXT PAGE

2.71. LEFT AFT CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

Remove detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

b. **Remove detonating cord (1) from severance device (2).**

(1) Remove lockwire from severance device (2) and nipple (3).

(2) Hold severance device (2). Remove nipple (3).

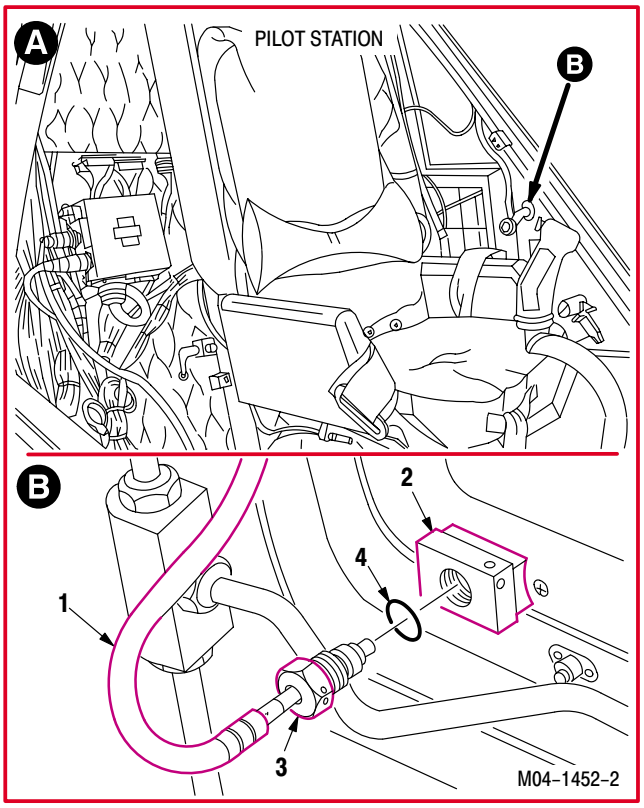
(3) Remove and discard packing (4) from nipple (3).

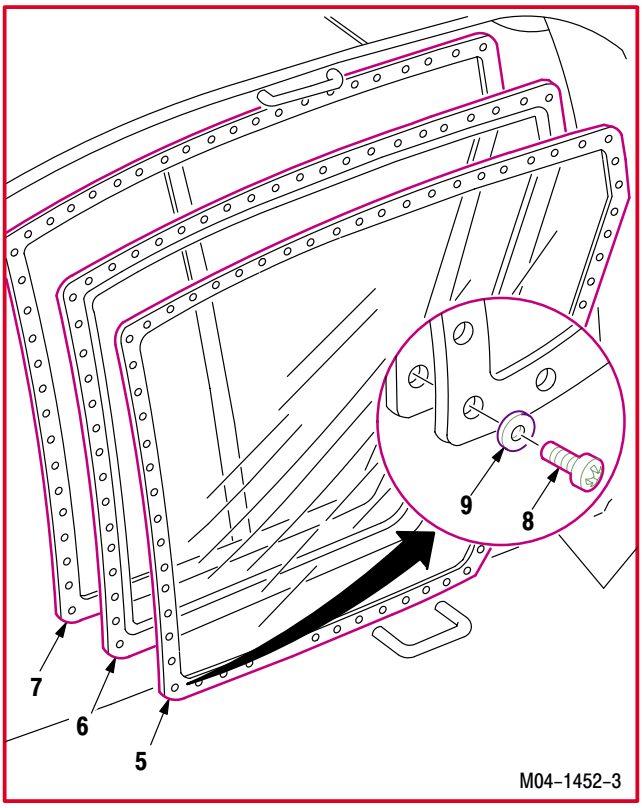
(4) Cover severance device (2) and nipple (3). Use cloth (item 52, App F) and tape (item 205, App F).

c. **Remove windshield panel (5) and fixed canopy (6) from canopy frame (7).**

(1) With one person supporting panel (5) and fixed canopy (6), remove 67 screws (8) and washers (9).

(2) Remove panel (5) and fixed canopy (6) from frame (7).

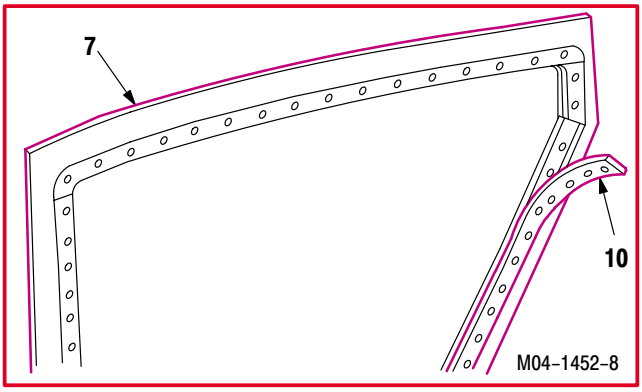




GO TO NEXT PAGE

2.71. LEFT AFT CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Remove five sections of seal (10) from frame (7).**



2.71.4. Cleaning

a. **Clean adhesive residue from frame** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**



c. **Clean protective latex coating from replacement panel if it does not peel off cleanly.** Use isopropyl alcohol (item 106, App F) and cloth (item 52, App F).

2.71.5. Inspection

a. **Check frame for cracks and corrosion** (para 2.11)**.**

b. **Check panel for cracks, pitting, and scratches** (para 2.12)**.**

c. **Check severance device and nipple for damaged threads.** None allowed.

d. **Check for discrepant screws.**

(1) 25 percent of screws can be discrepant if scattered randomly. Maximum of three consecutive bad screws allowed.

e. **Check cord for damage.** Any break in cord requires replacement.

GO TO NEXT PAGE

2.71. LEFT AFT CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

2.71.6. Installation



a. **Apply 1/8 INCH bead of adhesive around window cavity (11).** Use adhesive (item 14, App F).

b. **Install seal (10) in window cavity (11)** (para 2.52)**.**

c. **Install severance assembly (6) and panel (5) in frame (7).**

(1) With one person to assist, position and hold panel assembly (12) in frame (7).

(2) Install five washers (9) and screws (8) in locations shown in illustration. Do not tighten.

(3) Install 62 washers (9) and screws (8) in group sequence 1 thru 10 shown in illustration. Do not tighten.

(4) Tighten five alinement screws (8) in locations shown in illustration, until screws (8) are snug against washers (9).

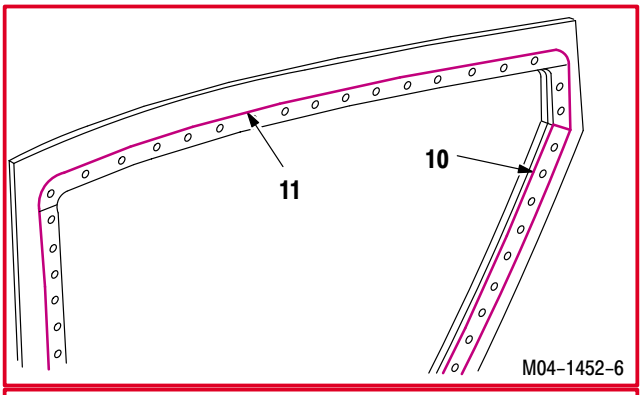
(5) Tighten 62 screws (8) in group sequence 1 thru 10 shown in illustration, until screws (8) are snug against washers (9) and panel (12) is in complete contact with frame (7).

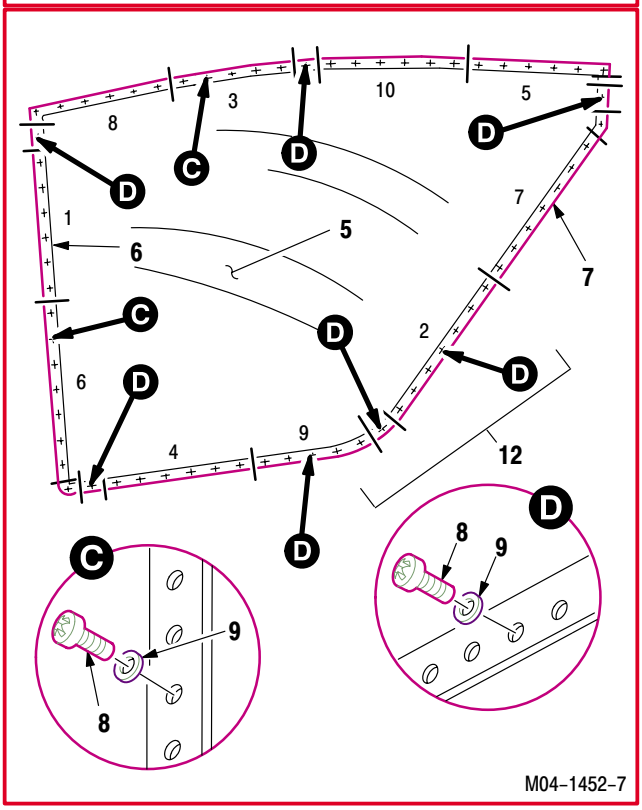
d. **Torque five screws (8) to 5 INCH-POUNDS in locations shown in illustration.** Use torque wrench.

e. **Torque 62 screws (8) to 5 INCH-POUNDS in group sequence 1 thru 10 shown in illustration.** Use torque wrench.



f. **Seal around panel (5).** Use sealing compound (item 176, App F) and sealant gun.





GO TO NEXT PAGE

2.71. LEFT AFT CANOPY WINDSHIELD PANEL ASSEMBLY REMOVAL/INSTALLATION – continued

g. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe injury to personnel. If injury occurs, seek medical aid.

CAUTION

Install detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

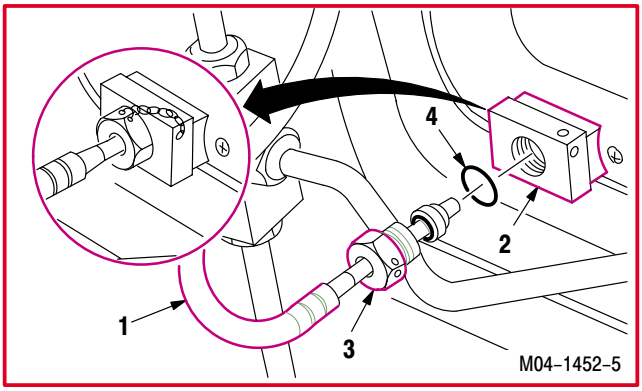
h. **Install cord (1) in severance device (2).** Torque fitting (3) to **80 INCH-POUNDS**.

(1) Install new packing (4) on nipple (3).

(2) Install nipple (3) in severance device (2).

(3) Hold severance device (2). Torque fitting (3) to **80 INCH-POUNDS**. Use torque wrench.

(4) Lockwire nipple (3) to severance device (2). Use wire (item 226, App F).



i. **Inspect (QA).**

j. **Install wire strike protection aircraft cable cutter** (para 2.193)**.**

k. **Install bow beam handle** (para 2.49)**.**

END OF TASK

2.72. UPPER FORWARD CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION

2.72.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.72.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
8-ounce hand sealant gun (item 160, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Sealing compound (item 176, App F)
Sealing compound (item 177, App F)

Personnel Required:

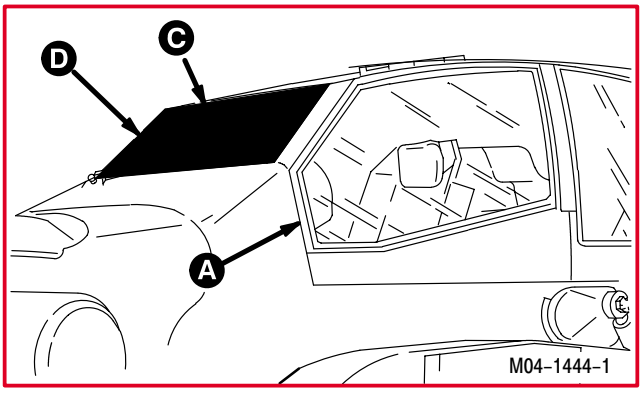
67R Attack Helicopter Repairer
One person to assist
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
12.10	CPG windshield wiper arm removed
12.11	CPG windshield wiper link removed



GO TO NEXT PAGE

2.72. UPPER FORWARD CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

2.72.3. Removal

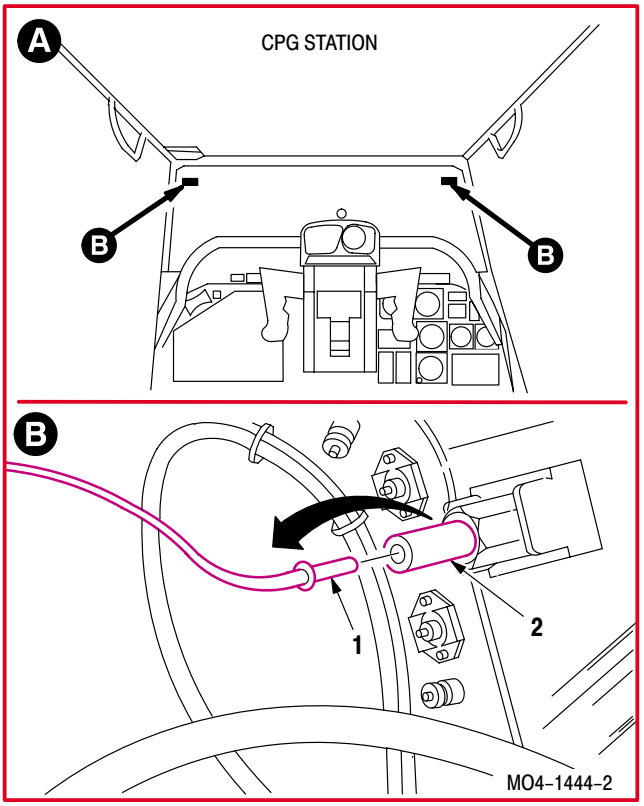
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open CANOPY ANTI-ICE CONT and CANOPY ANTI-ICE circuit breakers.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

d. **Detach wires (1) from two anti-ice terminal studs (2).**

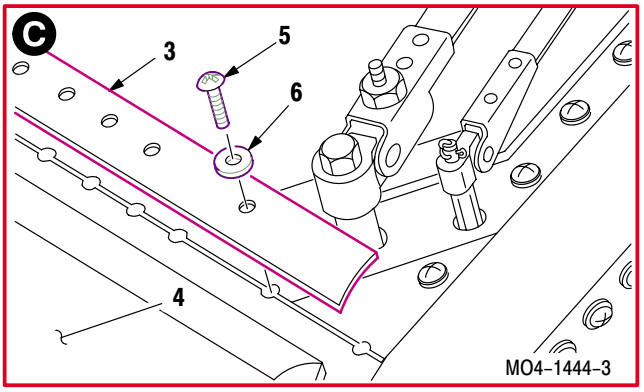
(1) Identify and detach wires (1) from two studs (2).



e. **Remove windshield clamping bar assembly (3) from windshield panel (4).**

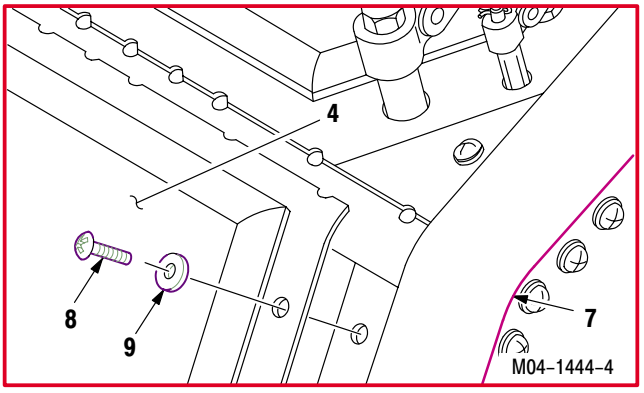
(1) Remove 29 screws (5) and washers (6).

(2) Remove bar (3) from windshield (4).



f. **Remove windshield (4) from airframe (7).**

(1) Remove 53 screws (8) and washers (9).

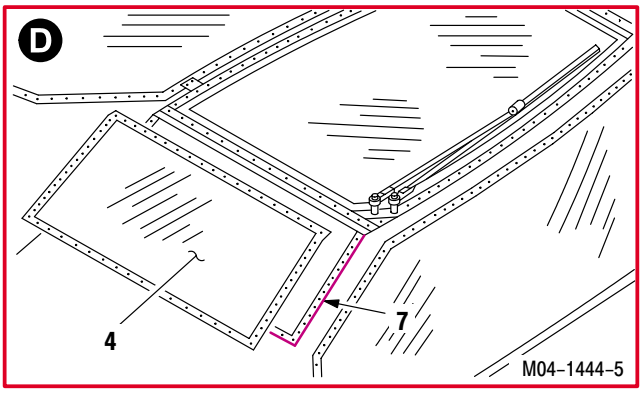


GO TO NEXT PAGE

2.72. UPPER FORWARD CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

(2) Push out on windshield (4).

(3) Lift windshield (4) from airframe (7).



2.72.4. Cleaning

a. **Clean sealing compound residue from airframe** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.72.5. Inspection

a. **Check frame for cracks and corrosion** (para 2.11)**.**

b. **Check panel for cracks, pitting, and scratches** (para 2.12)**.**

c. **Check bar for elongated holes** (para 2.12)**.**

d. **Check for cracked or broken bar.** None allowed.

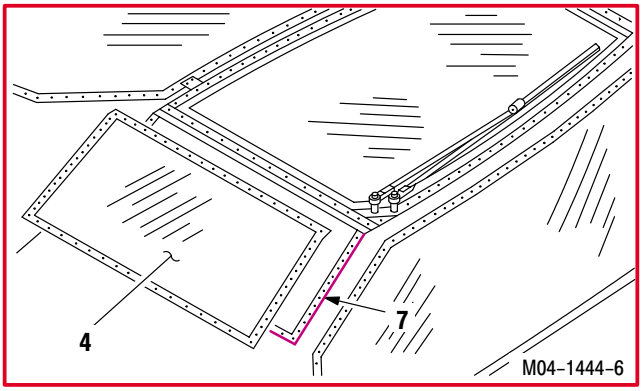
e. **Check screws for stripped threads.** None allowed.

2.72.6. Installation



a. **Install windshield (4) in airframe (7).** Torque 53 screws (7) to **5 INCH-POUNDS**.

(1) Position windshield (4) in airframe (7).



GO TO NEXT PAGE

2.72. UPPER FORWARD CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

(2) Install 53 screws (8) and washers (9) until screws (8) are snug against washers (9) and windshield (4) is in complete contact with airframe (7).

(3) Torque 53 screws (8) to **5 INCH-POUNDS**. Use torque wrench.

(4) Apply a **0.125 INCH** bead of sealing compound around mating surfaces of windshield (4) and airframe (7). Use sealing compound (item 177, App F) and sealant gun.

b. **Install bar (3) on windshield (4).** Torque 29 screws (5) to **20 INCH-POUNDS**.

(1) Install 29 screws (5) and washers (6).

(2) Torque 29 screws (5) to **20 INCH-POUNDS**. Use torque wrench.



c. **Seal around bar (3) and windshield (4).** Use sealing compound (item 176, App F) and sealant gun.

d. **Attach wires (1) to two studs (2).**

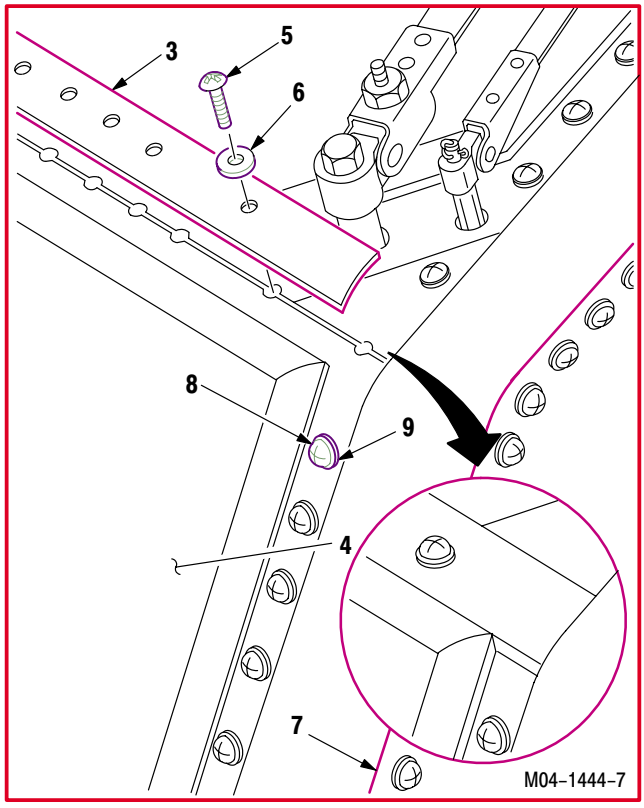
e. **Inspect (QA).**

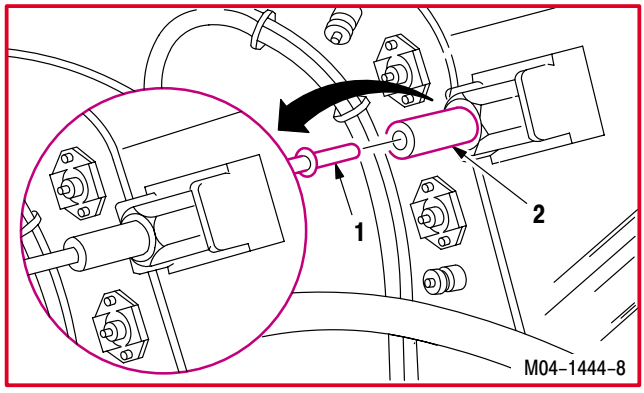
f. **Install CPG windshield wiper arm** (para 12.10)**.**

g. **Install CPG windshield wiper link** (para 12.11)**.**

h. **Perform canopy defog/de-ice system maintenance operational check** (TM 1-1520-238-T)**.**

i. **Perform canopy windshield wiper system maintenance operational check** (TM 1-1520-238-T)**.**





END OF TASK

2.73. UPPER CENTER CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION

2.73.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.73.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
8-ounce hand sealant gun (item 160, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Sealing compound (item 176, App F)
Sealing compound (item 177, App F)

Personnel Required:

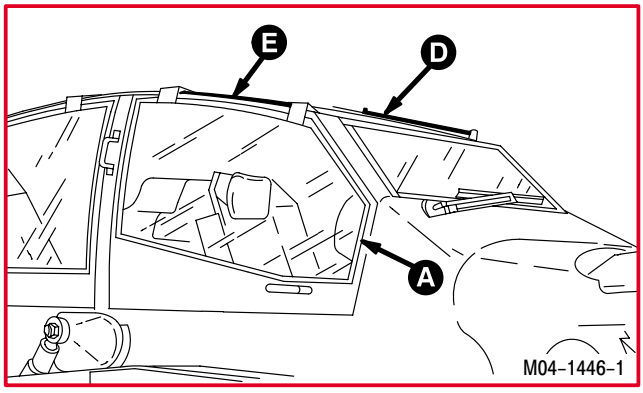
67R Attack Helicopter Repairer
One person to assist
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
12.3	Pilot windshield wiper arm removed
12.4	Pilot windshield wiper link removed

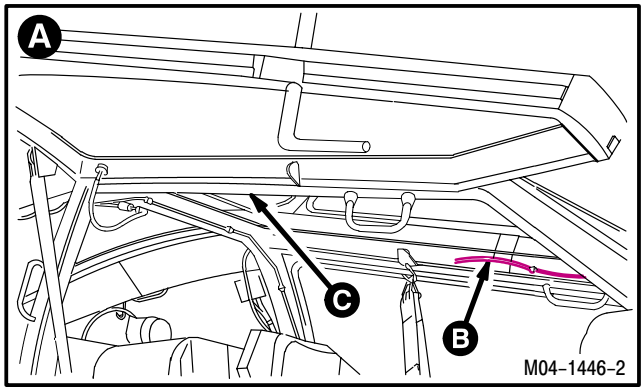


2.73.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot aft circuit breaker panel, open CANOPY ANTI-ICE CONT and CANOPY ANTI-ICE circuit breakers.**

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



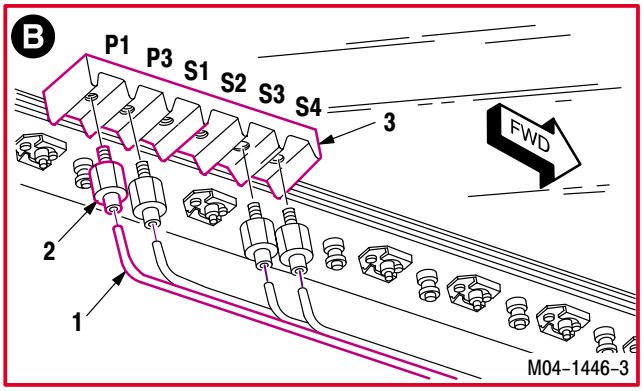
GO TO NEXT PAGE

2.73. UPPER CENTER CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

d. **Detach four wires (1) from anti-ice terminal studs (2).**

(1) Identify and detach four wires (1) from studs (2).

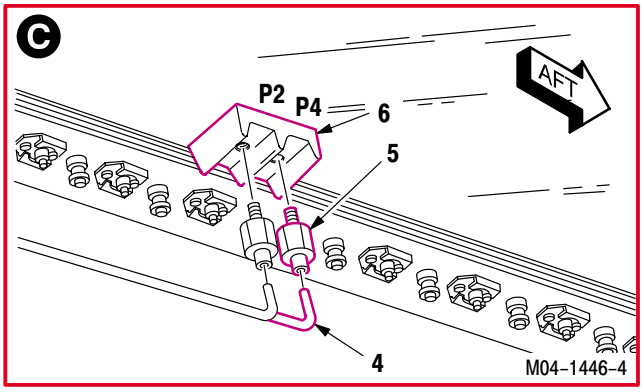
(2) Remove four studs (2) from terminal block (3) for use in installation.



e. **Detach two wires (4) from anti-ice terminal studs (5).**

(1) Identify and detach two wires (4) from studs (5).

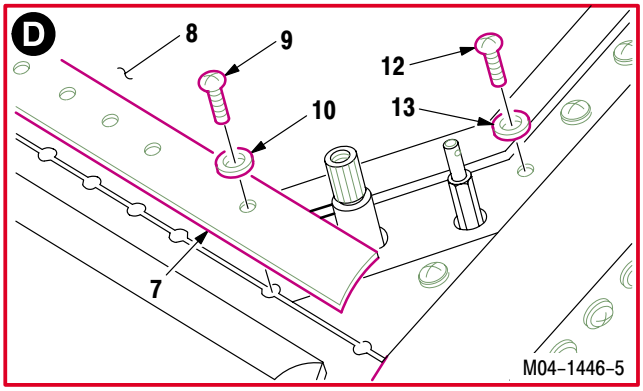
(2) Remove two studs (5) from terminal block (6) for use in installation.



f. **Remove windshield clamping bar (7) from windshield (8).**

(1) Remove 29 screws (9) and washers (10).

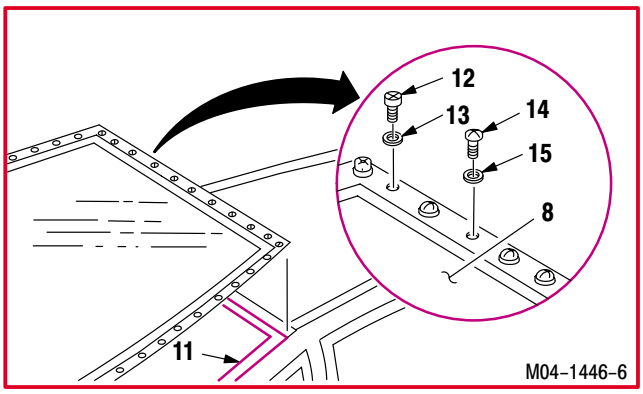
(2) Remove bar (7) from windshield (8).



g. **Remove windshield (8) from airframe (11).**

(1) Remove 62 screws (12) and washers (13).

(2) Remove seven screws (14) and washers (15).



GO TO NEXT PAGE

2.73. UPPER CENTER CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

(3) Remove angle (16) from windshield (8).

(4) Remove windshield (8) from airframe (11).

2.73.4. Cleaning

a. **Clean sealing compound residue from frame** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.73.5. Inspection

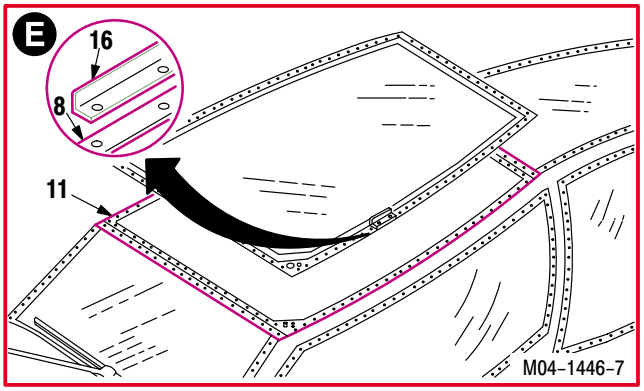
a. **Check frame for cracks and corrosion** (para 2.12)**.**

b. **Check panel for cracks, pitting, and scratches** (para 2.12)**.**

c. **Check for cracked or broken bar.** None allowed.

d. **Check screws for stripped threads.** None allowed.

e. **Check bar for elongated holes** (para 2.12)**.**



GO TO NEXT PAGE

2.73. UPPER CENTER CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

2.73.6. Installation



a. **Install windshield (8) in airframe (11).** Torque 62 screws (12) and 7 screws (14) to **5 INCH-POUNDS**.

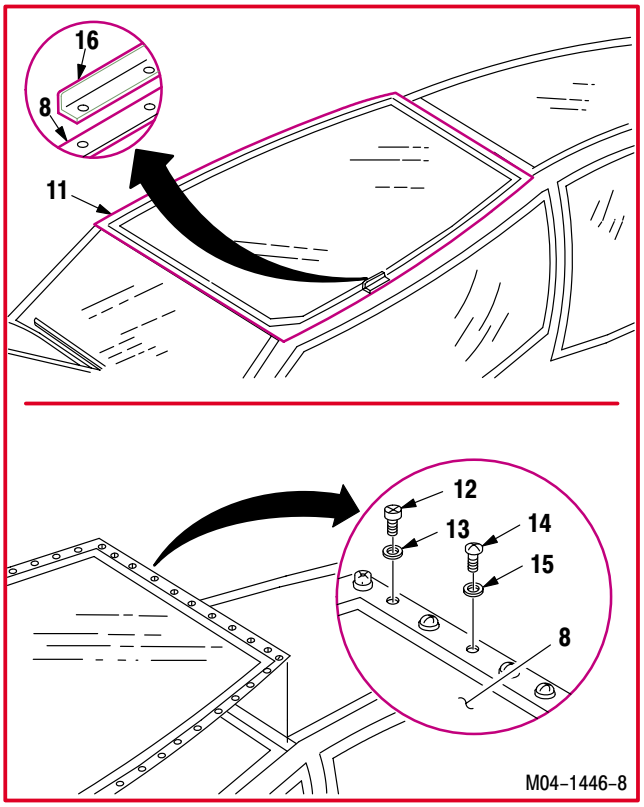
(1) Position windshield (8) in airframe (11).

(2) Install angle (16) on windshield (8).

(3) Install 62 screws (12) with washers (13) and 7 screws (14) with washers (15) until screws (12) and (14) are snug against washers (15) and (13) and windshield (8) is in complete contact with airframe (11).

(4) Torque 62 screws (12) and 7 screws (14) to **5 INCH-POUNDS**. Use torque wrench.

(5) Apply a **0.125 INCH** bead of sealing compound around mating surfaces of windshield (8) and airframe (11). Use sealing compound (item 177, App F) and sealant gun.



GO TO NEXT PAGE

2.73. UPPER CENTER CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

b. **Install bar (7) on windshield (8).** Torque 29 screws (9) to **20 INCH-POUNDS**.

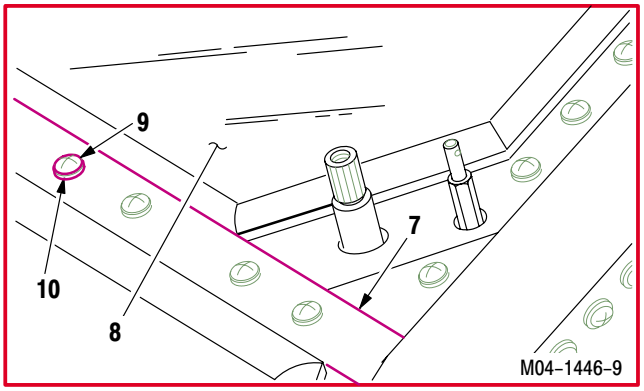
(1) Position bar (7) on windshield (8).

(2) Apply sealing compound to threads of 29 screws (9). Use sealing compound (item 177, App F) and sealant gun.

(3) Install 29 screws (9) and washers (10) in bar (7) while sealing compound is still wet.

(4) Torque 29 screws (9) to **20 INCH-POUNDS**. Use torque wrench.

(5) Apply a **0.125 INCH** bead of sealing compound on bottom forward and aft mating surfaces of windshield (8) and bar (7). Use sealing compound (item 177, App F) and sealant gun.





c. **Seal around bar (7) and windshield (8).** Use sealing compound (item 176, App F) and sealant gun.

d. **Attach four wires (1) to studs (2).**

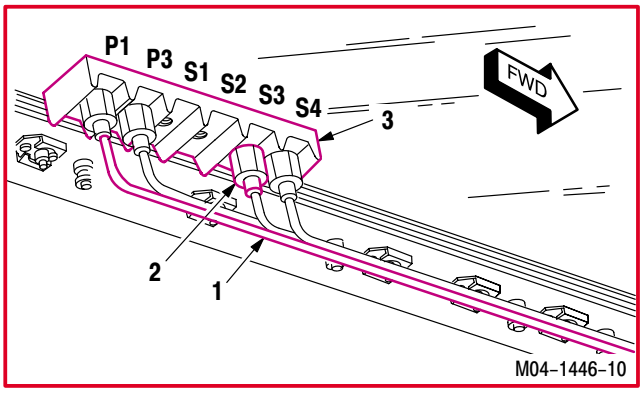
(1) Install four studs (2) on block (3).

(2) Attach wire H70C16 (1) to stud P1 (2).

(3) Attach wire H70B16 (1) to stud P3 (2).

(4) Attach wire H73A24 (1) to stud S3 (2).

(5) Attach wire H74A24 (1) to stud S4 (2).



GO TO NEXT PAGE

2.73. UPPER CENTER CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued

e. **Attach two wires (4) to studs (5).**

(1) Install two studs (5) on block (6).

(2) Attach wire H69B16 (4) to stud P2 (5).

(3) Attach wire H71B16 (4) to stud P4 (5).

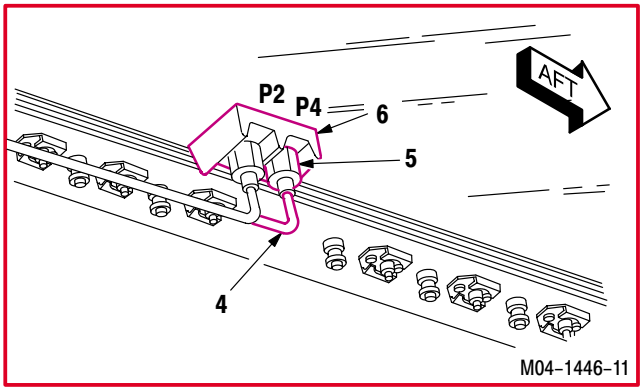
f. **Inspect (QA).**

g. **Install pilot windshield wiper link** (para 12.4)**.**

h. **Install pilot windshield wiper arm** (para 12.3)**.**

i. **Perform canopy defog/de-ice system maintenance operational check** (TM 1-1520-238-T)**.**

j. **Perform windshield wiper system maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

2.74. UPPER AFT CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION

2.74.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.74.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
8-ounce hand sealant gun (item 160, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Cloth (item 48, App F)
Isopropyl alcohol (item 106, App F)
Sealing compound (item 176, App F)
Sealing compound (item 177, App F)

Personnel Required:

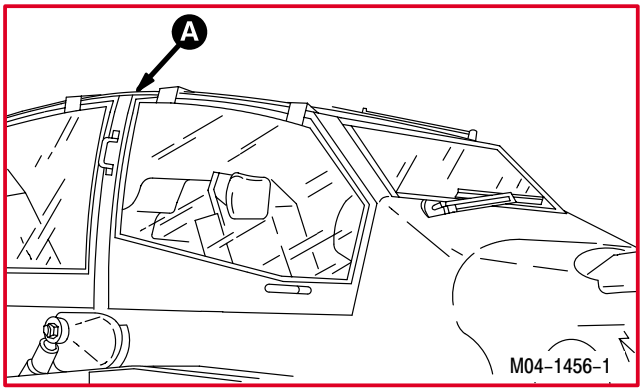
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



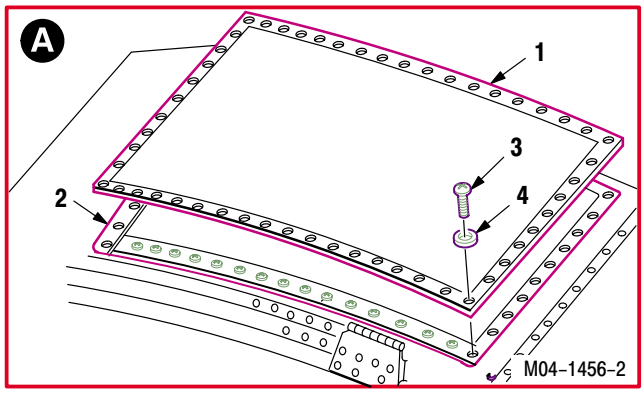
2.74.3. Removal

a. **Remove upper windshield panel (1) from frame (2).**

(1) Remove 53 screws (3) and washers (4).

(2) Break bead of sealing compound.

(3) Remove panel (1) from frame (2).



2.74.4. Cleaning

a. **Clean sealing compound residue from frame and windshield** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

GO TO NEXT PAGE

2.74. UPPER AFT CANOPY WINDSHIELD PANEL REMOVAL/INSTALLATION – continued



c. **Clean protective latex coating from replacement panel if it does not peel off cleanly.** Use isopropyl alcohol (item 106, App F) and cloth (item 48, App F).

2.74.5. Inspection

a. **Check frame for cracks and corrosion** (para 2.12)**.**

b. **Check panel for cracks, pitting, and scratches** (para 2.12)**.**

2.74.6. Installation

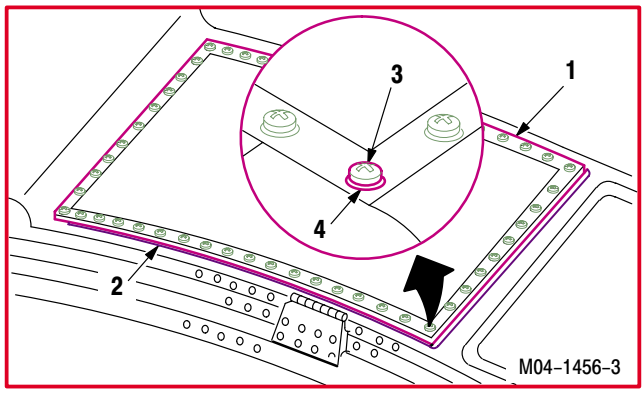


a. **Install panel (1) on frame (2).**

(1) Apply a **0.125 INCH** bead of sealing compound around mating surfaces of frame (2). Use sealing compound (item 177, App F).

(2) Position panel (1) on frame (2).

(3) Install 53 screws (3) through washers (4) until screws (3) are snug against washers (4) and panel (1) is in complete contact with frame (2).



b. **Torque 53 screws (3) to 5 INCH-POUNDS.** Use torque wrench.



c. **Seal around panel (1).** Use sealing compound (item 176, App F) and sealant gun.

d. **Inspect (QA).**

END OF TASK

SECTION V. CENTER FUSELAGE MAINTENANCE

2.75. MAIN LANDING GEAR FUSELAGE FAIRING REMOVAL/INSTALLATION

2.75.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.75.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

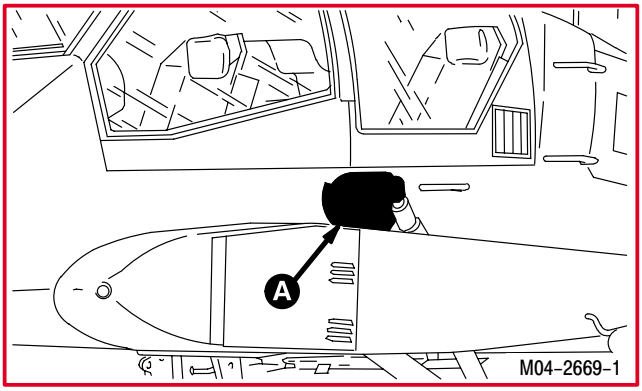
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.18	Left or right main landing gear shock strut removed

NOTE

This task is typical for left and/or right fuselage fairings.

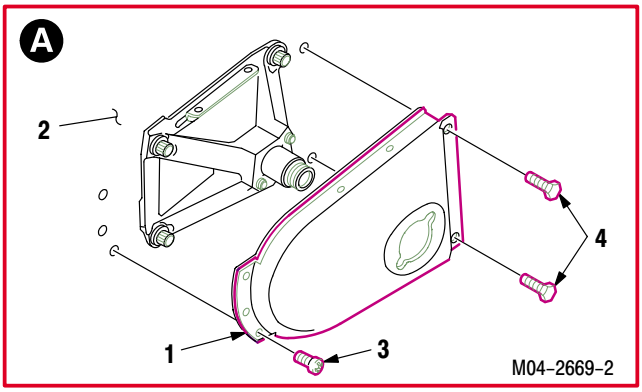


2.75.3. Removal

a. **Remove main landing gear fuselage fairing (1) from fuselage (2).**

(1) Remove five screws (3) and two bolts (4) from fairing (1).

(2) Remove fairing (1) from fuselage (2).



GO TO NEXT PAGE

2.75. MAIN LANDING GEAR FAIRING REMOVAL/INSTALLATION – continued

2.75.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.75.5. Inspection

a. **Check mounting surfaces of fairing for damage** (para 2.12)**.**

b. **Check fairing for cracks** (para 2.12)**.**

2.75.6. Repair

a. **Repair fairing (1) by replacing seal (5)** (para 2.52)**.**

2.75.7. Installation

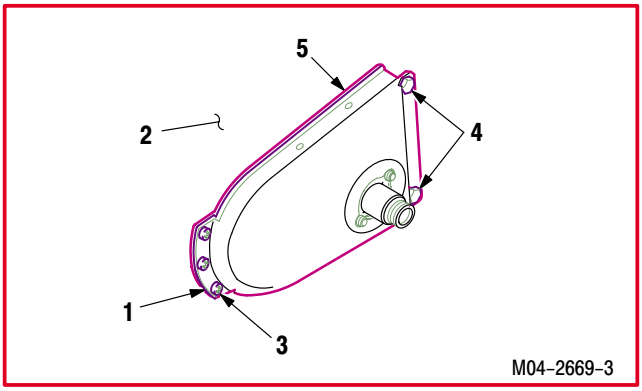
a. **Install fairing (1) on fuselage (2).**

(1) Aline fairing (1) with fuselage (2) mounting holes.

(2) Install five screws (2) and two bolts (4) through fairing (1) and fuselage (2).

b. **Inspect (QA).**

c. **Install left or right main landing gear shock strut** (para 3.18)**.**



END OF TASK

2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION

2.76.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.76.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
5/16 x 3/8-inch drive torque wrench adapter (item 21, App H)
Light duty laboratory apron (item 27, App H)
Demagnetizer (item 105A, App H)
Chemical protective gloves (item 154, App H)
Ultraviolet light (item 202A, App H)
Magnetometer (item 205A, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 3/8-inch drive click type torque wrench (item 441, App H)
0 - 600 foot-pound 3/4-inch drive deflecting frame torque wrench (item 443, App H)
Shock strut support wrench set (figure D-470, App D)

Materials/Parts:

Magnetic inspection compound (item 60A, App F)
Epoxy primer coating kit (item 78, App F)
Primer (item 143, App F)

Personnel Required:

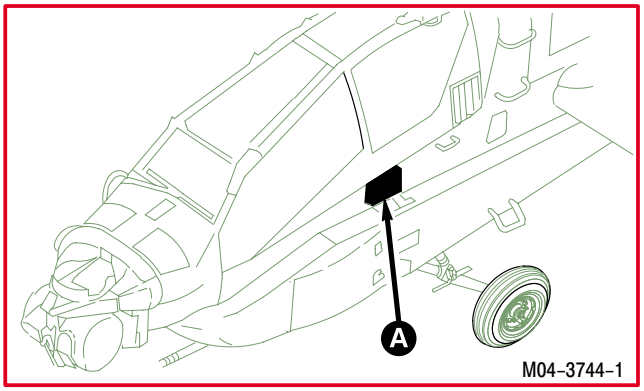
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 9-1090-208-23-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 9-1090-208-23-1	ARCS display control panel removed
2.2	Access panel L120 and L135 removed; pilot left console panel PL5 removed
2.178	Nontransparent barrier armor assembly removed
2.75	Main landing gear left fuselage fairing removed
9.33	Pilot ELEC PWR panel removed
TM 9-1090-208-23-1	Stores jettison control panel removed
TM 9-1090-208-23-1	Missile control panel removed



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2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

2.76.3. Removal

a. **Remove wire harness support bracket (1) from airframe (2).**

(1) Remove three screws (3) and washers (4) from bracket (1) and airframe (2).

NOTE

- Wire harness support bracket may be tilted forward or aft for better access to shock strut structural support nuts.
- It may be necessary to loosen or remove wire bundle clamps and reposition wire bundles for access to nuts inside left hand console.

b. **Remove left main landing gear shock strut structural support (5) from airframe (2).**

(1) Remove shear bolt (6) from support (5).

(2) Remove bolt (7), self-locking nut (8), washer (9), and two washers (10) from support (5).

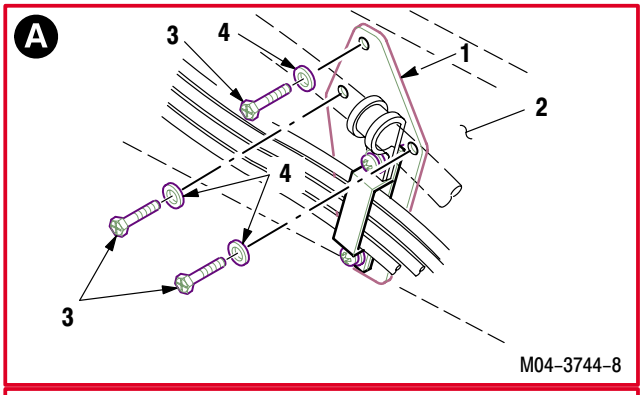
(3) Remove shear bolt (11) and two bolts (12) from support (5).

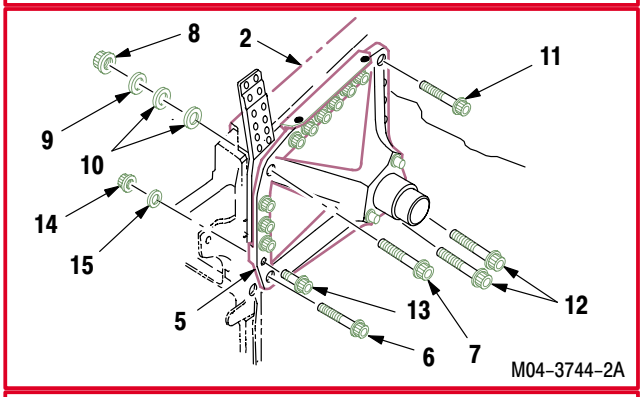
(4) Remove shear bolt (13), self-locking nut (14), and washer (15) from support (5).

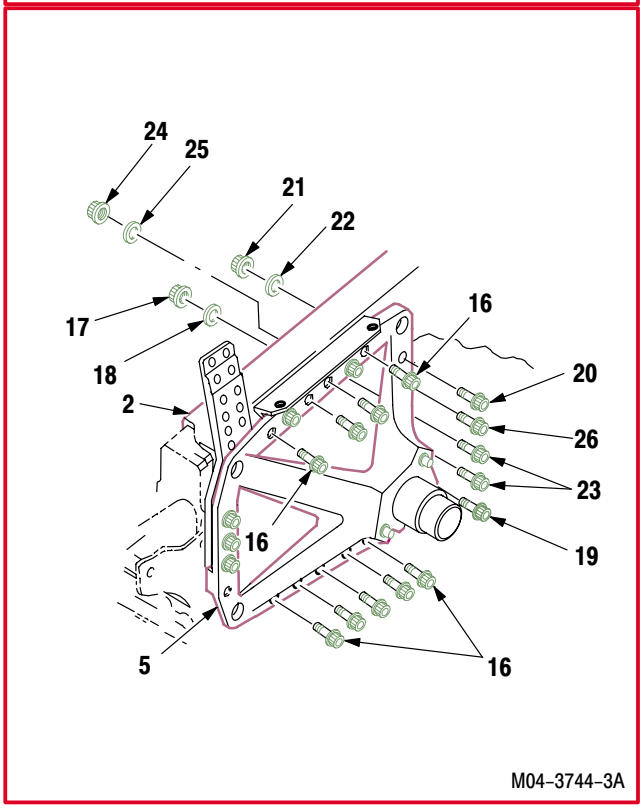
(5) Remove nine shear bolts (16), self-locking nuts (17), and washers (18) from support (5).

(6) Remove shear bolts (19) and (20), two self-locking nuts (21), and washers (22) from support (5). Use torque wrench adapter.

(7) Remove two shear bolts (23), self-locking nuts (24), and washers (25) from support (5).







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2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

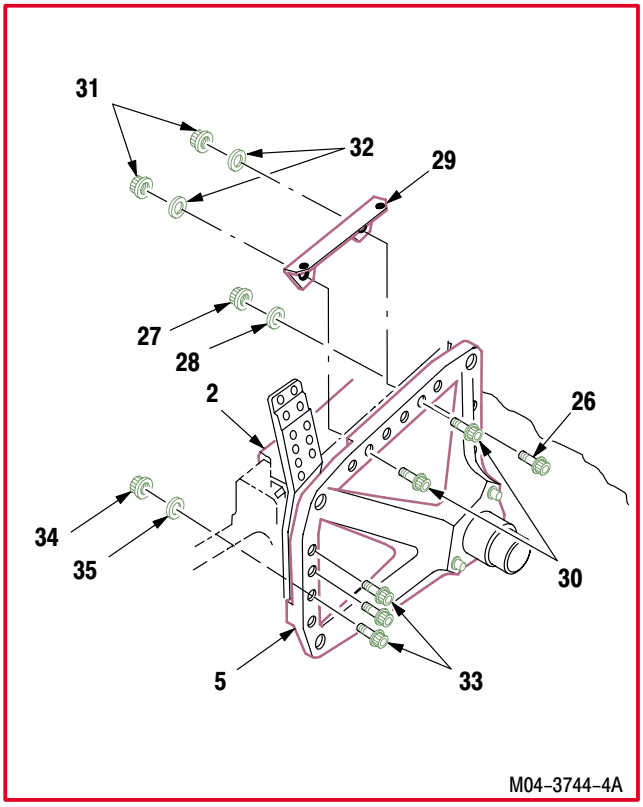
(8) Remove shear bolt (26), self-locking nut (27), and washer (28) from support (5).

(9) Remove angle (29) from support (5).

(a) Remove two shear bolts (30), self-locking nuts (31), and washers (32) from angle (29).

(10) Remove three shear bolts (33), self-locking nuts (34), and washers (35) from support (5).

(11) Remove support (5) from airframe (2).



2.76.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.76.5. Inspection

a. **Check mounting surface, support, and angle for corrosion** (para 1.49)**.**

WARNING

If support is cracked, replace attaching bolts.

b. **Check support and angle for bends and/or cracks** (para 2.12)**.**

c. **Check mounting surface for broken or stripped threads of nutplates** (TM 1-1500-204-23)**.**

GO TO NEXT PAGE

2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued



d. **Check support.** Use 10X magnifying glass.

(1) Check within the **0.25 INCH** area of zone A.

(a) Pits or axial scratches not more than **0.010 INCH** before blending are allowed. Blend damage in axial direction. Apply primer to blended area. Allow to dry **1 HOUR** and apply epoxy primer. Use primer (item 143, App F) and epoxy primer coating kit (item 78, App F).

(b) A series of three or more pits lined up in a radial line are not allowed. Replace support.

(c) Radial scratches or grooves are not allowed. Replace support.

(2) Check within the **0.25 INCH** area of zone B.

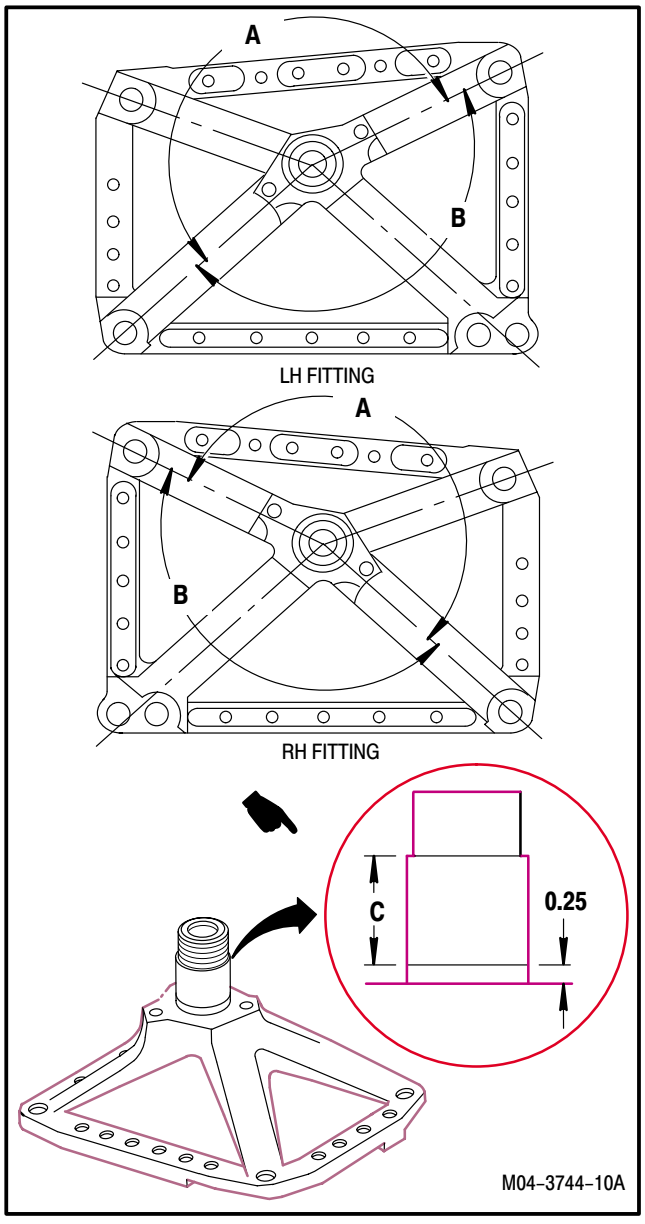
(a) Damage or corrosion through plating and into parent material is not allowed. Replace support.

(3) Check zone C.

(a) Pits or axial scratches not more than **0.020 INCH** before blending are allowed. Blend damage in axial direction. Apply primer to blended area. Allow to dry **1 HOUR** and apply epoxy primer. Use primer (item 143, App F) and epoxy primer coating kit (item 78, App F).

(b) Radial scratches or grooves not allowed. Replace support.

e. **Check guide pins for corrosion, pits, scratches, cracks, and looseness.** None allowed. Replace pin (para 2.77A).



GO TO NEXT PAGE

2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

NOTE

Magnetic particle inspection is to be performed by a qualified inspector in accordance with MIL-STD-410E or having received appropriate training from an ATCOM authorized instructor.

f. **Perform magnetic particle inspection on support.**

(1) Inspection should be concentrated from an area around the sharp radius at shaft base continuing up shaft approximately **0.25 INCH**.

(2) No cracks, grooves, pits, or scratches are allowed inside the **0.25 INCH** critical zone.

(3) Connect ultraviolet light to power source and allow it to warm up 15 minutes before using.

(4) Position center of coil around mount shaft. Ensure bottom of shaft rests on inside surface of coil as close to shaft base as possible. Use demagnetizer.

NOTE

Energize coil by pressing the hand/foot switch for 2 to 3 seconds.

(5) Steady coil and magnetize mount by energizing coil.

(6) De-energize coil and remove from mount.

(7) Check magnetic field strength of threaded end of mount. Use magnetometer. A minimum reading of 5 marks (7.5 oersteds) deflection +/–. Repeat steps f.(4) thru f.(7) if minimum reading is not achieved.

(8) Immediately after magnetizing check, apply generous amount of well mixed magnetic particle compound to shaft. Concentrate around lower portion of shaft and base. Use magnetic inspection compound (item 60A, App F).

(9) Allow compound to set on mount for one minute prior to illumination with ultraviolet light.

(10) Illuminate mount and check for cracks. Use ultraviolet light.

(a) If cracks are found, go to step f.(11) to de-magnetize mount. Discard mount in accordance with normal supply procedures and submit a Category 1 deficiency report.

(b) If no cracks are found, go to step f.(11).

(11) De-magnetize mount.

(a) Position center of coil around mount shaft. Ensure bottom of shaft rests on inside surface of coil as close to shaft base as possible. Use demagnetizer.

(b) While coil is energized, slowly remove coil from shaft and clear end by minimum distance of two feet.

(12) Check mount for residual magnetism. Use magnetometer.

(a) If indicator does not exceed two marks +/– (3 oersteds), go to step f.(13).

(b) If indicator exceeds two marks +/– (3 oersteds), repeat steps f.(11) and f.(12).

(13) Clean inspection area and ensure all magnetic inspection compound is removed (para 1.47).

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2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

2.76.6. Installation

NOTE

- It may be necessary to add additional washers to bolts after MWO 1-1520-238-50-46 has been applied.
- Use shock strut support wrench set (figure D-470, App D) to hold nuts as necessary.

a. **Install support (5) on airframe (2).** Torque three nuts (34), two nuts (31), nut (27), two nuts (24), nine nuts (17), and nut (14) to **90 INCH-POUNDS**.

(1) Install bolt (6) and (11) and two bolts (12) on support (5). Do not tighten.

(2) Install bolt (7), two washers (10), washer (9), and nut (8) on support (5). Do not tighten.

(3) Install bolts (19) and (20), two washers (22), and nuts (21) on support (5). Do not tighten. Use torque wrench adapter.

(4) Install three bolts (33), washers (35), and nuts (34) on support (5). Torque nuts (34) to **90 INCH-POUNDS**. Use torque wrench.

(5) Install angle (29) on support (5).

(a) Position angle (29) on support (5).

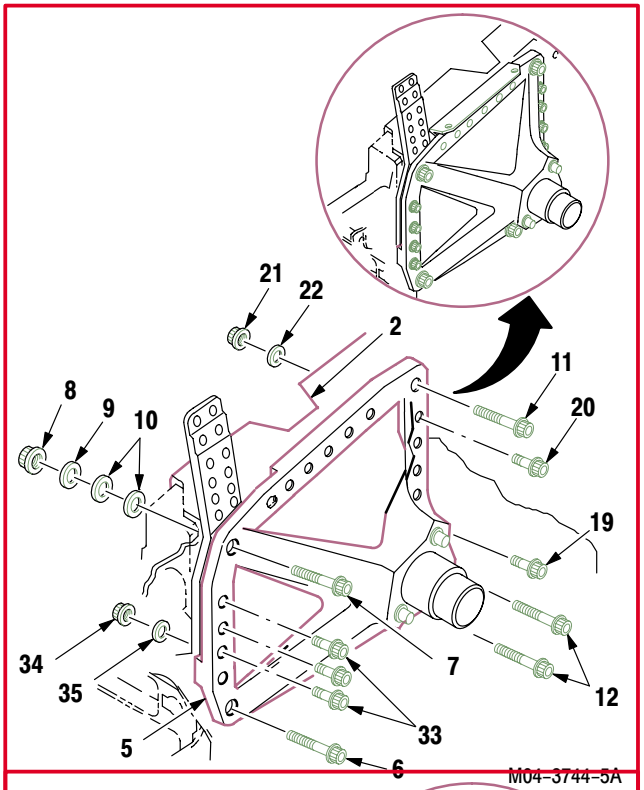
(b) Install two bolts (30), washers (32), nuts (31), and angle (29) on support (5). Torque nuts (31) to **90 INCH-POUNDS**. Use torque wrench.

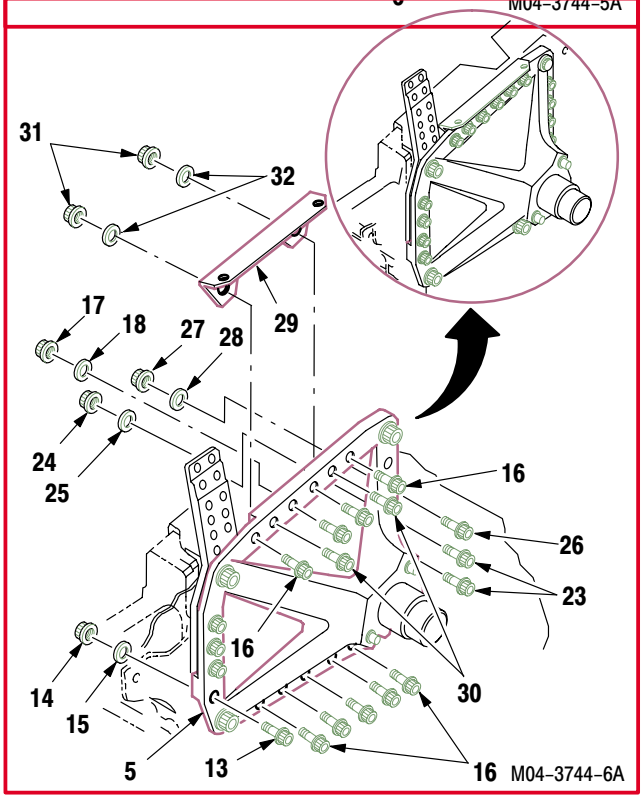
(6) Install bolt (26), washer (28), and nut (27) on support (5). Torque nut (27) to **90 INCH-POUNDS**. Use torque wrench.

(7) Install two bolts (23), washers (25), and nuts (24) on support (5). Torque nuts (24) to **90 INCH-POUNDS**. Use torque wrench.

(8) Install nine bolts (16), washers (18), and nuts (17) on support (5). Torque nuts (17) to **90 INCH-POUNDS**. Use torque wrench.

(9) Install bolt (13), washer (15), and nut (14) on support (5). Torque nut (14) to **90 INCH-POUNDS**. Use torque wrench.





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2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

b. **Torque two bolts (12) to 158 FOOT-POUNDS.** Use torque wrench.

NOTE

Torque on bolts (6), (7), and (11) before MWO 1-1520-238-50-46 has been applied is **125 FOOT-POUNDS**. Torque on bolts after MWO 1-1520-238-50-46 has been applied is **79 FOOT-POUNDS**.

c. **Torque three bolts in order (6), (7), and (11) to 79 or 125 FOOT-POUNDS.** Use torque wrench.

d. **Torque bolts (19) and (20) to 90 INCH-POUNDS.** Use torque wrench and torque wrench adapter.

NOTE

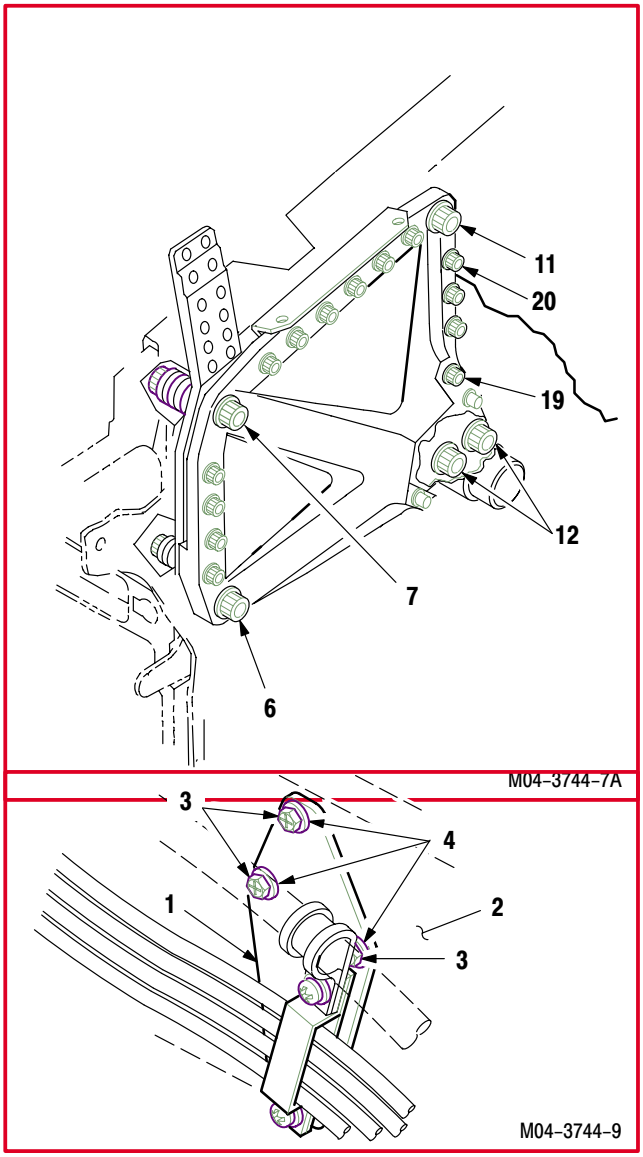
Tighten or install wire bundle clamps if loosened or removed.

e. **Install bracket (1) on airframe (2).**

(1) Aline bracket (1) with airframe (2) mounting holes.

(2) Install three screws (3) and washers (4) through bracket (1) in airframe (2).

f. **Inspect (QA).**



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2.76. MAIN LANDING GEAR LEFT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

g. **Install missile control panel** (TM 9-1090-208-23-1)**.**

h. **Install stores jettison control panel** (TM 9-1090-208-23-1)**.**

i. **Install pilot ELEC PWR panel** (para 9.33)**.**

j. **Install main landing gear left fuselage fairing** (para 2.75)**.**

k. **Install nontransparent barrier armor assembly** (para 2.178)**.**

l. **Install access panels L120 and L135; install pilot left console panel PL5** (para 2.2)**.**

m. **Install ARCS display and control panel assembly** (TM 9-1090-208-23-1)**.**

END OF TASK

2.77. MAIN LANDING GEAR RIGHT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION

2.77.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.77.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
5/16 x 3/8-inch drive torque wrench adapter (item 21, App H)
Light duty laboratory apron (item 27, App H)
Demagnetizer (item 105A, App H)
Chemical protective gloves (item 154, App H)
Ultraviolet light (item 202A, App H)
Magnetometer (item 205A, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 3/8-inch drive click type torque wrench (item 441, App H)
0 - 600 foot-pound 3/4-inch drive deflecting frame torque wrench (item 443, App H)
Shock strut support wrench set (figure D-470, App D)

Materials/Parts:

Magnetic inspection compound (item 60A, App F)
Epoxy primer coating kit (item 78, App F)
Primer (item 143, App F)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

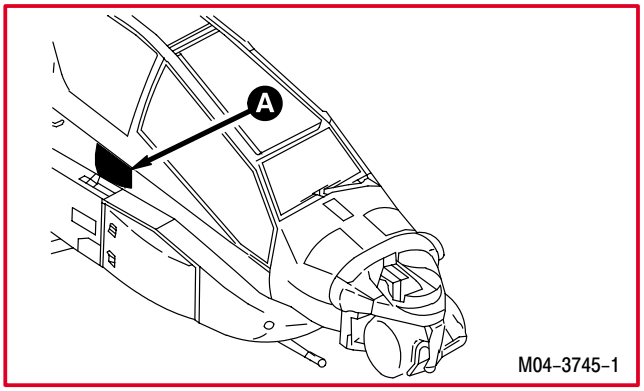
TM 1-1500-204-23
TM 11-1520-238-23-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 11-1520-238-23-1	Pilot UHF/AM receiver/transmitter removed
2.2	Access panel R120 and pilot right console panel PR4 removed
2.178	Nontransparent barrier armor assembly removed
2.75	Main landing gear right fuselage fairing removed
9.105	Pilot caution/warning panel removed
13.28	Air duct No. 22 removed

NOTE

This task typical for left hand or right hand strut supports with or without safety bolt installed.



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2.77. MAIN LANDING GEAR RIGHT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

2.77.3. Removal

a. **Remove right main landing gear shock strut structural support (1) from airframe (2).**

(1) Remove shear bolt (3) from support (1).

(2) Remove bolt (4), self-locking nut (5), washer (6), and two washers (7) from support (1).

(3) Remove shear bolt (8) and two bolts (9) from support (1).

(4) Remove shear bolt (10), self-locking nut (11), and washer (12) from support (1).

(5) Remove nine shear bolts (13), self-locking nuts (14), and washers (15) from support (1).

(6) Remove shear bolts (16) and (17), two self-locking nuts (18), and washers (19) from support (1). Use torque wrench adapter.

(7) Remove two shear bolts (20), self-locking nuts (21), and washers (22) from support (1).

(8) Remove shear bolt (23), self-locking nut (24), and washer (25) from support (1).

(9) Remove angle (26) from support (1).

(a) Remove two shear bolts (27), self-locking nuts (28), and washers (29) from angle (26).

(10) Remove three shear bolts (30), self-locking nuts (31), and washers (32) from support (1).

2.77.4. Cleaning

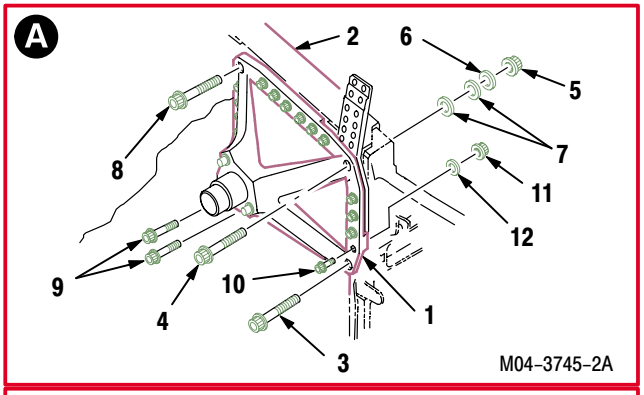
a. **Wipe removed and attaching parts and surfaces with a clean rag.**

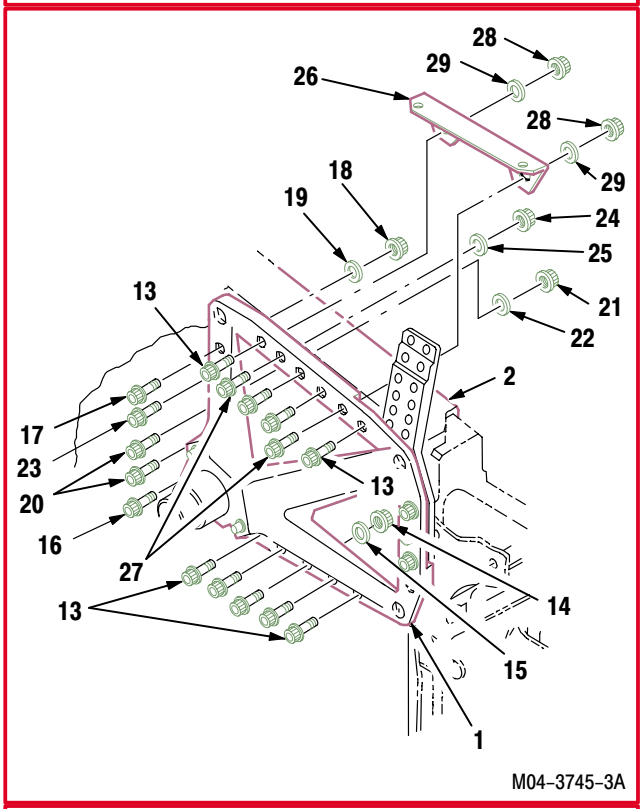
2.77.5. Inspection

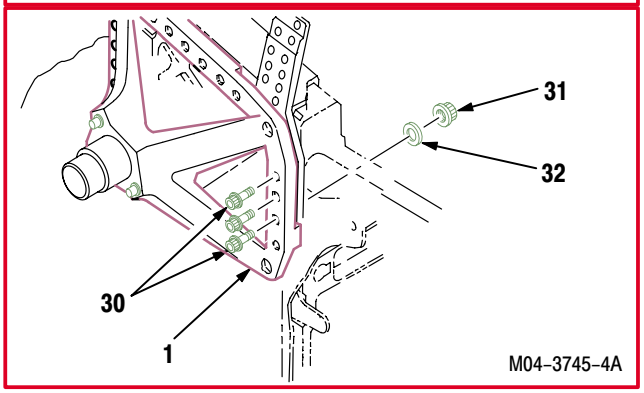
a. **Check mounting surface, support, and angle for corrosion** (para 1.49)**.**

WARNING

If support is cracked, replace attaching bolts.







GO TO NEXT PAGE

2.77. MAIN LANDING GEAR RIGHT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

b. **Check support and angle for bends and/or cracks** (para 2.12)**.**

c. **Check mounting surface for broken or stripped threads of nutplates** (TM 1-1500-204-23)**.**



d. **Check support.** Use 10X magnifying glass.

(1) Check within the **0.25 INCH** area of zone A.

(a) Pits or axial scratches not more than **0.010 INCH** before blending are allowed. Blend damage in axial direction. Apply primer to blended area. Allow to dry **1 HOUR** and apply epoxy primer. Use primer (item 143, App F) and epoxy primer coating kit (item 78, App F).

(b) A series of three or more pits lined up in a radial line are not allowed. Replace support.

(c) Radial scratches or grooves are not allowed. Replace support.

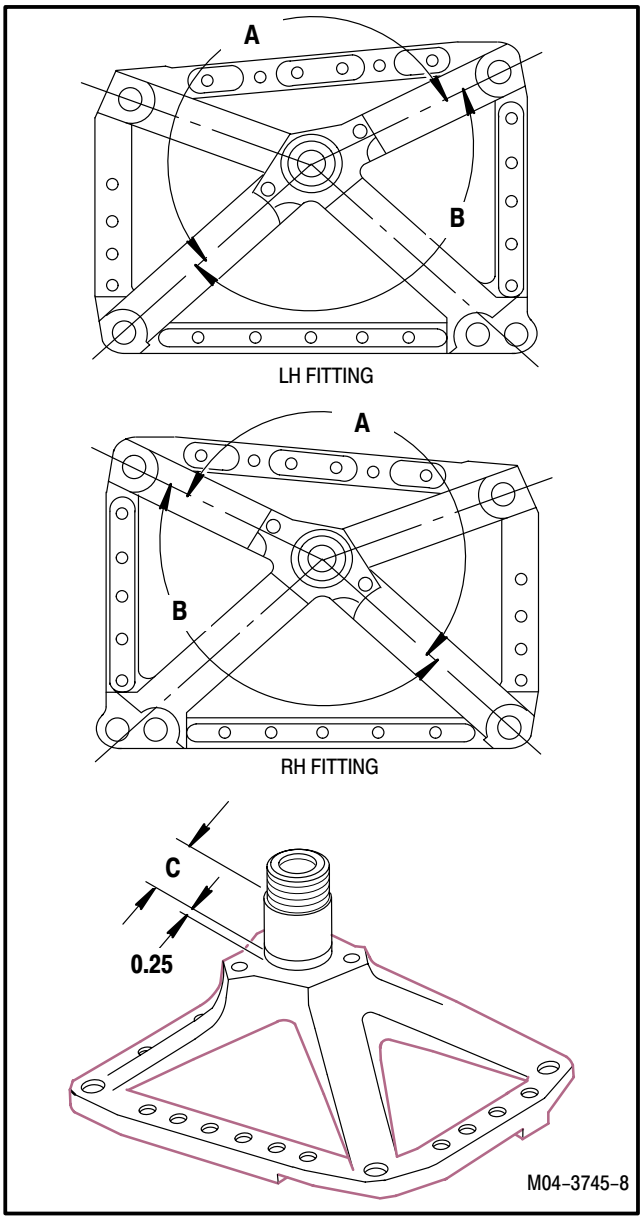
(2) Check within the **0.25 INCH** area of zone B.

(a) Damage or corrosion through plating and into parent material is not allowed. Replace support.

(3) Check zone C.

(a) Pits or axial scratches not more than **0.020 INCH** before blending are allowed. Blend damage in axial direction. Apply primer to blended area. Allow to dry **1 HOUR** and apply epoxy primer. Use primer (item 143, App F) and epoxy primer coating kit (item 78, App F).

(b) Radial scratches or grooves not allowed. Replace support.



GO TO NEXT PAGE

2.77. MAIN LANDING GEAR RIGHT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

e. **Check guide pins for corrosion, pits, scratches, cracks, and looseness.** None allowed. Replace pin (para 2.77A).

NOTE

Magnetic particle inspection is to be performed by a qualified inspector in accordance with MIL-STD-410E or having received appropriate training from an ATCOM authorized instructor.

f. **Perform magnetic particle inspection on support.**

(1) Inspection should be concentrated from an area around the sharp radius at shaft base continuing up shaft approximately **0.25 INCH**.

(2) No cracks, grooves, pits, or scratches are allowed inside the **0.25 INCH** critical zone.

(3) Connect ultraviolet light to power source and allow it to warm up 15 minutes before using.

(4) Position center of coil around mount shaft. Ensure bottom of shaft rests on inside surface of coil as close to shaft base as possible. Use demagnetizer.

NOTE

Energize coil by pressing the hand/foot switch for 2 to 3 seconds.

(5) Steady coil and magnetize mount by energizing coil.

(6) De-energize coil and remove from mount.

(7) Check magnetic field strength of threaded end of mount. Use magnetometer. A minimum reading of 5 marks (7.5 oersteds) deflection +/–. Repeat steps f.(4) thru f.(7) if minimum reading is not achieved.

(8) Immediately after magnetizing check, apply generous amount of well mixed magnetic particle compound to shaft. Concentrate around lower portion of shaft and base. Use magnetic inspection compound (item 60A, App F).

(9) Allow compound to set on mount for one minute prior to illumination with ultraviolet light.

(10) Illuminate mount and check for cracks. Use ultraviolet light.

(a) If cracks are found, go to step f.(11) to de-magnetize mount. Discard mount in accordance with normal supply procedures and submit a Category 1 deficiency report.

(b) If no cracks are found, go to step f.(11).

(11) De-magnetize mount.

(a) Position center of coil around mount shaft. Ensure bottom of shaft rests on inside surface of coil as close to shaft base as possible. Use demagnetizer.

(b) While coil is energized, slowly remove coil from shaft and clear end by minimum distance of two feet.

(12) Check mount for residual magnetism. Use magnetometer.

(a) If indicator does not exceed two marks +/– (3 oersteds), go to step f.(13).

(b) If indicator exceeds two marks +/– (3 oersteds), repeat steps f.(11) and f.(12).

(13) Clean inspection area and ensure all magnetic inspection compound is removed (para 1.47).

GO TO NEXT PAGE

2.77. MAIN LANDING GEAR RIGHT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

2.77.6. Installation

NOTE

- It may be necessary to add additional washers to bolts after MWO 1-1520-238-50-46 has been applied.
- Use shock strut support wrench set (figure D-470, App D) to hold nuts as necessary.

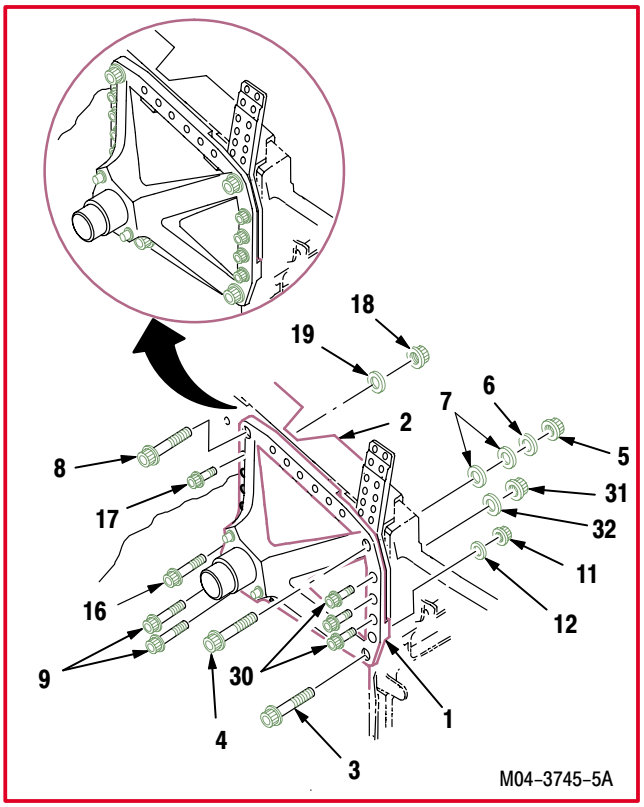
a. **Install support (1) on airframe (2).** Torque three nuts (31), two nuts (28), nut (24), two nuts (21), nine nuts (14), and nut (14) to **90 INCH-POUNDS**. Torque bolt (10) to **90 INCH-POUNDS**.

(1) Install bolts (3) and (8) and two bolts (9) on support (1). Do not tighten.

(2) Install bolt (4), two washers (7), washer (6), and nut (5) on support (1). Do not tighten.

(3) Install bolts (16) and (17), two washers (19), and nuts (18) on support (1). Do not tighten. Use torque wrench adapter.

(4) Install three bolts (30), washers (32), and nuts (31) on support (1). Torque nuts (31) to **90 INCH-POUNDS**. Use torque wrench.



GO TO NEXT PAGE

2.77. MAIN LANDING GEAR RIGHT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

(5) Install angle (26) on support (1).

(a) Position angle (26) on support (1).

(b) Install two bolts (27), washers (29),and nuts (28) on angle (26). Torque nuts (28) to **90 INCH-POUNDS**. Use torque wrench.

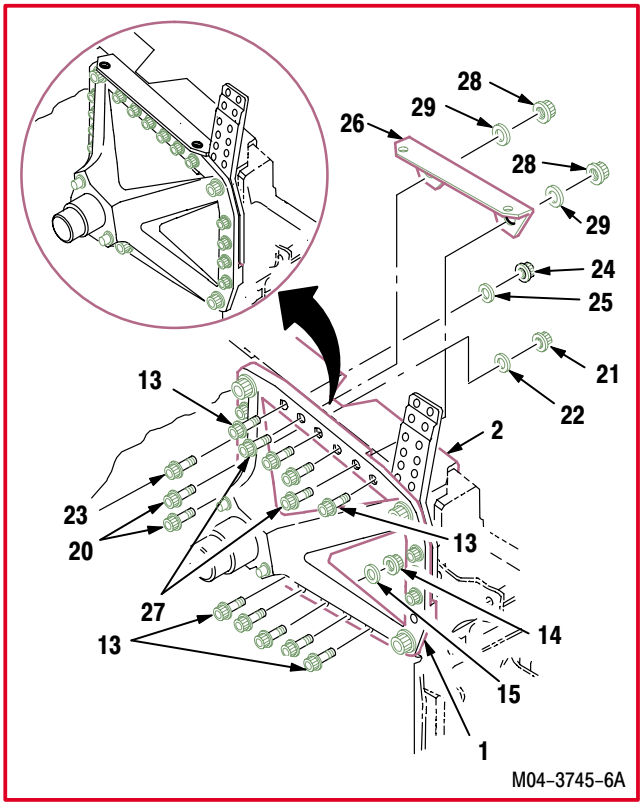
(6) Install bolt (23), washer (25), and nut (24) on support (1). Torque nut (24) to **90 INCH-POUNDS**. Use torque wrench.

(7) Install two bolts (20), washers (22), and nuts (21) on support (1). Torque nuts (21) to **90 INCH-POUNDS**. Use torque wrench.

(8) Install nine bolts (13), washers (15), and nuts (14) on support (1). Torque nuts (14) to **90 INCH-POUNDS**. Use torque wrench.

(9) Install bolt (10), washer (12), and nut (11) on support (1). Torque bolt (10) to **90 INCH-POUNDS**. Use torque wrench.

b. **Torque two bolts (9) to 158 FOOT-POUNDS.** Use torque wrench.



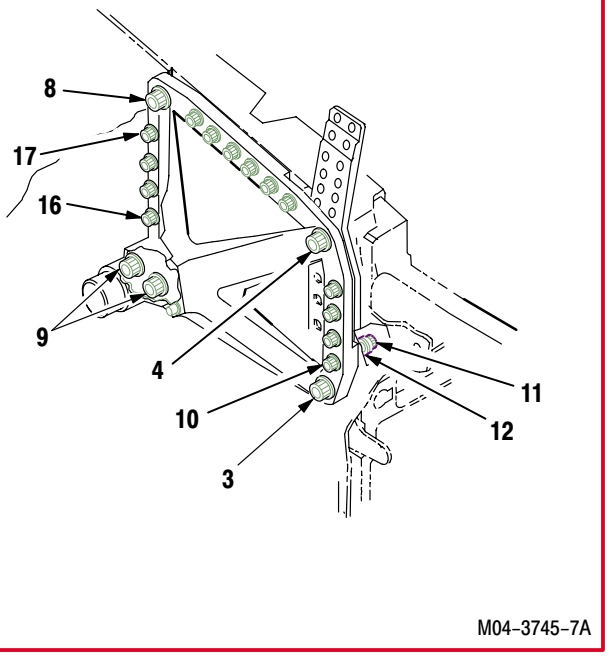
M04-3745-6A

NOTE

Torque on bolts (8), (4), and (3) before MWO 1-1520-238-50-46 has been applied is **125 FOOT-POUNDS**. Torque on bolts after MWO 1-1520-238-50-46 has been applied is **79 FOOT-POUNDS**.

c. **Torque three bolts in order (8), (4), and (3) to 79 or 125 FOOT-POUNDS.** Use torque wrench.

d. **Torque bolts (16) and (17) to 90 INCH-POUNDS.** Use torque wrench and torque wrench adapter.



M04-3745-7A

GO TO NEXT PAGE

2.77. MAIN LANDING GEAR RIGHT SHOCK STRUT STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

e. **Inspect (QA).**

f. **Install air duct No. 22** (para 13.28)**.**

g. **Install pilot caution/warning panel** (para 9.105)**.**

h. **Install main landing gear right fuselage fairing** (para 2.75)**.**

i. **Install nontransparent barrier armor assembly** (para 2.178)**.**

j. **Install pilot right console panel PR4 and access panels R120** (para 2.2)**.**

k. **Install pilot UHF/AM receiver/transmitter** (TM 11-1520-238-23-1)**.**

END OF TASK

2.77A. MAIN LANDING GEAR SHOCK STRUT STRUCTURAL SUPPORT PIN REPLACEMENT

2.77A.1. Description

This task covers: Removal. Cleaning. Inspection. Replacement.

2.77A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Electric gun type heater (item 163, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Pin(s)
Epoxy primer coating kit (item 78, App F)
Primer (item 143, App F)
Sealing compound (item 165, App F)

Personnel Required:

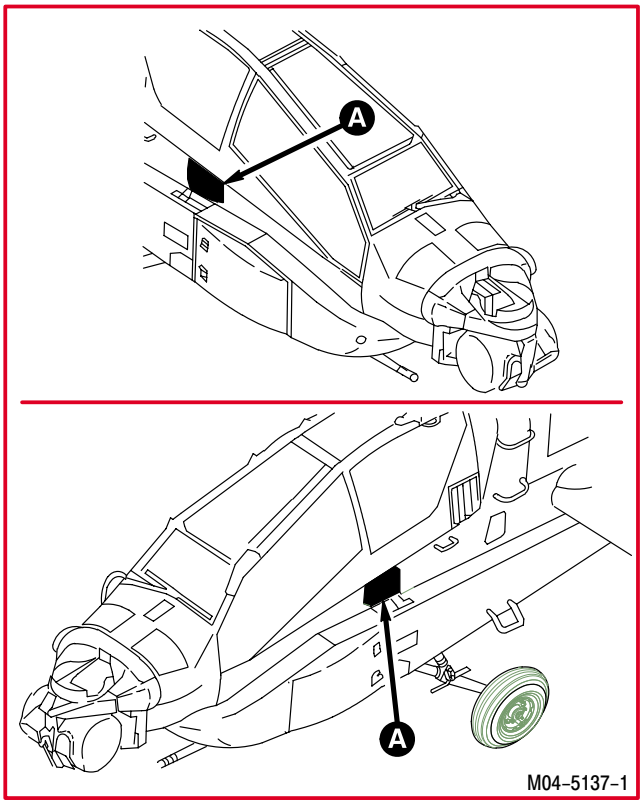
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.75	Main landing gear fuselage fairing removed

NOTE

This task typical for two guide pins on left hand or right hand strut supports with or without safety bolt installed, except where noted.



GO TO NEXT PAGE

2.77A. MAIN LANDING GEAR SHOCK STRUT STRUCTURAL SUPPORT PIN REPLACEMENT – continued

2.77A.3. Removal



WARNING

Do not place heater near flammable material or allow heater to contact skin: severe burns can result. Wear protective equipment. If injury occurs, seek medical aid.

a. **Remove guide pins (1) from strut support (2).**

(1) Apply heat to guide pins (1). Use heater.

(2) Remove and discard guide pins (1) from support (2).

2.77A.4. Cleaning

a. **Clean guide pin attaching surfaces** (para 1.47)**.**

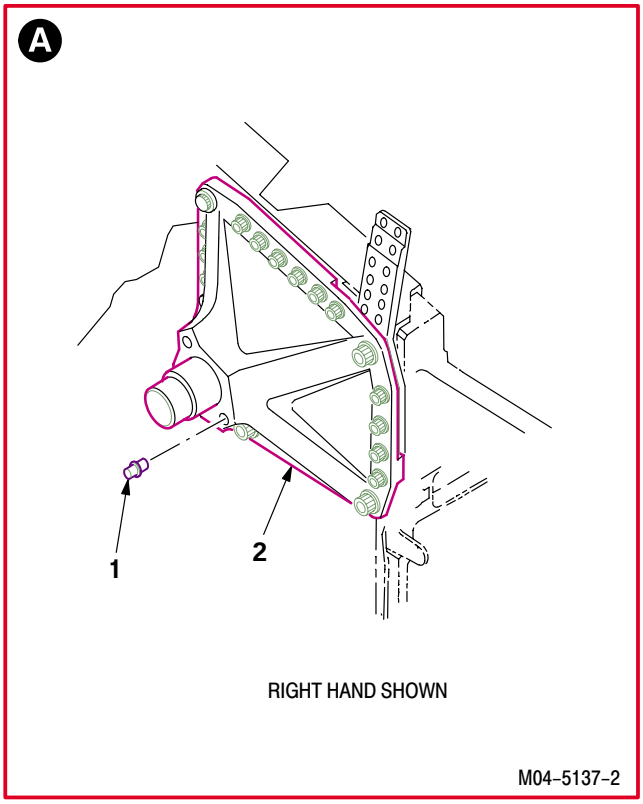
2.77A.5. Inspection

a. **Check support and angle for corrosion** (para 1.49)**.**

WARNING

If support is cracked, replace attaching bolts.

b. **Check support and angle for bends and/or cracks** (para 2.12)**.**



GO TO NEXT PAGE

2.77A. MAIN LANDING GEAR SHOCK STRUT STRUCTURAL SUPPORT PIN REPLACEMENT – continued



c. **Check support.** Use 10X magnifying glass.

(1) Check within the **0.25 INCH** area of zone A.

(a) Pits or axial scratches not more than **0.010 INCH** before blending are allowed. Blend damage in axial direction. Apply primer to blended area. Allow to dry **1 HOUR** and apply epoxy primer. Use primer (item 143, App F) and epoxy primer coating kit (item 78, App F).

(b) A series of three or more pits lined up in a radial line are not allowed. Replace support.

(c) Radial scratches or grooves are not allowed. Replace support.

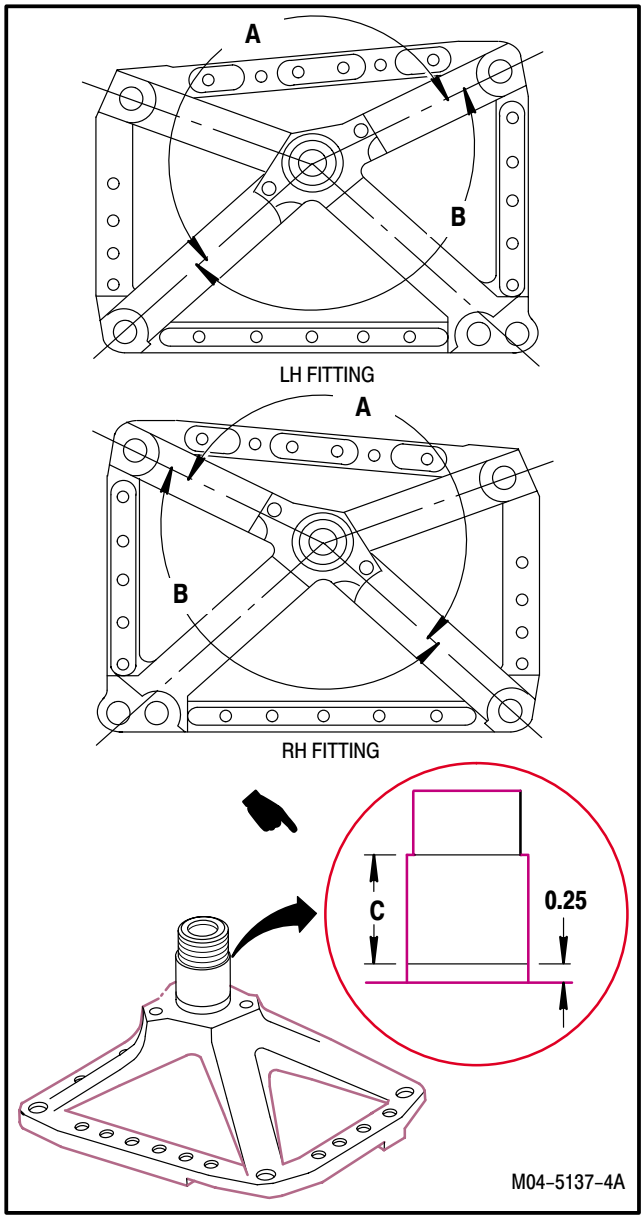
(2) Check within the **0.25 INCH** area of zone B.

(a) Damage or corrosion through plating and into parent material is not allowed. Replace support.

(3) Check zone C.

(a) Pits or axial scratches not more than **0.020 INCH** before blending are allowed. Blend damage in axial direction. Apply primer to blended area. Allow to dry **1 HOUR** and apply epoxy primer. Use primer (item 143, App F) and epoxy primer coating kit (item 78, App F).

(b) Radial scratches or grooves not allowed. Replace support.



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2.77A. MAIN LANDING GEAR SHOCK STRUT STRUCTURAL SUPPORT PIN REPLACEMENT – continued

d. **Perform magnetic particle inspection on left support** (para 2.76) **or right support** (para 2.77)**.**

e. **Check pin mating surface for damage.**

(1) Check for cracks. None allowed.

(2) Pits and scratches not more than **0.010 INCH** before blending are allowed. Blend out damage at a 20 to 1 ratio.

2.77A.6. Replacement



NOTE

Go to step b. to install guide pins with safety bolt installed on support.

a. **Install guide pins (1) in support (2).**

(1) Apply a coat of sealing compound to mating surface of new guide pin (1). Use protective gloves and sealing compound (item 165, App F).

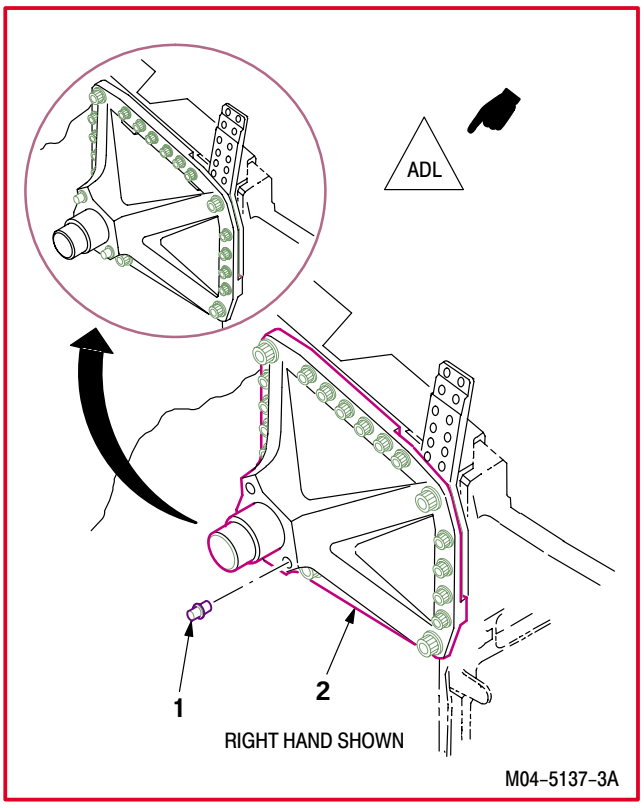
(2) Install new guide pins (1) in support (2).

NOTE

To ensure guide pin will be secured to support, guide pin shall remain undisturbed while curing.

(a) Allow sealing compound on installed guide pins (1) to cure at ambient temperature for **2 HOURS**.

(3) Go to step c.



GO TO NEXT PAGE

2.77A. MAIN LANDING GEAR SHOCK STRUT STRUCTURAL SUPPORT PIN REPLACEMENT – continued

CAUTION

Ensure washer is installed with chamfered surface of washer inboard against structural support. Failure to comply could result in damage to equipment.



b. **Install guide pins (1) and (1.1) in support (2) using washer (3) as a guide for proper alinement of pins.**

(1) Apply a coat of sealing compound to mating surface of new guide pins (1) and (1.1). Use protective gloves and sealing compound (item 165, App F).

(2) Install new guide pin (1) in support (2).

(3) Using washer (3) as a guide install new guide pin (1.1) with flat side facing up in support (2).

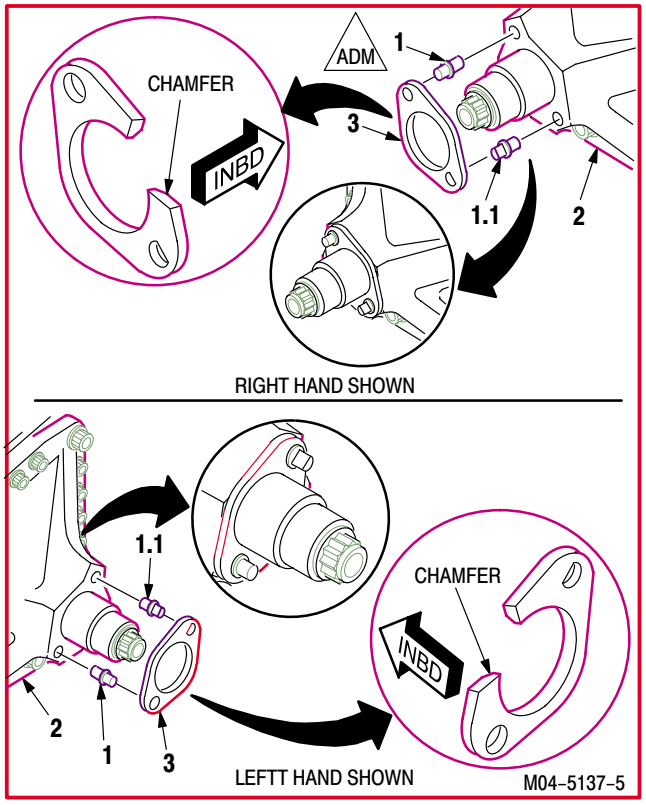
NOTE

To ensure guide pins will be secured to support, guide pins shall remain undisturbed while curing.

(4) Allow sealing compound on installed guide pins (1) and (1.1) to cure at ambient temperature for **2 HOURS**.

c. **Inspect (QA).**

d. **Install main landing gear fuselage fairing** (para 2.75)**.**



END OF TASK

2.78. FUSELAGE BOW HANDLE REMOVAL/INSTALLATION

2.78.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.78.2. Initial Setup

Tools:

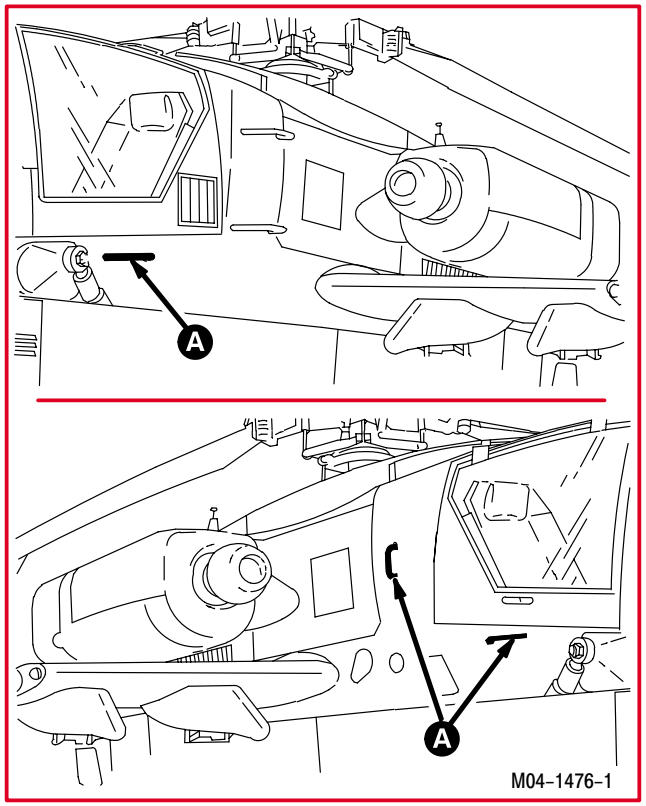
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

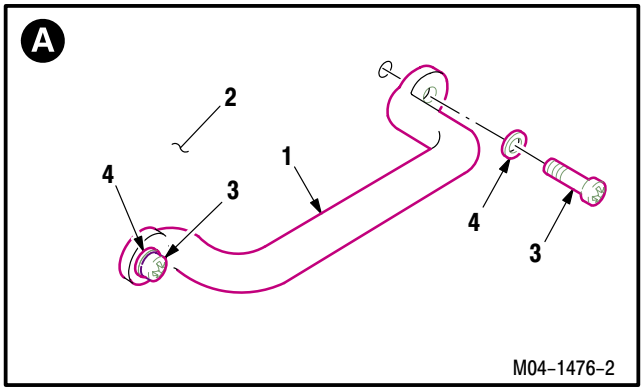
2.78. FUSELAGE BOW HANDLE REMOVAL/INSTALLATION – continued

2.78.3. Removal

a. **Remove fuselage bow handle (1) from fuselage (2).**

(1) Remove screws (3) and washers (4) from handle (1).

(2) Remove handle (1) from fuselage (2).



2.78.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.78.5. Inspection

a. **Check fuselage for damage** (para 2.11)**.**

b. **Check handle for cracks and corrosion** (para 2.11)**.**

2.78.6. Installation

a. **Install handle (1) on fuselage (2).**

(1) Position handle (1) on fuselage (2).

(2) Install two screws (3) and washers (4).

b. **Inspect (QA).**

END OF TASK

2.79. FUSELAGE STEP REMOVAL/INSTALLATION

2.79.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.79.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

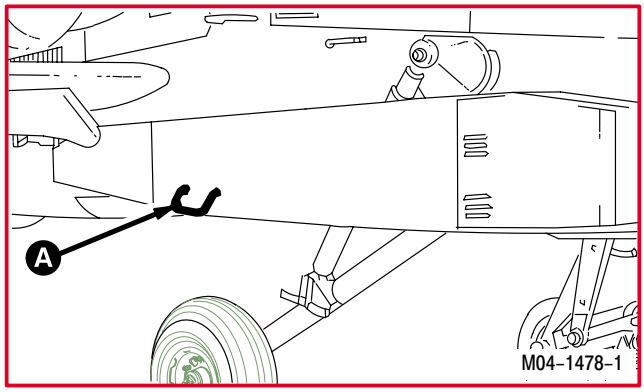
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

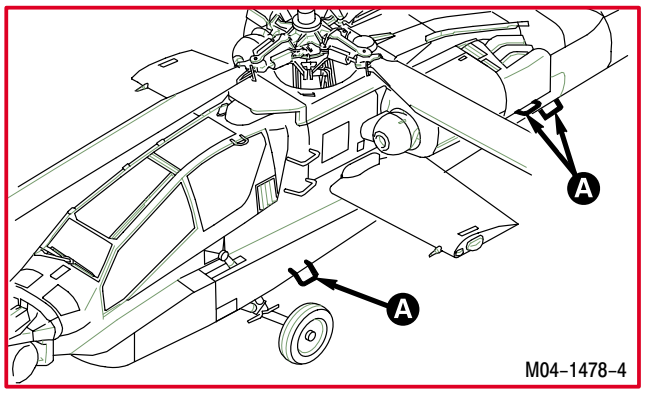
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

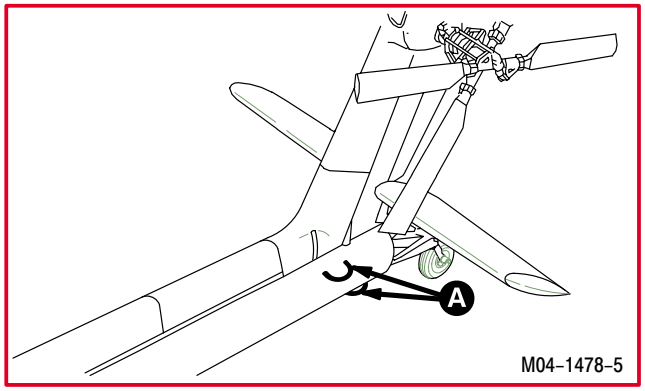
This task is typical for all fuselage steps.





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2.79. FUSELAGE STEP REMOVAL/INSTALLATION – continued



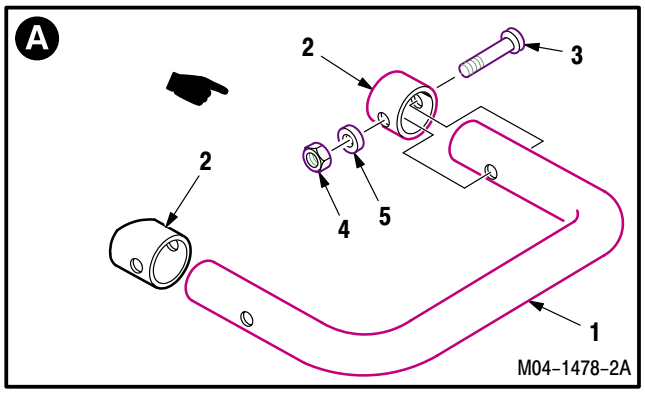
2.79.3. Removal

a. **Remove step (1) from two support assemblies (2).**

(1) Hold two screws (3). Remove two nuts (4) and washers (5).

(2) Remove two screws (3) from supports (2) and step (1).

(3) Remove step (1) from two supports (2).



2.79.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.79.5. Inspection

a. **Check step and tubes for wear, deformation, cracks, corrosion, anti-skid coating, and bolt holes for elongation** (para 2.11)**.**

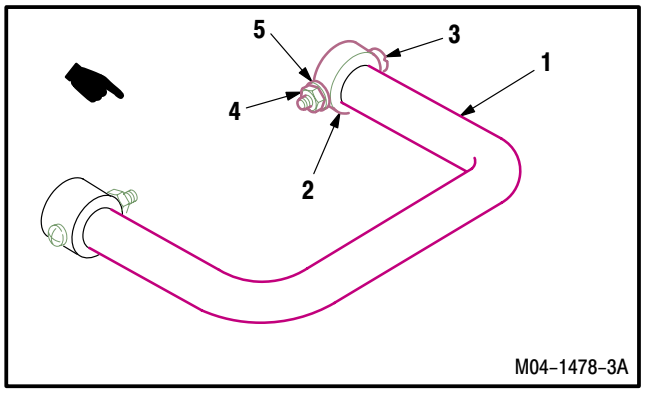
2.79.6. Installation

a. **Install step (1) in two supports (2).**

(1) Install two screws (3) through supports (2) and step (1).

(2) Hold two screws (3). Install two washers (5) and nuts (4).

b. **Inspect (QA).**



END OF TASK

2.80. LEFT FUSELAGE FOOTSTEP REMOVAL/INSTALLATION

2.80.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.80.2. Initial Setup

Tools:

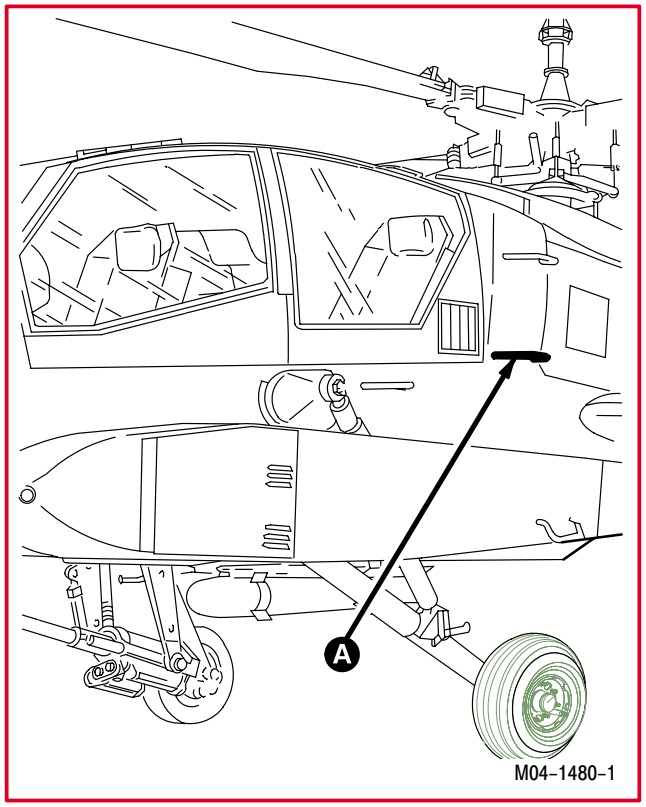
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.80. LEFT FUSELAGE FOOTSTEP REMOVAL/INSTALLATION – continued

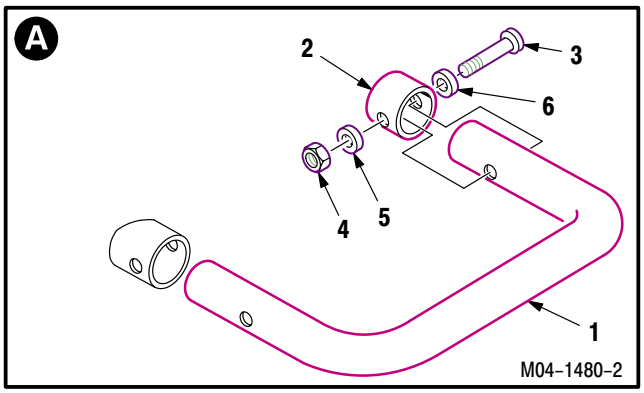
2.80.3. Removal

a. **Remove left fuselage footstep (1) from two footstep sockets (2).**

(1) Hold two screws (3). Remove self-locking nuts (4) and washers (5).

(2) Remove two screws (3) and washers (6) from sockets (2) and footstep (1).

(3) Remove footstep (1) from two sockets (2).



2.80.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.80.5. Inspection

a. **Check footstep for wear, deformation, cracks, corrosion, anti-skid coating, and bolt holes elongation** (para 2.11)**.**

2.80.6. Installation

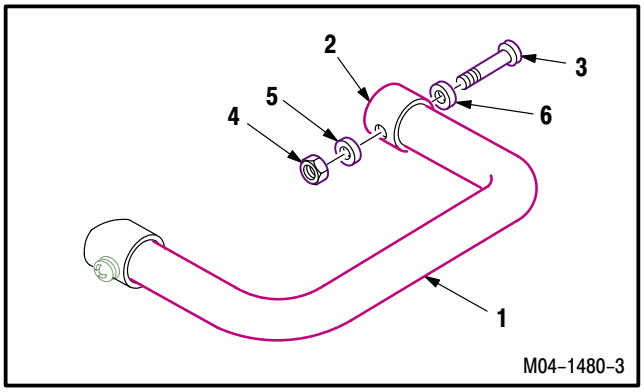
a. **Install footstep (1) in sockets (2).**

(1) Install footstep (1) in two sockets (2).

(2) Install two screws (3) through washers (6), sockets (2), and footstep (1).

(3) Hold two screws (3). Install washers (5) and nuts (4).

b. **Inspect (QA).**



END OF TASK

2.81. MAIN LANDING GEAR CROSS TUBE REMOVAL/INSTALLATION

2.81.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.81.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

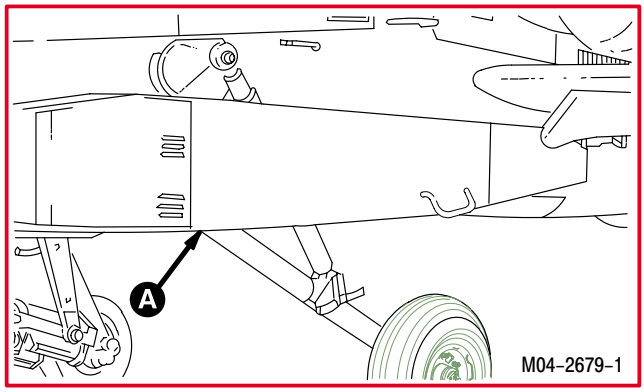
67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.66	Helicopter jacking (tripod jacks at three points)
3.18	Main landing gear shock struts removed
3.16	Main landing gear trailing arm assemblies removed

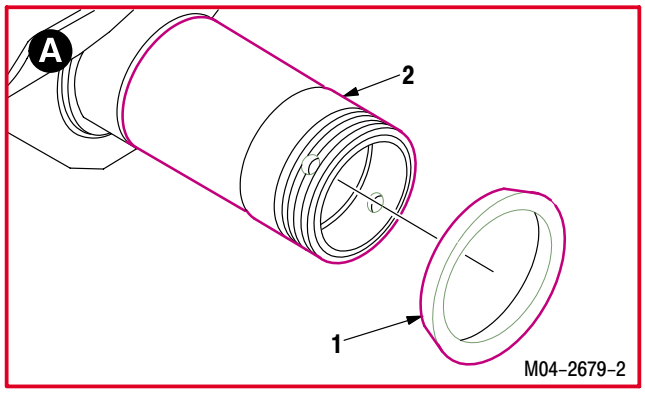
NOTE

This task is typical to remove main landing gear cross tube from left or right side.



2.81.3. Removal

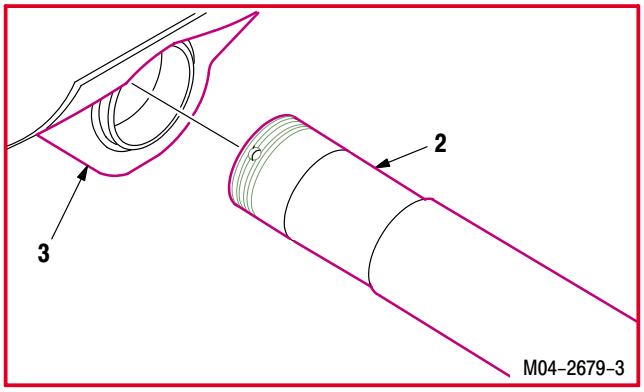
a. **Remove two spacers (1) from main landing gear cross tube (2).**



GO TO NEXT PAGE

2.81. MAIN LANDING GEAR CROSS TUBE REMOVAL/INSTALLATION – continued

b. **Remove tube (2) from fuselage (3).**



2.81.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

2.81.5. Inspection

a. **Check mounting points and bearings for cracks and wear.**

(1) Repairable limits after clean up are no greater than **0.75 INCH** diameter and no greater than **0.215 INCH** deep.

b. **Check cross tube for corrosion** (para 1.49)**.**

2.81.6. Installation

a. **Install tube (2) in fuselage (3).**

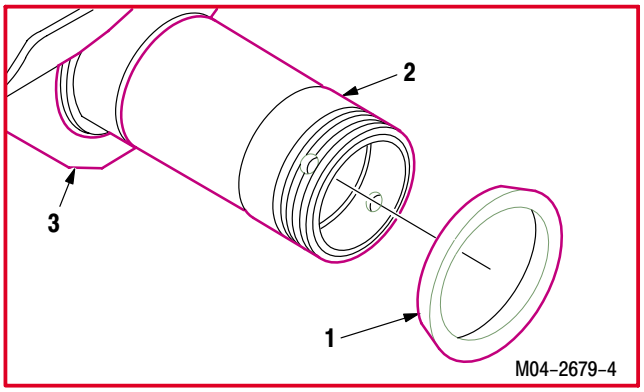
b. **Install two spacers (1) on tube (2).**

c. **Inspect (QA).**

d. **Install main landing gear trailing arm assembly** (para 3.16)**.**

e. **Install main landing gear shock struts** (para 3.18)**.**

f. **Remove tripod jacks** (para 1.66)**.**



END OF TASK

2.82. AMMUNITION MAGAZINE STRUT AND EYE BOLT REMOVAL/INSTALLATION

2.82.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.82.2. Initial setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 9-1090-208-23

Materials/Parts:

Adhesive (item 2, App F)

Personnel Required:

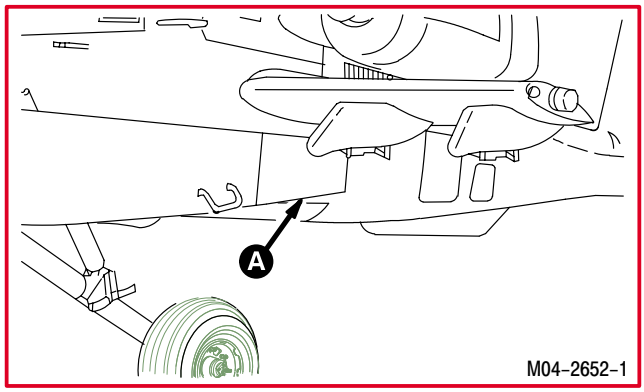
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 9-1090-208-23-1	Ammunition storage magazine removed

NOTE

This task is typical for left and/or right ammunition magazine struts and eye bolts.



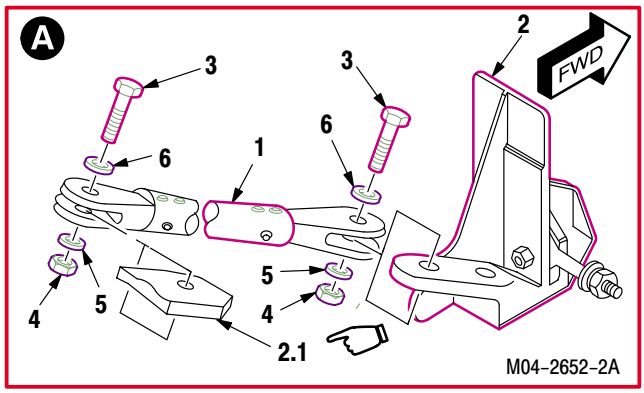
2.82.3. Removal

a. **Remove strut assembly (1) from fitting (2) and airframe (2.1).**

(1) Hold two shoulder bolts (3). Remove nuts (4) and washers (5).

(2) Remove two bolts (3) and washers (6) from strut (1).

(3) Remove strut (1) from fitting (2) and airframe (2.1).



GO TO NEXT PAGE

2.82. AMMUNITION MAGAZINE STRUT AND EYE BOLT REMOVAL/INSTALLATION – continued

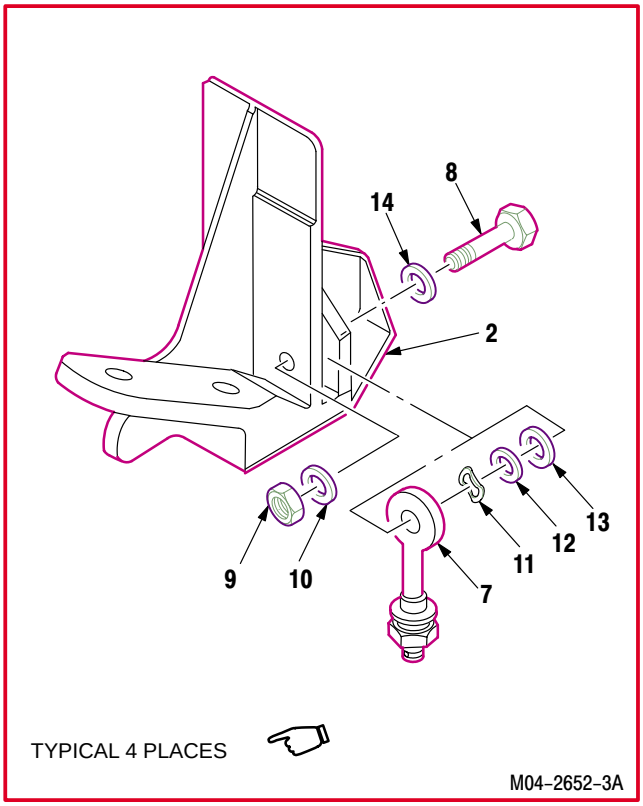
b. **Remove eye bolt (7) from fitting (2).**

(1) Hold shoulder bolt (8). Remove nut (9) and washer (10).

(2) Pull bolt (8) half way out of fitting (2).

(3) Remove spring tension washer (11), washer (12), laminated washer (13), and eye bolt (7) from fitting (2).

(4) Remove bolt (8) and washer (14) from fitting (2).



2.82.4. Cleaning

a. **Clean adhesive residue in fitting slot** (para 1.47)**.**

b. **Wipe attaching areas of strut and eye bolt with a clean rag.**

2.82.5. Inspection

a. **Check strut and fittings for corrosion** (para 1.49)**.**

b. **Check mounting surface of strut and eyebolt for damage** (para 2.12)**.**

c. **Check fitting and eye bolt for hole size.**

(1) If hole size is greater than **0.319 INCH**, replace.

d. **Check strut for hole size.**

(1) If hole size is greater than **0.319 INCH**, replace.

GO TO NEXT PAGE

2.82. AMMUNITION MAGAZINE STRUT AND EYE BOLT REMOVAL/INSTALLATION – continued

2.82.6. Installation



a. **Install eye bolt (7) on fitting (2).**

(1) Install bolt (8) and washer (14) halfway through fitting (2).

(2) Install eye bolt (7), washers (11), (12), and (13) in fitting (2), then push bolt (8) fully through hardware and fitting (2).

(3) Measure gap between washer (12) and fitting (2), then add **0.015 INCH**.

(4) Remove hardware installed in step a.(2).

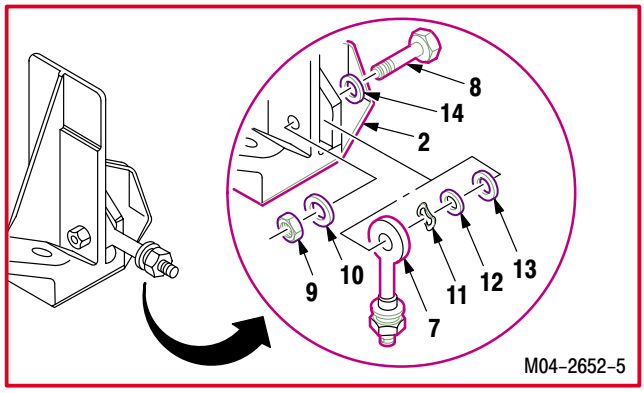
(5) Peel washer (13) to thickness determined by step a.(3).

(6) Apply adhesive to washer (13) and bond to fitting (2). Use adhesive (item 2, App F).

(7) Install bolt (8) and washer (14) halfway through fitting (2).

(8) Install eye bolt (7), washers (11) and (12) in fitting (2), then push bolt (8) fully through fitting (2).

(9) Install washer (10) and nut (9) on bolt (8).



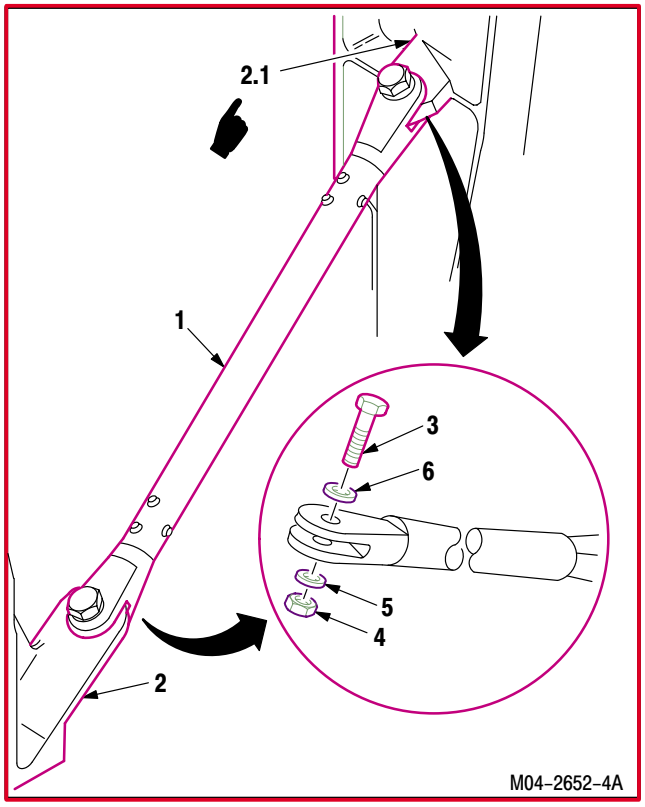
b. **Install strut (1) on fitting (2) and airframe (2.1).**

(1) Aline strut (1) with attachment point (2) and airframe (2.1).

(2) Install bolt (3) through washer (6), strut (1), and washer (5) (two places).

(3) Install two nuts (4).

c. **Install ammunition storage magazine** (TM 9-1090-208-23-1)**.**



END OF TASK

2.83. CATWALK FOLD/UNFOLD

2.83.1. Description

This task covers: Fold. Unfold.

2.83.2. Initial Setup

Tools:

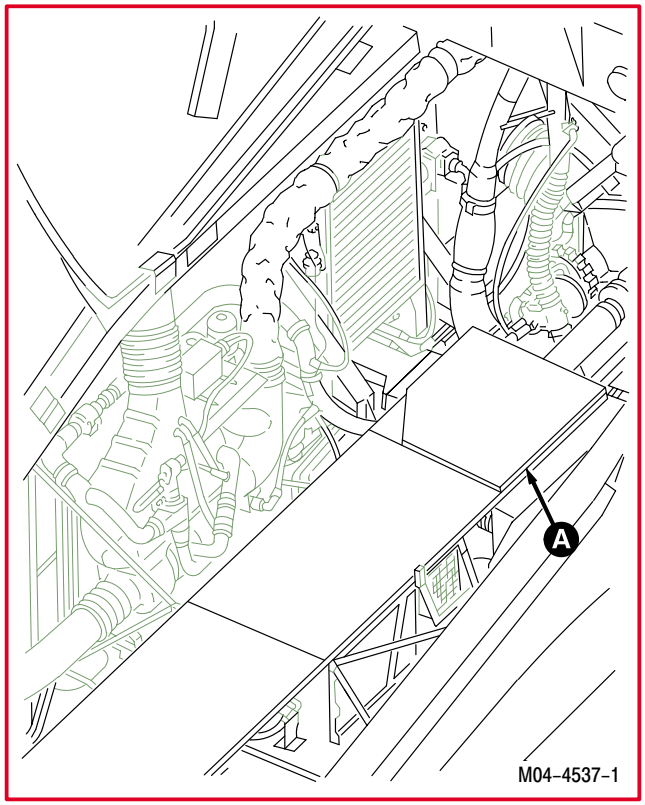
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened



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2.83. CATWALK FOLD/UNFOLD – continued

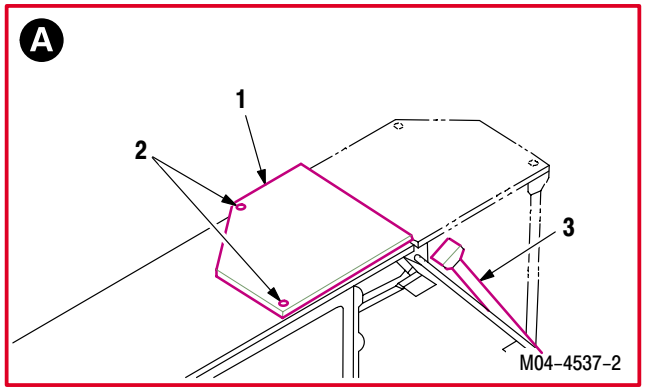
2.83.3. Fold

a. **Fold catwalk (1).**

(1) Loosen two fasteners (2).

(2) Fold catwalk (1).

(3) Fold two support legs (3).



2.83.4. Unfold

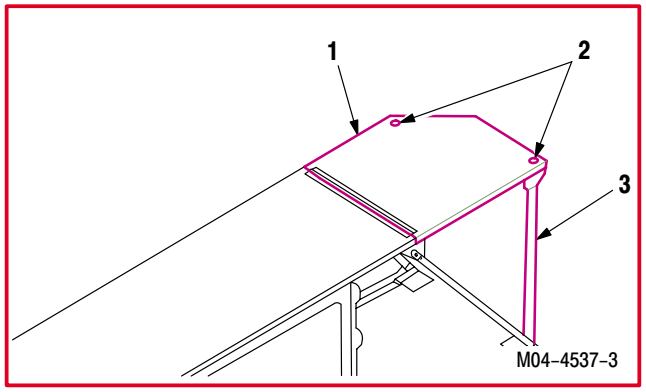
a. **Unfold catwalk (1).**

(1) Unfold two support legs (3).

(2) Unfold catwalk (1).

(3) Attach catwalk (1) to support legs (3) with two fasteners (2).

b. **Inspect (QA).**



END OF TASK

2.84. CATWALK REMOVAL/INSTALLATION

2.84.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.84.2. Initial Setup

Tools:

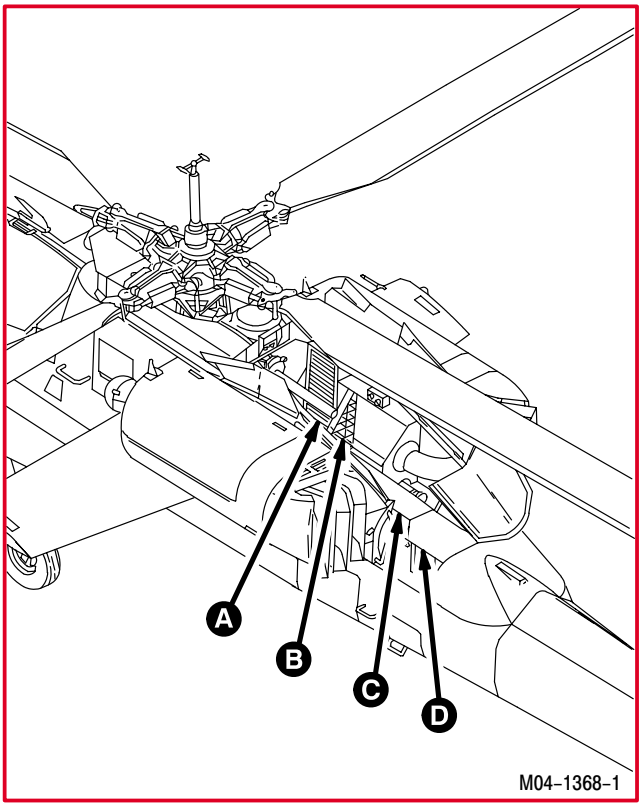
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened
15.41	APU upper cover removed



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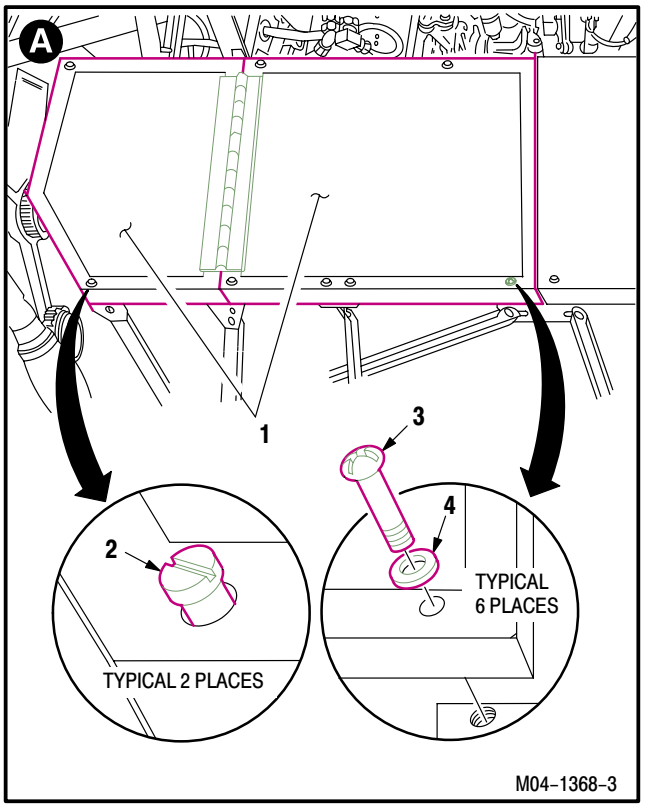
2.84. CATWALK REMOVAL/INSTALLATION – continued

2.84.3. Removal

a. **Remove forward structural panel (1).**

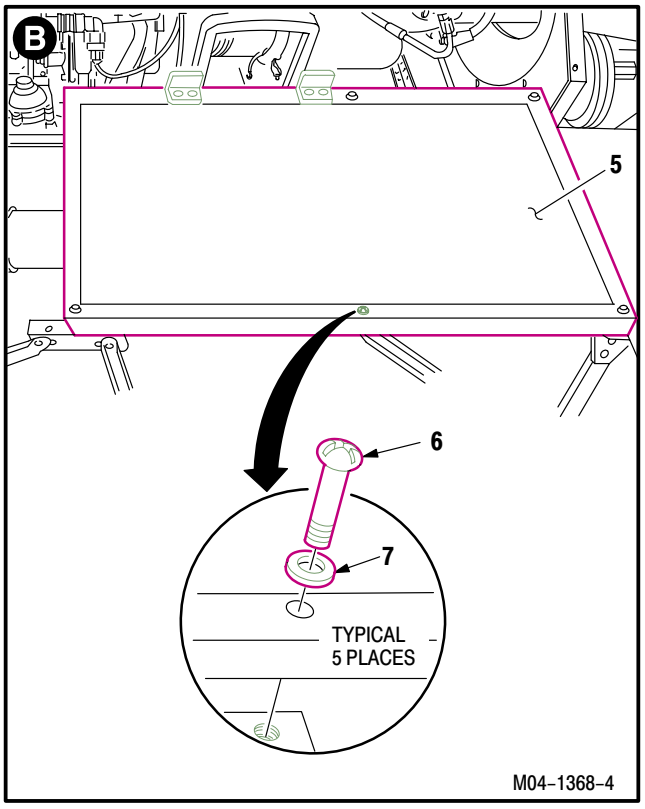
(1) Remove two cowling fasteners (2).

(2) Remove six screws (3) and washers (4).



b. **Remove center forward structural panel (5).**

(1) Remove five screws (6) and washers (7).



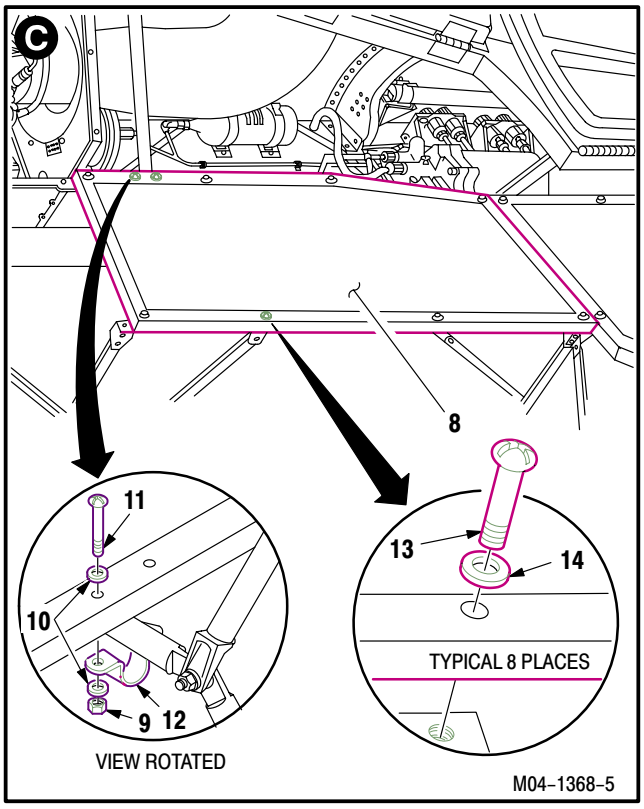
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2.84. CATWALK REMOVAL/INSTALLATION – continued

c. **Remove center aft structural panel (8).**

(1) Remove two nuts (9), four washers (10), two screws (11), and U-clamp (12).

(2) Remove eight screws (13) and washers (14).



d. **Remove aft structural panel (15).**

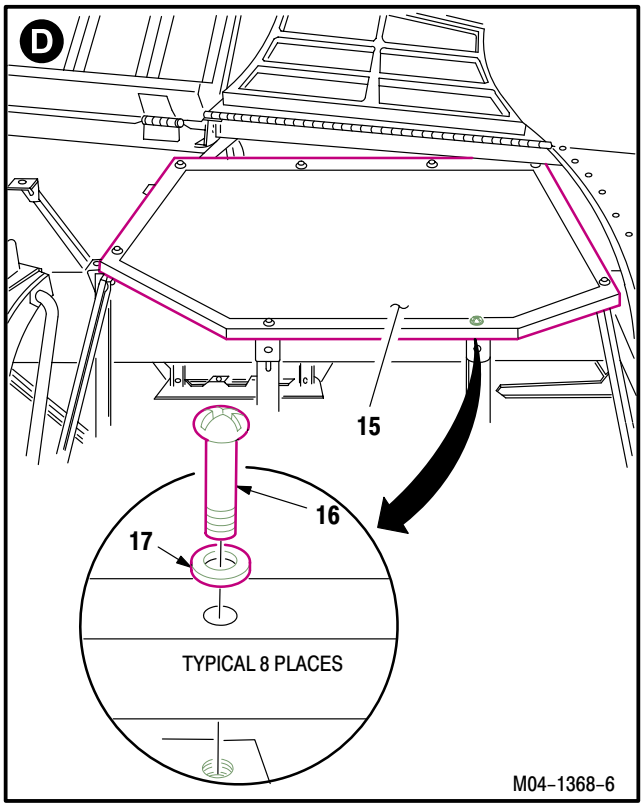
(1) Remove eight screws (16) and washers (17).

2.84.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.84.5. Inspection

a. **Check removed and attaching parts for excessive wear** (para 2.12)**.**



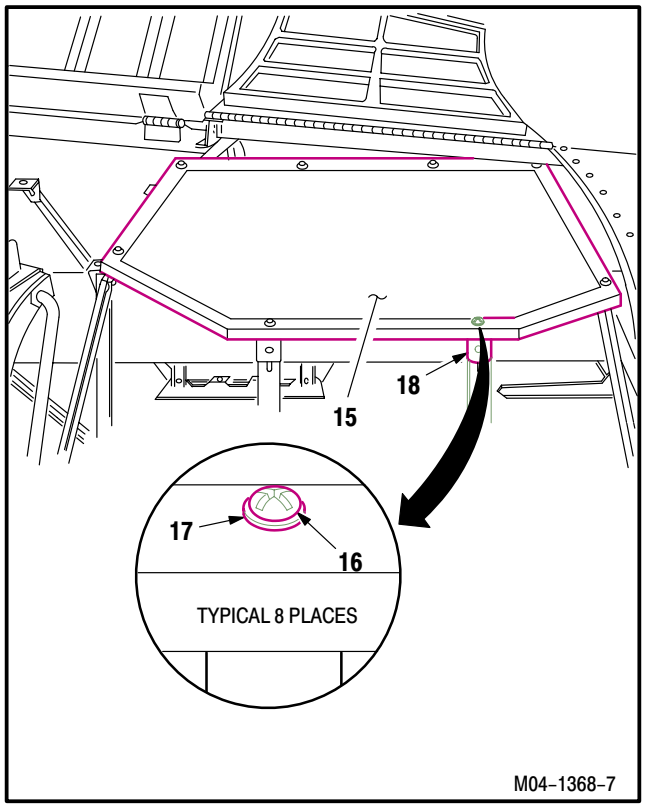
GO TO NEXT PAGE

2.84. CATWALK REMOVAL/INSTALLATION – continued

2.84.6. Installation

a. **Install aft panel (15).**

(1) Install eight screws (16) through washers (17) and panel (15) in eight clips (18).

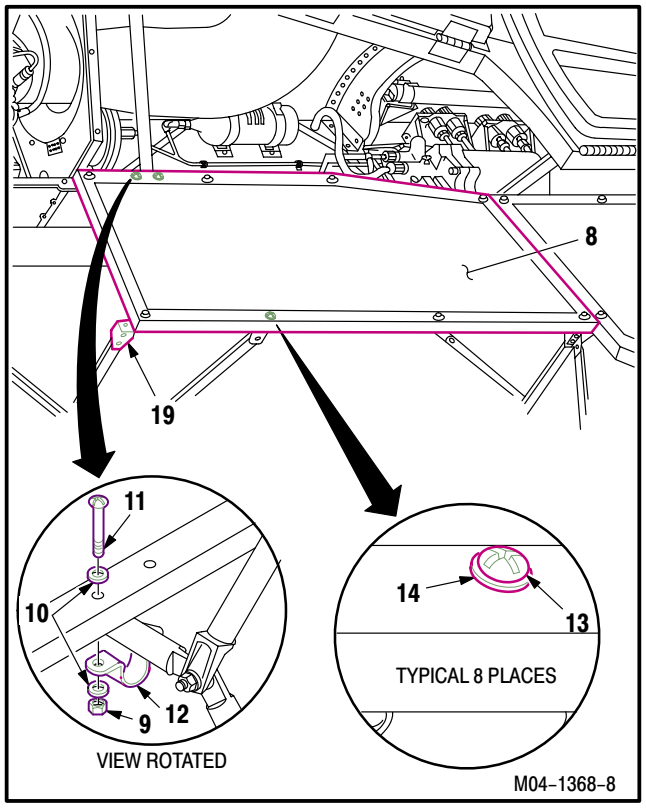


b. **Install center aft panel (8).**

(1) Install eight screws (13) through washers (14) and panel (8) in eight clips (19).

(2) Install two screws (11) through two washers (10), panel (8), U-clamp (12), and two washers (10).

(3) Install two nuts (9).

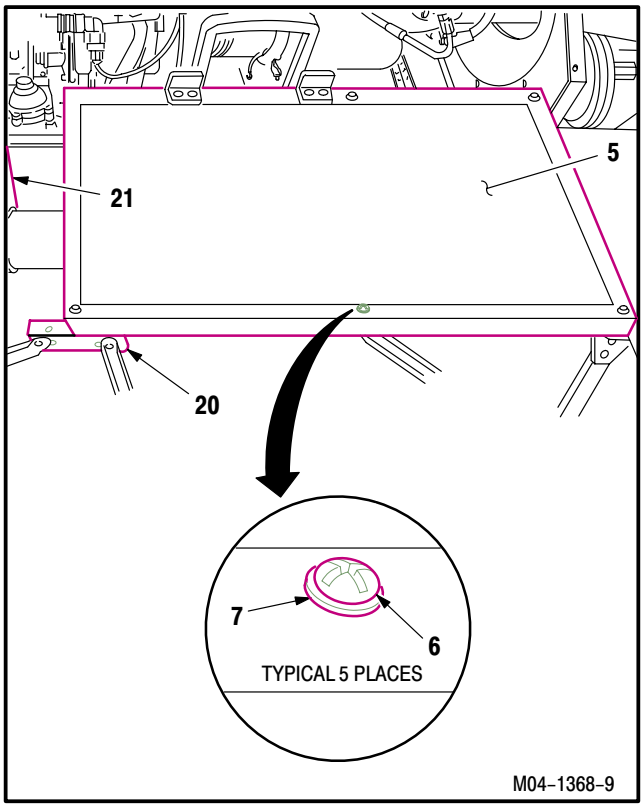


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2.84. CATWALK REMOVAL/INSTALLATION – continued

c. **Install center forward panel (5).**

(1) Install five screws (6) through washers (7) and panel (5) in three clips (20) and auxiliary power unit (APU) lower cover (21).



d. **Install forward panel (1).**

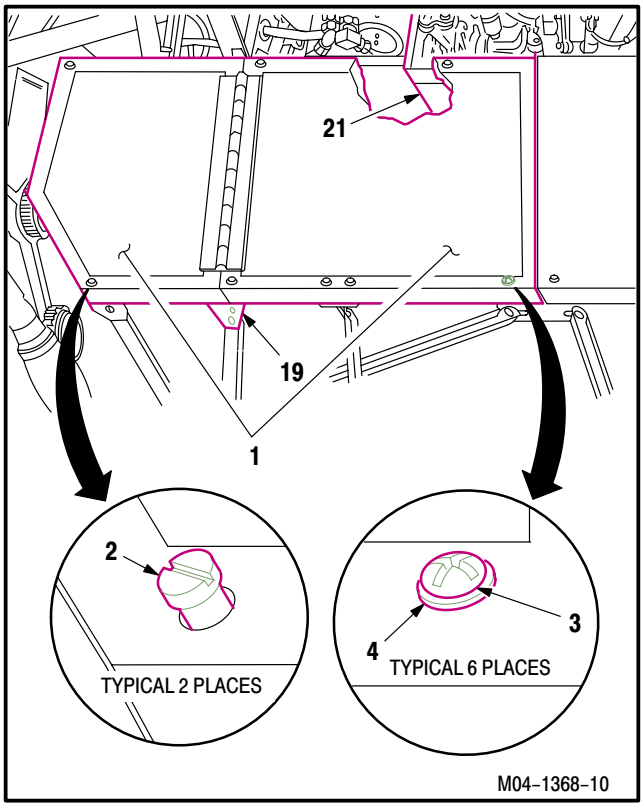
(1) Install six screws (3) through washers (4) and panel (1) in three clips (19) and APU lower cover (21).

(2) Lock two fasteners (2) at forward end of panel (1).

e. **Inspect (QA).**

f. **Install APU upper cover** (para 15.42)**.**

g. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**



END OF TASK

2.85. LATERAL SERVOCYLINDER WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION

2.85.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.85.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Airframe repairman's tool kit (item 377, App H)

References:

TM 1-1500-204-23
TM 9-1090-208-23

Equipment Conditions:

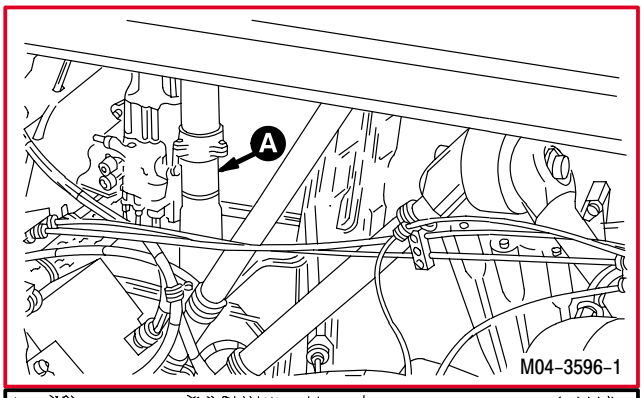
Ref	Condition
1.57	Helicopter safed
2.2	Access panels L200 and R200 removed
TM 9-1090-208-23	Ammunition storage magazine and carrier drive assembly removed
10.28	Forward fuel cell removed

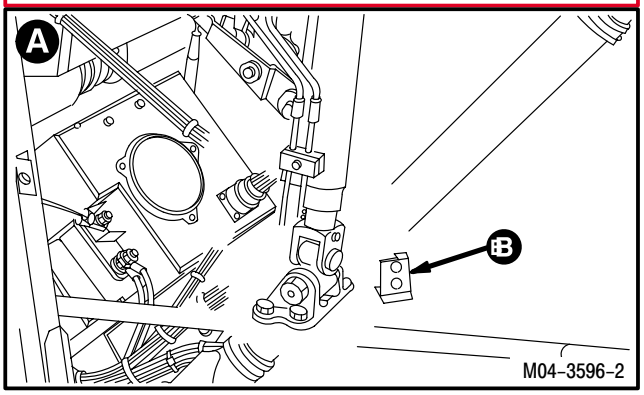
Personnel Required:

67R	Attack Helicopter Repairer
68G	Aircraft Structural Repairer
	One person to assist
67R3F	Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for flight control servocylinder wire harness support brackets.





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2.85. LATERAL SERVOCYLINDER WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION – continued

2.85.3. Removal

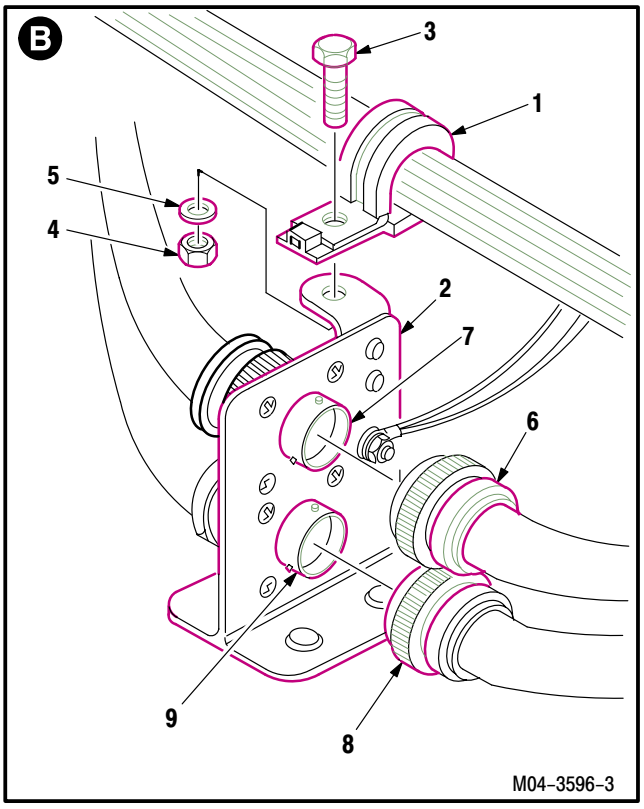
a. **Remove clamp (1) from support bracket (2).**

(1) Hold bolt (3). Remove nut (4) and washer (5).

(2) Remove bolt (3) and clamp (1) from bracket (2).

b. **Detach connector (L35)P225 (6) from receptacle J225 (7).**

c. **Detach connector (L35)P415 (8) from receptacle J415 (9).**



d. **Remove receptacle J225 (7) from bracket (2).**

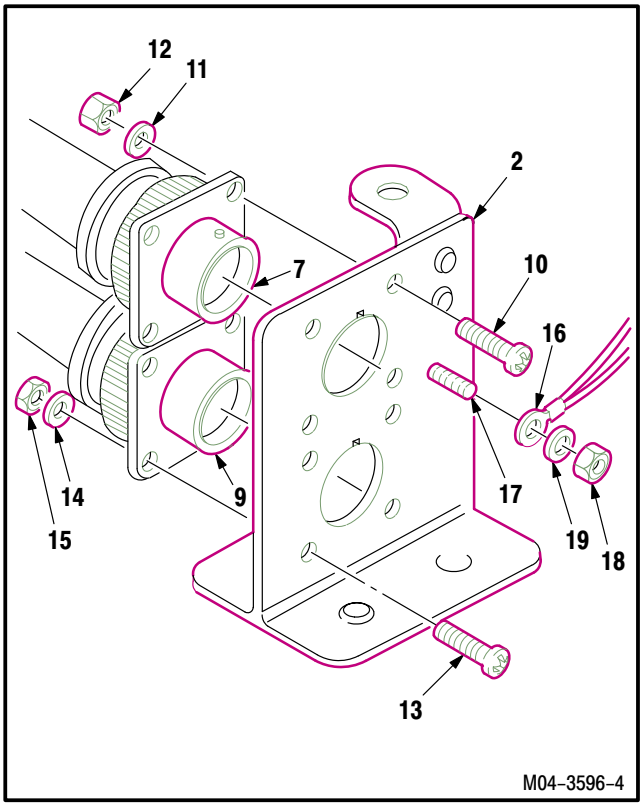
(1) Remove four screws (10), washers (11), nuts (12), and receptacle J225 (7) from bracket (2).

e. **Remove receptacle J415 (9) from bracket (2).**

(1) Remove four screws (13), washers (14), nuts (15), and receptacle J415 (9) from bracket (2).

f. **Identify and detach wires (16) from ground stud GS455 (17).**

(1) Remove nut (18), washer (19), and wires (16) from ground stud GS455 (17).



GO TO NEXT PAGE

2.85. LATERAL SERVOCYLINDER WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION – continued

g. **Remove bracket (2) from transmission deck (20).**

(1) Remove four rivets (21) (TM 1-1500-204-23).

2.85.4. Cleaning

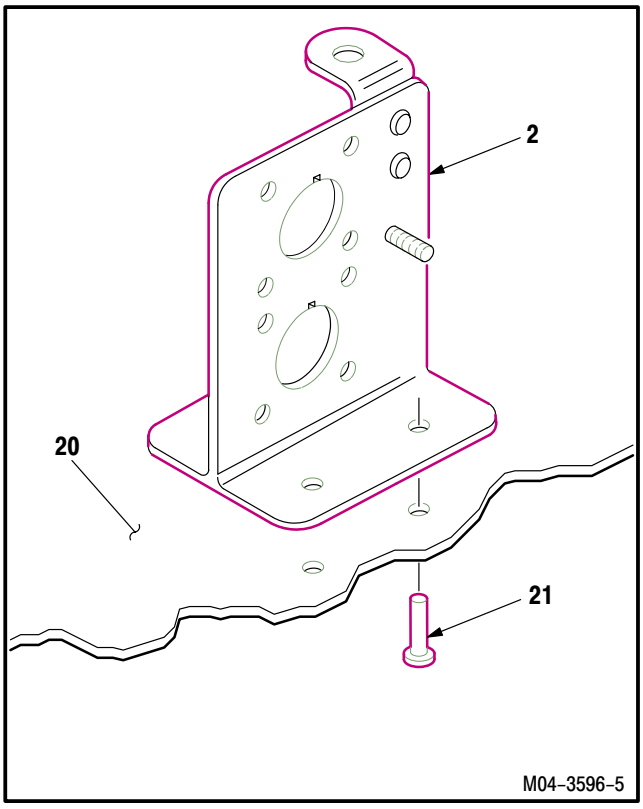
a. **Wipe removed and attaching parts and surfaces with a clean rag.**

b. **Remove debris from fuel cell and transmission deck area.**

2.85.5. Inspection

a. **Check transmission deck attaching area for cracks, scratches, and metal erosion** (para 2.11)**.**

b. **Check transmission deck attaching area and bracket for corrosion** (para 1.49)**.**



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2.85. LATERAL SERVOCYLINDER WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION – continued

2.85.6. Installation

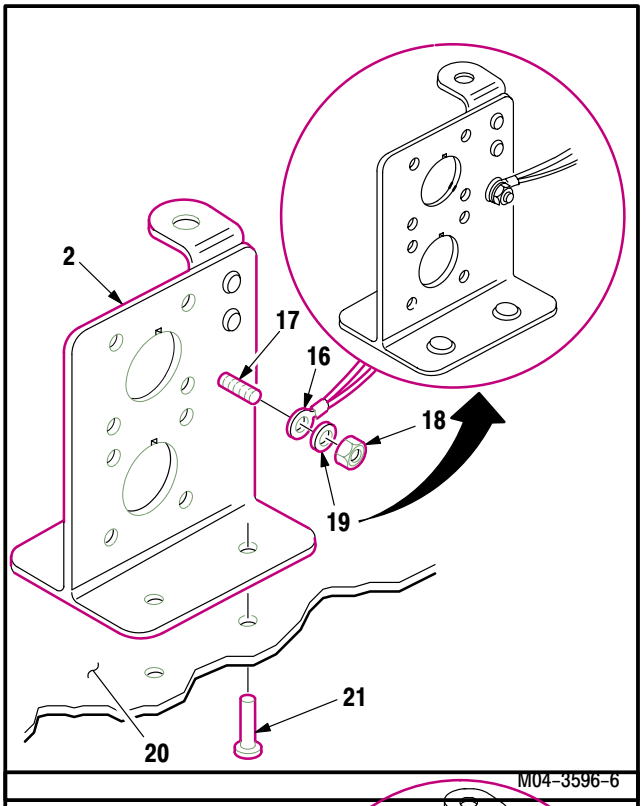
a. **Install bracket (2) on transmission deck (20).**

(1) Aline bracket (2) with transmission deck (20) mounting holes.

(2) Install four rivets (21) (TM 1-1500-204-23).

b. **Attach wire (16) to ground stud GS455 (17).**

(1) Install wire (16), washer (19), and nut (18) on ground stud GS455 (17).



c. **Install receptacle J415 (9) on bracket (2).**

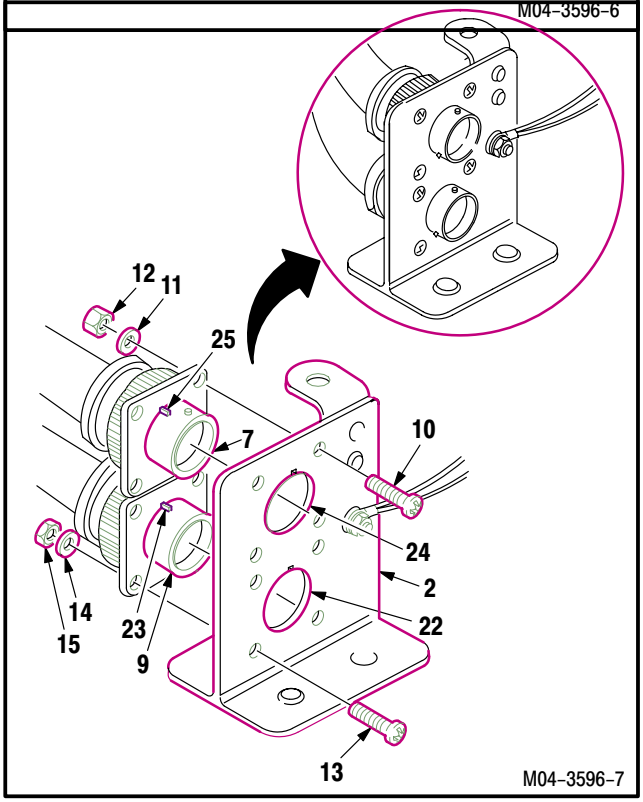
(1) Aline receptacle J415 (9) with bracket (2) bottom mounting hole (22). Insert with key (23) at twelve o'clock position.

(2) Install four screws (13), washers (14), and nuts (15) on bracket (2) and receptacle J415 (9).

d. **Install receptacle J225 (7) on bracket (2).**

(1) Aline receptacle J225 (7) with bracket (2) top mounting hole (24). Insert with key (25) at twelve o'clock position.

(2) Install four screws (10), washers (11), and nuts (12) on bracket (2) and receptacle J225 (7).



GO TO NEXT PAGE

2.85. LATERAL SERVOCYLINDER WIRE HARNESS SUPPORT BRACKET REMOVAL/INSTALLATION – continued

e. **Attach connector (L35)P415 (8) to receptacle J415 (9).**

f. **Attach connector (L35)P225 (6) to receptacle J225 (7).**

g. **Install clamp (1) on bracket (2).**

(1) Position clamp (1) on bracket (2).

(2) Install bolt (3) through clamp (1).

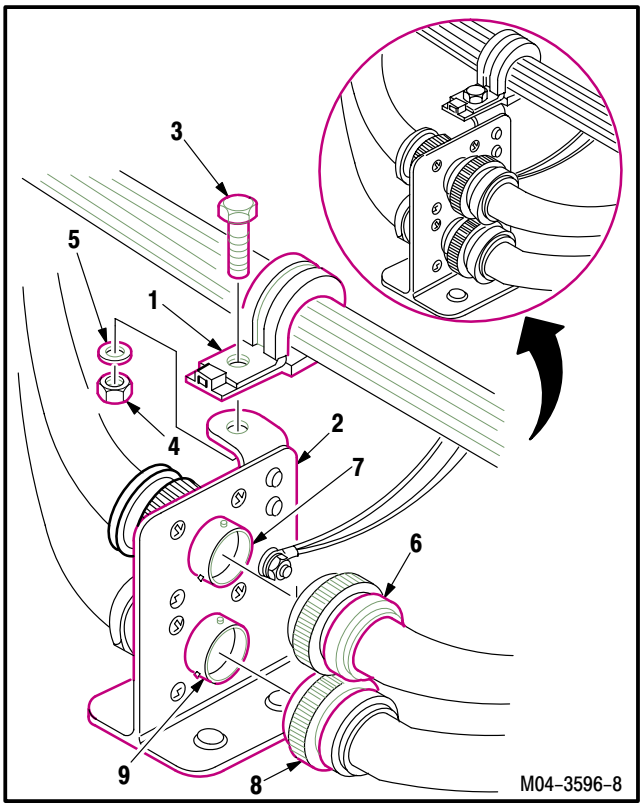
(3) Hold bolt (3). Install washer (5) and nut (4).

h. **Inspect (QA).**

i. **Install forward fuel cell** (para 10.29)**.**

j. **Install carrier drive assembly and ammunition storage magazine** (TM 9-1090-208-23)**.**

k. **Install access panels L200 and R200** (para 2.2)**.**



END OF TASK

2.86. ROTOR SUPPORT MIXER ASSEMBLY AND BOLT REMOVAL/INSTALLATION

2.86.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.86.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 3/4-inch drive torque wrench adapter (item 19, App H) (p/o item 391, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)

Materials/Parts:

Keyway washer
Antiseize compound (item 26, App F)
Brush (item 34, App F)
Sealing compound (item 177, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-322-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.88	Rotor support mast support base removed

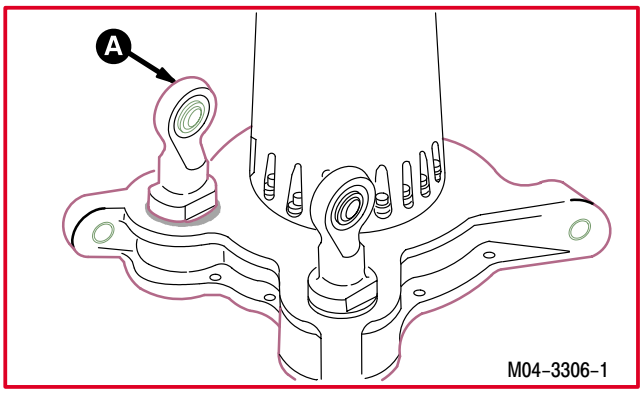
WARNING

FLIGHT SAFETY PART

The rotor support assembly contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

NOTE

This task is typical for left and/or right rotor support mixer assemblies and bolts.



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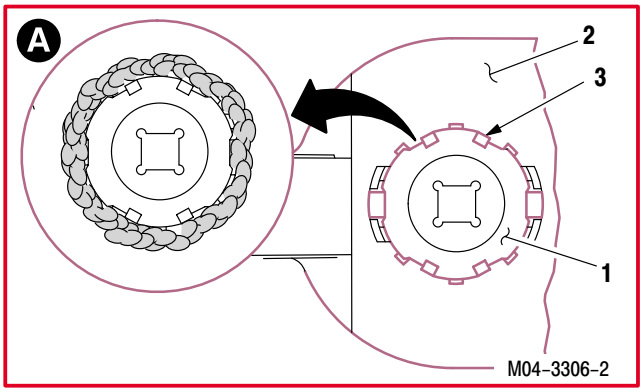
2.86. ROTOR SUPPORT MIXER ASSEMBLY AND BOLT REMOVAL/INSTALLATION – continued

2.86.3. Removal

a. **Remove mixer support bolt (1) from rotor support assembly (2).**

(1) Clean sealing compound from mixer support bolt (1), keyway washer (3), and shoulder of mixer support fitting (4) (para 1.47).

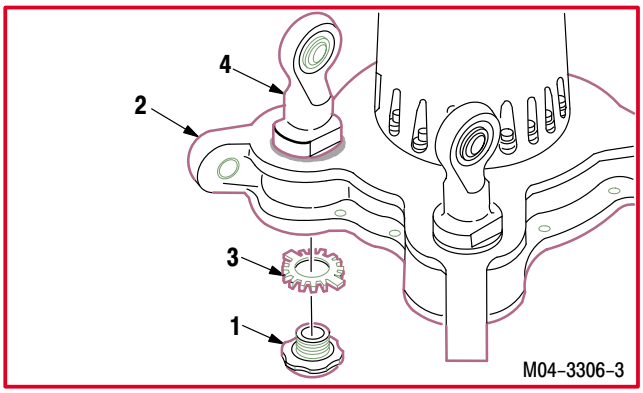
(2) Pry back tabs of washer (3) from bolt (1).



b. **Remove support (4) from base (2).**

(1) Hold support (4). Remove bolt (1) and washer (3) from base (2). Use torque wrench adapter.

(2) Discard washer (3).



2.86.4. Cleaning

a. **Clean removed and attaching and parts and surfaces** (para 1.47)**.**

2.86.5. Inspection

a. **Check rotor support mixer assembly and mounting surfaces for cracks and surface corrosion.** None allowed.

b. **Check mixer support bolt for cracks and evidence of damage.** None allowed.

c. **Check area where thread run-out intersects thread relief.**

(1) Thread run-out must not be below minimum diameter of thread relief.

d. **Check support for missing or damaged identification plate.** None allowed.

e. **Check bearing staking area for cracks and damage.** None allowed.

GO TO NEXT PAGE

2.86. ROTOR SUPPORT MIXER ASSEMBLY AND BOLT REMOVAL/INSTALLATION – continued

f. **Check bearing for binding, catching, corrosion, metal chips, and other contamination** (TM 55-1500-322-24)**.** None allowed.

g. **Measure inside diameter of bearing.**

(1) If bearing measures more than **1.3755 INCHES** in diameter, replace rotor support mixer assembly.

2.86.6. Installation



a. **Lubricate threads and bearing face of bolt (1), internal threads of support (2), and bearing face of washer (3).** Use antiseize compound (item 26, App F) and brush (item 34, App F).

b. **Install support (4) in base (2).**

(1) Position support (4) in base (2).

(2) Hold support (4). Install new washer (3) and bolt (1).

c. **Torque bolt (1) 230 to 280 FOOT-POUNDS.**

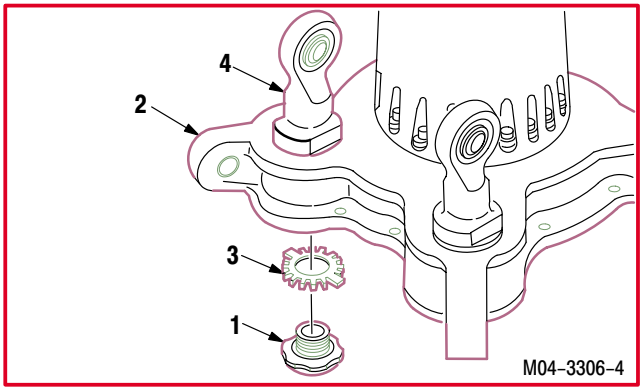
(1) Torque bolt (1) to **280 FOOT-POUNDS**. Use torque wrench and torque wrench adapter.

(2) Back off bolt (1) to remove all preload.

(3) Retorque bolt (1) to **280 FOOT-POUNDS**. Use torque wrench and torque wrench adapter.

(4) Back off bolt (1) to remove all preload.

(5) Retorque bolt (1) to **230 FOOT-POUNDS**. Use torque wrench and torque wrench adapter.



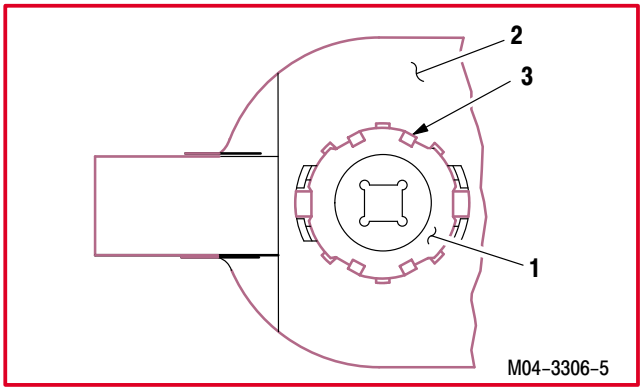
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2.86. ROTOR SUPPORT MIXER ASSEMBLY AND BOLT REMOVAL/INSTALLATION – continued

(6) Aline washer (3) so that at least four tabs of washer (3) may be bent against bolt (1). Increase torque to improve alinement. Do not exceed **280 FOOT-POUNDS**. Use torque wrench and torque wrench adapter.

(7) Bend at least four tabs of washer (3) against bolt (1).



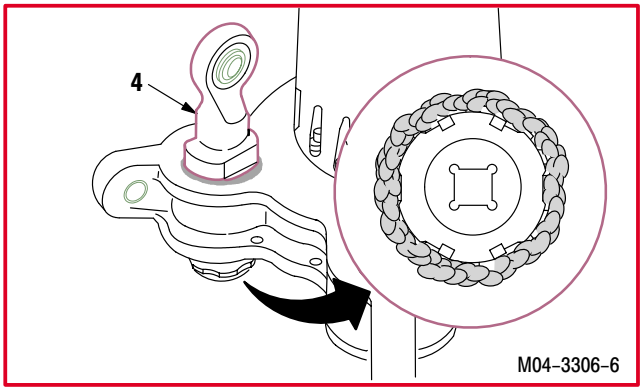


d. **Apply a continuous bead of sealing compound around bolt head (1) and washer (3).** Use sealing compound (item 177, App F).

e. **Apply a continuous bead of sealing compound around shoulder of support (4).** Use sealing compound (item 177, App F).

f. **Inspect (QA).**

g. **Install rotor support mast support base** (para 2.88)**.**



END OF TASK

2.87. ROTOR SUPPORT MIXER ASSEMBLY IDENTIFICATION PLATE REPLACEMENT

2.87.1. Description

This task covers: Removal. Cleaning. Installation.

2.87.2. Initial Setup

Tools:

Aircraft maintenance tool kit (item 372, App H)
Light duty laboratory apron (item 27, App H)
Metal stamping die set (item 107, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Adhesive (item 13, App F)
Brush (item 34, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)

WARNING

FLIGHT SAFETY PART

The rotor support mixer assembly is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

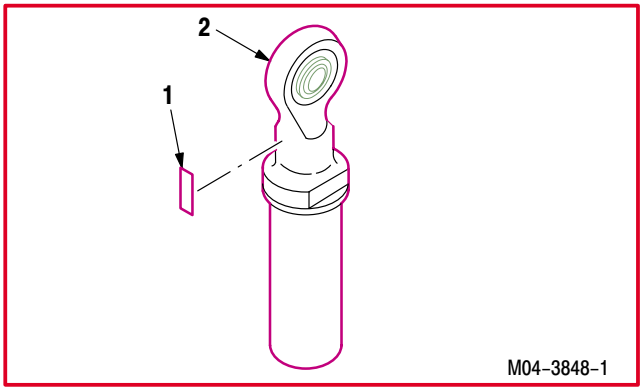
2.87.3. Removal

a. **Record all identification data found on identification plate (1) for later reference.**

b. **Remove identification plate (1) from rotor support mixer assembly (2).**

(1) Peel up corner of plate (1). Use putty knife.

(2) Remove and discard plate (1) from assembly (2).



GO TO NEXT PAGE

2.87. ROTOR SUPPORT MIXER ASSEMBLY IDENTIFICATION PLATE REPLACEMENT – continued

2.87.4. Cleaning



a. **Clean plate mounting surface.** Use cloth (item 52, App F) and isopropyl alcohol (item 106, App F) (para 1.47).

2.87.5. Installation

a. **Transcribe all identification data on new plate (1).** Use die set.



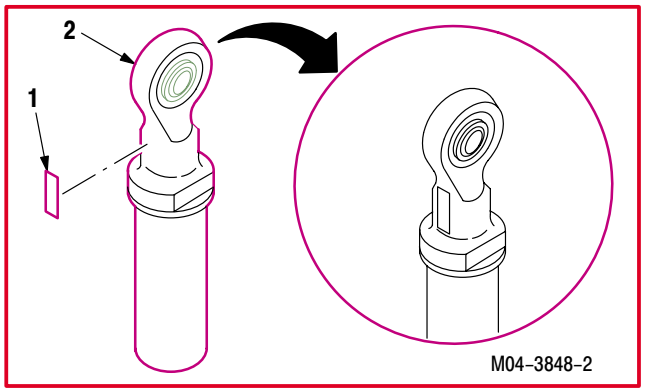
b. **Install new plate (1) on assembly (2).**

(1) Remove lining from back side of plate (1).

(2) Install new plate (1) in same location as old plate (1) on assembly (2).

(3) Apply adhesive to edges of plate (1). Use brush (item 34, App F) and adhesive (item 13, App F).

c. **Inspect (QA).**



END OF TASK

2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION

2.88.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.88.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
3/8 x 1/2-inch drive socket wrench adapter (item 6, App H)
Light duty laboratory apron (item 27, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
0.20 - 1.00-inch inside micrometer caliper (item 50, App H)
3/4 x 6-inch long driftpin (item 113, App H)
5-inch x 1/2-inch drive socket wrench extension (item 124, App H)
0.0015 - 0.0250-inch thickness gage (item 152, App H)
Chemical protective gloves (item 154, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
5X & 12X monocular magnifier (item 206, App H)
Adjustable air filtering respirator (item 262, App H)
Rotor universal sling (item 292, App H)
15/16 & 1-inch box wrench (item 412, App H)
Socket wrench (item 428, App H) (p/o item 391 and 391A, App H)
or
Socket wrench (item 428A, App H) (p/o item 391A, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)
0 - 600 inch-pound 3/8-inch drive dial indicator torque wrench (item 447, App H)

Materials/Parts:

Cotter pin (4)
Cover (4) (figure D-243 and D-244, App D)
Adhesive (item 3A, App F)
Brush (item 34, App F)
Cloth (item 47, App F)
Corrosion preventive compound (item 62, App F)
Epoxy primer coating kit (item NO TAG, App F)
Impression material (item 95, App F)
Paper (item 133, App F)
Petrolatum (item 138, App F)
Polyurethane coating (item 140, App F)
Sealing compound (item 179, App F)

Personnel Required:

67R Attack Helicopter Repairer
Two persons to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
11.9	Longitudinal and collective bellcranks removed
6.101	Main transmission removed
6.97	Main rotor support mast removed

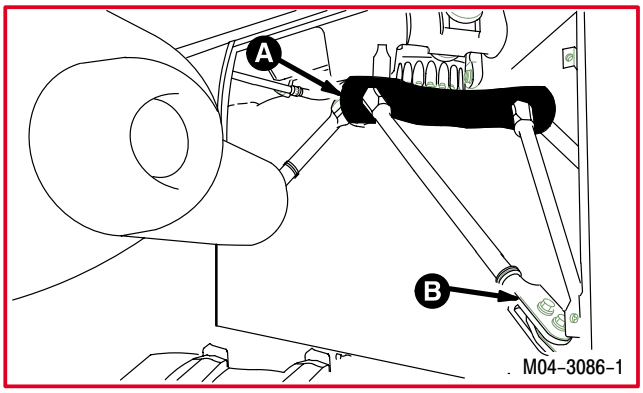
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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

WARNING

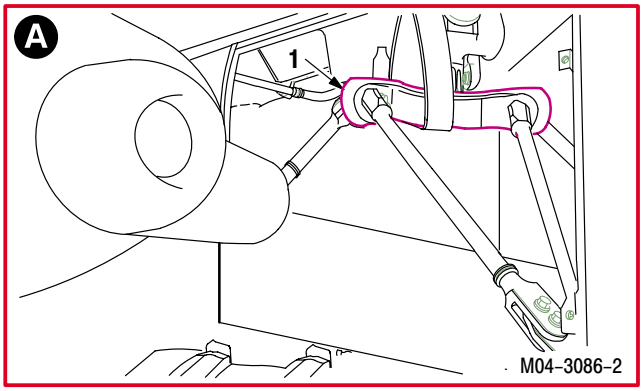
FLIGHT SAFETY PART

The rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.



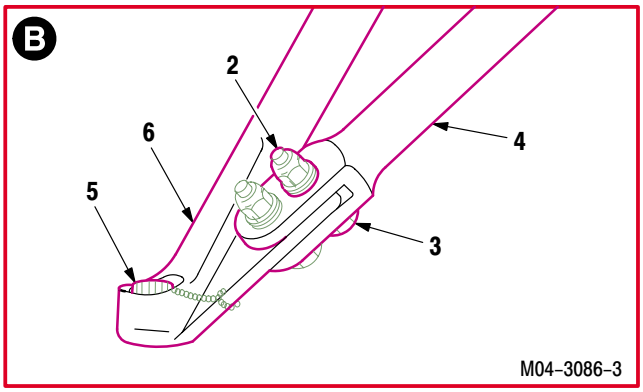
2.88.3. Removal

a. **Attach sling to mast support base (1).**



b. **Loosen but do not remove eight nuts (2) and bolts (3) on four left and right transmission rotor support strut assemblies (4).**

c. **Cut lockwire and loosen four bolts (5) from four forward and aft transmission rotor support strut assemblies (6).** Do not remove. Use socket wrench and telescopic bar.



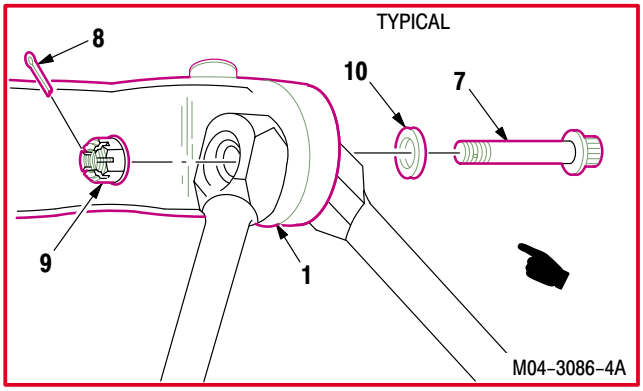
d. **Remove mast base (1).**

(1) Remove and discard four cotter pins (8).

(2) Hold four bolts (7). Remove nut (9). Use box wrench, telescopic bar, and adapter.

(3) Remove four bolts (7) and recessed washers (10) from mast base (1).

(4) Gently lift and remove mast base (1).

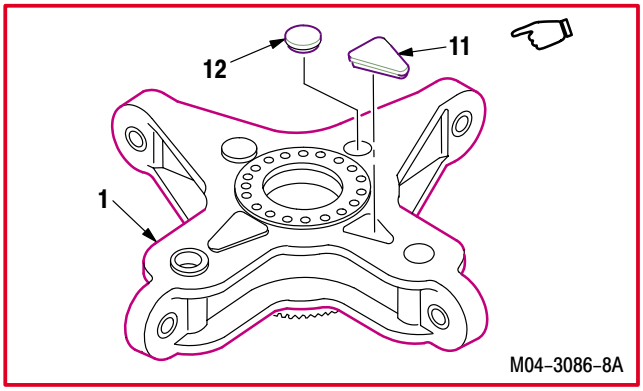


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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

e. **Clean sealing compound from top of four covers (11) and (12)** (para 1.47)**.**

f. **Remove and discard four covers (11) and (12) from mast base (1).**



2.88.4. Cleaning



a. **Remove adhesive from mast base and lightening holes.** Use cloth (item 47, App F).

b. **Clean mast base and lightening holes** (para 1.47)**.**

c. **Remove paint from lightening holes** (TM 55-1500-345-23)**.**

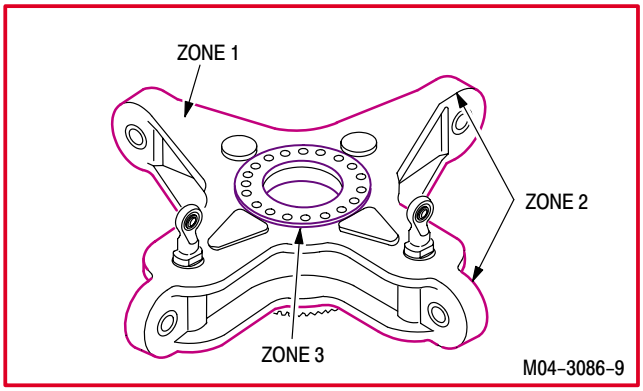
2.88.5. Inspection

a. **Check mast base and transmission struts for cracks.** None allowed.

b. **Check mast base and transmission struts for nicks, scratches, and gouges.**

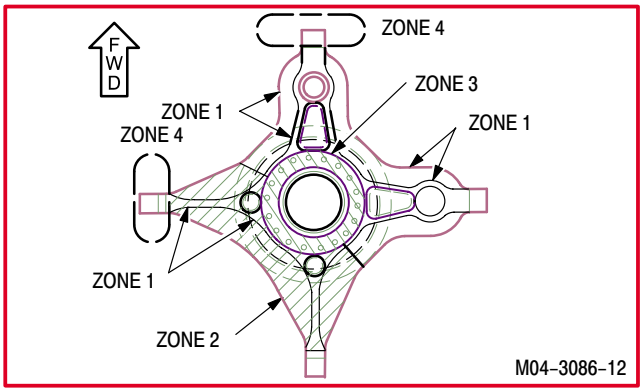
(1) Acceptable without rework: nicks, scratches, and gouges that do not penetrate surface protective finish.

(2) Rework for nicks and gouges: maximum allowable depth for zone 1 is **0.070 INCH**; zone 2 is **0.050 INCH**; and zone 3 is **0.007 INCH**.



c. **Check mast base for corrosion** (para 1.49)**.**

(1) Maximum allowable depth for zone 1 (all areas not specified) is **0.015 INCH**; zone 2 (upper and lower flanges, and tapered ends) is **0.050 INCH**; zone 3 (mast bolt circle) is **0.005 INCH**; and zone 4 (lug ends) is **0.150 INCH**.



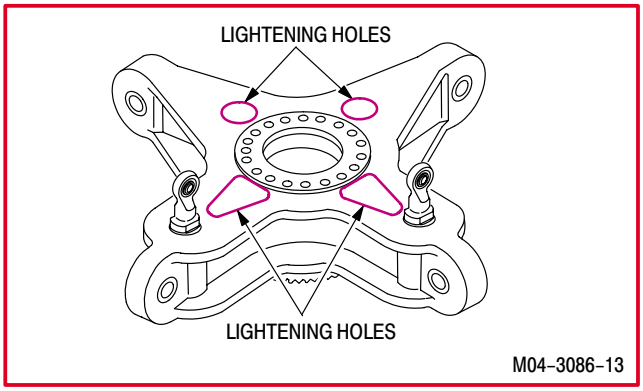
d. **Check walls and bottom area of lightening holes for dirt, fluid, and debris.** None allowed. Use flashlight and mirror.

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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

e. **Check lightening holes for corrosion** (para 1.49)**.** Use flashlight and mirror.

f. **Check lightening holes for pitting.** If pitting is observed, use impression material (item 95, App F). Use flashlight and mirror.



NOTE

- The following instructions on the use of impression material supercedes instructions provided by the manufacturer as labeled on the containers.
- Do not use the same scoop to remove putty and catalyst since contamination will result in impression material (item 95, App F) hardening. Use red scoop for putty and white scoop for catalyst.
- Combine equal parts of putty and catalyst.

(1) Triangular cavities:

(a) Use four scoops of red putty with four scoops of white catalyst.

(b) Mix the two components by hand using fingers and roll in palms until a uniform dull red is formed. **1 MINUTE** is required to mix the components.

(c) Form into a **4.50 INCH** long roll.

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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

(d) Immediately place impression material into wall cavities of the hole (hardening time is **2 to 3 MINUTES**).

(e) Work impression material hard by hand into metal to ensure penetration into any pits (**1 MINUTE** is required). Cover a total distance of one half the total internal wall surface area (use centerline as reference). Use flashlight and mirror to verify.

(2) Circular cavities:

(a) Make an applicator stick from wood **0.75 INCH** in diameter by **12.00 INCHES** long. Round one end to **0.25 INCH** radius.

(b) Use two scoops of red putty with two scoops of white catalyst.

(c) Mix the two components by hand using fingers and roll in palms until a uniform dull red is formed. **ONE MINUTE** is required to mix the components.

(d) Form into a **5.25 INCH** long roll.

(e) Place impression material on rounded bottom of applicator stick extending on one side, approximately **5.00 INCHES**. If compound adheres to applicator stick, apply lubricant to stick. Use petrolatum (item 138, App F).

(f) Immediately place impression material into wall cavities of the hole (hardening time is **2 to 3 MINUTES**). Ensure impression material reaches bottom and runs the entire depth of hole extending slightly over hole lip. Press impression material hard to ensure penetration into all pits (**1 MINUTE** is required). Work to cover half the wall surface and half the bottom of cavity. Use applicator stick as a rolling pin. Use flashlight and mirror to verify.

(3) Allow impression material to set for **2 MINUTES**.

(4) Peel off hardened impression material.

(5) Use a magnifier to verify the deepest impression.

(6) Measure the depth of the depression. Use caliper.

(7) Record pits.

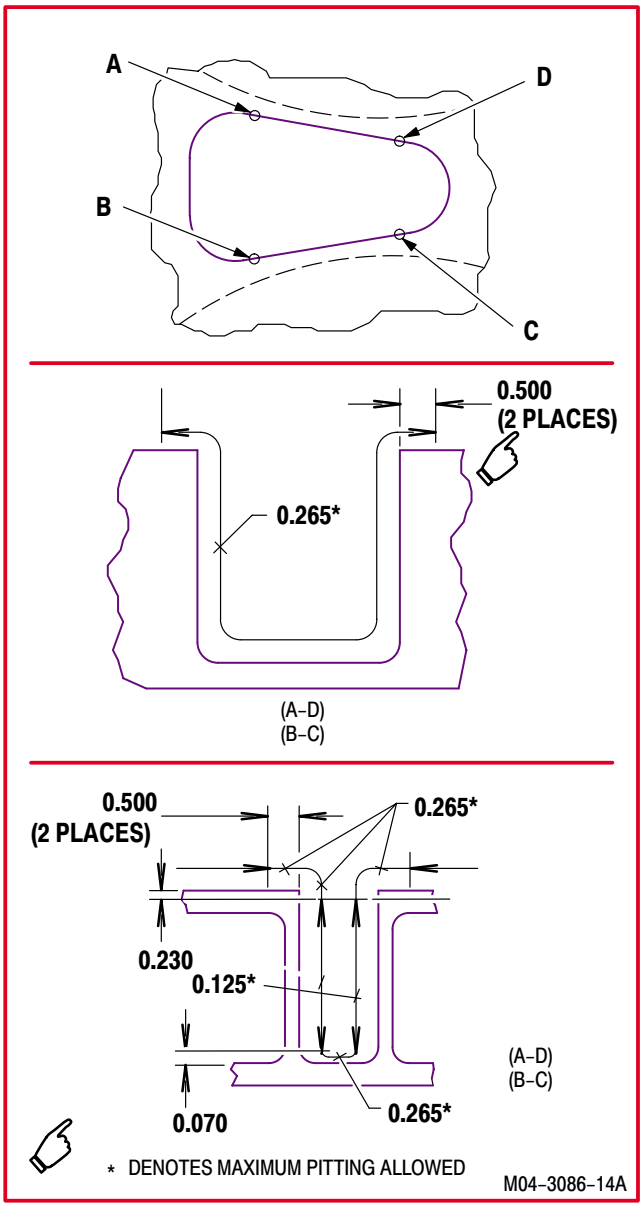
(8) Repeat impression process for each remaining side and bottom of triangular cavities and the other half of each internal surface and bottom of circular cavities.

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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

(9) Maximum allowable depth for triangular cavity:

(a) Inboard curved walls (A-B) are **0.265 INCH** (this measurement extends **0.500 INCH** beyond top hole lip); outboard curved walls (C-D) are **0.265 INCH** (this measurement extends **0.500 INCH** beyond top lip of hole to top surface); **1.00 INCH** from base of triangle to **3.10 INCHES** outboard (A-D) is **0.265 INCH** (this measurement extends **0.070 INCH** above bottom of hole); side walls (B-C) are **0.125 INCH** (this measurement extends to **0.230 INCH** below the top lip of hole). Use flashlight and mirror.

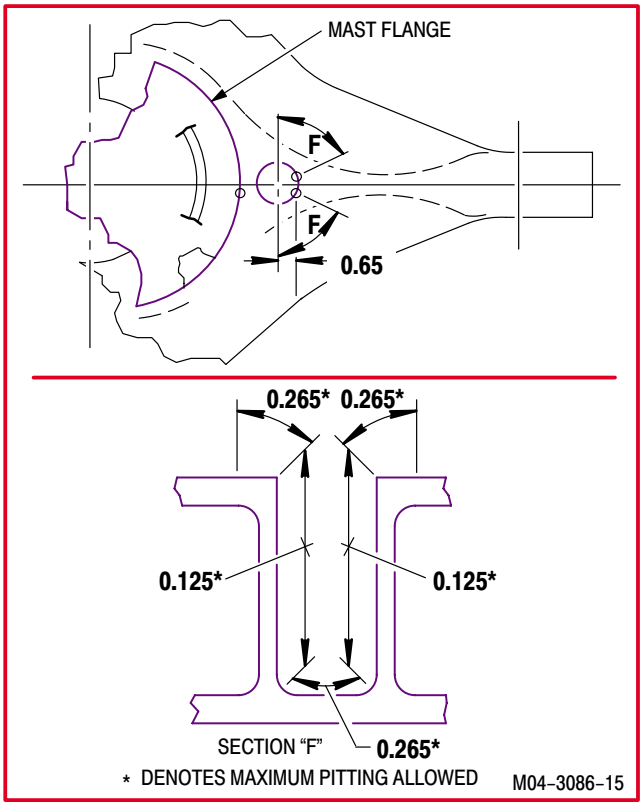


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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

(10) Maximum allowable depth for circular cavity:

(a) Section “F” side walls (two area segments measured from a starting point on the inside wall at the hole centerline going **0.650 INCH** outboard on both sides) are **0.125 INCH** (this measurement extends from lip to center of bottom radius); remaining inside walls and bottom of cavities are **0.265 INCH** (this measurement extends **0.265 INCH** beyond the hole lip). Use flashlight and mirror.



g. **Check strut bolt holes on mast base for elongation.** None allowed.

h. **Check rotor support assembly for corrosion** (para 1.49)**.**

i. **Check rotor support assembly bearing staking area for cracks and damage.** None allowed.

j. **Check rotor support assembly bearing for binding, catching, metal chips and other contamination.** None allowed.

2.88.6. Repair



a. **Remove nicks, gouges, and scratches from mast base.**

(1) Blend smooth; ensure minimal material loss. Use paper (item 133, App F).

(2) Check reworked area for cracks using penetrant inspect (TM 1-1500-204-23). None allowed.

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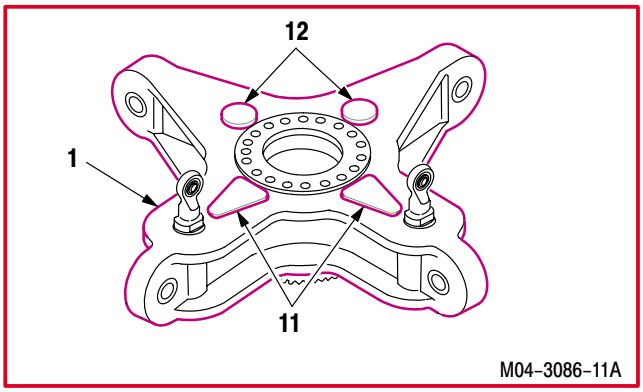
2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

(3) Reapply protective finish. Use polyurethane coating (item 140, App F) and epoxy primer coating kit (item NO TAG, App F) (TM 55-1500-345-23).

2.88.7. Installation



a. **Install four new covers (11) and (12) on mast base (1).**



(1) Apply primer in lightening holes. Use epoxy primer coating kit (item NO TAG, App F) and brush (item 34, App F). Allow to dry.

(2) Apply a coating of corrosion preventive compound in lightening holes. Use corrosion preventive compound (item 62, App F) and brush (item 34, App F).

(3) Apply a thin coat of adhesive to mating surfaces of four new covers (11) and (12), and mast base (1). Use adhesive (item 3A, App F).

(4) Install four new covers (11) and (12) on mast base (1).

(5) Apply sealing compound around entire edge of covers (11) and (12). Use sealing compound (item 179, App F) and brush (item 34, App F).

(6) Coat exterior surfaces of two covers (11) and (12). Use polyurethane coating (item 140, App F) and epoxy primer coating kit (item NO TAG, App F) (TM 55-1500-345-23).

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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

WARNING

The surface of the transmission cover and the mast base with the geared curvic coupling are precise surfaces. Normal handling of aluminum parts do not apply. Do not abrade surfaces of the curvic teeth over any extensive area. Small material movements can cause the curvic surfaces to fail to mesh. If the curvic shows impact damage as would be caused by tool impact or rough handling, remove any displaced metal to the surface. If the surface is corroded, send the parts to depot maintenance. Mast base curvic coupling must be entirely free of debris, displaced metal, and burrs.

NOTE

- Position mast base on struts so that one mixer pivot support faces forward, and the other support faces right side of helicopter.
- Nuts may be reused if run-on torque exceeds **50 INCH-POUNDS**.

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2.88. ROTOR SUPPORT MAST SUPPORT BASE REMOVAL/INSTALLATION – continued

b. **Install mast base (1) on struts (4) and (6).**

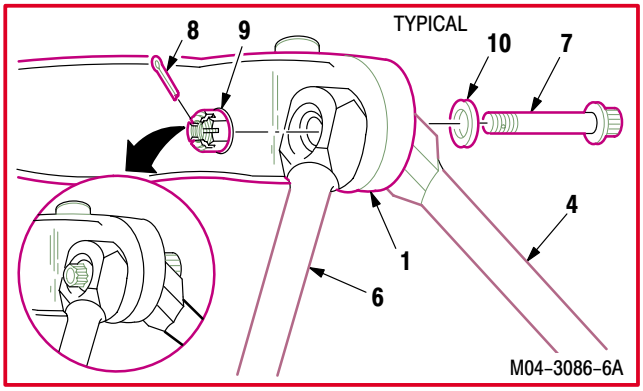
(1) Lower mast base (1) on four struts (4) and (6). Use sling.

(2) Aline struts (4) and (6) to base (1). Use drift-pin.

(3) Install four bolts (7) through washers (10) and mast base (1).

(4) Install four nuts (9) on bolts (7) finger tight.

(5) Ensure four nuts (9) have no less than **50 INCH-POUNDS** run-on torque. Use torque wrench.



c. **Torque four nuts (9) 280 to 304 FOOT-POUNDS.**

(1) Hold four bolts (7). Torque nuts (9) to **280 FOOT-POUNDS**. Use torque wrench, adapter, and 5-inch extension.

(2) If cotter pin hole is not alined, increase torque to aline. Do not exceed **304 FOOT-POUNDS**.

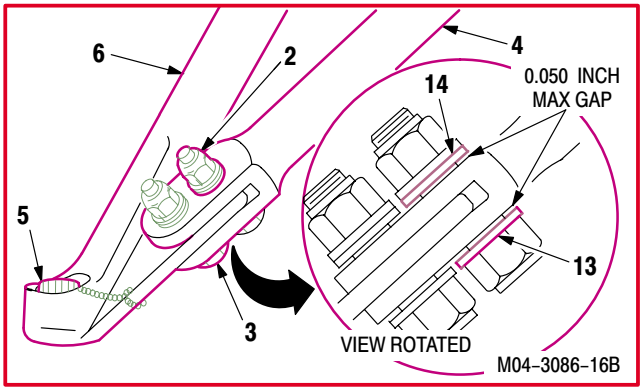
(3) Install new cotter pin (8) in alined hole.

d. **Torque four bolts (5) to 290 FOOT- POUNDS and lockwire to strut (6).** Use torque wrench and socket wrench.

e. **Torque eight nuts (2) to 600 INCH- POUNDS to secure strut (4).**

(1) Hold eight bolts (3). Torque nuts (2) to **600 INCH-POUNDS**. Use torque wrench and adapter.

f. **Check for maximum gap of 0.050 INCH under washer (13) at bolt head (3) and under washer (14) at nut side (2).** Use thickness gage. Replace bolt if gap exceeds **0.050 INCH**.



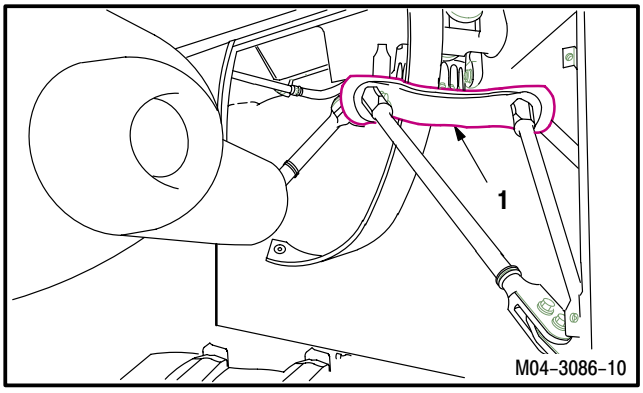
g. **Remove sling from base (1).**

h. **Inspect (QA).**

i. **Install main rotor support mast** (para 6.97)**.**

j. **Install main transmission** (para 6.107)**.**

k. **Install longitudinal and collective bellcranks** (para 11.9)**.**



END OF TASK

2.89. FORWARD LEFT OR RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLIES REMOVAL/INSTALLATION

2.89.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.89.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
3/4 x 6-inch long driftpin (item 113, App H)
5-inch x 3/4-inch drive socket wrench extension (item 125, App H)
15/16 & 1-inch box wrench (item 412, App H)
Mast support wrench (item 413, App H) (p/o item 391 and 391A, App H)
or
Mast support wrench (item 413A, App H) (p/o item 391A, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)

Materials/Parts:

Cotter pin
Wire (item 226, App F)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.79	Air vehicle sling installed
1.97	Maintenance crane installed
2.2	Access panels L200 and R200 removed
2.92	Left forward side transmission rotor support strut assembly removed
	or
2.93	Right forward side transmission rotor support strut assembly removed
6.90	Air data system (ADS) mast removed
12.32	Main deck fire/overheat detector removed

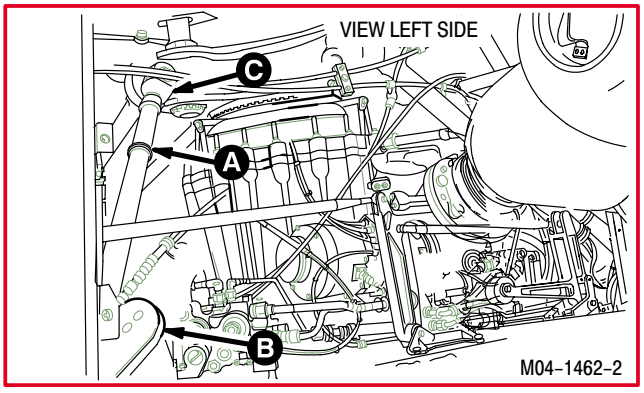
WARNING

FLIGHT SAFETY PART

Rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

NOTE

This task is typical for forward left and/or right center transmission rotor support strut assemblies.



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2.89. FORWARD LEFT OR RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLIES REMOVAL/INSTALLATION – continued

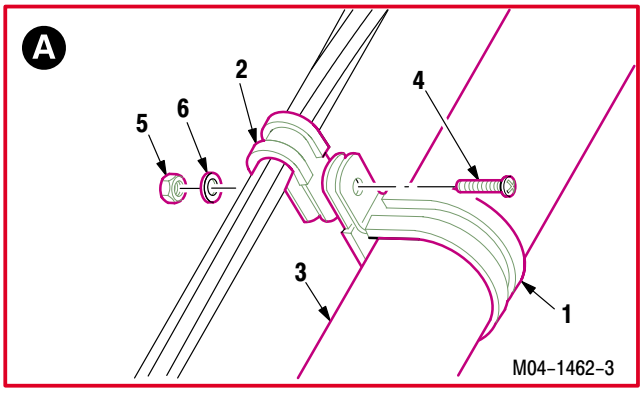
2.89.3. Removal

a. **Remove loop clamps (1) and (2) from forward center transmission rotor support strut assembly (3).**

(1) Hold screw (4). Remove self-locking nut (5) and washer (6).

(2) Remove screw (4) from clamps (1) and (2).

(3) Remove clamps (1) and (2) from strut (3).



WARNING

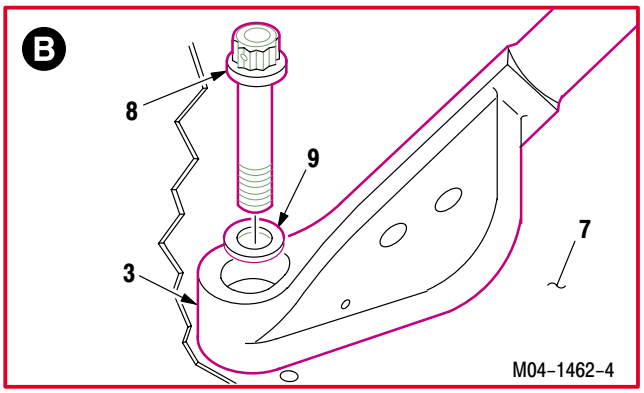
Apply tension to the maintenance crane cable/lifting hook before removing strut. Failure to follow instructions may result in serious injury or death to maintenance personnel and/or serious damage to the helicopter. If injury occurs, seek medical aid.

b. **Remove strut (3) from transmission deck (7).**

(1) Remove lockwire from bolt (8).

(2) Remove bolt (8) and recessed washer (9) from deck (7). Use mast support wrench and telescopic bar.

(3) Remove strut (3) from deck (7).



c. **Remove strut (3) from rotor support mast support base (10) and right forward center transmission rotor support strut assembly (11).**

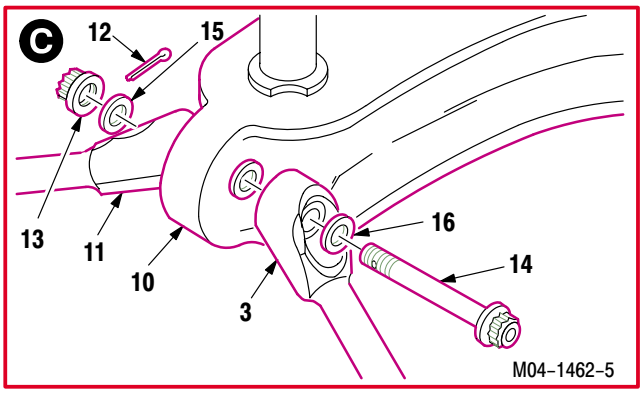
(1) Remove and discard cotter pin (12) from self-locking nut (13).

(2) Hold bolt (14). Break torque on nut (13). Use telescopic bar and adapter.

(3) Hold bolt (14). Remove nut (13) and washer (15).

(4) Remove bolt (14) and washer (16) from base (10) and struts (11) and (3).

(5) Remove strut (3) from base (10) and strut (11).



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2.89. FORWARD LEFT OR RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLIES REMOVAL/INSTALLATION

2.89.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.89.5. Inspection

a. **Check strut and base for damage and corrosion** (para 2.11)**.**

b. **Check nuts and bolts for stripped threads.** None allowed.

c. **Check strut bushing bores.**

(1) Check for scoring, nicks, and scratches. Scoring, nicks and scratches are acceptable if less than **0.020 INCH** deep.

(2) Check two strut support bushing bores. Maximum I.D. **0.7520 INCH**.

(3) Check deck bushing bore and mast support bushing bores (two places). Maximum I.D. **0.7510 INCH**.

d. **Check strut and base for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

2.89.6. Installation

a. **Install strut (3) on base (10) and strut (11).** Torque nut (13) **3360 to 3640 INCH-POUNDS**.

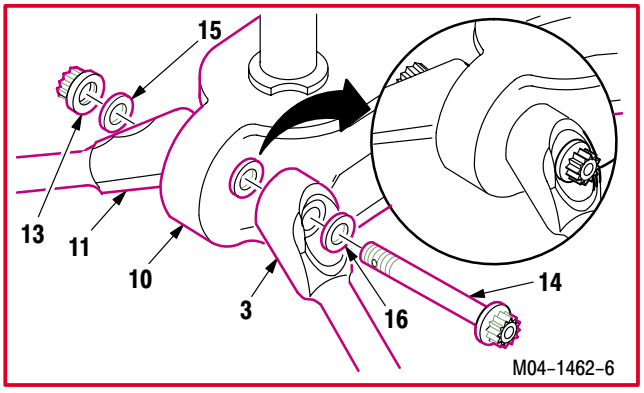
(1) Aline strut (3) on base (10) and strut (11). Use driftpin.

(2) Install bolt (14) through washer (16), strut (3), base (10), and strut (11).

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

(3) Ensure nut (13) has no less than **50 INCH-POUNDS** run-on torque. Use torque wrench.



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2.89. FORWARD LEFT OR RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLIES REMOVAL/INSTALLATION – continued

(4) Install washer (15) and nut (13) finger tight. Use box wrench.

(5) Hold bolt (14). Use box wrench.

(6) Torque nut (13) to **3360 INCH-POUNDS**. Use torque wrench, adapter, and 5-inch extension.

(7) Increase torque to aline cotter pin hole, but do not exceed **3640 INCH-POUNDS**.

(8) Install new cotter pin (12).

b. **Install strut (3) on deck (7).** Torque bolt (8) to **3500 INCH-POUNDS**.

(1) Install bolt (8) through washer (9) and strut (3) in deck (7). Use telescopic bar and mast support wrench.

(2) Torque bolt (8) to **3500 INCH-POUNDS**. Use torque wrench and mast support wrench.

(3) Lockwire bolt (8) to strut (3). Use wire (item 226, App F).

c. **Install clamps (1) and (2) on strut (3).**

(1) Install screw (4) through clamps (1) and (2).

(2) Install washer (6) and nut (5).

d. **Inspect (QA).**

e. **Install right forward side transmission rotor support strut assembly** (para 2.93)**.**

f. **Remove maintenance crane** (para 1.105)**.**

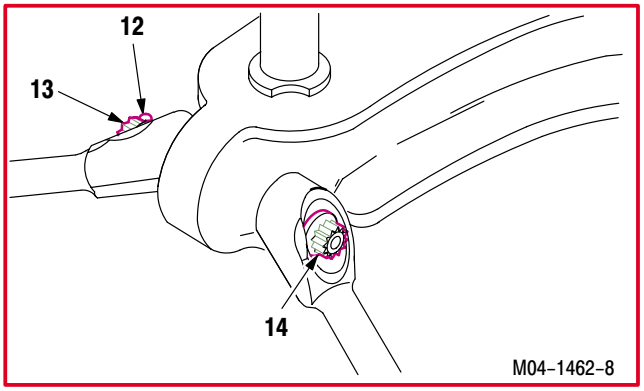
g. **Remove air vehicle sling** (para 1.79)**.**

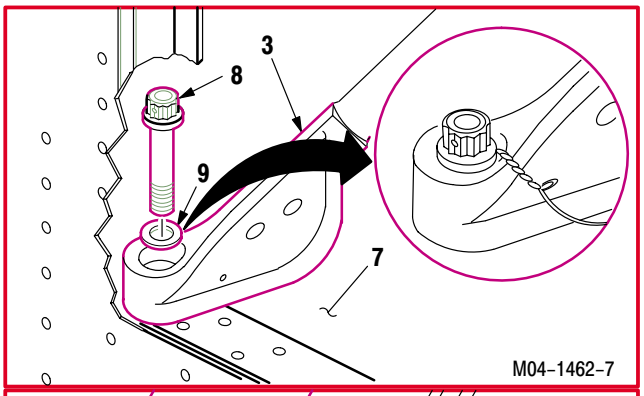
h. **Install air data system (ADS) mast** (para 6.90)**.**

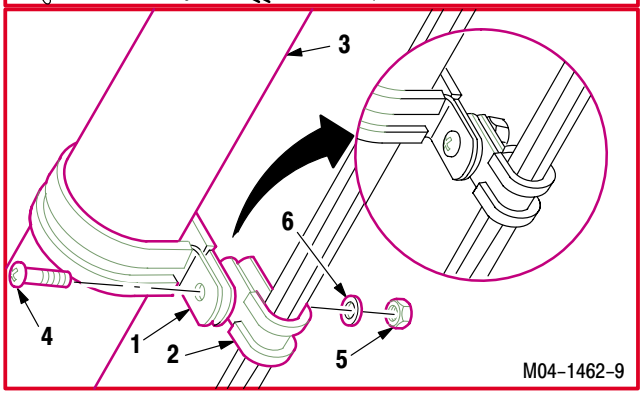
i. **Install left forward side transmission rotor support strut assembly** (para 2.92)**.**

j. **Install main deck fire/overheat detector** (para 12.32)**.**

k. **Install access panels L200 and R200** (para 2.2)**.**







END OF TASK

2.90. AFT LEFT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.90.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.90.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
1/2 x 3/4-inch drive socket wrench adapter (item 2, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
3/4 x 6-inch long driftpin (item 113, App H)
5-inch x 1/2-inch drive socket wrench extension (item 124, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
15/16 & 1-inch box wrench (item 412, App H)
Socket wrench (item 428, App H) (p/o item 391 and 391A, App H)
or
Socket wrench (item 428A, App H) (p/o item 391A, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)

Materials/Parts:

Cotter pin
Wire (item 226, App F)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

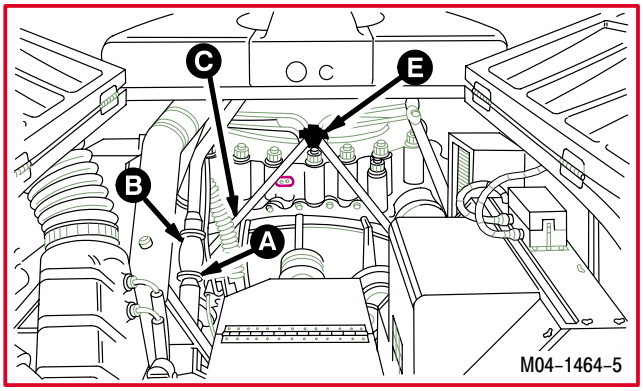
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290R, and L325 opened
2.94	Left aft side transmission rotor support strut assembly removed
12.32	Main deck fire/overheat detector removed
6.90	Air data system (ADS) mast removed
1.79	Air vehicle sling installed
1.97	Maintenance crane installed

WARNING

FLIGHT SAFETY PART

Rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.



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2.90. AFT LEFT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

2.90.3. Removal

a. **Remove harness loop clamp (1) from aft left center transmission rotor support strut assembly (2).**

(1) Hold screw (3). Remove self-locking nut (4) and washer (5).

(2) Remove screw (3) from clamps (1), (6), and (7).

b. **Remove harness loop clamp (8) from strut (2).**

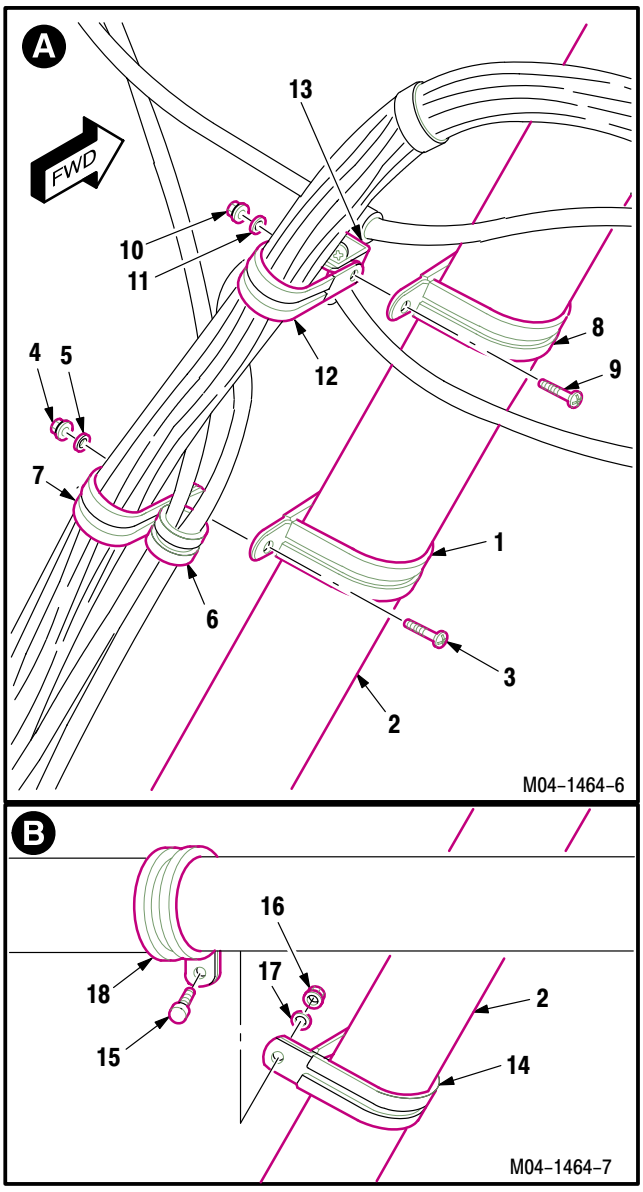
(1) Hold screw (9). Remove self-locking nut (10) and washer (11).

(2) Remove screw (9) from clamps (8) and (12), and angle bracket (13).

c. **Remove fuel crossfeed hose clamp (14) from strut (2).**

(1) Hold bolt (15). Remove self-locking nut (16) and washer (17).

(2) Remove bolt (15) from two clamps (14) and (18).



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2.90. AFT LEFT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Remove engine control cable loop clamp (19) from strut (2).**

(1) Hold screw (20). Remove self-locking nut (21) and washer (22).

(2) Remove screw (20) and washers (23) and (24), from angle bracket (25) and clamp (19).

WARNING

Apply tension to the maintenance crane cable/lifting hook before removing strut. Failure to follow instructions may result in serious injury or death to maintenance personnel and/or serious damage to the helicopter. If injury occurs, seek medical aid.

e. **Remove strut (2) from transmission deck (26).**

(1) Remove lockwire from bolt (27).

(2) Remove bolt (27) and washer (28). Use socket wrench and telescopic bar.

f. **Remove strut (2) from rotor support mast support base (29) and aft right center transmission rotor support strut assembly (30).**

(1) Remove and discard pin (31).

(2) Hold bolt (32). Use box wrench. Break torque on nut (33). Use telescopic bar and adapter.

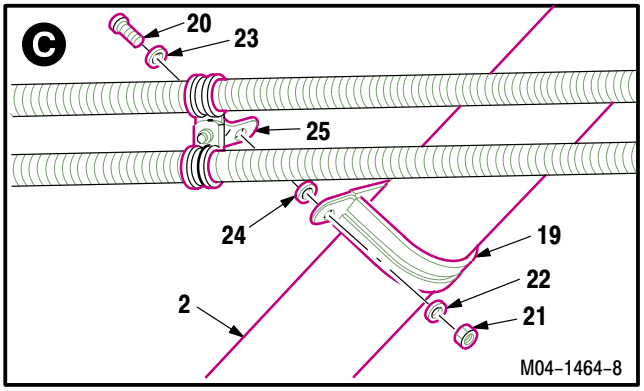
(3) Remove nut (33) and washer (34). Use ratchet and 5-inch extension.

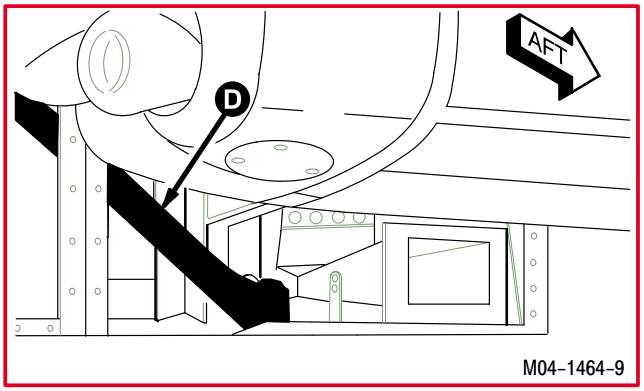
(4) Remove bolt (32) and washer (35).

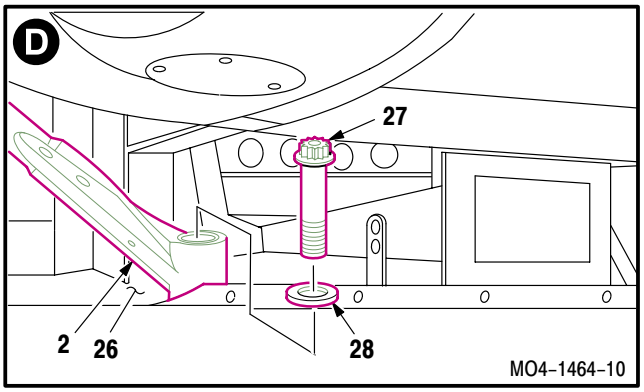
(5) Remove strut (2) from base (29) and strut (30).

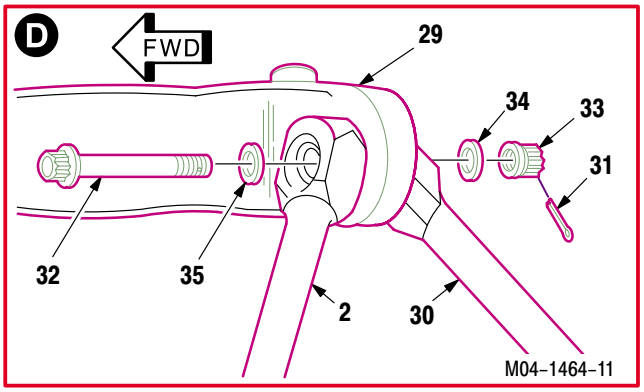
2.90.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**









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2.90. AFT LEFT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.90.5. Inspection

a. **Check strut and base for damage and corrosion** (para 2.11)**.**

b. **Check nuts and bolts for stripped threads.** None allowed.

c. **Check five strut bushing bores,**

(1) Check for scoring, nicks, and scratches. Scoring, nicks, and scratches are acceptable if less than **0.020 INCH** deep.

(2) Check two strut support bushing bores. Maximum I.D. **0.7520 INCH**.

(3) Check deck bushing bore and mast support bushing bores (two places). Maximum I.D. **0.7510 INCH**.

2.90.6. Installation

a. **Install strut (2) on base (29) and strut (30).** Torque nut (33) **3360 to 3640 INCH-POUNDS**.

(1) Aline strut (2) on base (29) and strut (30). Use driftpin.

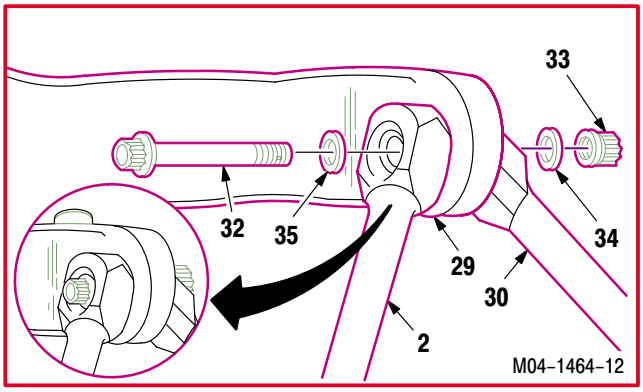
(2) Install bolt (32) through washer (35), struts (2), base (29), and strut (30).

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

(3) Ensure nut (33) run-on torque exceeds **50 INCH-POUNDS**. Use torque wrench.

(4) Install washer (34) and nut (33) on bolt (29) finger tight. Use ratchet and 5-inch extension.



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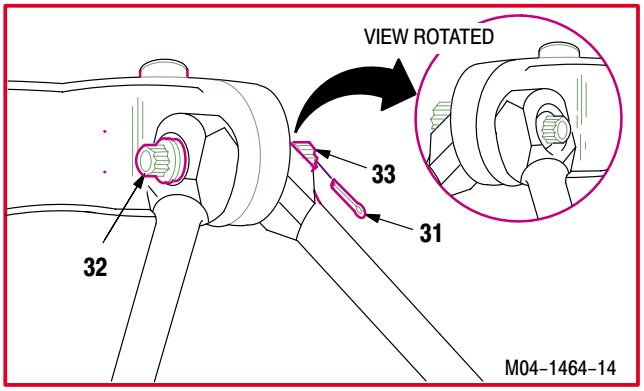
2.90. AFT LEFT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

(5) Hold bolt (32). Use box wrench.

(6) Torque nut (33) to **3360 INCH-POUNDS**. Use torque wrench, adapter, and 5-inch extension.

(7) Increase torque to aline cotter pin hole, but do not exceed **3640 INCH-POUNDS**.

(8) Install new cotter pin (31).

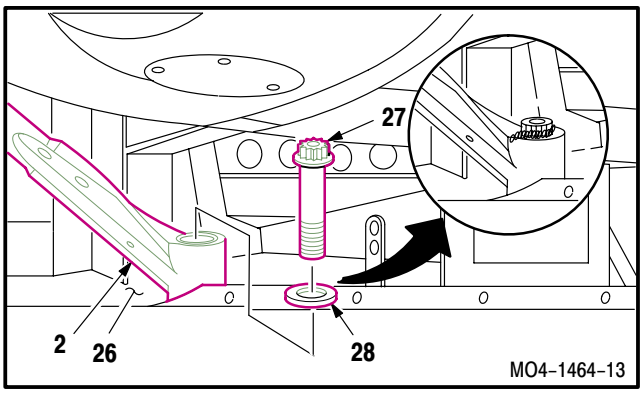


b. **Install strut (2) on deck (26).** Torque bolt (27) to **3500 INCH-POUNDS**.

(1) Install bolt (27) through washer (28) and strut (2) into deck (26).

(2) Torque bolt (27) to **3500 INCH-POUNDS**. Use socket wrench and torque wrench.

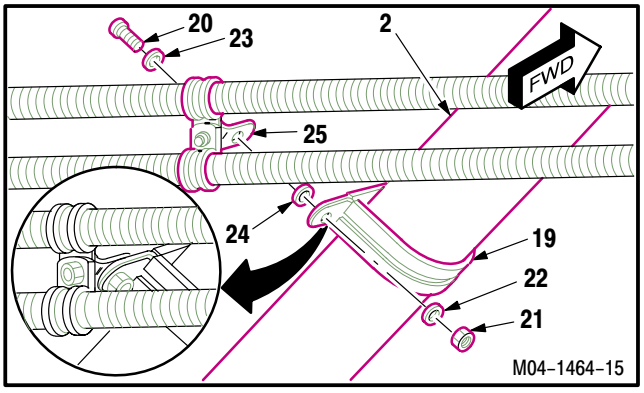
(3) Lockwire bolt (27) to strut (2). Use wire (item 226, App F).



c. **Install clamp (19) on strut (2).**

(1) Install screw (20) through washer (23), bracket (25), washer (24), and clamp (19).

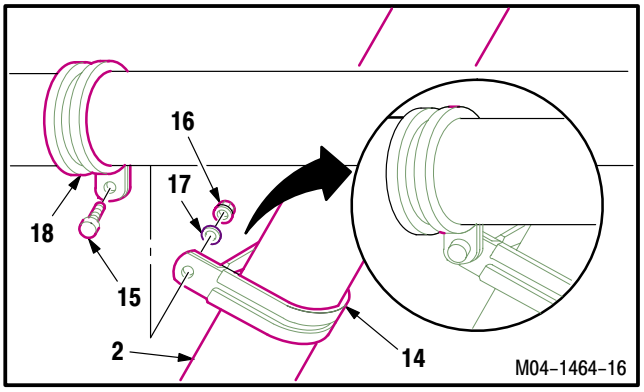
(2) Install washer (22) and nut (21).



d. **Install clamp (14) on strut (2).**

(1) Install bolt (15) through two clamps (18) and (14).

(2) Install washer (17) and nut (16).



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2.90. AFT LEFT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

e. **Install clamp (8) on strut (2).**

(1) Install screw (9) through clamps (8) and (12) and bracket (13).

(2) Install washer (11) and nut (10).

f. **Install clamp (1) on strut (2).**

(1) Install screw (3) through three clamps (1), (6), and (7).

(2) Install washer (5) and nut (4).

g. **Install left aft side transmission rotor support strut assembly** (para 2.94)**.**

h. **Install main deck fire/overheat detector** (para 12.32)**.**

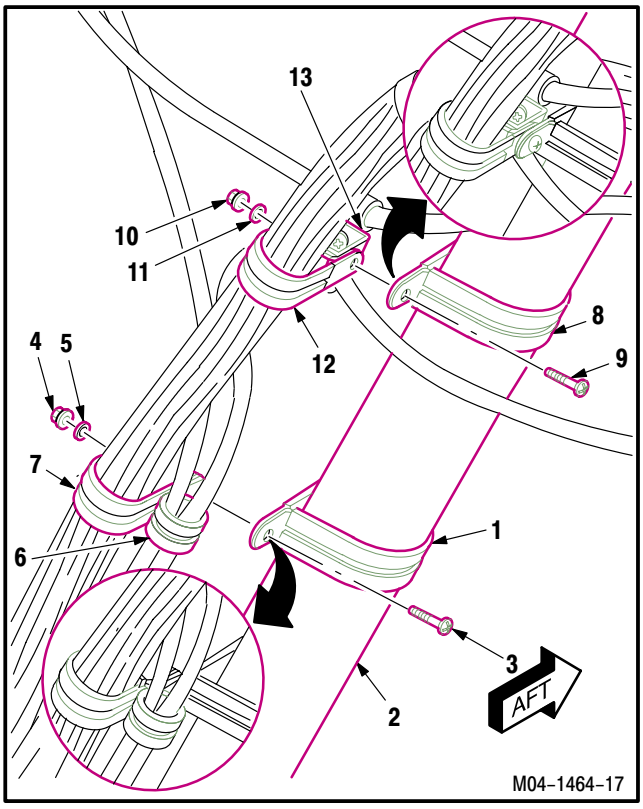
i. **Inspect (QA).**

j. **Remove maintenance crane** (para 1.105)**.**

k. **Remove air vehicle sling** (para 1.79)**.**

l. **Install air data system (ADS) mast** (para 6.90)**.**

m. **Secure access doors T250L, T250R, T290L, and L325** (para 2.2)**.**



END OF TASK

2.91. AFT RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.91.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.91.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
Light duty laboratory apron (item 27, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
5-inch x 1/2-inch drive socket wrench extension (item 124, App H)
Chemical protective gloves (item 154, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
Adjustable air filtering respirator (item 262, App H)
15/16 & 1-inch box wrench (item 412, App H)
Socket wrench (item 428, App H) (p/o item 391 and 391A, App H)
or
Socket wrench (item 428A, App H) (p/o item 391A, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)

Materials/Parts:

Cotter pin
Adhesive (item 14, App F)
Wire (item 226, App F)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

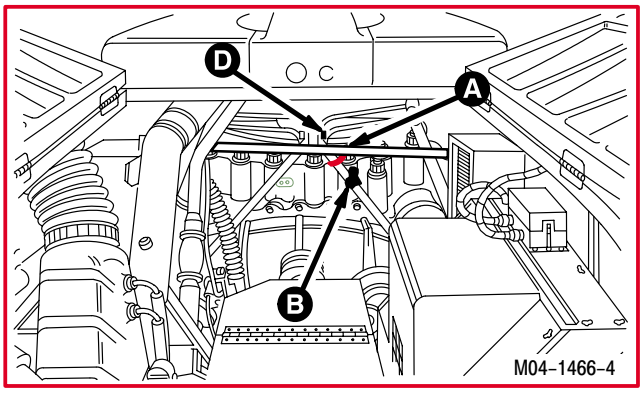
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened
2.95	Right aft side transmission rotor support strut assembly removed
12.32	Main deck fire/overheat detector removed
6.90	Air data system (ADS) mast removed
1.79	Air vehicle sling installed
1.97	Maintenance crane installed

WARNING

FLIGHT SAFETY PART

Rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.



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2.91. AFT RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

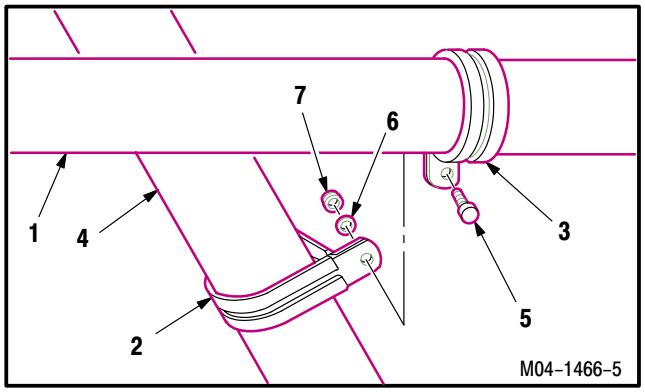
2.91.3. Removal

a. **Remove fuel cross feed hose (1) and loop clamps (2) and (3) from aft right center transmission rotor support strut assembly (4).**

(1) Hold screw (5). Remove self-locking nut (6) and washer (7).

(2) Remove screw (5) from clamps (2) and (3).

(3) Remove hose (1) and clamps (2) and (3) from strut (4).

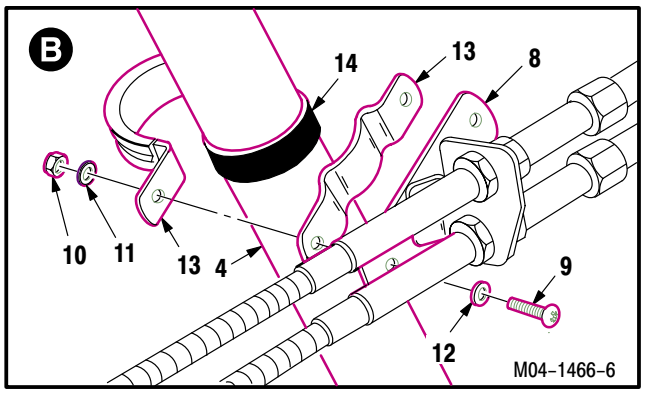


b. **Remove engine control cable bracket assembly (8) from strut (4).**

(1) Hold two screws (9). Remove self-locking nuts (10) and washers (11).

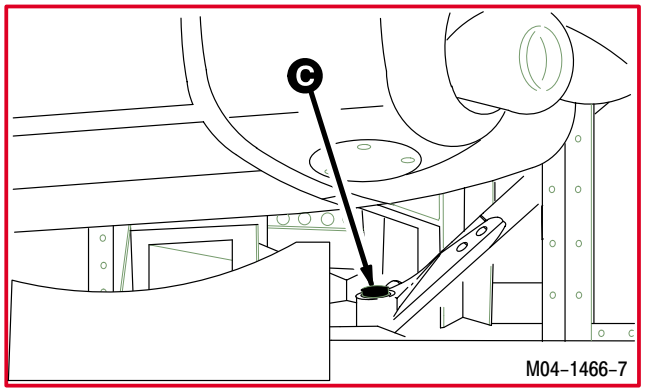
(2) Remove two screws (9) and washers (12) from loop clamp (13), spacer ring (14), and bracket (8).

(3) Remove bracket (8) from strut (4).



WARNING

Apply tension to the maintenance crane cable/lifting hook before removing strut. Failure to follow instructions may result in serious injury or death to maintenance personnel and/or serious damage to the helicopter. If injury occurs, seek medical aid.

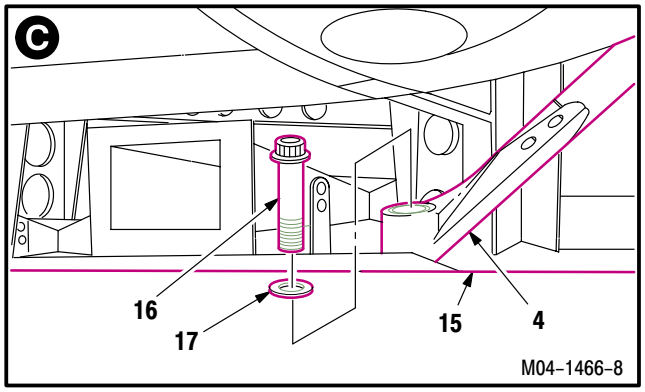


c. **Remove strut (4) from transmission deck (15).**

(1) Remove lockwire from bolt (16).

(2) Remove bolt (16) and recessed washer (17). Use socket wrench and telescopic bar.

(3) Remove strut (4) from deck (15).



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2.91. AFT RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Remove strut (4) from rotor support mast support base (19) and strut (20).**

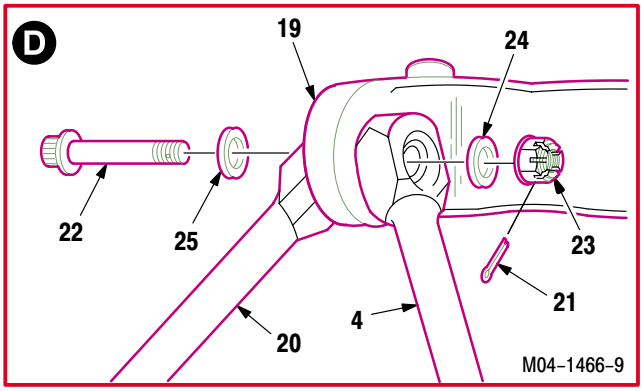
(1) Remove and discard cotter pin (21).

(2) Hold bolt (22). Break torque on self-locking nut (23). Use telescopic bar and adapter.

(3) Hold bolt (22). Remove nut (23) and washer (24). Use ratchet and 5-inch extension.

(4) Remove bolt (22) and washer (25) from strut (4), base (19), and strut (20).

(5) Remove strut (4) from base (19) and strut (20).



2.91.4. Cleaning

a. **Clean adhesive from strut** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.91.5. Inspection

a. **Check strut and base for damage and corrosion** (para 2.11)**.**

b. **Check nuts and bolts for stripped threads.** None allowed.

c. **Check strut bushing bores.**

(1) Check for scoring, nicks, and scratches. Scoring, nicks, and scratches are acceptable if less than **0.020 INCH** deep.

(2) Check two strut support bushing bores. Maximum I.D. **0.7520 INCH**.

(3) Check deck bushing bore and mast support bushing bore (two places). Maximum I.D. **0.7510 INCH**.

GO TO NEXT PAGE

2.91. AFT RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

2.91.6. Installation

a. **Install strut (4) on base (19) and strut (20).** Torque nut (23) **3360 to 3640 INCH-POUNDS**.

(1) Install bolt (22) through washer (25), strut (4), base (19), and strut (20).

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

(2) Install washer (24) and nut (23) on bolt (22) finger tight.

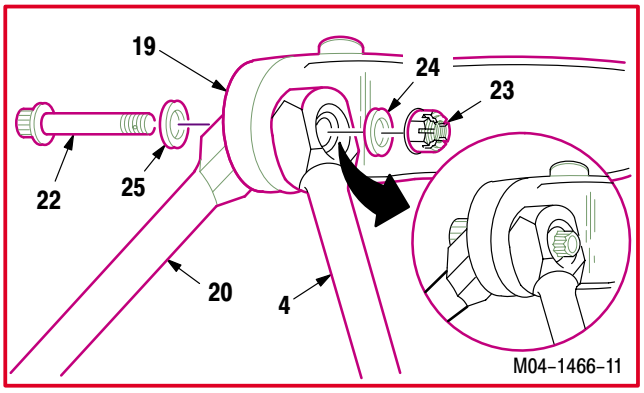
(3) Ensure nut (23) has no less than **50 INCH-POUNDS** run-on torque. Use torque wrench.

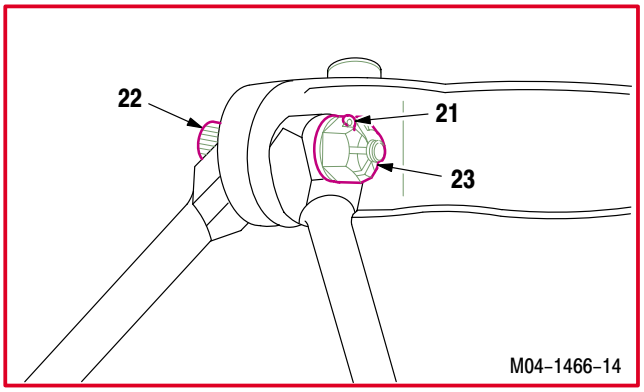
(4) Hold bolt (22). Use box wrench.

(5) Torque nut (23) to **3360 INCH-POUNDS**. Use torque wrench, adapter, and 5-inch extension.

(6) Increase torque to aline cotter pin hole, but do not exceed **3640 INCH-POUNDS**.

(7) Install new cotter pin (21).



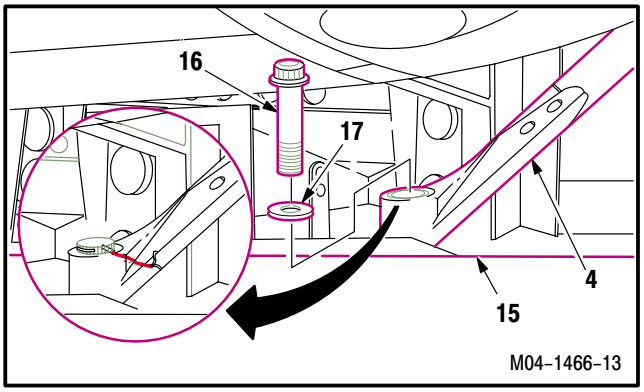


b. **Install strut (4) on deck (15).** Torque bolt (16) to **3500 INCH-POUNDS**.

(1) Install bolt (16) through washer (17) and strut (4) in deck (15).

(2) Torque bolt (16) to **3500 INCH-POUNDS**. Use torque wrench and socket wrench.

(3) Lockwire bolt (16) to strut (4). Use wire (item 226, App F).



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2.91. AFT RIGHT CENTER TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued



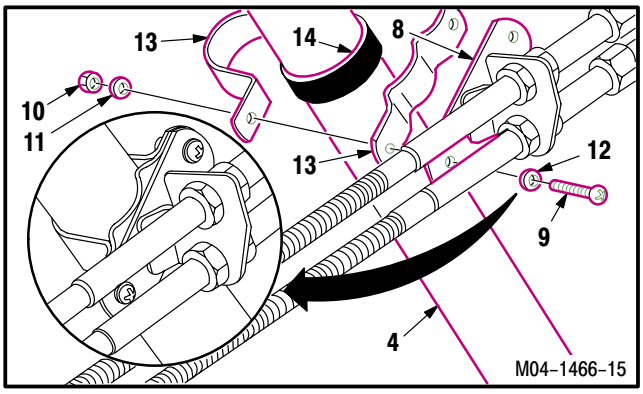
c. **Install bracket (8) on strut (4).**

(1) Apply adhesive to ring (14). Use adhesive (item 14, App F).

(2) Install ring (14) on strut (4).

(3) Install two screws (9) through washers (12), bracket (8), and clamp (13).

(4) Install two washers (11) and nuts (10).

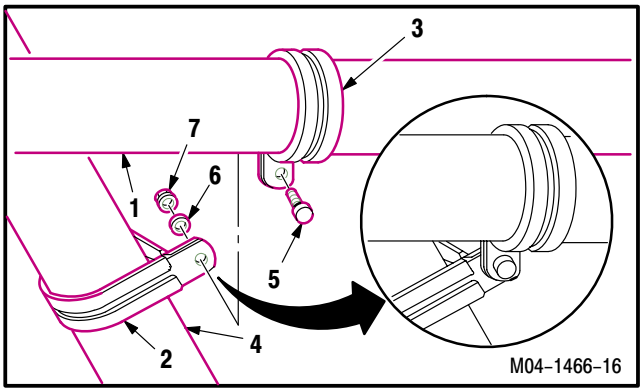


d. **Install hose (1) and two clamps (2) and (3) on strut (4).**

(1) Install clamp (2) on strut (4).

(2) Install screw (5) through clamps (3) and (2).

(3) Install washer (6) and nut (7).



e. **Inspect (QA).**

f. **Remove maintenance crane** (para 1.105)**.**

g. **Remove air vehicle sling** (para 1.79)**.**

h. **Install air data system (ADS) mast** (para 6.90)**.**

i. **Install right aft side transmission rotor support strut assembly** (para 2.95)**.**

j. **Install main deck fire/overheat detector** (para 12.32)**.**

k. **Secure access doors T250L, T250R, T290L, and T290R** (para 2.2)**.**

END OF TASK

2.92. LEFT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.92.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.92.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
3/8 x 1/2-inch drive socket wrench adapter (item 6, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
3/4 x 6-inch long driftpin (item 113, App H)
5-inch x 1/2-inch drive socket wrench extension (item 124, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
15/16 & 1-inch box wrench (item 412, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)

Materials/Parts:

Cotter pin

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

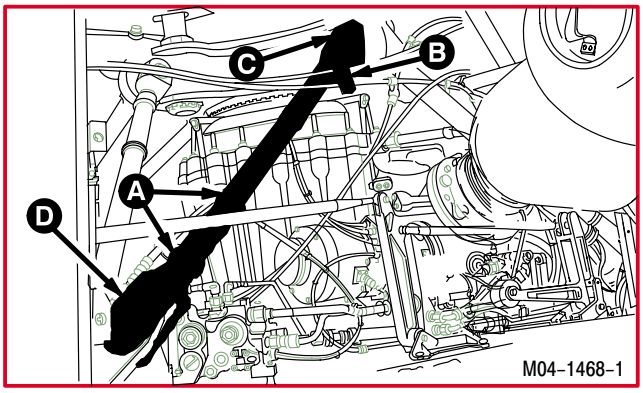
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel L200 removed
12.32	Main deck fire/overheat detector removed
6.90	Air data system (ADS) mast removed
1.79	Air vehicle sling installed
1.97	Maintenance crane installed

WARNING

FLIGHT SAFETY PART

Rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.



GO TO NEXT PAGE

2.92. LEFT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

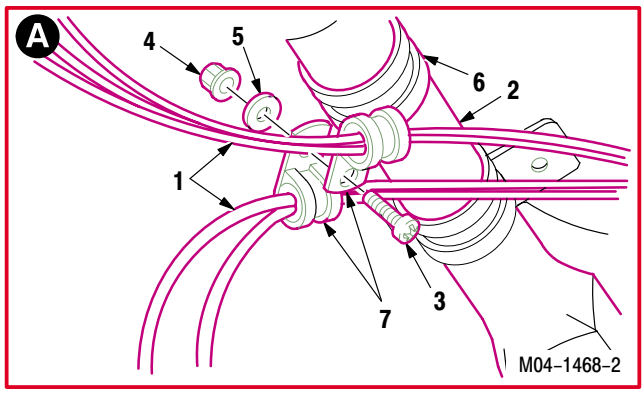
2.92.3. Removal

a. **Remove wire harness (1) from left forward side transmission rotor support strut assembly (2).**

(1) Hold screw (3). Remove self-locking nut (4) and washer (5).

(2) Remove screw (3) from loop clamp (6) and two clamps (7) on wire harness.

(3) Remove harness (1) from strut (2).



WARNING

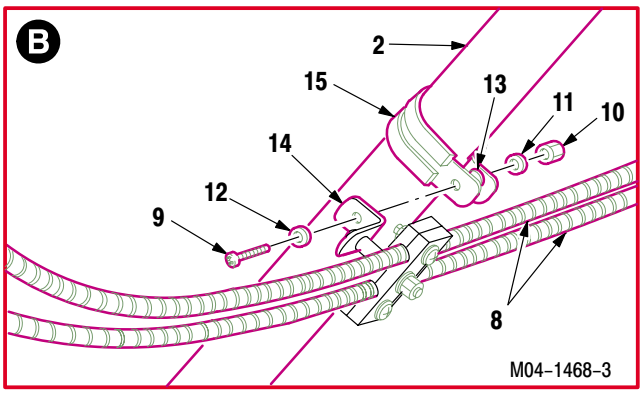
Apply tension to the maintenance crane cable/lifting hook before removing strut. Failure to follow instructions may result in serious injury or death to maintenance personnel and/or serious damage to the helicopter. If injury occurs, seek medical aid.

b. **Remove engine control cables (8) from strut (2).**

(1) Hold screw (9). Remove self-locking nut (10) and washer (11).

(2) Remove screw (9) and washers (12) and (13) from engine control cable angle bracket (14) and loop clamp (15).

(3) Remove cables (8) from strut (2).



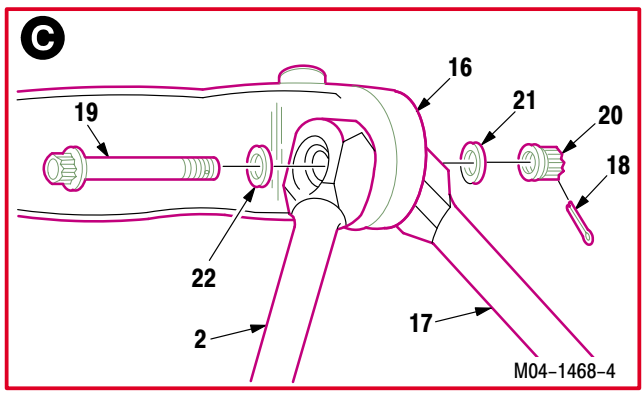
c. **Remove strut (2) from rotor support mast support base (16) and left aft side transmission rotor support strut assembly (17).**

(1) Remove and discard cotter pin (18).

(2) Hold bolt (19). Break torque on self-locking nut (20). Use telescopic bar and adapter.

(3) Remove nut (20) and washer (21). Use ratchet and 5-inch extension.

(4) Remove bolt (19) and washer (22) from strut (2), base (16), and strut (17).



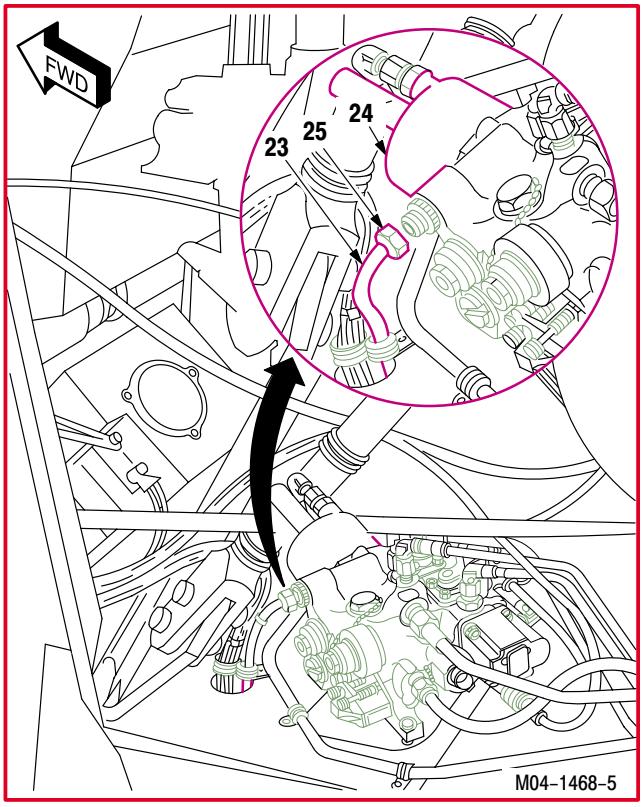
GO TO NEXT PAGE

2.92. LEFT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Remove hydraulic overflow line (23) from primary hydraulic manifold (24).**

(1) Remove nut (25) from manifold (24).

(2) Slide line (23) down through hole in deck.



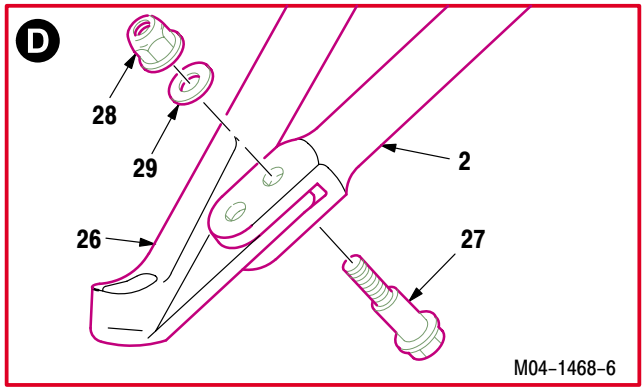
e. **Remove strut (2) from forward center transmission strut (26).**

(1) Hold two bolts (27). Remove nuts (28) and washers (29). Use ratchet and 5-inch extension.

(2) Remove two bolts (27) from struts (2) and (26).

2.92.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**



2.92.5. Inspection

a. **Check strut and base for damage and corrosion** (para 2.11)**.**

b. **Check nuts and bolts for stripped threads.** None allowed.

c. **Check strut bushing bores.**

(1) Check for scoring, nicks, and scratches. Scoring, nicks, and scratches are acceptable if less than **0.020 INCH** deep.

(2) Check strut support bushing bores (four places). Maximum I.D. **0.7520 INCH**.

(3) Check mast support bushing bores (two places). Maximum I.D. **0.7510 INCH**.

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2.92. LEFT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

2.92.6. Installation

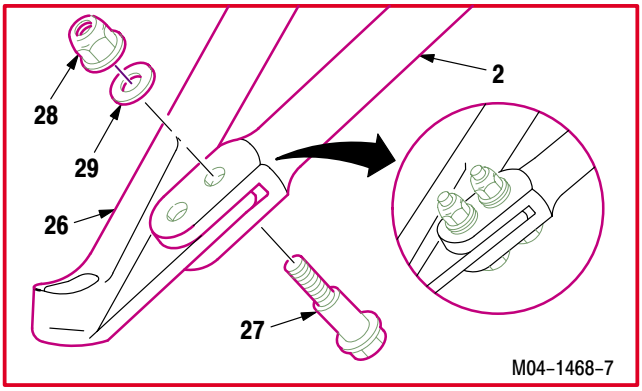
a. **Install strut (2) on strut (26).** Torque two nuts (28) to **600 INCH-POUNDS**.

(1) Install two bolts (27) in struts (2) and (26).

(2) Hold two bolts (27). Install washers (29) and nuts (28). Use ratchet.

(3) Torque two nuts (28) to **600 INCH-POUNDS**. Use torque wrench and adapter.

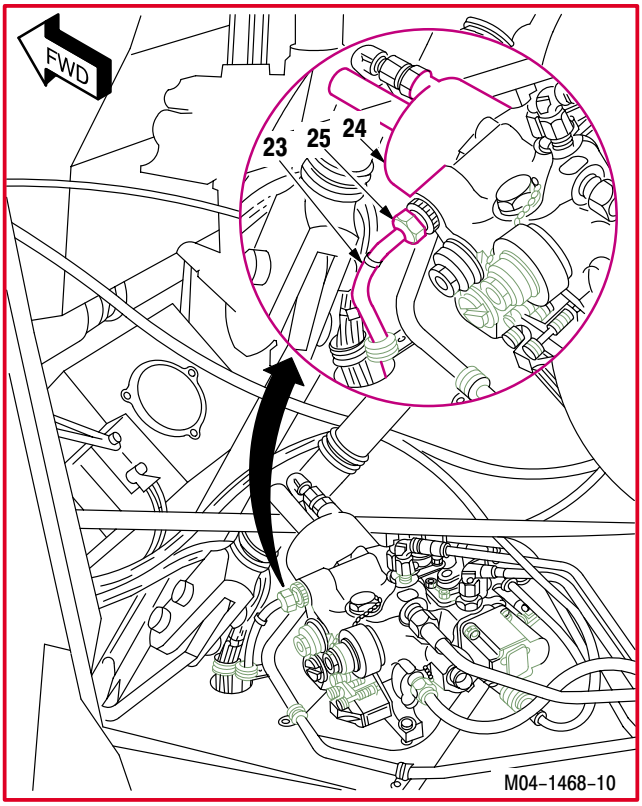
(4) Check for maximum gap of **0.050 INCH** under washer (29) at bolt (27) head and nut (28) side. Replace bolt (27) if gap exceeds **0.050 INCH**.



b. **Install line (23) on manifold (24).**

(1) Slide line (23) up through hole in deck.

(2) Install nut (25) on manifold (24).



GO TO NEXT PAGE

2.92. LEFT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

c. **Install strut (2) on base (16) and strut (17).** Torque nut (20) **3360 to 3640 INCH-POUNDS**.

(1) Aline strut (2) on base (16) and strut (17). Use driftpin.

(2) Install bolt (19) and washer (22) in strut (2) base (16), and strut (17).

(3) Hold bolt (19). Install washer (21) and nut (20) on bolt (19) finger tight. Use box wrench.

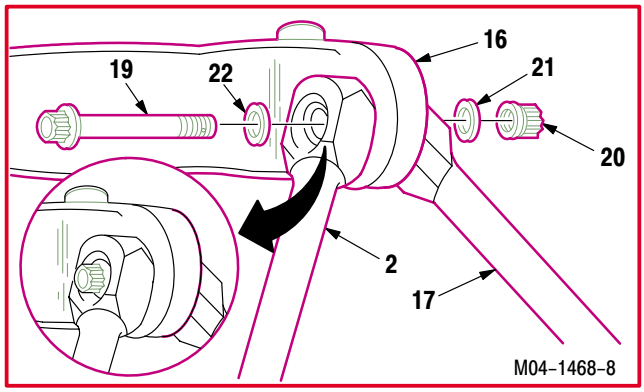
(4) Ensure nut (20) has no less than **50 INCH-POUNDS** run-on torque. Use torque wrench.

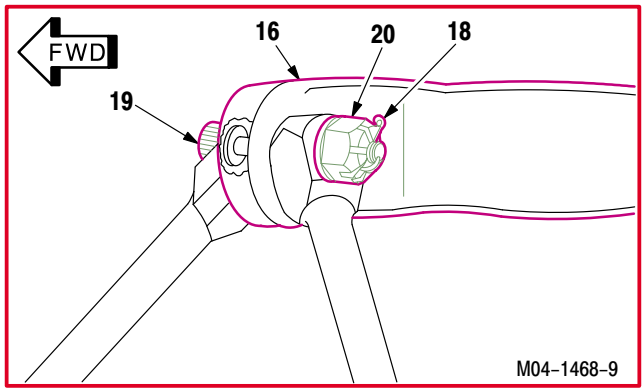
(5) Hold bolt (19). Use box wrench.

(6) Torque nut (20) to **3360 INCH-POUNDS**. Use torque wrench, adapter, and 5-inch extension.

(7) Increase torque to aline cotter pin hole, but do not exceed **3640 INCH-POUNDS**.

(8) Install cotter pin (18).

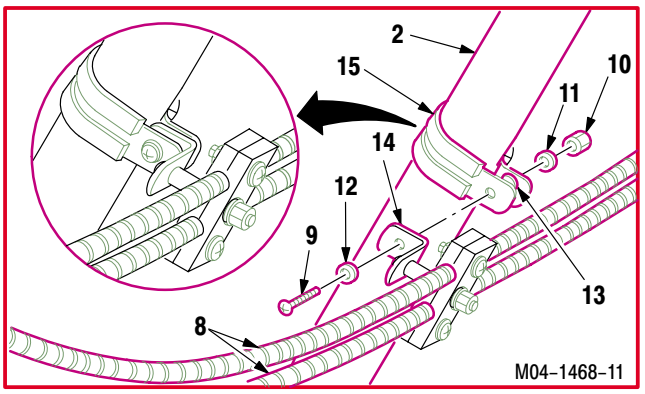




d. **Install cables (8) on strut (2).**

(1) Install screw (9) through washer (12), bracket (14), clamp (15), and washer (13).

(2) Hold screw (9). Install washer (11) and nut (10).



GO TO NEXT PAGE

2.92. LEFT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

e. **Install harness (1) on strut (2).**

(1) Install screw (3) through clamp (6) and two clamps (7) on wire harness (1).

(2) Hold screw (3). Install washer (5) and nut (4).

f. **Inspect (QA).**

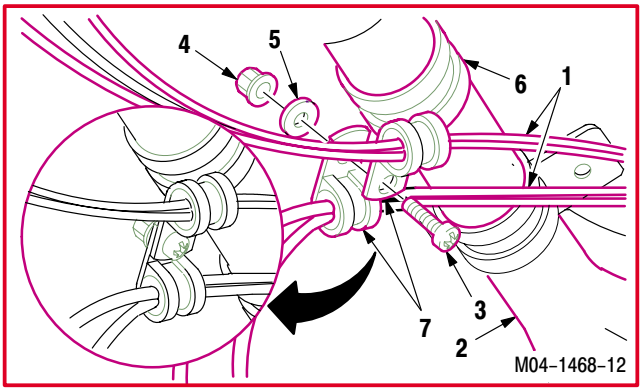
g. **Remove maintenance crane** (para 1.105)**.**

h. **Remove air vehicle sling** (para 1.79)**.**

i. **Install air data system (ADS) mast** (para 6.90)**.**

j. **Install main deck fire/overheat detector** (para 12.32)**.**

k. **Install access panel L200** (para 2.2)**.**



END OF TASK

2.93. RIGHT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.93.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.93.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
3/8 x 1/2-inch drive socket wrench adapter (item 6, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
3/4 x 6-inch long driftpin (item 113, App H)
5-inch x 1/2-inch drive socket wrench extension (item 124, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
15/16 & 1-inch box wrench (item 412, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)

Materials/Parts:

Cotter pin

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

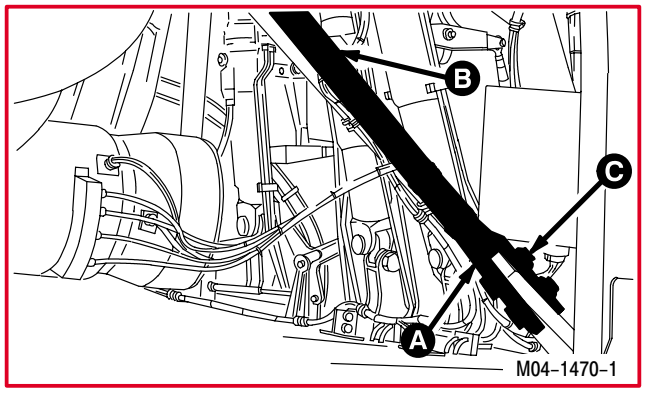
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel R200 removed
12.32	Main deck fire/overheat detector removed
6.90	Air data system (ADS) mast removed
1.79	Air vehicle sling installed
1.97	Maintenance crane installed

WARNING

FLIGHT SAFETY PART

Rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.



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2.93. RIGHT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

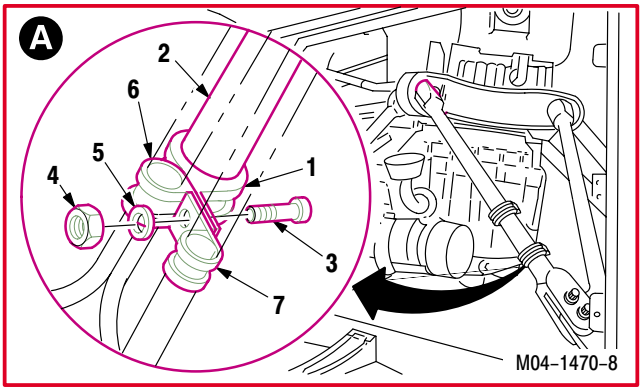
2.93.3. Removal

a. **Remove two loop clamps (1) from right forward side transmission rotor support strut assembly (2).**

(1) Hold screw (3). Remove self-locking nut (4) and washer (5).

(2) Remove screw (3) from clamps (1), (6), and (7).

(3) Remove clamps (1) from strut (2).



WARNING

Apply tension to the maintenance crane cable/lifting hook before removing strut. Failure to follow instructions may result in serious injury or death to maintenance personnel and/or serious damage to the helicopter. If injury occurs, seek medical aid.

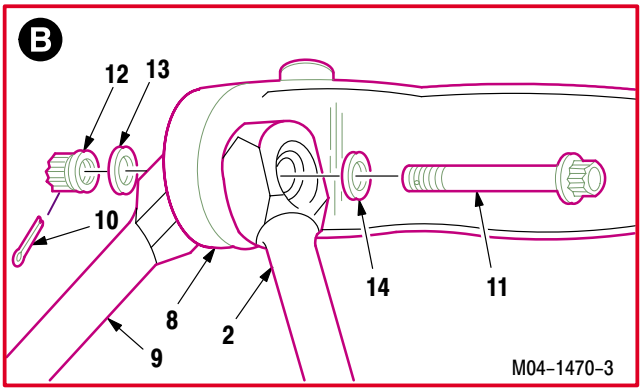
b. **Remove strut (2) from rotor support mast support base (8) and right aft side transmission rotor support strut assembly (9).**

(1) Remove and discard cotter pin (10).

(2) Hold bolt (11). Break torque on nut (12). Use telescopic bar and adapter.

(3) Remove nut (12) and washer (13). Use ratchet and 5-inch extension.

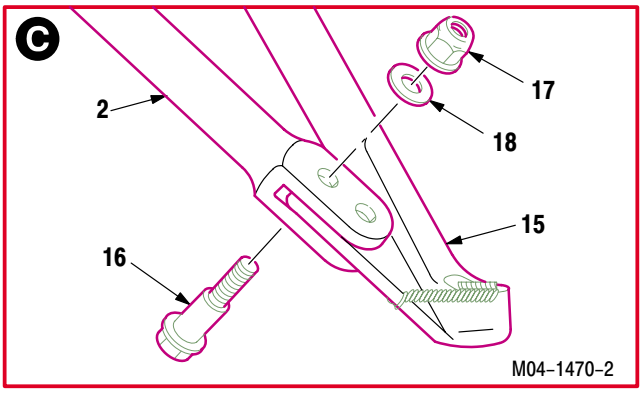
(4) Remove bolt (11) and washer (14) from strut (2), base (8), and strut (9).



c. **Remove strut (2) from forward center transmission strut (15).**

(1) Hold two bolts (16). Remove nuts (17) and washers (18). Use ratchet.

(2) Remove two bolts (16) from struts (2) and (15). Use driftpin.



2.93.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

GO TO NEXT PAGE

2.93. RIGHT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.93.5. Inspection

a. **Check strut and base for damage and corrosion** (para 2.11)**.**

b. **Check nuts and bolts for stripped threads.** None allowed.

c. **Check strut bushing bores.**

(1) Check for scoring, nicks, and scratches. Scoring, nicks, and scratches are acceptable if less than **0.020 INCH** deep.

(2) Check strut support bushing bores (four places. Maximum I.D. **0.7520 INCH**.

(3) Check mast support bushing bores (two places). Maximum I.D. **0.7510 INCH**.

2.95.6. Installation

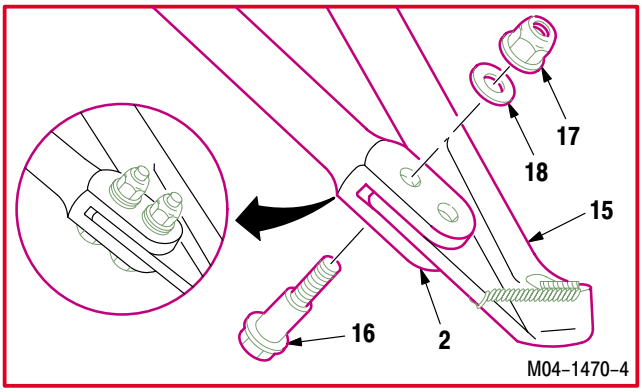
a. **Install strut (2) on strut (15).** Torque two nuts (17) to **600 INCH-POUNDS**.

(1) Install two bolts (16) in strut (2) and (15).

(2) Hold two bolts (16). Install washers (18) and nuts (17). Use ratchet.

(3) Torque nuts (17) to **600 INCH-POUNDS**. Use torque wrench and adapter.

(4) Check for maximum gap of **0.050 INCH** under washer (18) at bolt (16) head and nut (17) side. Replace bolt (16) if gap exceeds **0.050 INCH**.



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2.93. RIGHT FORWARD SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

b. **Install strut (2) on base (8) and (9).** Torque nut (12) **3360 to 3640 INCH-POUNDS.**

(1) Aline strut (2) with base (8) and strut (9). Use driftpin.

(2) Install bolt (11) through washer (14), strut (2), base (8), and strut (9).

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

(3) Hold bolt (11). Use box wrench.

(4) Ensure nut (12) run-on torque exceeds **50 INCH-POUNDS**. Use torque wrench.

(5) Install washer (13) and nut (12) on bolt (11) finger tight.

(6) Hold bolt (11). Torque nut (12) to **3360 INCH-POUNDS.** Use torque wrench, adapter, and 5-inch extension.

(7) Increase torque to aline cotter pin hole, but do not exceed **3640 INCH-POUNDS**.

(8) Install new cotter pin (10).

c. **Install two clamps (1) on strut (2).**

(1) Install clamp (1) on strut (2).

(2) Install screw (3) through clamps (1), (6), and (7).

(3) Hold screw (3). Install washer (5) and nut (4).

d. **Inspect (QA).**

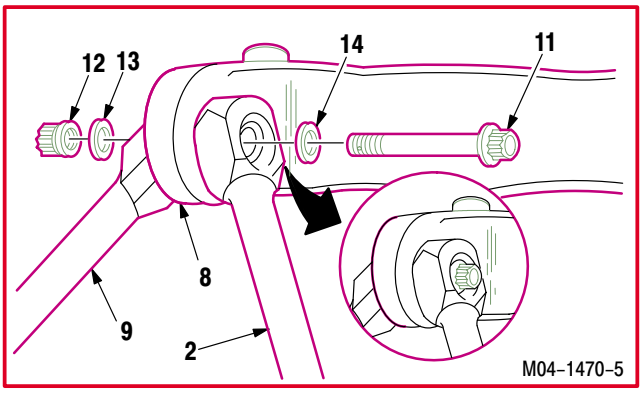
e. **Remove maintenance crane** (para 1.105)**.**

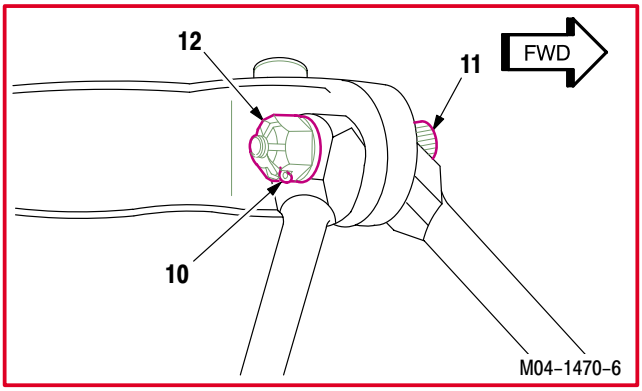
f. **Remove air vehicle sling** (para 1.79)**.**

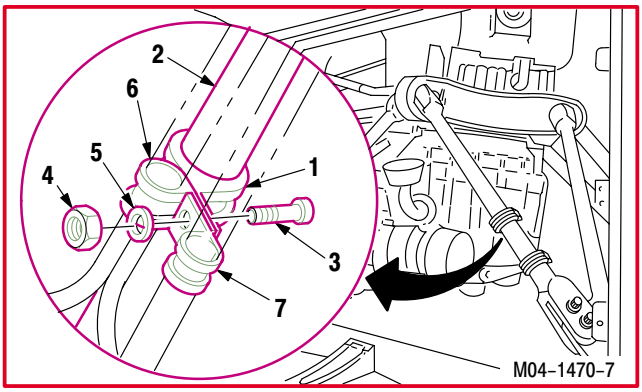
g. **Install air data system (ADS) mast** (para 6.90)**.**

h. **Install main deck fire/overheat detector** (para 12.32)**.**

i. **Install access panel R200** (para 2.2)**.**







END OF TASK

2.94. LEFT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.94.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.94.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
3/8 x 1/2-inch drive socket wrench adapter (item 6, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
3/4 x 6-inch long driftpin (item 113, App H)
5-inch x 1/2-inch drive socket wrench extension (item 124, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
15/16 & 1-inch box wrench (item 412, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)

Materials/Parts:

Cotter pin

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

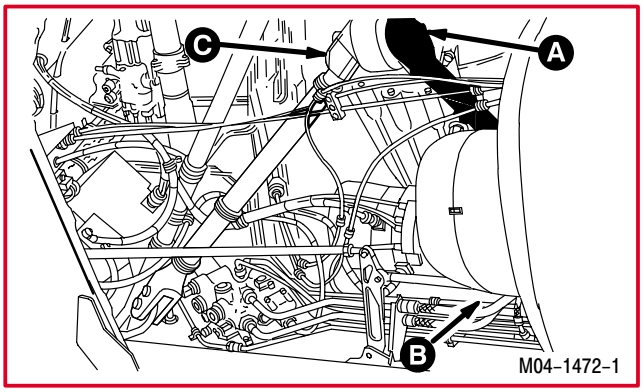
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panels L200 and L230 removed
12.32	Main deck fire/overheat detector removed
6.90	Air data system (ADS) mast removed
1.79	Air vehicle sling installed
1.97	Maintenance crane installed

WARNING

FLIGHT SAFETY PART

Rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.



GO TO NEXT PAGE

2.94. LEFT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

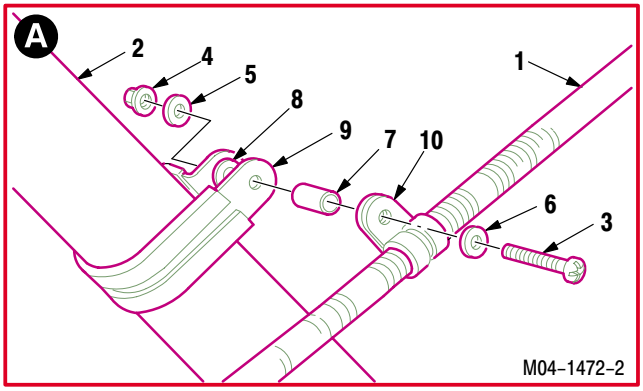
2.94.3. Removal

a. **Remove engine control cable (1) from left aft side transmission rotor support strut assembly (2).**

(1) Hold screw (3). Remove self-locking nut (4) and washer (5).

(2) Remove screw (3), washer (6), spacer (7), and washer (8) from loop clamps (9) and (10).

(3) Remove clamp (9) from strut (2).

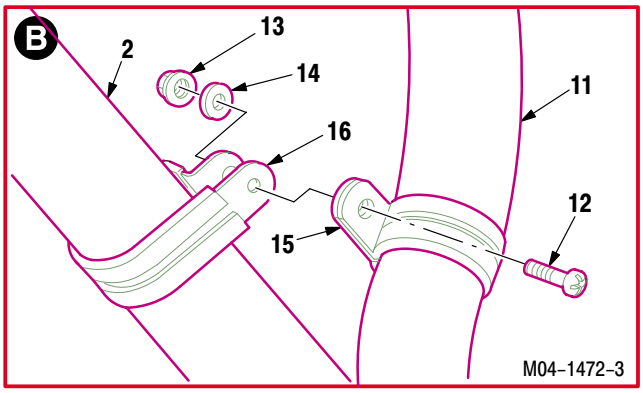


b. **Remove engine fuel hose (11) from strut (2).**

(1) Hold screw (12). Remove self-locking nut (13) and washer (14).

(2) Remove screw (12) from loop clamps (15) and (16).

(3) Remove clamp (16) from strut (2).



WARNING

Apply tension to the maintenance crane cable/lifting hook before removing strut. Failure to follow instructions may result in serious injury or death to maintenance personnel and/or serious damage to the helicopter. If injury occurs, seek medical aid.

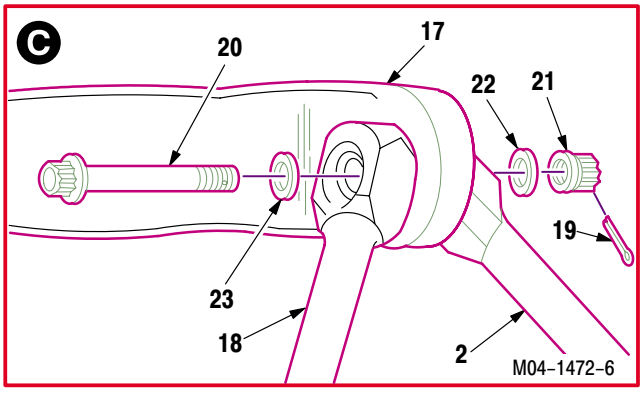
c. **Remove strut (2) from rotor support mast support base (17) and left forward side transmission rotor support strut assembly (18).**

(1) Remove and discard cotter pin (19).

(2) Hold bolt (20). Break torque on self-locking nut (21). Use telescopic bar and adapter.

(3) Remove nut (21) and washer (22). Use ratchet and 5-inch extension.

(4) Remove bolt (20) and washer (23) from strut (2), base (17), and strut (18).



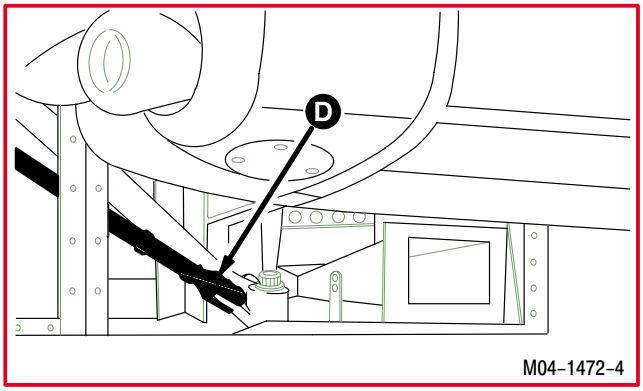
GO TO NEXT PAGE

2.94. LEFT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Remove strut (2) from aft center transmission strut (24).**

(1) Hold two adjustable fit bolts (25). Remove two nuts (26) and washers (27). Use ratchet and 5-inch extension.

(2) Remove two bolts (25) from struts (2) and (24).



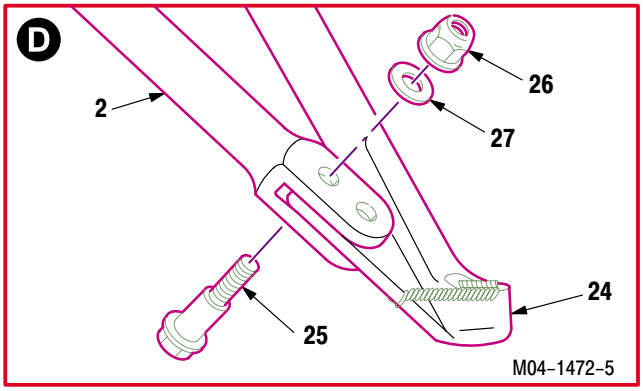
2.94.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.94.5. Inspection

a. **Check strut and base for damage and corrosion** (para 2.12)**.**

b. **Check nuts and bolts for stripped threads.** None allowed.



c. **Check strut bushing bores.**

(1) Check for scoring, nicks, and scratches. Scoring, nicks, and scratches are acceptable if less than **0.020 INCH** deep.

(2) Check strut support bushing bores (four places). Maximum I.D. **0.7520 INCH**.

(3) Check mast support bushing bores (two places). Maximum I.D. **0.7510 INCH**.

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2.94. LEFT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

2.94.6. Installation

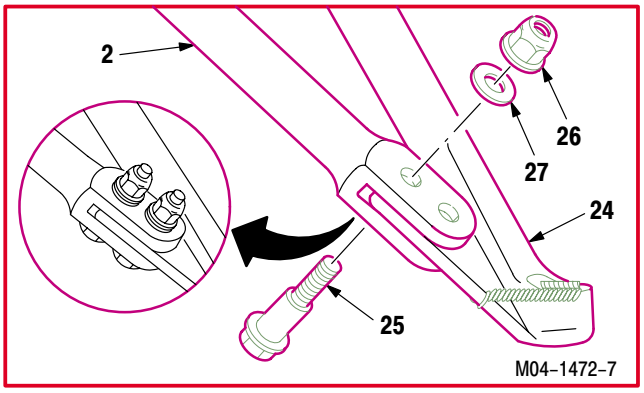
a. **Install strut (2) on strut (24).** Torque two nuts (26) to **600 INCH-POUNDS**.

(1) Install two bolts (25) in strut (2) and strut (24).

(2) Hold two bolts (25). Install two washers (27) and nuts (26).

(3) Torque two nuts (26) to **600 INCH-POUNDS**. Use torque wrench and adapter.

(4) Check for maximum gap of **0.050 INCH** under washer (27) at bolt (25) head and nut (26) side. Replace bolt (25) if gap exceeds **0.050 INCH**.



b. **Install strut (2) on base (17) and strut (18).** Torque nut (21) to **3360 to 3640 INCH-POUNDS**.

(1) Aline strut (2) on base (17) and strut (18). Use driftpin.

(2) Install bolt (20) through washer (23), strut (18), base (17), and strut (2).

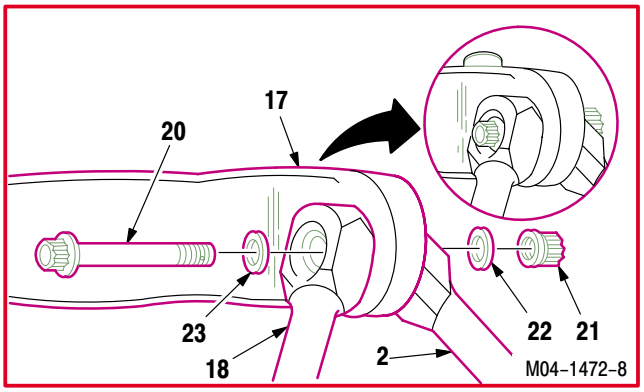
NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

(3) Hold bolt (20). Use box wrench.

(4) Ensure nut (21) has no less than **50 INCH-POUNDS** run-on torque. Use torque wrench.

(5) Install washer (22) and nut (21) on bolt (20) finger tight. Use ratchet and 5-inch extension.



GO TO NEXT PAGE

2.94. LEFT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

(6) Hold bolt (20). Use box wrench.

(7) Torque nut (21) to **3360 INCH-POUNDS**. Use torque wrench, adapter, and 5-inch extension.

(8) Increase torque to aline cotter pin hole, but do not exceed **3640 INCH-POUNDS**.

(9) Install new cotter pin (19).

c. **Install hose (11) on strut (2).**

(1) Install clamp (16) on strut (2).

(2) Install screw (12) through clamp (15) and (16).

(3) Hold screw (12). Install washer (14) and nut (13).

d. **Install cable (1) on strut (2).**

(1) Install clamp (9) on strut (2).

(2) Install screw (3) through washer (6), clamp (10), spacer (7), clamp (9), and washer (8).

(3) Hold screw (3). Install washer (5) and nut (4).

e. **Inspect (QA).**

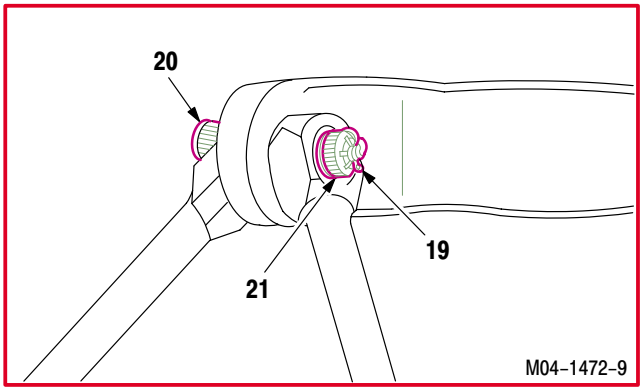
f. **Remove maintenance crane** (para 1.105)**.**

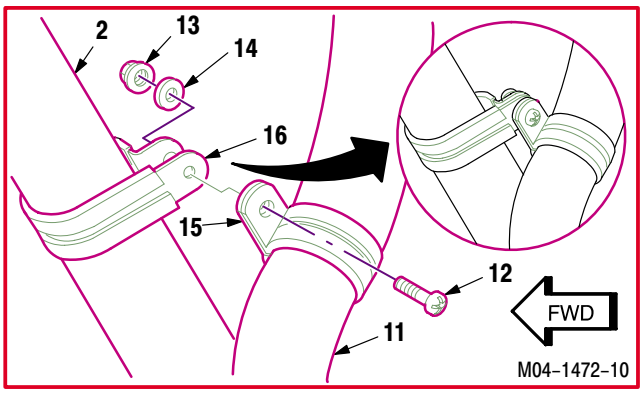
g. **Remove air vehicle sling** (para 1.79)**.**

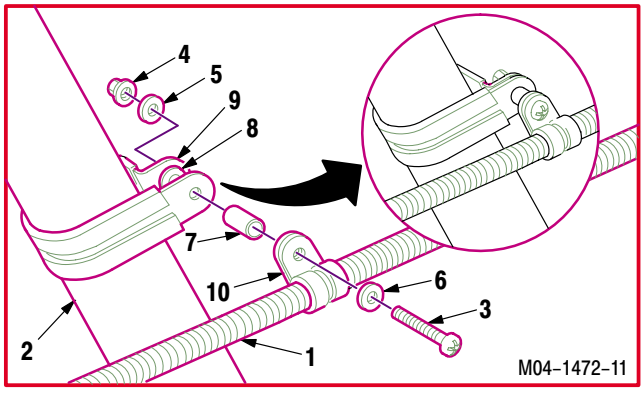
h. **Install air data system (ADS) mast** (para 6.90)**.**

i. **Install main deck fire/overheat detectors** (para 12.32)**.**

j. **Install access panels L200 and L230** (para 2.2)**.**







END OF TASK

2.95. RIGHT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.95.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.95.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
3/8 x 1/2-inch drive socket wrench adapter (item 6, App H)
44-inch x 3/4-inch drive telescopic bar (item 29, App H)
3/4 x 6-inch long driftpin (item 113, App H)
5-inch x 1/2-inch drive socket wrench extension (item 124, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
15/16 & 1-inch box wrench (item 412, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)

Materials/Parts:

Cotter pin

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

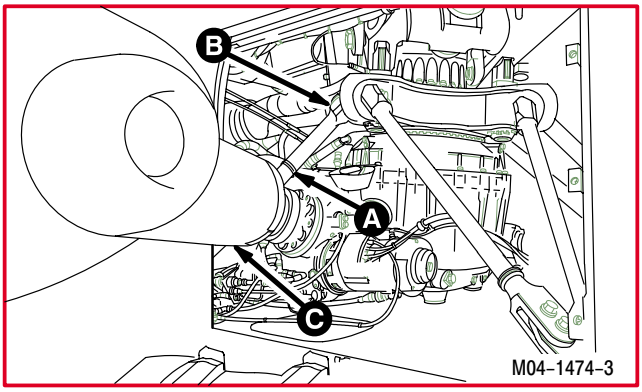
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panels R200 and R230 removed
12.32	Main deck fire/overheat detector removed
6.90	Air data system (ADS) mast removed
1.79	Air vehicle sling installed
1.97	Maintenance crane installed

WARNING

FLIGHT SAFETY PART

Rotor support mast support base is a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.



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2.95. RIGHT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

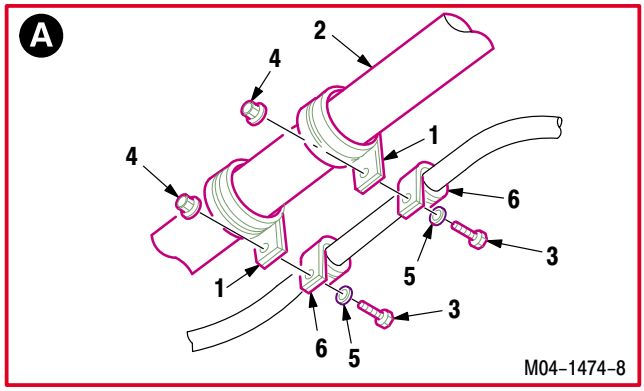
2.95.3. Removal

a. **Remove two loop clamps (1) from right aft side transmission rotor support strut assembly (2).**

(1) Hold two screws (3). Remove nuts (4).

(2) Remove two screws (3) and washers (5) from clamps (1) and (6).

(3) Remove two clamps (1) from strut (2).



WARNING

Apply tension to the maintenance crane cable/lifting hook before removing strut. Failure to follow instructions may result in serious injury or death to maintenance personnel and/or serious damage to the helicopter. If injury occurs, seek medical aid.

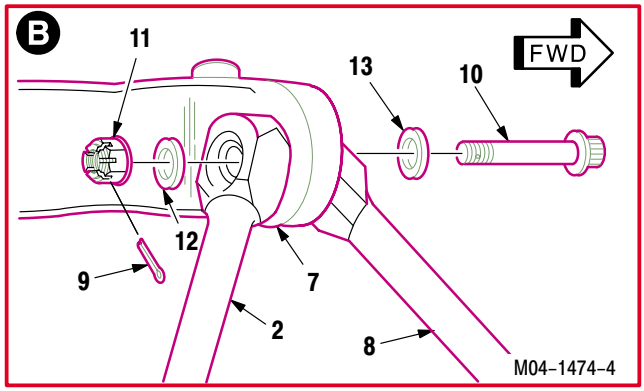
b. **Remove strut (2) from rotor support mast support base (7) and right forward side transmission rotor support strut assembly (8).**

(1) Remove and discard cotter pin (9).

(2) Hold bolt (10). Break torque on nut (11). Use telescopic bar and adapter.

(3) Remove washer (12) and nut (11). Use ratchet and 5-inch extension.

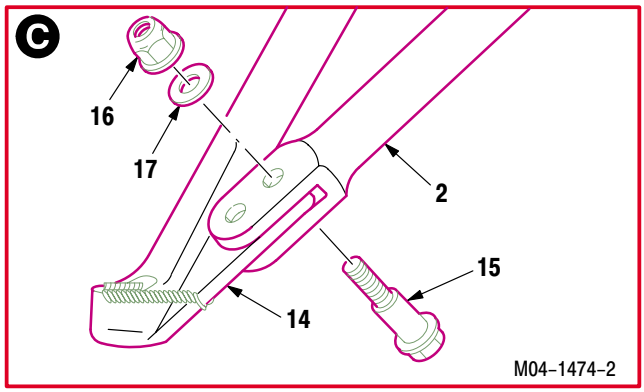
(4) Remove washer (13) and bolt (10) from strut (2), base (7), and strut (8).



c. **Remove strut (2) from aft center strut (14).**

(1) Hold two adjustable fit bolts (15). Remove two self-locking nuts (16) and washers (17).

(2) Remove two bolts (15) from struts (2) and (14).



2.95.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

GO TO NEXT PAGE

2.95. RIGHT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION

2.95.5. Inspection

a. **Check struts and base for damage and corrosion** (para 2.11)**.**

b. **Check nuts and bolts for stripped threads.** None allowed.

c. **Check strut bushing bores.**

(1) Check for scoring, nicks, and scratches. Scoring, nicks, and scratches are acceptable if less than **0.020 INCH** deep.

(2) Check strut support bushing bores (four places). Maximum I.D. **0.7520 INCH**.

(3) Check mast support bushing bores (two places). Maximum I.D. **0.7510 INCH**.

2.95.6. Installation

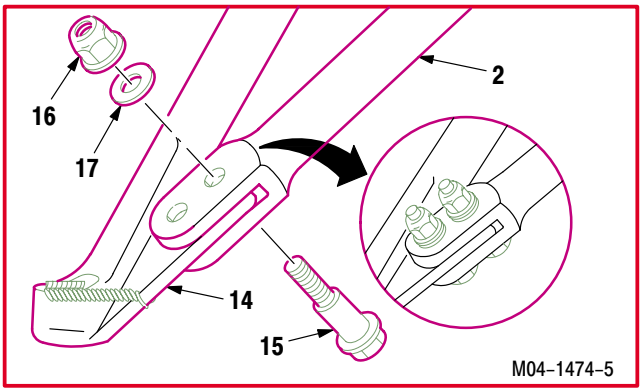
a. **Install strut (2) on strut (14).** Torque two nuts (16) to **600 INCH-POUNDS**.

(1) Install two bolts (15) through struts (2) and (14).

(2) Hold two bolts (15). Install washers (17) and nuts (16).

(3) Torque nuts (16) to **600 INCH-POUNDS**. Use torque wrench and adapter.

(4) Check for maximum gap of **0.050 INCH** under washer (17) at bolt (15) head and nut (16) side. Replace bolt (15) if gap exceeds **0.050 INCH**.



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2.95. RIGHT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

b. **Install strut (2) on base (7) and strut (8).** Torque nut (11) **3360 to 3640 INCH-POUNDS**.

(1) Aline strut (2) with base (7) and strut (8). Use driftpin.

(2) Install bolt (10) through washer (13), strut (8), base (7), and strut (2).

(3) Hold bolt (10). Use box wrench.

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

(4) Ensure nut (11) has no less than **50 INCH-POUNDS** run-on torque. Use torque wrench.

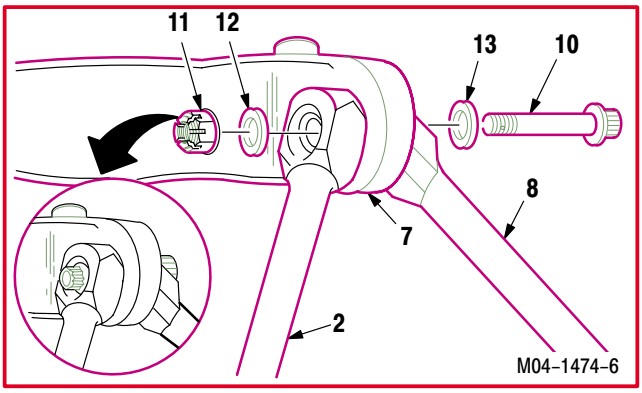
(5) Install washer (12) and nut (11) on bolt (10) finger tight.

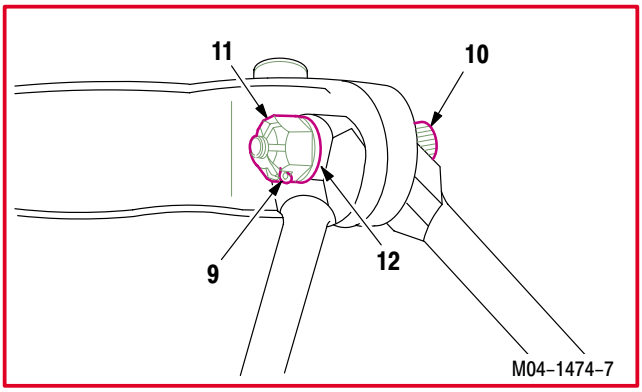
(6) Hold bolt (10). Use box wrench.

(7) Torque nut (11) to **3360 INCH-POUNDS**. Use torque wrench, adapter, and 5-inch extension.

(8) Increase torque to aline cotter pin hole, but do not exceed **3640 INCH-POUNDS**.

(9) Install new cotter pin (9).





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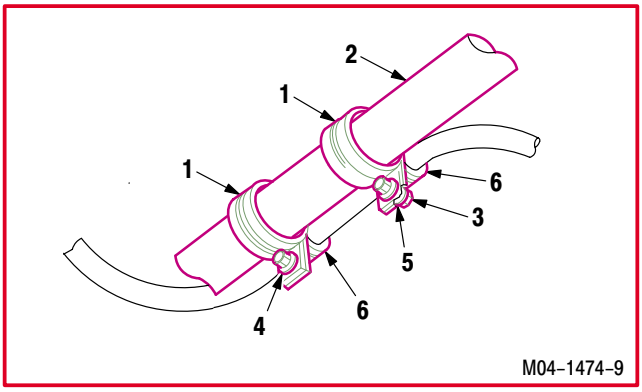
2.95. RIGHT AFT SIDE TRANSMISSION ROTOR SUPPORT STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

c. **Install two clamps (1) on strut (2).**

(1) Aline mounting holes of clamps (1) and (6).

(2) Install two screws (3) through washers (5), clamps (6), and clamps (1).

(3) Hold two screws (3). Install two nuts (4) on screws (3).



d. **Inspect (QA).**

e. **Remove maintenance crane** (para 1.105)**.**

f. **Remove air vehicle sling** (para 1.79)**.**

g. **Install air data system (ADS) mast** (para 6.90)**.**

h. **Install main deck fire/overheat detector** (para 12.32)**.**

i. **Install access panels R200 and R230** (para 2.2)**.**

END OF TASK

2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION

2.95A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.95A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
1 1/4-inch blade putty knife (item 199, App H)
Multimeter (item 215, App H)
3-piece spatula set (item 337, App H)

Materials/Parts:

Sealing compound (item 176, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

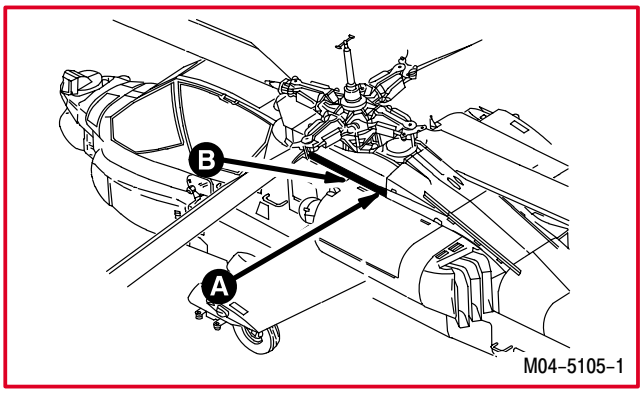
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TM 55-1500-345-23

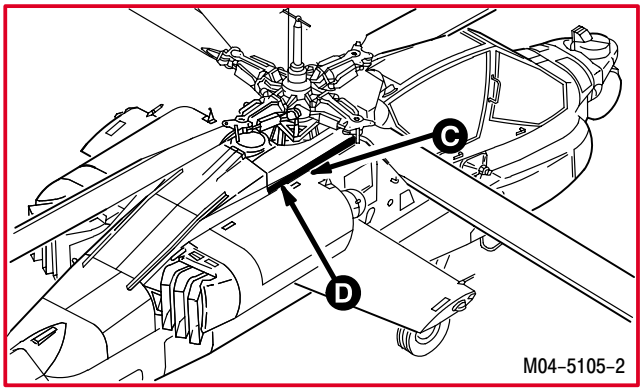
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Panel R200 and fairing T205R removed
2.123	Left hand or right hand engine nose gear box fairing and shroud removed
13.19	Air duct No. 3 removed (left hand side)
13.20	Air duct No. 4 removed (left hand side)

NOTE

This task typical for left hand and/or right hand longeron except where noted.





GO TO NEXT PAGE

2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

2.95A.3. Removal

a. **Detach connector (P60 right hand or P61 left hand) (1) from receptacle (J60 right hand or J61 left hand) (2).**

NOTE

- When removing wire harness support brackets from longeron, use steps b. thru d. for left hand and steps e. thru g. for right hand.
- Fairing is removed with wire harness receptacles attached.

b. **Remove transmission access panel support fairing (3) from firewall (4).**

(1) Remove two screws (5) and washers (6).

(2) Remove four bolts (7) and washers (8).

(3) Remove fairing (3) from firewall (4).

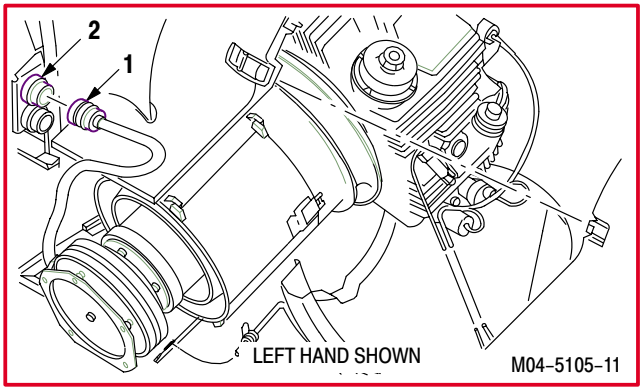
NOTE

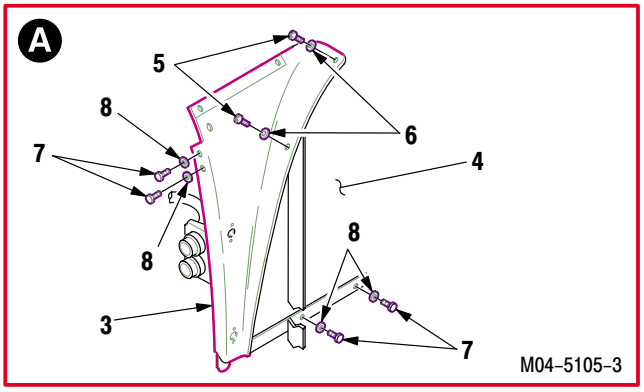
Support brackets are removed from longeron with wire harness, tube, and hose clamps installed.

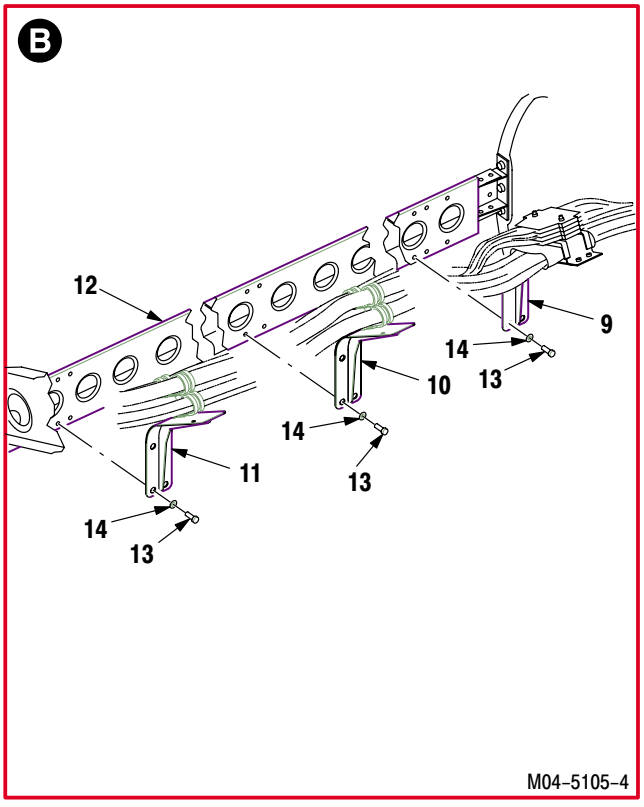
c. **Remove three wire harness support brackets, (9), (10), and (11) from left hand longeron (12).**

(1) Remove twelve screws (13) and washers (14) from longeron (12) and support brackets (9), (10), and (11).

(2) Remove brackets (9), (10), and (11) from longeron (12).







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2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

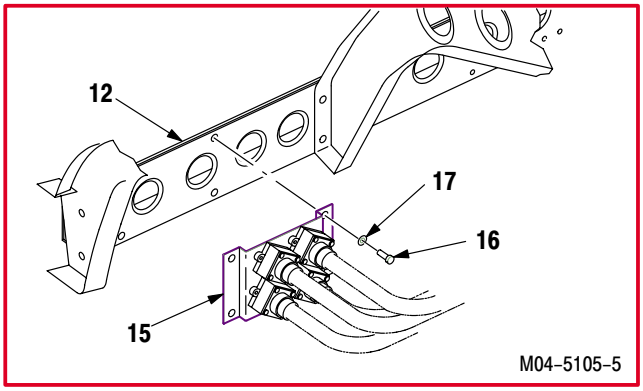
NOTE

Data link bracket is removed with receptacles installed and connectors attached.

d. **Remove data link bracket (15) from longeron (12).**

(1) Remove four screws (16) and washers (17) from bracket (15) and longeron (12).

(2) Remove bracket (15) from longeron (12).



NOTE

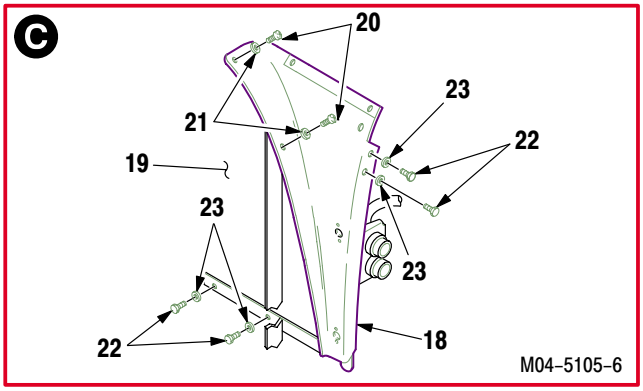
Fairing is removed with wire harness receptacles attached.

e. **Remove transmission access panel support fairing (18) from firewall (19).**

(1) Remove two screws (20) and washers (21).

(2) Remove four bolts (22) and washers (23).

(3) Remove fairing (18) from firewall (19).



NOTE

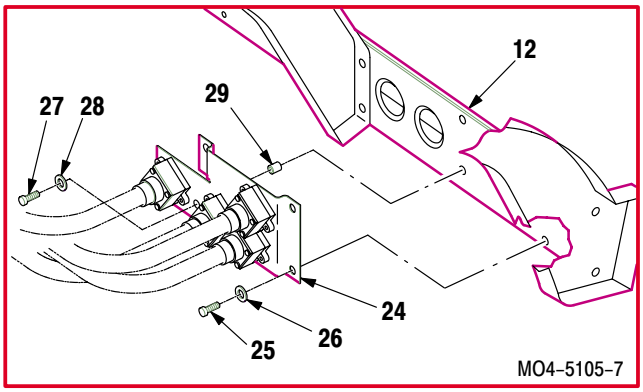
Data link bracket is removed with receptacles installed and connectors attached.

f. **Remove data link bracket (24) from longeron (12).**

(1) Remove three screws (25), and washers (26), from bracket (24) and longeron (12).

(2) Remove screw (27), washer (28), and spacer (29) from bracket (24) and longeron (12).

(3) Remove bracket (24) from longeron (12).



GO TO NEXT PAGE

2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

NOTE

Support brackets are removed from longeron with wire harness clamps installed.

g. **Remove three wire harness support brackets, (30), (31), and (32) from right hand longeron (12).**

(1) Remove three screws (33), washers (34), clamps (35), and spacers (36) from brackets (30), (31), (32), and longeron (12).

(2) Remove nine screws (37) and washers (38) from brackets (30), (31), (32), and longeron (12).

(3) Remove brackets (30), (31), and (32) from longeron (12).

NOTE

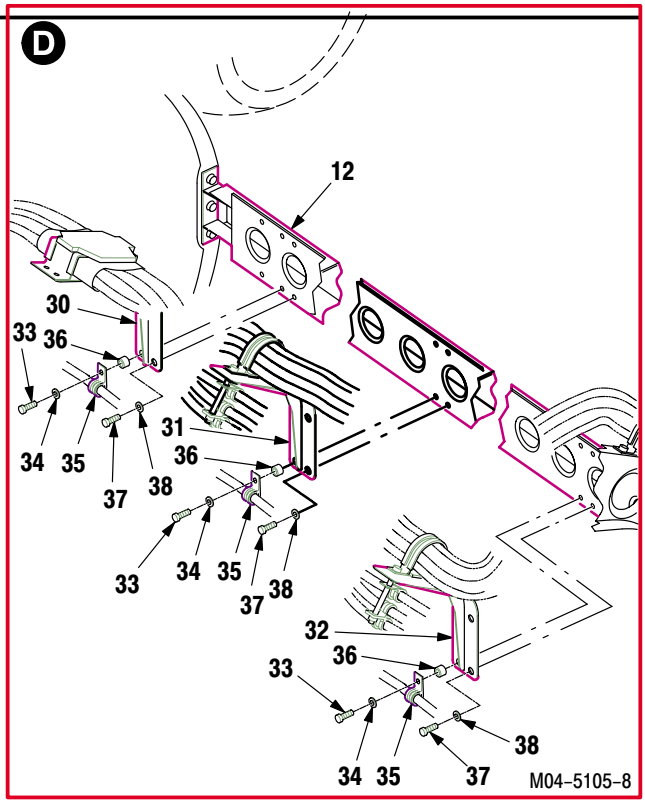
Left and right hand longeron removal typical.

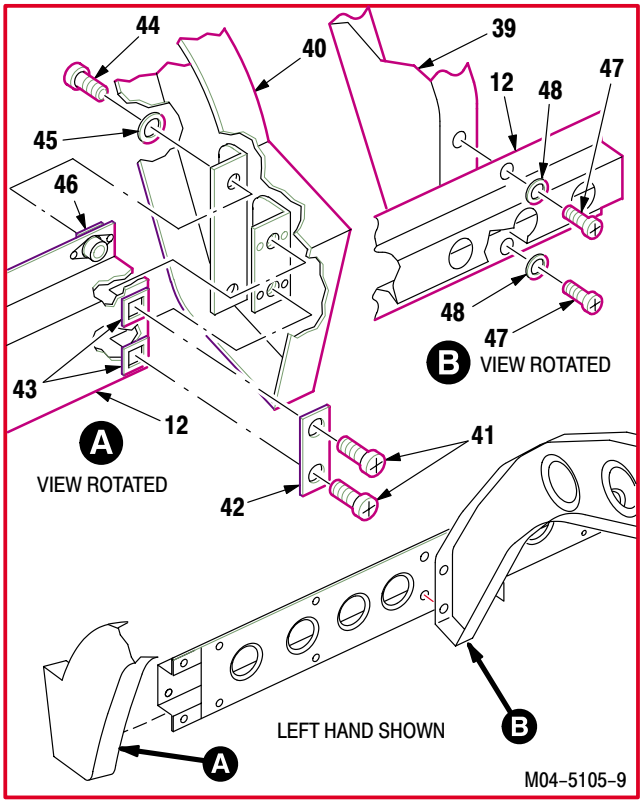
h. **Remove longeron (12) from forward cross over support (39), and aft cross over support (40).**

(1) Remove two screws (41), retainer (42), and pads (43) from longeron (12) and aft cross over support (40).

(2) Remove two screws (44), washers (45), and pads (46) from longeron (12) and aft cross over support (40).

(3) Remove two screws (47) and washers (48) from longeron (12) and forward cross over support (39).





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2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

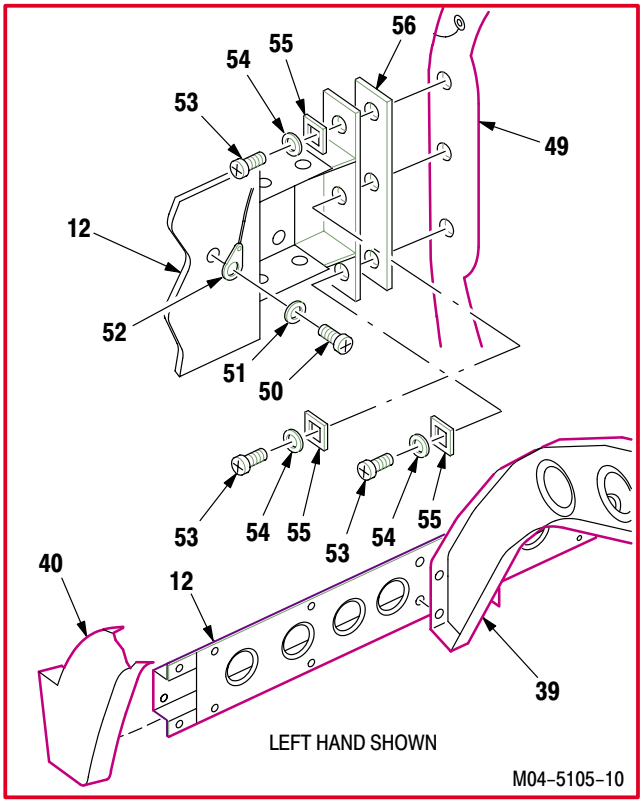
i. **Remove longeron (12) from fuselage (49).**

(4) Remove screw (50), washer (51), and jumper (52) from longeron (12).

(5) Remove three screws (53), washers (54), and pads (55) from longeron (12) and fuselage (49).

(6) Remove longeron (12) and pad (56) from fuselage (49).

(7) Remove longeron (12) from cross over supports (39) and (40).



2.95A.4. Cleaning

a. **Clean old sealant from mounting surface of support brackets and longeron.** Use putty knife.

b. **Clean removed and attaching parts** (para 1.47)**.**

2.95A.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check nutplates for loose rivets and stripped or damaged threads** (TM 1-1500-204-23)**.**

c. **Check panel support fairing and longeron mating surface for damaged EMI conductive coating.** Repair damage (para 2.11).

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2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

2.95A.6. Installation

NOTE

Left and right hand longeron installation typical.

a. **Install longeron (12) on cross over supports (40) and (39).**

(1) Install two screws (47), through washers (48) and longeron (12) in forward crossover support (39).

(2) Install two screws (44) through washers (45), pads (46), and longeron (12) in aft cross over support (40).

(3) Install two screws (41) through retainer (42), two pads (43), and longeron (12) in cross over support (40).

b. **Install longeron (12) on fuselage (49).**

(4) Install screw (50) through washer (51) and jumper (52) in longeron (12).

(5) Aline longeron (12) with pad (56) and fuselage (49).

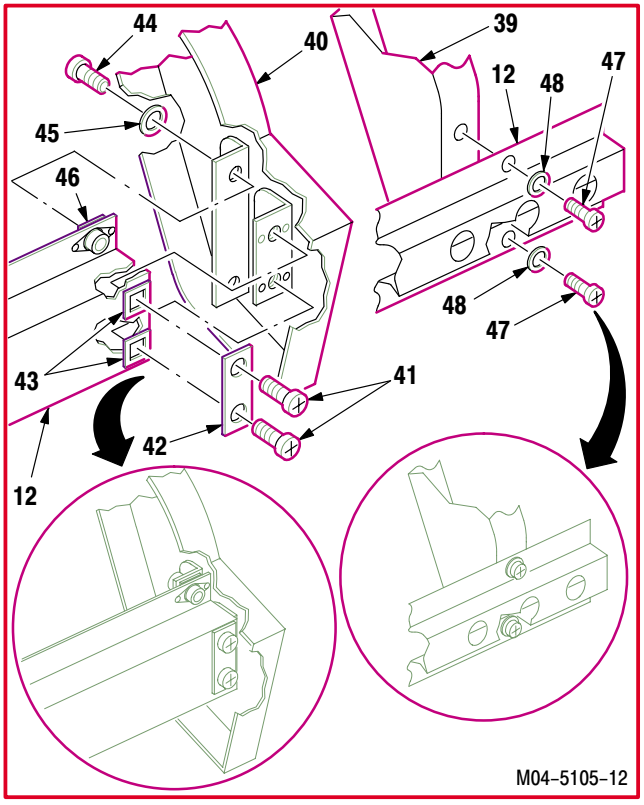
(6) Install three screws (53) through washers (54), pads (55), longeron (12), and pad (56) in fuselage (49).

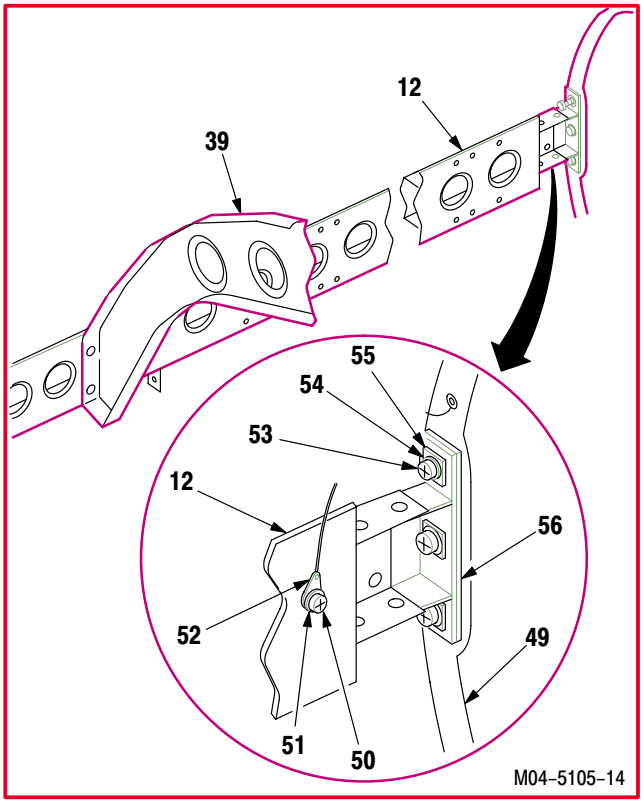
c. **Perform electrical bond check on attaching parts** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 ohm** or less. Use multimeter.



d. **Seal longeron (12) and forward cross over support (39).** Use sealing compound (item 176, App F) and spatula set.





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2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

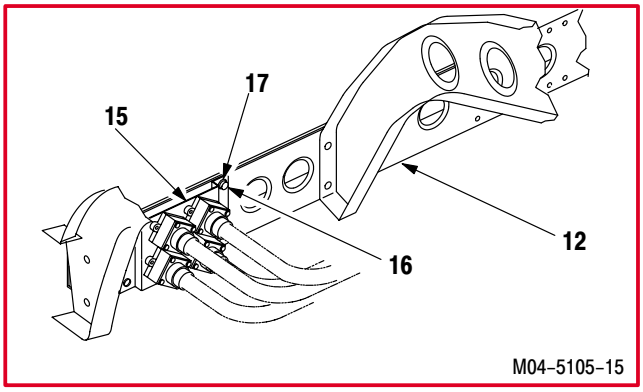
NOTE

When instaling wire harness support brackets on longeron, use steps e. thru i. for left hand and steps j. thru n. for right hand.

e. **Install data link bracket (15) on longeron (12)**

(1) Aline bracket (15) on longeron (12).

(2) Install four screws (16) through washers (17) and bracket (15) in longeron (12).



f. **Perform electrical bond check on attaching parts** (TM 55-1500-323-24)**.**

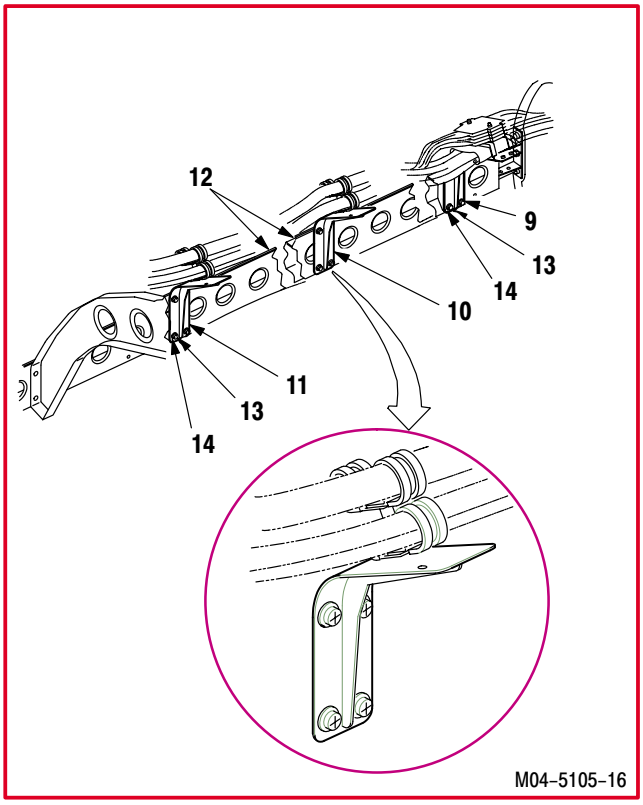
(1) Bond shall be **0.1 ohm** or less. Use multimeter.

g. **Seal edge of bracket (15) and longeron (12).** Use sealing compound (item 176, App F) and spatula set.

h. **Install three wire harness support brackets (11), (10), and (9) on longeron (12).**

(1) Aline three brackets (11), (10), and (9) on longeron (12).

(2) Install twelve screws (13) through washers (14) and brackets (11), (10), and (9) in longeron (12).



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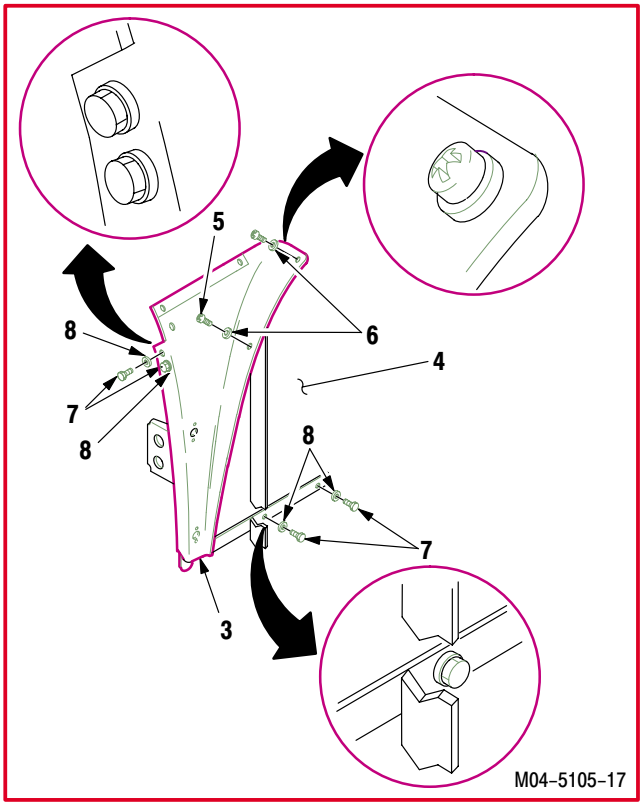
2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

i. **Install fairing (3) on firewall (4).**

(1) Aline fairing (3) on firewall (4).

(2) Install two screws (5) through washers (6) and fairing (3) in firewall (4).

(3) Install four bolts (7) through washers (8) and fairing (3) in firewall (4).



j. **Install data link bracket (24) on longeron (12).**

(1) Aline bracket (24) on longeron (12).

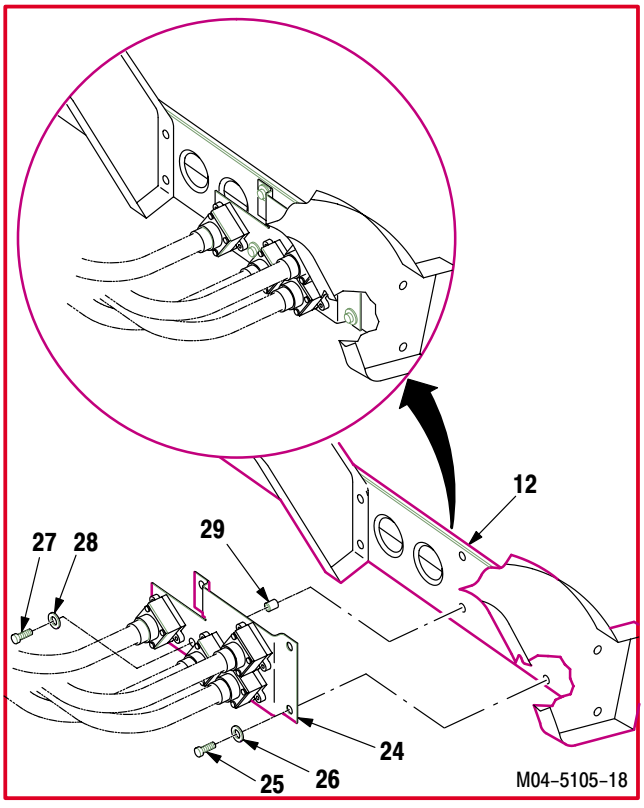
(2) Install screw (27) through washer (28), bracket (24), and spacer (29) in longeron (12).

(3) Install three screws (25) through washers (26) and bracket (24) in longeron (12).

k. **Perform electrical bond check on attaching parts** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 ohm** or less. Use multimeter.

l. **Seal edge of bracket (24) and longeron (12).** Use sealing compound (item 176, App F) and spatula set.



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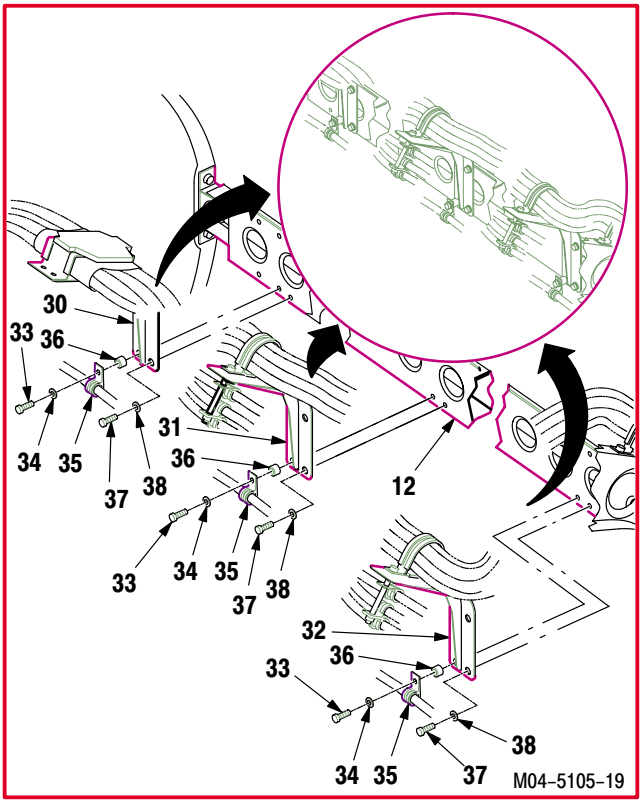
2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

m. **Install three wire harness support brackets (32), (31), and (30) on longeron (12).**

(1) Aline three brackets (32), (31), and (30) on longeron (12).

(2) Install nine screws (37) through washers (38) and brackets (32), (31), and (30) in longeron (12).

(3) Install three screws (33) through washers (34), clamps (35), spacers (36), and brackets (32), (31), and (30) in longeron (12).

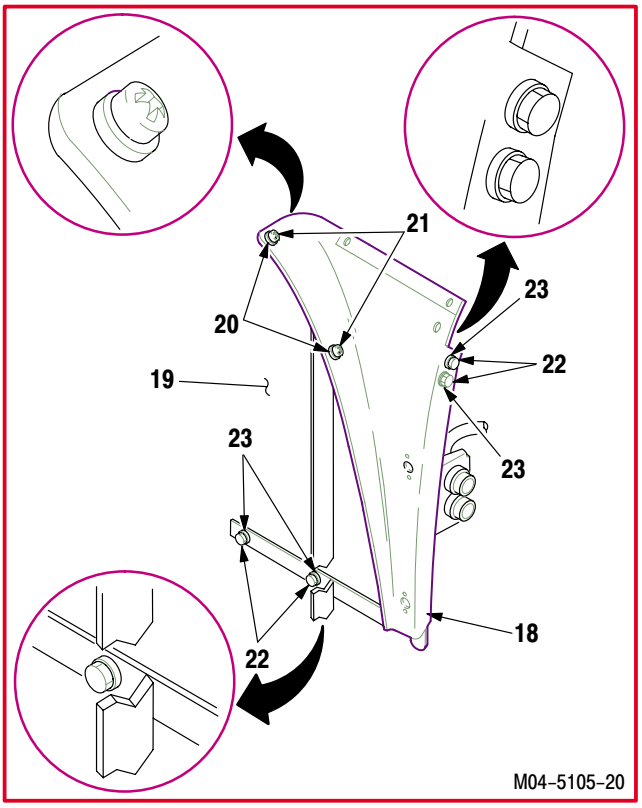


n. **Install fairing (18) on firewall (19).**

(1) Aline fairing (18) on firewall (19).

(2) Install two screws (20) through washers (21) and fairing (18) in firewall (19).

(3) Install four bolts (22) through washers (23) and fairing (18) in firewall (19).



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2.95A. LEFT HAND OR RIGHT HAND LONGERON REMOVAL/INSTALLATION – continued

o. **Attach connector (P60 right hand or P61 left hand) (1) to receptacle (J60 right hand or J61 left hand) (2).**

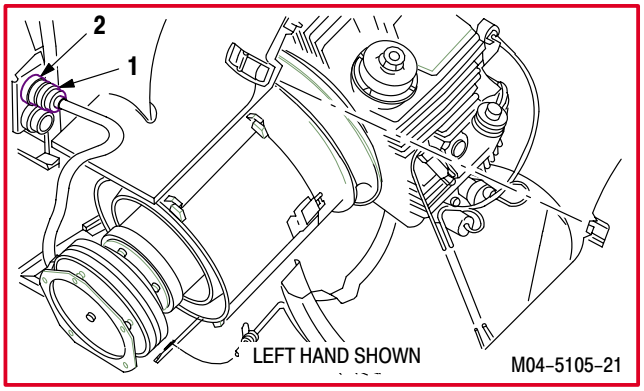
p. **Inspect (QA).**

q. **Install air duct No. 4 (left hand only)** (para 13.20)**.**

r. **Install air duct No. 3 (left hand only)** (para 13.19)**.**

s. **Install panel R200 and fairing T205R** (para 2.2)**.**

t. **Install left hand or right hand engine nose gear box fairing and shroud** (para 2.123)**.**



END OF TASK

2.95B. MAIN ROTOR SUPPORT STRUT BUSHING REPLACEMENT (AVIM)

2.95B.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.95B.2. Initial Setup

Tools:

Aircraft maintenance tool kit (item 372, App H)
Aircraft maintenance tool kit (item 373, App H)
Light duty laboratory apron (item 27, App H)
Fly cutter assembly (item 104, App H)
Fluorescent inspection kit (item 138, App H)
Chemical protective gloves (item 154, App H)
Heat protective gloves (item 155, App H)
Electric gun type heater (item 163, App H)
0.001 - 0.200-inch dial indicator (item 176, App H)
14-quart utility pail (item 222, App H)
Hand operated arbor press (item 234, App H)
Universal puller kit (item 241, App H)
Adjustable hand reamer (item 253A, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
68D Aircraft Powertrain Repairer/NDI
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Adhesive (item 14A, App F)
Brush (item 34, App F)
Carbon dioxide (item 40, App F)
Corrosion resistant coating (item 64A, App F)
Sealing compound (item 158A, App F)

References:

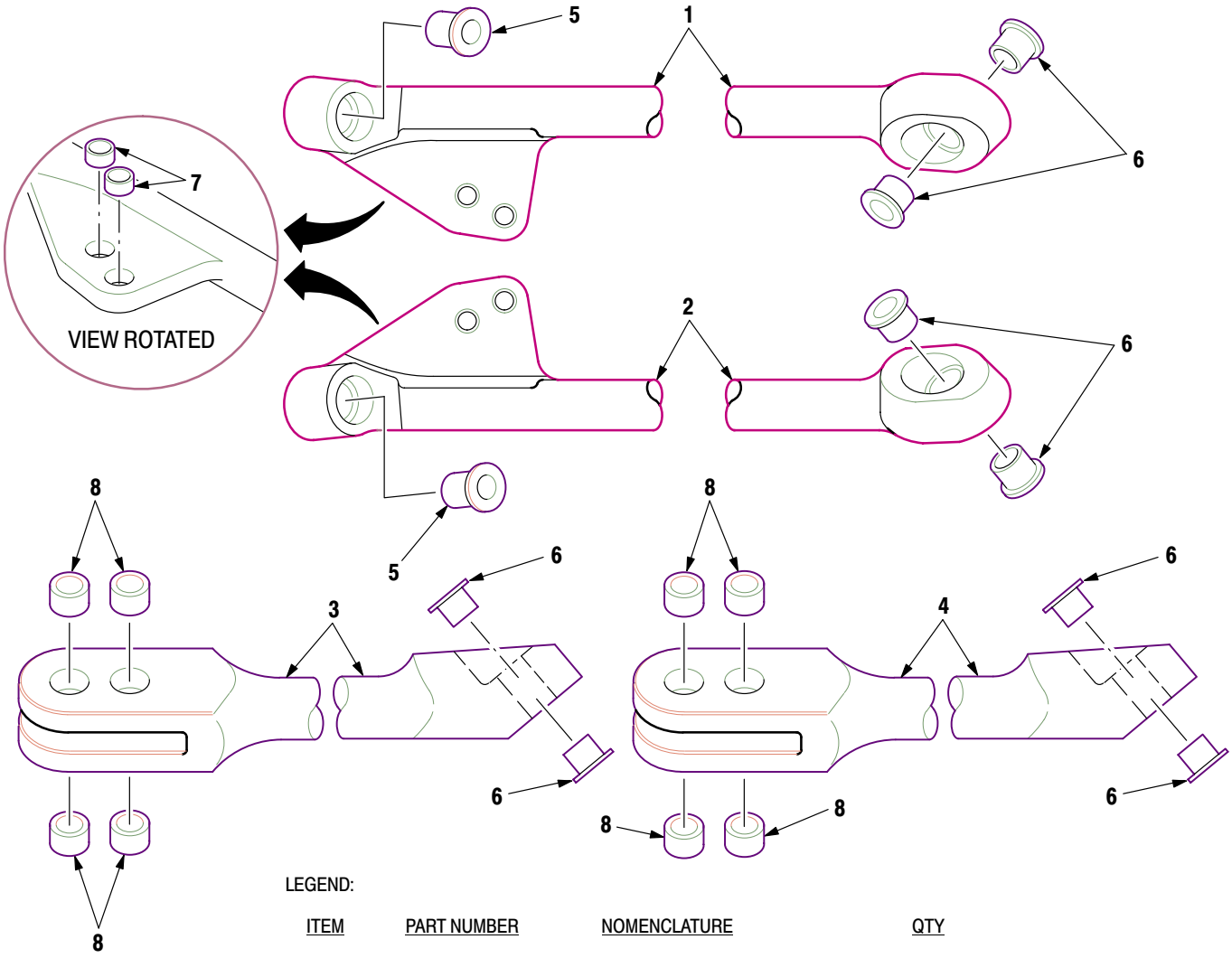
TM 55-1500-322-24
TM 55-1500-335-23
TM 55-1500-345-23

NOTE

This task is typical for bushing removal and installation procedures for main rotor support struts. Refer to Table 2-1 to determine the applicable parts, mating bore ID, bushing OD, and applicable notes.

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2.95B. MAIN ROTOR SUPPORT STRUT BUSHING REPLACEMENT (AVIM) – continued



LEGEND:

ITEM	PART NUMBER	NOMENCLATURE	QTY
1	7–311160055–1 (SHOWN)	STRUT ASSEMBLY	1
	7–311160055–2 (OPPOSITE)	STRUT ASSEMBLY	1
2	7–311160085–1 (SHOWN)	STRUT ASSEMBLY	1
	7–311160085–2 (OPPOSITE)	STRUT ASSEMBLY	1
3	7–311160060–1 (SHOWN)	STRUT ASSEMBLY	1
	7–311160060–2 (OPPOSITE)	STRUT ASSEMBLY	1
4	7–311160070–1 (SHOWN)	STRUT ASSEMBLY	1
	7–311160070–2 (OPPOSITE)	STRUT ASSEMBLY	1
5	7–211160047	BUSHING	4
6	HS4173B12P0.67	BUSHING	16
7	NAS76A12–020P	BUSHING	8
8	NAS76A12–022P	BUSHING	16

NOTE:

SEE TABLE 2-1 FOR INSTALLATION PROCEDURES

M04–5141–1

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2.95B. MAIN ROTOR SUPPORT STRUT BUSHING REPLACEMENT (AVIM) – continued

TABLE 2-1

Rotor Support Strut P/N	Bushing P/N	Mating Bore ID		Bushing OD		Bushing ID		Notes
		Min	Max	Min	Max	Min	Max	
7-311160055-1/-2 or 7-311160085-1/-2	NAS76A12-022P	0.9373	0.9378	0.9383	0.9393	0.7500	0.7515	1, 2, 4, 6, 8, 10, 11
	7-211160047	0.9005	0.9010	0.8998	0.9002	0.7500	0.7505	1, 2, 4, 5, 7, 9, 11
	HS4173B12P0.67	0.8745	0.8755	0.8760	0.8765	0.7500	0.7505	1, 2, 3, 4, 5, 7, 10, 11
7-311160060-1/-2 or 7-311160070-1/-2	HS4173B12P0.67	0.8745	0.8755	0.8760	0.8765	0.7500	0.7505	1, 2, 3, 4, 5, 7, 10, 11
	NAS76A12-020P	0.9373	0.9378	0.9383	0.9393	0.7500	0.7515	1, 2, 3, 4, 6, 8, 10, 11

NOTE

1. All dimensions in inches.
2. Interference fit required: **0.0005/0.0020 INCH**.
3. Bushings must be coaxial to each other after installation; therefore the opposite facing bushing must be replaced.
4. Use carbon dioxide (item 40, App F) (dry ice). If necessary, use heater.
5. Go to step 2.95B.3.a when removing flanged bushing(s).
6. Go to step 2.95B.3.b when removing bushing(s) from strut fork and strut fork support.
7. Go to step 2.95B.6.a when installing flanged bushing(s).
8. Go to step 2.95B.6.b when installing bushing(s) in strut fork and strut fork support.
9. Install bushing using adhesive (item 14A, App F).
10. Install bushing using sealing compound (item 158A, App F).
11. No paint/primer allowed in holes or under flange.

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2.95B. MAIN ROTOR SUPPORT STRUT BUSHING REPLACEMENT (AVIM) – continued

2.95B.3. Removal

CAUTION

Cutting bushing(s) too deep will result in damage to strut mating bore.

a. **Remove bushing(s) (1) from strut (2)** (TM 55-1500-322-24)**.**

(1) Cut bushing(s) (1) to thin cell (3) and collapse. Use fly cutter and hand reamer.

(2) Remove bushing(s) (1) from strut (2). Use puller kit.

(3) Discard bushing(s) (1).

CAUTION

Pressing bushing(s) from strut without supporting strut fork, will result in damage to strut.

b. **Remove bushing(s) (4) from strut (5)** (TM 55-1500-322-24)**.**

(1) While supporting strut fork (6) or strut fork support (7), press bushing(s) (4) from strut (5). Use arbor press.

(2) Discard bushing(s) (4).

2.95B.4. Cleaning

a. **Clean strut bushing mating bore(s)** (para 1.47)**.**

2.95B.5. Inspection

a. **Check strut for corrosion** (para 1.49)**.**

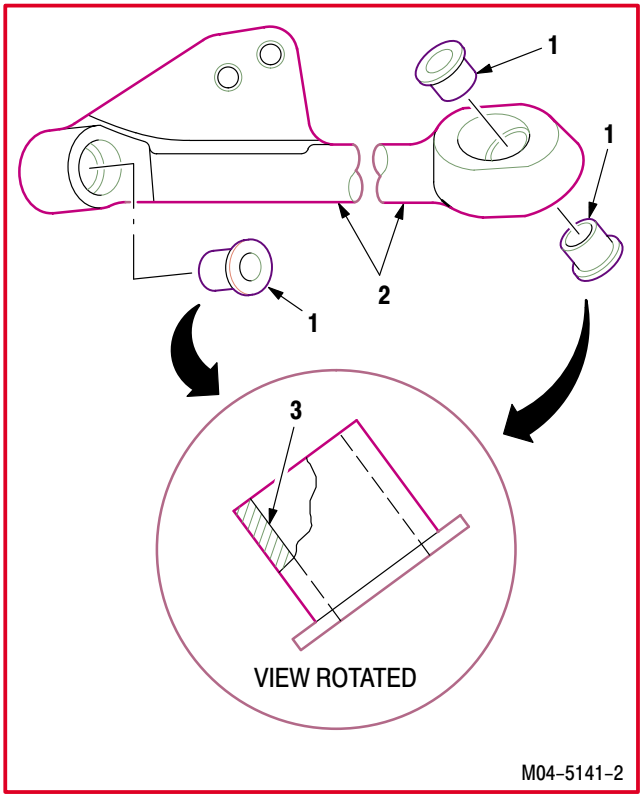
b. **Check strut for damage** (para 2.11)**.**

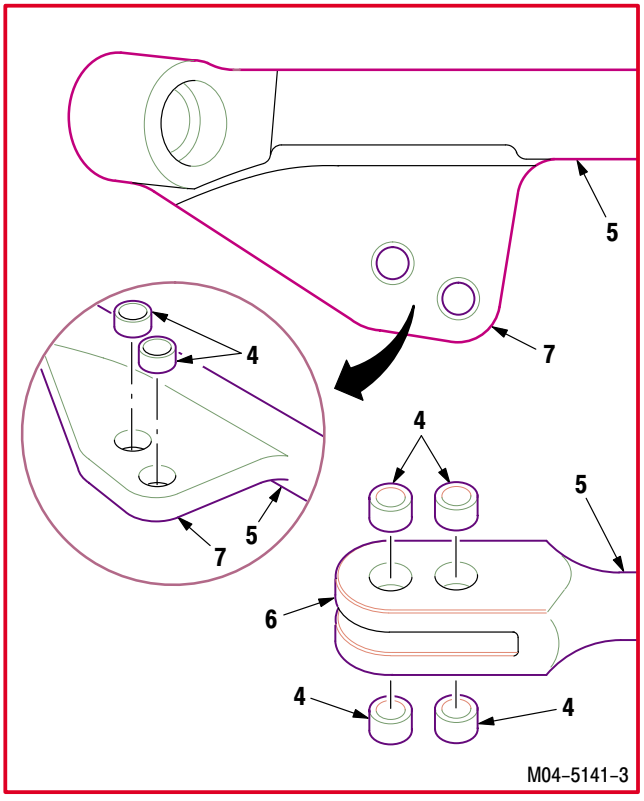
c. **Check strut mating bore diameter.**

(1) Diameter shall not exceed maximum listed in Table 2-1. Use dial indicator.

(2) Check for scoring, nicks, and scratches. Scoring, nicks, and scratches are acceptable if less than **0.020 INCH** deep.

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2.95B. MAIN ROTOR SUPPORT STRUT BUSHING REPLACEMENT (AVIM) – continued

d. **Perform penetrant inspection on strut mating bore.** Use fluorescent inspection kit (TM 55-1500-335-23).

2.95B.6. Installation



CAUTION

- Install bushing(s) with care or damage to surface finish on flange will result.
- Do not heat ferrous parts over 350 °F (177 °C) or nonferrous parts over 250 °F (121 °C).
- Do not cool bearings and bushings below -321 °F (-196 °C).

a. **Install bushing(s) (1) in strut (2).**

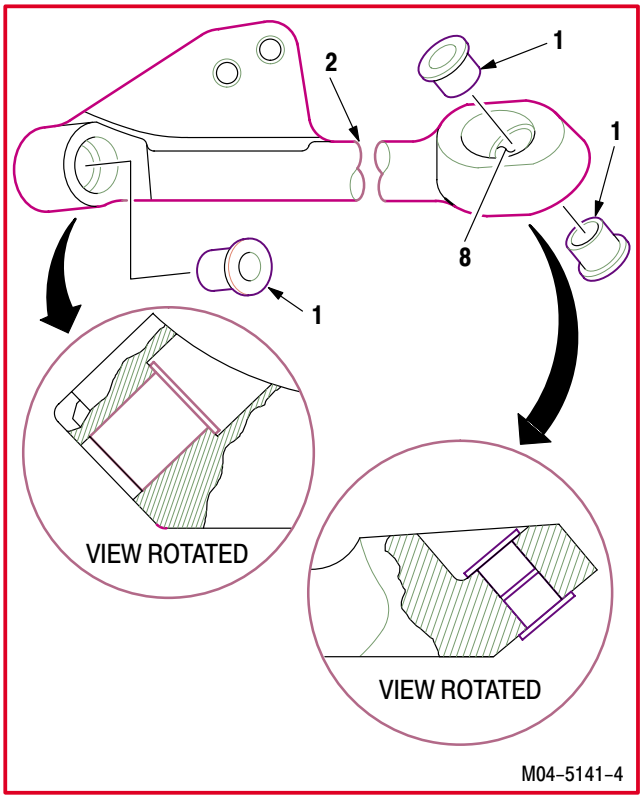
(1) Apply corrosion resistant coating to strut bushing bore (8). Use corrosion resistant coating (item 64A, App F) and brush (item 34, App F).

(2) Place bushing(s) (1) in dry ice for **20 MINUTES**. Use carbon dioxide (item 40, App F) and pail.

(3) Remove bushing(s) (1) from dry ice and apply adhesive or sealant to OD of bushing(s) (1). Use adhesive (item 14A, App F) or sealing compound (item 158A, App F). Refer to Table 2-1.

(4) Aline and install bushing(s) (1) in strut (2) (TM 55-1500-322-24). Use arbor press.

(a) If necessary, heat end of strut (2). Use heater.



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2.95B. MAIN ROTOR SUPPORT STRUT BUSHING REPLACEMENT (AVIM) – continued



CAUTION

- Pressing bushing(s) in strut without supporting strut fork, will result in damage to strut.
- Install bushing(s) with care or damage to surface finish will result.
- Do not heat ferrous parts over 350 °F (177 °C) or nonferrous parts over 250 °F (121 °C).
- Do not cool bearings and bushings below -321 °F (-196 °C).

b. **Install bushing(s) (4) in strut (5)** (TM 55-1500-322-24)**.**

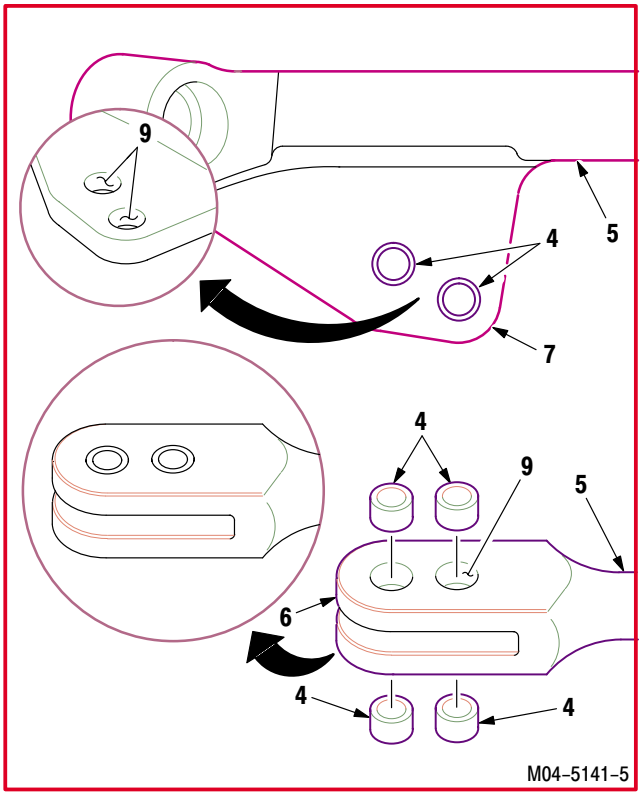
(1) Apply corrosion resistant coating to strut bushing bore (9). Use corrosion resistant coating (item 64A, App F) and brush (item 34, App F).

(2) Place bushing(s) (4) in dry ice for **20 MINUTES**. Use carbon dioxide (item 40, App F), pail.

(3) Remove bushing(s) (4) from dry ice and apply sealant to OD of bushing (4). Use sealing compound (item 158A, App F). Refer to Table 2-1.

(4) While supporting strut fork (6), or strut fork support (7), aline and install bushing(s) (4) in strut (5) (TM 55-1500-322-24). Use arbor press.

(a) If necessary, heat end of strut (2). Use heater.



c. **Apply paint touchup** (TM 55-1500-345-23)**.**

d. **Inspect (QA).**

END OF TASK

SECTION VI. AFT FUSELAGE MAINTENANCE

2.96. NACELLE CARRY-THRU STRUT ASSEMBLY REMOVAL/INSTALLATION

2.96.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.96.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23

Equipment Conditions:

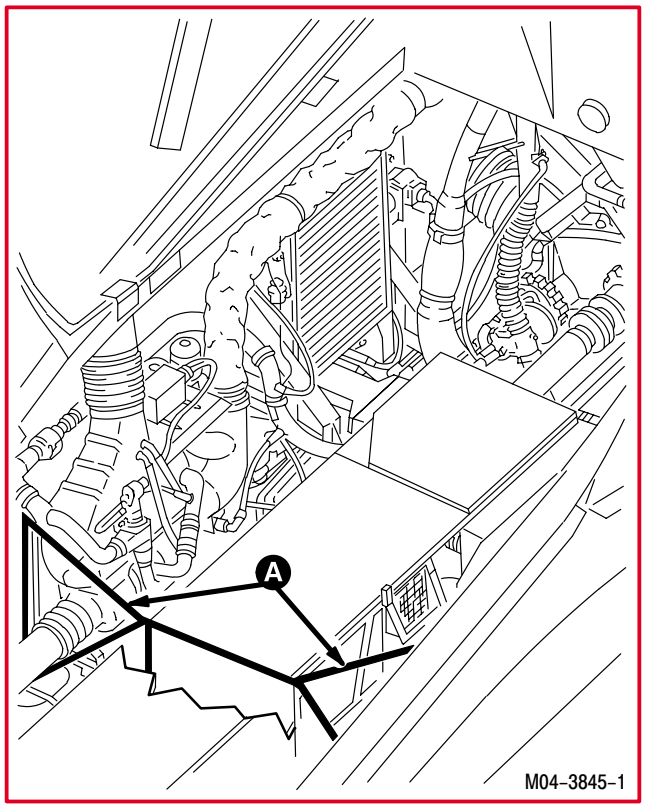
Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, and L325 opened
2.84	Catwalk center aft panel removed

Personnel Required:

67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for all nacelle carry-thru support struts.



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2.96. AFT NACELLE CARRY-THRU STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

2.96.3. Removal

a. **Remove nacelle support strut (1) from nacelle support post assembly (2).**

(1) Hold bolt (3). Remove self-locking nut (4) and washer (5).

(2) Remove bolt (3) and washer (6) from post (2).

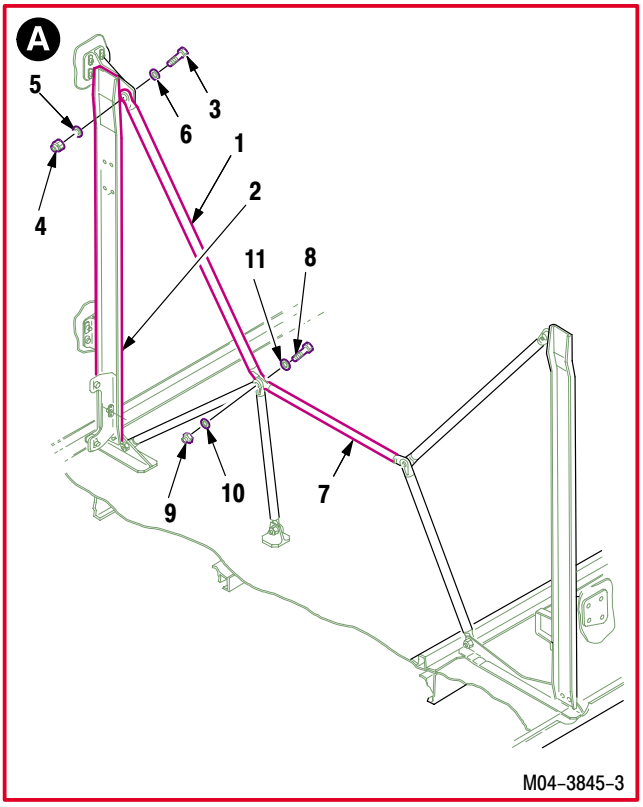
(3) Remove strut (1) from post (2).

b. **Remove strut (1) from center nacelle support strut (7).**

(1) Hold bolt (8). Remove self-locking nut (9) and washer (10).

(2) Remove bolt (8) and washer (11) from strut (7).

(3) Remove strut (1) from strut (7).



2.96.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.96.5. Inspection

a. **Check struts for corrosion** (para 1.49)**.**

b. **Check strut end fittings for nicks, scratches, and elongated holes** (para 2.12)**.**

c. **Check struts for loose, missing, or broken rivets** (TM 1-1500-204-23)**.**

GO TO NEXT PAGE

2.96. AFT NACELLE CARRY-THRU STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

2.96.6. Installation

a. **Install strut (1) on strut (7).**

(1) Install bolt (8) and washer (11) on strut (7).

(2) Install strut (1) on strut (7).

(3) Hold bolt (8). Install washer (10) and nut (9).

b. **Install strut (1) on post (2).**

(1) Position strut (1) on post (2).

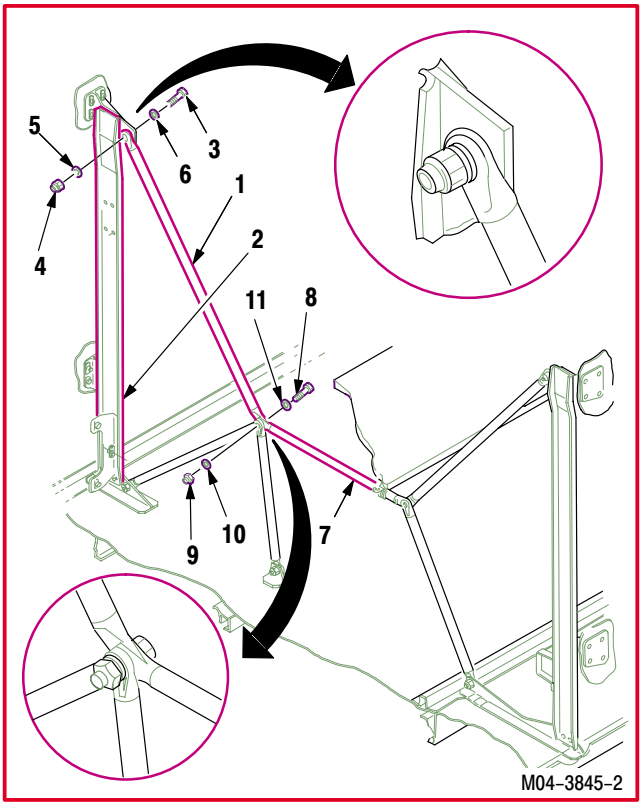
(2) Install washer (6) and bolt (3) in strut (1) and post (2).

(3) Hold bolt (3). Install washer (5) and nut (4).

c. **Inspect (QA).**

d. **Install catwalk center aft panel** (para 2.84)**.**

e. **Install access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**



END OF TASK

2.97. NACELLE CARRY-THRU POST ASSEMBLY REMOVAL/INSTALLATION

2.97.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.97.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Sealing compound (item 161, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

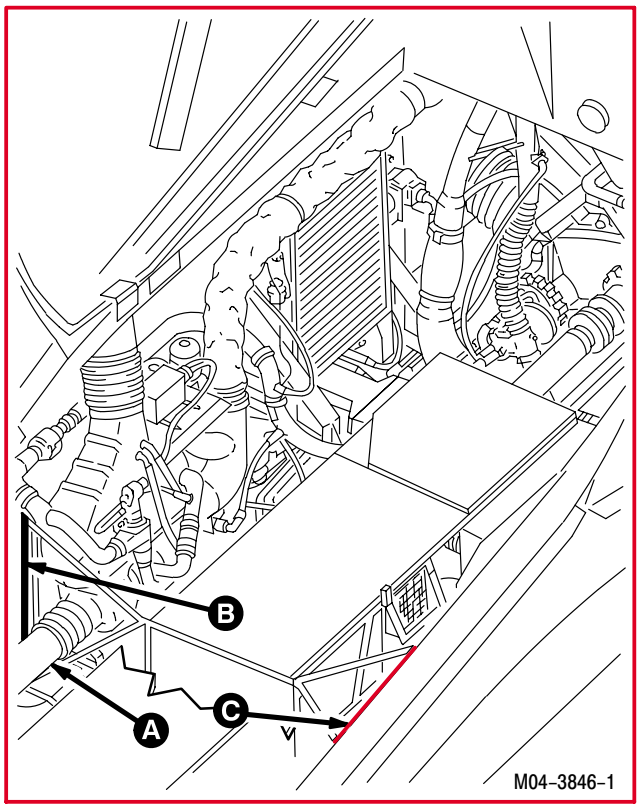
TM 1-1500-204-23
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.96	Nacelle carry-thru support assembly struts removed as required
4.121	No. 1 or No. 2 engine inboard secondary nozzle removed as required
15.40	APU exhaust duct removed
9.133	Stabilator relay box removed (when removing left side only)

NOTE

This task is typical for left and/or right nacelle carry-thru support post, except as noted.



GO TO NEXT PAGE

2.97. NACELLE CARRY-THRU POST ASSEMBLY REMOVAL/INSTALLATION – continued

2.97.3. Removal

CAUTION

Do not stand on the nacelle work platform when carry-thru post assembly is removed or damage may occur.

a. **Remove two wire harness loop clamps (1), loop clamp (2), and clamp block (3) from left nacelle post assembly (4).**

(1) Remove two screws (5) and washers (6) from clamps (1).

(2) Remove screw (7) from clamp (2) and clamp block (3).

b. **Remove ground jumper assembly (8) from left post (4).**

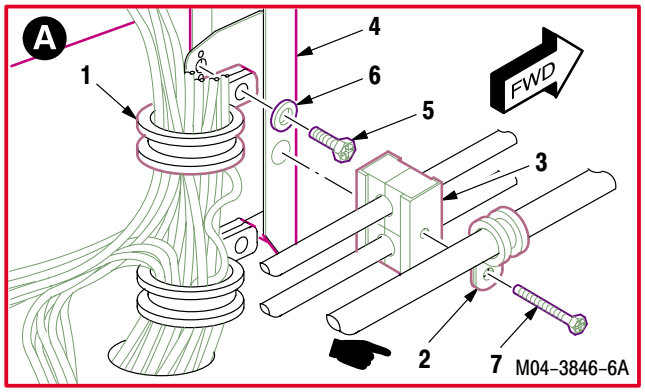
(1) Remove self-locking nut (9) and washer (10) from ground stud (11).

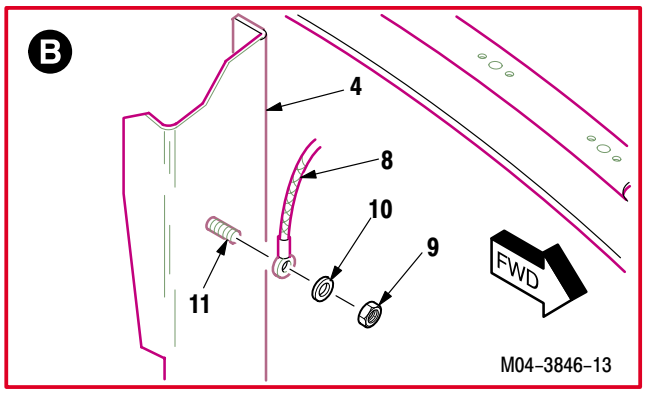
(2) Remove jumper (8) from stud (11) and post (4).

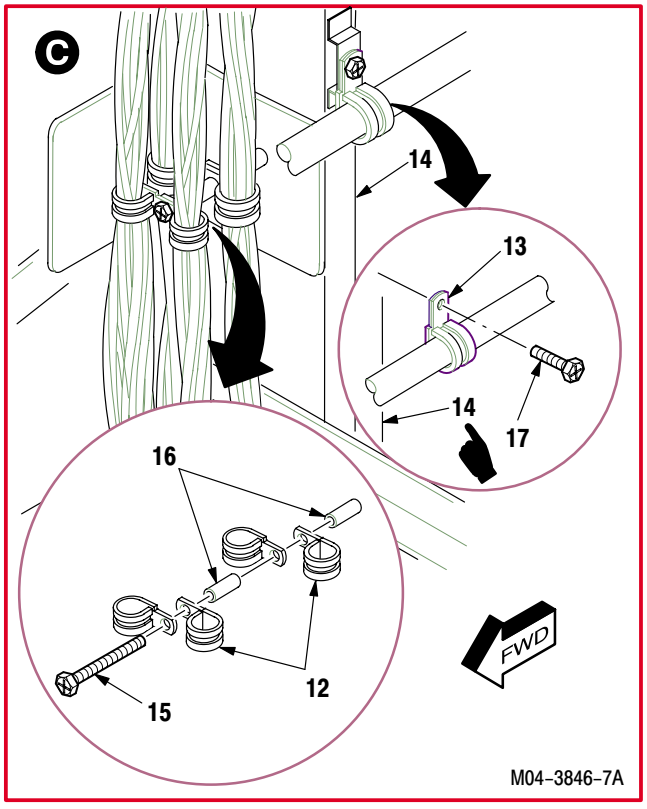
c. **Remove four wire harness loop clamps (12) (three places) and loop clamp (13) from right nacelle post assembly (14).**

(1) Remove screw (15) from two clamps (12), spacer (16), two clamps (12), spacer (16) (three places), and post (14).

(2) Remove screw (17) from clamp (13) and post (14).







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2.97. NACELLE CARRY-THRU POST ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Remove post (4) from nacelle (18).**

(1) Remove two bolts (19) and washers (20) from base of post (4).

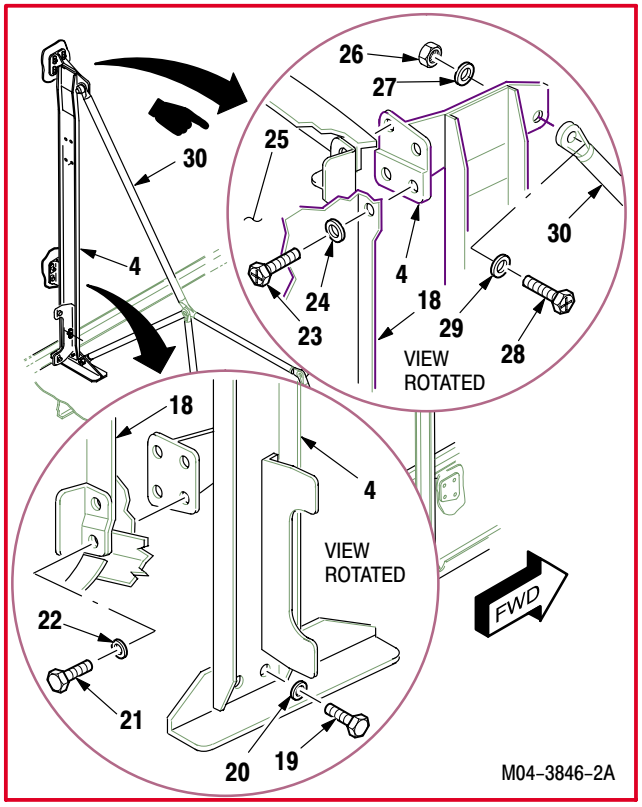
(2) Remove four bolts (21) and washers (22) from nacelle (18) and bottom section of post (4).

(3) Remove four bolts (23) and washers (24) from inside secondary exhaust mount area (25) and top of post (4).

(4) Remove self-locking nut (26) and washer (27) from bolt (28).

(5) Remove bolt (28), recessed washer (29), and strut (30) from post (4).

(6) Remove post (4).



e. **Remove post (14) from nacelle (31).**

(1) Remove two bolts (32) and washers (33) from base of post (14).

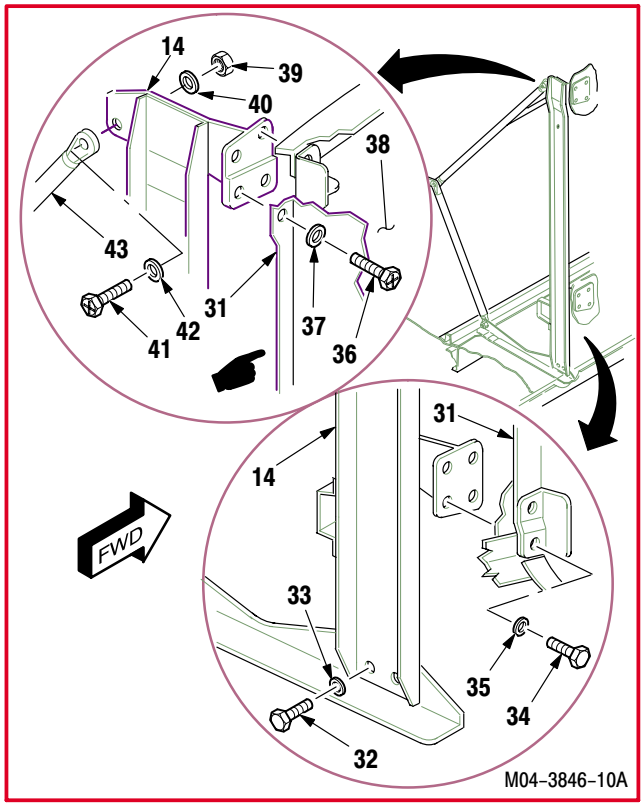
(2) Remove four bolts (34) and washers (35) from nacelle (31) and bottom section of post (14).

(3) Remove four bolts (36) and washers (37) from inside secondary exhaust mount area (38).

(4) Remove self-locking nut (39) and washer (40) from bolt (41).

(5) Remove bolt (41), recessed washer (42), and strut (43) from post (14).

(6) Remove post (14).



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2.97. NACELLE CARRY-THRU POST ASSEMBLY REMOVAL/INSTALLATION – continued

2.97.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean cloth.**

2.97.5. Inspection

a. **Check post for corrosion** (para 1.49)**.**

b. **Check post for nicks, scratches, and cracks** (TM 1-1500-204-23)**.**

c. **Check post for loose, missing, or broken rivets** (TM 1-1500-204-23)**.**

2.97.5. Installation

CAUTION

Do not stand on the nacelle work platform when carry-thru post assembly is removed or damage may occur.

a. **Install post (4) on nacelle (18).**

(1) Position post (4) on nacelle (18).

(2) Install four bolts (21) through washers (22) and nacelle (18) in bottom section of post (4).

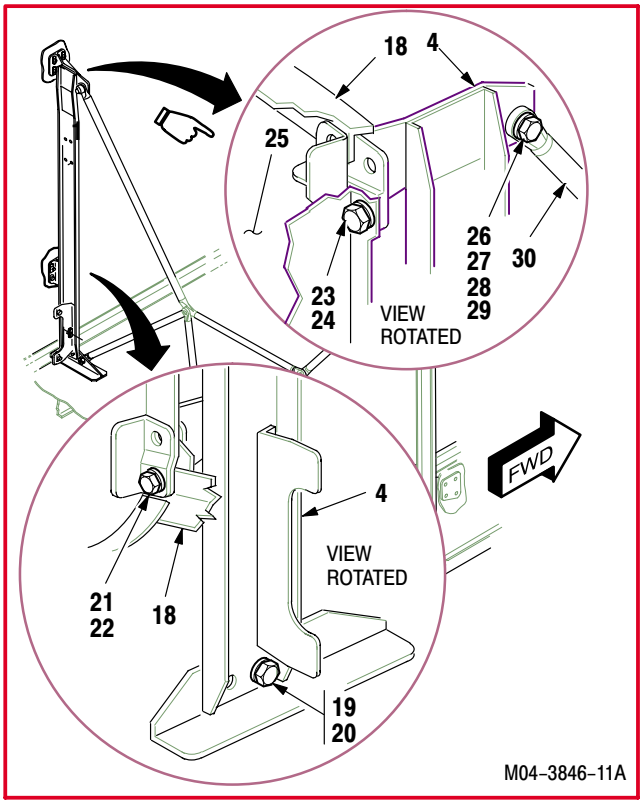
(3) Position post (4) on mount (25).

(4) Install four bolts (23) through washers (24) and nacelle (18) in top of post (4).

(5) Install bolt (28) through recessed washer (29), strut (30) and post (4).

(6) Install washer (27) and self-locking nut (26) on bolt (28).

(7) Install two bolts (19) and washers (20) in base of post (4).



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2.97. NACELLE CARRY-THRU POST ASSEMBLY REMOVAL/INSTALLATION – continued

b. **Install post (14) on nacelle (31).**

(1) Position post (14) on nacelle (31).

(2) Install four bolts (34) through washers (35) and nacelle (31) in bottom of post (14).

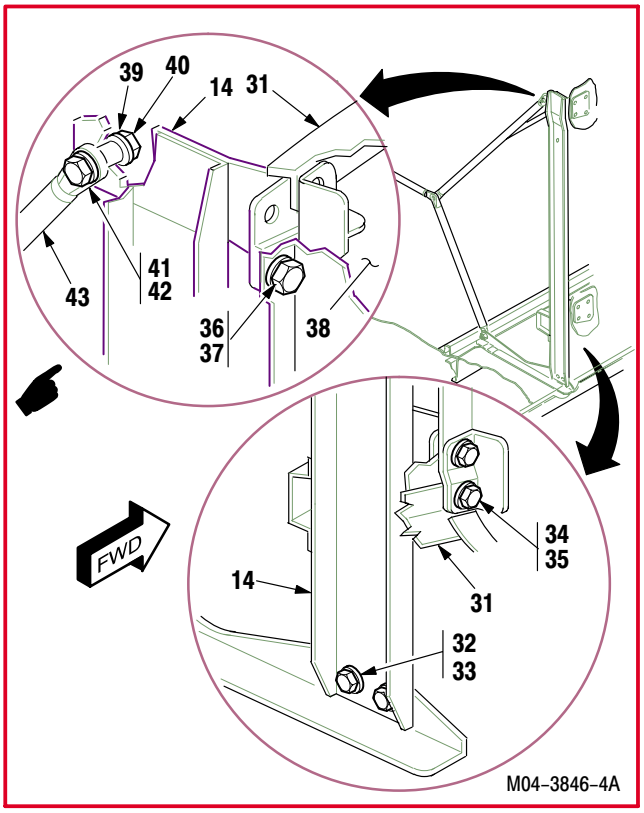
(3) Position post (14) on mount (38).

(4) Install four bolts (36) through washers (37) and nacelle (31) in top of post (14).

(5) Install bolt (41) through recessed washer (42), strut (43) and post (14).

(6) Install washer (39) and self-locking nut (40) on bolt (41).

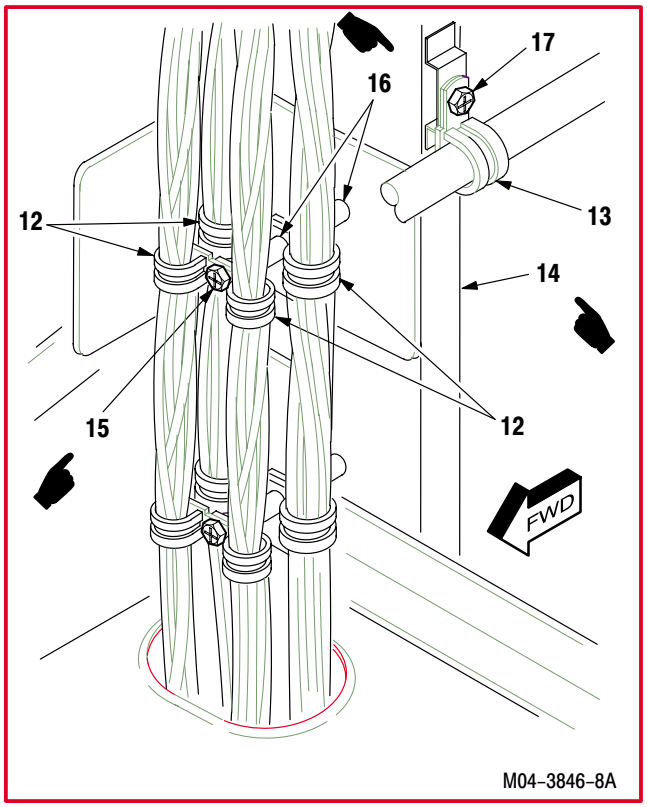
(7) Install two bolts (32) and washers (33) in base of post (14).



c. **Install four clamps (12) (three places) and clamp (13) on post (14).**

(1) Install screw (17) through clamp (13) into post (14).

(2) Install screw (15) through two clamps (12), spacer (16), two clamps (12), and spacer (16) into post (14).



GO TO NEXT PAGE

2.97. NACELLE CARRY-THRU POST ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Install jumper (8) on left post (4).**

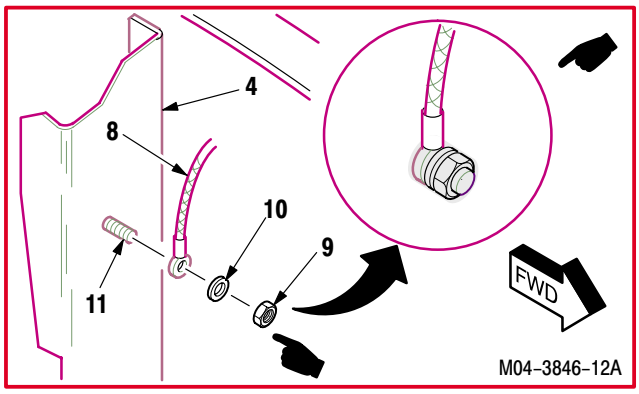
(1) Install jumper (8) on stud (11).

(2) Install washer (10) and nut (9) on stud (11).

(3) Perform electrical bond check (TM 55-1500-323-24).



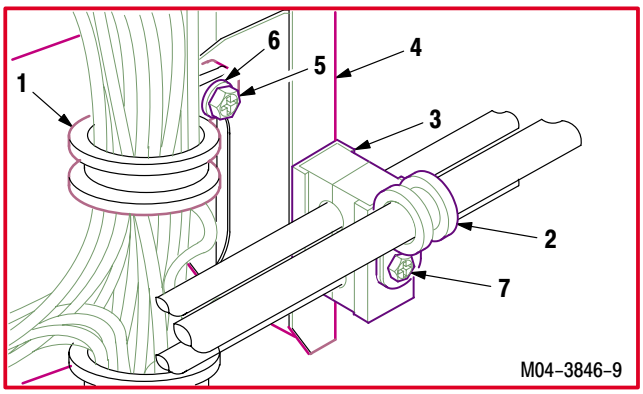
(4) Apply sealing compound. Use sealing compound (item 161, App F).



e. **Install two clamps (1), clamp (2), and clamp block (3) on left post (4).**

(1) Install screw (7) through clamp (2) and clamp block (3) into post (4).

(2) Install screw (5) through washer (6) and clamps (1) into post (4).



f. **Inspect (QA).**

g. **Install nacelle carry-thru support assembly struts as required** (para 2.96)**.**

h. **Install APU exhaust nozzle** (para 15.40)**.**

i. **Install stabilator relay box (when installing left side only)** (para 9.133)**.**

END OF TASK

2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION

2.98.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.98.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Pneumatic vacuum cleaner (item 65, App H)
0.0015 - 0.0250-inch thickness gage (item 152, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)
3-piece spatula set (item 337, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)

Materials/Parts:

Rivet (8)
Washers (8)
Sealing compound (item 164, App F)

Personnel Required:

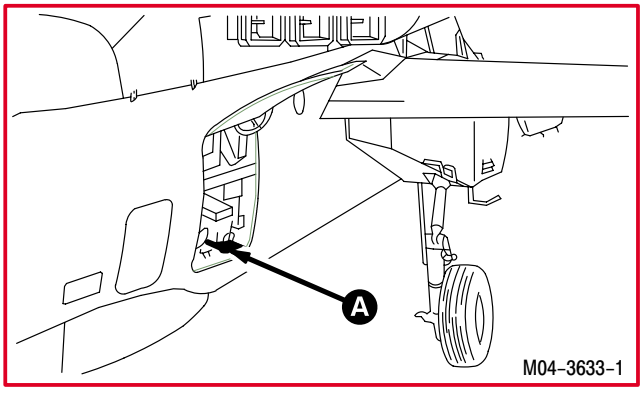
68G Aircraft Structural Repairer
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 9-1230-476-20-1
TM 11-1520-238-23-1
TM 55-1500-323-24
TM 55-1500-345-23

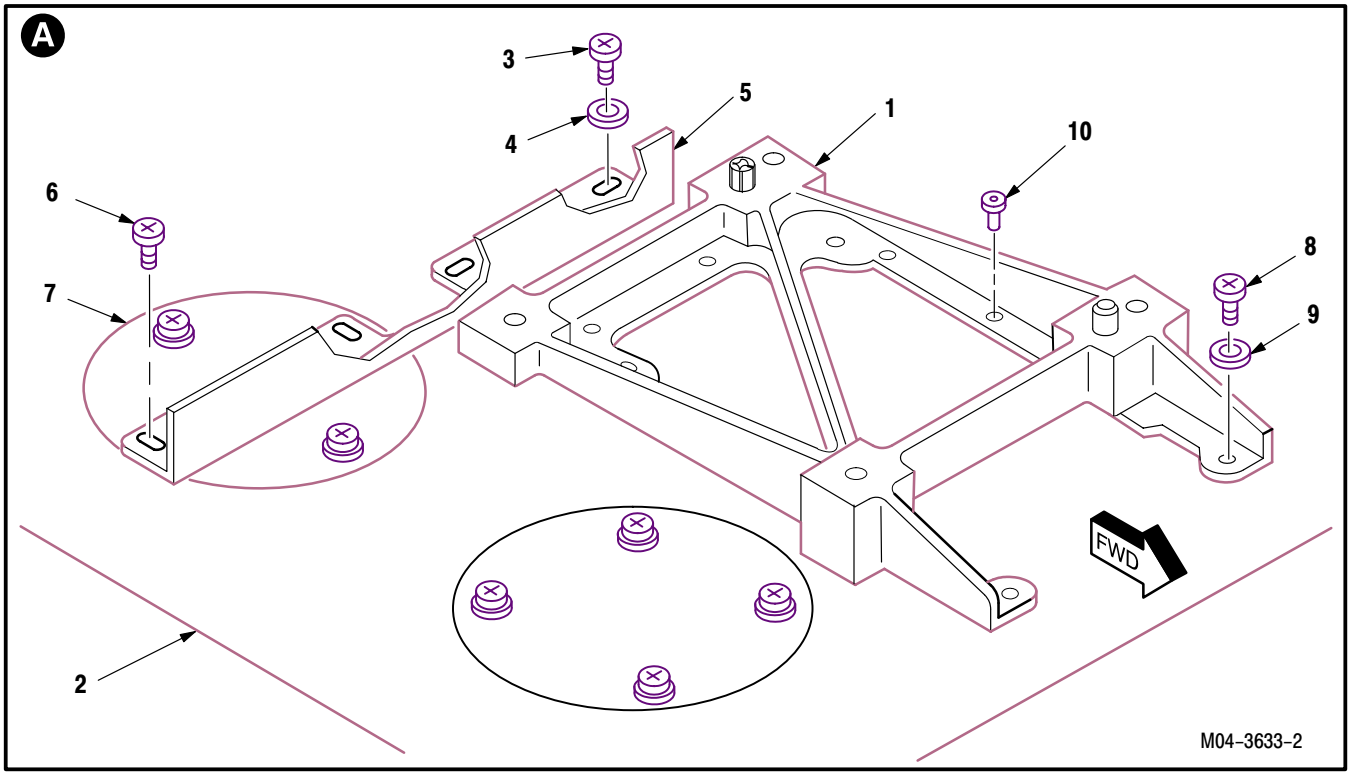
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 11-1520-238-23-1	HARS electronic unit removed



GO TO NEXT PAGE

2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION – continued



2.98.3. Removal

a. **Remove HARS support (1) from aft electronics bay shelf (2).**

(1) Remove two screws (3) and washers (4) from bracket (5) and shelf (2).

(2) Remove two screws (6) from bracket (5) and panel (7).

(3) Remove bracket (5) from shelf (2)

(4) Remove sealant from support (1) and shelf (2). Use spatula set.

(5) Remove four screws (8) and washers (9) from support (1) and shelf (2).

(6) Lightly mark support (1) to shelf (2) location, using a pencil, at two accessible places (one fore and one aft) to facilitate re–installation of support.

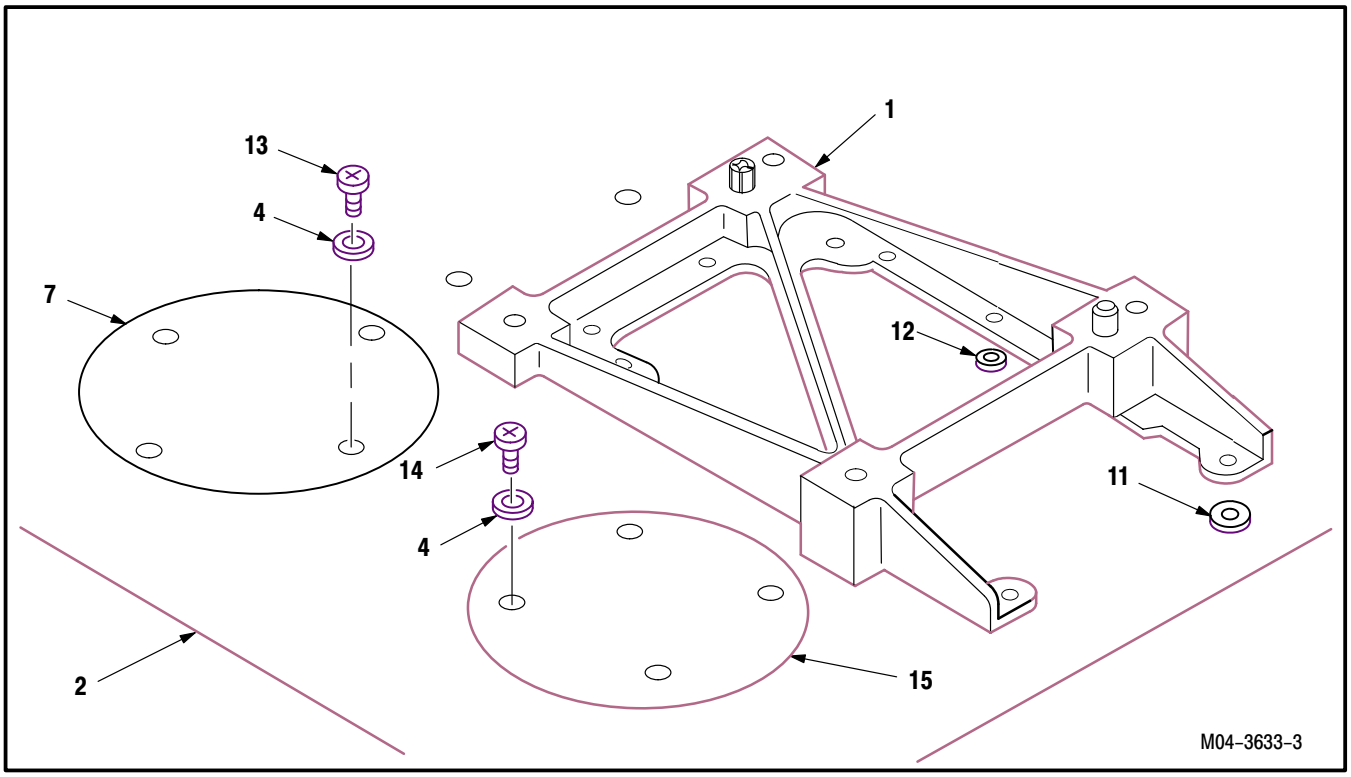
CAUTION

Do not elongate rivet holes or lack of rivet edge distance will result causing major repair of shelf.

(7) Remove eight rivets (10) from support (1) (TM 1-1500-204-23).

GO TO NEXT PAGE

2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION – continued



(8) Remove support (1) and shim(s) (11) from shelf (2).

(9) If installed, remove washers (12) from shelf (2).

(10) Remove two screws (13) and washers (4) from panel (7).

(11) Remove panel (7) from shelf (2).

(12) Remove four screws (14) and washers (4) from panel (15).

(13) Remove panel (15) from shelf (2).

2.98.4. Cleaning

a. **Clean sealing compound residue from shelf and support** (para 1.47)**.**

b. **Access and vacuum all FOD through access holes in shelf (1).** Use vacuum cleaner.

2.98.5. Inspection

a. **Check fuselage for cracks and corrosion** (para 1.49)**.**

b. **Check support for cracks and corrosion** (para 1.49)**.**

c. **Check support alinement pins for damage.** Go to paragraph 2.98.6 to replace defective pin.

d. **Check support and aft electronics bay floor for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION – continued

2.98.6. Repair

WARNING

Do not drill into hardened steel pin, twist drill may break causing injury or damage to support assembly.

CAUTION

Ensure alinement pin mounting hole is not enlarged or damaged when removing damaged alinement pin.

a. **Remove defective pin (16) or (17) from support (1).**

(1) Locate and mark center of alinement pin (16) or (17) on bottom of support (1).

NOTE

- For forward (tapered) pin (16) location go to step (2).
- For aft (diamond) pin (17) location go to step (3).

(2) Drill a **0.098 INCH** diameter by **0.68 INCH** deep hole through bottom of support (1) as marked at forward location (TM 1-1500-204-23). Go to step (4).

(3) Drill a **0.098 INCH** diameter by **0.26 INCH** deep hole through bottom of support (1) as marked at aft location (TM 1-1500-204-23).

(4) Insert punch into access hole and drive defective pin (11) or (12) from support (1).

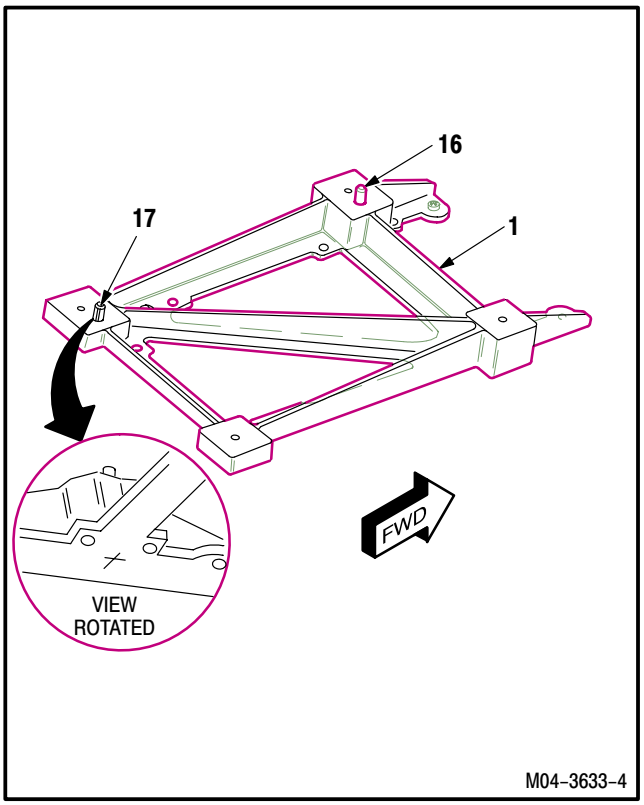
(5) Remove drill filings from hole. Use vacuum cleaner.

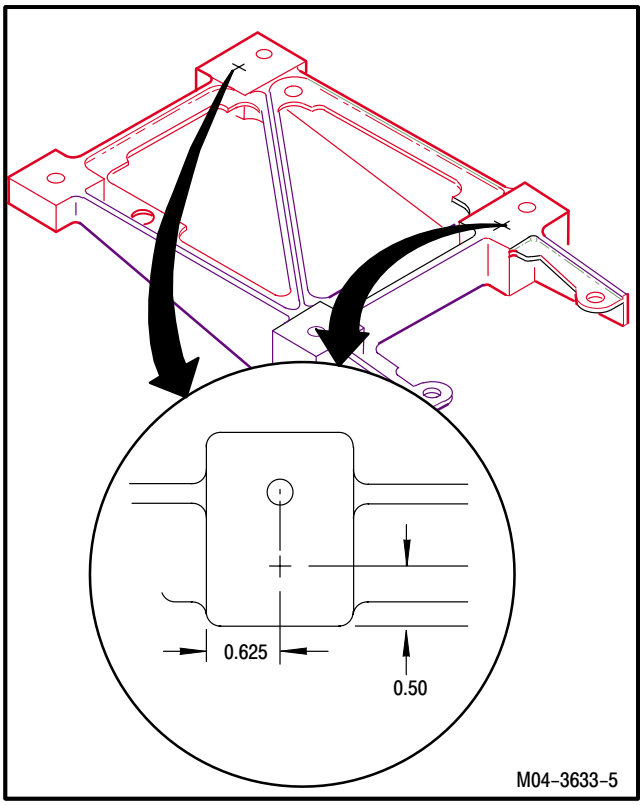
b. **Measure pin hole, maximum diameter 0.1874 INCH.**

c. **Press new pin (16) or in respective hole** (TM 1-1500-204-23)**.**

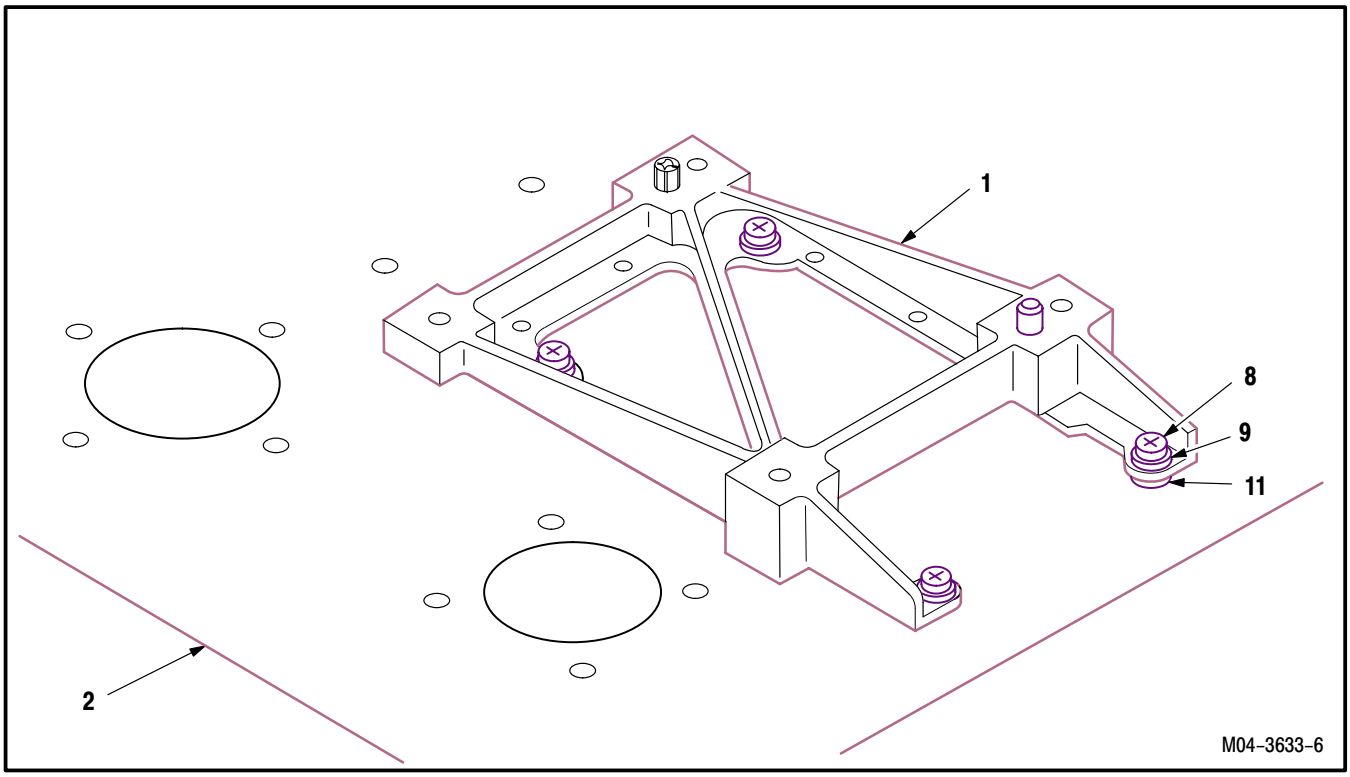
d. **Touch up paint on support (1)** (TM 55-1500-345-23)**.**

GO TO NEXT PAGE





2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION – continued



2.98.7. Installation

a. **Install support (1) on shelf (2).**

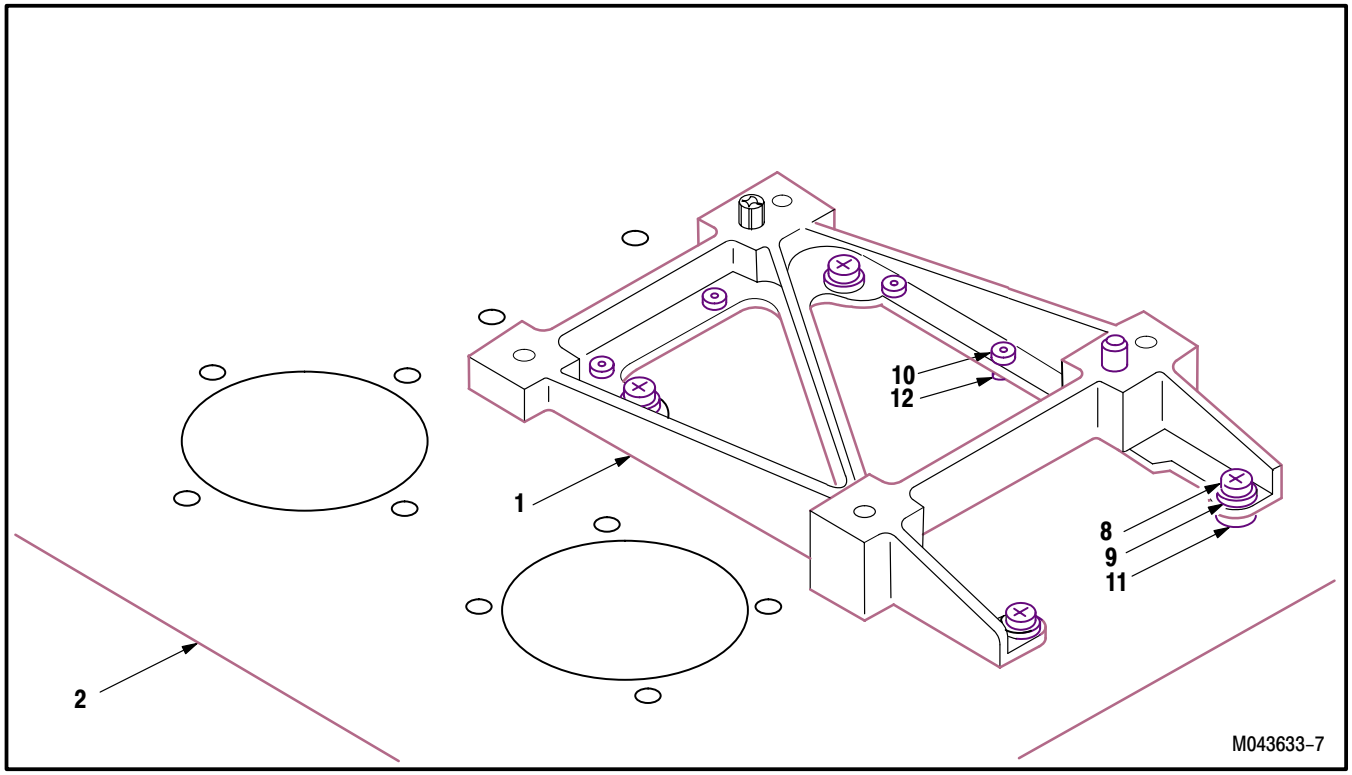
(1) Aligning pencil marks made during removal, position support (1) on shelf (2).

(2) Temporarily install support (1) on shelf (2) with four screws (8), washers (9), and shim(s) (11). Torque screws (8), in a crisscross pattern, to **25 INCH–POUNDS**. Use torque wrench.

b. **Perform HARS support boresighting** (TM 9-1230-476-20-1)**.**

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2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION – continued



CAUTION

Do not elongate rivet holes or lack of rivet edge distance will result causing major repair of shelf.

c. **If required and alining pencil marks made during boresighting, drill new support (1) to match fuselage shelf (2) rivet hole pattern.**

d. **Install support (1) on shelf (2).**

(1) Temporarily install support (1) on shelf (2) with four screws (8), washers (9), and shim(s) (11). Torque screws (8), in a crisscross pattern, to **25 INCH–POUNDS**. Use torque wrench.

(2) Measure gap between support (1) and shelf (2) at rivet locations to determine required washer(s) (12) thickness. Use thickness gage.

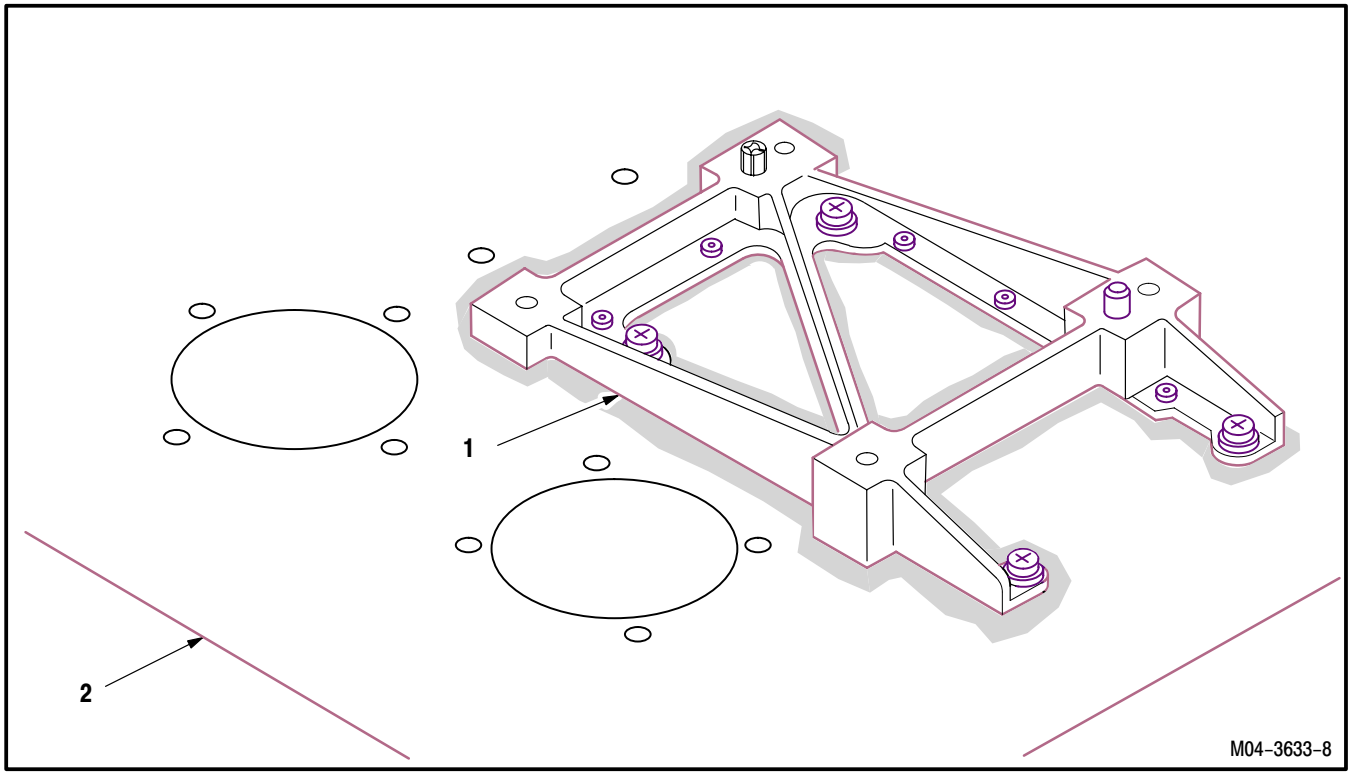
(3) Install eight rivets (10) and required thickness washer(s) (12) on support (1) (TM 1-1500-204-23).

e. **Perform HARS mount alinement verification** (TM 9-1230-476-20-1)**.**

f. **If HARS alinement verification is within tolerance go to step g. otherwise go to paragraph 2.98.3.**

GO TO NEXT PAGE

2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION – continued





g. **Perform electrical bond check on attaching hardware.**

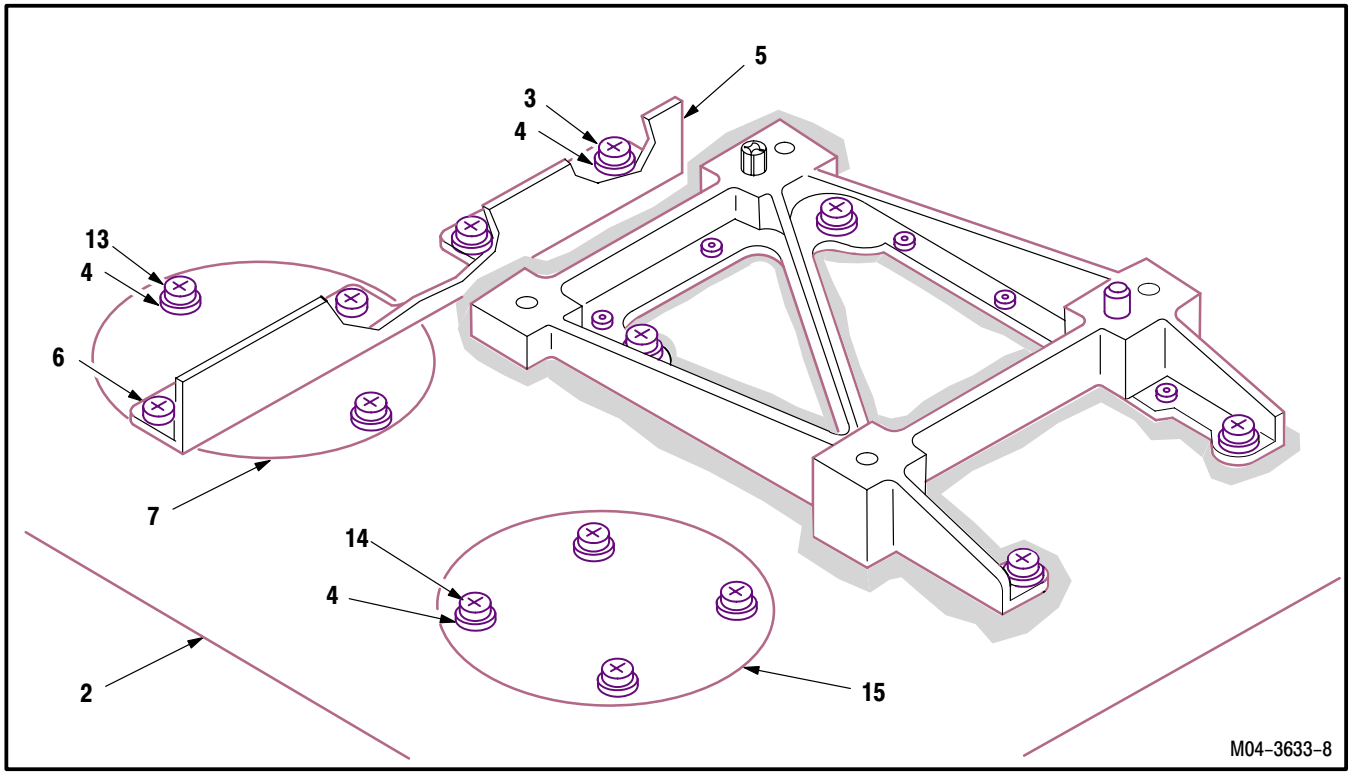
(1) Bond shall be **0.0025 OHM** or less (TM 55-1500-323-24). Use ohmmeter.

(2) Seal internal and external edges of mount (1). Use sealing compound (item 164, App F).

h. **Inspect (QA).**

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2.98. ELECTRONIC COMPARTMENT SUPPORT ASSEMBLY (HARS) REMOVAL/INSTALLATION – continued



i. **Install bracket (5) and panel (7) on shelf (2) using two screws (13) and washers (4), two screws (3) and washers (4), and two screws (6).**

(1) Install two screws (13) and washers (4) through panel (7) and shelf (2).

(2) Install two screws (3) and washers (4) through bracket (5) and shelf (2).

(3) Install two screws (6) through bracket (5), panel (7), and shelf (2).

j. **Install panel (15) on shelf (2) using four screws (14) and washers (4).**

k. **Inspect (QA).**

l. **Install heading attitude reference system (HARS) electronic unit** (TM 11-1520-238-23-1)**.**

END OF TASK

2.99. DOPPLER FAIRING REMOVAL/INSTALLATION

2.99.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.99.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Materials/Parts:

Wire (item 221, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

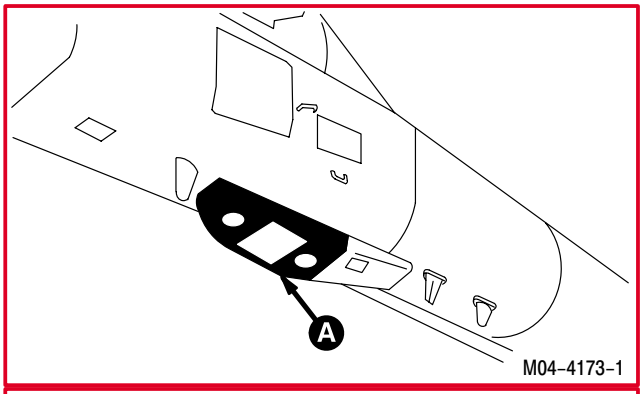
TM 1-1500-204-23
TM 1-1520-264-23
TM 11-1520-238-23-2

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

CAUTION

Doppler fairing must be supported when lowered to prevent damage to radar altimeter antenna cables and connectors.

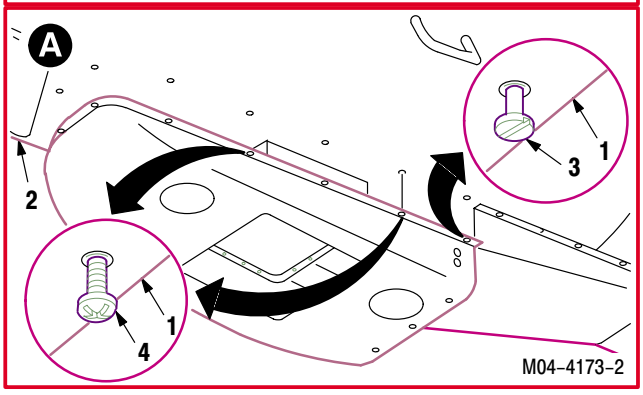


2.99.3. Removal

a. **Remove doppler fairing (1) from fuselage (2).**

(1) Unlock 16 turnlock studs (3) and 2 screws (4).

(2) Lower doppler fairing (1) but do not allow to hang on antenna wires.



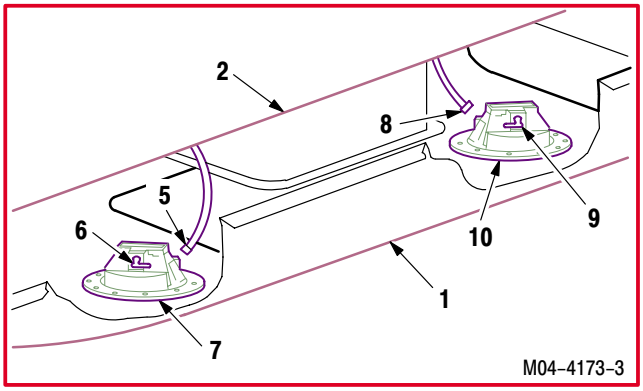
GO TO NEXT PAGE

2.99. DOPPLER FAIRING REMOVAL/INSTALLATION – continued

(3) Detach P377 connector (5) from receptacle (6) on radar altimeter antenna (7).

(4) Detach P379 connector (8) from receptacle (9) from radar altimeter antenna (10).

(5) Remove doppler fairing (1) from fuselage (2).



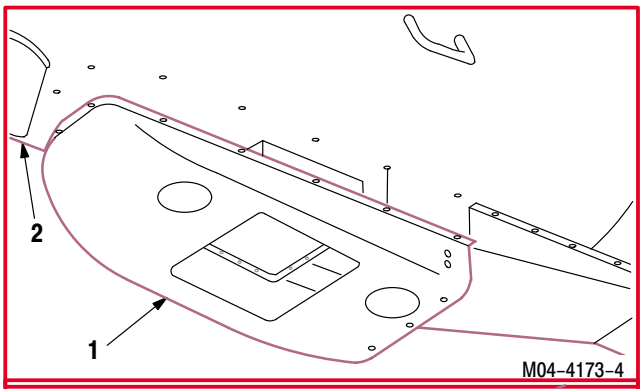
2.99.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.99.5. Inspection

a. **Check fuselage for cracks and corrosion** (para 1.49)**.** If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

b. **Check doppler fairing for damaged or missing nutplates** (TM 1-1500-204-23)**.**



2.99.6. Installation

CAUTION

Doppler fairing must be supported after radar altimeter antenna cables are attached.

a. **Install fairing (1) on fuselage (2).**

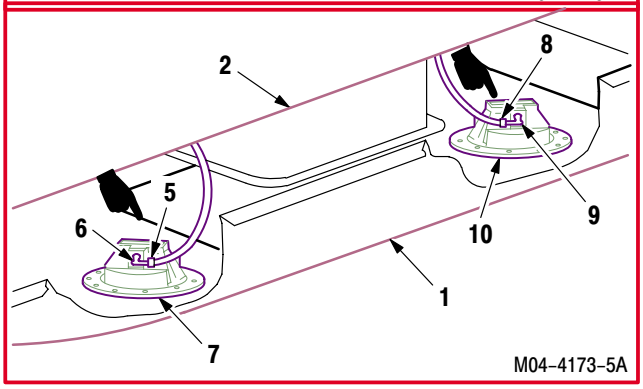
(1) Position fairing (1) under fuselage (2).

(2) Attach connector P377 (5) to receptacle (6) on antenna (7).

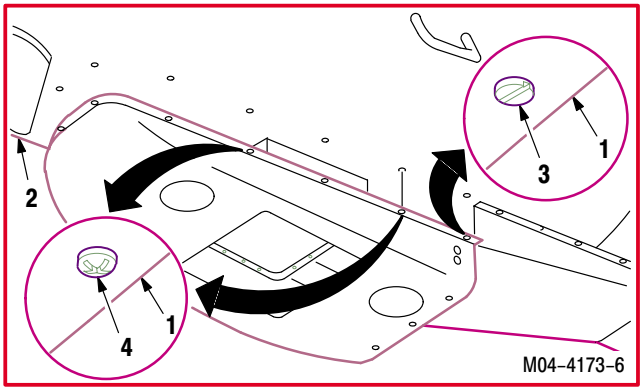
(3) Attach connector P379 (8) to receptacle (9) on antenna (10).

(4) Lockwire connector (5) to receptacle (6) and connector (8) to receptacle (9). Use wire (item 221, App F).

(5) Install 16 turnlock studs (3) and 2 screws (4) to install fairing (1) on fuselage (2).



b. **Perform radar altimeter maintenance operational check** (TM 11-1520-238-23-2)**.**



END OF TASK

2.99A. STRUCTURAL ASSEMBLY (DOPPLER MOUNT) REMOVAL/INSTALLATION

2.99A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.99A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Ohmmeter (item 218, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)

References:

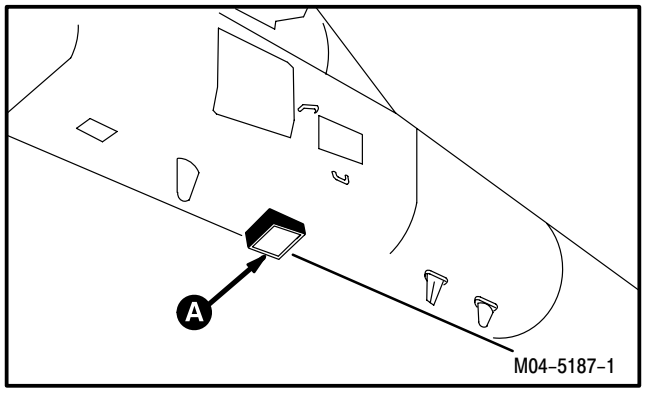
TM 1-1500-204-23
TM 9-1230-476-20-1
TM 11-1520-238-23-1
TM 55-1500-323-24

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

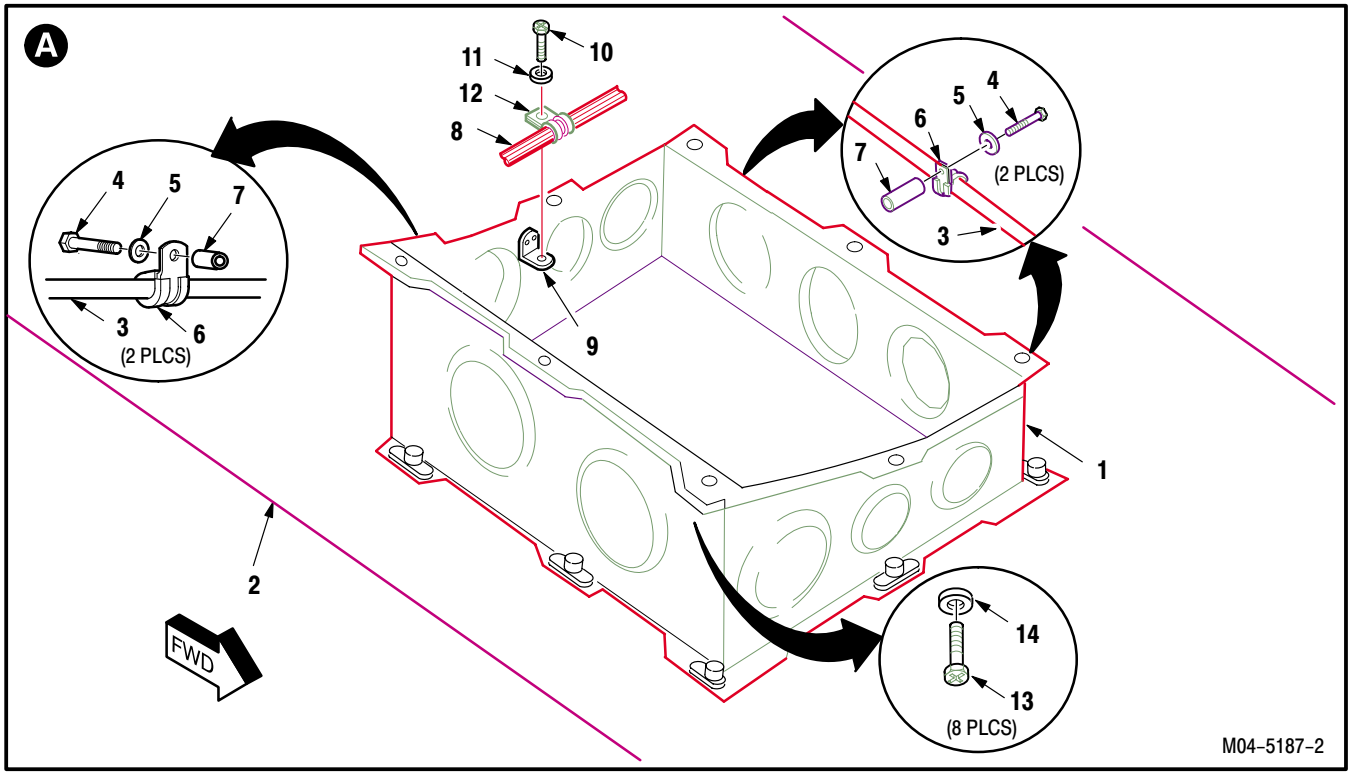
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.6	B330 fairing removed
TM 11-1520-238-23-1	Doppler antenna removed



GO TO NEXT PAGE

2.99A. STRUCTURAL ASSEMBLY (DOPPLER MOUNT) REMOVAL/INSTALLATION – continued



2.99A.3. Removal

a. **Remove mount (1) from fuselage (2).**

(1) Remove wire harness W203 (3) from mount (1).

(a) Remove four screws (4), washers (5), clamps (6), and spacers (7) from mount (1).

(b) Remove harness (3) from mount (1).

(2) Remove wire harness W213 (8) from mount bracket (9).

(a) Remove screw (10), washer (11), and clamp (12) from bracket (9).

(b) Remove harness (8) from bracket (9).

(3) Remove eight screws (13) and washers (14) from mount (1).

CAUTION

Reposition W203 wire harness and W213 wire harness so mount can be removed without interference, or damage to wire harness may occur.

(4) Remove mount (1).

GO TO NEXT PAGE

2.99A. STRUCTURAL ASSEMBLY (DOPPLER MOUNT) REMOVAL/INSTALLATION – continued

2.99A.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean cloth.**

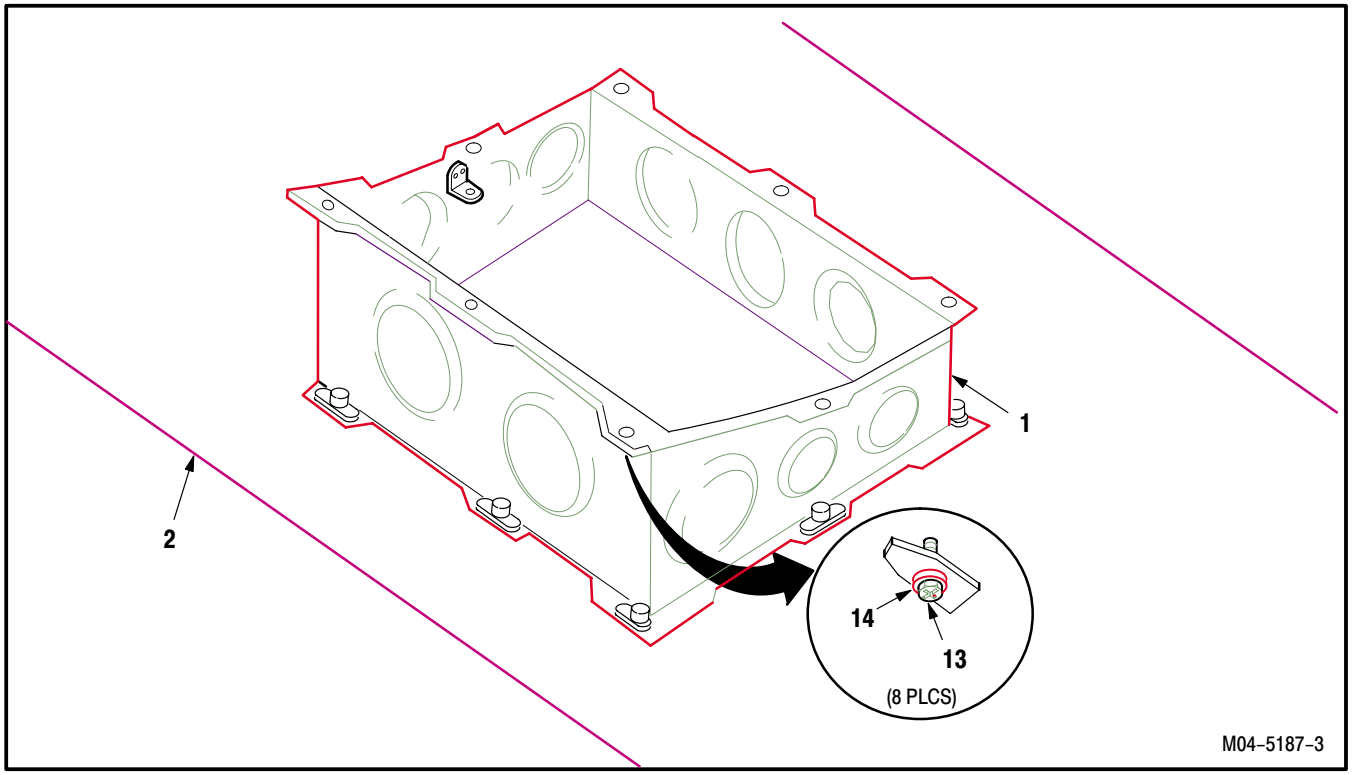
2.99A.5. Inspection

a. **Check fuselage for cracks and corrosion** (para 1.49)**.**

b. **Check mount for damaged or missing nutplates** (TM 1-1500-204-23)**.**

GO TO NEXT PAGE

2.99A. STRUCTURAL ASSEMBLY (DOPPLER MOUNT) REMOVAL/INSTALLATION – continued



2.99A.6. Installation

NOTE

Ensure electrical bonded surfaces are clean prior to installing new mount.

a. **Install mount (1) on fuselage (2).**

(1) Position mount (1) under fuselage (2).

(2) Install four screws (13) and washers (14) on mount (1) at corner locations. Torque screws (13), in a crisscross pattern, to **25 INCH–POUNDS**. Use torque wrench.

NOTE

The remaining four screws will be installed during doppler mount boresighting.

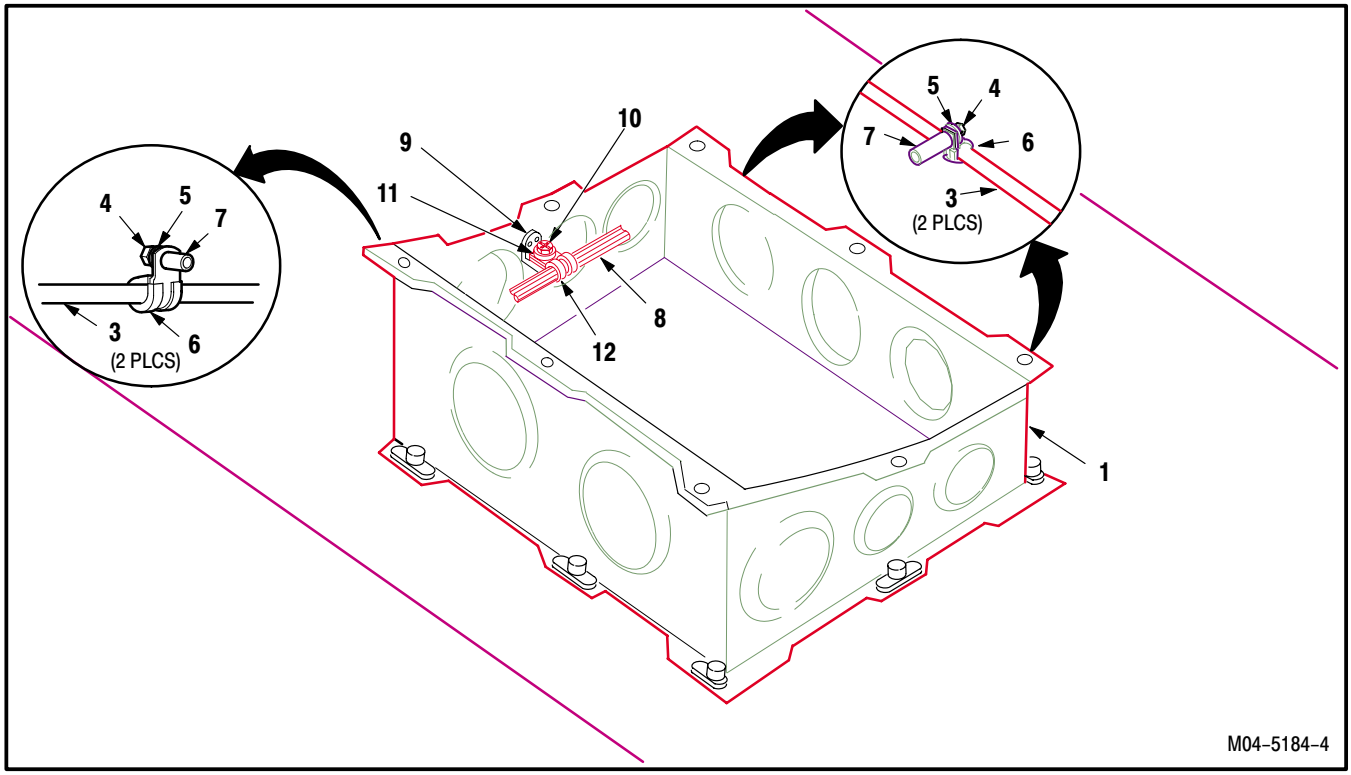
b. **Perform doppler mount boresighting** (TM 9-1230-476-20-1)**.**

c. **Perform electrical bond check on attaching hardware.**

(1) Bond shall be **0.0025 OHM** or less (TM 55-1500-323-24). Use ohmmeter.

GO TO NEXT PAGE

2.99A. STRUCTURAL ASSEMBLY (DOPPLER MOUNT) REMOVAL/INSTALLATION – continued



d. **Install wire harness W213 (8) on bracket (9).**

(1) Install clamp (12) on harness (8).

(2) Install screw (10) and washer (11) through clamp (12) and bracket (9).

e. **Install wire harness W203 (3) on mount (1).**

(1) Install four clamps (6) on wire (3).

(2) Install four screws (4) and washers (5) through clamps (6) and spacers (7) in mount (1).

f. **Inspect (QA).**

g. **Install doppler antenna** (TM 11-1520-238-23-1)**.**

h. **Install B330 fairing** (para 2.6)**.**

END OF TASK

2.100. TAILBOOM FLUID DRAIN TUBE REPLACEMENT

2.100.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.100.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

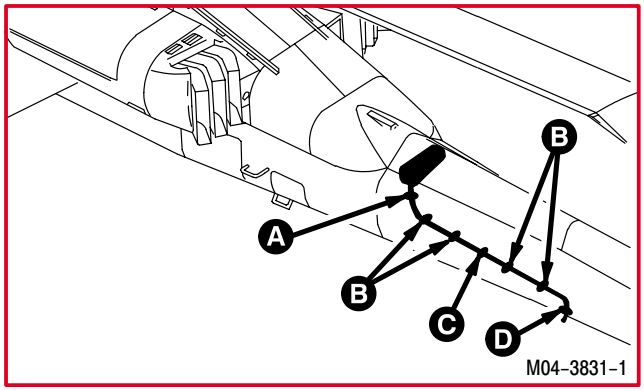
Adhesive (item 7, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

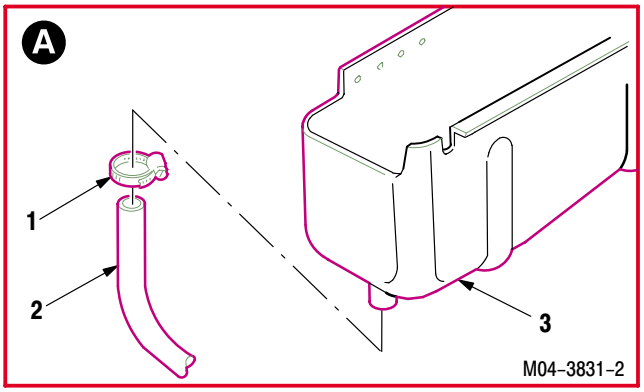
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors L330 and R330 opened



2.100.3. Removal

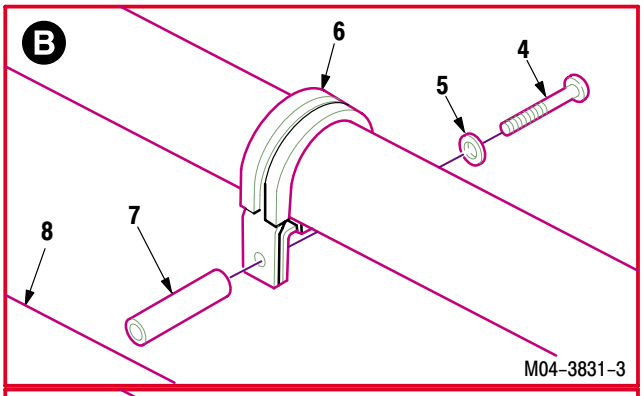
a. **Remove hose clamp (1) and fluid drain tube (2) from fluid drain pan (3).**



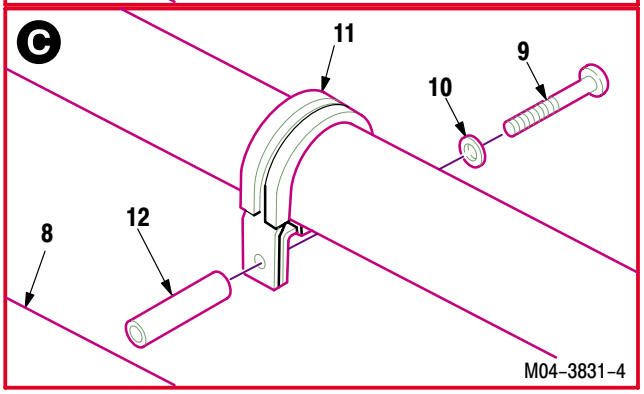
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2.100. TAILBOOM FLUID DRAIN TUBE REPLACEMENT – continued

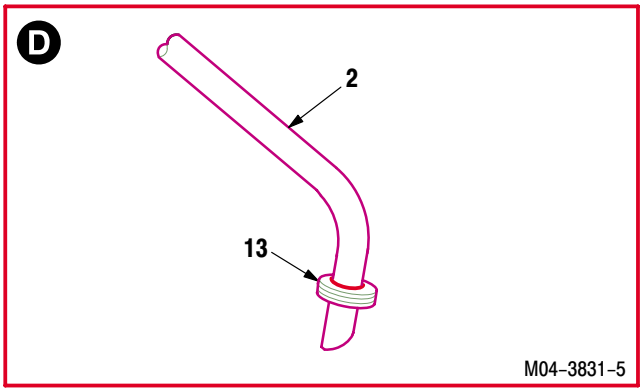
b. **Remove four screws (4), washers (5), clamps (6), and sleeve spacers (7) from structure (8).**



c. **Remove screw (9), washer (10), clamp (11), and sleeve spacer (12) from structure (8).**



d. **Remove and discard tube (2) from grommet (13).**



2.100.4. Cleaning

a. **Clean adhesive from drain tube at grommet** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.100.5. Inspection

a. **Check structure for cracks and corrosion** (para 2.12)**.**

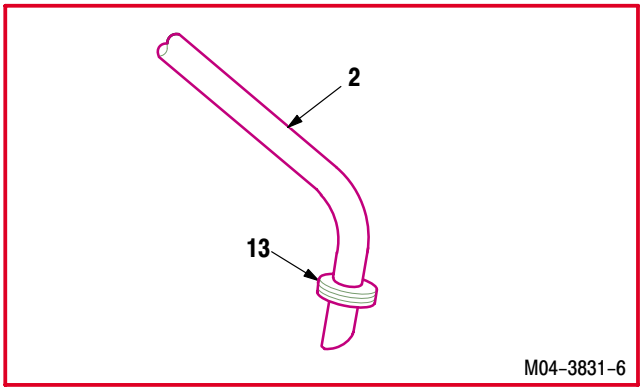
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2.100. TAILBOOM FLUID DRAIN TUBE REPLACEMENT – continued

2.100.6. Installation

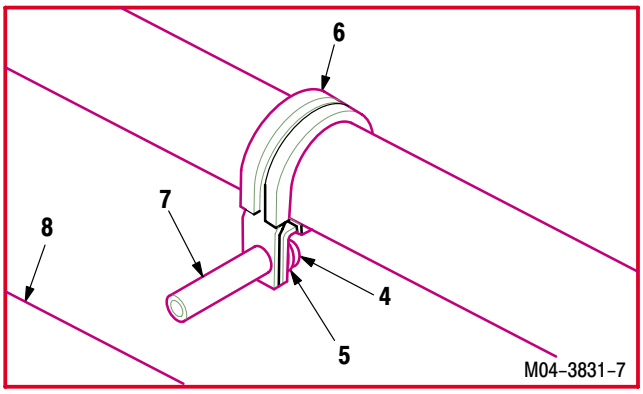
a. **Install end of new drain tube (2) through grommet (13).**



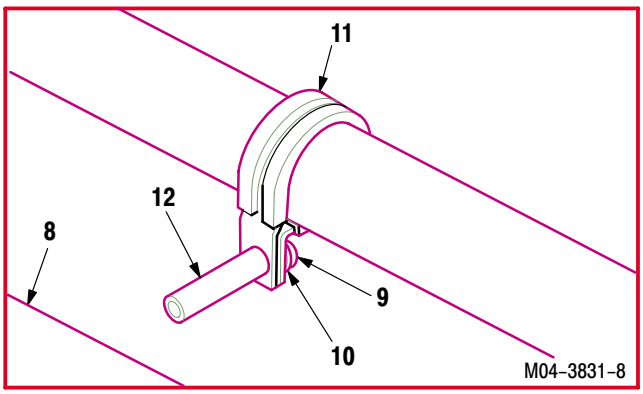


b. **Apply adhesive to tube (2) at grommet (13).** Use adhesive (item 7, App F).

c. **Install screw (9) through washer (10), clamp (11), and spacer (12) on structure (8).**



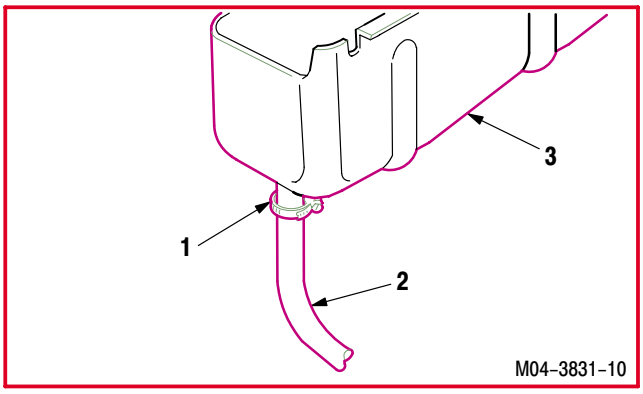
d. **Install four screws (4), through washers (5), clamps (6), and spacers (7) on structure (8).**



e. **Install clamp (1) and tube (2) on drain pan (3).**

f. **Inspect (QA).**

g. **Secure access doors L330 and R330** (para 2.2)**.**



END OF TASK

2.101. TAILBOOM FLUID DRAIN PAN REPLACEMENT

2.101.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.101.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

Materials/Parts:

Primer coating (item 147, App F)
Sealing compound (item 174, App F)

Personnel Required:

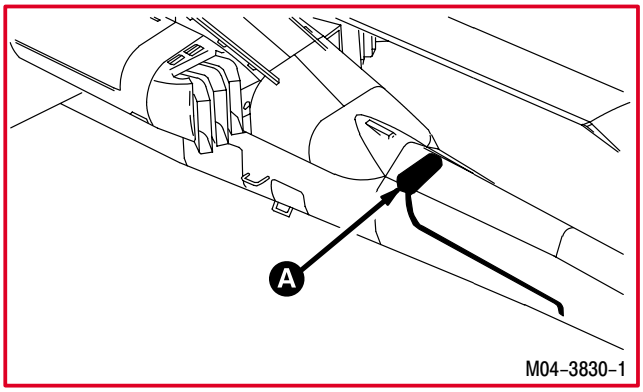
68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-344-23

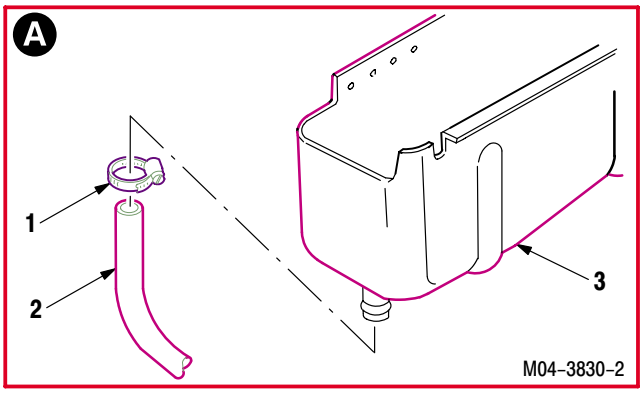
Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T250L, T250R, T290L, T290R, L325, L330, R330, R335, and R410 opened; fairing T355 removed



2.101.3. Removal

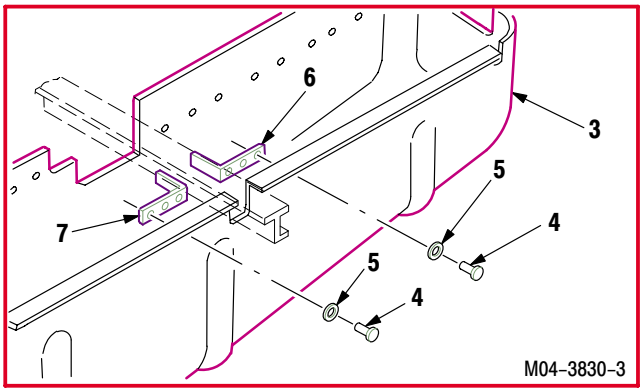
a. **Remove hose clamp (1) and fluid drain tube (2) from fluid drain pan (3).**



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2.101. TAILBOOM FLUID DRAIN PAN REPLACEMENT – continued

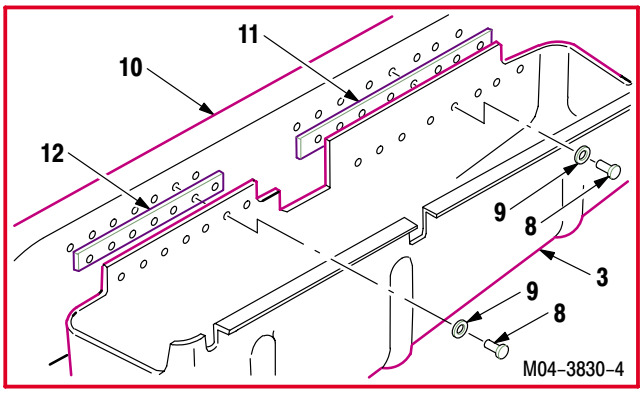
b. **Remove six rivets (4) and washers (5) attaching pan (3) to clips (6) and (7)** (TM 1-1500-204-23)**.**



c. **Remove 14 rivets (8) and washers (9) attaching pan (3) to structure (10)** (TM 1-1500-204-23)**.**

d. **Remove pan (3) and fillers (11) and (12) from structure (10).**

(1) Discard pan (3).



2.101.4. Cleaning

a. **Clean sealing compound around drain pan** (para 1.47)**.**

b. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.101.5. Inspection

a. **Check structure for cracks and corrosion** (para 2.12)**.**

b. **Check drain tube for hardness or loss of flexibility.** If found, replace drain tube (para 2.100).

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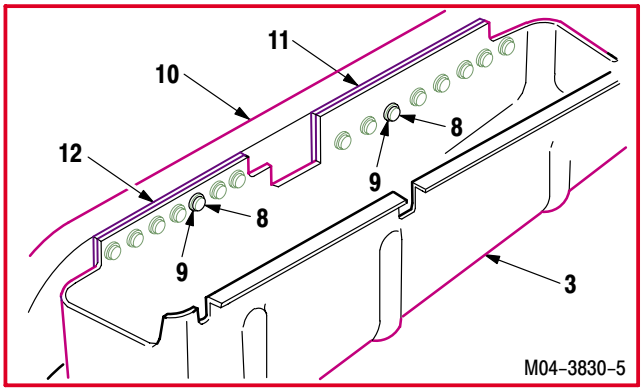
2.101. TAILBOOM FLUID DRAIN PAN REPLACEMENT – continued

2.101.6. Installation



a. **Apply a coat of primer to rivets (8) and (4) and washers (9) and (5).** Use primer coating (item 147, App F).

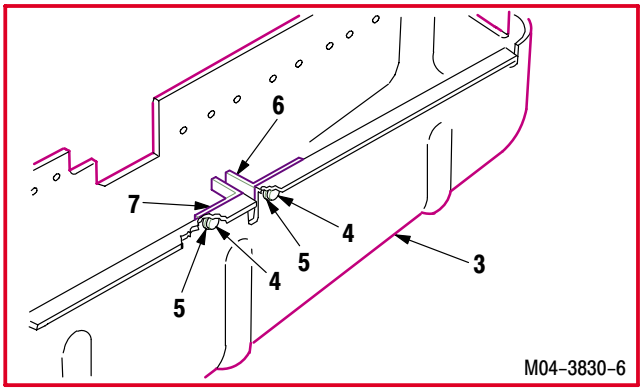
b. **Install 14 rivets (8) through washers (9), fillers (11) and (12), and new pan (3) on structure (10)** (TM 1-1500-204-23)**.**



c. **Install six rivets (4) through washers (5), clips (6) and (7), and pan (3) on structure (10)** (TM 1-1500-204-23)**.**



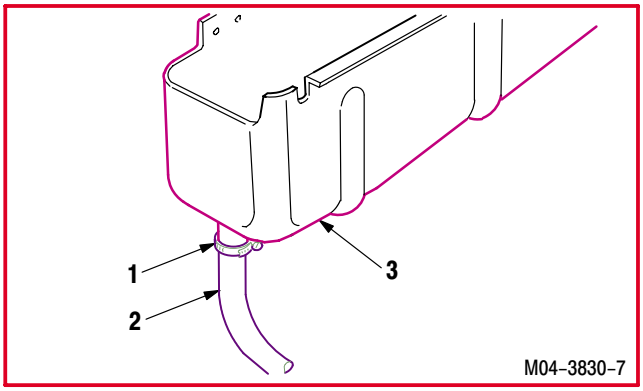
d. **Seal all edges of pan (3).** Use sealing compound (item 174, App F).



e. **Install clamp (1) and tube (2) on pan (3).**

f. **Inspect (QA).**

g. **Secure access doors T250L, T250R, T290L, T290R, L325, L330, R330, R335, and R410; install fairing T355** (para 2.2)**.**



END OF TASK

2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM)

2.101A.1. Description

This task covers: Repair.

2.101A.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Rivets NAS1738B4–2
Rivets NAS1738B4–3
Rivets NAS1738B4–4
Rivets NAS1738B4–5
Rivets NAS1739B4–3
Clad Aluminum Sheet, 2024–T3, 0.063 inch thick, per QQ-A-250/5
Cloth (item 52, App F)
Corrosion resistant coating (item 66, App F)
Detergent (item 71, App F)
Epoxy primer coating kit (item 78, App F)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

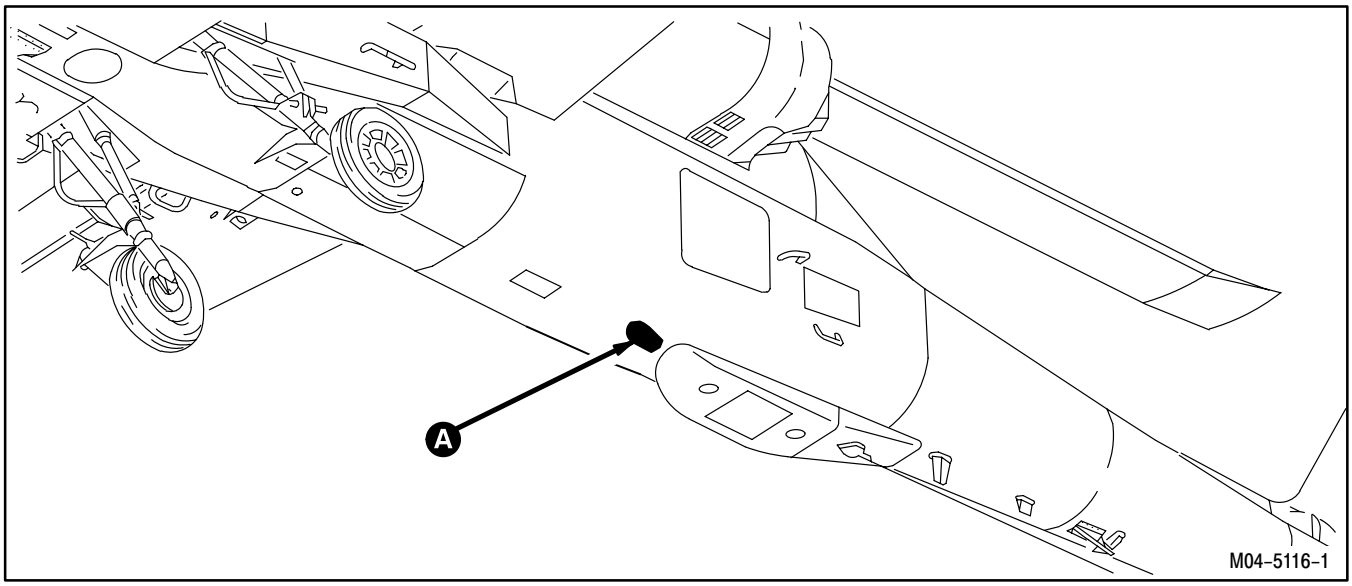
References:

TM 1-1500-204-23
TM 11-1520-238-23
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 11-1520-238-23	Wide band communication blade antenna removed

2.101A.3. Repair



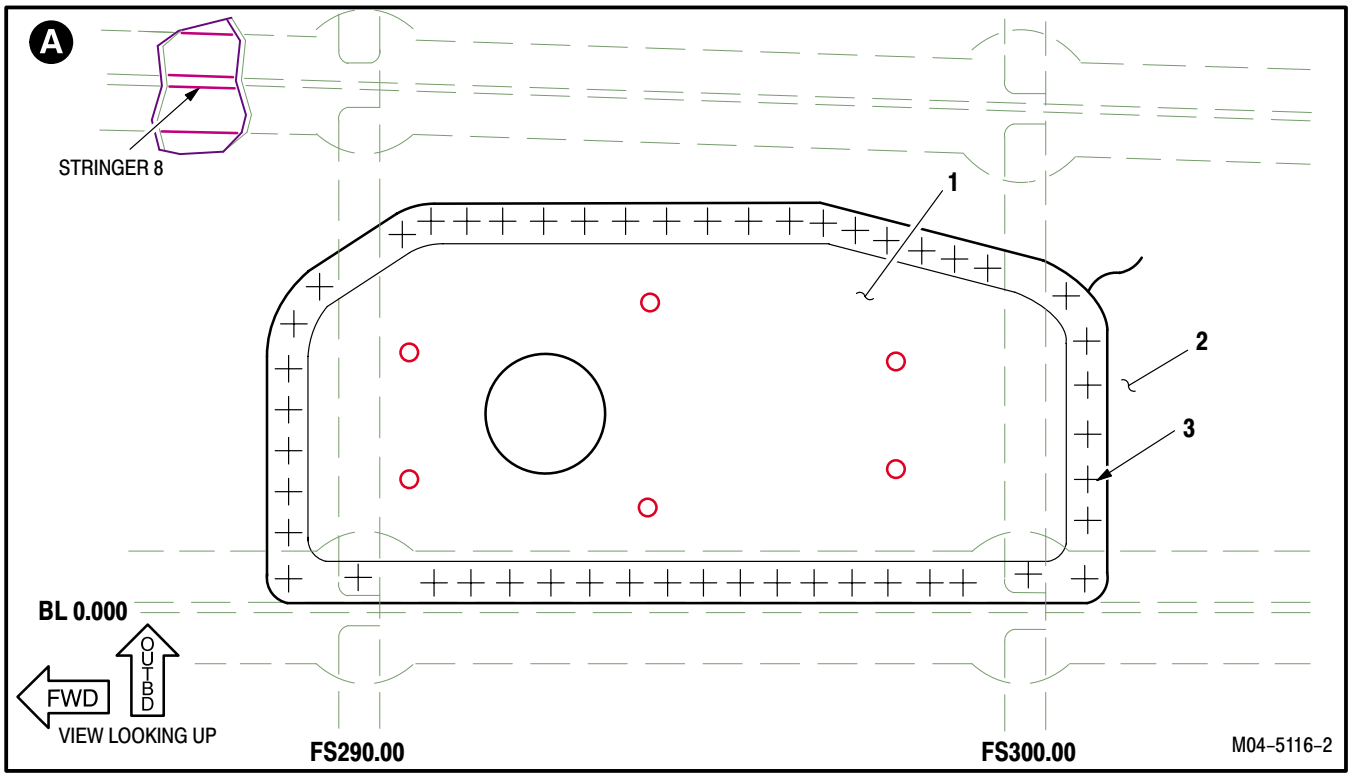
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2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM) – continued

a. **Remove pan (1) from airframe (2).**

(1) Remove rivets (3) from pan (1) and airframe (2) (TM 1-1500-204-23).

(2) Remove pan (1).



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2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM) – continued

b. **Repair crack(s).**

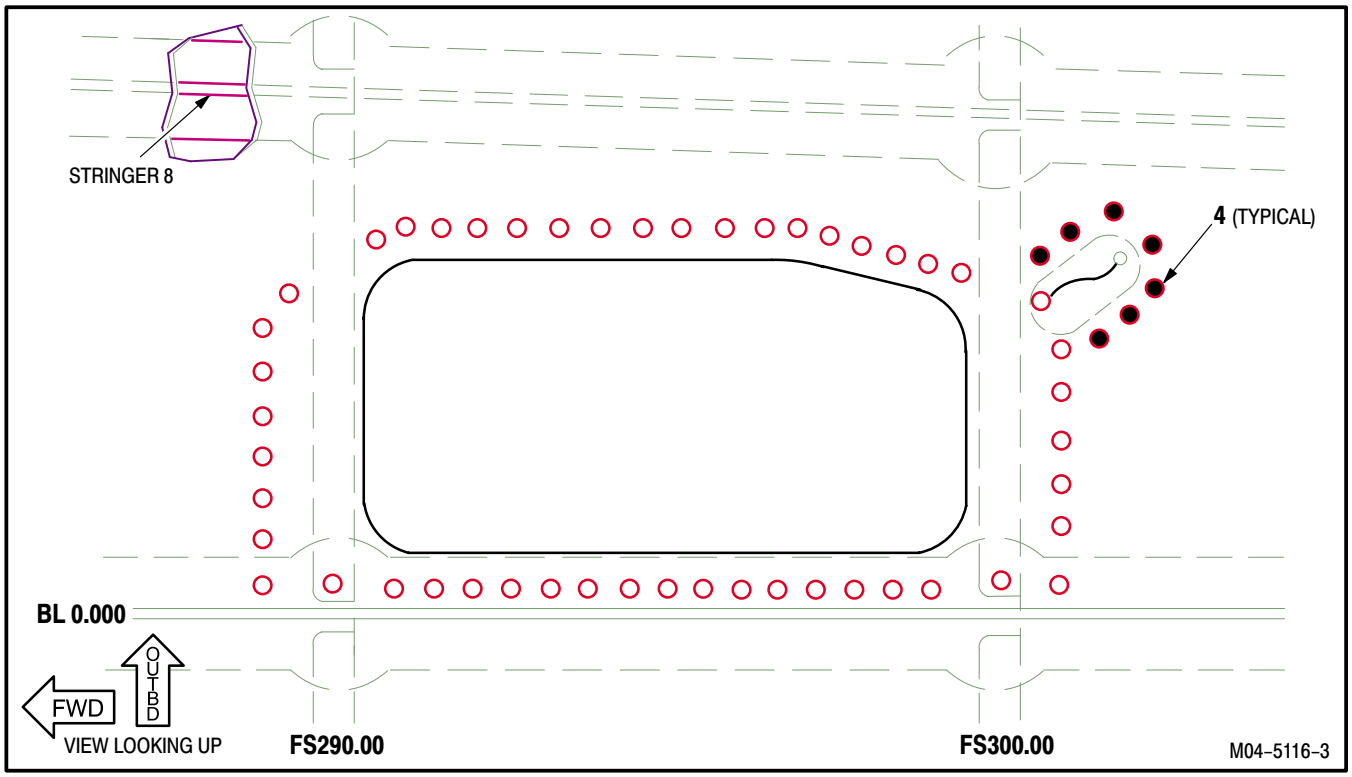
(1) Trim away cracked aircraft skin or stop drill crack(s) as required (TM 1-1500-204-23).

CAUTION

Rivets around crack repair must have **0.62 INCH** minimum edge distance from trim area to end of doubler.

(2) Drill new rivet holes (4) equally spaced around crack repair.

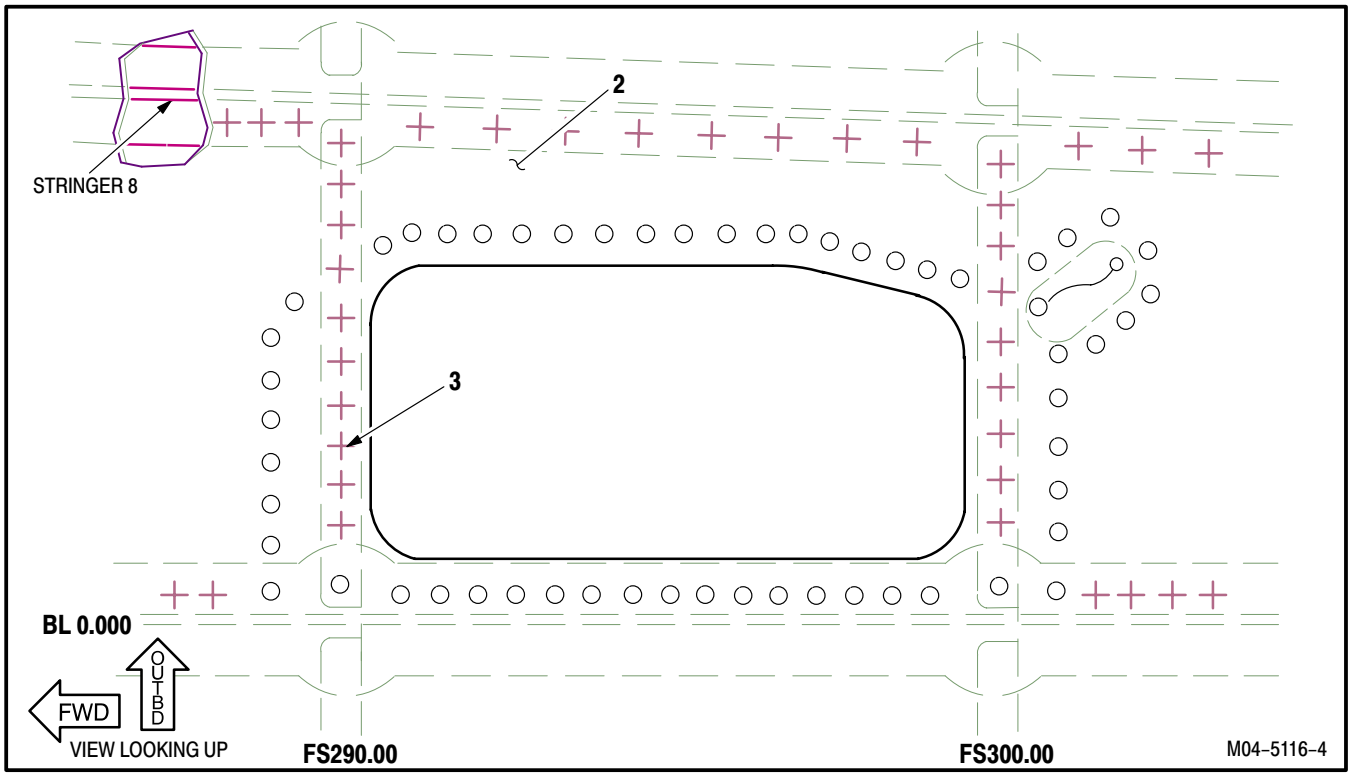
(3) Remove all sharp edges.



GO TO NEXT PAGE

2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM) – continued

c. **Remove rivets (3) from airframe (2).**



GO TO NEXT PAGE

2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM) – continued

CAUTION

Rivet edge distance of **2D + 0.03 INCH** must be maintained for all installed rivets except for rivets around crack repair which must have **0.62 INCH** minimum edge distance from trim area to end of doubler.

d. **Fabricate doubler (5) and enlarge airframe skin cutout.**

(1) Fabricate doubler (5) to approximate size shown using a **0.28 INCH** radius, four places. Doubler length may vary to ensure rivet edge distance of **2D + 0.03 INCH** minimum is maintained. Use clad aluminum sheet 2024–T3, **0.063 INCH** thick, per QQ-A-250/5.

(2) Make rough cut of cutout area in doubler to approximate size of original skin cutout. Exact match of cutout will be made in step (6).

(3) Match drill doubler (5) to airframe using existing rivet holes (6).

(4) Match drill two **0.375 INCH** drain holes (7) in doubler (5).

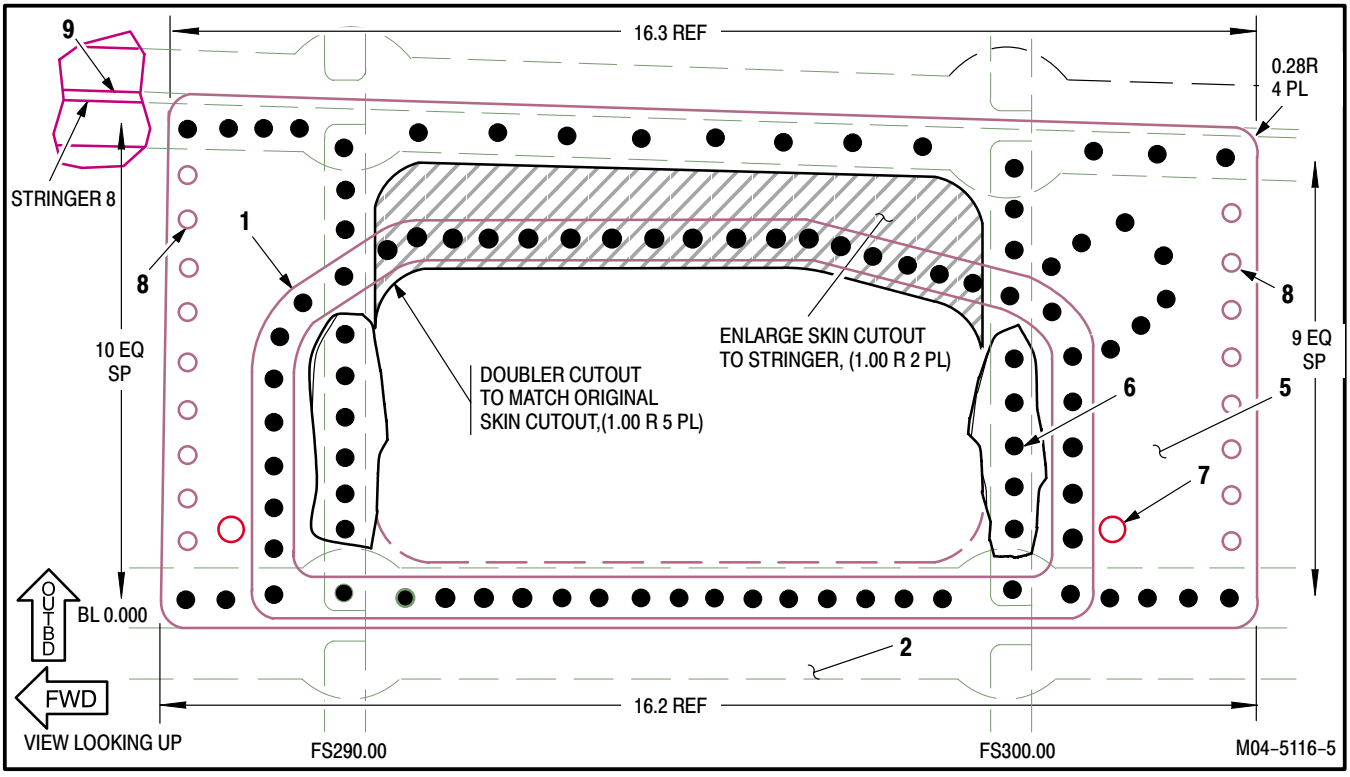
(5) Drill 17 new holes (8) in doubler (5) and airframe (2).

(a) Drill nine holes with ten equal spaces at forward edge of doubler.

(b) Drill eight holes with nine equal spaces at aft edge of doubler.

(6) Match original cutout in skin on doubler (5) using a **one INCH** radius, five places.

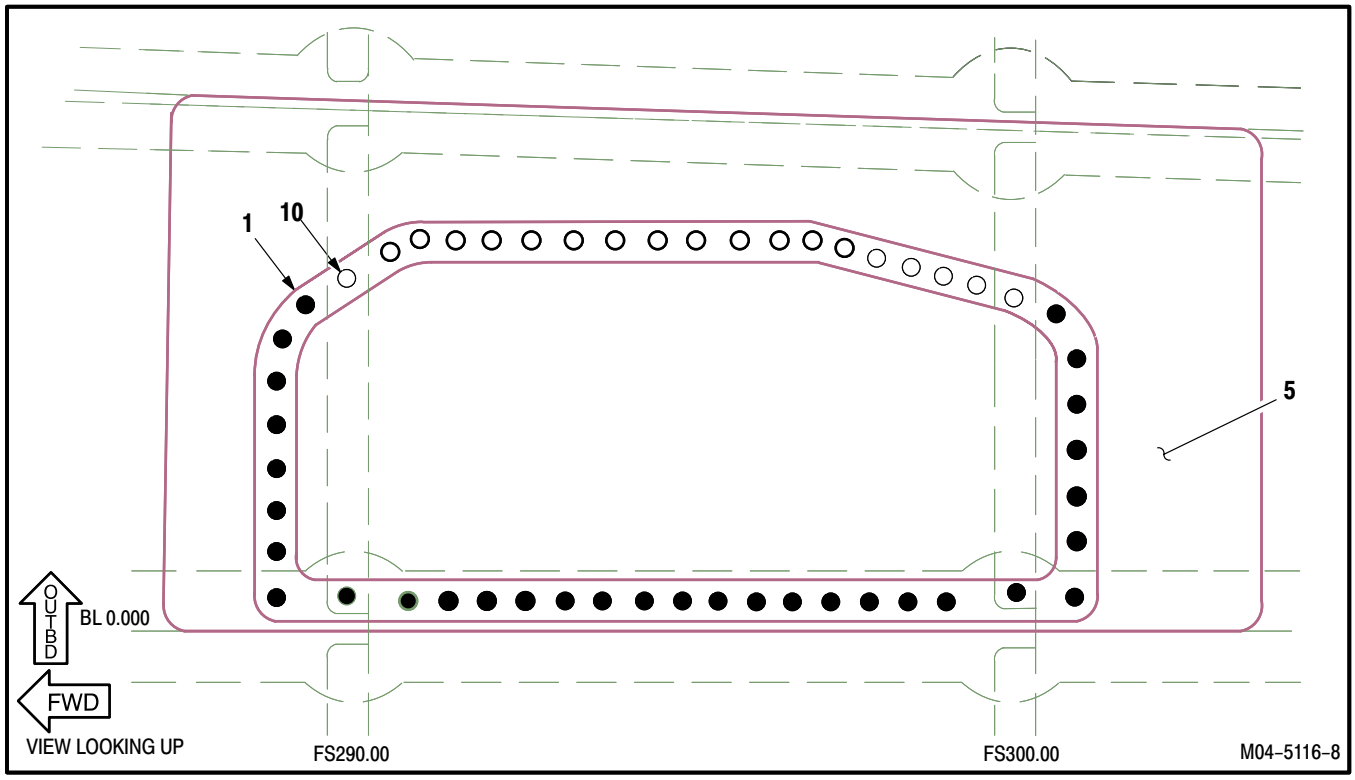
(7) Enlarge airframe skin cutout to stringer 8 (9) using **one INCH** radius, two places.



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2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM) – continued

e. **Match drill pan (1) and doubler (5) using existing rivet holes (10).**





f. **Prepare doubler for bonding.**

(1) Wash finished doubler (including rivet holes). Use detergent (item 71, App F) and water.

(2) Rinse doubler with clear water and dry with a lint free cloth. Use cloth (item 52, App F).

(3) Apply corrosion resistant coating to doubler and allow to dry for minimum **one hour** at a minimum temperature of 65° F (18° C). Use corrosion resistant coating (item 66, App F).



g. **Apply primer to doubler.**

(4) Apply primer to doubler (TM 55-1500-345-23). Use epoxy primer coating kit (item 78, App F).

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2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM) – continued

h. **Install doubler (5) on airframe (2).**

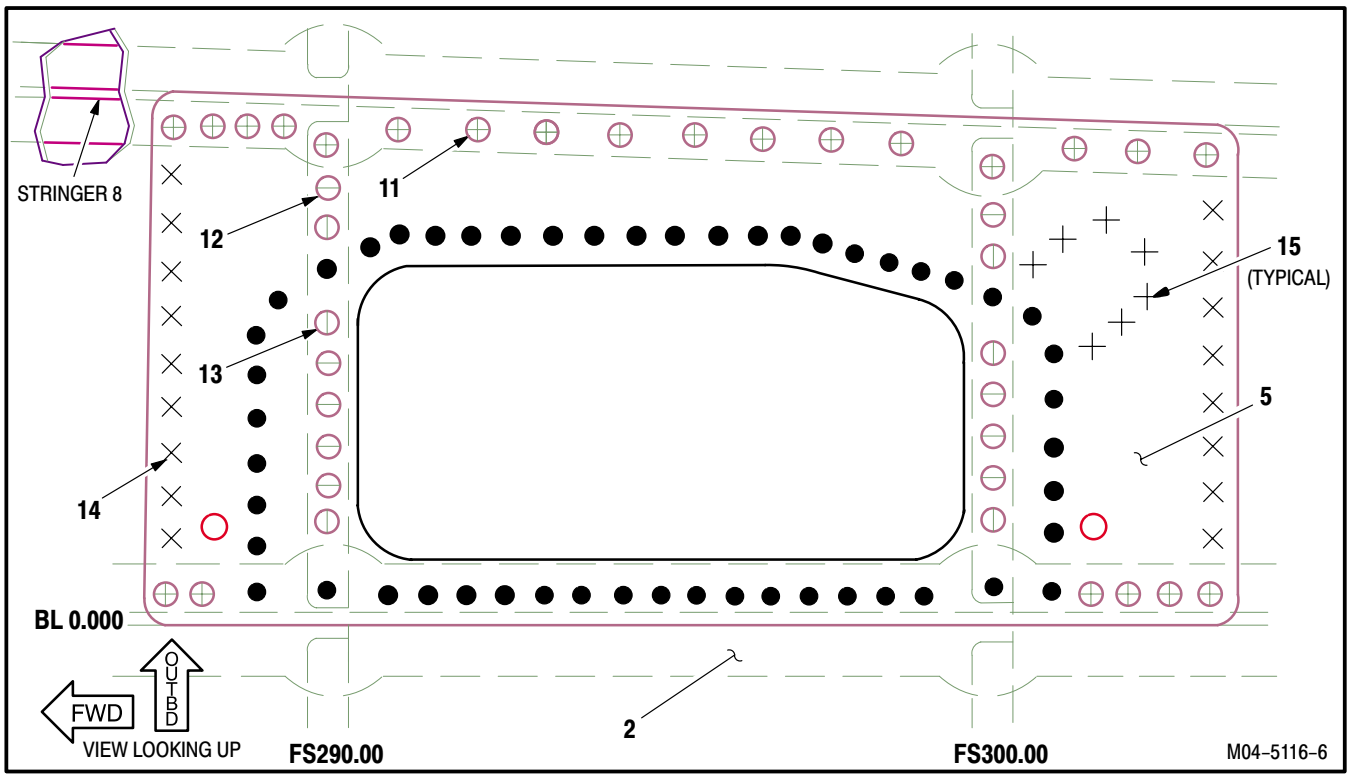
(1) Install 23 NAS1738B4–4 rivets (11) through doubler (5) and airframe (2) (TM 1-1500-204-23).

(2) Install 9 NAS1738B4–3 rivets (12) through doubler (5) and airframe (2) (TM 1-1500-204-23).

(3) Install 6 NAS1739B4–3 rivets (13) through doubler (5) and airframe (2) (TM 1-1500-204-23).

(4) Install 17 NAS1738B4–2 rivets (14) through doubler (5) and airframe (2) (TM 1-1500-204-23).

(5) Install NAS1738B4–2 rivets (15) through doubler (5) and airframe (2) around repair area(s) as required (TM 1-1500-204-23).



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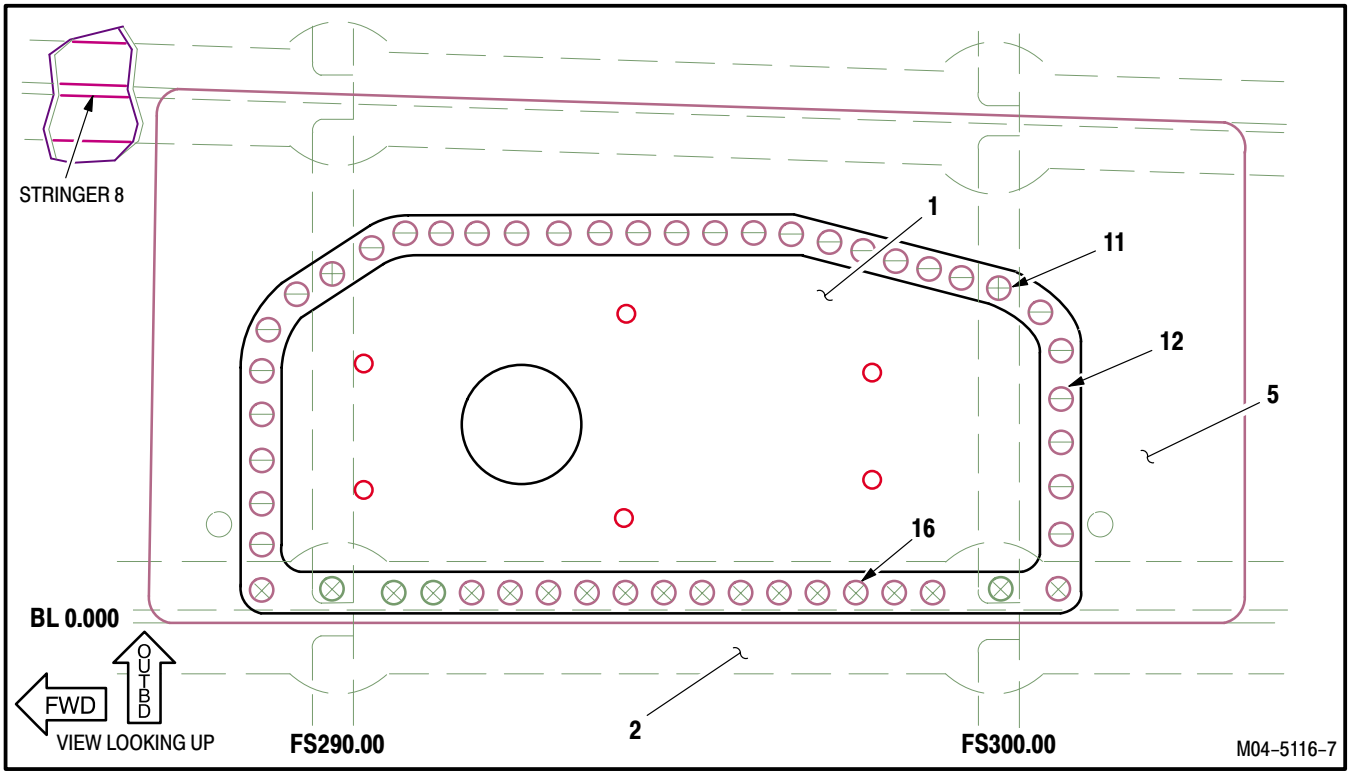
2.101A. WIDE BAND FM ANTENNA PAN MOUNT FUSELAGE REPAIR (AVIM) – continued

i. **Install pan (1) on airframe (2).**

(1) Install 30 NAS1738B4–3 rivets (12) through pan (1), doubler (5) and airframe (2) (TM 1-1500-204-23).

(2) Install 19 NAS1738B4–5 rivets (16) through pan (1), doubler (5) and airframe (2) (TM 1-1500-204-23).

(3) Install 2 NAS1738B4–4 rivets (11) through pan (1), doubler (5) and airframe (2) (TM 1-1500-204-23).



j. **Spot prime new rivets and paint exposed doubler** (TM 55-1500-345-23)**.**

k. **Inspect (QA).**

l. **Install Wide Band Communication Blade Antenna** (TM 11-1520-238-23)**.**

END OF TASK

SECTION VII. EMPENNAGE MAINTENANCE

2.102. EMPENNAGE INSPECTION

2.102.1. Description

This task covers: Fuselage. Vertical Stabilizer. Horizontal Stabilator. General (Fittings, Castings, Forgings).

2.102.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/8 x 1/2-inch drive socket wrench adapter (item 6, App H)
700 - 1600 inch-pound 1/2-inch drive click type torque wrench (item 433, App H)

Materials/Parts:

Cloth (item 50, App F)
Dishwashing compound (item 72, App F)
Grease (item 87, App F)
Sponge (item 190, App F)

Personnel Required:

67R Attack Helicopter Repairer

References:

TM 1-1500-204-23
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

Refer to paragraph 2.103 for damage limits and corrective action.

2.102.3. Fuselage

a. **Check skin panels, access covers, doors, and fairings for corrosion, cracks, tears, punctures, loose or missing fasteners, and working rivets.**

b. **Check honeycomb panels for cracks, tears, or punctures.**

c. **Check steps for corrosion, cracks, and condition of anti-skid coating.**

d. **Check structural attach points for wear caused by movement.** None allowed.

e. **When electrical connectors are detached, check for foreign objects, corroded, bent, broken, loose, or missing pins.**

(1) Check connector operation for smooth, positive locking action.

(2) Check wire harnesses for chafing and loose installation. Refer to TM 55-1500-323-24 for wire and connector repair.

f. **Check for cracks at frame F.S. 530 and F.S. 547 forward faces.** Use flashlight and mirror.

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2.102. EMPENNAGE INSPECTION

g. **Check for cracks along all stringers attached to frames F.S. 530 and F.S. 547, especially within 6 INCHES of frame attachment points.**

2.102.4. Vertical Stabilizer

a. **Check skin panels, access covers, door, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.**

(1) Check for cracked or chipped paint around rivet heads. Use a 5X magnifier.

b. **Check fittings, castings, and forgings for corrosion and cracks.**

c. **Check structural attachment points for evidence of wear due to movement.** None allowed.

d. **Check entire length of all stringers under vertical stabilizer mounts for cracks and working rivets.**

(1) Clean paint area. Use dishwashing compound (item 72, App F) and sponge (item 190, App F).

(2) Check cleaned area for cracked paint around perimeter and head of rivets. Use 5X magnifier.

e. **Check for working or missing rivets.**

(1) If working rivets or missing rivets are found, refer to TM 1-1500-204-23.

f. **Check for loose or damaged nutplates.**

(1) If loose or damaged nutplates are found, refer to TM 1-1500-204-23.

g. **Check vertical stabilizer attachment bolts for proper torque.**

(1) Check torque by applying **975 INCH-POUNDS** torque to all vertical stabilizer bolts. Use torque wrench and adapter.

CAUTION

Ensure no more than one bolt is out at the same time and that the installed bolts are torqued to breakaway torque plus **50 INCH-POUNDS** prior to removing another bolt.

(2) Any bolt which will not hold torque must be removed and inspected immediately along with its mating barrel nut. If either the barrel nut or bolt are damaged, remove both fasteners and hold as CAT 1 QDR exhibit. Check and record the torque on the other mounting bolts and include in the QDR.

(3) Replace the defective hardware (para 2.107).

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2.102. EMPENNAGE INSPECTION – continued

2.102.5. Horizontal Stabilator

a. **Check skin panels, access covers, doors, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.**

b. **Check fittings, castings, and forgings for corrosion and cracks.**

c. **Check stabilator pivot bolts.**

(1) Remove access doors LS1 and RS1; and fairings L545 and R545 (para 2.2).

(2) Remove stabilator pivot bolts one at a time (para 2.113).

(3) Check pivots bolts and self-aligning bearing for evidence of surface discoloration and roughness.

(a) If surface discoloration or roughness is visible, or if bolt removal was difficult, polish bolt with cloth (item 50, App F).

(b) After polishing, if surface pits and scratches exceed limits (para 2.113), replace bolt.

(c) If scratches are less than limits (para 2.113) deep, ensure sharp edges are removed with minimal material and surface coating loss.

NOTE

To check surface discoloration and roughness on self-aligning bearings it may be necessary to remove stabilator assembly (para 2.113).

(4) Check inner race of self-aligning bearing.

NOTE

Discoloration may be deeper than surface level. Polishing should remove roughness. Avoid removal of surface coating and material.

(a) If surface discoloration or roughness exists, polish race with cloth (item 50, App F).

(b) After polishing, if surface pits and scratches remain, do not attempt blending. If scratches and pits prevent easy installation of pivot bolt, replace stabilator (para 2.113).

(5) Check that spacer slides freely and smoothly over surface of bolt.

(6) Coat pivot bolts with grease (item 87, App F) and install (para 2.113).

(7) Close access doors LS1 and RS1; and secure fairings L545 and R545 (para 2.2).

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2.102. EMPENNAGE INSPECTION – continued

d. **Check leading edge debris cover for cuts, tears, holes, and loose edges.**

(1) Cuts and tears less than **2.0 INCHES** in length, repair (para 2.113). Cuts and tears exceeding **2.0 INCHES** in length, replace (para 2.115).

(2) Loose edges less than **1.5 INCHES**, repair (para 2.113). Loose edges exceeding **1.5 INCHES**, replace (para 2.115).

(3) Holes and gaps less than **0.5 INCHES** in diameter, repair (para 2.113). Holes and gaps exceeding **0.5 INCHES** in diameter, replace (para 2.115).

2.102.6. General (Fittings, Castings, Forgings)

a. **Nicks, scratches, and gouges which do not develop into cracks are generally acceptable if sharp edges can be blended and damage does not interfere with operational characteristics of affected components.**

(1) If blending is required, remove minimal material to smooth off sharp edges.

b. **Cracks are generally not acceptable.**

(1) Use approved non-destructive testing methods to determine if cracks exist.

END OF TASK

2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR

2.103.1. Description

This task covers: Damage Limits Categories. Types of Damage (Examples): Limits and Action. Corrosion. Impact or Fatigue Damage.

2.103.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1500-204-23
TM 55-1500-345-23

Materials/Parts:

Cloth (item 50, App F)
Sealing compound (item 178, App F)

Personnel Required:

68G Aircraft Structural Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

2.103.3. Damage Limits Categories

Damage categories are assigned to help you establish repairable limits for particular areas and parts. Only applicable categories are listed for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

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2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR – continued

2.103.4. Types of Damage (Examples): Limits and Action



Category	Limits	Action
a. Type: Skin Corrosion		
A	Less than 20 percent of skin thickness and no more than 25 percent of panel area.	Remove corrosion (para 1.49).
B	More than 20 percent of skin thickness and less than 50 percent of panel area with no effect on adjacent structure.	Patch repair (TM 1-1500-204-23) not to exceed 25 percent of total panel area.
C	More than 50 percent of panel area and skin thickness.	Replace affected area with patch repair (TM 1-1500-204-23).
b. Type: Skin or Sheet Metal Holes, Cracks, or Tears		
A	---	---
B	---	---
C	No cracks or tears more than 25 percent of shortest skin panel dimension.	Clean up and patch repair (TM 1-1500-204-23).
	No holes greater than **3.00 INCHES** in diameter (clean up can be no closer than **2.00 INCHES** to support structure).	Clean up and patch repair (TM 1-1500-204-23).

2.103.5. Corrosion

Category	Limits	Action
a. Structural		
A	Less than 10 percent of material thickness across 25 percent of cross section.	Remove corrosion (para 1.49).
B	Greater than 10 percent of material thickness but less than 50 percent of cross section.	Patch repair (TM 1-1500-204-23) as long as area remaining allows attaching area.
C	Greater than minor damage.	Replace.

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2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
b. Castings, Forgings		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040 INCH** depth.	Repair corroded area (TM 1-1500-204-23).
B	Exceeds A.	Replace.
c. Fasteners, Bearings, and Bushings		
A	Removable or allowed to remain without affecting size or function. Stabilator pivot bolts and self-alining bearings allowed discoloration below surface coating, surface pits, and/or scratches less than **0.005 INCH** after polishing with cloth (item 50, App F) to remove roughness. (Surface coating must not be removed.)	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
d. Covers		
A	Not applicable.	
B	Less than 10 percent of material thickness and less than **4.00 SQUARE-INCHES** after clean up.	Repair (TM 1-1500-204-23).
C	Exceeds B or repairs will affect function.	Replace.
e. Step assembly		
B	Less than 10 percent of wall thickness or 25 percent of tube circumference in length or width after clean up.	Repair (TM 1-1500-204-23).
C	Exceeds B.	Replace.

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2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
f. Horizontal Stabilator Actuator		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040 INCH** depth (whichever is smaller). (Reworked area must clear fastener holes or counter bores by not less than **0.50 INCH**.)	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.

2.103.6. Impact or Fatigue Damage

Category	Limits	Action
a. Skin or Sheet Metal Holes, Cracks, or Tears		
A	Holes: Less than **3.00 INCHES** in diameter. (Cleanup can be no closer than **2.00 INCHES** to supporting structure, and no more than 5 percent of skin areas.)	Clean up and patch repair (TM 1-1500-204-23).
B	Cracks or tears: no longer than 25 percent of shortest skin dimension.	Clean up and patch repair (TM 1-1500-204-23).
b. Working Rivets		
B	Loose or working rivets in groups of 5 or less and groups of 6 or more.	Replace rivets (TM 1-1500-204-23) and Table 1. Touch up paint (TM 55-1500-345-23).

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2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR – continued



CAUTION

- Replace rivets one bay (rib to rib) at a time.
- Use extra care during rivet removal not to enlarge holes.
- Use temporary fasteners in surrounding rivet holes when performing riveting operation.

NOTE

- All replacement rivets shall be installed wet with sealing compound (item 178, App F) (TM 1-1500-204-23).
- Do not shave stem of rivet after installation.

Table 1

GROUPING	HOLE LIMITS		RIVET TYPE
	MIN	MAX	
5 rivets or less	0.160	0.164	NAS1398CW5A
	0.176	0.180	NAS1738B5
	0.192	0.196	NAS1398D6
	0.205	0.209	NAS1738B6

GROUPING	HOLE LIMITS		RIVET TYPE
	MIN	MAX	
6 rivets or more	0.160	0.164	NAS1398CW5A
	0.176	0.180	NAS1720V5LAX
	0.192	0.196	NAS1398CW6A or NAS1720C6L

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2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
c. Castings, Forgings		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040 INCH** depth (whichever is smaller). (Reworked area must clear fastener holes by not less than **0.50 INCH**.)	Repair (TM 1-1500-204-23).
B	Exceeds A.	Requires depot repair.
d. Skin or Sheet Metal Nicks or Scratches		
A	Less than 10 percent of material thickness.	Clean up (para 1.47). (Area cannot exceed **4.00 SQUARE-INCHES**).
B	Deeper than 10 percent but less than 25 percent of material thickness.	Clean up (para 1.47). (Area cannot exceed 5 percent of skin area and can be no closer than **2.00 INCHES** to supporting structure.)
C	Exceeds B.	Replace.
e. Skin Dents		
A	Smooth dents less than **0.25 INCH** deep.	Repair (TM 1-1500-204-23).
B	Dents with nicks or gouges or deeper than **0.025 INCH**.	Patch repair (TM 1-1500-204-23).
C	Dents greater than **3.00 INCHES** in diameter or cleanup will exceed 5 percent of skin area or will be closer than **2.00 INCHES** to supporting structure.	Clean up and remove any sharply bent sections or other damaged sections that could result in fatigue crack initiation/progressive fatigue crack failure. Patch repair “damage clean” section (TM 1-1500-204-23).
f. Cover Cracks, Tears, and Punctures		
B	Less than 25 percent length of shortest dimension.	Repair (TM 1-1500-204-23).
C	Exceeds B.	Replace.
g. Horizontal Stabilator Actuator Fitting Cracks		
C	Any crack.	Replace.

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2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
h. Horizontal Stabilizer Leading Edge Abrasions, Cuts, and Cracks		
A	Less than 50 percent of material thickness. Each 10 percent reduction in depth will double the permissible area or length of damage.	Repair (TM 1-1500-204-23).
A	Abrasions of maximum depth not to exceed **1.00 SQUARE-INCH**. Cuts to maximum depth not to exceed **1 INCH** in length.	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
i. Horizontal Stabilizer Leading Edge Dents		
A	Smooth dents less than **0.25 INCH** deep.	Repair (TM 1-1500-204-23).
B	Dents with nicks or gouges or deeper than **0.025 INCH**.	Patch repair (TM 1-1500-204-23).
C	Dents greater than **3.00 INCHES** in diameter or cleanup will exceed 5 percent of skin area or will be closer than **2.00 INCHES** to supporting structure.	Clean up and remove any sharply bent sections or other damaged sections that could result in fatigue crack initiation/progressive fatigue crack failure. Patch repair “damage clean” section (TM 1-1500-204-23).
j. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: less than 25 percent length of shortest skin dimension.	Repair (para 2.30).
B	Punctures: less than **2.00 INCHES** from supporting structure.	Repair (para 2.30).
C	Exceeds B or hinders normal operation or function.	Replace.
k. Kevlar/Epoxy Skin Delamination		
B	No deeper than three plies or **0.050 INCH**, whichever is less. (Treat limit-exceeding damages as crack, tear, or puncture repair.)	Repair (para 2.30).

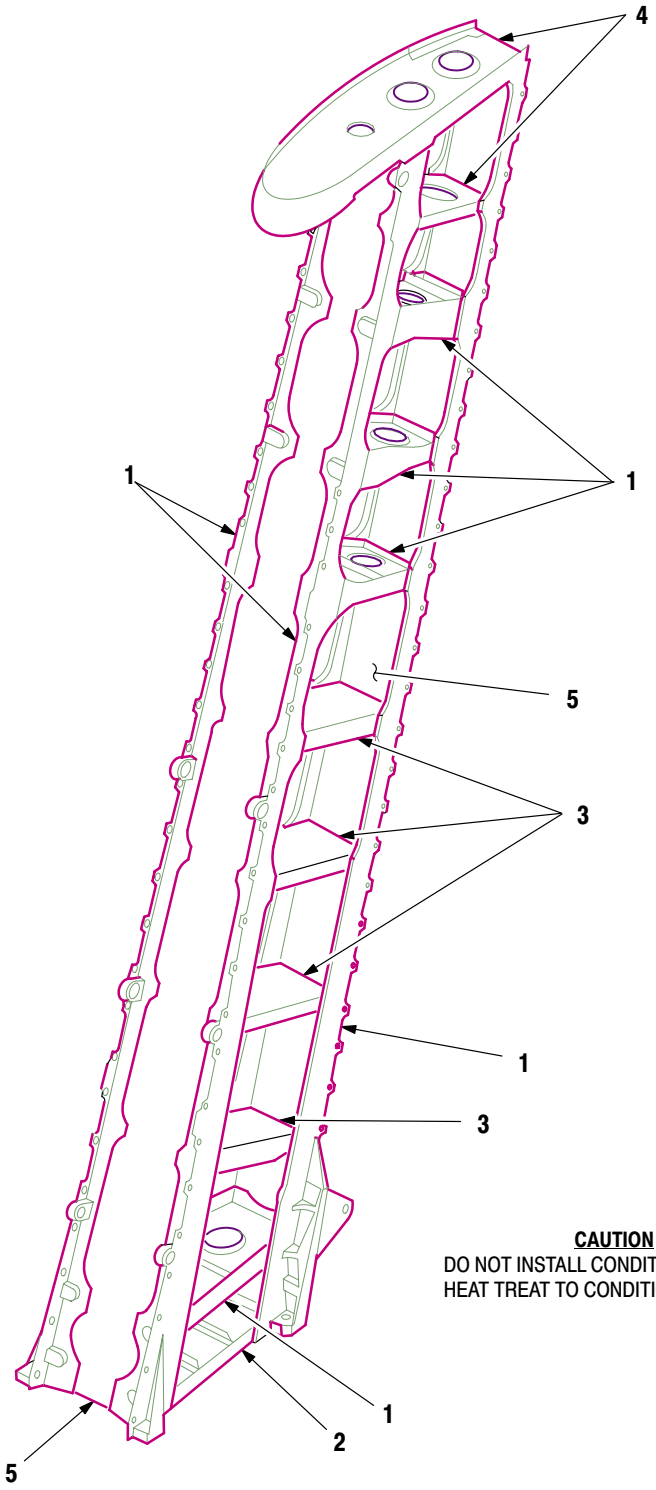
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2.103. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
l. Kevlar/Epoxy Skin Debonding		
C	Greater than **6.00 INCHES** but less than 40 percent of panel area. Greater than 40 percent of panel area.	Replace if possibility of danger to crew or helicopter exists. Replace panel.
m. Kevlar/Epoxy Fairings Debonding		
B		Rebond where ribs, gussets, baffles, stiffeners, seals, and doublers have debonded.
n. Kevlar/Epoxy Fairings Cracks		
B	No longer than 25 percent of shortest skin dimension.	Repair (para 2.30).
C	Exceeds B or extends from one end of part through other end.	Replace.
o. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers.	Repair (para 2.30).

END OF TASK

2.104. VERTICAL STABILIZER SPAR BOX FRAME STRUCTURE



CAUTION

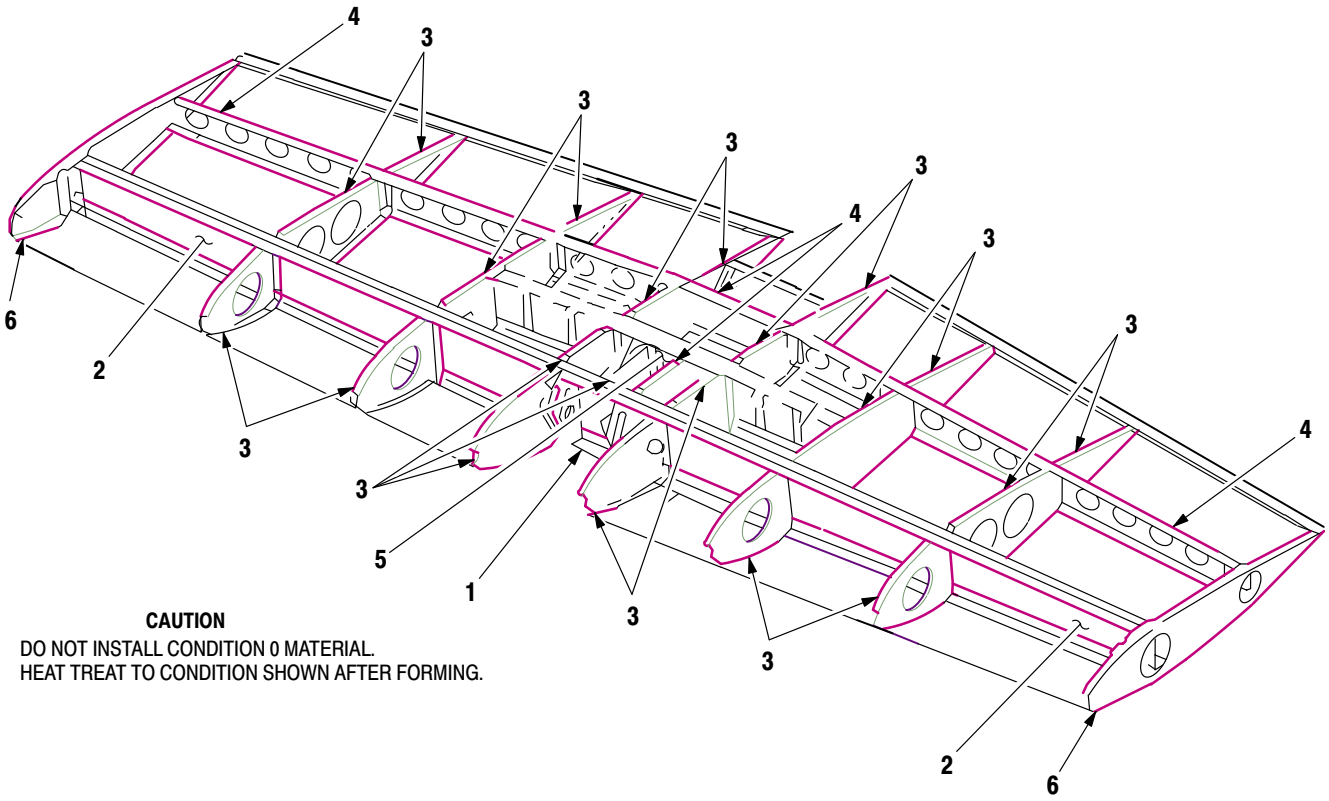
DO NOT INSTALL CONDITION O MATERIAL.
HEAT TREAT TO CONDITION SHOWN AFTER FORMING.

M04–0011

2.104. VERTICAL STABILIZER SPAR BOX FRAME STRUCTURE – continued

Item	Material	Specification	Condition	Thickness (inches)
1	Forging			
2	2024 AL ALY	QQ-A-250/4	T42	0.063
3	2024 AL ALY	QQ-A-250/4	T42	0.050
4	2024 AL ALY	QQ-A-250/4	T42	0.040
5	2024 AL ALY	QQ-A-250/4	T3	0.050

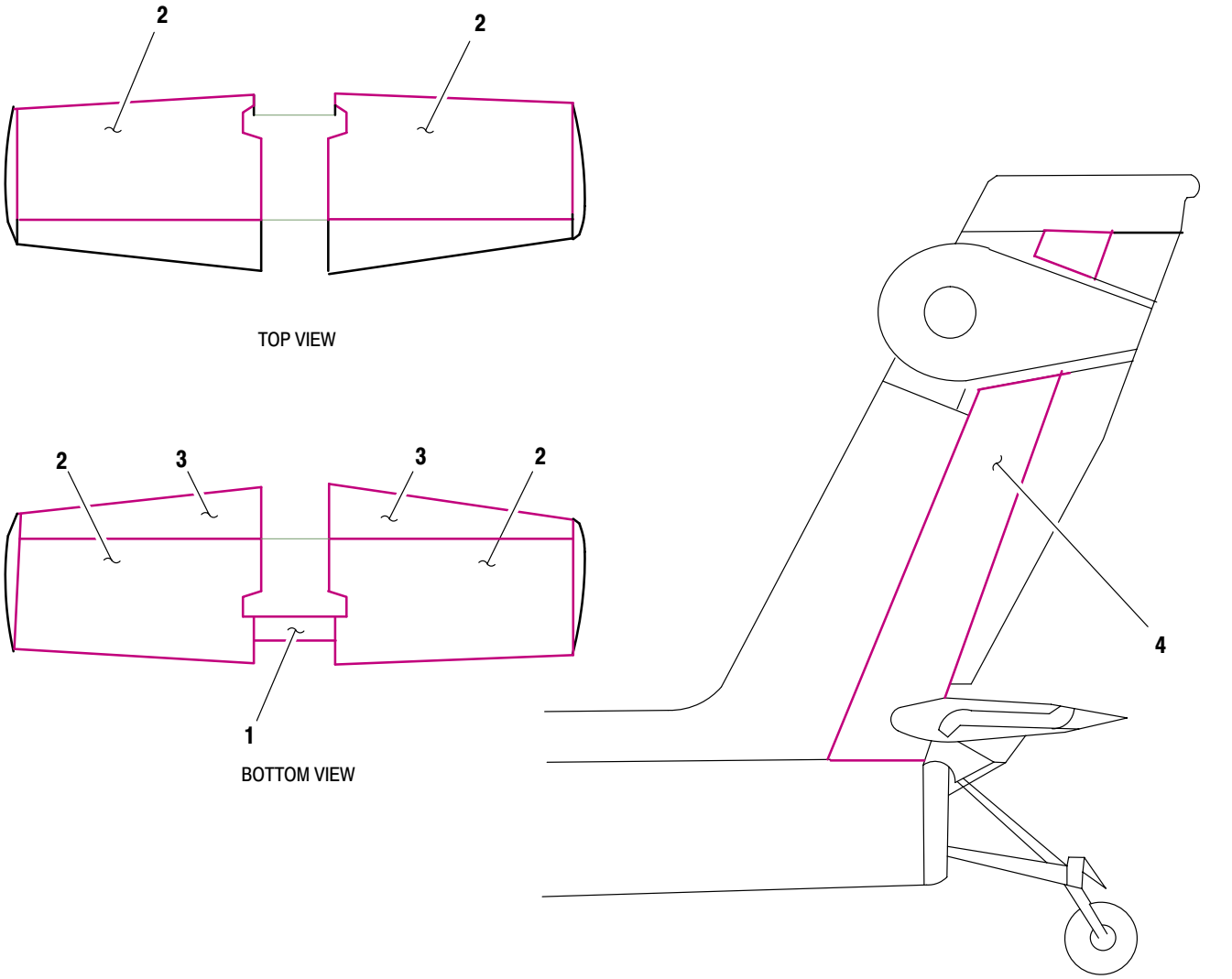
2.105. HORIZONTAL STABILATOR FRAME STRUCTURE



M04–1155–1

Item	Material	Specification	Condition	Thickness (inches)
1	Forging			
2	2024 AL ALY	QQ-A-250/4	T3	0.016
3	2024 AL ALY	QQ-A-250/4	T42	0.032
4	2024 AL ALY	QQ-A-250/4	T42	0.040
5	2042 AL ALY	QQ-A-250/4	T3	0.032
6	2024 AL CLAD	QQ-A-250/5	T42	0.032

2.106. EMPENNAGE SKIN PLATES



Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T3	0.025	9.0	12.0
2	2024 AL CLAD	QQ-A-250/5	T3	0.025	32.0	60.0
3	2024 AL CLAD	QQ-A-250/5	T3	0.025	28.0	60.0
4	2024 AL CLAD	QQ-A-250/5	T3	0.050	15.12	104.0

2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION

2.107.1. Description

This task covers: Removal. Cleaning. Inspection. Installation. Corrosion Prevention.

2.107.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
3/8 x 1/2-inch drive socket wrench adapter (item 6, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)
Aircraft maintenance sling (item 289, App H) (p/o item 390, App H)
700 - 1600 inch-pound 1/2-inch drive click type torque wrench (item 433, App H)
30 - 150 inch-pound 3/8-inch drive click type torque wrench (item 441, App H)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Materials/Parts:

Antiseize compound (item 26, App F)
Cloth (item 52, App F)
Corrosion preventive compound (item 63, App F)
Dry cleaning solvent (item 74, App F)
Mat (item 122, App F)
Sealing compound (item 176, App F)
Strap (item 191, App F)

Personnel Required:

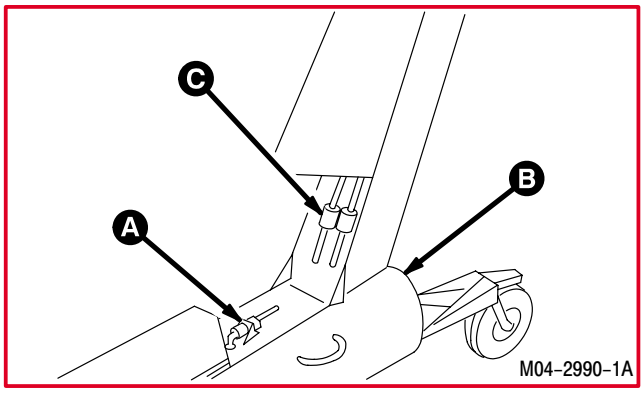
67R Attack Helicopter Repairer
Two persons to assist
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-323-24
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
6.131	Intermediate gearbox removed
6.145	Tail rotor gearbox removed
2.113	Horizontal stabilator removed
2.110	Vertical stabilizer tip removed
2.111	Vertical stab trailing edge removed

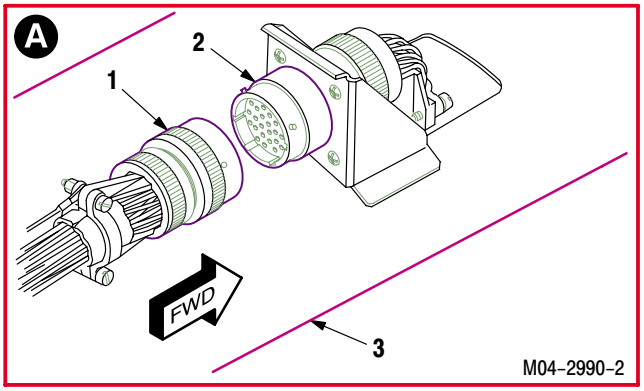


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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

2.107.3. Removal

a. **Detach connector P124 (1) from receptacle J124 (2) on tailboom assembly (3).**

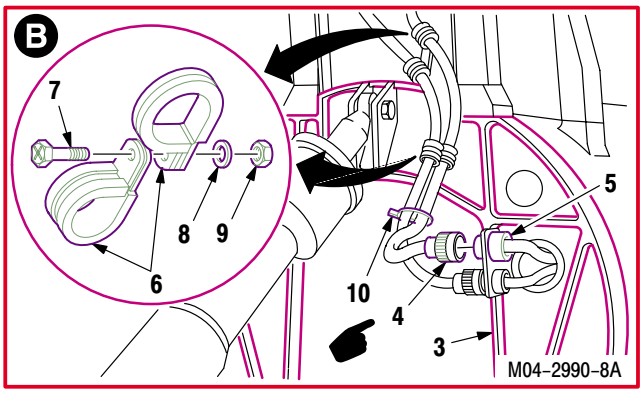


b. **Detach connector P756 (4) from receptacle J756 (5) on tailboom (3).**

c. **Remove two loop clamps (6) from tailboom (3) (two places).**

(1) Remove two screws (7), self-locking nuts (8), and washers (9) from clamps (6).

(2) Remove two clamps (6) from tailboom (3) (two places).



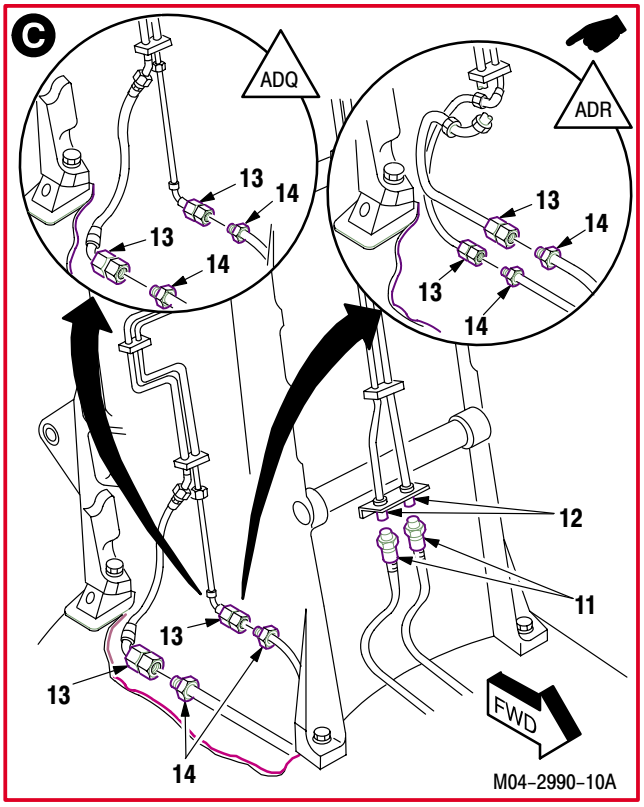
d. **Remove and discard tie strap (10).**

NOTE

- On aircraft modified with elastomeric mounts the two vertical stabilizer hydraulic line assemblies are installed with the 45° and 90° elbows at the back of the vertical stabilizer hard lines.
- On aircraft that have not been modified with elastomeric mounts the two vertical stabilizer hydraulic line assemblies are installed with the 45° and 90° elbows at the bracket on the F.S. 547 frame.

e. **Remove two vertical stabilizer hydraulic line coupling assemblies (11) from coupling halves (12).**

f. **Remove two coupling assemblies (13) from coupling halves (14).**



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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

g. **If installed, remove two grounding jumpers (14.1) from two terminal studs (14.2).**

(1) Remove two nuts (14.3) and washers (14.4) from two terminal studs (14.2).

(2) Remove two jumpers (14.1) and washers (14.5) from terminal studs (14.2).

h. **Install aircraft maintenance sling (15) on stabilizer (16).**

(1) Insert and lock four sling quick-release pins (17) in stabilizer pin sockets (18).

1. **Remove stabilizer (16) from tailboom (3).**

(1) Position lifting crane aft of helicopter tail.

(2) Aline crane hook (19) over tail rotor gearbox area on stabilizer (16) forward structure.

(3) Install crane hook (19) on stabilizer sling lifting eye (20).

CAUTION

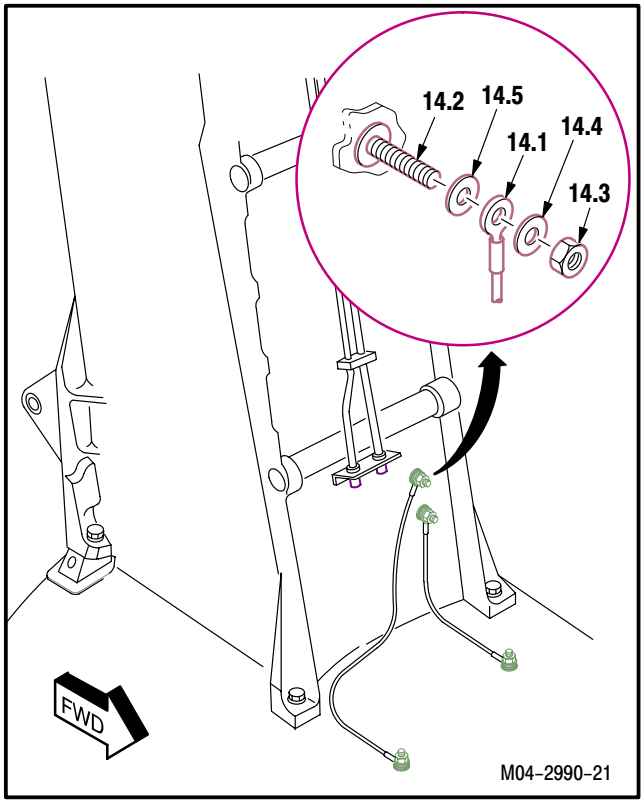
Tension sling at this point only enough to remove strap slack. Hoist-loading on stabilizer will cause major structural damage if too much tension is applied.

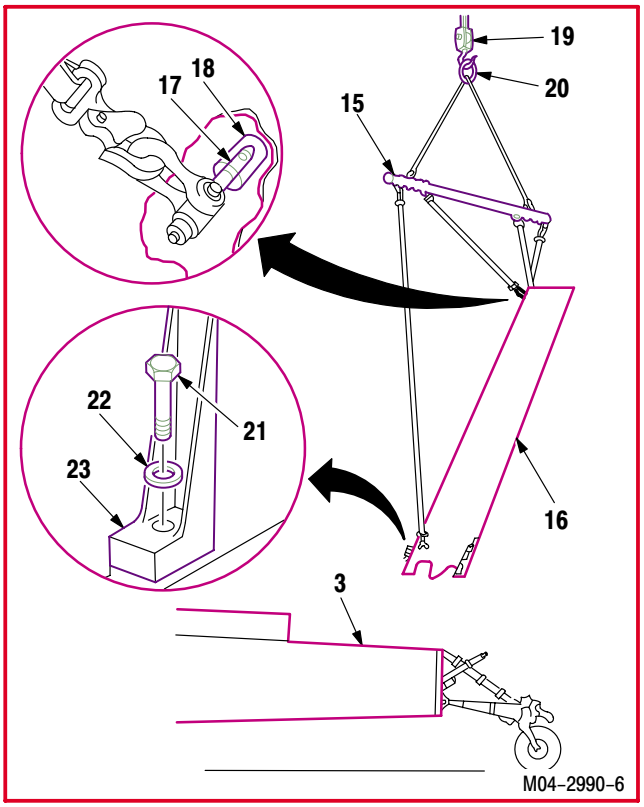
(4) Operate crane winch very slowly to remove all slack from sling (15) straps.

(5) Remove four shear bolts (21) and recessed washers (22) from stabilizer lugs (23).

(6) Two persons support and guide stabilizer (16).

(7) Lift stabilizer (16) clear of tailboom (3).





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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

2.107.4. Cleaning

a. **Wipe hydraulic quick-disconnect fittings with a clean rag.**

b. **Clean sealing compound from stabilizer and tailboom** (para 1.47)**.**

c. **Clean lugs and lug mating surfaces on tailboom** (para 1.47)**.**

2.107.5. Inspection

a. **Check electrical connectors for bent or broken pins, cracked or burned insulation, and dented or deformed shells** (para 2.102)**.**

b. **Check quick-disconnect fittings for stripped threads.** None allowed.

c. **Check lugs for cracks or deformation.** None allowed.

d. **Check barrel nut for cracks, warpage, or stripped threads.** None allowed.

2.107.6. Installation

a. **Install sling (15) on stabilizer (16).**

(1) Insert and lock four pins (17) in sockets (18).

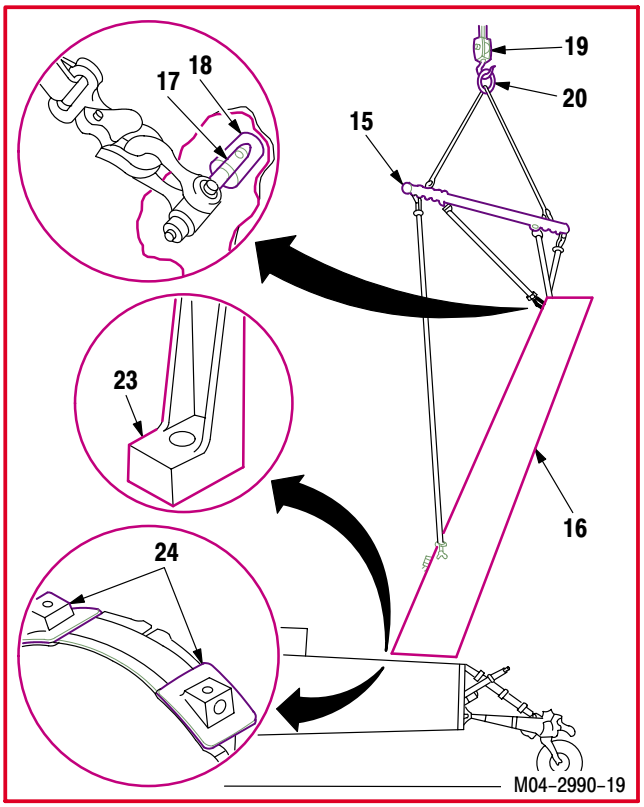
(2) Install sling lifting eye (20) on crane hook (19).

b. **Strip bottom of lugs (23) and top of tailboom pads (24) to bare metal** (TM 55-1500-345-23)**.**

c. **Chemically treat lugs (23) and top of pads (24)** (TM 55-1500-345-23)**.**

d. **Perform electrical bond check on stabilizer pads (23) and tailboom pads (24)** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.



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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

CAUTION

- On aircraft 82-23355 through 91-0121 after MWO 1-1520-238-50-41 has been complied with and on aircraft 91-0122 and subsequent, the following are the only authorized hardware for installation of the vertical stabilizer: HS5482-8-20, VS3523-8-20, AIC805-8-20, 84208-8-20, or FTC7306-8-20 Inconel bolts and HS5813-8 Inconel barrel nuts.
- When replacing one bolt/barrel nut, all four bolts/barrel nuts must be replaced.
- Ensure that countersunk side of washer is installed against bolt head.

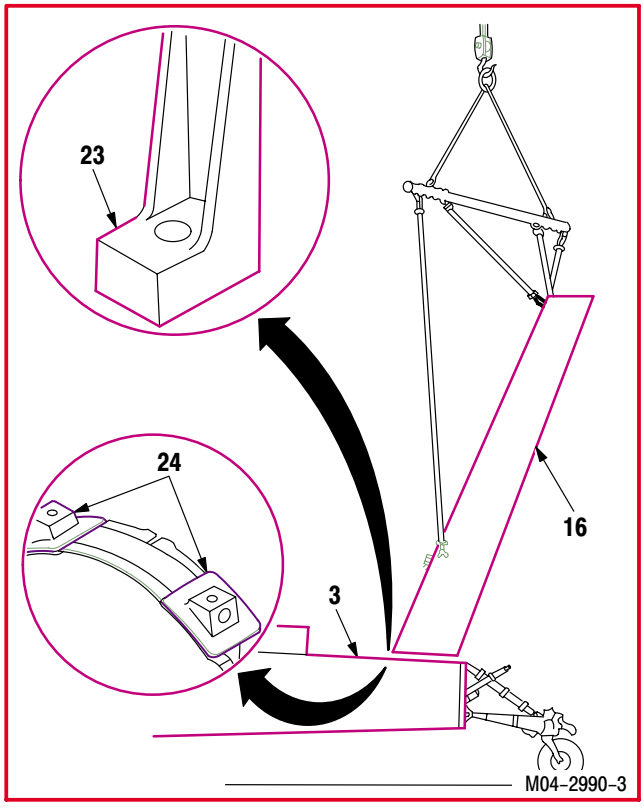
NOTE

- When installing Inconel bolts, coat bolt threads, shank, and under the bolt head and washer using antiseize compound (item 26, App F).
- If new barrel nuts are not available, old barrel nuts may be reused provided they meet the minimum breakaway torque value of **18 INCH-POUNDS**.

e. **Install stabilizer (16) on tailboom (3).** Torque four bolts (21) in sequence. Ensure to identify type of mounts installed (elastomeric or non-elastomeric mounts).

(1) Aline four stabilizer lugs (23) over tailboom pads (24).

(2) Carefully lower stabilizer (16) on tailboom (3).



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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

NOTE

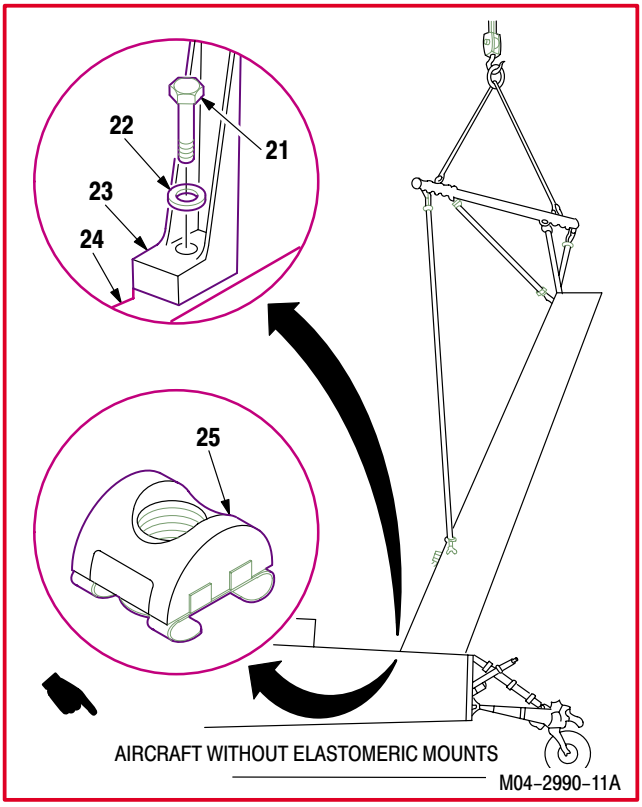
- Maintain a **0.020 INCH** minimum gap between the end of bolt threads (chamfer) and bottom of the barrel nut hole. A flat washer, P/N AN960-816L, NSN 5310-00-167 -0839 or flat washer AN960-816, NSN 5310-00-167-0823 may be added under the existing washer to obtain minimum gap.

- Sequence of bolt installation shall be left-hand (LH) forward, LH aft, right-hand (RH) aft and RH forward.

(3) Remove any grease or oil from HS5482-8-20 bolts (21) and HS5483-820 barrel nuts (25). Use dry cleaning solvent (item 74, App F) and cloth (item 52, App F). If bolt holes are not clean of all residue, abrade. Use mat (item 122, App F).

(4) Apply a coating of lubricant to bolt (21) threads, shank, and under bolt head, and washer (22) (Inconel only). Use antiseize compound (item 26, App F).

(5) Install four bolts (21) through washers (22) and lugs (23) in tailboom pads (24). Ensure recessed side of washer (22) is installed against bolt (21) head.



NOTE

- To torque mounting hardware on aircraft without elastomeric mounts, perform steps (6) and (7).

- To torque mounting hardware on aircraft with elastomeric mounts, perform steps (8) and (9).

(6) Torque four bolts (21) in sequence to breakaway torque plus **50 INCH-POUNDS**. Use torque wrench.

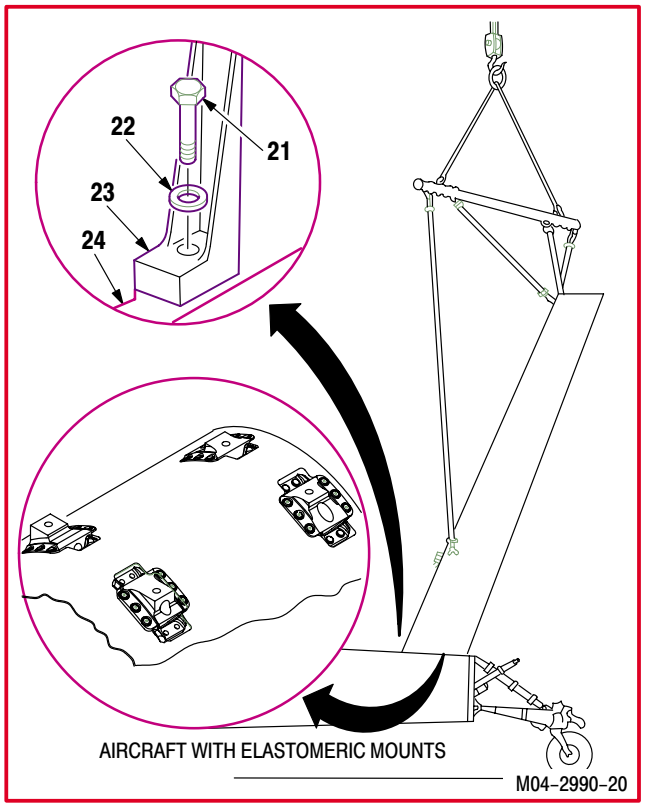
(7) Torque four bolts (21) in sequence and in increments of **325 INCH-POUNDS** up to **975 INCH-POUNDS**. Use adapter and applicable torque wrench.

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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

(8) Torque four bolts (21) in sequence to **75 INCH-POUNDS**. Use torque wrench.

(9) Torque four bolts (21) in sequence and in increments of **350 INCH-POUNDS** up to **1385 INCH-POUNDS**. Use adapter and applicable torque wrench.



f. **Perform electrical bond check between left forward stabilizer lug (23) and right aft tailboom pad (24)** (TM 55-1500-323-24)**.**

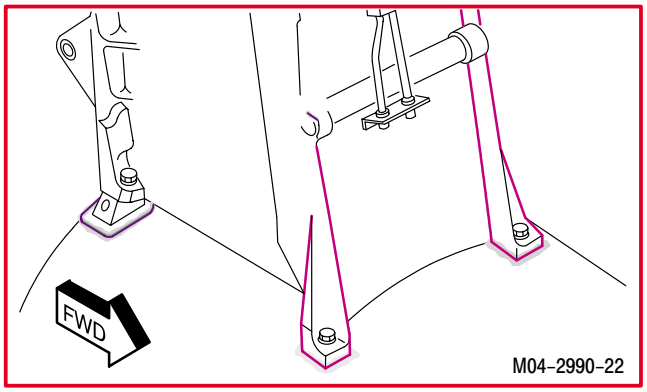
(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

g. **Perform electrical bond check between right forward stabilizer lug (23) and left aft tailboom pad (24)** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

NOTE

If bond check exceeds **0.1 OHM**, remove vertical stabilizer and repeat steps a. thru g.

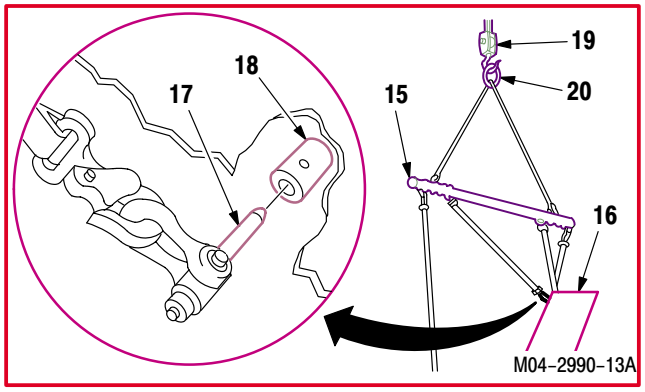


h. **Seal junction of lug (23) and pad (24).** Use sealing compound (item 176, App F).

i. **Remove sling (15) from stabilizer (16).**

(1) Unlock and remove four sling quick-release pins (17) from pin sockets (18).

(2) Remove sling lifting eye (20) from crane hook (19).



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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

j. **If removed, install two grounding jumpers (14.1) 0n two terminal studs (14.2).**

(1) Install two washers (14.5) and jumpers (14.1) on terminal studs (14.2).

(2) Install two nuts (14.3) and washers (14.4) on two terminal studs (14.2).

k. **Perform electrical bond check on jumpers (14.1) and nuts (14.3)** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

l. **Seal jumpers (14.1) and nuts (14.3).** Use sealing compound (item 176, App F).

NOTE

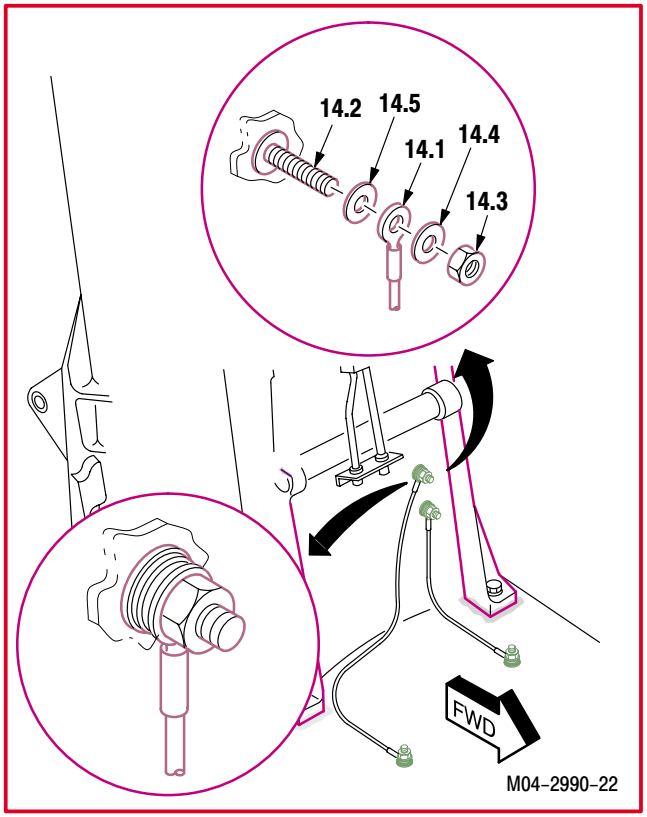
- On aircraft modified with elastomeric mounts the two vertical stabilizer hydraulic line assemblies are installed with the 45° and 90° elbows at the back of the vertical stabilizer hard lines.
- On aircraft modified with elastomeric mounts ensure that the quick disconnect fittings are attached to the straight end of the hoses.
- On aircraft that have not been modified with elastomeric mounts the two vertical stabilizer hydraulic line assemblies are installed with the 45° and 90° elbows at the bracket on the F.S. 547 frame.

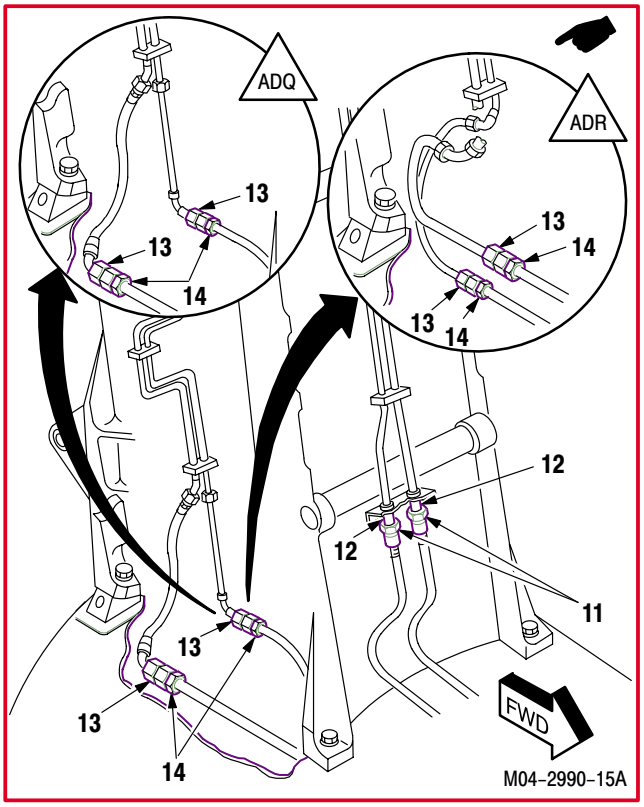
m. **Install two couplings (13) on (14).**

(1) Turn couplings (13) clockwise until locking teeth engage fully on coupling halves (14).

n. **Install two couplings (11) on (12).**

(1) Turn couplings (11) clockwise until locking teeth engage fully on coupling halves (11).





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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

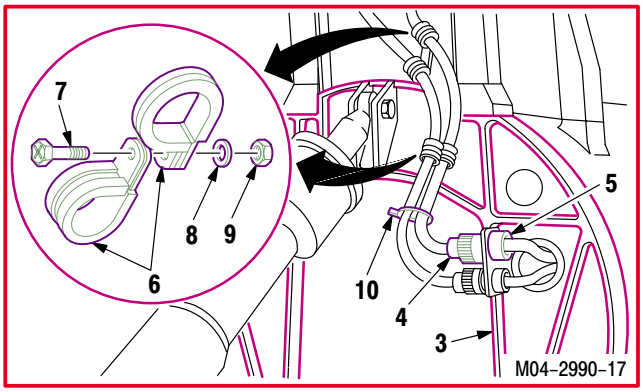
o. **Attach connector P756 (4) to receptacle J756 (5) on tailboom (3).**

(1) Install screw (7) through two clamps (6) and washer (8) (two places).

(2) Install two nuts (9).

(3) Attach connector P756 (4) to receptacle J756 (5) on tailboom (3).

(4) Install new tie strap (10). Use strap (item 191, App F).



p. **Attach connector P124 (1) to receptacle J124 (2) on tailboom (3).**

q. **Inspect (QA).**

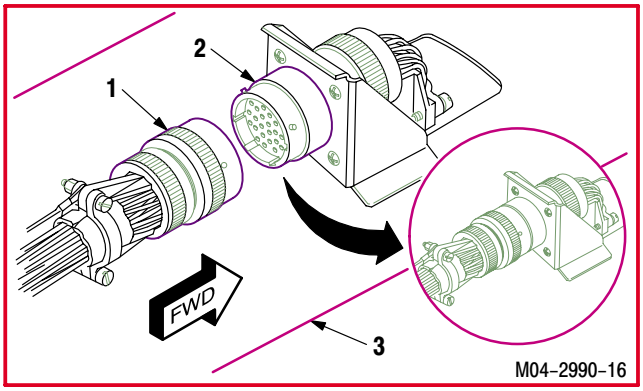
r. **Install horizontal stabilator** (para 2.113)**.**

s. **Install tail rotor gearbox** (para 6.145)**.**

t. **Install intermediate gearbox** (para 6.131)**.**

u. **Install vertical stabilizer trailing edge** (para 2.111)**.**

v. **Install vertical stabilizer tip** (para 2.110)**.**



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2.107. VERTICAL STABILIZER REMOVAL/INSTALLATION – continued

2.107.7. Corrosion Prevention

CAUTION

Do not apply corrosion preventive compound on individual components prior to or during assembly. Application will result in a wet (lubricated) torque which can cause a much higher torque value than specified.

NOTE

- New stabilizer and/or new hardware initially require two applications of corrosion preventive compound which must be applied at intervals at least **1 HOUR** apart.
- When applying corrosion preventive compound, use the precision (drinking straw-like) applicator attached to the spray head of aerosol can.
- After **2 MINUTES**, wipe excess corrosion preventive compound from applied area.



a. **Apply corrosion preventive compound (item 63, App F) to vertical stabilizer hinge assemblies.**

(1) Make application in single short duration squirts to the following areas:

(a) Between nut and vertical stabilizer ear.

(b) Between vertical stabilizer ears and horizontal stabilator ears (three places on each hinge assembly).

b. **Inspect (QA).**

END OF TASK

2.107A. VERTICAL STABILIZER ELASTOMERIC MOUNT REMOVAL/INSTALLATION

2.107A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation. Corrosion Prevention.

2.107A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)

Materials/Parts:

Antiseize compound (item 26, App F)
Corrosion preventive compound (item 63, App F)

Personnel Required:

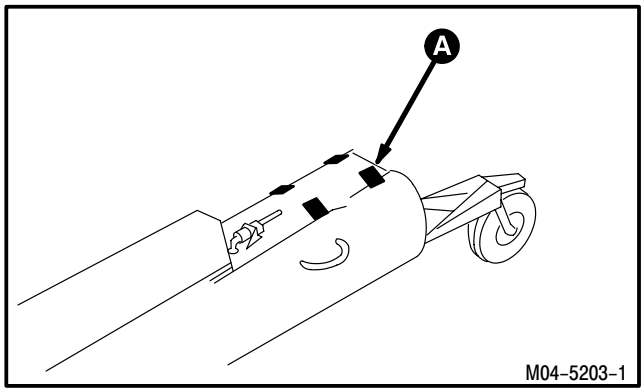
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.107	Vertical stabilizer removed

NOTE

This task is typical for removing and installation of all four elastomeric mounts.



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2.107A. VERTICAL STABILIZER ELASTOMERIC MOUNT REMOVAL/INSTALLATION – continued

2.107A.3. Removal

NOTE

If removing more than one elastomeric mount, attaching hardware must be kept with removed mount.

a. **Remove vertical stabilizer elastomeric mount (1) from tailboom (2).**

(1) Remove four shear bolts (3) and recessed washers (4) from mounts (1).

(2) Remove one mount (1) from tailboom (2).

2.107A.4. Cleaning

a. **Clean sealing compound from mounts and tailboom** (para 1.47)**.**

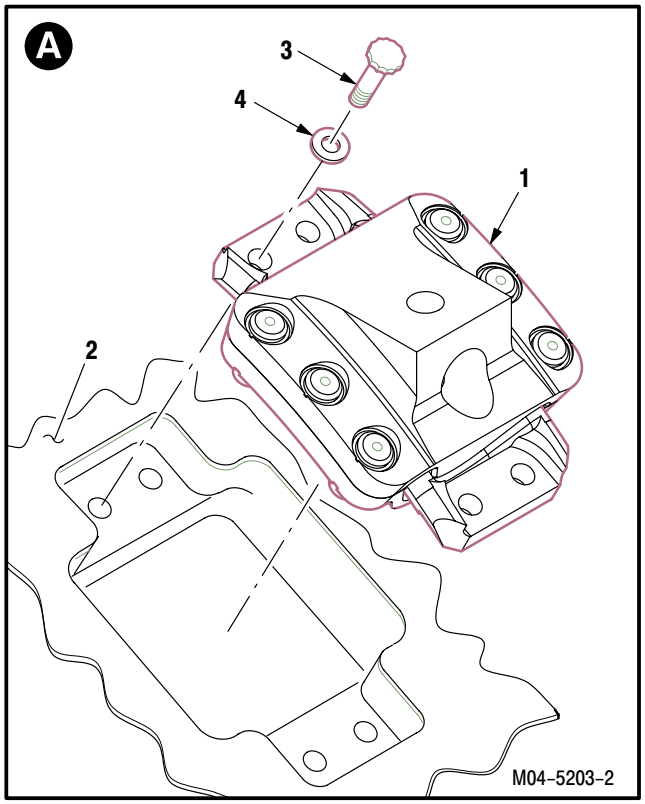
2.107A.5. Inspection

a. **Check removed and attaching parts for damage** (para 2.102)**.**

b. **Check removed and attaching parts for corrosion** (para 2.102)**.**

c. **Check mounting surfaces for cracks and corrosion** (para 2.102)**.**

d. **Check barrel nuts for cracks, warpage, or stripped threads.** None allowed.



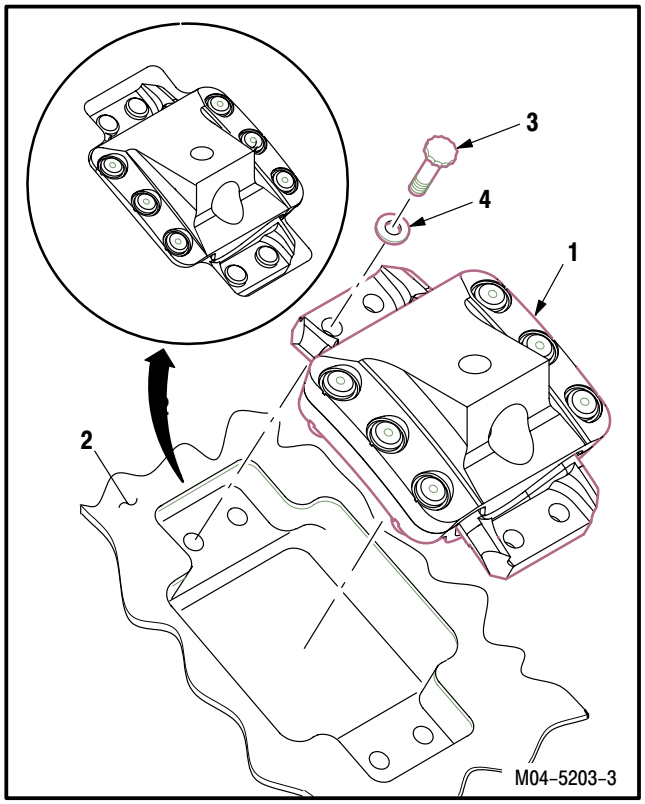
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2.107A. VERTICAL STABILIZER ELASTOMERIC MOUNT REMOVAL/INSTALLATION – continued

2.107A.6. Installation

NOTE

Elastomeric mounts are specific to their positions and are not interchangeable. The aft mounts use different attaching hardware than forward mounts.



a. **Install mount (1) on tailboom (2).** Torque four bolts (3) to **420 INCH-POUNDS**.

(1) Apply a coating of lubricant to bolt (3) and washer (4). Use antiseize compound (item 26, App F).

(2) Install four bolts (3) through washers (4), mount (1), and tailboom (2). Ensure recessed side of washer (4) is installed against bolt (3) head.

(3) Torque four bolts (3) to **420 INCH-POUNDS**. Use torque wrench.

b. **Inspect (QA).**

c. **Install vertical stabilizer** (para 2.107)**.**

d. **Inspect (QA).**

END OF TASK

2.108. VERTICAL STABILIZER FAIRINGS L510 AND R510 REMOVAL/INSTALLATION

2.108.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.108.2. Initial Setup

Tools:

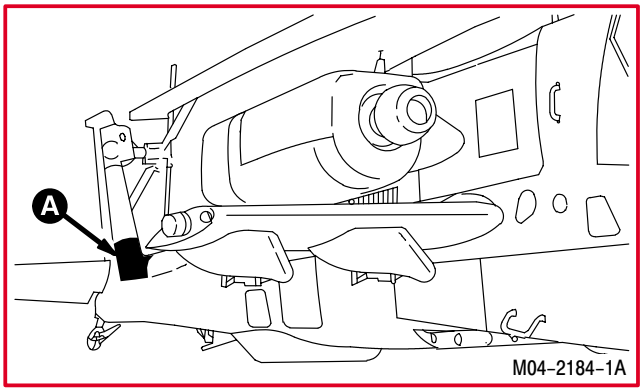
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.108. VERTICAL STABILIZER FAIRINGS L510 AND R510 REMOVAL/INSTALLATION – continued

2.108.3. Removal

a. **Remove vertical stabilizer fairing R510 (1) from vertical stabilizer (2).**

(1) Unfasten 34 turnlock fastener studs (3).

b. **Remove vertical stabilizer fairing L510 (4) from stabilizer (2).**

(1) Unfasten 17 turnlock fasteners (5).

2.108.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.108.5. Inspection

a. **Check turnlock fasteners for damage.** None allowed.

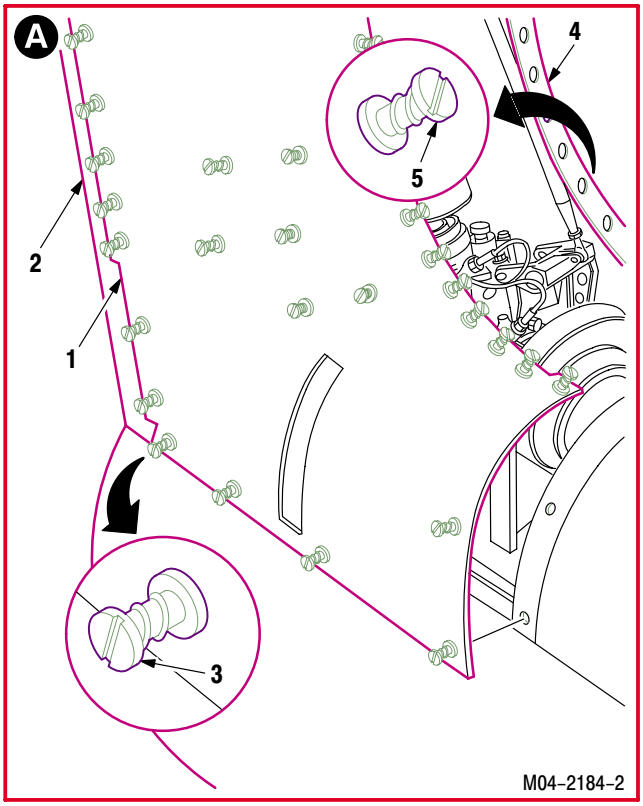
b. **Check vertical stabilizer fairing R510 and L510 for cracks and corrosion** (para 2.102)**.**

NOTE

Steps c. and d. refer to aircraft equipped with EMI provisions.

c. **Check fairing and mating surface for loose or damaged EMI gasket** (para 12.27)**.**

d. **Check stabilizer and fairing mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).



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2.108. VERTICAL STABILIZER FAIRINGS L510 AND R510 REMOVAL/INSTALLATION – continued

2.108.6. Installation

a. **Install fairing L510 (4) on stabilizer (2).**

(1) Install fairing L510 (4) on fairing supports (6) and (7).

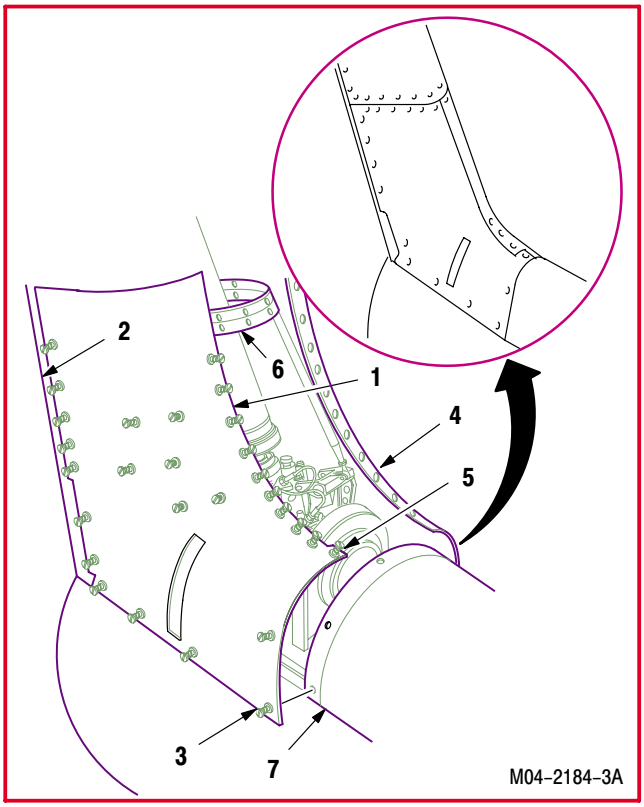
(2) Fasten 17 fasteners (5) on fairing (4).

b. **Install fairing R510 (1) on stabilizer (2).**

(1) Install fairing R510 (1) on fairing supports (6) and (7).

(2) Fasten 34 fasteners (3) on fairing (1).

c. **Inspect (QA).**



END OF TASK

2.109. VERTICAL STABILIZER FAIRING L530 REMOVAL/INSTALLATION

2.109.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.109.2. Initial Setup

Tools:

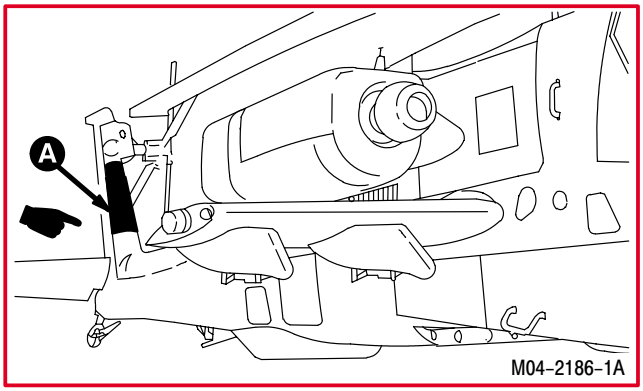
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.109. VERTICAL STABILIZER FAIRING L530 REMOVAL/INSTALLATION – continued

2.109.3. Removal

a. **Remove vertical stabilizer fairing L530 (1) from fairing supports (2) and (3).**

(1) Remove 48 screws (4) and washers (5).

(2) Remove fairing (1) from supports (2) and (3).

2.109.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.109.5. Inspection

a. **Check fairing for cracks and corrosion** (para 2.102)**.**

b. **Check screws for stripped threads.** None allowed.

NOTE

Steps c. and d. refer to aircraft equipped with EMI provisions.

c. **Check fairing and mating surface for loose or damaged EMI gasket** (para 2.1)**.**

d. **Check fairing and support mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

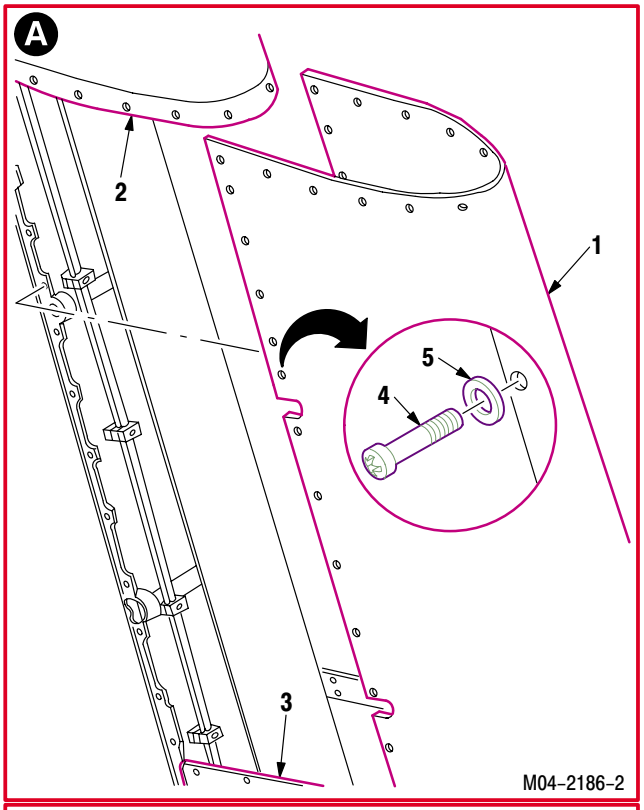
2.109.6. Installation

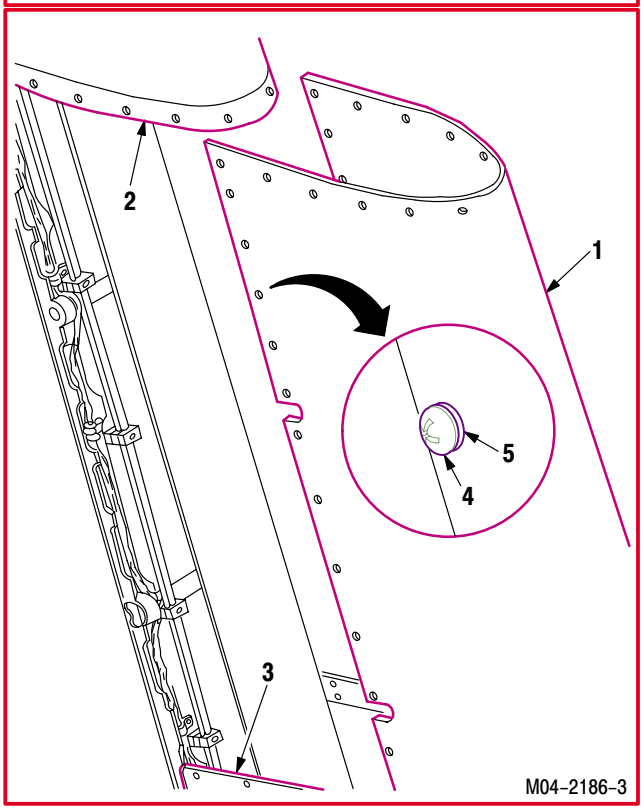
a. **Install fairing (1) on supports (2) and (3).**

(1) Position fairing (1) on supports (2) and (3).

(2) Install 48 screws (4) and washers (5).

b. **Inspect (QA).**





END OF TASK

2.110. VERTICAL STABILIZER TIP FAIRINGS T545A AND T545 REMOVAL/INSTALLATION

2.110.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.110.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Aircraft maintenance platform (item 211, App H)

Materials/Parts:

Wire (item 221, App F)

Personnel Required:

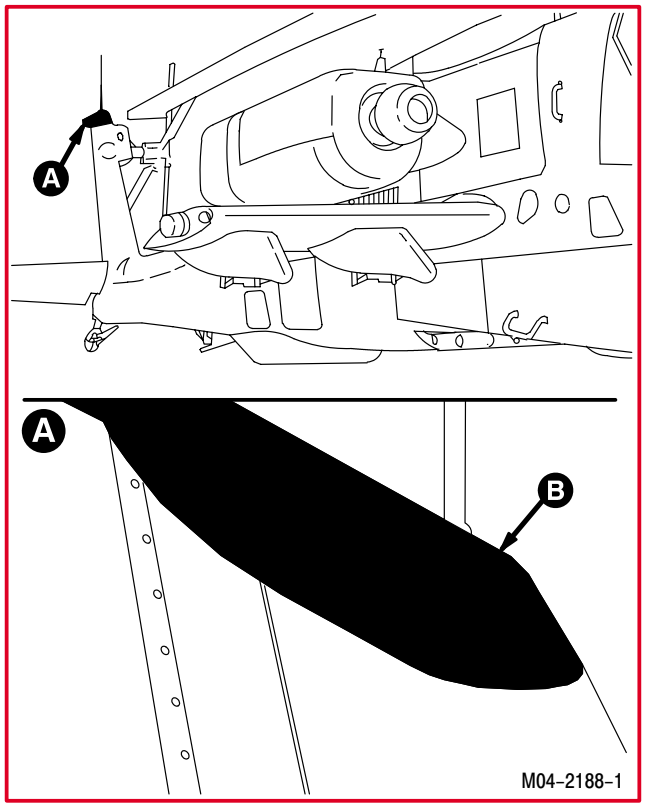
67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T
TM 11-1520-238-23-1
TM 11-1520-238-23-2
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 11-1520-238-23-1	Aft radar warning receiver disconnected
	Global positioning antenna disconnected (ADD)



GO TO NEXT PAGE

2.110. VERTICAL STABILIZER TIP FAIRINGS T545A AND T545 REMOVAL/INSTALLATION – continued

2.110.3. Removal

a. **Remove clamp (1) from vertical stabilizer tip fairing T545 (2).** Use maintenance platform.

(1) Remove screw (3) and washer (4) from clamp (1).

(2) Remove clamp (1).

b. **Remove clamp (5) from fairing (2).**

(1) Remove screw (6), washer (7), clamp (5), and spacer (8).

NOTE

Identify each wire and terminal during removal to ensure proper placement during installation.

c. **Identify and depin four wires (9) from four splices (10)** (TM 55-1500-323-24)**.**

d. **Remove tip fairings T545A (11) and T545 (2) from stabilizer (12).**

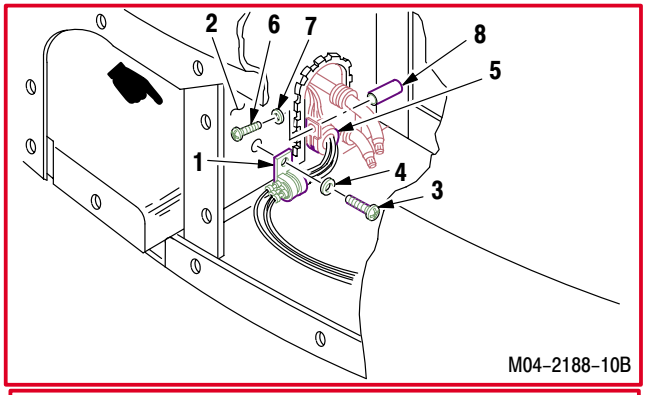
(1) Remove 6 screws (13) and washers (14) from cap assembly (15).

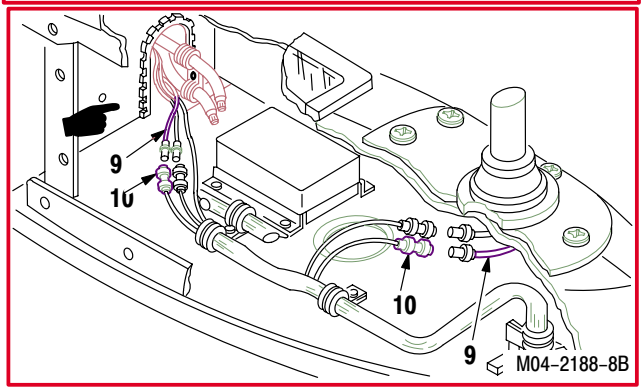
(2) Slide cap assembly (15) upward to allow clearance.

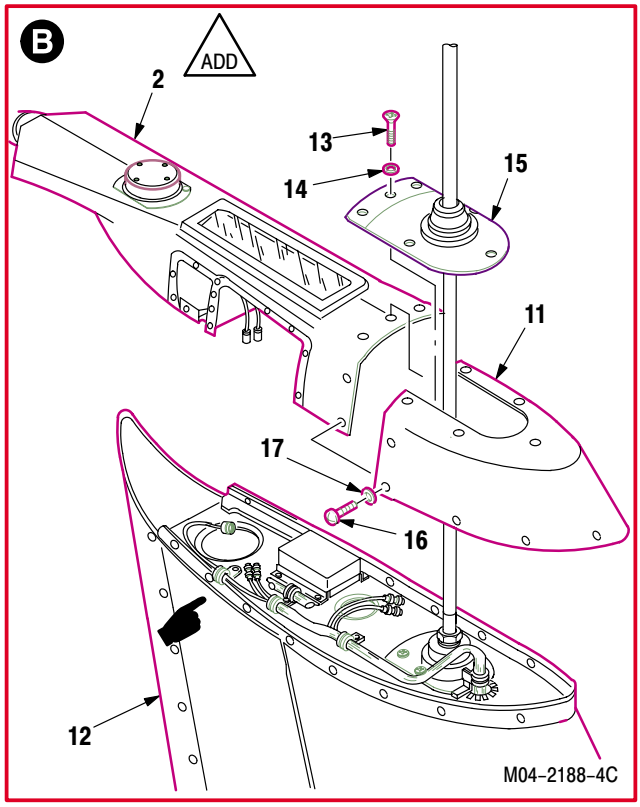
(3) Remove 17 screws (16) and washers (17) from fairings (2) and (11).

(4) Pull fairing (11) forward and remove from stabilizer (12).

(5) Remove fairing (2) from stabilizer (12).







GO TO NEXT PAGE

2.110. VERTICAL STABILIZER TIP FAIRINGS T545A AND T545 REMOVAL/INSTALLATION – continued

2.110.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.110.5. Inspection

a. **Check tip for cracks and corrosion** (para 2.103)**.**

b. **Check tip for damaged EMI tape or conductive coating** (para 2.1)**.**

c. **Check screws for stripped threads.**

(1) Damage not to exceed 50 percent of one thread.

d. **Check vertical stabilizer for damage** (para 2.102)**.**

e. **Check detached wires for cracks, cuts, breaks, and damaged splices** (para 2.102)**.**

2.110.6. Installation

CAUTION

Replacement fiberglass or polycarbonate cap assemblies will be installed unfinished. Surface finishing will cause damage.

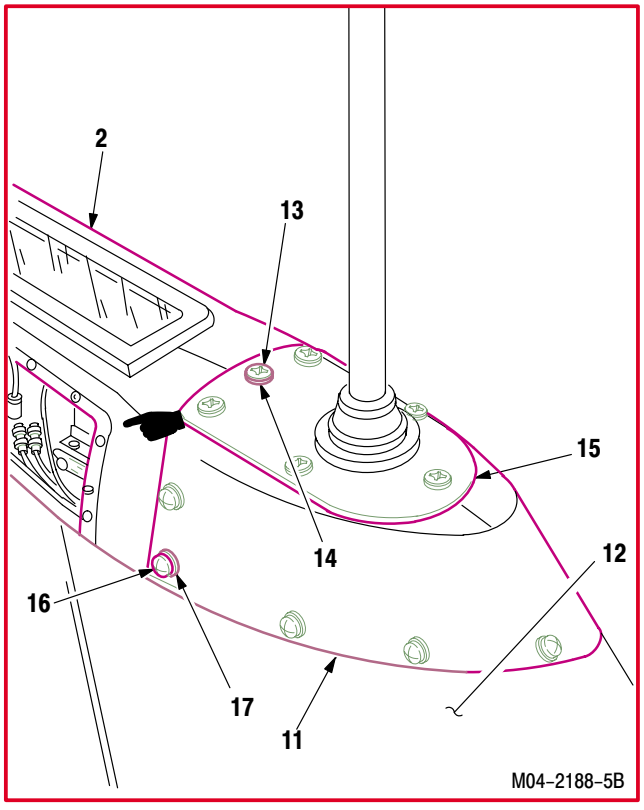
a. **Install fairings (2) and (11).** Use maintenance platform.

(1) Install fairing (2) on stabilizer (12).

(2) Install fairing (11) on fairing (2) and stabilizer (12).

(3) Install 17 screws (16) and washers (17) on fairings (2) and (11).

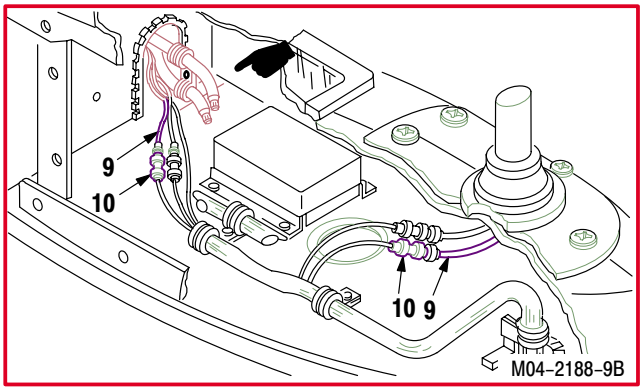
(4) Install six screws (13) and washers (14) on cap assembly (15).



GO TO NEXT PAGE

2.110. VERTICAL STABILIZER TIP FAIRINGS T545A AND T545 REMOVAL/INSTALLATION – continued

b. **Pin four identified wires (9) in four splices (10)** (TM 55-1500-323-24)**.**



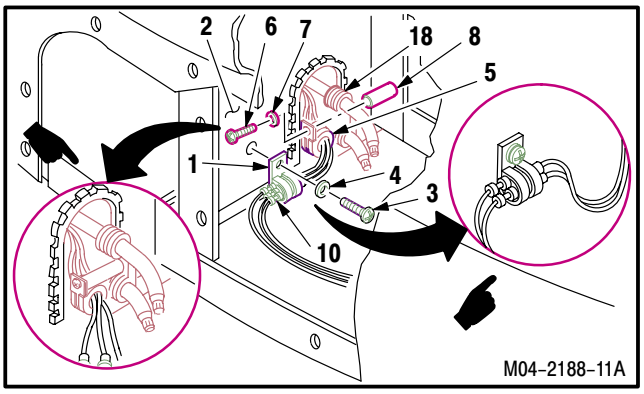
c. **Install clamp (5) to fairing (2).**

(1) Install screw (6) through washer (7), clamp (5), spacer (8), and clamp stackup (18).

d. **Install clamp (1) on fairing (2).**

(1) Position two splices (10) in clamp (1).

(2) Install screw (3) through washer (4) and clamp (1).



e. **Inspect (QA).**

f. **Connect aft radar warning receiver** (TM 11-1520-238-23-1)**.**

g. **Connect global positioning antenna (ADD)** (TM 11-1520-238-23-1)**.**

h. **Perform spiral antenna and radar warning maintenance operational check** (TM 11-1520-238-23-2)**.**

i. **Perform navigation and formation lights maintenance operational check** (TM 1-1520-238-T)**.**

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2.111. VERTICAL STABILIZER TRAILING EDGE REMOVAL/INSTALLATION

2.111.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.111.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Aircraft maintenance platform (item 211, App H)
Ohmmeter (item 218, App H)

References:

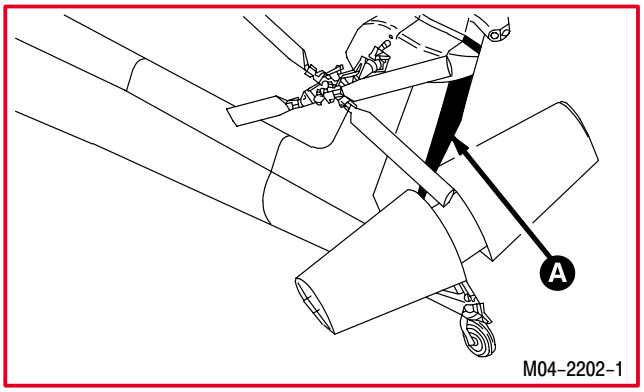
TM 55-1500-323-24
TM 55-1500-345-23

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.111. VERTICAL STABILIZER TRAILING EDGE REMOVAL/INSTALLATION – continued

2.111.3. Removal

a. **Remove trailing edge (1) from vertical stabilizer (2).** Use maintenance platform.

(1) Remove 56 screws (3) and washers (4).

2.111.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.111.5. Inspection

a. **Check trailing edge for damage and corrosion** (para 2.103)**.**

b. **Check screws for stripped threads.** None allowed.

2.111.6. Installation

a. **Strip both edges of stabilizer (2) to bare metal** (TM 55-1500-345-23)**.**

b. **Chemically treat both edges of stabilizer (2)** (TM 55-1500-345-23)**.**

c. **Install trailing edge (1) on stabilizer (2).** Use maintenance platform.

(1) Install 56 screws (3) and washers (4).

d. **Chemically treat both edges of stabilizer (2)** (TM 55-1500-345-23)**.**

NOTE

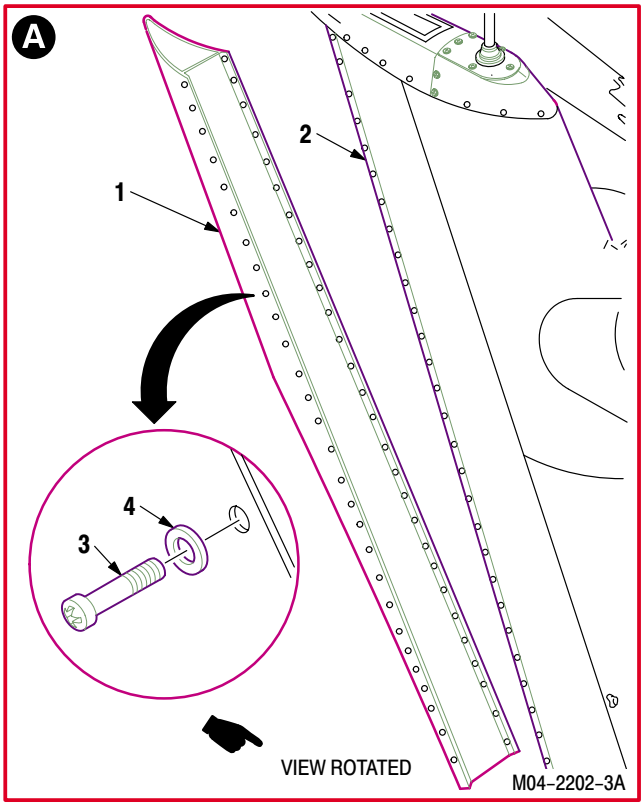
If aircraft is equipped with VHF-AM-FM noise cancelling antenna, go to step f.

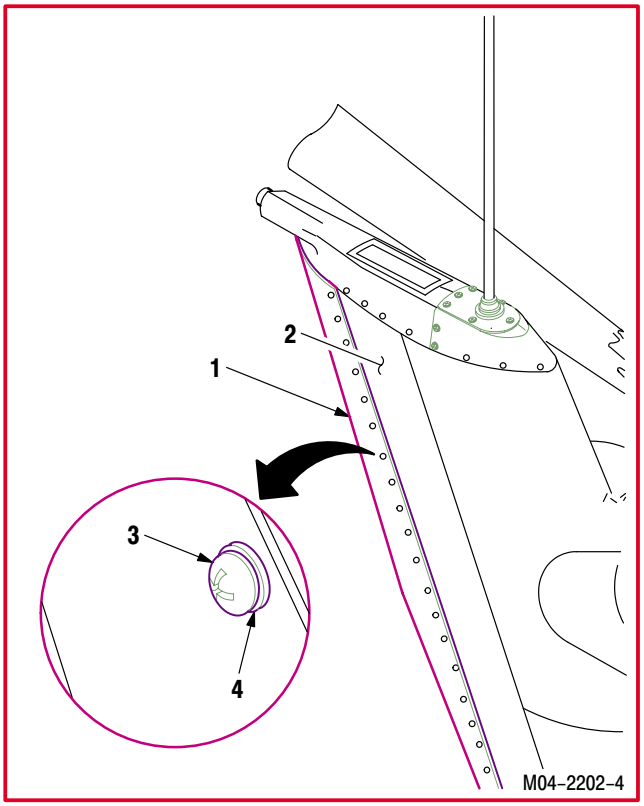
e. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.0025 OHM** or less. Use ohmmeter.

f. **Inspect (QA).**

END OF TASK





2.112. VERTICAL STABILIZER HANDHOLD STEPS REMOVAL/INSTALLATION

2.112.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.112.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

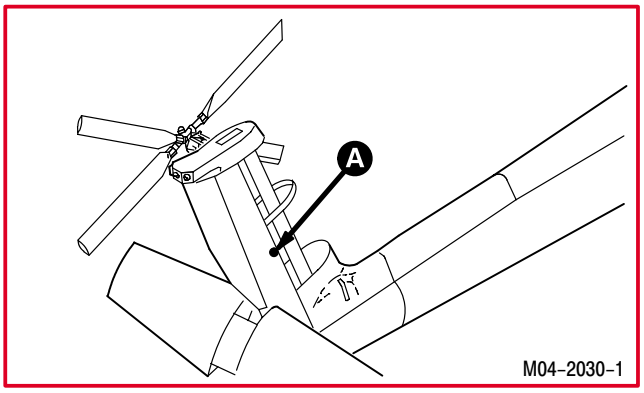
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Primer coating (item 147, App F)
Sealing compound (item 168, App F)
or
Sealing compound (item 170B, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access fairings L510, R510, L530, and L540 removed



2.112.3. Removal

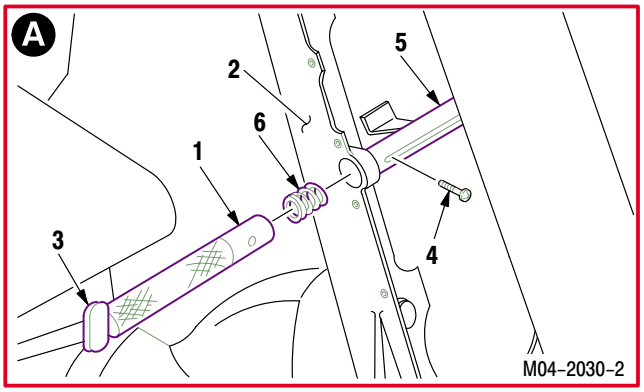
a. **Remove metal tube assembly (1) from vertical stabilizer (2).**

(1) Rotate tube key (3) counterclockwise to unlock.

(2) Remove screw (4) from tube (1).

(3) Remove tube (1) from fixed tube (5).

(4) Remove compressed helical spring (6) from fixed tube (4).



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2.112. VERTICAL STABILIZER HANDHOLD STEPS REMOVAL/INSTALLATION – continued

2.112.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

b. **Wipe removed and attaching parts with a clean rag.**

2.112.5. Inspection

a. **Check handhold step tubes for stripped threads, bends, and excessive wear.** None allowed.

b. **Check handhold step tubes for corrosion** (para 2.103)**.**

2.112.6. Installation



a. **Install tube (1) on stabilizer (2).**

(1) Install spring (6) into fixed tube (5).

(2) Insert tube (1) into fixed tube (5).

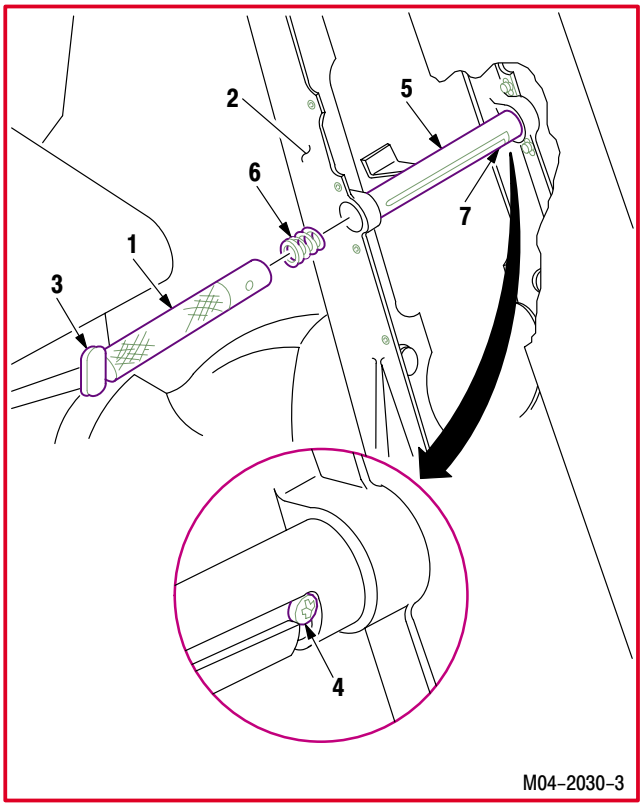
(3) Apply primer to screw (4). Use primer coating (item 147, App F).

(4) Apply sealing compound to screw (4). Use sealing compound (item 168, App F) or sealing compound (item 170B, App F).

(5) Aline screw (4) with slot (7) at corner in fixed tube (5).

(6) Install screw (4) in tube (1). Tighten to ensure freedom of handle.

(7) Lock tube (1) in fixed tube (5). Push on tube (1). Turn key (3) clockwise to lock.



b. **Inspect (QA).**

c. **Install access fairings L510, R510, L530, and L540** (para 2.2)**.**

END OF TASK

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION

2.113.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation. Corrosion Prevention.

2.113.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
1/2 x 3/8-inch drive socket wrench adapter (item 3, App H)
Light duty laboratory apron (item 27, App H)
1 5/16 x 3/8-inch drive open end socket wrench crow-foot attachment (item 95, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
#1 & #2 phillips offset screwdriver (item 276, App H)
1 1/2 x 1/2-inch drive socket wrench socket (item 306, App H)
1 1/2 & 1 5/8-inch open end wrench (item 418, App H)
700 - 1600 inch-pound 1/2-inch drive click type torque wrench (item 433, App H)
0 - 600 inch-pound 3/8-inch drive dial indicator torque wrench (item 447, App H)

Materials/Parts:

Cotter pin (3)
Corrosion preventive compound (item 63, App F)
Grease (item 87, App F)
Sealing compound (item 170A, App F)
Strap (item 192, App F)

Personnel Required:

67R Attack Helicopter Repairer
Four persons to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

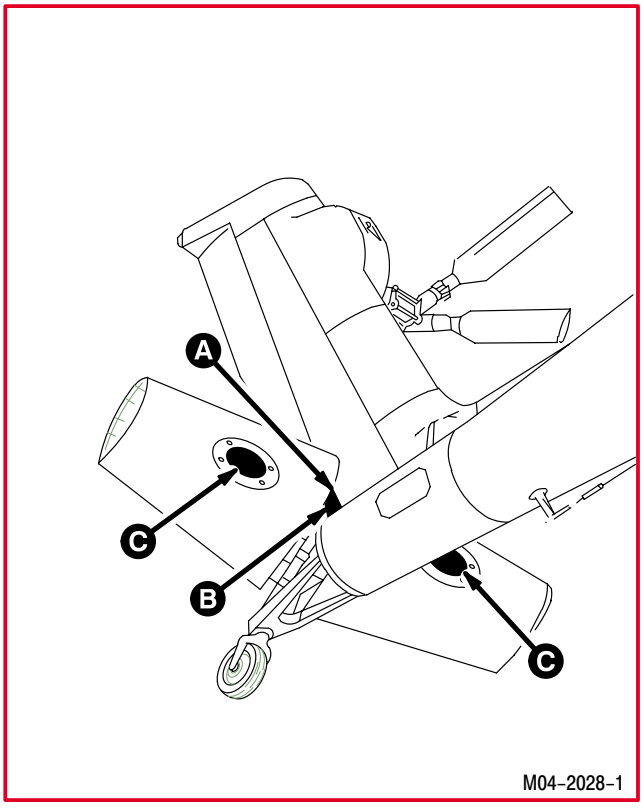
TM 1-1520-238-MTF
TM 1-1520-238-T
TM 55-1500-322-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors LS1 and RS1 opened; fairings L545 and R545 removed

GO TO NEXT PAGE

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued



2.113.3. Removal

NOTE

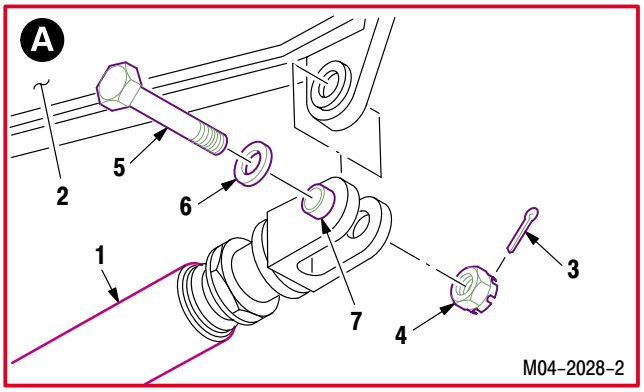
Four persons shall support stabilator during removal and installation.

a. **Remove electro-mechanical actuator (1) from horizontal stabilator (2).**

(1) Remove and discard cotter pin (3) from nut (4).

(2) Hold bolt (5). Remove nut (4).

(3) Remove bolt (5), washer (6), and sleeve bushing (7).



GO TO NEXT PAGE

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

b. **Remove motional transducer (8) from stabilator (2).**

(1) Remove screw (9), washer (10), loop clamps (11) and (12), and spacer (13).

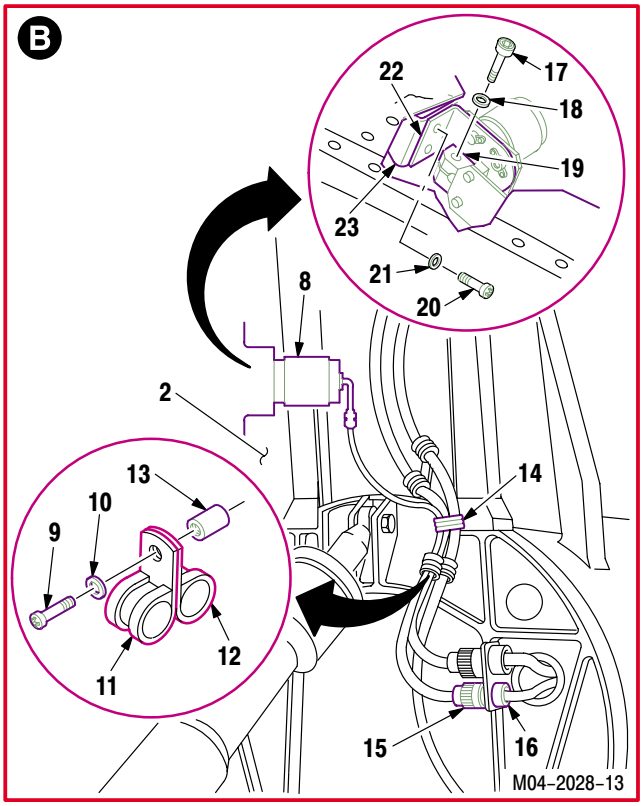
(2) Remove tie strap (14).

(3) Detach receptacle J1076 (15) from connector P1076 (16).

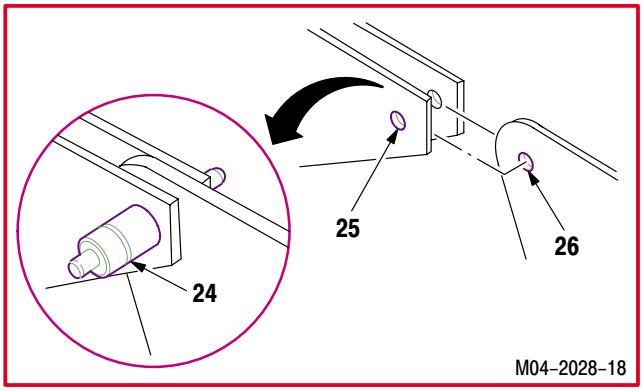
(4) Remove screw (17) and washer (18) from sensor clamp (19).

(5) Remove two screws (20) and washers (21) from sensor bracket assembly (22), shim (23), and stabilator (2).

(6) Remove transducer (8) from stabilator (2).



c. **Insert rig pin (24) through rig pin holes (25) and (26).**



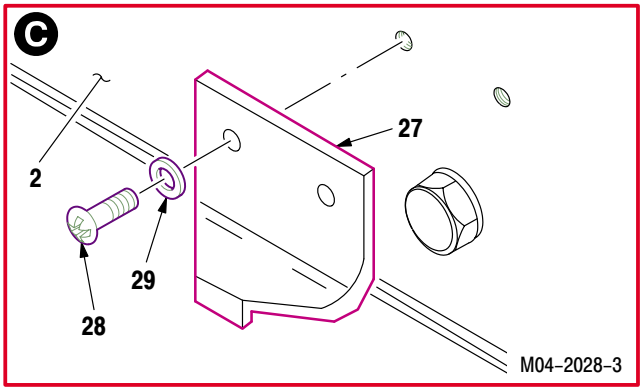
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2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

d. **Remove two aircraft structural plates (27) from inside stabilator (2).**

(1) Remove two screws (28) and washers (29) from each plate (27).

(2) Remove plates (27) from stabilator (2).



WARNING

Do not insert fingers through pivot lugs when pivot bolts are removed. Any movement of stabilator can cause injury or amputation. If injury occurs, seek medical aid.

e. **Remove stabilator (2) from helicopter.**

(1) Remove and discard two cotter pins (30) from nuts (31) and bolts (32).

(2) Hold two shoulder bolts (32). Use socket.

(3) Remove two nuts (31) and washers (33) from bolts (32). Turn bolts (32) to remove nuts (31). Do not remove bolts (32). Use socket and adapter.

(4) Remove two spacers (34) and shims (35) from vertical stabilator inboard pivot lug (36).

NOTE

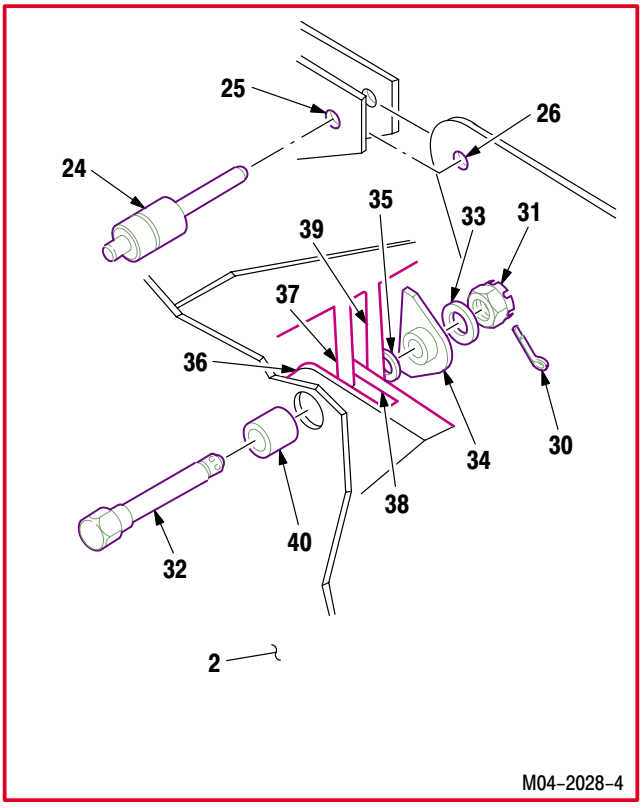
Both bolts must be free to turn while four persons support weight of stabilator.

(5) Remove rig pin (24) from rig pin holes (25) and (26).

(6) Remove two bolts (32) from pivot lugs (36), (37), (38), and (39).

(7) Slide stabilator (2) aft from helicopter.

(8) Remove two spacers (40) from lugs (36) and (37).



GO TO NEXT PAGE

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

2.113.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.113.5. Inspection

a. **Check horizontal stabilator for cracks and corrosion** (para 2.102)**.**

b. **Check horizontal stabilator leading edge debris cover for cuts, tears, holes, and loose edges** (para 2.102)**.**

c. **Check stabilator actuator for cracks and corrosion** (para 2.103)**.**

d. **Check pivot lugs for damage or distortion.** None allowed.

e. **Check pivot lugs for corrosion** (para 1.49)**.**

f. **Check bolts and nuts for stripped threads.** None allowed.

g. **Check shoulder bolts, spacers, and pivot lugs for looseness.**

(1) Slide spacers in pivot lugs.

(2) Insert shoulder bolts to check axial play. Maximum axial play of **0.006 INCH** allowable.

h. **Check shoulder bolts and pivot lugs for roughness.**

(1) Insert shoulder bolts through pivot lugs to check roughness. Spacer must slide smoothly on bolt.

i. **Check bushing limits.**

(1) Bushings are considered within limits with 70 percent or more of lining intact. The missing 30 percent may not be in one continuous area.

j. **Check outer race of pivot bearings for looseness.** None allowed.

k. **Check pivot bearings for bearing radial play.**

(1) Maximum radial play of **0.010 INCH** allowable (TM 55-1500-322-24).

2.113.5A. Repair



a. **Repair leading edge debris cover.**

a Tears and cuts less than **2.0 INCHES**, if greater than **2.0 INCHES**, replace (para 2.115).

(1) Trim away loose materials and apply sealing compound to faying edges. Use sealing compound (item 170A, App F).

b Loose edges less than **1.5 INCHES**, if greater than **1.5 INCHES**, replace (para 2.115).

(1) Trim away loose materials and apply sealing compound to faying edges. Use sealing compound (item 170A, App F).

c Holes and gaps less than **0.5 INCHES** in diameter, if greater than **0.5 INCHES** in diameter, replace (para 2.115).

(1) Trim away loose materials and apply sealing compound to faying edges. Use sealing compound (item 170A, App F).

GO TO NEXT PAGE

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

2.113.6. Installation



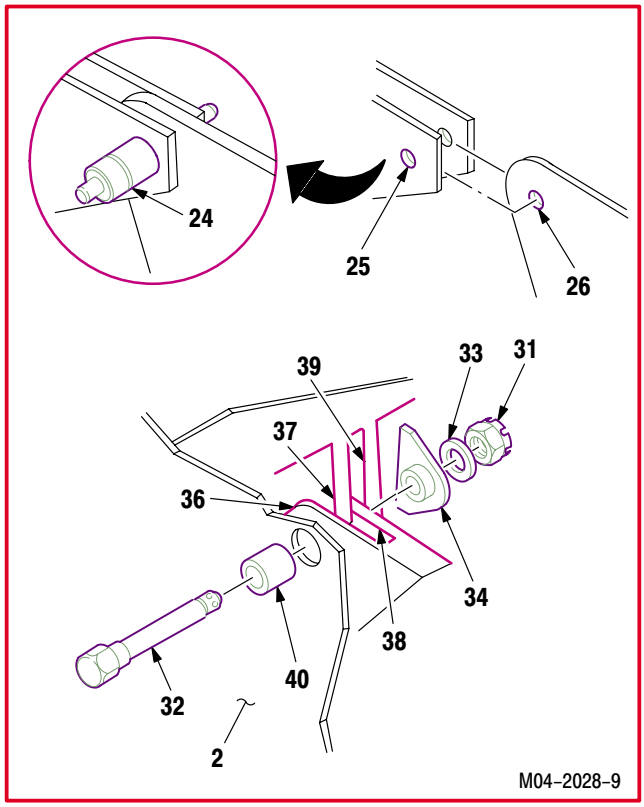
a. **Install stabilator (2) on helicopter.** Torque two nuts (31) to **225 INCH-POUNDS**.

(1) Install two spacers (40) on bolts (32).

(2) Aline pivot lugs (37) and (39) with pivot lugs (36) and (38).

NOTE

Hold stabilator position until pivot lug hardware is installed.

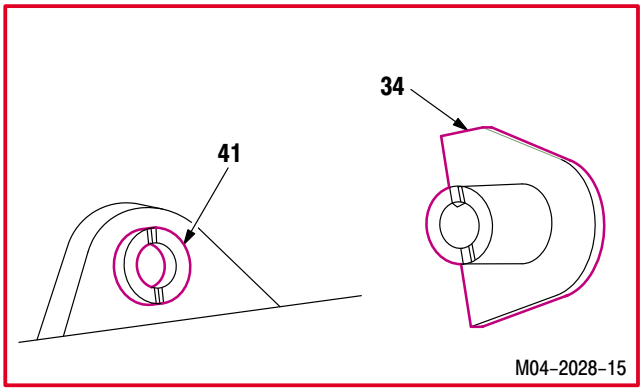


(3) Set slots in two bearings (41) at 6 and 12 o'clock. Turn two spacers (34) to aline keys in spacers (34) with slots in bearings (41).

(4) Lubricate two bolts (32). Use grease (item 87, App F).

NOTE

Stabilator support must be adjusted to allow no-load installation of shoulder bolts.



(5) Install two bolts (32) from inside stabilator (2) through bearings (41), spacers (34), and pivot lugs (36), (37), (38), and (39).

(6) Lift stabilator (2) to aline rig pin holes (25) and (26). Insert rig pin (24) through alined rig pin holes (25) and (26).

(7) Install two washers (33) and nuts (31) on bolts (32).

GO TO NEXT PAGE

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

(8) Hold two bolts (32). Use socket.

(9) Torque two nuts (31) to **225 INCH-POUNDS**. Use torque wrench, crowfoot, and adapter.

(10) Laterally center stabilator (2) so that gaps between pivot lugs (38) and (37) are equal within **0.010 INCH** on both sides of helicopter.

(11) Measure gaps under flanges of two spacers (34) and faces of mating angles (42).

(12) Go to 2.113.3.e. to remove two nuts (31), washers (33).

(13) Measure thickness of two shims (35). Required shim (35) thickness is **0.001 INCH to 0.003 INCH** less than measured gap in step a.(11). Peel shim leaves or replace shims and peel off layers to meet gap requirement, if needed.

(14) Install two shims (35), spacers (34), washers (33), and nuts (31). Turn spacers (34) to aline keys in spacers (34) with slots in bearings (41).

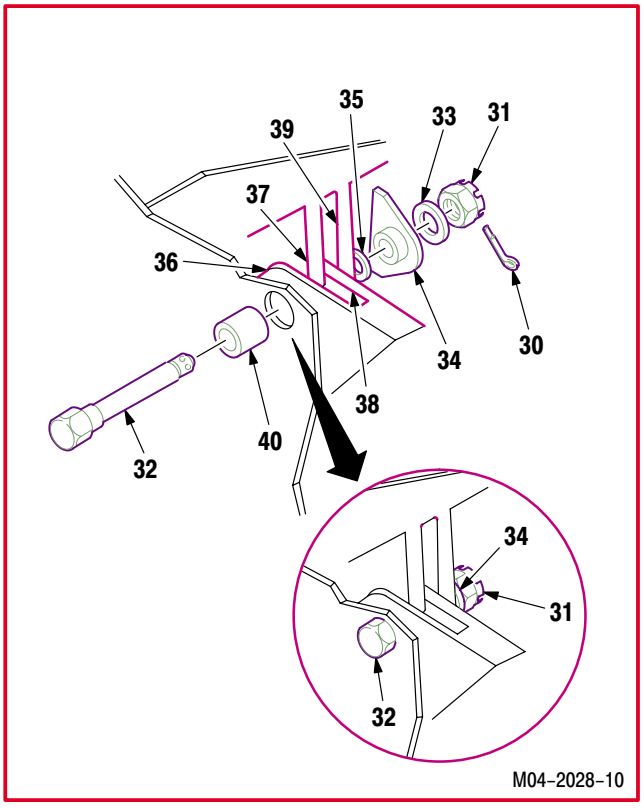
b. **Torque two nuts (31) 1100 to 1300 INCH-POUNDS.**

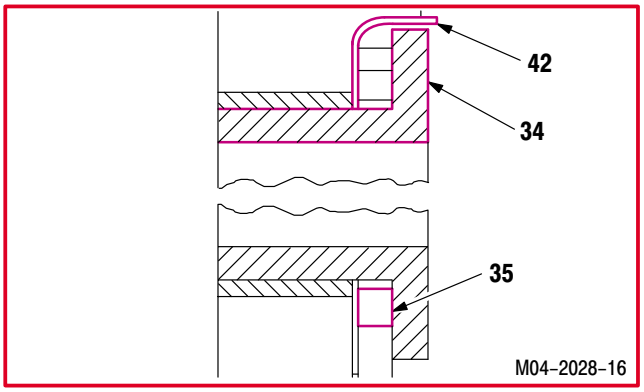
(1) Hold two bolts (32). Use open end wrench.

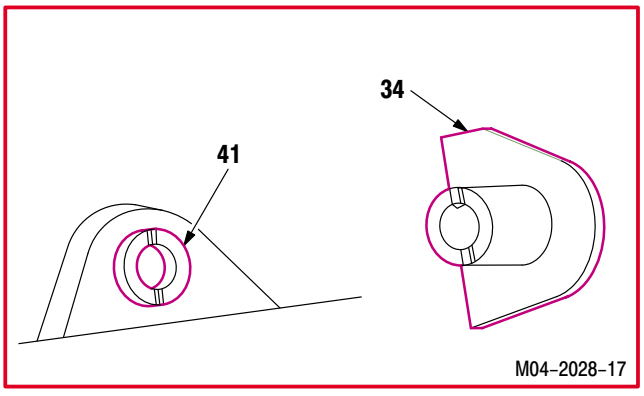
(2) Torque two nuts (31) to **1100 INCH-POUNDS**. Use torque wrench, crowfoot, and adapter.

(3) Increase torque to aline cotter pin holes, but do not exceed **1300 INCH-POUNDS**.

(4) Install two new cotter pins (30) in nuts (31) and bolts (32).







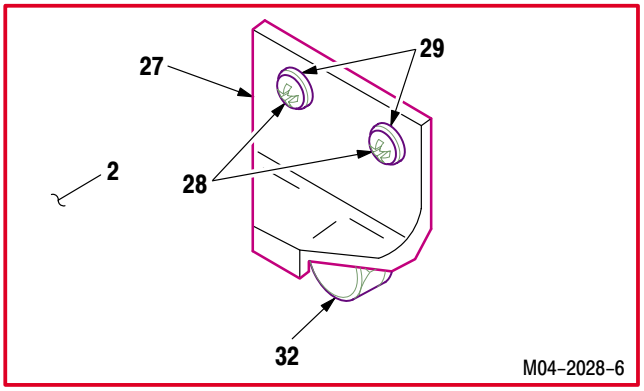
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2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

c. **Install two plates (27) inside stabilator (2).**

(1) Position two plates (27) over bolts (32).

(2) Install two screws (28) and washers (29) in each plate (27).



d. **Install transducer (8) in stabilator.**

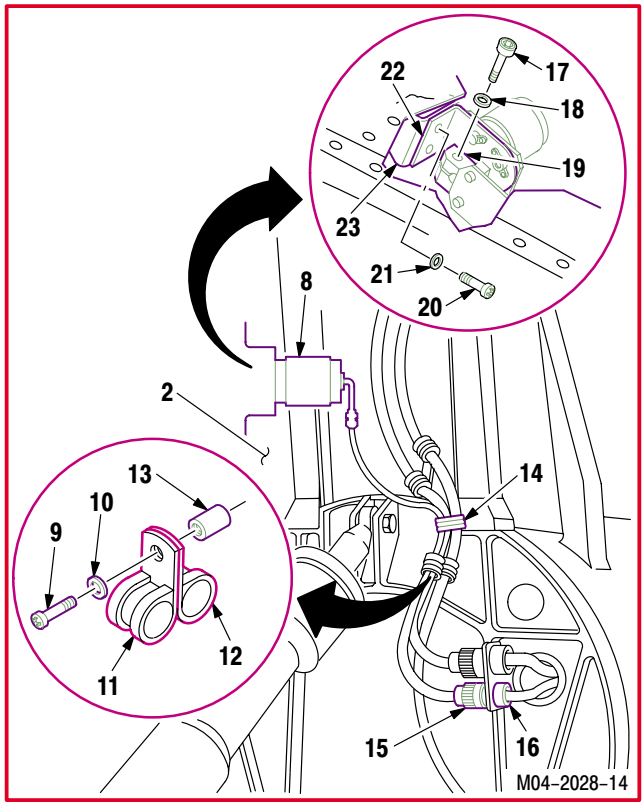
(1) Install two screws (20) and washers (21) through bracket (22), shim (23), and stabilator (2). Use offset screwdriver.

(2) Install screw (17) and washer (18) in clamp (19).

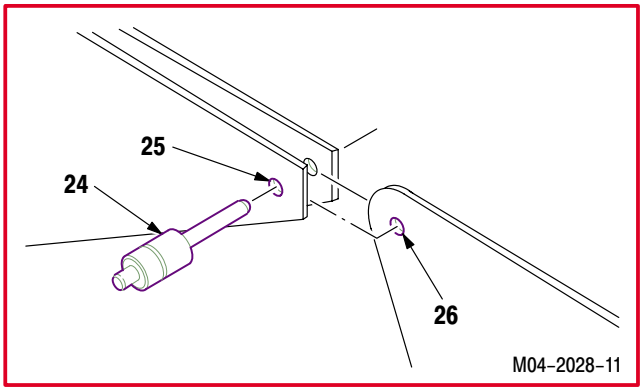
(3) Attach receptacle J1076 (15) to connector P1076 (16).

(4) Install tie strap (14). Use strap (item 192, App F).

(5) Install screw (9) through washer (10), clamps (11) and (12), and spacer (13).



e. **Remove rig pin (24) from rig pin holes (25) and (26).**



GO TO NEXT PAGE

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

NOTE

Install attaching hardware so that bolt head is on inboard side. Bushing may be on bolt head or nut side, depending on actuator adjustment.

f. **Install actuator (1) on stabilator (2).** Torque nut (4) **95 to 110 INCH-POUNDS**.

(1) Aline actuator clevis (43) with stabilator fitting (44).

(2) Install bushing (7) through clevis (43) and fitting (44).

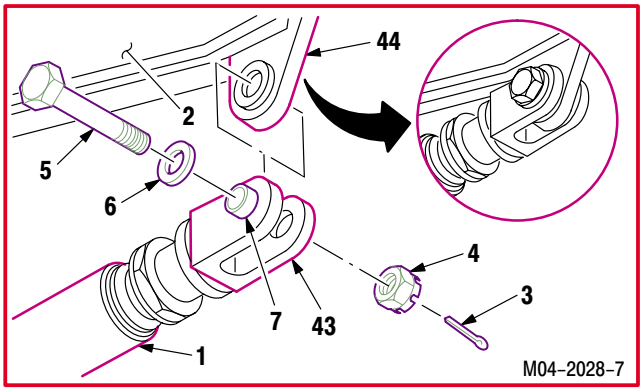
(3) Install bolt (5) through washer (6) and bushing (7).

(4) Install nut (4) on bolt (5).

(5) Torque nut (4) to **95 INCH-POUNDS**. Use torque wrench.

(6) Increase torque to aline cotter pin hole, but do not exceed **110 INCH-POUNDS**.

(7) Install new cotter pin (3) in nut (4).



g. **Inspect (QA).**

GO TO NEXT PAGE

2.113. HORIZONTAL STABILATOR REMOVAL/INSTALLATION – continued

2.113.7. Corrosion Prevention



CAUTION

Do not apply corrosion preventive compound (item 63, App F) on individual components prior to or during installation. Application will result in a wet (lubricated) torque which can cause a much higher torque value than specified.

NOTE

- New horizontal stabilator and/or new hardware initially require two applications of corrosion preventive compound (item 63, App F) which must be applied in intervals at least **1 HOUR** apart.
- When applying corrosion preventive compound (item 63, App F), use the precision (drinking straw-like) applicator attached to the spray head of aerosol can.
- After **2 MINUTES**, wipe excess corrosion preventive compound (item 63, App F) from applied area.

a. **Apply corrosion preventive compound (item 63, App F) to horizontal stabilator hinge assemblies.**

(1) Make application in single short duration squirts, to following areas:

(a) Between the nut and the vertical stabilizer ear.

(b) Between vertical stabilizer ears and horizontal stabilator ears (three places on each hinge assembly).

b. **Inspect (QA).**

c. **Secure access doors LS1 and RS1** (para 2.2)**.**

d. **Install access fairings L545 and R545** (para 2.2)**.**

e. **Perform stabilator maintenance operational check** (TM 1-1520-238-T)**.**

f. **Perform maintenance test flight** (TM 1-1520-238-MTF)**.**

END OF TASK

2.114. HORIZONTAL STABILATOR ACTUATOR FITTING REMOVAL/INSTALLATION

2.114.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.114.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Universal puller kit (item 243, App H)
Hand operated arbor press (item 234, App H)
Adjustable air filtering respirator (item 262, App H)
Staking tool kit (item 392, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Bearing
Brush (item 34, App F)
Cloth (item 52, App F)
Epoxy primer coating kit (item 78, App F)
Methyl ethyl ketone (item 124, App F)
Polyurethane coating (item 141, App F)
Primer (item 145, App F)
Primer coating (item 147, App F)
Sealing compound (item 175, App F)
Wire (item 223, App F)

Personnel Required:

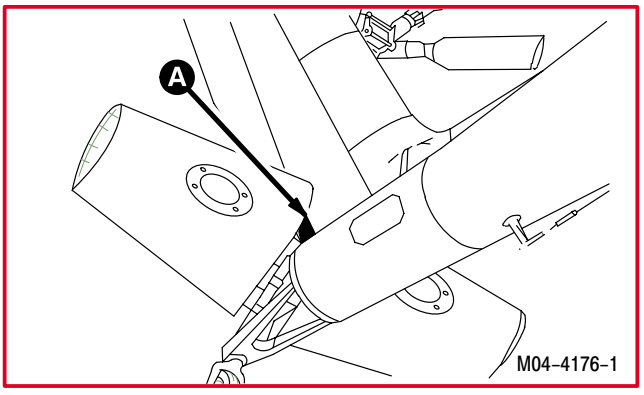
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-322-24
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.113	Horizontal stabilator actuator removed



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2.114. HORIZONTAL STABILATOR ACTUATOR FITTING REMOVAL/INSTALLATION – continued

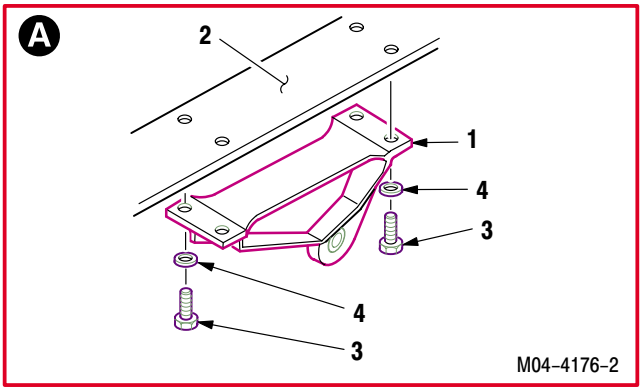
2.114.3. Removal

a. **Remove horizontal stabilator actuator fitting (1) from stabilator (2).**

(1) Remove lockwire from four shear bolts (3).

(2) Remove four bolts (3) and washers (4) from fitting (1).

(3) Remove fitting (1) from stabilator (2).



2.114.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.114.5. Inspection

a. **Check fitting for cracks and corrosion** (para 2.102)**.**

b. **Check bearing staking area for cracks and damage.** None allowed.

c. **Check bearing for binding, catching, corrosion, metal chips, and other contamination.** None allowed.

GO TO NEXT PAGE

2.114. HORIZONTAL STABILATOR ACTUATOR FITTING REMOVAL/INSTALLATION – continued

2.114.6. Repair



CAUTION

- Do not allow primer to enter bearing or bearing contamination will result.
- Installation pressure not to exceed **608 POUNDS** or bearing damage will result.
- Staking pressure not to exceed **13,000 POUNDS** or bearing damage will result.

a. **Repair fitting (1) by removing bearing (5).**

(1) Remove and discard bearing (5) from fitting (1) (TM 55-1500-322-24). Use arbor press and puller kit.

(2) Clean fitting (1) bore and staking area. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

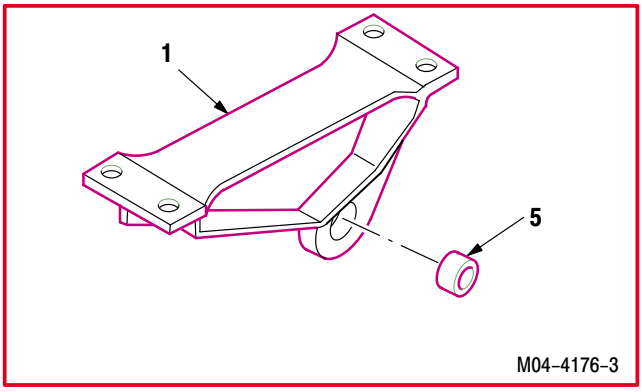
(3) Coat fitting (1) bore and bearing (5). Use primer (item 145, App F) and brush (item 34, App F).

(4) Press wet bearing (5) into fitting (1) flush to **0.010 INCH** above fitting surface (TM 55-1500-322-24). Use arbor press.

NOTE

After bearing is installed it shall not be possible to press bearing from housing with finger.

(5) Form a neat fillet of excess primer around outer race of bearing. Remove excess. Use primer coating (item 147, App F).

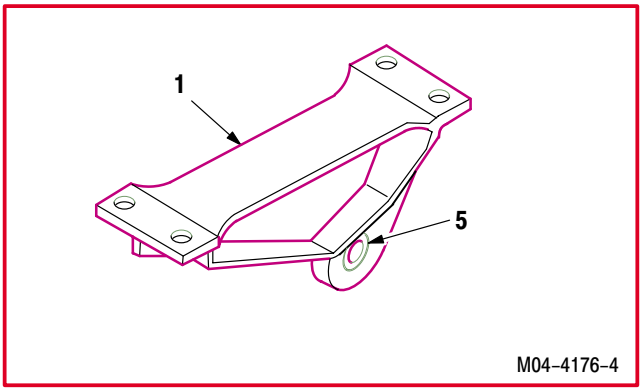


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2.114. HORIZONTAL STABILATOR ACTUATOR FITTING REMOVAL/INSTALLATION – continued

(6) Stake bearing (5) into fitting (1) (TM 55-1500-322-24). Use staking tool kit and arbor press.

(7) Touch up paint (TM 55-1500-345-23). Use epoxy primer coating kit (item 78, App F) and polyurethane coating (item 141, App F).



2.114.7. Installation



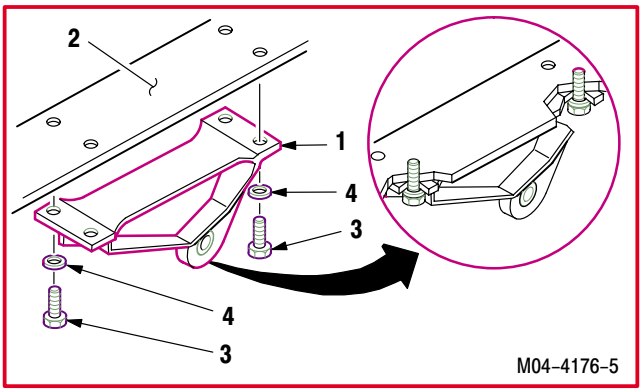
a. **Install fitting (1) on stabilator (2).** Torque four bolts (3) to **15 INCH-POUNDS**.

(1) Install four bolts (3) and washers (4) in fitting (1).

(2) Torque four bolts (3) to **15 INCH-POUNDS**. Use torque wrench.

(3) Lockwire four bolts (3) to fitting (1). Use wire (item 223, App F).

(4) Apply torque stripes to four bolts (3). Use sealing compound (item 175, App F).



b. **Inspect (QA).**

c. **Install horizontal stabilator actuator** (para 2.113)**.**

END OF TASK

2.114A. HORIZONTAL STABILATOR POSITION SENSOR CLAMP REPLACEMENT

2.114A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.114A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23

Materials/Parts:

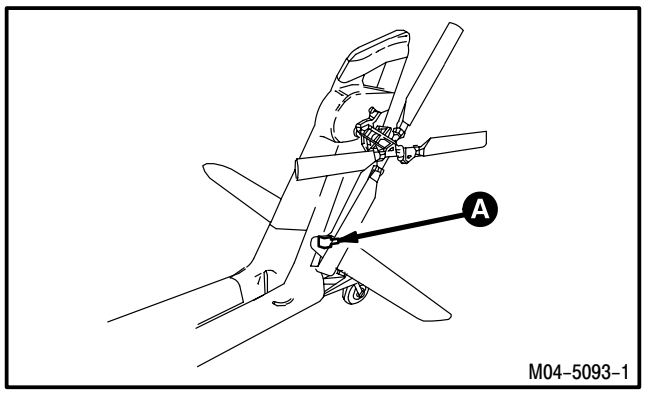
Bracket (item D-232, App D)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
11.231	Stabilator position transducer removed



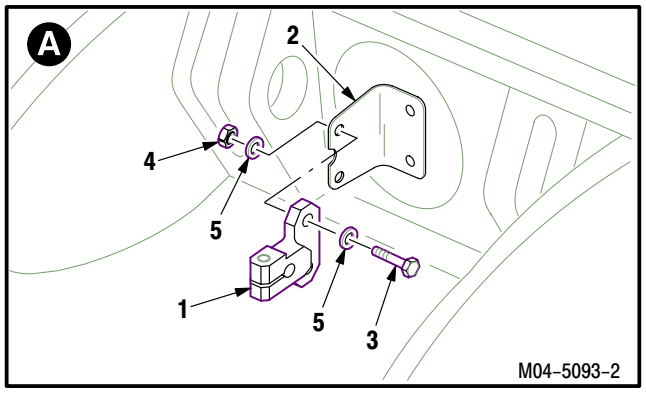
2.114A.3. Removal

a. **Remove stabilator position sensor clamp (1) from sensor clamp bracket (2).**

(1) Hold two bolts (3). Remove two nuts (4) and washers (5).

(2) Remove two bolts (3) and washers (5) from clamp (1) and bracket (2).

(3) Remove clamp (1) from bracket (2).



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2.114A. HORIZONTAL STABILATOR POSITION SENSOR CLAMP REPLACEMENT – continued

2.114A.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.114A.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check bracket for damage, cracks, and loose or missing hardware.**

(1) If bracket is damaged, fabricate (item D-232, App D) and replace bracket (TM 1-1500-204-23).

2.114A.6. Installation

a. **Install clamp (1) on bracket (2).**

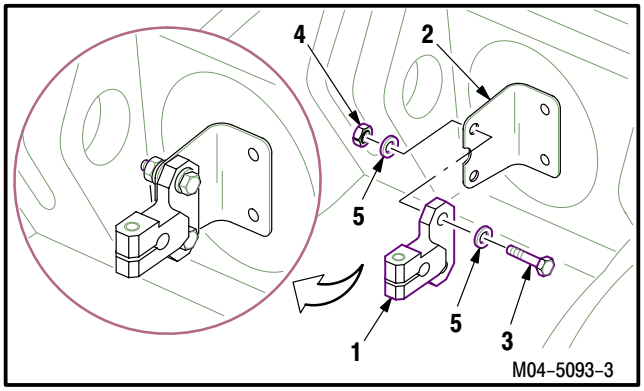
(1) Aline clamp (1) on bracket (2).

(2) Install two bolts (3) through two washers (5), clamp (1), bracket (2), and two washers (5).

(3) Install two nuts (4) on two bolts (3).

b. **Install stabilator position transducer** (para 11.231)**.**

c. **Inspect (QA).**



END OF TASK

2.115. HORIZONTAL STABILATOR DEBRIS COVER REMOVAL/INSTALLATION

2.115.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.115.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
2-inch wide hand roller (item 270, App H)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Cover, Debris Protection-Stabilator (figure D442.9 and/or D442.10, App D)
Adhesive (item 13, App F)
Isopropyl alcohol (item 106, App F)
Methyl ethyl ketone (item 124, App F)
Paper (item 135, App F)
Primer, Pressure Sensitive Tape (item 144A, App F)
Tape (item 206, App F)

References:

TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panel L548 or R548 removed

NOTE

This task is typical for left and/or right debris cover.

2.115.3. Removal



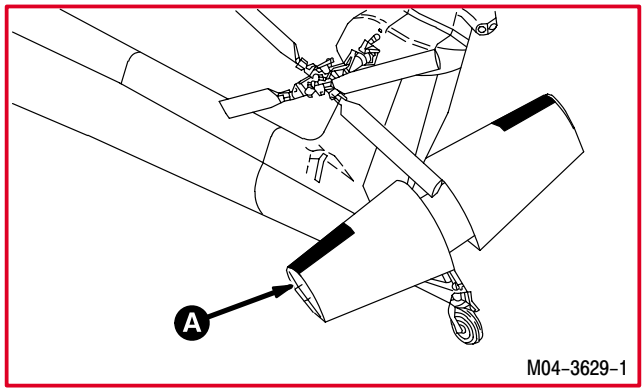
a. **Remove debris cover (1) from horizontal stabilator (2).**

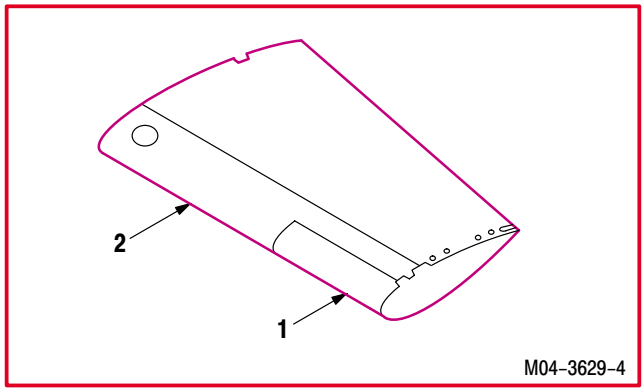
(1) Mask off area around debris cover (1). Use tape (item 206, App F).

(2) Loosen cover (1) by applying solvent to edges.

(a) If cover is a double ply cover, use isopropyl alcohol (item 106, App F).

(b) If cover is a single ply cover, use methyl ethyl ketone (item 124, App F).





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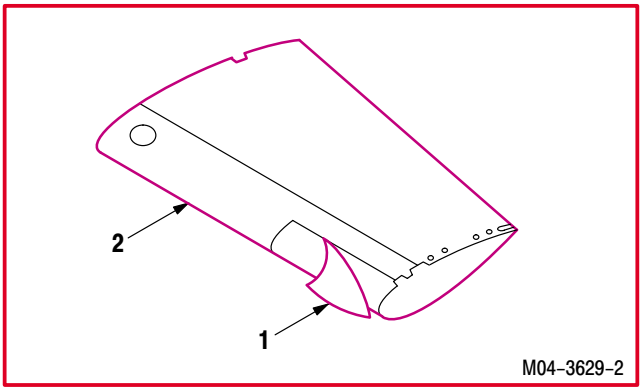
2.115. HORIZONTAL STABILATOR DEBRIS COVER REMOVAL/INSTALLATION – continued

CAUTION

To prevent damage to helicopter, use caution to avoid gouging skin with putty knife.

(3) Start at a corner and carefully peel cover (1) from surface of stabilator (2). Use putty knife.





b. **After removal of cover (1), sand surface lightly to smooth.** Use paper (item 135, App F).

2.115.4. Cleaning

a. **Clean adhesive from stabilator** (para 1.47)**.**

2.115.5. Inspection

a. **Check stabilator for cracks** (para 2.102)**.**

b. **Check stabilator for corrosion** (para 1.49)**.**

2.115.6. Installation



a. **Lightly scuff surface of area to be bonded.** Use paper (item 135, App F).

b. **Clean area to be bonded on stabilator** (para 1.47)

c. **Apply primer pressure sensitive tape to area of stabilator (2) to be bonded.**

(1) Apply primer pressure sensitive tape to mating surfaces of stabilator (2) in a **3.0 INCHES** wide strip around the edges of the bond area as well as the protruding rivet heads. Use primer tape (item 144A, App F).

(2) Allow primer to cure **15 to 60 MINUTES.**

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2.115. HORIZONTAL STABILATOR DEBRIS COVER REMOVAL/INSTALLATION – continued



NOTE

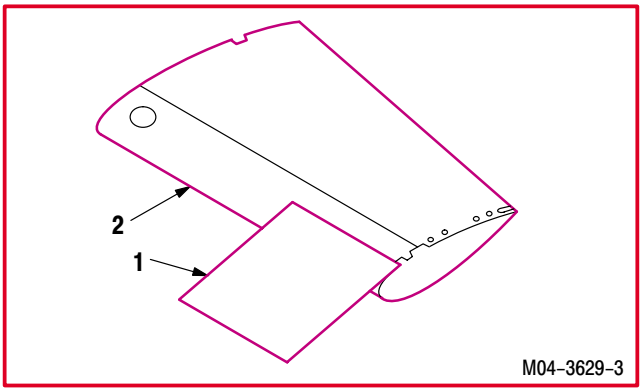
- Adhesive must be tacky when mating surfaces are joined.
- If adhesive dries before mating, apply small amount of MEK to reactivate adhesion. Use methyl ethyl ketone (item 124, App F).
- Allow MEK to evaporate before joining parts.
- Heat may be applied to help shape the cover over surface irregularities. Do not prermit the temperature of the cover to exceed 120 °F (48.9°C)

d. **Install new cover (1) on stabilator (2).**

(1) Position cover (1) on top of stabilator (2).

(2) Remove liner to expose adhesive and apply cover (1) on stabilator (2) using a roller to work out air pockets as you go.

(3) Apply adhesive to edges of cover (1). Use adhesive (item 13, App F).



e. **Trim cover (1) as required to protect stabilator (2).**

f. **Clean excess adhesive from around cover (1)** (para 1.47)**.**

g. **Remove masking tape.**

h. **Install access panel L548 or R548** (para 2.2)**.**

i. **Allow installation to cure 24 HOURS.**

j. **Touch up paint** (TM 55-1500-345-23)**.**

k. **Inspect (QA).**

END OF TASK

SECTION VIII. WINGS MAINTENANCE

2.116. WINGS INSPECTION

2.116.1. Description

This task covers: Wings.

NOTE

Refer to para 2.117 for damage limits and corrective action.

2.116.2. Wings

a. **Check skin panels, access covers, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.**

b. **Check fittings, castings, and forgings for corrosion or cracks.**

c. **Check structural attachment points for wear caused by movement.** None allowed.

d. **Inspect the wing forward upper mounting flange area.**

(1) Remove auxiliary fuel tanks, if installed (para 10.140).

(2) Using 10x or greater magnifier, inspect around the top of the wing forward mounting spar flange area for cracks. Remove paint, if necessary, and repaint (TM 55-1500-345-23).

(3) If cracks are found, replace wing (para 2.120).

END OF TASK

2.117. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR

2.117.1. Description

This task covers: Damage Limit Categories. Types Of Damage (Examples): Limits and Action. Corrosion. Impact or Fatigue Damage.

2.117.2. Damage Limits Categories

The following damage categories help you establish repairable limits for particular areas and parts. Only applicable categories are listed for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

2.117.3. Types of Damage (Examples): Limits and Action

Category	Limits	Action
a. Type: Skin Corrosion		
A	Less than 20 percent of skin thickness and no more than 25 percent of panel area.	Remove corrosion (para 1.49).
B	More than 20 percent of skin thickness and less than 50 percent of panel area with no affect on adjacent structure.	Patch repair (TM 1-1500-204-23) not to exceed 25 percent of total panel area.
C	More than 50 percent of panel skin thickness.	Replace affected area with patch repair (TM 1-1500-204-23).
b. Type: Skin or Sheet Metal Holes, Cracks, or Tears		
A	---	---
B	---	---
C	No cracks or tears more than 25 percent of shortest skin panel dimension. No holes greater than **3.00 INCHES** diameter (clean up can be no closer than **2.00 INCHES** to support structure).	Clean up and patch repair (TM 1-1500-204-23).

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2.117. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR – continued

2.117.4. Corrosion

Category	Limits	Action
a. Structural		
A	Less than 10 percent of material thickness across 25 percent of cross section.	Remove corrosion (para 1.49).
B	Greater than 10 percent of material thickness but less than 50 percent of cross section.	Patch repair (TM 1-1500-204-23) as long as area remaining allows attaching repair.
C	Greater than minor damage.	Replace.
b. Castings, Forgings		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040 INCH** deep.	Repair corroded area (TM 1-1500-204-23).
B	Exceeds A.	Replace.
c. Fasteners, Bearings, and Bushings		
A	Removable or allowed to remain without affecting size or function.	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
d. Covers		
A	Not applicable.	
B	Less than 10 percent of material thickness and less than **4.00 SQUARE-INCHES** after clean up.	Repair (TM 1-1500-204-23).
C	Exceeds B or repairs will affect function.	Replace.

GO TO NEXT PAGE

2.117. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR – continued

2.117.5. Impact or Fatigue Damage

Category	Limits	Action
a. Skin or Sheet Metal Holes, Cracks. or Tears		
B	Holes: less than **3.00 INCHES** in diameter. (Clean up can be no closer than **2.00 INCHES** to supporting structure, and no more than 5 percent of skin area.)	Clean up and patch repair (TM 1-1500-204-23).
B	Cracks or tears: no longer than 25 percent of shortest skin dimension.	Clean up and patch repair (TM 1-1500-204-23).
b. Skin or Sheet Metal Nicks or Scratches		
A	Less than 10 percent of material thickness.	Clean up (para 1.47). (Area cannot exceed **4.00 SQUARE-INCHES**.)
B	Deeper than 10 percent but less than 25 percent of material thickness.	Clean up (para 1.47). (Area cannot exceed five percent of skin area and can be no closer than **2.00 INCHES** to supporting structure.)
C	Exceeds B.	Replace.
c. Skin Dents		
A	Smooth dents less than **0.25 INCH** deep.	Repair (TM 1-1500-204-23).
B	Dents with nicks or gouges or deeper than **0.25 INCH**.	Patch repair (TM 1-1500-204-23). (Treat dents as holes.)
C	Dents greater than **3.00 INCHES** in diameter or cleanup will exceed 5 percent of skin area or will be closer than **2.00 INCHES** to supporting structure.	Replace.
d. Cover Cracks, Tears, and Punctures		
B	Less than 25 percent length of shortest dimension.	Repair (TM 1-1500-204-23).

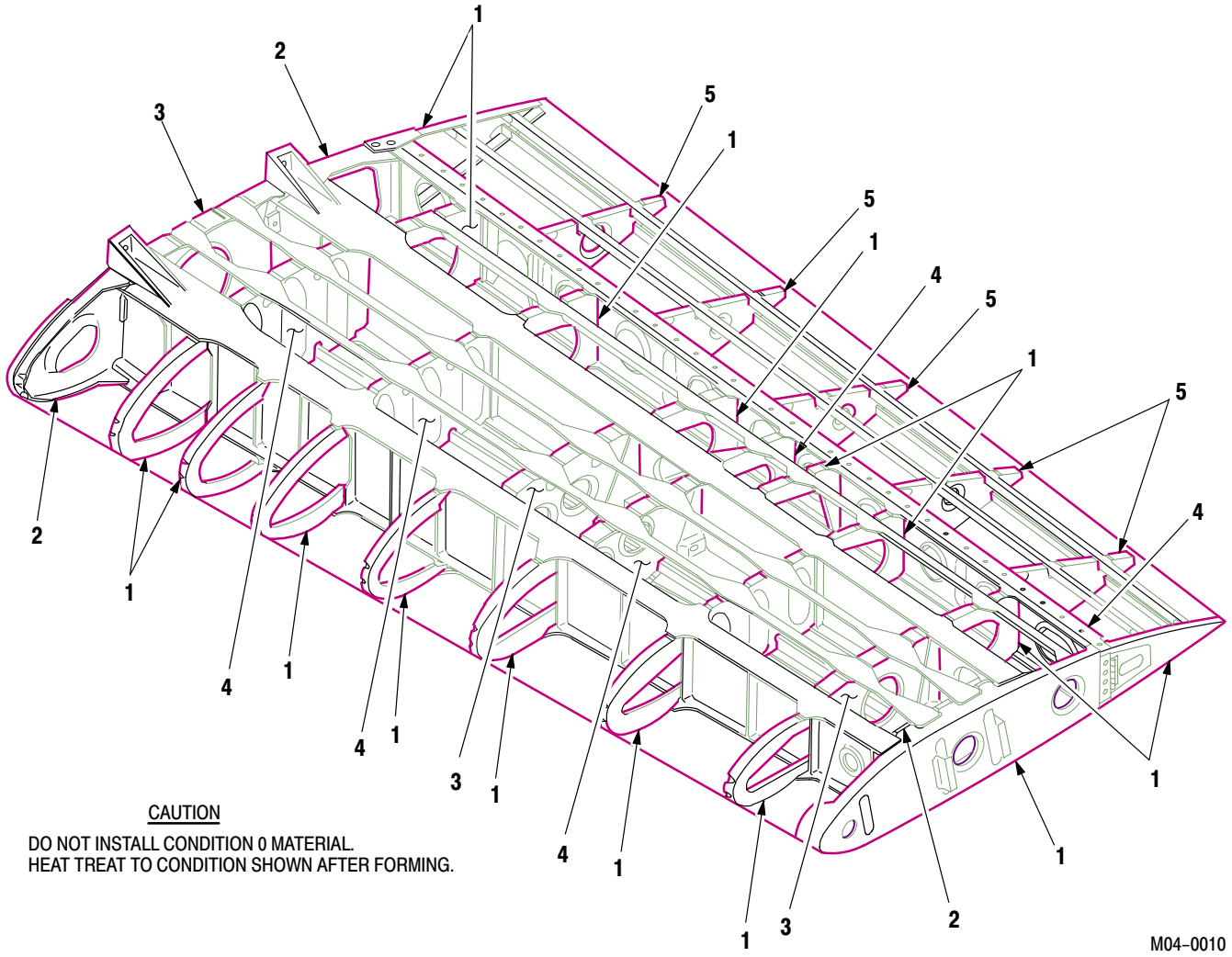
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2.117. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
e. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: less than 25 percent length of shortest skin dimension.	Repair (para 2.30).
B	Punctures: less than **2.00 INCHES** from supporting structure.	Repair (para 2.30).
C	Exceeds B or hinders normal operation or function.	Replace.
f. Kevlar/Epoxy Skin Delamination		
B	No deeper than three plies or **0.050 INCH**, whichever is less. (Treat limit exceeding damages as crack, tear, or puncture repair.)	Repair (para 2.30).
g. Kevlar/Epoxy Skin Debonding		
C	Greater than **6.00 INCHES** but less than 40 percent of panel area.	Replace if possibility of danger to crew or helicopter exists.
C	Greater than 40 percent of panel area.	Replace panel.
h. Kevlar/Epoxy Fairings Debonding		
B		Rebond where ribs, gussets, baffles, stiffeners, seals, and doublers have debonded.
i. Kevlar/Epoxy Fairings Cracks		
B	No longer than 25 percent of shortest skin dimension.	Repair (para 2.30).
C	Exceeds B or extends from one end of part through other end.	Replace.
j. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers.	Repair (para 2.30).

END OF TASK

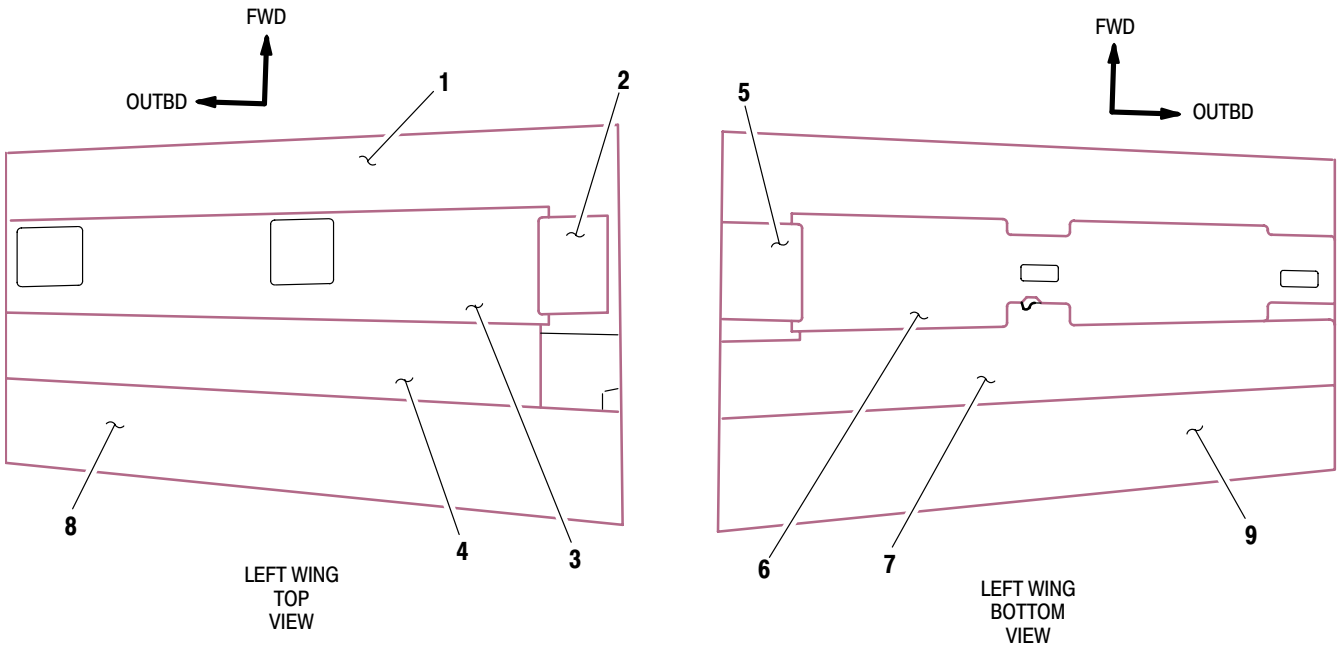
2.118. WING FRAME STRUCTURE



Item	Material	Specification	Condition	Thickness (inches)
1	2024 AL ALY	QQ-A-250/4	T42	0.032
2	2024 AL ALY	QQ-A-250/4	T42	0.050
3	2024 AL ALY	QQ-A-250/4	T42	0.063
4	2042 AL ALY	QQ-A-250/4	T42	0.040
5	2024 AL ALY	QQ-A-250/4	T42	0.025

END OF TASK

2.119. WING SKIN PLATES



M04–015

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T3	0.032	24.50	74.00
2	2024 AL CLAD	QQ-A-250/5	T3	0.071	9.10	12.60
3	2024 AL CLAD	QQ-A-250/5	T3	0.040	14.60	66.50
4	2024 AL CLAD	QQ-A-250/5	T3	0.025	9.60	66.00
5	2024 AL CLAD	QQ-A-250/5	T3	0.063	9.10	12.90
6	2024 AL CLAD	QQ-A-250/5	T3	0.032	14.70	66.50
7	2024 AL CLAD	QQ-A-250/5	T3	0.025	10.40	74.40
8	2024 AL CLAD	QQ-A-250/5	T3	0.016	16.50	74.00
9	2024 AL CLAD	QQ-A-250/5	T3	0.016	15.00	74.00

END OF TASK

2.120. WING REMOVAL

2.120.1. Description

This task covers: Removal. Cleaning. Inspection.

2.120.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
1/2-inch drive ratchet socket wrench handle (item 172, App H)
11/16 x 1/2-inch drive socket wrench socket (item 304, App H)
5/8 x 1/2-inch drive socket wrench socket (item 315A, App H)
9/16 x 1/2-inch drive socket wrench socket (item 316, App H)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.22	Fuel system vented
2.2	Access cover LW9 or RW9 removed; fairings LW10 and LW11 or RW10 and RW11 removed
16.2	Pylons removed
2.122	Wing trailing edge removed

Personnel Required:

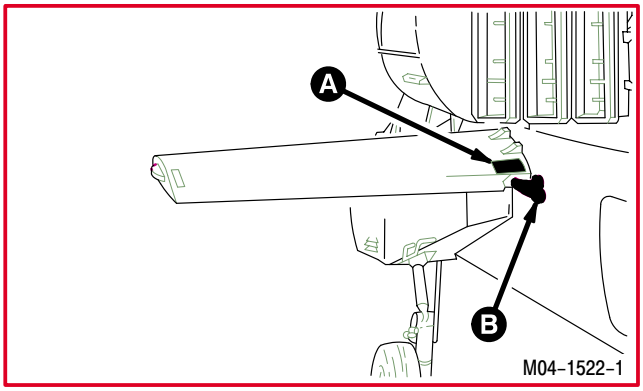
67R Attack Helicopter Repairer
Four persons to assist

WARNING

To prevent injury to personnel or damage to equipment, four persons must lift or carry the wing during removal. If injury occurs, seek medical aid.

NOTE

This task is typical for left and/or right wings.



GO TO NEXT PAGE

2.120. WING REMOVAL – continued

2.120.3. Removal

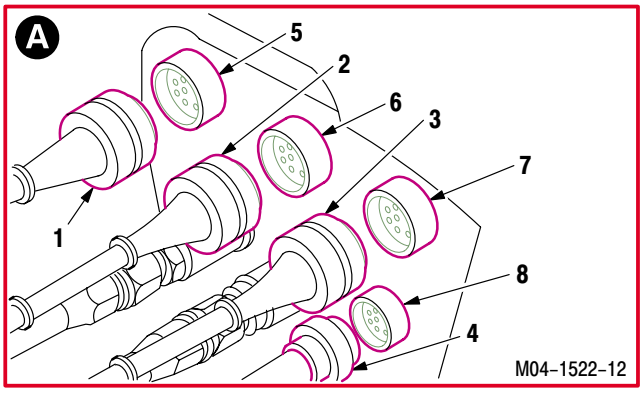
a. **Detach four wing connectors (1), (2), (3), and (4) from receptacles (5), (6), (7), and (8).**

(1) Detach connector P586 (1) from receptacle J586 (5).

(2) Detach connector P1075 (2) from receptacle J1075 (6).

(3) Detach connector P587 (3) from receptacle J587 (7).

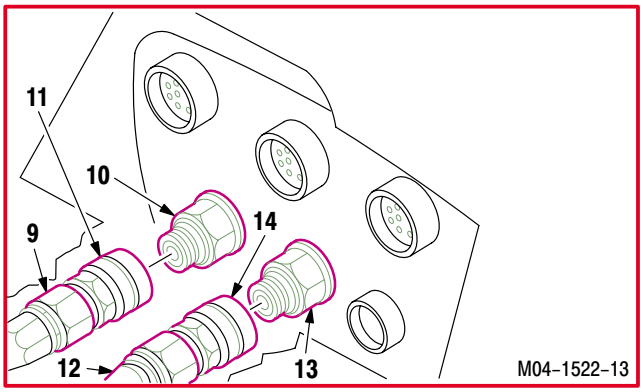
(4) Detach connector P115 (4) from receptacle J115 (8).



b. **Remove nonmetallic hose assembly (9) from coupling assembly (10).**

(1) Place rags under hose (9) and coupling (10) to catch fluid spills.

(2) Slide sleeve (11) outboard and turn counterclockwise.



c. **Remove hose assembly (12) from coupling half (13).**

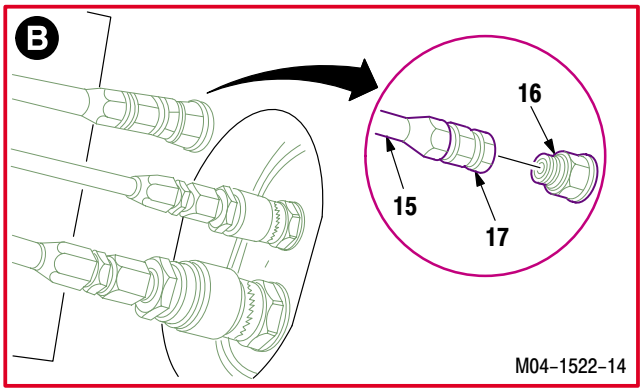
(1) Slide sleeve (14) outboard and turn counterclockwise.

(2) Remove hose (12) from coupling (13).

d. **Remove pitot tube assembly (15) from tube nipple (16).**

(1) Remove hose nut (17) from nipple (16).

(2) Remove tube (15) from nipple (16).



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2.120. WING REMOVAL – continued

e. **If installed, remove fuel coupling (18) and air coupling (19) from coupling halves (20) and (21).**

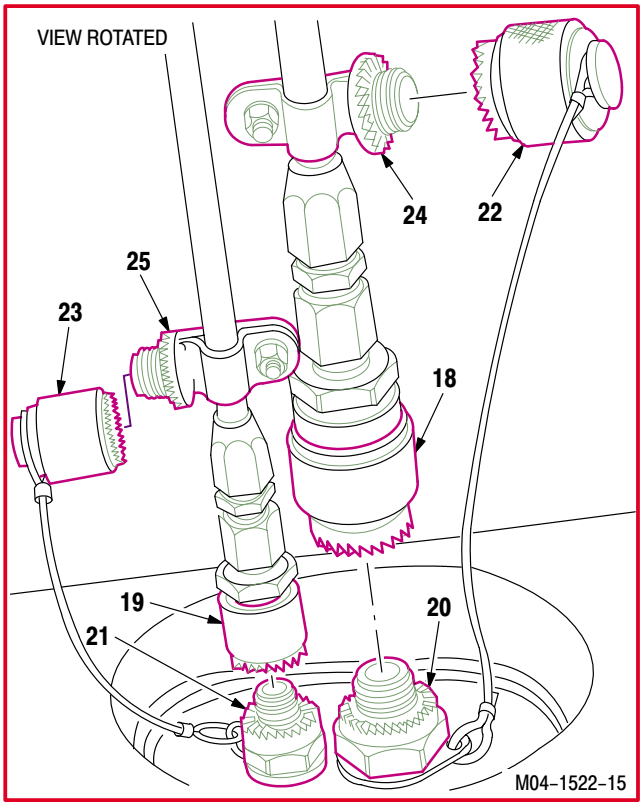
(1) Pull ratchet sleeve on couplings (18) and (19) away from locking teeth on couplings (20) and (21).

(2) Turn ratchet sleeve counterclockwise until free from adapters (20) and (21).

f. **Remove dust caps (22) and (23) from adapters (24) and (25).**

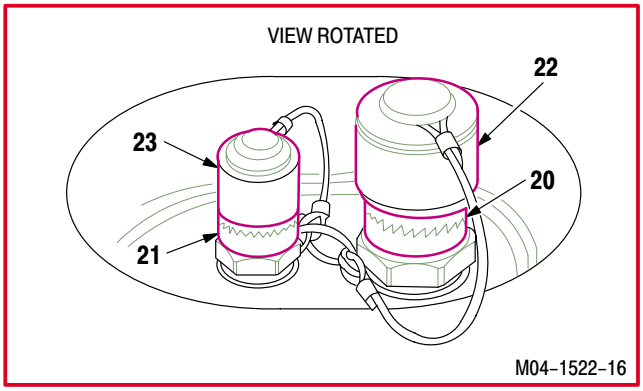
(1) Pull ratchet sleeve on dust caps (22) and (23) away from locking teeth on retainer assemblies (24) and (25).

(2) Turn dust caps (22) and (23) counterclockwise until free from adapters (24) and (25).



g. **Install dust caps (22) and (23) on adapters (20) and (21).**

(1) Turn dust caps (22) and (23) clockwise until firmly seated and locking teeth are fully engaged.



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2.120. WING REMOVAL – continued

WARNING

To prevent injury to personnel and damage to equipment, four persons must lift and carry the wing during removal. If injury occurs, seek medical aid.

NOTE

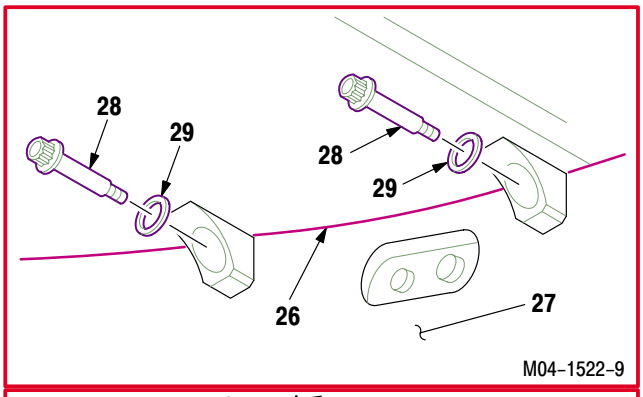
Four persons are required to support wing (26) forward and aft during removal.

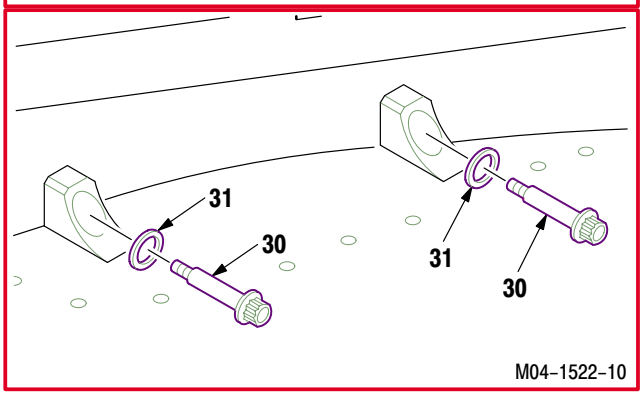
h. **Remove wing (26) from fuselage (27).**

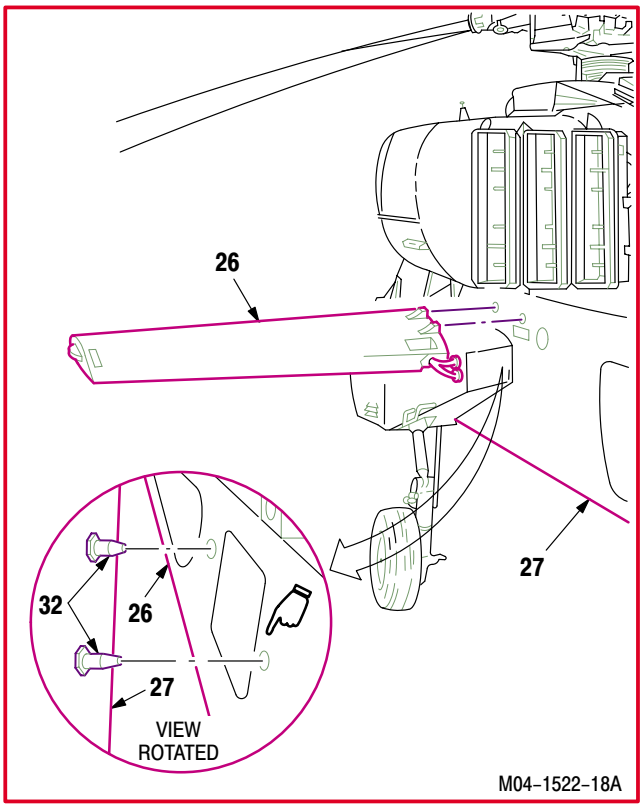
(1) Remove lower bolts (28) and washers (29) from wing (26). Use socket or socket and ratchet.

(2) Remove upper bolts (30) and washers (31). Use socket and ratchet.

(3) Carefully pull wing (26) straight out from fuselage (27) and alinement pins (32).







GO TO NEXT PAGE

2.120. WING REMOVAL – continued

2.120.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.120.5. Inspection

a. **Check for cracks, nicks, scratches, and loose rivets** (para 2.117)**.**

b. **Check for broken or sheared bolts.**

c. **Check condition of anti-skid coating** (para 2.36)**.**

d. **Check ribs and structure of wing for damage** (para 2.117)**.**

e. **Check surfaces for corrosion** (para 1.49)**.**

END OF TASK

2.121. WING INSTALLATION

2.121.1. Description

This task covers: Installation.

2.121.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
3/4 x 1/2-inch drive socket wrench adapter (item 5, App H)
11/16 x 1/2-inch drive socket wrench socket (item 304, App H)
5/8 x 1/2-inch drive socket wrench socket (item 315A, App H)
9/16 x 1/2-inch drive socket wrench socket (item 316, App H)
0 - 600 foot-pound 3/4-inch drive deflecting frame torque wrench (item 443, App H)
0 - 175 foot-pound 1/2-inch drive dial indicator torque wrench (item 444, App H)

Personnel Required:

67R Attack Helicopter Repairer
Four persons to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T
TM 9-1230-476-20-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

WARNING

To prevent injury to personnel or damage to equipment , four persons must lift or carry the wing during installation.

CAUTION

- Do not mix bolts or barrel nuts.
- When using HS5683-10 bolts, barrel nut HS5483-10 or HS5813-10 must be used.
- When using HS5683-8 bolts, barrel nut HS5483-8 or HS5813-8 must be used.

GO TO NEXT PAGE

2.121. WING INSTALLATION – continued

NOTE

This task is typical for left and/or right wing installation.

2.121.3. Installation

a. **Install wing (1) on fuselage (2).** Torque bolts (3) to **220 FOOT-POUNDS**. Torque bolts (4) to **90 FOOT-POUNDS**.

(1) Four persons support and guide wing (1) during installation.

(2) Aline wing guide pins (5) with wing holes (6).

NOTE

Install washers with recess facing bolt heads.

(3) Install two upper bolts (3) and recessed washers (7). Torque bolts (3) to **220 FOOT-POUNDS**. Use adapter, socket and torque wrench.

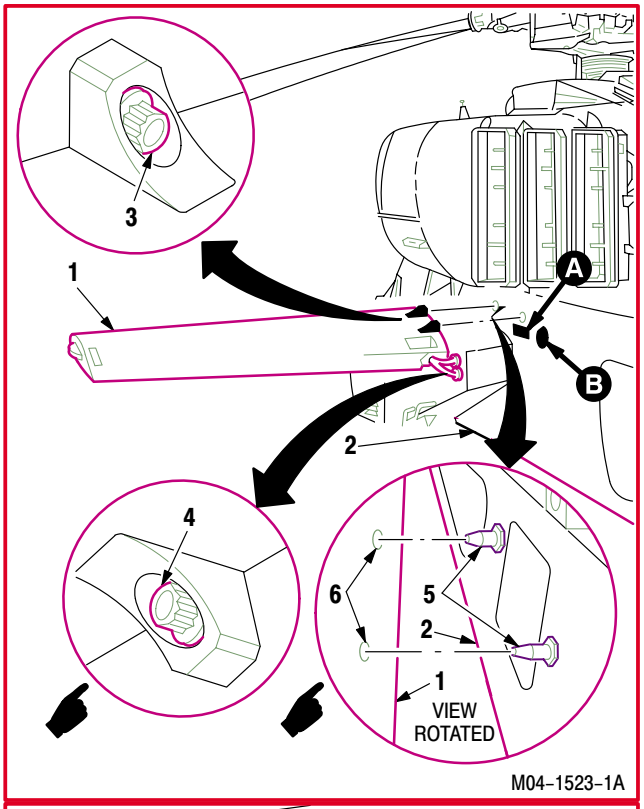
NOTE

Ensure lower bolts are long enough to permit not less than **0.100 INCH** protrusion through the fuselage mounted barrel nuts. A measurement of bolt length must be taken prior to installation.

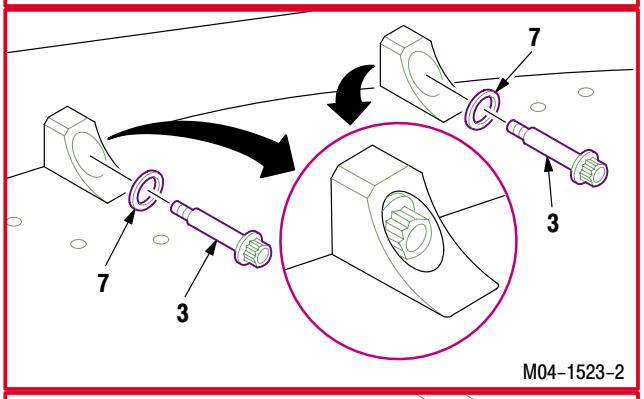
(4) Measure bolt (4). Length shall be **2.058 to 2.088 INCHES**.

(5) Install two lower bolts (4) and recessed washers (8). Torque bolts (4) to **90 FOOT-POUNDS**. Use torque wrench and socket or socket.

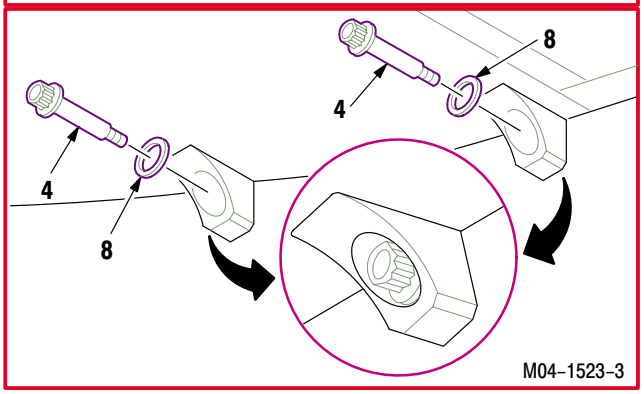
b. **Inspect (QA).**



M04-1523-1A



M04-1523-2



M04-1523-3

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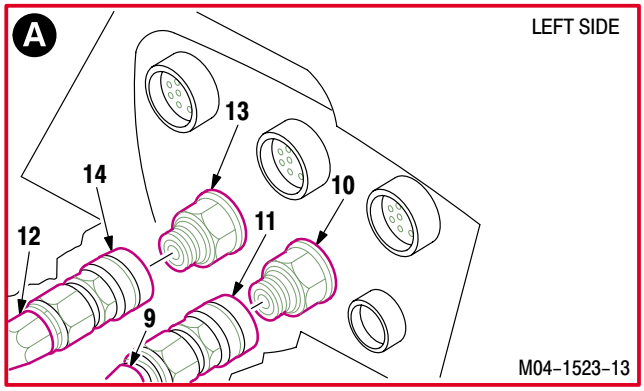
2.121. WING INSTALLATION – continued

c. **Install nonmetallic hose assembly (9) on coupling assembly (10).**

(1) Place rags under hose (9) and coupling (10) to catch fluid spills.

(2) Install hose (9) on coupling (10).

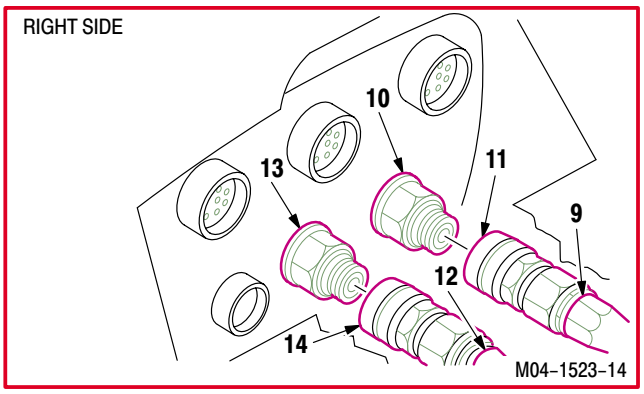
(3) Turn sleeve (11) clockwise on hose (9) until seated and locking teeth fully engaged.



d. **Install hose assembly (12) on coupling half (13).**

(1) Install hose (12) on coupling (13).

(2) Turn sleeve (14) clockwise on hose (12) until seated and locking teeth fully engage.



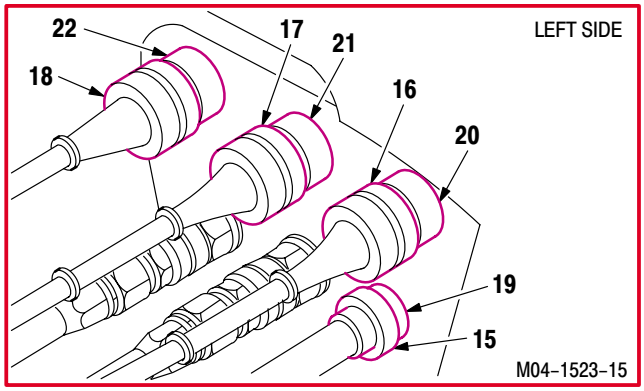
e. **Attach four left wing connectors (15), (16), (17), and (18) to receptacles (19), (20), (21), and (22).**

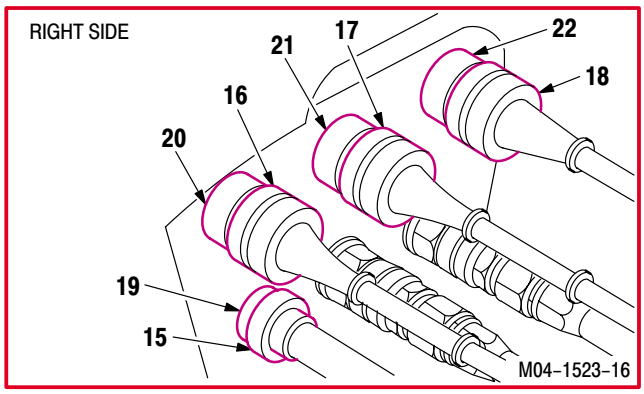
(1) Attach connector P115 (15) to receptacle J115 (19).

(2) Attach connector P587 (16) to receptacle J587 (20).

(3) Attach connector P1075 (17) to receptacle J1075 (21).

(4) Attach connector P586 (18) to receptacle J586 (22).





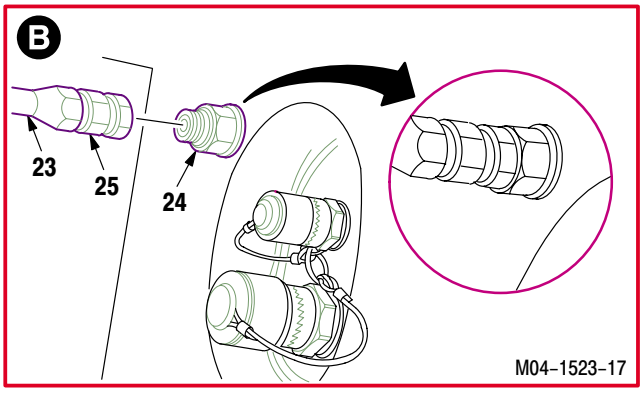
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2.121. WING INSTALLATION – continued

f. **Wipe wing interior free of spilled fluids with a clean rag.**

g. **Install pitot tube assembly (23) on tube nipple (24).**

(1) Install tube nut (25) on nipple (24).



h. **Remove dust cap (26) from adapter (27).**

(1) Pull ratchet sleeve on cap (26) away from locking teeth on coupling (27).

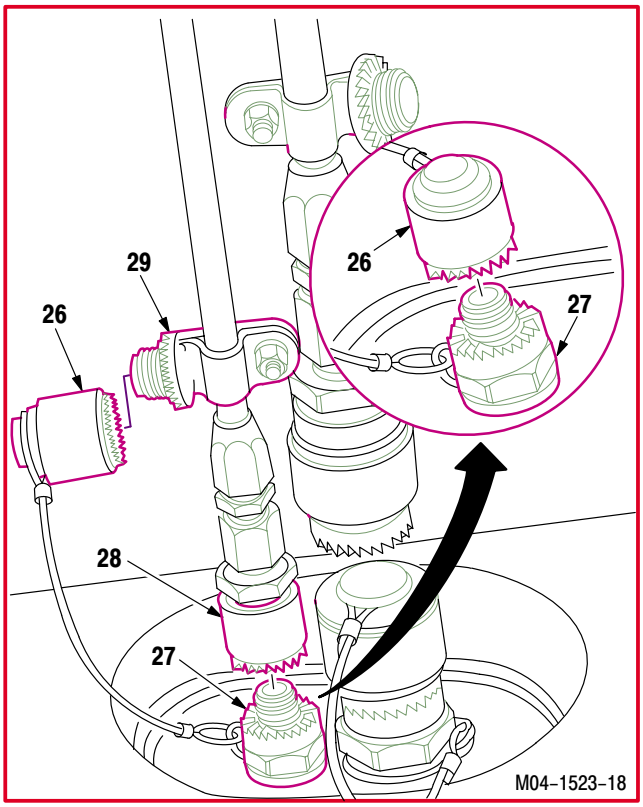
(2) Turn cap (26) counterclockwise until free from coupling (27).

i. **If required, install air coupling (28) on coupling half (27).**

(1) Turn sleeve clockwise on coupling (28) until seated and locking teeth are fully engaged.

j. **Install dust cap (26) on adapter (29).**

(1) Turn dust cap (26) clockwise until seated and locking teeth are fully engaged.



GO TO NEXT PAGE

2.121. WING INSTALLATION – continued

k. **Remove dust cap (30) from coupling half (31).**

(1) Pull ratchet sleeve on cap (30) away from locking teeth on coupling (31).

(2) Turn cap (30) counterclockwise until free from coupling (31).

l. **Install fuel coupling (32) on coupling (31).**

(1) Turn sleeve clockwise on coupling (32) until seated and locking teeth are fully engaged.

m. **Install cap (30) on adapter (33).**

(1) Install cap (30) on adapter (33).

(2) Turn cap (30) clockwise until seated and locking teeth are fully engaged.

n. **Inspect (QA).**

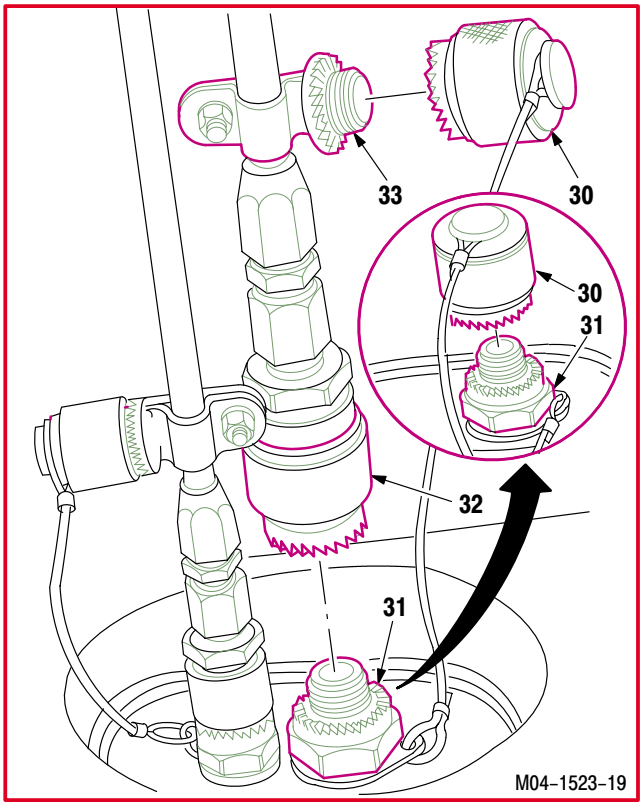
o. **Install access fairings LW10, LW11, or RW10, and RW11; covers LW9 or RW9** (para 2.2)**.**

p. **Install wing trailing edge** (para 2.122)**.**

q. **Install pylons** (para 16.2)**.**

r. **Perform flight instrument maintenance operational check** (TM 1-1520-238-T)**.**

s. **Perform pylon boresight maintenance operational check** (TM 9-1230-476-20-1)**.**



END OF TASK

2.122. WING TRAILING EDGE REMOVAL/INSTALLATION

2.122.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.122.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 9-1230-476-20-1

Equipment Conditions:

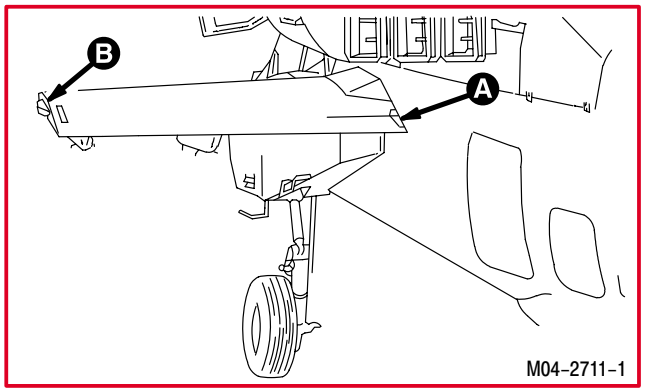
Ref	Condition
1.57	Helicopter safed
2.2	Access fairing P3 removed
TM 9-1230-476-20-1	Multiplex remote terminal unit (MRTU) type II removed

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for left and/or right wing trailing edge.



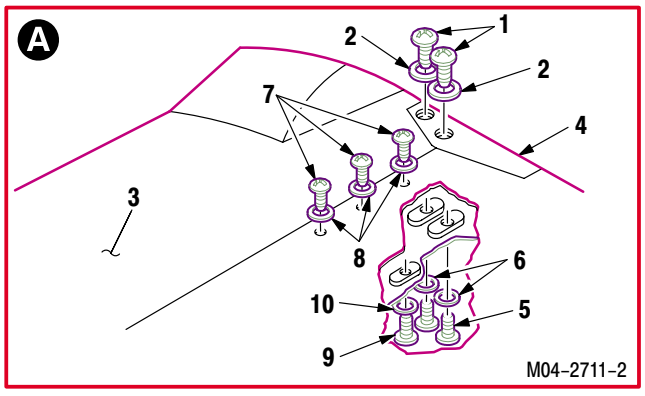
2.122.3. Removal

a. **Remove two screws (1) and washers (2) from top of wing (3) at tie (4).**

b. **Remove two screws (5) and washers (6) from bottom of wing (3) at tie (4).**

c. **Remove 36 screws (7) and washers (8) from top of wing (3).**

d. **Remove 35 screws (9) and washers (10) from bottom of wing (3).**



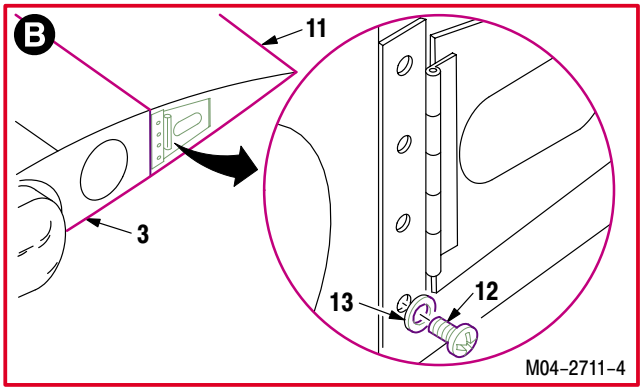
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2.122. WING TRAILING EDGE REMOVAL/INSTALLATION – continued

e. **Remove trailing edge (11) from wing (3).**

(1) Remove four screws (12) and washers (13) from trailing edge (11) of wing (3).

(2) Remove trailing edge (11) from wing (3).



2.122.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.122.5. Inspection

a. **Check trailing edge for cracks, nicks, scratches, and loose rivets** (para 2.117)**.**

b. **Check removed screws for stripped threads.** None allowed.

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

2.122.6. Installation

NOTE

Covers on lower side of trailing edge must be stowed if auxiliary wing tank kit is installed on pylons.

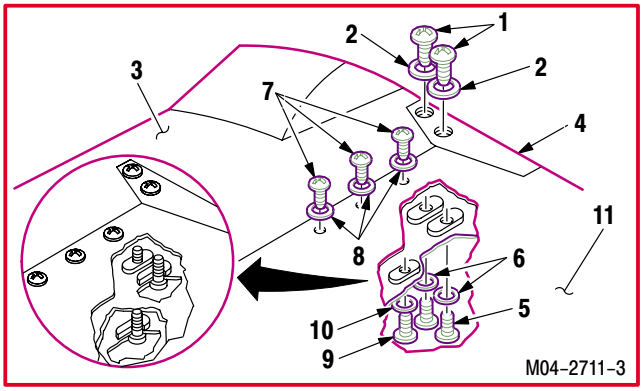
a. **Position trailing edge (11) on wing (3).**

b. **Install 35 screws (9) and washers (10) in bottom of wing (3).**

c. **Install 36 screws (7) and washers (8) in top of wing (3).**

d. **Install two screws (5) and washers (6) in bottom of wing (3) at tie (4).**

e. **Install two screws (1) and washers (2) in top of wing (3) at tie (4).**

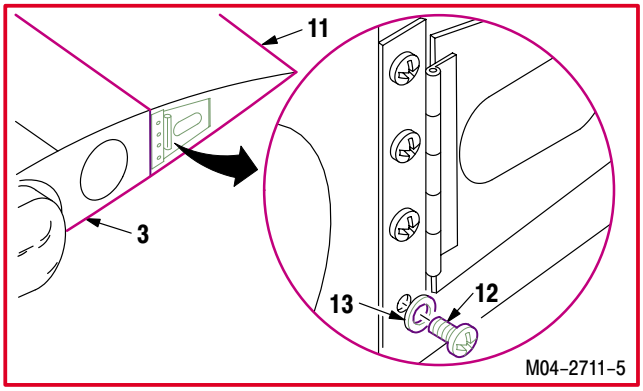


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2.122. WING TRAILING EDGE REMOVAL/INSTALLATION – continued

f. **Install trailing edge (11) on wing (3).**

(1) Install four screws (12) and washers (13) in trailing edge (11) at tip of wing (3).



g. **Inspect (QA).**

h. **Install MRTU type II** (TM 9-1230-476-20-1)**.**

i. **Install access fairing P3** (para 2.2)**.**

END OF TASK

SECTION IX. NOSE GEARBOX FAIRING MAINTENANCE

2.123. NOSE GEARBOX FUSELAGE FAIRING AND SHROUD REMOVAL/INSTALLATION

2.123.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.123.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1520-238-T

Materials/Parts:

Nonmetallic special shaped section (item 129, App F)
Strap (item 192, App F)

Personnel Required:

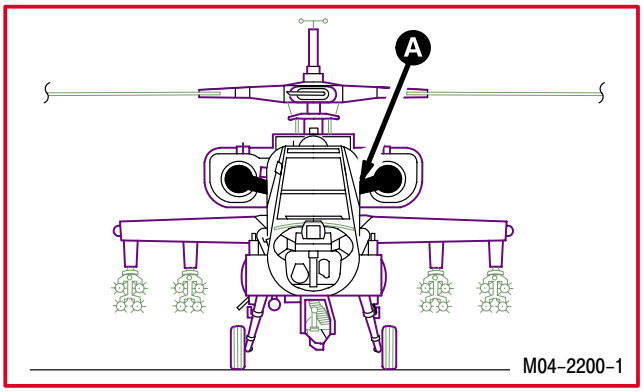
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access panels L200 or R200 removed

NOTE

This task is typical for No. 1 and/or No. 2 nose gearbox fairings and shrouds.



GO TO NEXT PAGE

2.123. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION – continued

2.123.3. Removal

a. **Detach connector P47 (1) from receptacle J47 (2) and connector (HR3)P2 (3) from receptacle J2 (4) on nose gearbox No. 1.**

b. **Detach connector P48 (1) from receptacle J48 (2) and connector (HR4)P2 (3) from receptacle J2 (4) on nose gearbox No. 2.**

c. **Remove screw (5), washer (6), clamp (7), and spacer (8) from wire harness (9).**

d. **Remove and discard tiedown strap (10) and rubber strip (11) from anchor (12).**

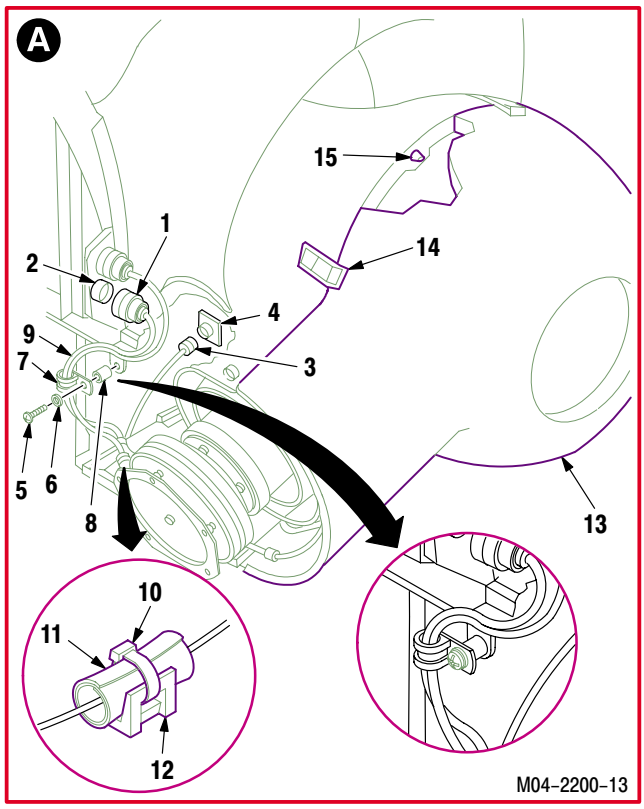
CAUTION

To prevent damage to heater blanket lead, do not allow forward fairing to hang from heater blanket pigtail.

e. **Remove forward fairing (13).**

(1) Unlock four latches (14).

(2) Slide fairing (13) forward until clear of guide pins (15).

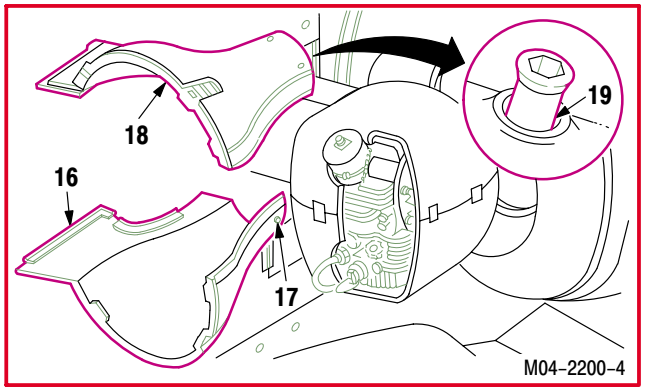


f. **Remove lower aft fairing (16).**

(1) Remove three stud nuts (17).

g. **Remove upper aft fairing (18).**

(1) Remove four stud nuts (19).



GO TO NEXT PAGE

2.123. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION – continued

h. **Remove and discard four tiedown straps (20) and rubber strips (21) from anchors (22).**

i. **Remove clamp (23) from wire harness (24) and fan (25).**

(1) Remove screw (26), washer (27), and bracket (28) from fan (25).

(2) Hold nut (29). Remove screw (30), washer (31), bracket (28), and clamp (23) from wire harness (24).

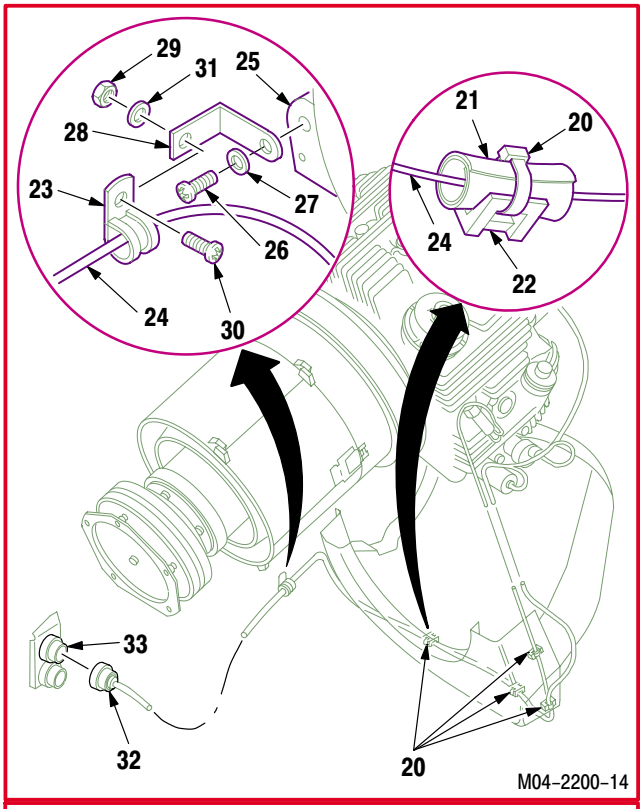
j. **Detach connector P61 (32) from receptacle J61 (33) on nose gearbox No. 1.**

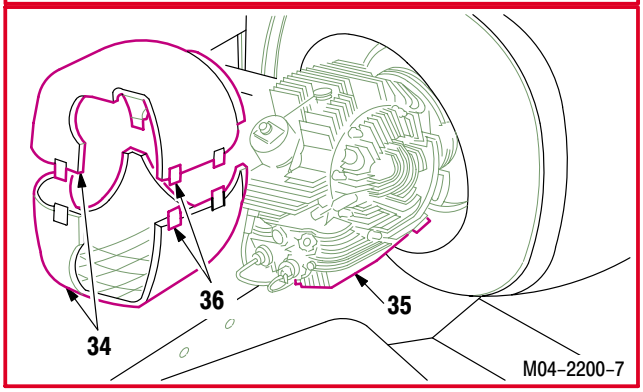
k. **Detach connector P60 (32) from receptacle J60 (33) on nose gearbox No. 2.**

l. **Remove shroud (34) from gearbox (35).**

(1) Hold lower half of shroud (34) in place. Open hook-and-pile fasteners (36).

(2) Remove both halves of shroud (34) from gearbox (35).





2.123.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.123.5. Inspection

a. **Check fairings and shroud for cracks, nicks, and scratches** (para 2.11)**.**

b. **Check for loose or missing hardware** (para 2.11)**.**

c. **Check detached connectors and receptacles for damage** (para 2.11)**.**

d. **Check fairing for corrosion** (para 1.49)**.**

e. **Check shroud seals for tears and deterioration.** None allowed. Replace seals (para 2.124A).

f. **Check fairing seals and bumpers for tears and deterioration.** None allowed. Replace seals and bumpers (para 2.124B).

g. **Check fairings for cracked or broken latches.** None allowed. Replace latches (para 2.124C).

GO TO NEXT PAGE

2.123. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION – continued

h. **Check fairings for bent or broken guide pins.** None allowed. Replace pins (para 2.124D).

i. **Check fairings for loose, broken or missing stud nuts.** Replace stud nuts (para 2.124E).

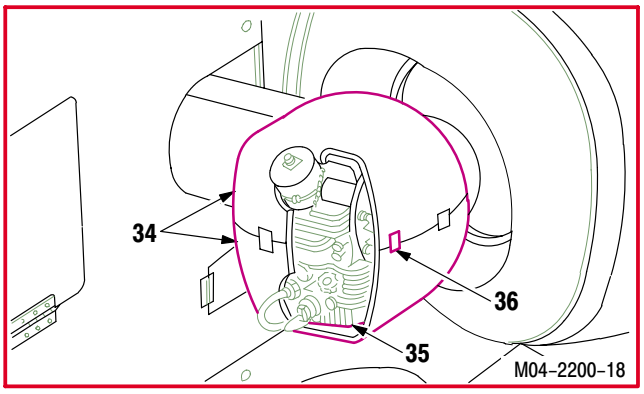
2.123.6. Installation

a. **Install shroud (34) on gearbox (35).**

(1) Position upper half of shroud (34) on gearbox (35).

(2) Aline lower half of shroud (34) with upper half of shroud (34).

(3) Hold lower half of shroud (34) in place. Fasten three hook-and-pile fasteners (36).



b. **Attach connector P61 (32) to receptacle J61 (33) on nose gearbox No. 1.**

c. **Attach connector P60 (32) to receptacle J60 (33) on nose gearbox No. 2.**

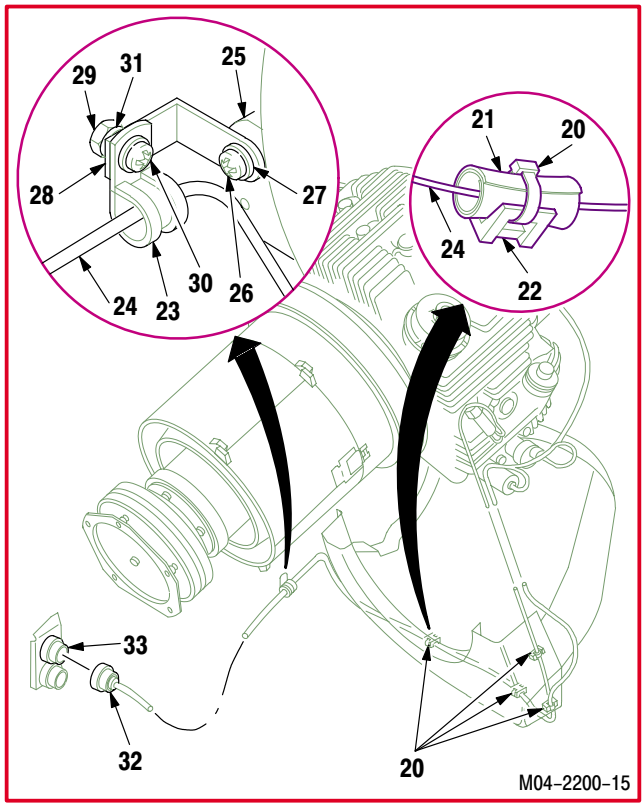
d. **Install clamp (23) to wire harness (24) and fan (25).**

(1) Hold nut (29). Install screw (30), washer (31), bracket (28), and clamp (23) to wire harness (24).

(2) Install screw (26), washer (27), and bracket (28) to fan (25).

CAUTION

Tiedown straps must be installed. Tiedown straps prevent contact between wire harness and rotating drive shaft.



e. **Install four new tiedown straps (20) and rubber strips (21) to anchors (22).**

(1) Install four tiedown straps (20) through four anchors (22). Use strap (item 192, App F).

(2) Secure tiedown straps (20) and rubber strips (21) around wire bundle (24). Use nonmetallic special shaped section (item 129, App F).

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2.123. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION – continued

f. **Install upper aft fairing (18).**

(1) Secure four stud nuts (19).

g. **Install lower aft fairing (16).**

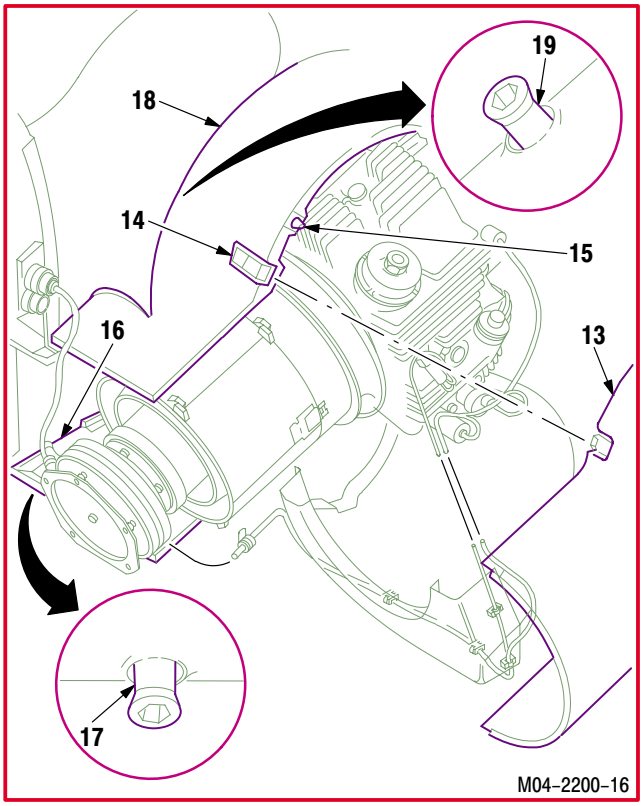
(1) Secure three stud nuts (17).

h. **Install forward fairing (13).**

(1) Aline fairing (13), using guide pins (15), with aft fairings (16) and (18).

(2) Slide forward fairing (13) aft until guide pins (15) are firmly seated.

(3) Lock four latches (14).



i. **Install tiedown strap (10) and rubber strip (11) on lower aft fairing (16) anchor (12).**

(1) Install tiedown strap (10) through anchor (12). Use strap (item 192, App F).

(2) Secure tiedown strap (12) and rubber strip (11) around wire harness (9). Use nonmetallic special shaped section (item 129, App F).

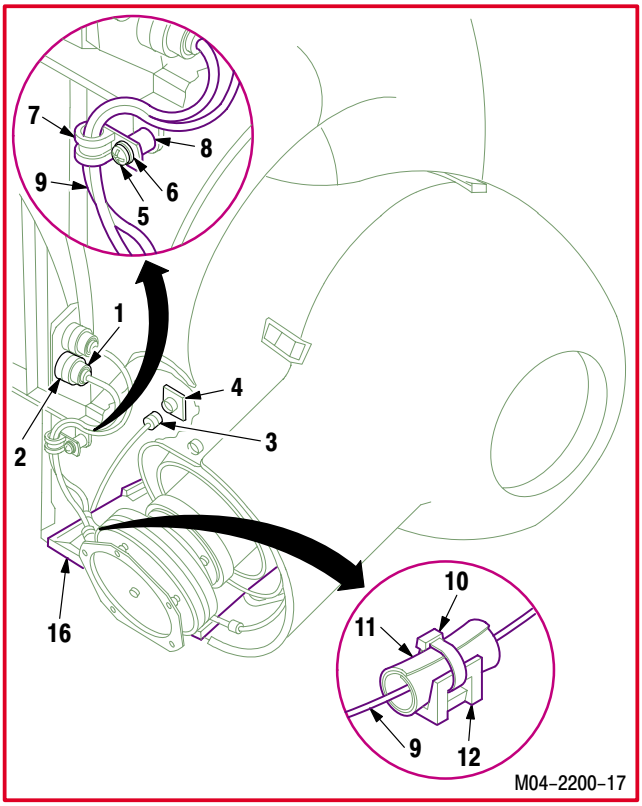
j. **Install screw (5), washer (6), clamp (7), and spacer (8) to wire harness (9).**

(1) Place clamp (7) around wire harness (9).

(2) Install screw (5), washer (6), and spacer (8).

k. **Attach connector P47 (1) to receptacle J47 (2) and connector (HR3)P2 (3) to receptacle J2 (4) on nose gearbox No. 1.**

l. **Attach connector P48 (1) to receptacle J48 (2) and connector (HR4)P2 (3) to receptacle J2 (4) on nose gearbox No. 2.**



GO TO NEXT PAGE

2.123. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION – continued

m. **Inspect (QA).**

n. **Perform engine anti-ice maintenance operational check** (TM 1-1520-238-T)**.**

o. **Install panels L200 or R200** (para 2.2)**.**

END OF TASK

2.124. NOSE GEARBOX FUSELAGE FAIRING CONTROL MODULE ASSEMBLY REPLACEMENT

2.124.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.124.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1520-264-23

Materials/Parts:

Strap (item 193, App F)

Personnel Required:

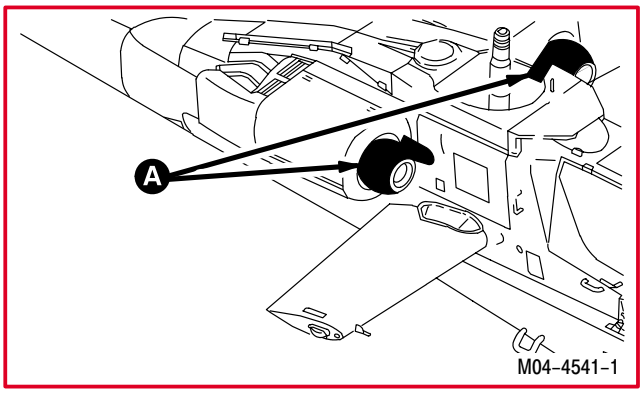
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.123	Nose gearbox fairing removed

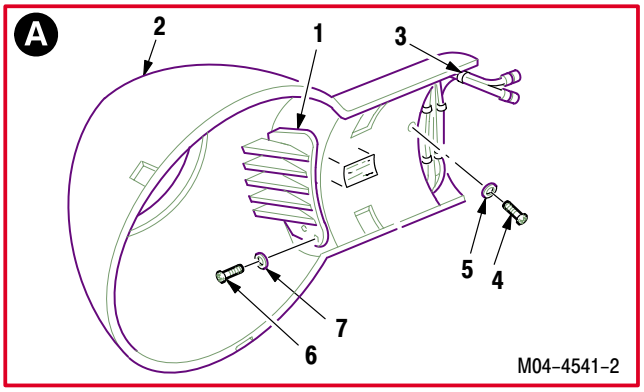
NOTE

This task is typical for left and/or right nose gearbox fairings.



2.124.3. Removal

a. **Remove control module assembly (1) from nose gearbox fairing (2).**



(1) Remove and discard tiedown strap (3) from fairing (2).

(2) Remove two screws (4) and washers (5) from module (1).

(3) Remove six screws (6) and washers (7) from module (1).

(4) Remove and discard module (1) from fairing (2).

GO TO NEXT PAGE

2.124. NOSE GEARBOX FUSELAGE FAIRING CONTROL MODULE ASSEMBLY REPLACEMENT – continued

2.124.4. Cleaning

a. **Clean module attachment area** (para 1.47)**.**

2.124.5. Inspection

a. **Check fairing for cracks and corrosion** (para 2.11)**.** If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

2.124.6. Installation

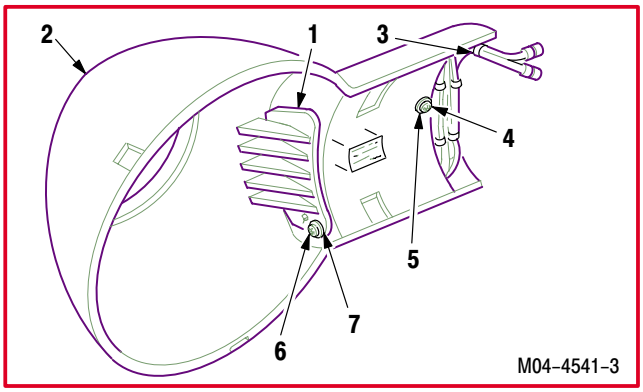
a. **Install new module (1) in fairing (2).**

(1) Position module (1) in fairing (2).

(2) Install six screws (6) and washers (7) in module (1).

(3) Install two screws (4) and washers (5) in module (1).

(4) Install strap (3) on fairing (2). Use strap (item 193, App F).



b. **Inspect (QA).**

c. **Install nose gearbox fairing** (para 2.123)**.**

END OF TASK

2.124A. NOSE GEARBOX SHROUD ADHESIVE SEAL REPLACEMENT

2.124A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.124A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Seal (table D-123, App D)
Seal (table D-124, App D)
Adhesive (item 14, App F)
Brush (item 34, App F)
Cloth (item 52, App F)
Epoxy primer coating kit (item 78, App F)
Naphtha (item 127, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.123	Nose gearbox fairing removed

NOTE

This task is typical for No. 1 and/or No. 2 nose gearbox shrouds adhesive seals.

2.124A.3. Removal

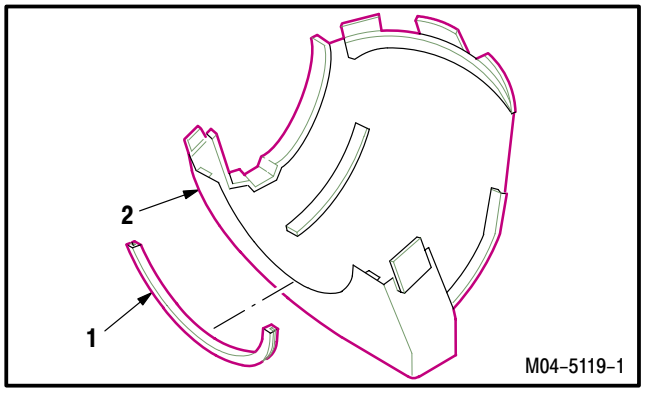


a. **Remove seal (1) from shroud (2).**

(1) Remove and discard as much of old seal (1) as possible from shroud (2).

(2) Clean residue remaining on sealing surface of shroud (2). Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

(3) Protect cleaned shroud (2) surfaces from contamination until new seal (1) is installed.



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2.124A. NOSE GEARBOX SHROUD ADHESIVE SEAL REPLACEMENT – continued

2.124A.4. Cleaning

a. **Wipe shroud parts and surfaces with a clean rag.**

2.124A.5. Inspection

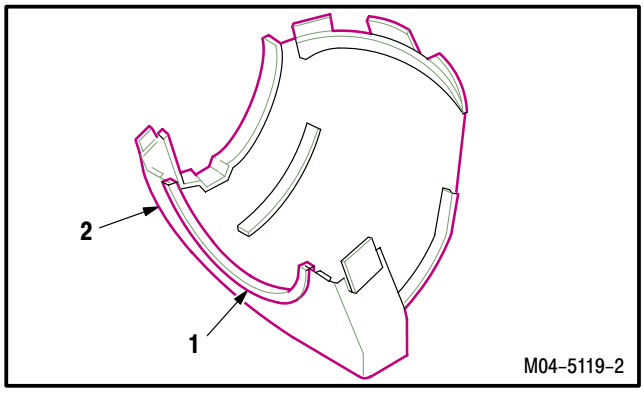
a. **Check shroud for cracks** (para 2.11)**.**

b. **Check shroud for corrosion** (para 1.49)**.**

2.124A.6. Installation



a. **Install new seal (1) on shroud (2).**



(1) Apply a thin, even coat of primer to sealing surfaces of shroud (2) and allow to dry. Use epoxy primer coating kit (item 78, App F).

(2) Apply adhesive to mating surfaces of seal (1) and shroud (2). Spread sealant to uniform thickness of **0.015 INCH**. Work out bubbles. Use adhesive (item 14, App F) and brush (item 34, App F).

(3) Position seal (1) in shroud (2). Apply firm uniform pressure. Do not shift sealed surfaces.

(4) Clean excess adhesive around joints and seams. Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

(5) Do not move joined components for **1 HOUR** after applying adhesive (or until adhesive is tack-free to the touch).

b. **Inspect (QA).**

c. **Install nose gearbox fairing** (para 2.123)**.**

END OF TASK

2.124B. NOSE GEARBOX FAIRING RIVETED SEAL REPLACEMENT

2.124B.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.124B.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Chemical protective gloves (item 154, App H)
Industrial goggles (item 156, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Rivets (8)
Washers (8)
Cloth (item 52, App F)
Epoxy primer coating kit (item 78, App F)
Naphtha (item 127, App F)
Polyurethane coating (item 141, App F)
Polyurethane coating (item 141A, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.123	Nose gearbox fairing removed

NOTE

This task is typical for No. 1 and/or No. 2 nose gearbox fairings riveted seals and bumpers replacement with exception of P/N 7-311140174-31. P/N 7-311140174-31 is not replaceable.

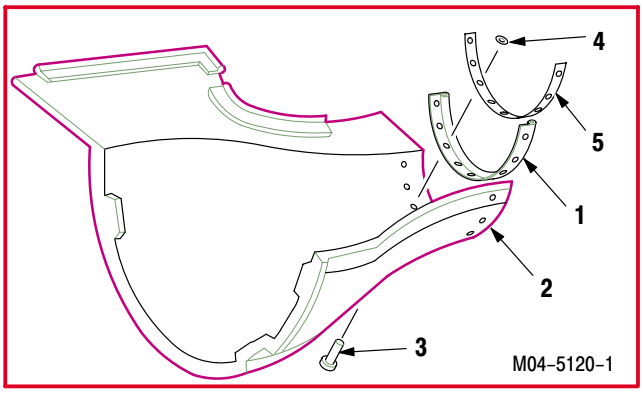
2.124B.3. Removal



a. **Remove seal (1) from fairing (2).**

(1) Remove rivets (3) and washers (4) from seal (1) (TM 1-1500-204-23).

(2) Remove retainer (5) and seal (1) from fairing (2).



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2.124B. NOSE GEARBOX FAIRING RIVETED SEAL REPLACEMENT – continued

2.124B.4. Cleaning

a. **Wipe fairing and retainer surfaces with a clean rag.**

2.124B.5. Inspection

a. **Check fairing and retainer for cracks** (para 2.11)**.**

b. **Check fairing and retainer for corrosion** (para 1.49)**.**

2.124B.6. Installation



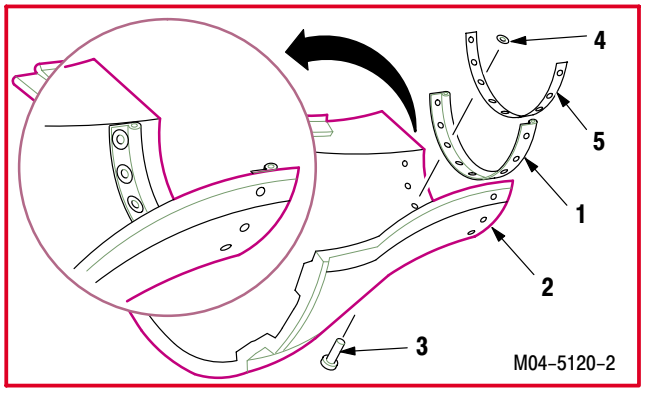
a. **Install new seal (1) on fairing (2).**

(1) Drill holes in seal (1). Use retainer (5) as template.

(2) Clean seal (1) and retainer (5). Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

(3) Position seal (1) and retainer (5) on fairing (2). Install rivets (3) with washers (4) under rivet tails (TM 1-1500-204-23).

(4) Touch up retainer and rivets (TM 55-1500-345-23). Use epoxy primer coating kit (item 78, App F), polyurethane coating (item 141, App F) and polyurethane coating (item 141A, App F). Air dry.



b. **Inspect (QA).**

c. **Install nose gearbox fairing** (para 2.123)**.**

END OF TASK

2.124C. NOSE GEARBOX FAIRING LATCH REPLACEMENT

2.124C.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.124C.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Chemical protective gloves (item 154, App H)
Industrial goggles (item 156, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Rivets (2)
Washers (2)
Cloth (item 52, App F)
Epoxy primer coating kit (item 78, App F)
Naphtha (item 127, App F)
Polyurethane coating (item 141, App F)
Polyurethane coating (item 141A, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.123	Nose gearbox fairing removed

NOTE

This task is typical for No. 1 and/or No. 2 nose gearbox fairings.

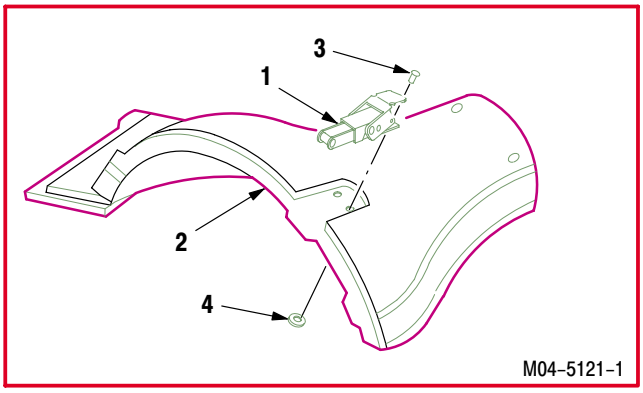
2.124C.3. Removal



a. **Remove latch (1) from fairing (2).**

(1) Remove rivets (3) and washers (4) from latch (1) (TM 1-1500-204-23).

(2) Remove latch (1) from fairing (2).



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2.124C. NOSE GEARBOX FAIRING LATCH REPLACEMENT – continued

2.124C.4. Cleaning

a. **Wipe fairing surfaces with a clean rag.**

2.124C.5. Inspection

a. **Check fairing for cracks** (para 2.11)**.**

b. **Check fairing for corrosion** (para 1.49)**.**

2.124C.6. Installation



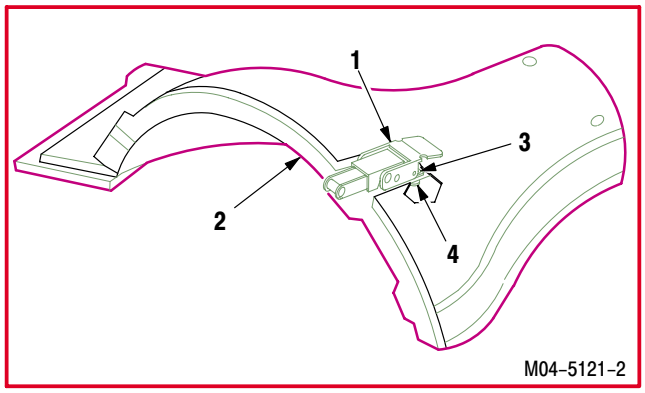
a. **Install new latch (1) on fairing (2).**

(1) Drill holes in latch (1). Use fairing (2) as template.

(2) Clean latch (1) and fairing (2). Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

(3) Position latch (1) on fairing (2). Install rivets (3) with washers (4) under rivet tails (TM 1-1500-204-23).

(4) Touch up rivets (TM 55-1500-345-23). Use epoxy primer coating kit (item 78, App F), polyurethane coating (item 141, App F) and polyurethane coating (item 141A, App F). Air dry.



b. **Inspect (QA).**

c. **Install nose gearbox fairing** (para 2.123)**.**

END OF TASK

2.124D. NOSE GEARBOX FAIRING GUIDE PIN REPLACEMENT

2.124D.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.124D.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Chemical protective gloves (item 154, App H)
Industrial goggles (item 156, App H)
Electric gun type heater (item 163, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Rivets (2)
Adhesive (item 19, App F)
Cloth (item 52, App F)
Epoxy primer coating kit (item 78, App F)
Naphtha (item 127, App F)
Polyurethane coating (item 141, App F)
Polyurethane coating (item 141A, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.123	Nose gearbox fairing removed

NOTE

This task is typical for No. 1 and/or No. 2 nose gearbox fairings.

2.124D.3. Removal



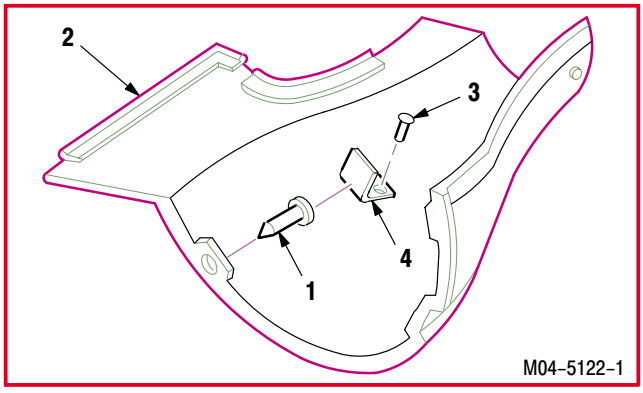
a. **Remove guide pin (1) from fairing (2).**

(1) Remove rivets (3) from angle (4) (TM 1-1500-204-23).

(2) Remove angle (4) from fairing (2).

(3) Remove bonding adhesive from fairing (2). Use cloth (item 52, App F) moistened with naphtha (item 127, App F).

(4) Remove guide pin (1) from fairing (2).



GO TO NEXT PAGE

2.124D. NOSE GEARBOX FAIRING GUIDE PIN REPLACEMENT – continued

2.124D.4. Cleaning

a. **Wipe fairing and angle surfaces with a clean rag.**

2.124D.5. Inspection

a. **Check fairing and angle for cracks** (para 2.11)**.**

b. **Check fairing and angle for corrosion** (para 1.49)**.**

2.124D.6. Installation



a. **Install new guide pin (1) on fairing (2).**

(1) Apply bonding adhesive to faying surfaces of pin (1). Use adhesive (item 19, App F).

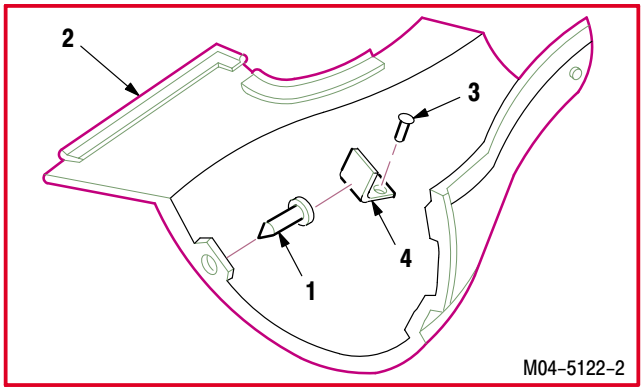
(2) Position guide pin (1) in fairing (2).

(3) Apply bonding adhesive to faying surfaces of angle (4). Use adhesive (item 19, App F).

(4) Position angle (4) on fairing (2). Install rivets (3) (TM 1-1500-204-23).

(5) Cure bonding adhesive. Use heater.

(6) Touch up rivets (TM 55-1500-345-23). Use epoxy primer coating kit (item 78, App F), polyurethane coating (item 141, App F) and polyurethane coating (item 141A, App F). Air dry.



b. **Inspect (QA).**

c. **Install nose gearbox fairing** (para 2.123)**.**

END OF TASK

2.124E. NOSE GEARBOX FAIRING STUD NUT REPLACEMENT

2.124E.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.124E.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.123	Nose gearbox fairing removed

NOTE

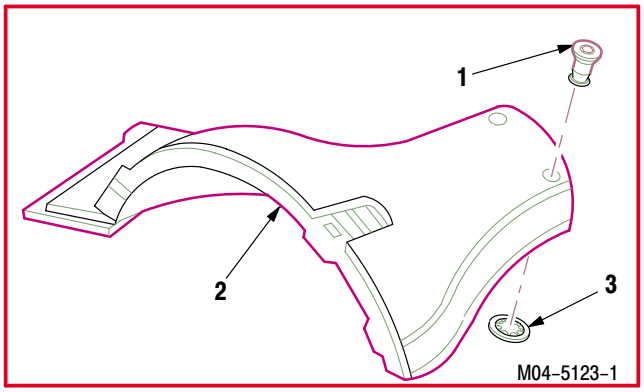
This task is typical for No. 1 and/or No. 2 nose gearbox fairings.

2.124E.3. Removal

a. **Remove stud nut (1) from fairing (2).**

(1) Remove retaining ring (3) from stud nut (1).

(2) Remove stud nut (1) from fairing (2).



2.124E.4. Cleaning

a. **Wipe fairing and ring surfaces with a clean rag.**

2.124E.5. Inspection

a. **Check fairing and ring for cracks** (para 2.11)**.**

b. **Check fairing and ring for corrosion** (para 1.49)**.**

2.124E.6. Installation

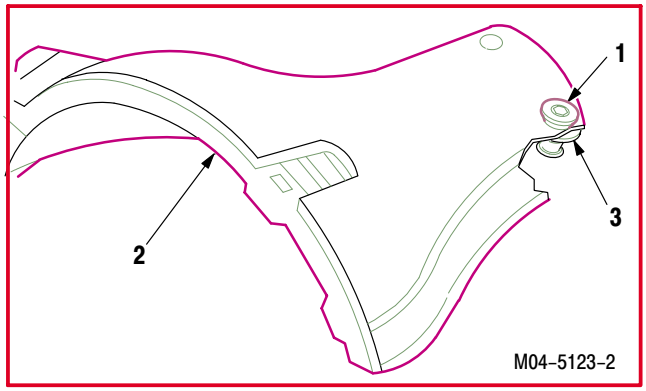
a. **Install new stud nut (1) in fairing (2).**

(1) Position stud nut (1) in fairing (2). Hold in place.

(2) Install retaining ring (3). Use tool supplied with retaining ring.

b. **Inspect (QA).**

c. **Install nose gearbox fairing** (para 2.123)**.**



END OF TASK

SECTION X. FUSELAGE FAIRING MAINTENANCE

2.125. ACCESS DOOR T250L OR T250R REMOVAL/INSTALLATION

2.125.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.125.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

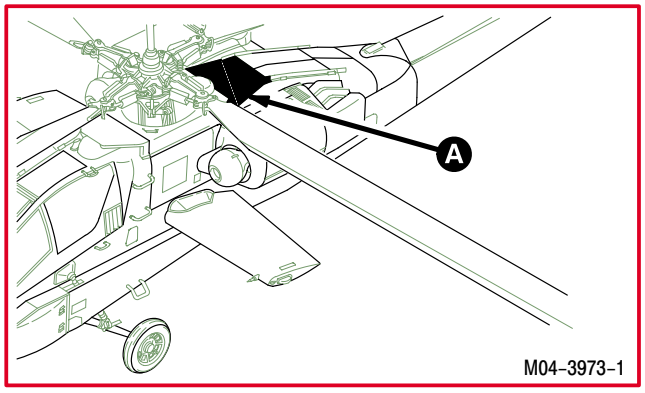
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T290R, T290L, T250R, T290L, and L325 opened

NOTE

Each access door is individually shimmed. To ensure proper fit of access door upon installation, shims must be secured to respective hinge and identified for proper location.



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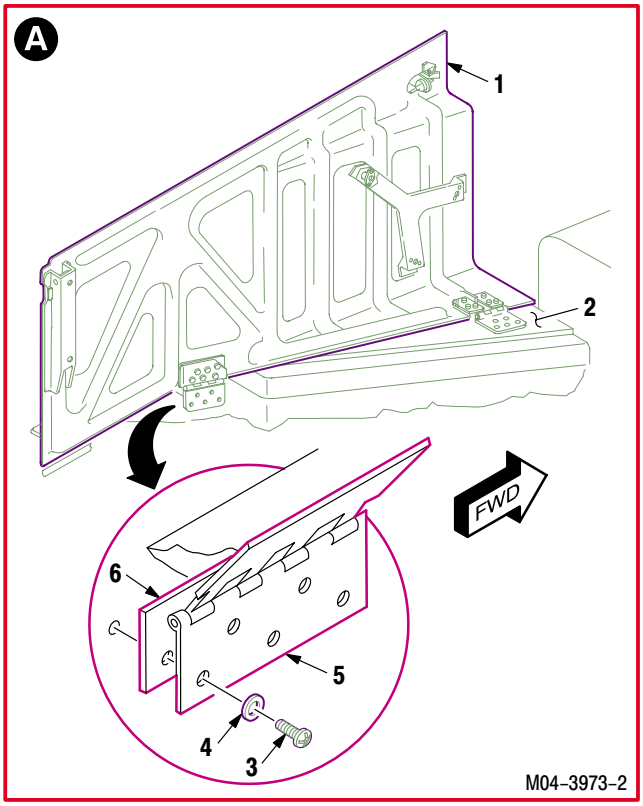
2.125. ACCESS DOOR T250L OR T250R REMOVAL/INSTALLATION – continued

2.125.3. Removal

a. **Remove access door (1) from support assembly (2).**

(1) With one person holding door (1), remove 10 screws (3) and washers (4) from 2 hinges (5) and support assembly (2).

(2) Remove door (1) and shims (6). Secure shims (6) to respective hinge (5) and identify for proper location.



2.125.4. Cleaning

a. **Wipe door and mounting surface with a clean rag.**

2.125.5. Inspection

a. **Check door mount for cracks, nicks, dents, elongated screw holes, and loose or missing nutplates** (para 2.11)**.**

b. **Check door for cracks, nicks, dents, loose or missing hardware** (para 2.11)**.**

NOTE

Steps c. and d. refer to aircraft equipped with EMI provisions.

c. **Check door and support mating surface for loose or damaged EMI gasket** (para 2.1)**.**

d. **Check door and support mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

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2.125. ACCESS DOOR T250L OR T250R REMOVAL/INSTALLATION – continued

2.125.6. Installation

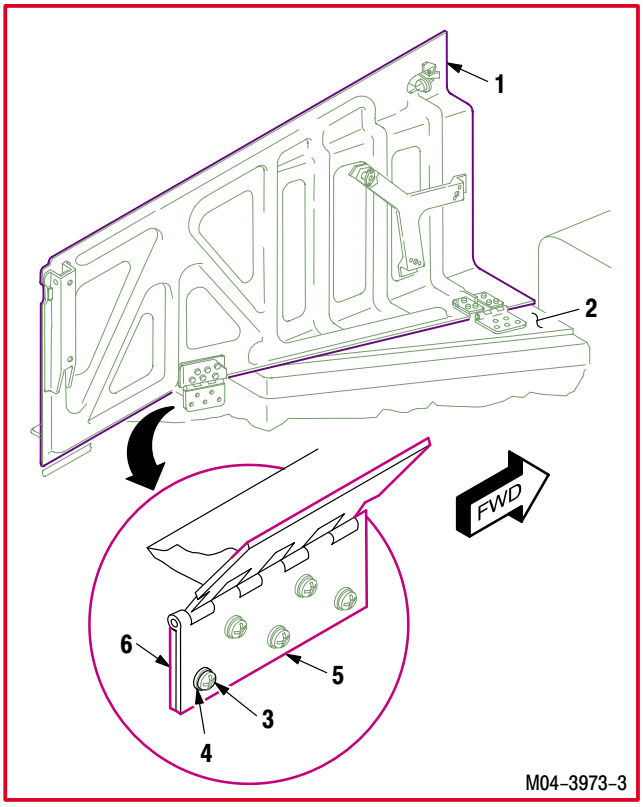
a. **Install door (1) on support assembly (2).**

(1) With one person person holding door (1), install shims (6) under hinges (5).

(2) Install 10 screws (3) and washers (4) through 2 hinges (5) in support assembly.

b. **Inspect (QA).**

c. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**



END OF TASK

2.126. ACCESS DOOR T290L OR T290R REMOVAL/INSTALLATION

2.126.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.126.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

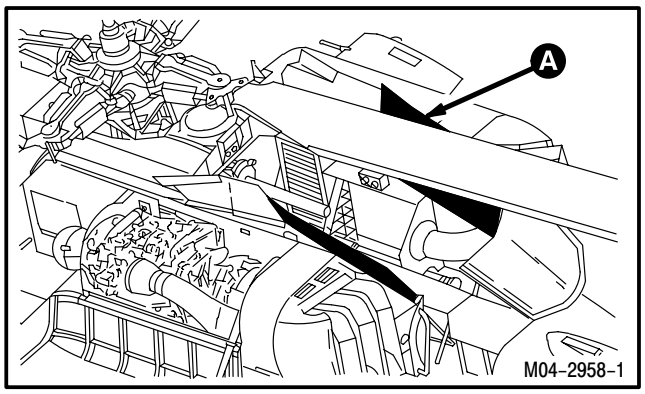
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors T290L, T290R, T250L, T250R, and L325 opened

NOTE

Each access door is individually shimmed. To ensure proper fit of access door upon installation, shims must be secured to respective hinge and identified for proper location.



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2.126. ACCESS DOOR T290L OR T290R REMOVAL/INSTALLATION – continued

2.126.3. Removal

a. **Remove access door (1) from support assembly (2).**

(1) With one person holding door (1), remove 12 screws (3) from 3 hinges (4).

(2) Remove shims (5). Secure to respective hinge and identify for proper location.

2.126.4. Cleaning

a. **Wipe door and mounting surface with a clean rag.**

2.126.5. Inspection

a. **Check door mount for cracks, nicks, dents, elongated screw holes, and loose or missing nutplates** (para 2.11)**.**

b. **Check door for cracks, nicks, dents, and loose or missing hardware** (para 2.11)**.**

NOTE

Steps c. and d. refer to aircraft equipped with EMI provisions.

c. **Check door and support mating surface for loose or damaged EMI gasket** (para 2.1)**.**

d. **Check door and support mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

2.126.6. Installation

a. **Install door (1) on support assembly (2).**

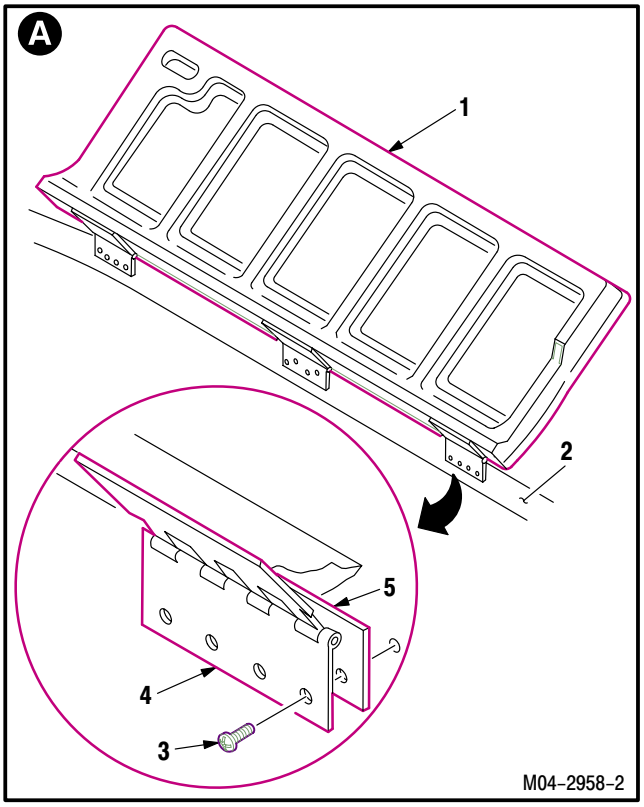
(1) With one person holding door (1), install shims (5) under three hinges (4).

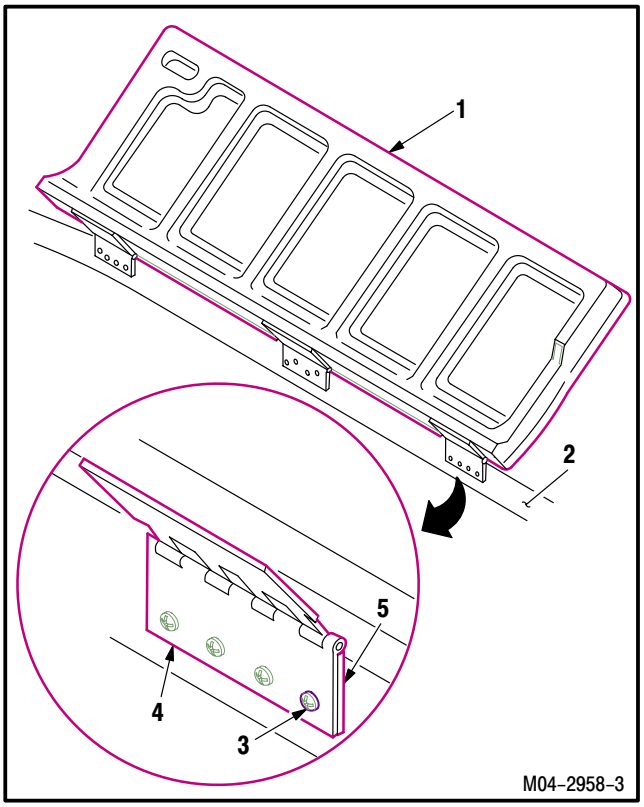
(2) Install 12 screws (3) in 3 hinges (4).

b. **Inspect (QA).**

c. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2.2)**.**

END OF TASK





2.126A. TAIL ROTOR DRIVE SHAFT FAIRING T355 REPAIR (AVIM)

2.126A.1. Description

This task covers: Repair.

2.126A.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1500-204-23
TM 55-1500-345-23

Materials/Parts:

Adhesive (item 2, App F)
Methyl ethyl ketone (item 124, App F)
Rubber sheet (item 152A, App F)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

2.126A.3. Repair

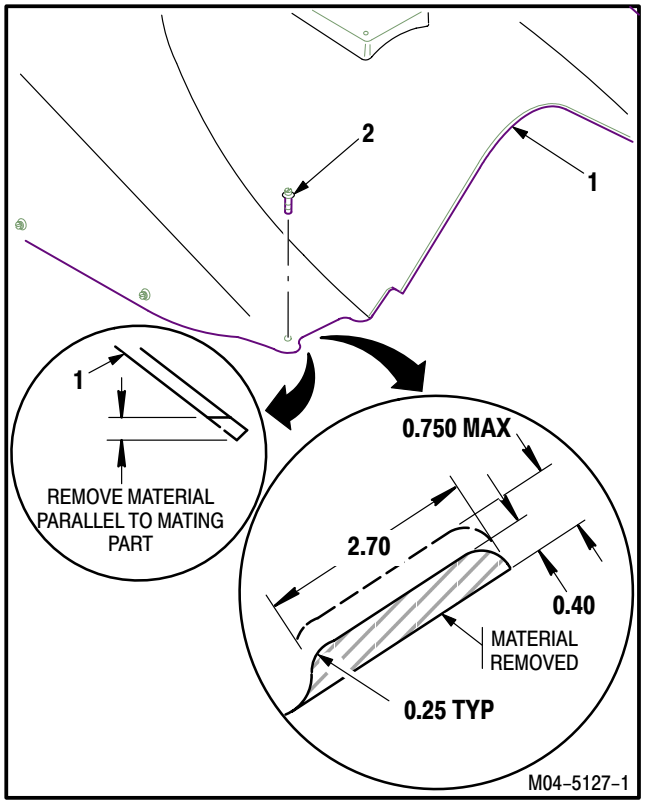


a. **Tail rotor drive shaft fairing (1) repair.**

(1) Remove two fasteners (2) from fairing (1) (para 2.21).

(2) Trim fairing (1) left and right trailing edges (TM 1-1500-204-23). Do not exceed **0.750 INCH** from fairing (1) trailing edge.

(3) Smooth edges and repair laminate (para 2.30).



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2.126A. TAIL ROTOR DRIVE SHAFT FAIRING T355 REPAIR (AVIM) – continued

(4) Cut two chafe strips (3) conforming to outside radius of fairing (1) and centered on hole (4). Use rubber sheet (item 152A, App F).

(5) Cut **0.50 INCH** radius hole centered in two chafe strips (3) conforming to inside radius and centered on hole (4).

(6) Trim two chafe strips (3) to **0.090 INCH** thick.

(7) Clean two chafe strips (3) and bonding area (5). Use methyl ethyl ketone (item 124, App F).

(8) Apply adhesive to chafe strip (3). Use adhesive (item 2, App F).

(9) Apply adhesive to bonding area (5). Use adhesive (item 2, App F).

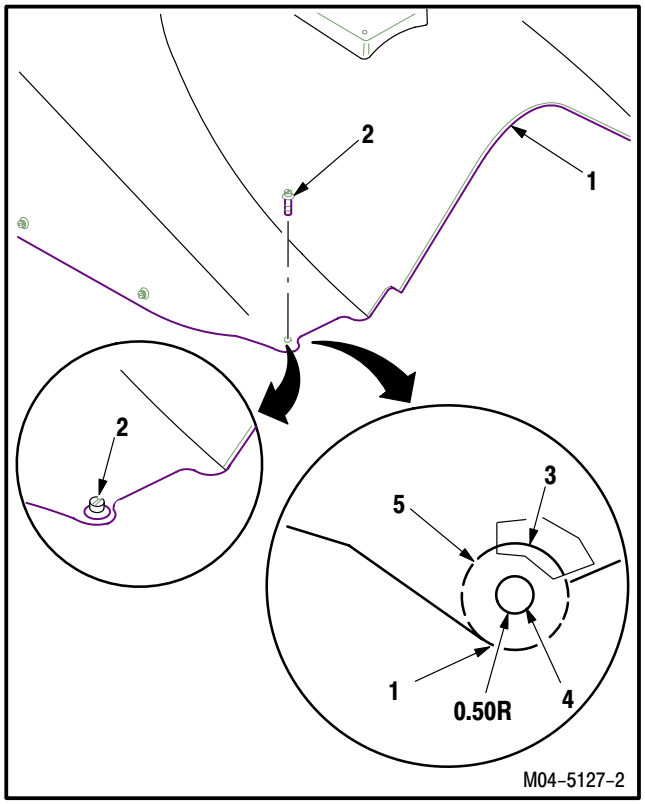
(10) Install chafe strip (3) on bonding area (5).

(11) Allow adhesive to cure at room temperature for **24 HOURS**.

(12) Remove excess adhesive. Use methyl ethyl ketone (item 124, App F).

(13) Apply EMI coating (para 2.34).

(14) Install two fasteners (2) on fairing (1) (para 2.21).



b. **Inspect (QA).**

END OF TASK

2.126B. LEFT HAND ACCESS DOOR L325 REMOVAL/INSTALLATION

2.126B.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.126B.2. Initial Setup

Tools:

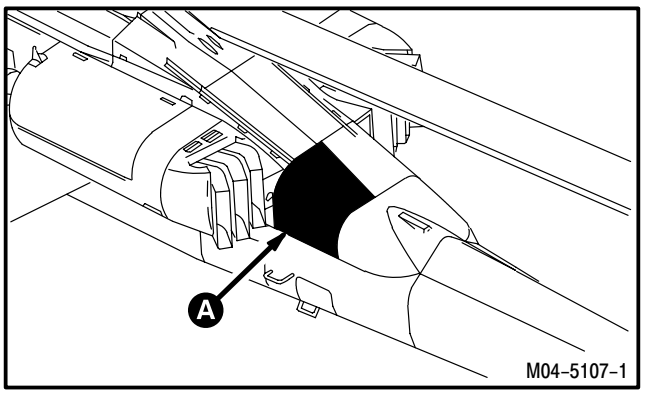
Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23
TM 1-1520-264-23

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector



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2.126B. LEFT HAND ACCESS DOOR L325 REMOVAL/INSTALLATION – continued

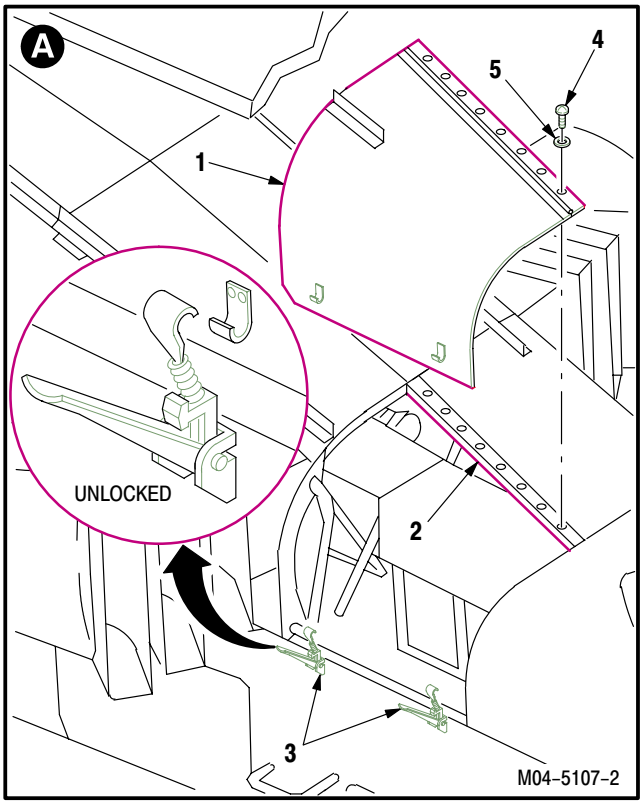
2.126B.3. Removal

a. **Remove left hand access door (1) from panel (2).**

(1) Unlock two latches (3) from door (1).

(2) Remove eight screws (4) and washers (5) from door (1) and panel (2).

(3) Remove door (1).



2.126B.4. Cleaning

a. **Wipe door and panel mounting surface with a clean rag.**

2.126B.5. Inspection

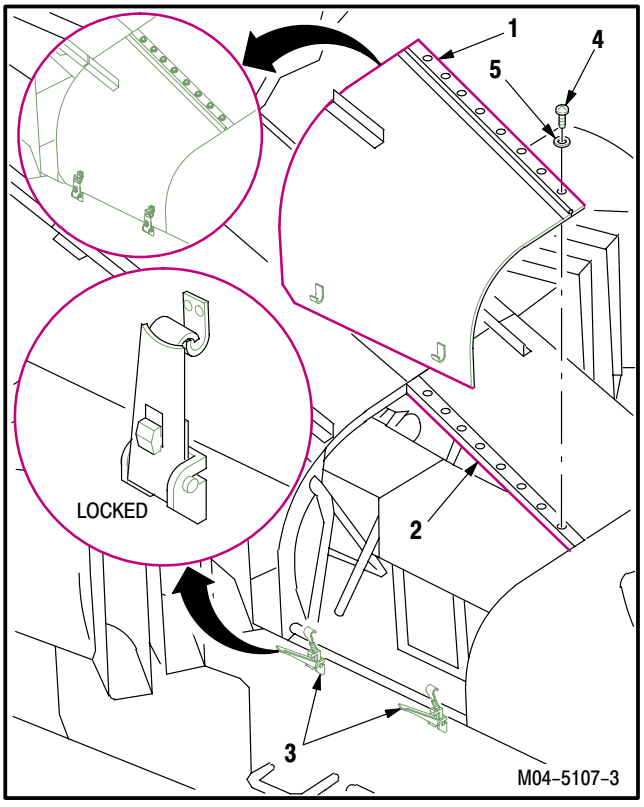
a. **Check panel nutplates for loose or missing rivets and stripped threads** (TM 1-1500-204-23)**.**

b. **Check door and panel for corrosion** (para 1.49)**.**

c. **Check door and panel for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

d. **Check door and panel mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).



2.126B.6. Installation

a. **Install door (1) on panel (2).**

(1) Install eight screws (4) and washers (5) through door (1) in panel (2).

(2) Lock two latches (3) on door (1).

b. **Inspect (QA).**

END OF TASK

2.126C. TRANSMISSION ACCESS PANEL DOOR L210 OR R210 REMOVAL/INSTALLATION

2.126C.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.126C.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

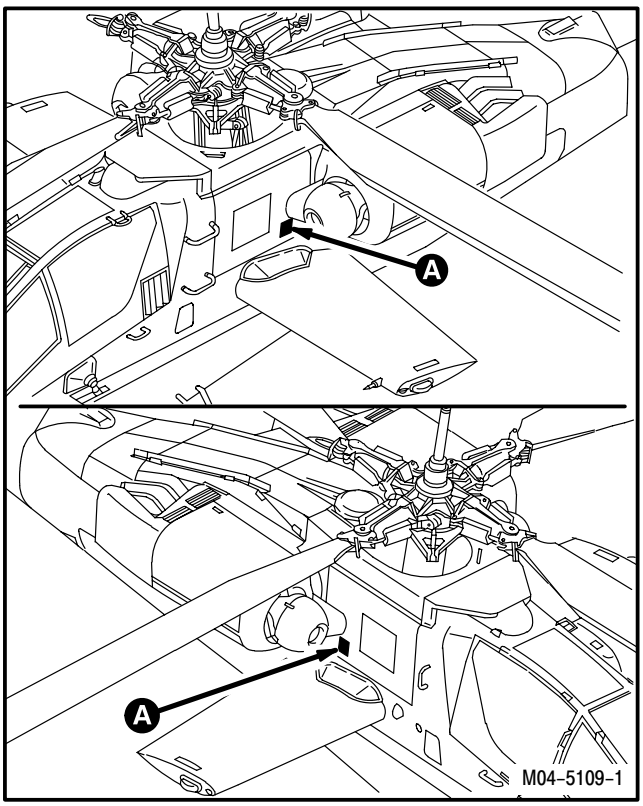
TM 1-1500-204-23

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for transmission access panel doors L210 and R210.



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2.126C. TRANSMISSION ACCESS PANEL DOOR L210 OR R210 REMOVAL/INSTALLATION – continued

2.126C.3. Removal

a. **Remove transmission access panel doors (1) from transmission access panel (2).**

(1) Unlock fastener (3) from panel (2).

(2) Remove three screws (4), washers (5), and self-locking nuts (6) from door (1) and panel (2).

(3) Remove door (1).

2.126C.4. Cleaning

a. **Wipe door and panel mounting surface with a clean rag.**

2.126C.5. Inspection

a. **Check panel nutplates.**

(1) Check for loose or missing rivets, and stripped threads (TM 1-1500-204-23).

(2) Check for cracks. None allowed.

(3) Check for corrosion (para 1.49).

b. **Check doors for corrosion** (para 1.49)**.**

c. **Check door and panel mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

2.126C.6. Installation

a. **Install door (1) on panel (2).**

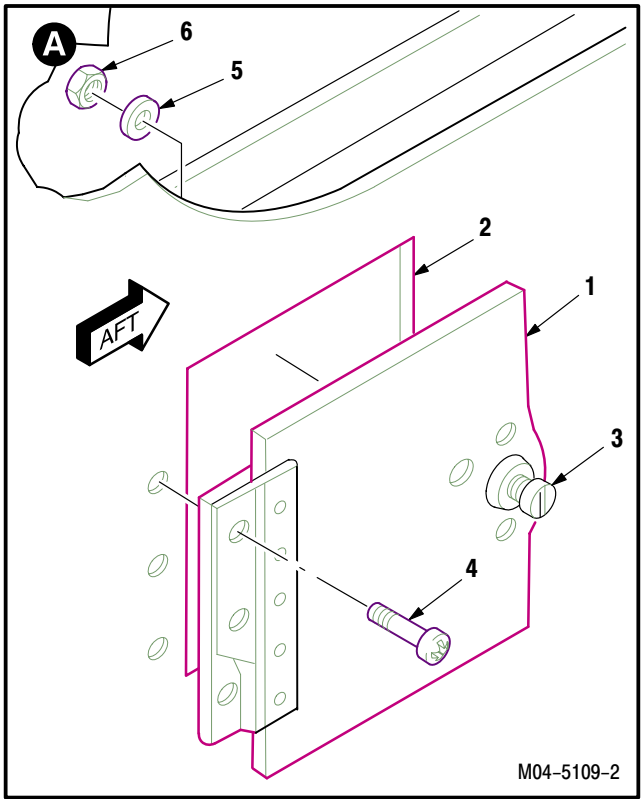
(1) Install three screws (4) through door (1), panel (2) and washers (5).

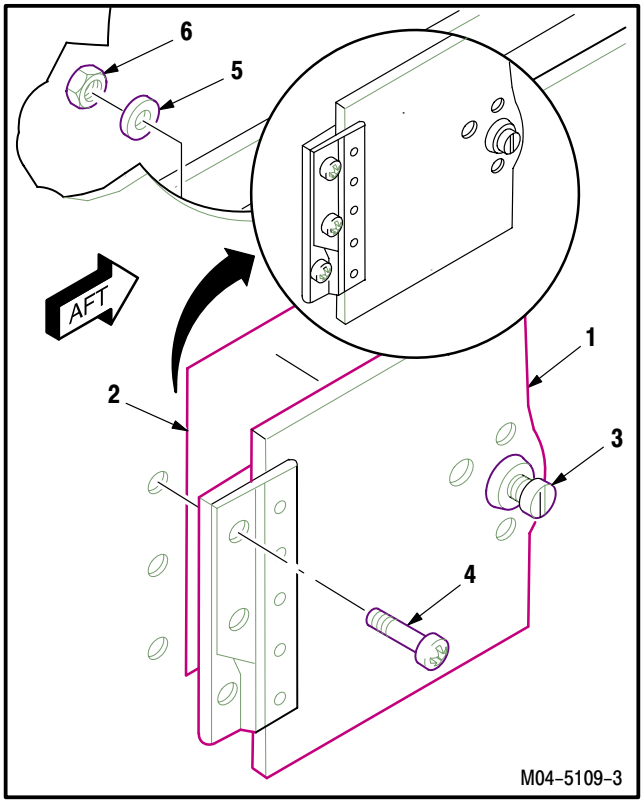
(2) Install three self-locking nuts (6) on screws (4).

(3) Lock fastener (3) in panel (2).

b. **Inspect (QA).**

END OF TASK





2.126D. TAIL ROTOR DRIVE SHAFT FAIRING R410 OR R475 REMOVAL/INSTALLATION

2.126D.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.126D.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

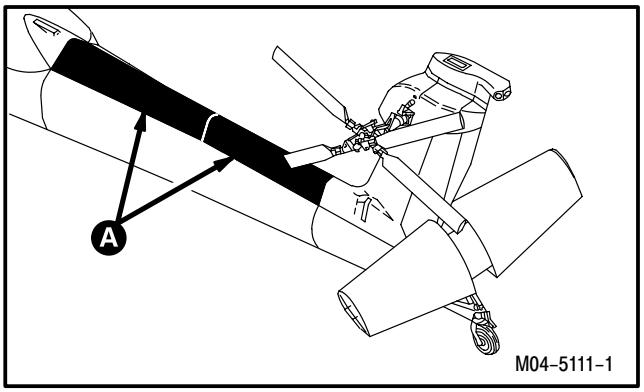
TM 1-1500-204-23

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for tail rotor drive shaft access fairings R410 and R475, except as noted.



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2.126D. TAIL ROTOR DRIVE SHAFT FAIRING R410 OR R475 REMOVAL/INSTALLATION – continued

2.126D.3. Removal

a. **Remove tail rotor drive shaft access fairing (1) from tailboom (2).**

(1) Unlock seven or six fasteners (R410 or R475) (3) from tailboom (2).

(2) Remove 16 or 14 screws (R410 or R475) (4) and washers (5) from fairing (1) and tailboom (2).

(3) Remove fairing (1).

2.126D.4. Cleaning

a. **Wipe fairing and tailboom mounting surface a clean rag.**

2.126D.5. Inspection

a. **Check tailboom nutplates for loose or missing rivets and stripped threads** (TM 1-1500-204-23)**.**

b. **Check fairing and tailboom for corrosion** (para 1.49)**.**

c. **Check fairing and tailboom for cracks.** None allowed.

d. **Check fairing and tailboom mating surface for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

e. **Check for damage, tears, or breaks in EMI tape.** Repair damage (para 2.28).

2.126D.6. Installation

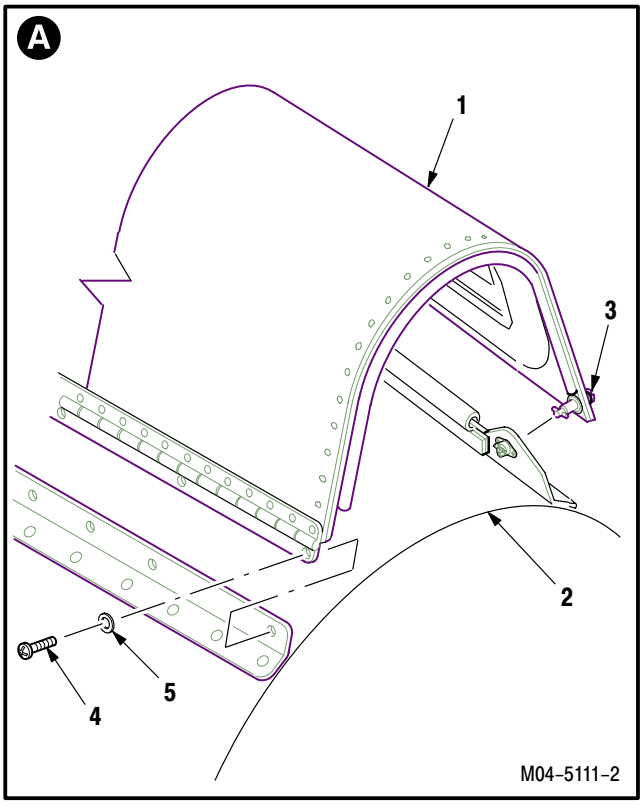
a. **Install fairing (1) on tailboom (2).**

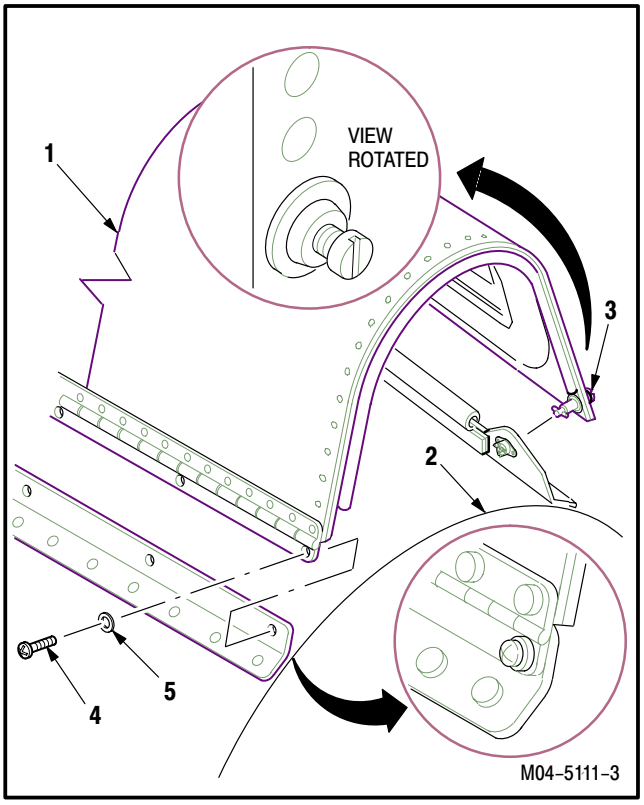
(1) Install 16 or 14 screws (R410 or R475) (4) and washers (5) through fairing (1) in tailboom (2).

(2) Lock seven or six fasteners (R410 or R475) (3) in tailboom (2).

b. **Inspect (QA).**

END OF TASK





2.126E. MAIN ROTOR SHAFT FAIRING T205L OR T205R REMOVAL/INSTALLATION

2.126E.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.126E.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23
TM 11-1520-238-23-1
TM 55-1500-323-24

Equipment Conditions:

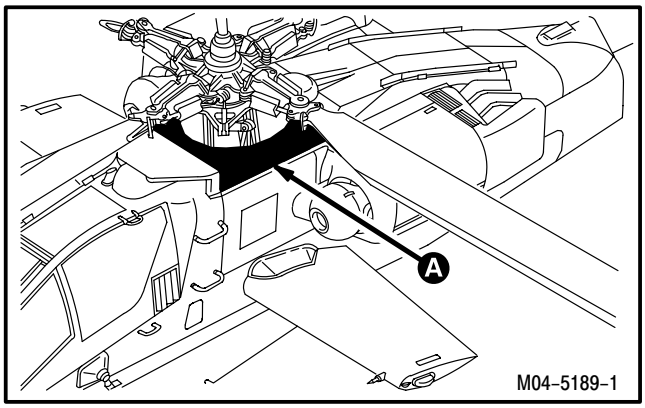
Ref	Condition
1.57	Helicopter safed
2.2	Access cover T205 and fairing T225 removed
TM 11-1520-238-23-1	If required, forward left or right laser detecting sensor unit removed

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

NOTE

This task is typical for both T205L and T205R main rotor shaft fairings except where noted.



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2.126E. MAIN ROTOR SHAFT FAIRING T205L OR T205R REMOVAL/INSTALLATION – continued

2.126E.3. Removal

NOTE

Perform step a. for fairing without laser detecting sensor unit mount installed, or perform step b. for fairing with laser detecting sensor unit mount installed (ADP).

a. **Remove main rotor shaft fairing (1) from longeron (2).**

(1) Unlock five or six fasteners (T205R or T205L) (3) from fairing (1).

(2) Remove eleven screws (4) and washers (5), from fairing (1) and longeron (2).

(3) Remove fairing (1).

b. **Remove main rotor shaft fairing (1) from longeron (2).**

(1) If installed, remove laser sensor mount cover plate (8) and disconnect connector (9) (P1103 for left side or P1101 for right side).

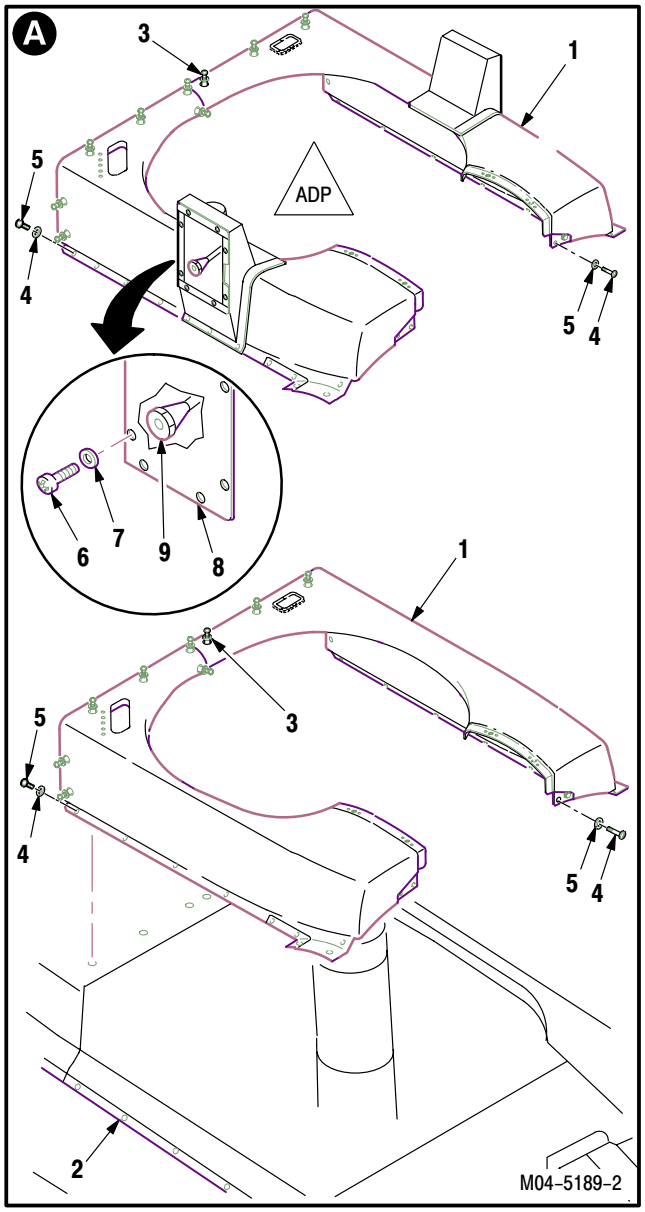
(a) Remove eight screws (6) and washers (7).

(b) Disconnect connector (9).

(2) Unlock five or six fasteners (T205R or T205L) (3) from fairing (1).

(3) Remove thirteen screws (4) and washers (5), from fairing (1) and longeron (2).

(4) Remove fairing (1).



GO TO NEXT PAGE

2.126E. MAIN ROTOR SHAFT FAIRING T205L OR T205R REMOVAL/INSTALLATION – continued

2.126E.4. Cleaning

a. **Wipe fairing and fairing mounting surface with a clean rag.**

b. **If required, clean sealing compound from fairing and longeron** (para 1.47)**.**

2.126E.5. Inspection

a. **Check fairing and longeron nutplates for loose or missing rivets and stripped threads** (TM 1-1500-204-23)**.**

b. **Check fairing and longeron for corrosion** (para 1.49)**.**

c. **Check fairing and longeron for cracks.** None allowed.

d. **Check fairing and longeron mating surface for damaged EMI conductive coating.** Repair fairing and mating surface (para 2.34).

GO TO NEXT PAGE

2.126E. MAIN ROTOR SHAFT FAIRING T205L OR T205R REMOVAL/INSTALLATION – continued

2.126E.6. Installation

NOTE

Perform step a. for fairing without laser detecting sensor unit mount installed, or perform step b. for fairing with laser detecting sensor unit mount installed (ADP).

a. **Install fairing (1) on longeron (2).**

(1) Install fairing (1) on longeron (2).

(2) Install eleven screws (4) through washers (5), fairing (1), and longeron (2).

(3) Lock five or six fasteners (T205R or T205L) (3) on fairing (1).

b. **Install fairings (1) on longeron (2).**

(1) Install fairing (1) on longeron (2).

(2) Install thirteen screws (4) through washers (5), fairing (1), and longeron (2).

(3) Lock five or six fasteners (T205R or T205L) (3) on fairing (1).

(4) If required, connect connector (9) (P1103 for left side or P1101 for right side) and install laser sensor mount cover plate (8).

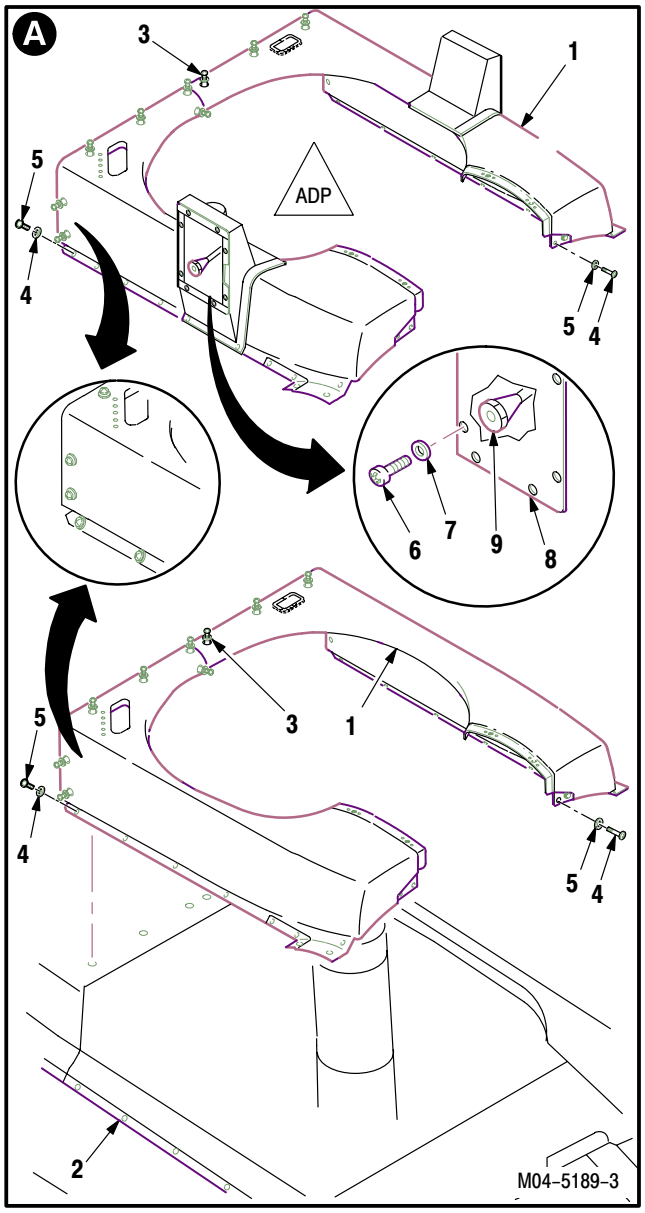
(a) Connect connector (9).

(b) Install eight screws (5) and washers (4).

c. **Inspect (QA).**

d. **Secure access cover T250L and fairing T225** (para 2.2)**.**

e. **If required, install forward left or right laser detecting sensor unit** (TM 11-1520-238-23-1)**.**



END OF TASK

2.127. TAILBOOM CLOSEOUT FAIRING ACCESS COVERS REMOVAL/INSTALLATION

2.127.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.127.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

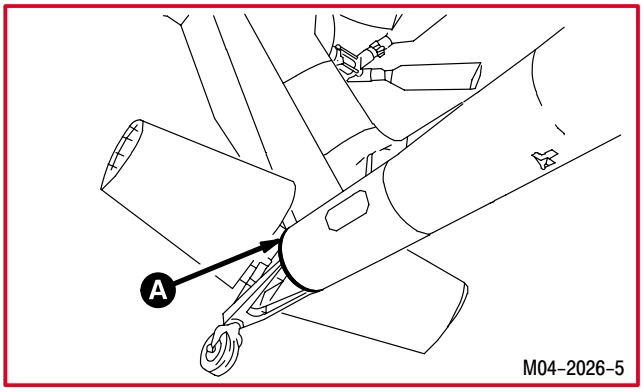
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 1-1520-264-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.127. TAILBOOM CLOSEOUT FAIRING ACCESS COVERS REMOVAL/INSTALLATION – continued

2.127.3. Removal

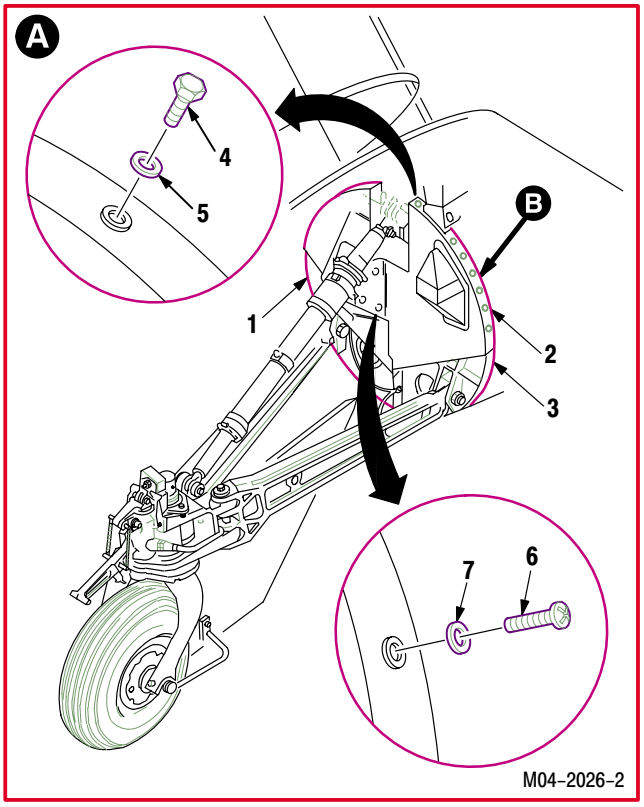
a. **Remove tailboom closeout access covers (1) and (2) from tailboom frame (3).**

(1) Remove two screws (4) and washers (5) from top of covers (1) and (2).

(2) Remove five screws (6) and washers (7) from front of cover (1).

(3) Remove 16 screws (8) and washers (9) from sides of covers (1) and (2).

(4) Remove covers (1) and (2) from frame (3).



2.127.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.127.5. Inspection

a. **Check cover for cracks** (para 2.11)**.**

b. **Check frame for corrosion** (para 1.49)**.**

c. **Check frame for cracks.**

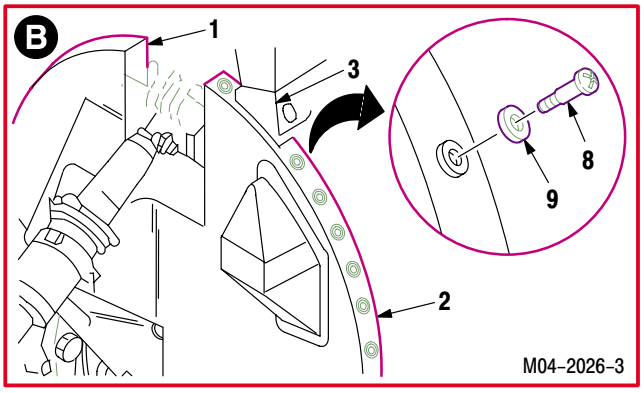
(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

NOTE

Steps d. and e. refer to aircraft equipped with electromagnetic interference (EMI) provisions.

d. **Check fairings and mating surface for loose or damaged EMI gasket** (para 2.1)**.**

e. **Check fairing mating surface for damaged or worn EMI tape or conductive coating** (para 2.1)**.**



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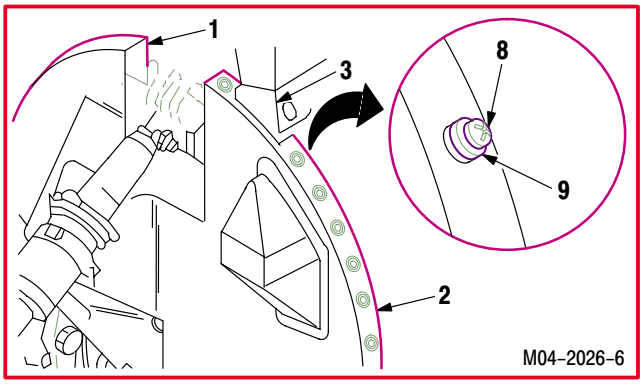
2.127. TAILBOOM CLOSEOUT FAIRING ACCESS COVERS REMOVAL/INSTALLATION – continued

2.127.6. Installation

a. **Install covers (1) and (2) on frame (3).**

(1) Position covers (1) and (2) on frame (3).

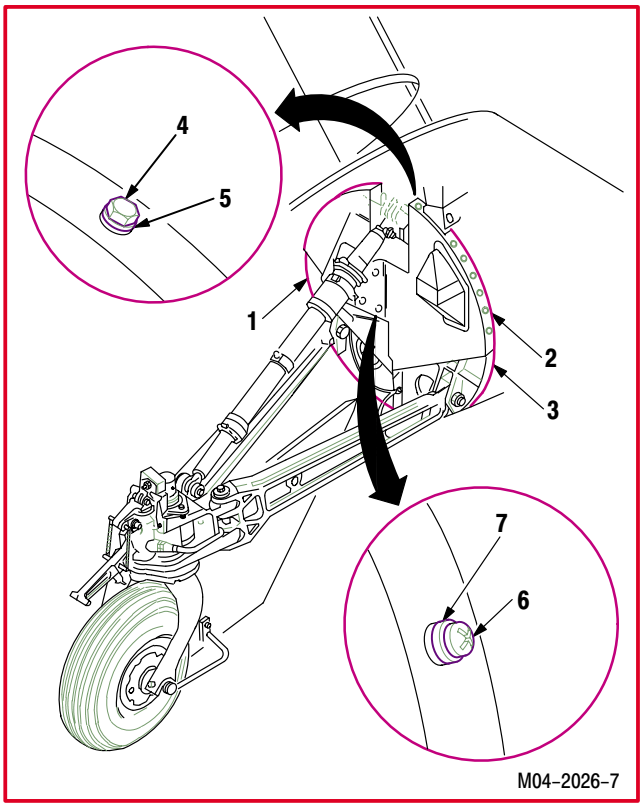
(2) Install 16 screws (8) and washers (9) in sides of covers (1) and (2).



(3) Install five screws (6) and washers (7) in front of cover (1).

(4) Install two screws (4) and washers (5) in top of covers (1) and (2).

b. **Inspect (QA).**



END OF TASK

SECTION XI. ENGINE NACELLE MAINTENANCE

2.128. ENGINE NACELLE INSPECTION

2.128.1. Description

This task covers: Engine Nacelle.

NOTE

Refer to paragraph 2.129 for damage limits and corrective action.

2.128.2. Engine Nacelle

a. **Check skin panels, access covers, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.**

b. **Check engine mounts for corrosion, cracks, and loose mounting.**

c. **Check structural attachment points for wear caused by movement.** None allowed.

END OF TASK

2.129. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR

2.129.1. Description

This task covers: Damage Limits Categories. Types of Damage (Examples): Limits and Action. Corrosion. Impact or Fatigue Damage.

2.129.2. Damage Limits Categories

The following damage categories are assigned to help you establish repairable limits for particular areas and parts. Only applicable categories are listed for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

2.129.3. Types of Damage (Examples): Limits and Action

Category	Limits	Action
a. Type: Skin Corrosion		
A	Less than 20 percent of skin thickness and no more than 25 percent of panel area.	Remove corrosion (para 1.49).
B	More than 20 percent of skin thickness and less than 50 percent of panel with no affect on adjacent structure.	Patch repair (TM 1-1500-204-23) not to exceed 25 percent of total panel.
C	More than 50 percent of skin thickness.	Replace affected area with patch repair (TM 1-1500-204-23).
b. Type: Skin or Sheet Metal Holes, Cracks, or Tears		
A	---	---
B	---	---
C	No cracks or tears more than 25 percent of shortest skin panel dimension.	Clean up and patch repair (TM 1-1500-204-23).
	No holes greater than **3.00 INCHES** diameter. (Clean up can be no closer than **2.00 INCHES** to support structure.)	Clean up and patch repair (TM 1-1500-204-23).

GO TO NEXT PAGE

2.129. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR – continued

2.129.4. Corrosion

Category	Limits	Action
a. Structural		
A	Less than 10 percent of material thickness of **0.040 INCH** depth across 25 percent of cross section. Damage must clear fillets and fastener holes by **0.50 INCH** minimum.	Remove corrosion (para 1.49).
B	Exceeds A.	Replace.
C	Impact or fatique damage, cracks, or loose mounting – none allowed.	Replace or tighten.
b. Castings, Forgings		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040 INCH** deep.	Repair corroded area (TM 1-1500-204-23).
B	Exceeds A.	Replace.
c. Fasteners, Bearings, and Bushings		
A	Removable or allowed to remain without affecting size or function.	Repair (TM 1-1500-204-23).
B	Exceeds A.	Replace.
d. Doors		
A	Not applicable.	
B	Less than 10 percent of material thickness and less than **4.00 SQUARE-INCHES** after cleanup.	Repair (TM 1-1500-204-23).
C	Exceeds B or repairs will affect function.	Replace.
e. Engine Mount Support		
A.	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040 INCH** in depth. Damage must clear fillets and fastener holes or counterparts by **0.50 INCH** minimum.	Repair (TM 1-1500-204-23).
B.	Exceeds A.	Replace.

GO TO NEXT PAGE

2.129. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR – continued

2.129.5. Impact or Fatigue Damage

Category	Limits	Action
a. Skin or Sheet Metal Holes, Cracks, or Tears		
B	Holes: less than **3.00 INCHES** in diameter. (Cleanup can be no closer than **2.00 INCHES** to supporting structure, and no more than 5 percent of skin area.)	Clean up and patch repair (TM 1-1500-204-23).
B	Cracks or tears: no longer than 25 percent of shortest skin dimension.	Clean up and patch repair (TM 1-1500-204-23).
b. Skin or Sheet Metal Nicks or Scratches		
A	Less than 10 percent of material thickness.	Clean up (para 1.47). (Area cannot exceed **4.00 SQUARE-INCHES**.)
B	Deeper than 10 percent but less than 25 percent of material thickness.	Clean up (para 1.47). (Area cannot exceed five percent of skin area and can be no closer than **2.00 INCHES** to supporting structure.)
C	Exceeds B.	Replace.
c. Skin Dents		
A	Smooth dents less than **0.25 INCH** deep.	Repair (TM 1-1500-204-23).
B	Dents with nicks or gouges or deeper than **0.25 INCH**.	Patch repair (TM 1-1500-204-23). (Treat dents as holes.)
C	Dents greater than **3.00 INCHES** in diameter or cleanup will exceed 5 percent of skin area or will be closer than **2.00 INCHES** to supporting structure.	
d. Door Cracks, Tears, and Punctures		
B	Less than 25 percent length of shortest dimension.	Repair (TM 1-1500-204-23).
C	Exceeds B.	Replace.

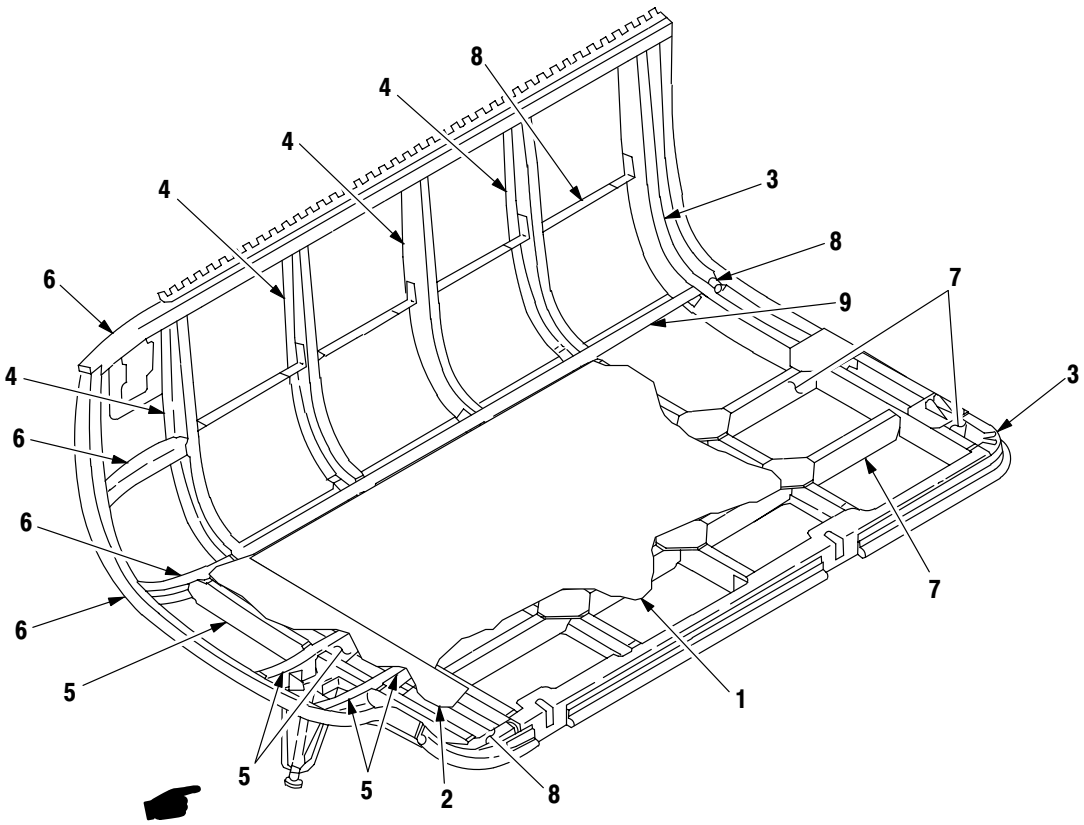
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2.129. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR – continued

Category	Limits	Action
e. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: Less than 25 percent length of shortest skin dimension.	Repair (para 2.30).
	Punctures: Less than **2.00 INCHES** from supporting structure.	Repair (para 2.30).
C	Exceeds B or hinders normal operation or function.	Replace.
f. Kevlar/Epoxy Skin Delamination		
B	No deeper than three plies or **0.050 INCH**, whichever is less. (Treat limit exceeding damages as crack, tear, or puncture repair.)	Repair (para 2.30).
g. Kevlar/Epoxy Skin Debonding		
B	Greater than **6.00 INCHES** but less than 40 percent of panel area.	Replace if possibility of danger to crew or helicopter exists.
	Greater than 40 percent of panel area.	Replace panel.
h. Kevlar/Epoxy Fairings Debonding		
B		Rebond where ribs, gussets, baffles, stiffeners, seals, and doubler shave debonded.
i. Kevlar/Epoxy Fairings Cracks		
B	No longer than 25 percent of shortest skin dimension.	Repair (para 2.30).
C	Exceeds B or extends from one end of part through other end.	Replace.
j. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers.	Repair (para 2.30).

END OF TASK

2.130. WORK PLATFORM NACELLE DOOR STRUCTURE

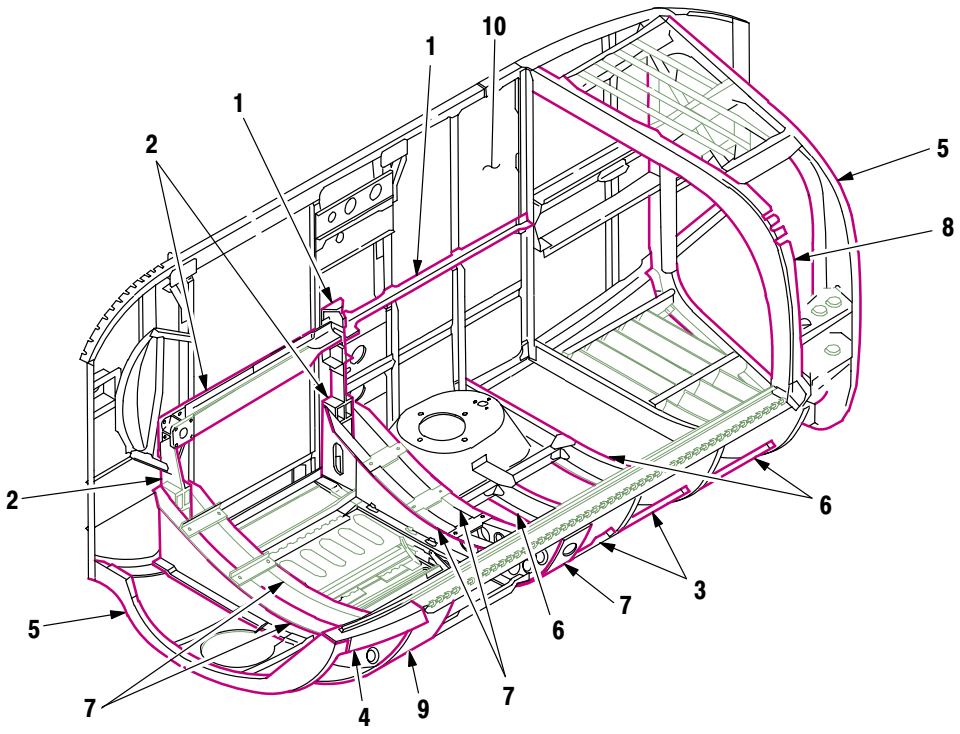


M04–2340A

Item	Material	Specification	Condition	Thickness (inches)
1	7075 AL CLAD	QQ-A-250/13	T6	0.032
2	2024 AL ALY	QQ-A-250/4	T42	0.020
3	7075 AL ALY	QQ-A-250/12	T6	0.063
4	7075 AL ALY	QQ-A-250/12	T6	0.032
5	2024 AL ALY	QQ-A-250/4	T42	0.050
6	2024 AL ALY	QQ-A-250/4	T42	0.063
7	2024 AL ALY	QQ-A-250/4	T42	0.032
8	2024 AL ALY	QQ-A-250/4	T42	0.040
9	2024 AL ALY	QQ-A-250/4	T42	0.071

END OF TASK

2.131. ENGINE NACELLE STRUCTURE

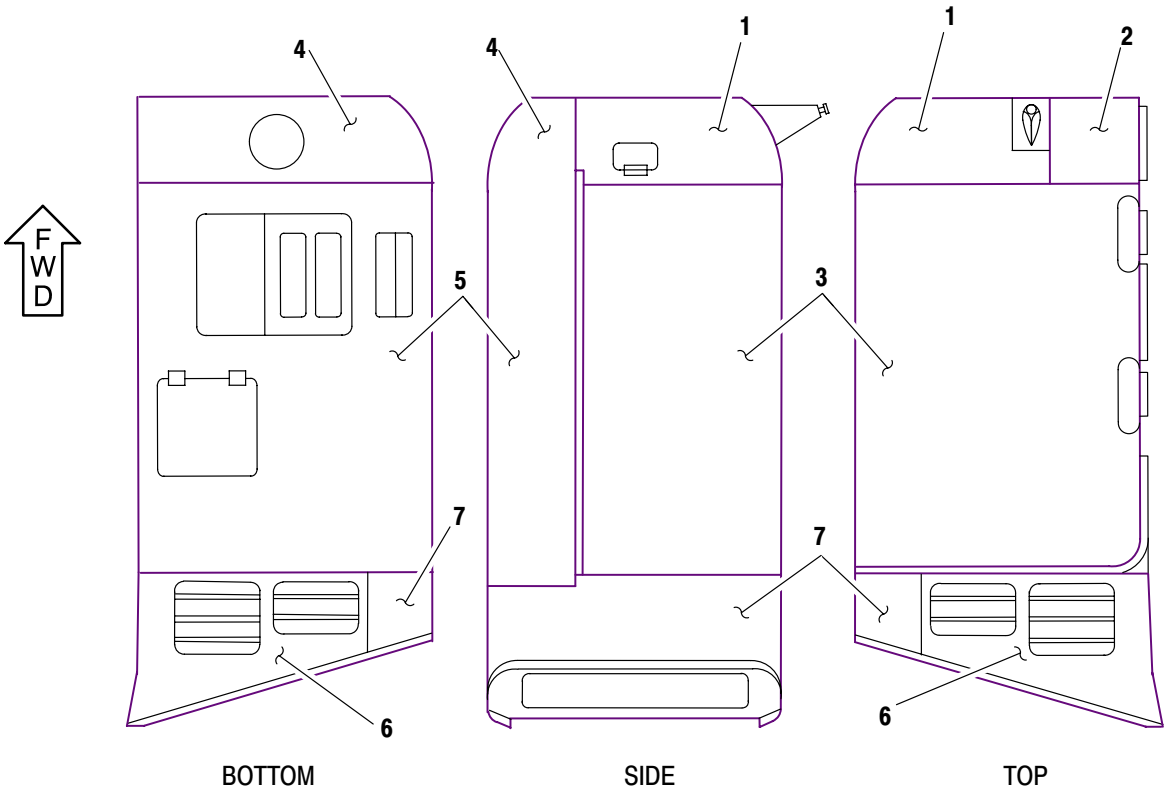


M04-2337

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	MACHINED TITANIUM					
2	MACHINED TITANIUM					
3	2024 AL ALY	QQ-A-250/4	T42	0.032		
4	2024 AL ALY	QQ-A-250/4	T42	0.063		
5	2024 AL ALY	QQ-A-250/4	T42	0.050		
6	2024 AL ALY	QQ-A-250/4	T42	0.040		
7	2024 AL ALY	QQ-A-250/4	T42	0.080		
8	2024 AL ALY	QQ-A-250/4	T42	0.100		
9	2024 AL CLAD	QQ-A-250/5	T42	0.080		
10	TITANIUM	MIL-T-9046 TYPE 1 COMP B		0.016	29.1	78.0

END OF TASK

2.132. ENGINE NACELLE SKIN PLATES



M04-2339

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T42	0.020	11.0	35.8
2	2024 AL CLAD	QQ-A-250/5	T42	0.020	9.6	13.3
3	7075 AL CLAD	QQ-A-250/13	T6	0.020	41.2	44.6
4	2024 AL CLAD	QQ-A-250/5	T3	0.020	9.0	36.0
5	2024 AL CLAD	QQ-A-250/5	T3	0.020	36.0	41.0
6	2024 AL CLAD	QQ-A-250/5	T42	0.020	24.0	24.5
7	2024 AL CLAD	QQ-A-250/5	T42	0.020	9.0	29.0

END OF TASK

2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION

2.133.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.133.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Spreader bar kit (item 195, App H)
Adjustable air filtering respirator (item 262, App H)
Rod and link adjusting tool (item 365, App H)
1 1/16 & 1 1/4-inch open end wrench (item 416, App H)
1 & 1 1/8-inch open end wrench (item 417, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)

Materials/Parts:

Brush (item 34, App F)
Sealing compound (item 174, App F)
Wire (item 226, App F)

Personnel Required:

67R Attack Helicopter Repairer
Two persons to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

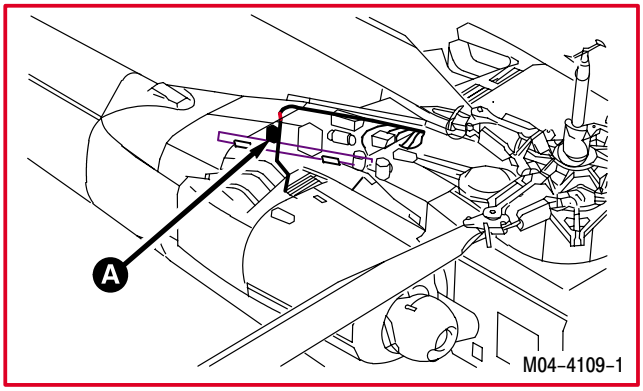
TM 1-1520-264-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
7.3	Hydraulic system vented
1.22	Fuel system vented
2.2	Access panels L200, R200, L230, and R230 removed
2.125	Access door T250L and T250R removed
2.126	Upper fuselage doors T290L and T290R removed
4.120	No. 1 engine outboard secondary nozzle removed
4.121	No. 1 engine inboard secondary nozzle removed
4.122	No. 1 engine center secondary nozzle removed
2.135	Engine nacelle fairing removed
4.123	Secondary nozzle structural support removed
4.170	No. 1 engine power available spindle aft cable removed
4.176	No. 1 engine load demand spindle aft cable removed
4.3	No. 1 engine removed
4.58	No. 1 engine louver removed
13.13	ENCU overboard exhaust duct removed
13.3	ENCU removed
7.139	Bleed air shutoff valve removed
12.57	Engine anti-ice relay box removed
9.148	Stabilator airspeed transducer removed
10.99	No. 1 engine crossfeed/shutoff valve removed
12.59	Ice detector processor removed
7.137	Aircraft air pressure fluid manifold removed
7.155	ENCU aft air tube removed
13.15	ECS shutoff valve removed
13.17	Air duct No. 1 removed
4.96	Left nacelle radiation shields removed
2.137	Work platform door removed

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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

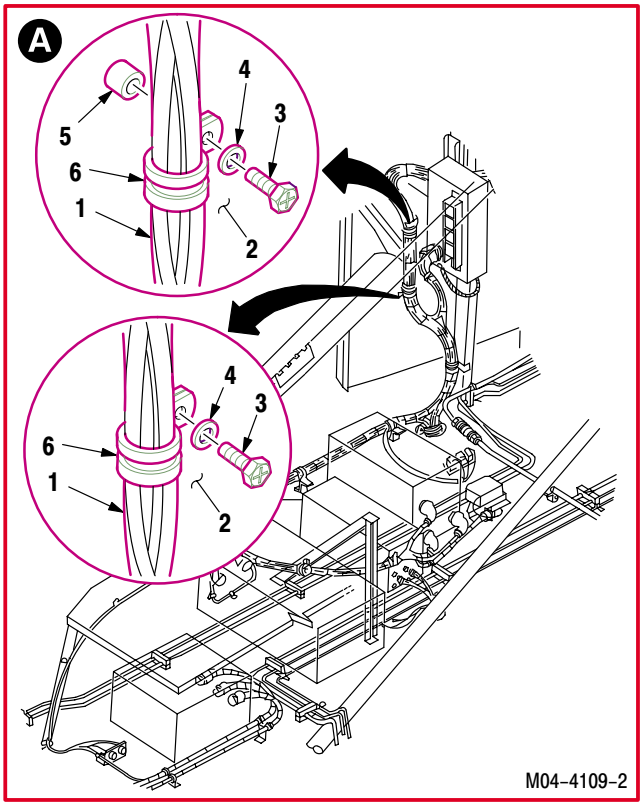


2.133.3. Removal

a. **Remove wire harness W211 (1) from firewall (2).**

(1) Remove two screws (3), washers (4), and spacer (5).

(2) Reposition wire harness (1) and clamps (6) away from firewall (2).





WARNING

Each actuator stud must be wired to a ground stud to prevent accidental discharge.

NOTE

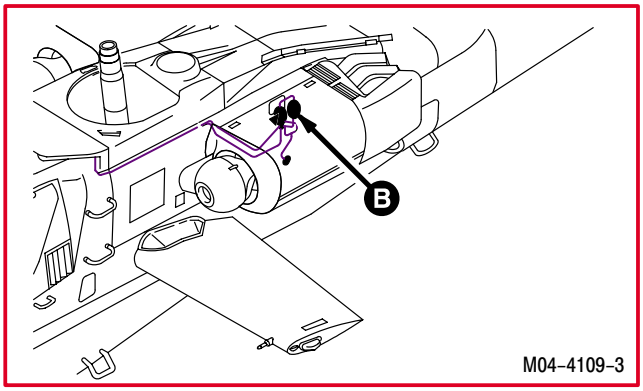
Fire extinguisher bracket and bottles can be removed as one unit.

b. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

c. **On pilot circuit breaker panel, open FIRE EXTGH PLT, FIRE EXTGH CPG, and FIRE EXTGH APU circuit breakers.**

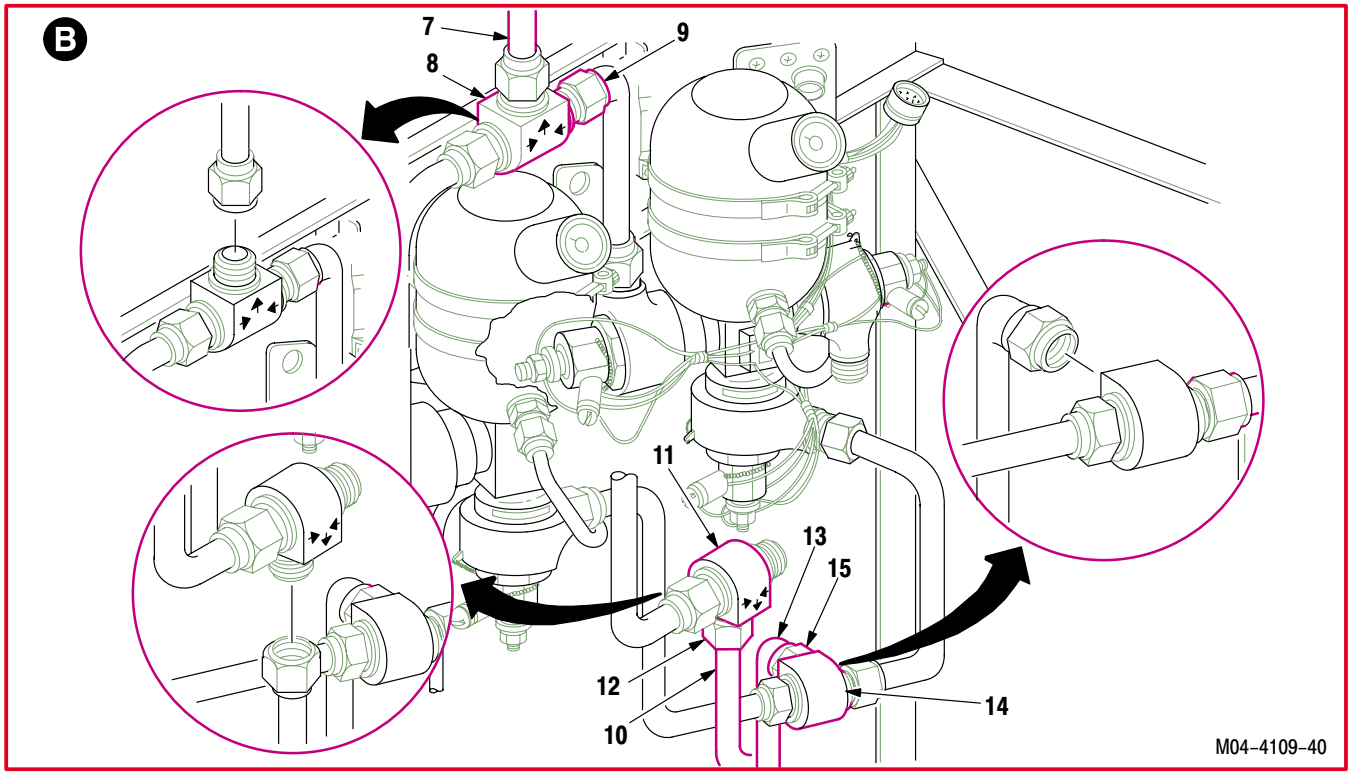
d. **Install shorting wires on cartridges** (para 12.38)**.** Use wire (item 226, App F).

e. **Detach primary and reserve connectors P1** (para 12.38)**.**



GO TO NEXT PAGE

2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued



f. **Remove fire extinguisher tube (7) from check valve (8).**

(1) Hold check valve (8). Remove nut (9). Use open end wrench and open end wrench.

(2) Remove tube (7) from check valve (8).

g. **Remove fire extinguisher tube (10) from check valve (11).**

(1) Hold check valve (11). Remove nut (12). Use open end wrench and open end wrench.

(2) Remove tube (10) from check valve (11).

h. **Remove fire extinguisher tube (13) from check valve (14).**

(1) Hold check valve (14). Remove nut (15). Use open end wrench and open end wrench.

(2) Remove tube (13) from check valve (14).

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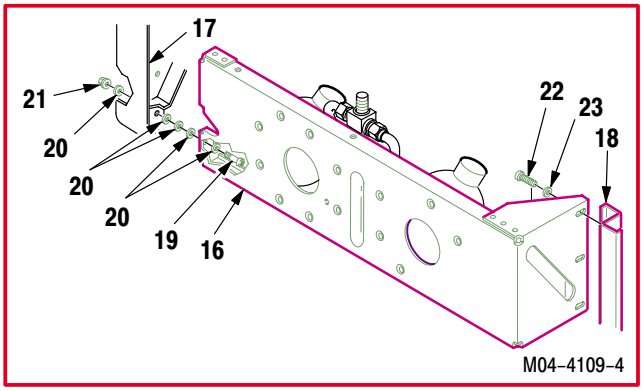
2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

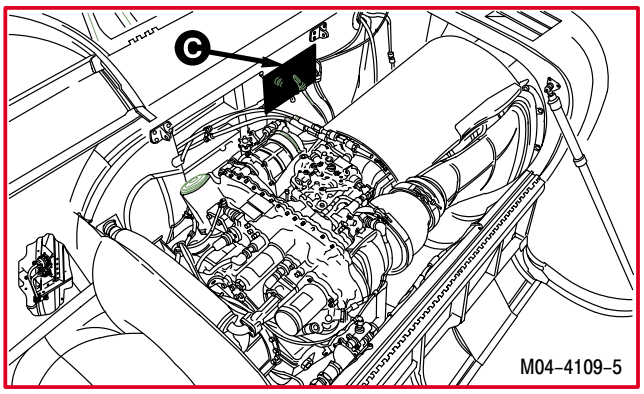
i. **Remove fire extinguisher bracket and bottle unit (16) from aft engine mount support (17) and ENCU bracket (18).**

(1) Remove 4 screws (19), 20 washers (20), and 4 nuts (21) from support (17).

(2) Remove three screws (22) and washers (23) from bracket (18).

(3) Remove bracket and bottle unit (16) from support (17) and bracket (18).





j. **Remove receptacles J21 (24) and J23 (25) from firewall (2).**

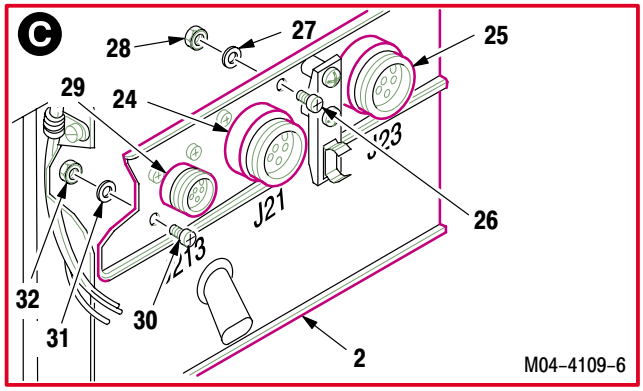
(1) Remove 8 screws (26), 16 washers (27), and 8 locknuts (28).

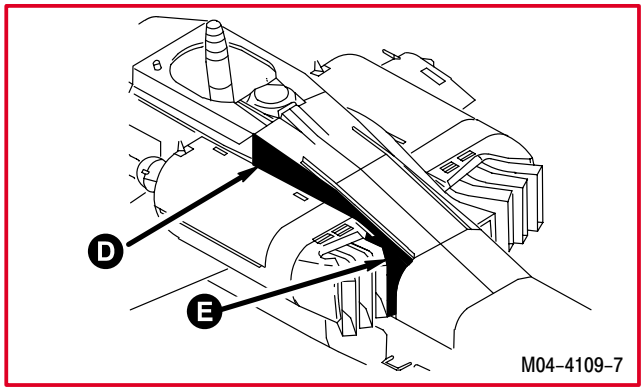
(2) Remove receptacles J21 (24) and J23 (25) from firewall (2).

k. **Remove receptacle J213 (29) from firewall (2).**

(1) Remove four screws (30), eight washers (31), and four nuts (32).

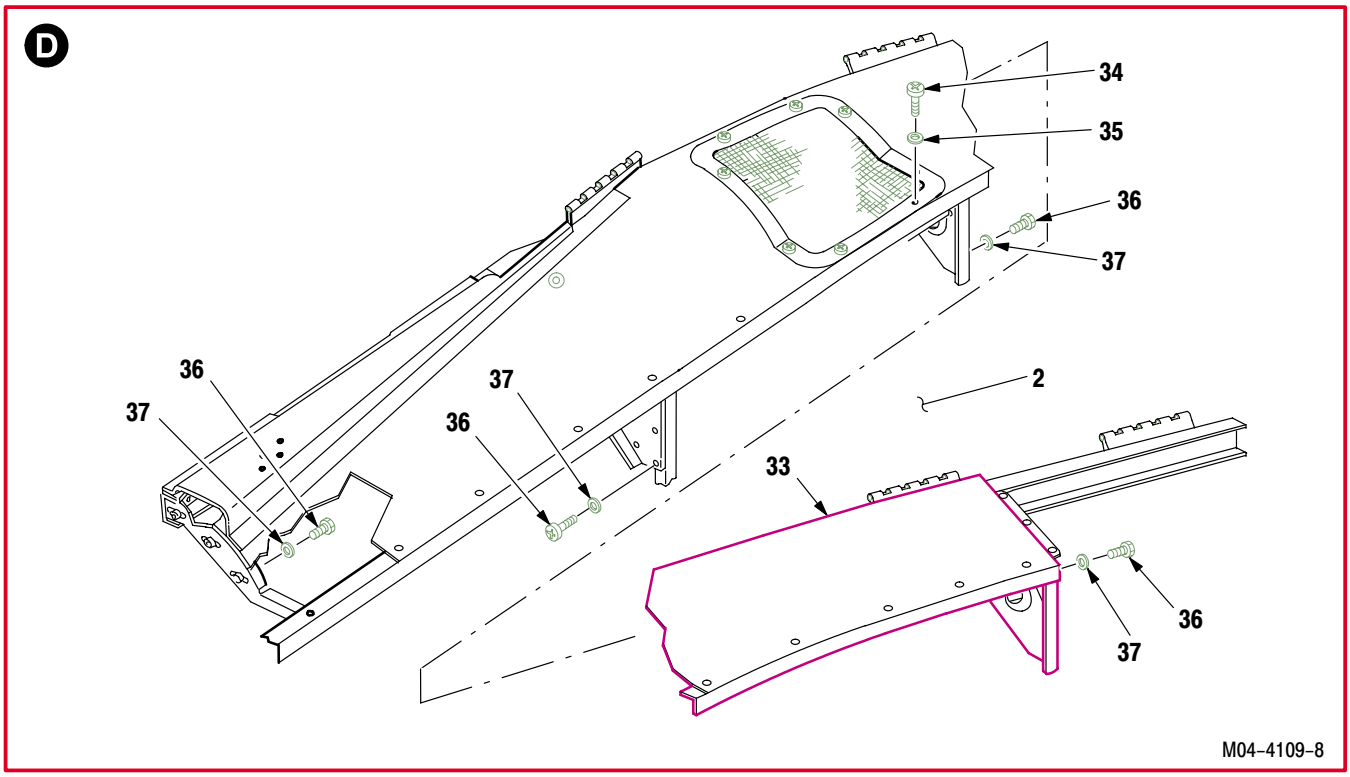
(2) Remove receptacle J213 (29) from firewall (2).





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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued



l. **Remove upper fuselage fairing (33) from firewall (2).**

(1) Remove 13 screws (34) and washers (35) from fairing (33).

(2) Remove 12 bolts (36) and washers (37) from fairing (33) (4 places).

(3) Remove fairing (33) and reposition away from firewall (2).

GO TO NEXT PAGE

2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

NOTE

Six different type/size screws will be removed from LH fuselage fairing. Bag and tag screws and locations for ease of re-installation.

m. **Remove fuselage fairing (38) from fairing (33) and deck (45).**

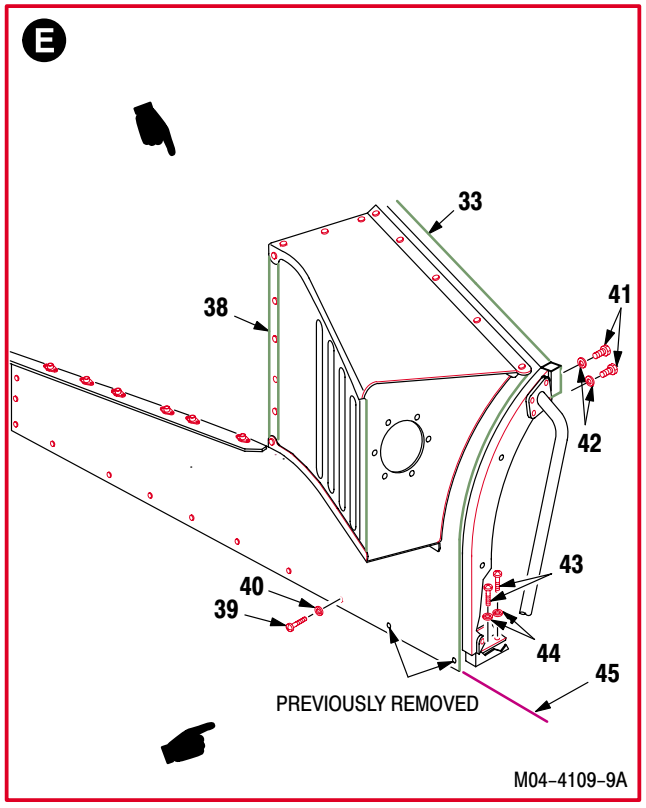
(1) Remove 30 screws (39) and washers (40) from fairing (38).

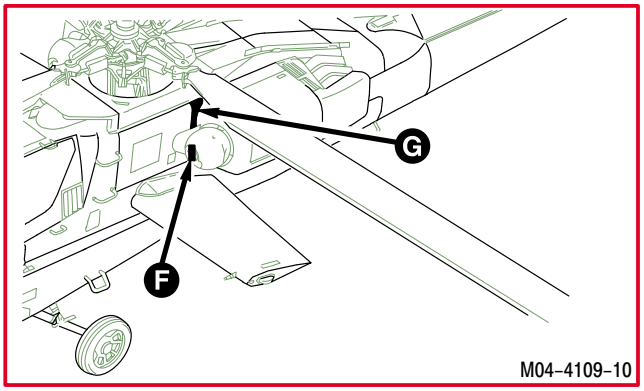
(2) Remove two screws (41) and washers (42) to remove fairing (38) from fairing (33).

(3) Remove sealant from two screws (43).

(4) Remove two screws (43) and washers (44) to remove fairing (38) from fairing (33).

(5) Remove fairing (38) from fairing (33) and deck (45).

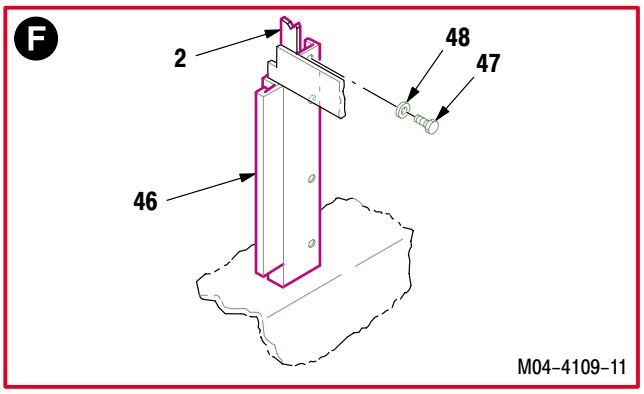




n. **Remove transmission access panel support (46) from firewall (2).**

(1) Remove bolt (47) and washer (48).

(2) Remove support (46) from firewall (2).



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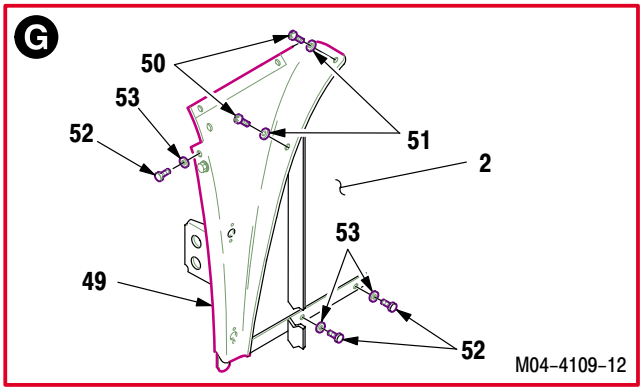
2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

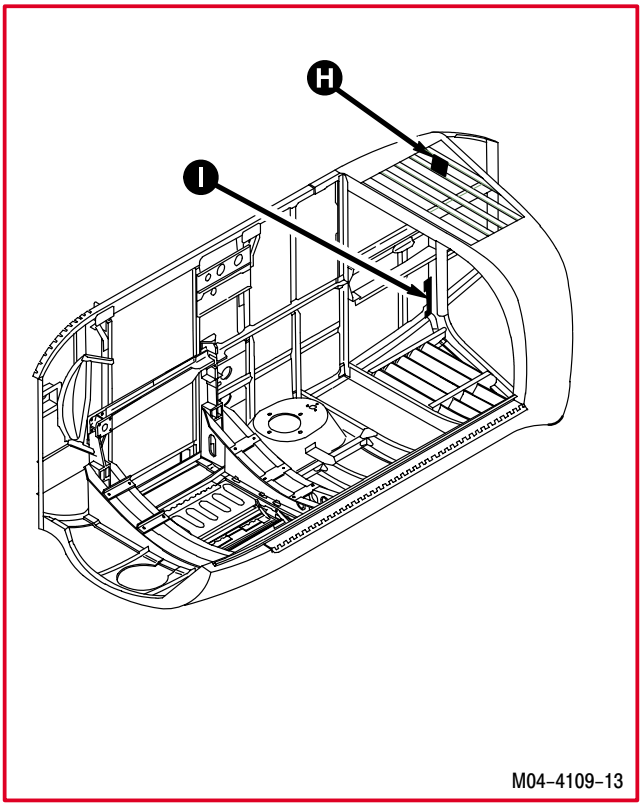
o. **Remove transmission access panel support fairing (49) from firewall (2).**

(1) Remove two screws (50) and washers (51).

(2) Remove four bolts (52) and washers (53).

(3) Remove fairing (49) from firewall (2).





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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

WARNING

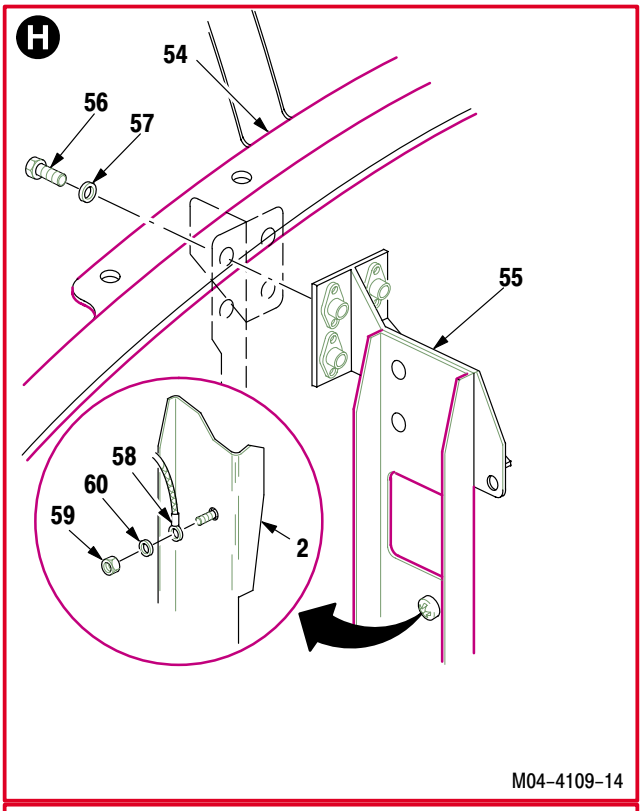
Ensure personnel and all tools are removed from nacelle prior to removing attaching hardware. Failure to comply could result in serious injury.

p. **Remove nacelle (54) from top of post (55).**

(1) Remove four bolts (56) and washers (57) from top of post (55).

(2) Remove bonding jumper (58) by removing nut (59) and washer (60) from firewall (2).

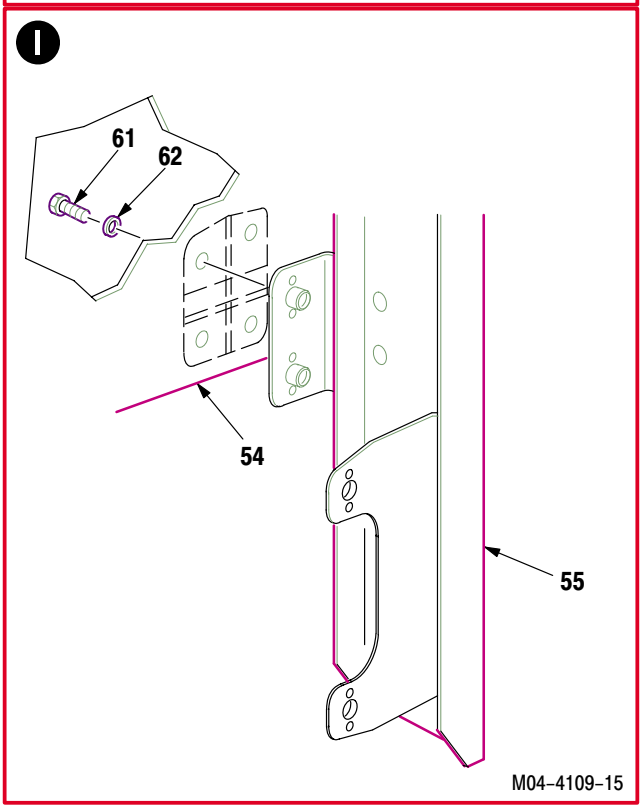
(3) Remove nacelle (54) from post (55).



q. **Remove nacelle (54) from bottom of post (55).**

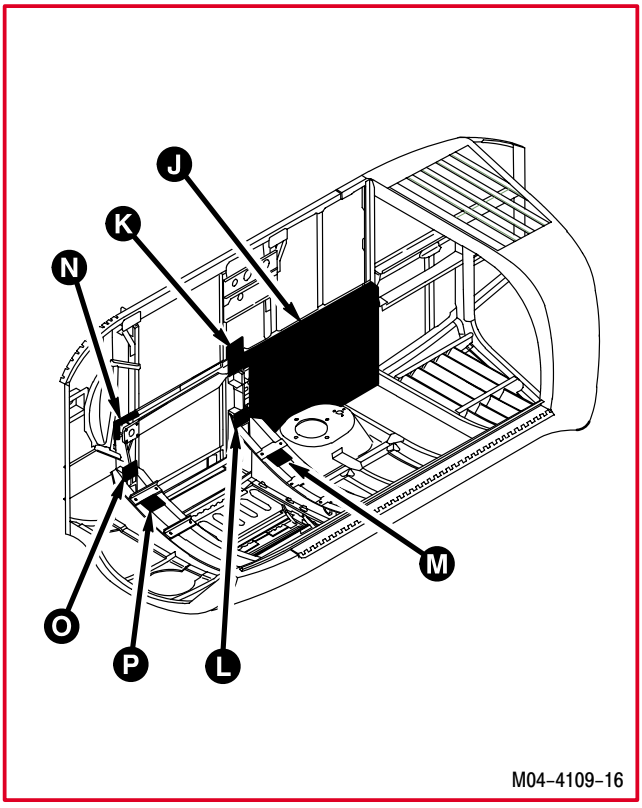
(1) Remove four bolts (61) and washers (62) from bottom of post (55).

(2) Remove nacelle (54) from post (55).



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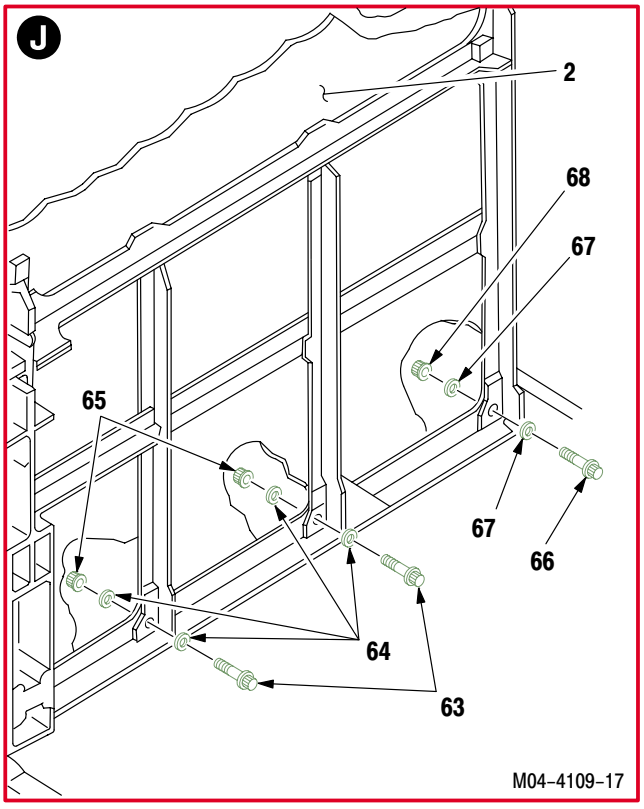
2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued



r. **Remove two nacelle bolts (63) and bolt (66) from bottom of firewall (2).**

(1) Remove two bolts (63), four washers (64), and two nuts (65) from firewall (2).

(2) Remove bolt (66), two washers (67), and nut (68) from firewall (2).

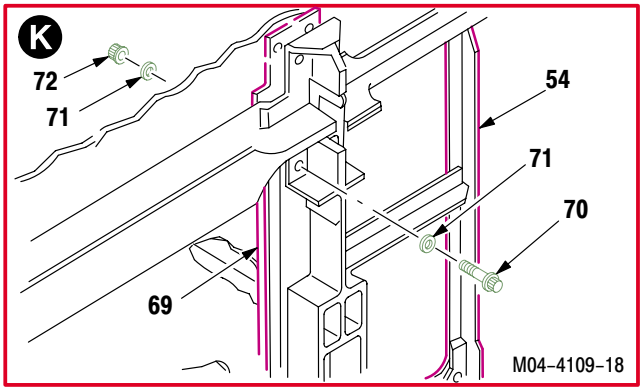


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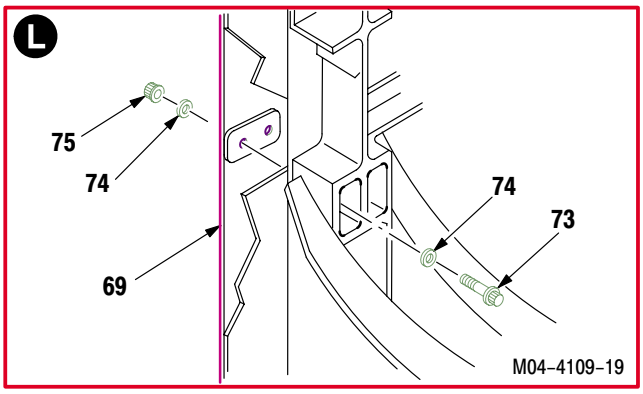
2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

s. **Remove nacelle (54) from aft support (69).**

(1) Remove four bolts (70), eight washers (71), and four nuts (72) from top of support (69).

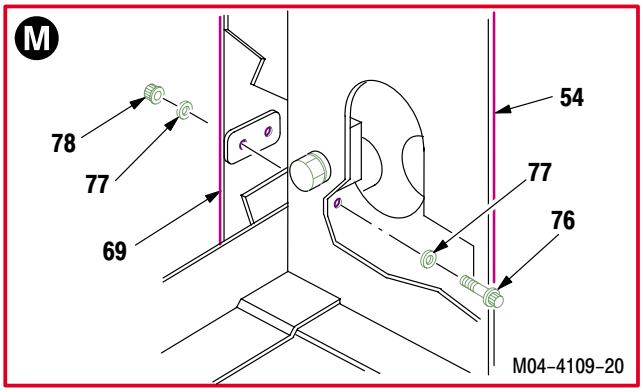


(2) Remove two bolts (73), four washers (74), and two nuts (75) from middle section of support (69).



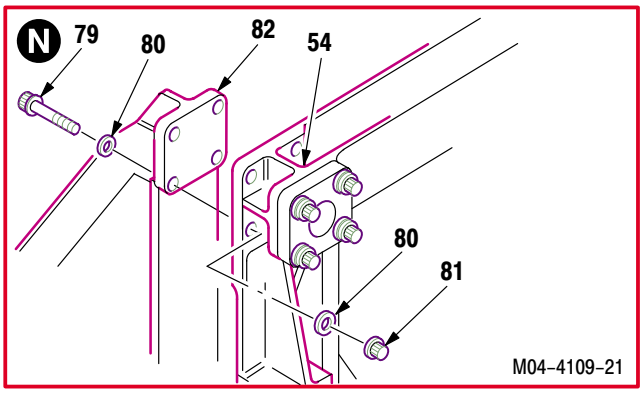
(3) Remove two bolts (76), four washers (77), and two nuts (78) from bottom section of support (69).

(4) Remove nacelle (54) from support (69).



t. **Remove nacelle (54) from forward support (82).**

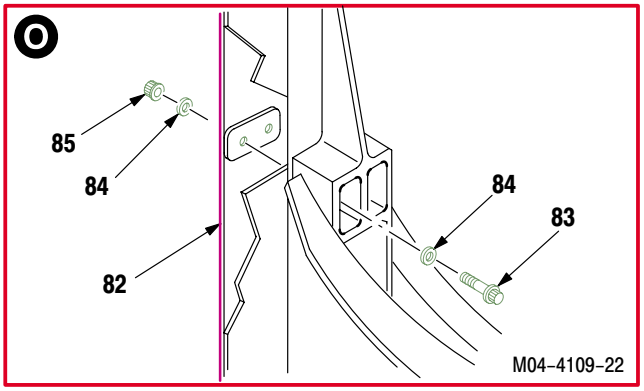
(1) Remove four bolts (79), eight washers (80), and four nuts (81) from top of support (82).



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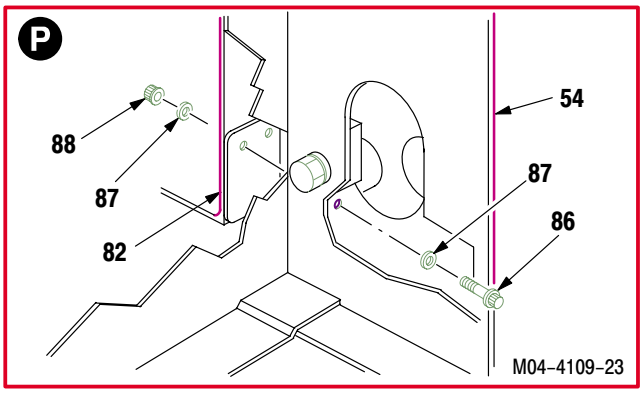
2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

(2) Remove two bolts (83), four washers (84), and two nuts (85) from middle section of support (82).



(3) Remove two bolts (86), four washers (87), and two nuts (88) from bottom section of support (82).

(4) Remove nacelle (54) from support (82).



2.133.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.133.5. Inspection

a. **Check nacelle for damage** (para 2.128)**.**

b. **Check nacelle and support mating surfaces for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

c. **Check nacelle strut attachment area for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

2.133.6. Installation

a. **Lift and aline nacelle (54) with supports (69) and (82).**

b. **Install nacelle (54) on support (82).** Torque eight bolts (79), (83), and (86) to **110 INCH-POUNDS**.

(1) Install four bolts (79) and eight washers (80) through top of nacelle (54) and support (82).

(2) Install four nuts (81).

(3) Torque four bolts (79) to **110 INCH-POUNDS**. Use torque wrench.

(4) Install two bolts (83) through four washers (84), middle section of nacelle (54), and support (82).

(5) Install two nuts (85).

(6) Torque two bolts (83) to **110 INCH-POUNDS**. Use torque wrench.

(7) Install two bolts (86) through four washers (87), bottom section of nacelle (54), and support (82).

(8) Install two nuts (88).

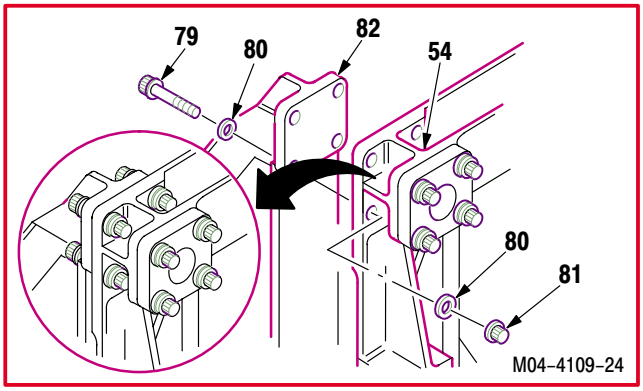
(9) Torque two bolts (86) to **110 INCH-POUNDS**. Use torque wrench.

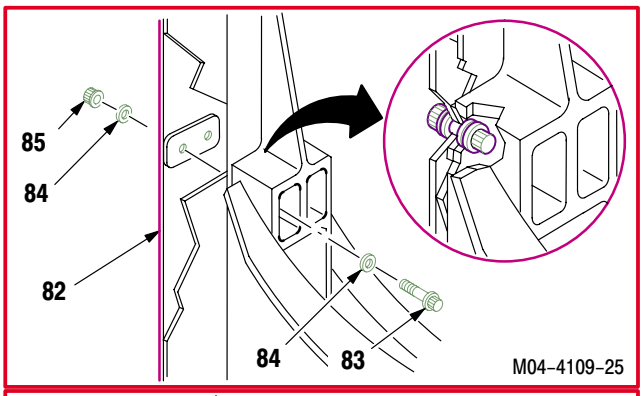
c. **Install nacelle (54) on support (69).** Torque eight bolts (70), (73), and (76) to **110 INCH-POUNDS**.

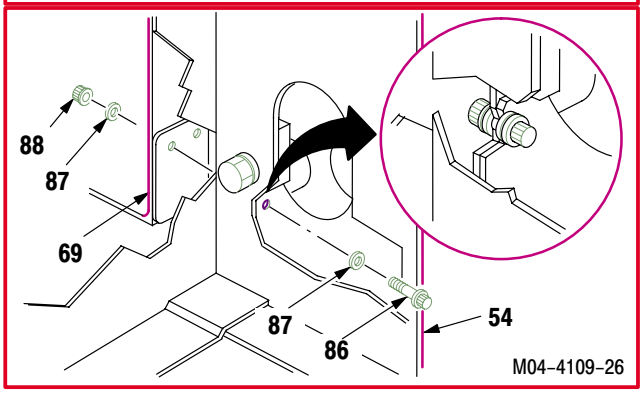
(1) Install four bolts (70) through eight washers (71), top of nacelle (54), and support (69).

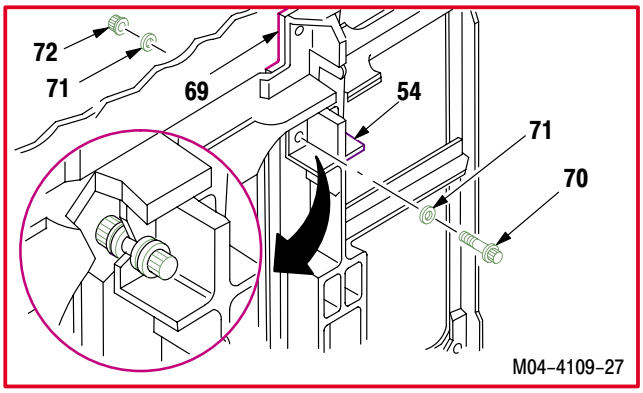
(2) Install four nuts (72).

(3) Torque two bolts (70) to **110 INCH-POUNDS**. Use torque wrench.









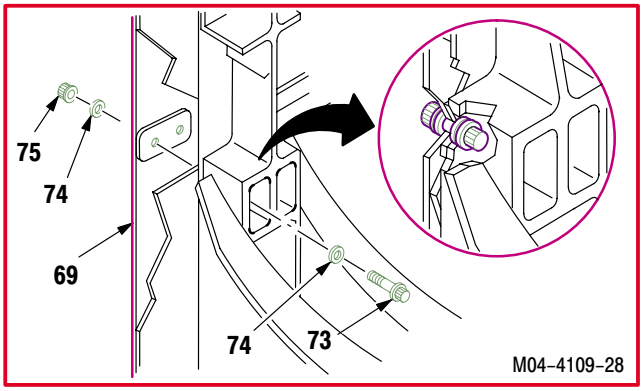
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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

(4) Install two bolts (73) through four washers (74), middle section of nacelle (54), and support (69).

(5) Install two nuts (75).

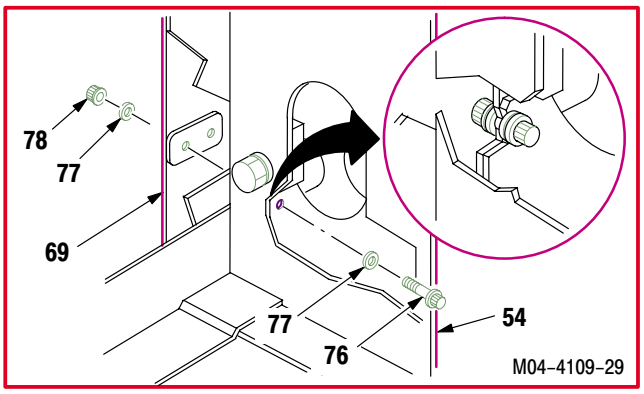
(6) Torque bolts (73) to **110 INCH-POUNDS**. Use torque wrench.



(7) Install two bolts (76) through four washers (77), bottom section of nacelle (54), and support (69).

(8) Install two nuts (78).

(9) Torque bolts (76) to **110 INCH-POUNDS**. Use torque wrench.



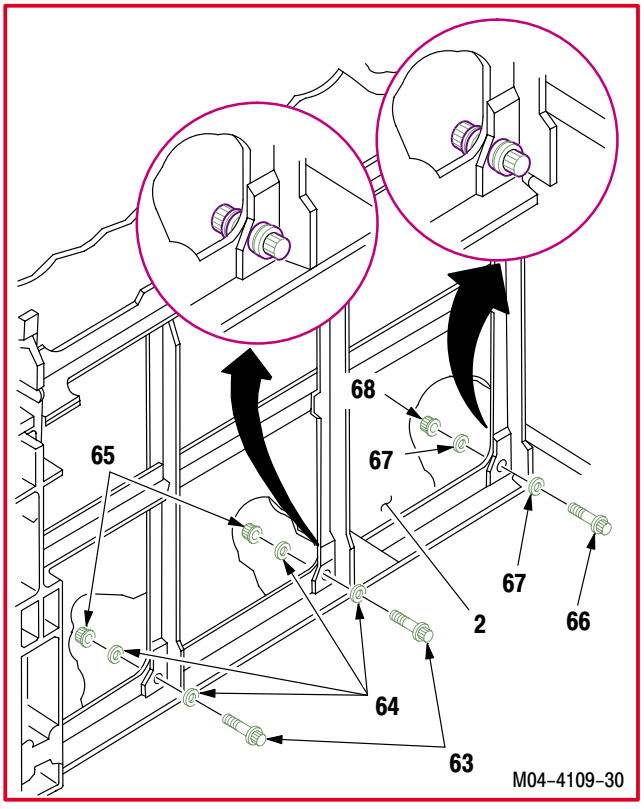
d. **Install two bolts (63) and bolt (66) on bottom of firewall (2).** Torque two bolts (63) to **110 INCH-POUNDS** and bolt (66) to **225 INCH-POUNDS**.

(1) Install two bolts (63), four washers (64), and two nuts (65) on firewall (2).

(2) Install bolt (66), two washers (67), and nut (68) on firewall (2).

(3) Torque two bolts (63) to **110 INCH-POUNDS**. Use torque wrench.

(4) Torque bolt (66) to **225 INCH-POUNDS**. Use torque wrench.

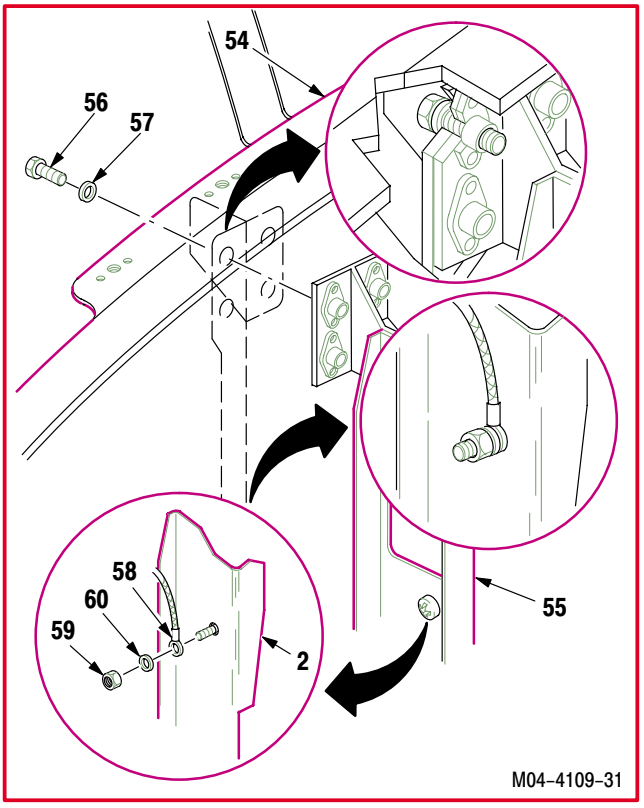


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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

e. **Install nacelle (54) on post (55).**

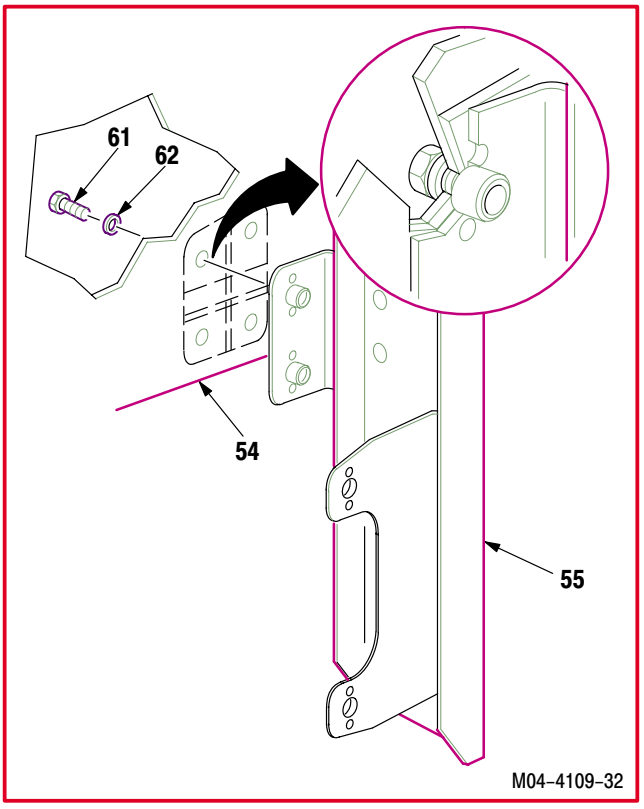
(1) Install four bolts (56) through washers (57) and top of nacelle (54) in post (55).



(2) Install four bolts (61) through washers (62) and bottom of nacelle (54) in post (55).

(3) Install bonding jumper (58), washer (60), and nut (59) on firewall (2).

f. **Install work platform door** (para 2.137)**.**

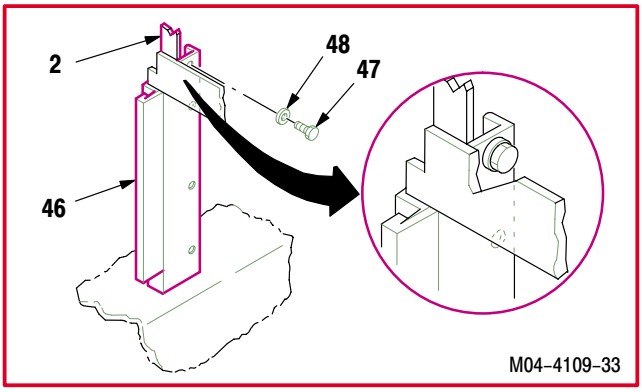


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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

g. **Install support (46) on firewall (2).**

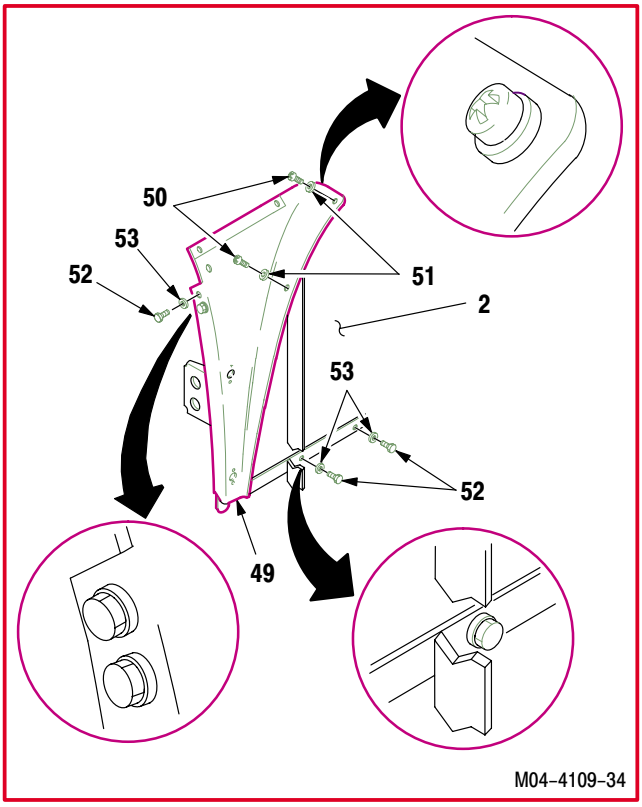
(1) Install bolt (47) through washer (48) and support (46) on firewall (2).



h. **Install fairing (49) on firewall (2).**

(1) Install two screws (50) through washers (51) and fairing (49) on firewall (2).

(2) Install four bolts (52) through washers (53) and fairing (49) on firewall (2).



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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

NOTE

Ensure to install the different type/size screws in each respective location.

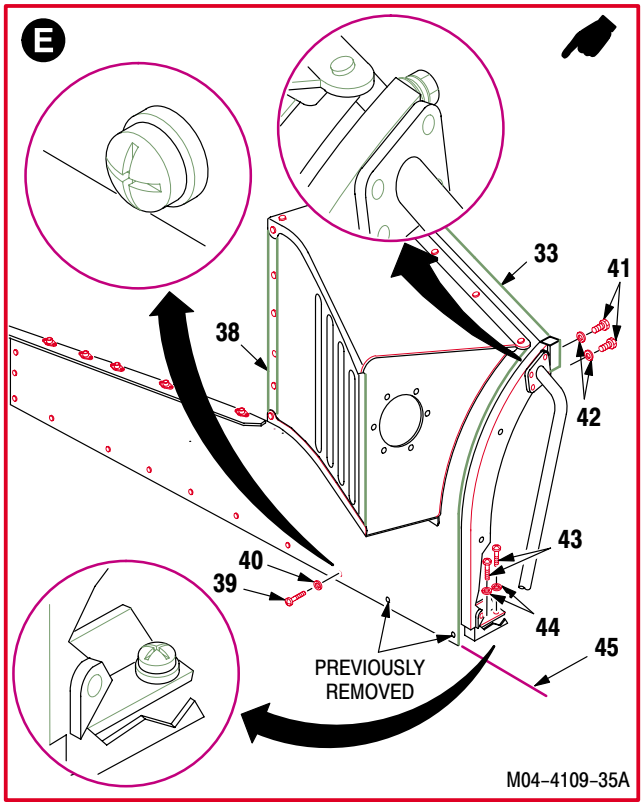
i. **Install fairing (38) on fairing (33) and deck (45).**

(1) Install 30 screws (39) and washers (40) on fairing (38).

(2) Install two screws (41) through washers (42) and fairing (38) in fairing (33).

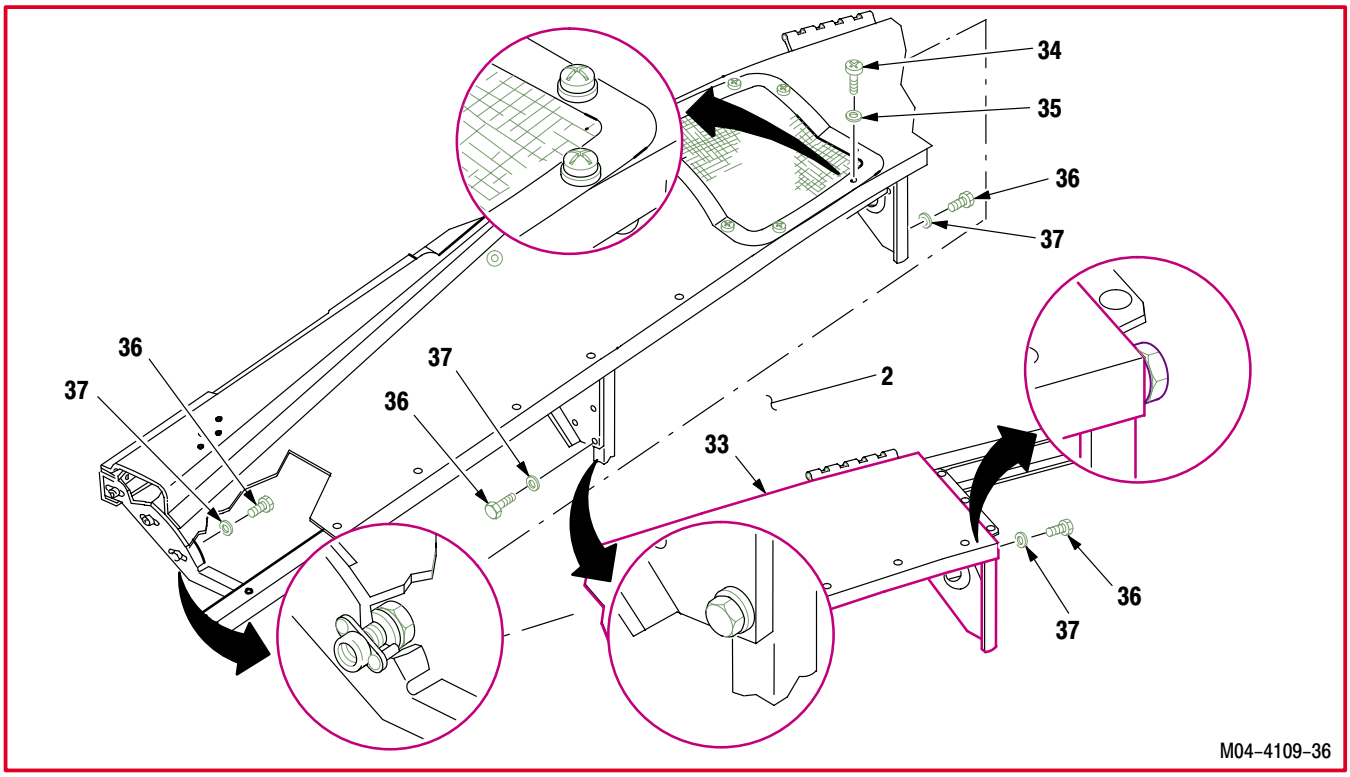
(3) Install two screws (43) and washers (44) to install fairing (38) on deck (45).

(4) Seal head of two screws (43). Use sealing compound (item 174, App F) and brush (item 34, App F).



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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued



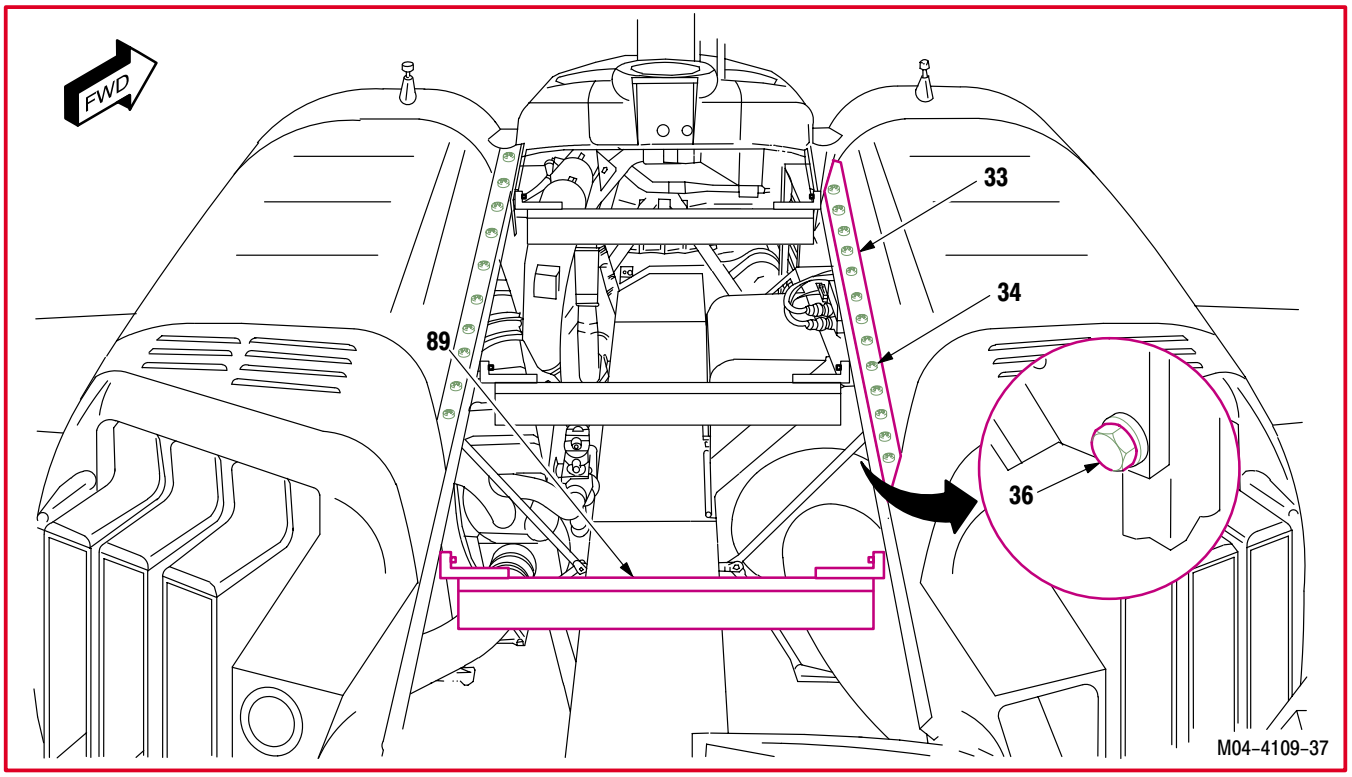
j. **Install fairing (33) on firewall (2).**

(1) Loosely install 13 screws (34) and washers (35) on fairing (33).

(2) Loosely install 12 bolts (36) through washers (37) and fairing (33) on firewall (2) (4 places).

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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued



k. **Adjust fairing (33).**

(1) Install three spreader bars (89) between fairings (33) at F.S. 247.0, F.S. 272.0 and F.S. 298.0. Use spreader bar.

(2) Secure each end of spreader bars with hardware provided.

(3) Tighten 13 screws (34) and 12 bolts (36) on fairing (33).

(4) Remove attaching hardware at each end of spreader bars (89).

(5) Remove spreader bars (89) from fairing (33).

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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

l. **Install receptacle J213 (29) on firewall (2).**

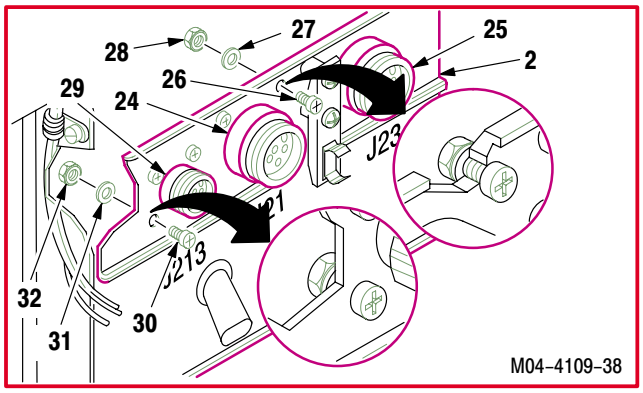
(1) Install four screws (30) through washers (31) and receptacle (29) on firewall (2).

(2) Install four nuts (32).

m. **Install receptacles J21 (24) and J23 (25) on firewall (2).**

(1) Install eight screws (26) through washers (27) and receptacles (24) and (25) on firewall (2).

(2) Install eight nuts (28).



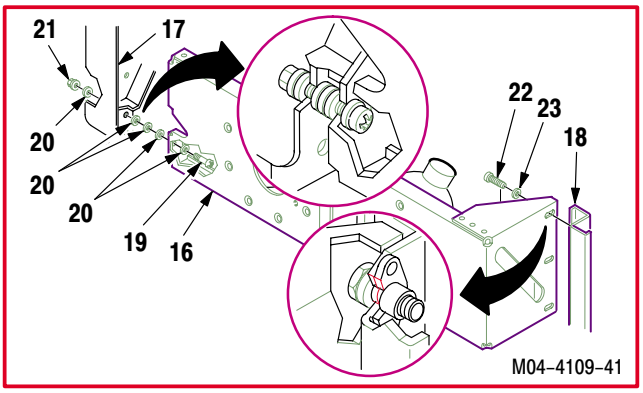
n. **Install fire extinguishing bracket and bottle unit (16) on support (17) and bracket (18).**

(1) Aline fire extinguishing bracket and bottles (16) with support (17) and bracket (18).

(2) Install four screws (19) through eight washers (20), bracket (16), and support (17).

(3) Install four nuts (21).

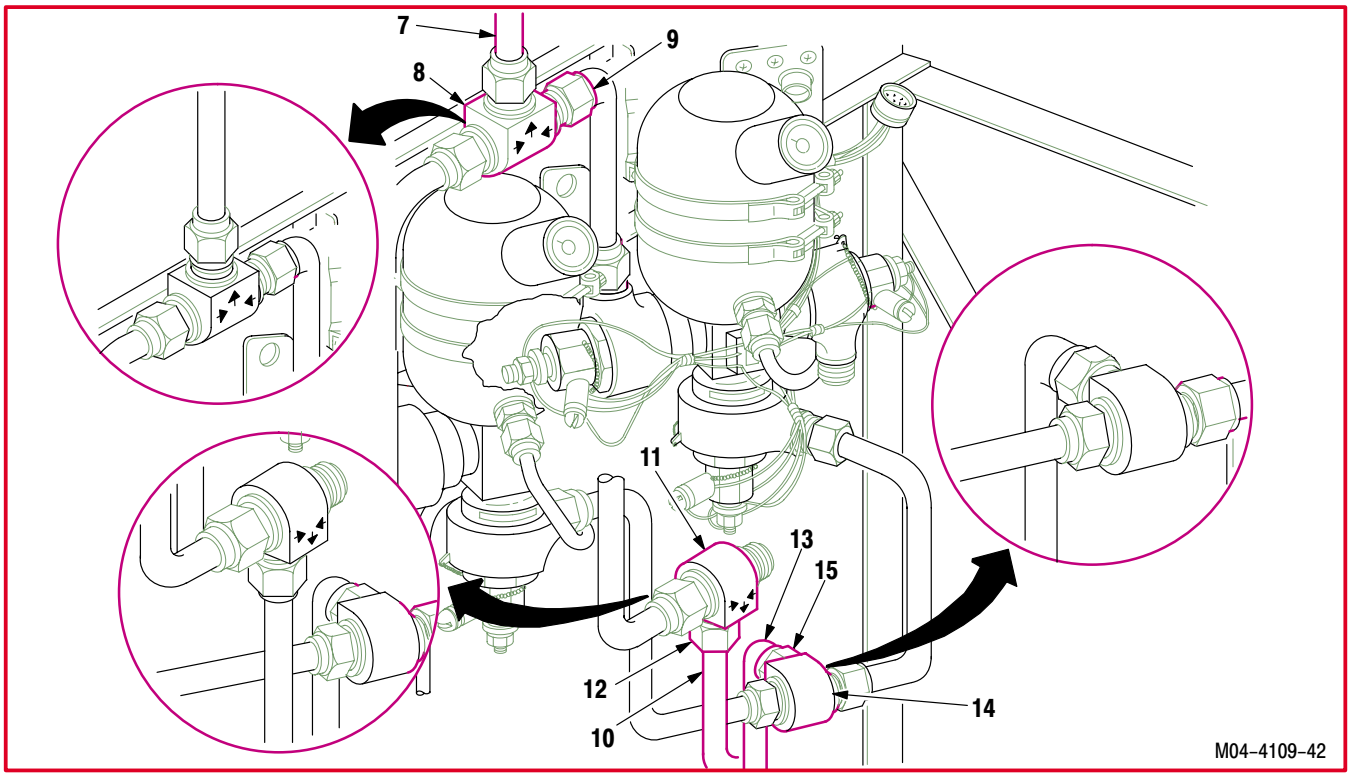
(4) Install three screws (22) through washers (23) and bracket (16) on bracket (18).



o. **Seal periphery of three screw heads (22).** Use sealing compound (item 174, App F) and brush (item 34, App F).

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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued



p. **Install tube (7) on check valve (8).**

(1) Aline tube (7) with check valve (8).

(2) Hold check valve (8). Install nut (9). Use open end wrench and open end wrench.

q. **Install tube (10) on check valve (11).**

(1) Aline tube (10) with check valve (11).

(2) Hold check valve (11). Install nut (12). Use open end wrench and open end wrench.

r. **Install tube (13) on check valve (14).**

(1) Aline tube (13) with check valve (14).

(2) Hold check valve (14). Install nut (15). Use open end wrench and open end wrench.

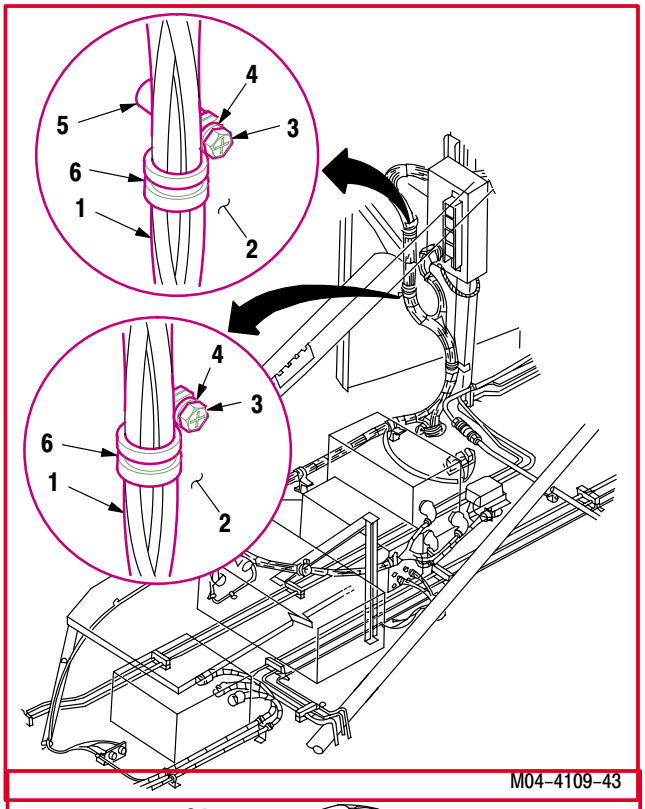
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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

s. **Install wire harness W211 (1) on firewall (2).**

(1) Aline wire harness W211 (1) with firewall (2).

(2) Install two screws (3), washers (4), and spacer (5) through wire harness (1) on firewall (2).



t. **If nacelle is being reinstalled, go to step ab.**

u. **If nacelle is being replaced, go to step v.**

v. **Adjust nacelle rod (90) and link (91).**

(1) Install adjusting tool (92) to forward engine mount (93) and aft engine mount (94). Use adjusting tool.

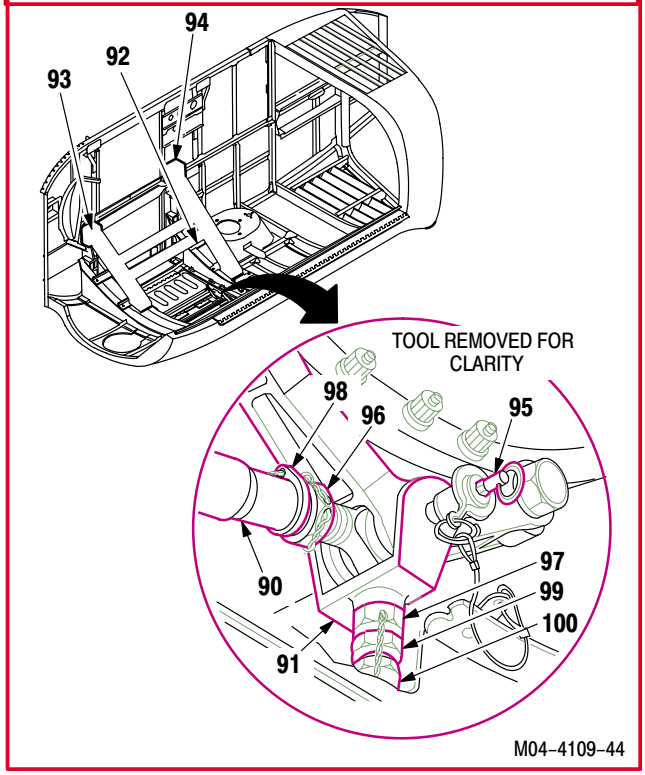
(2) Adjust rod (90) and link (91) by lengthening or shortening until ball support pin (95) can be freely inserted through tool (92), rod (90), and link (91).

w. **Torque nut (96) to 100 INCH-POUNDS.** Use torque wrench.

x. **Torque nut (97) to 35 INCH-POUNDS.** Use torque wrench.

y. **Lockwire nut (96) to tab washer (98).** Use wire (item 226, App F).

z. **Lockwire nut (97) to land (99) and nut (100).** Use wire (item 226, App F).



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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

aa. **Seal rod (90).** Use sealing compound (item 174, App F) and brush (item 34, App F).

ab. **Install No. 1 engine louvers** (para 4.59)**.**

ac. **Install No. 1 engine crossfeed/shutoff valve** (para 10.99)**.**

ad. **Install stabilator airspeed transducer** (para 9.148)**.**

ae. **Install engine anti-ice relay panel** (para 12.57)**.**

af. **Install ice detector processor** (para 12.59)**.**

ag. **Install bleed air shutoff valve** (para 7.139)**.**

ah. **Install ENCU** (para 13.3)**.**

ai. **Install ENCU overboard exhaust duct** (para 13.13)**.**

aj. **Install aircraft air pressure fluid manifold** (para 7.138)**.**

ak. **Install ECS shutoff valve** (para 13.15)**.**

al. **Install ENCU aft air tube** (para 7.155)**.**

am. **Install left nacelle radiation shields** (para 4.96)**.**

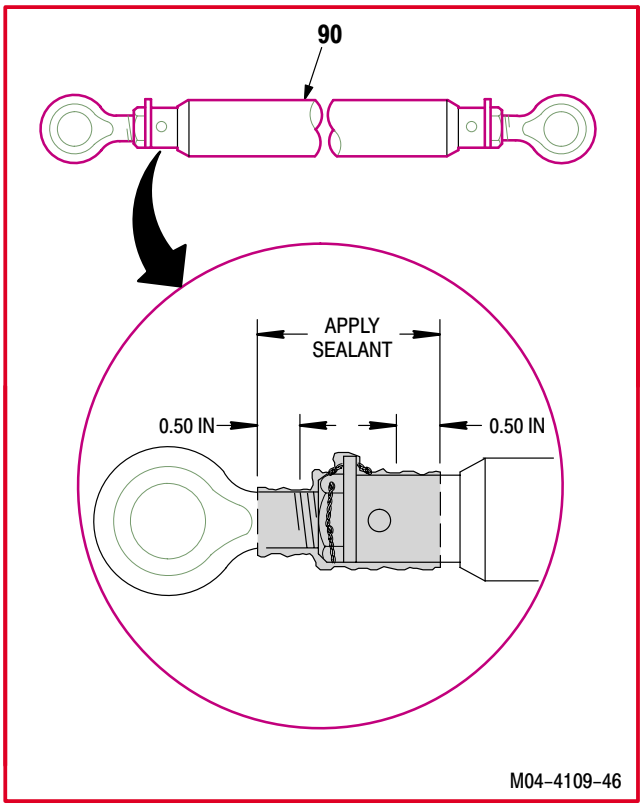
an. **Install No. 1 engine** (para 4.48)**.**

ao. **Install No. 1 engine power available spindle aft cable** (para 4.171)**.**

ap. **Install No. 1 engine load demand spindle aft cable** (para 4.177)**.**

aq. **Install work platform door** (para 2.137)**.**

ar. **Install engine nacelle fairing** (para 2.135)**.**



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2.133. NO. 1 ENGINE NACELLE REMOVAL/INSTALLATION – continued

as. **Install secondary nozzle structural support** (para 4.123)**.**

at. **Install No. 1 engine outboard secondary nozzle** (para 4.120)**.**

au. **Install No. 1 engine inboard secondary nozzle** (para 4.121)**.**

av. **Install No. 1 engine center secondary nozzle** (para 4.122)**.**

aw. **Install air duct No. 1** (para 13.17)**.**

ax. **Install access panel L200, R200, L230, and R230** (para 2.2)**.**

ay. **Install access door T250L and T250R** (para 2.125)**.**

az. **Install access door T290L and T290R** (para 2.126)**.**

END OF TASK

2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION

2.134.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.134.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Spreader bar kit (item 195, App H)
Adjustable air filtering respirator (item 262, App H)
Rod and link adjusting tool (item 365, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)

Materials/Parts:

Brush (item 34, App F)
Sealing compound (item 174, App F)
Wire (item 226, App F)

Personnel Required:

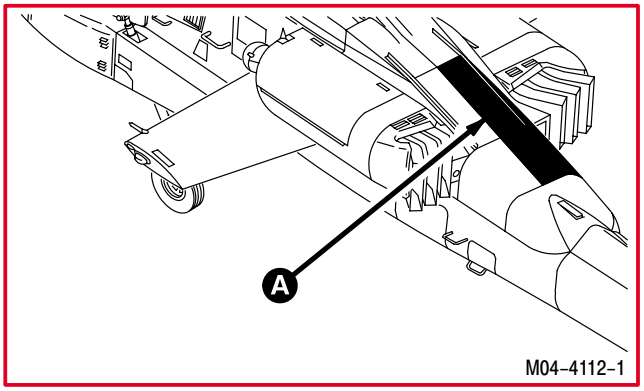
67R Attack Helicopter Repairer
Two persons to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
7.3	Hydraulic system vented
2.2	Access panels L200, R200, L230, and R230 removed
2.125	Access doors T250L and T250R removed
2.126	Upper fuselage doors T290L and T290R removed
4.120	No. 2 engine outboard secondary nozzle removed
4.121	No. 2 engine inboard secondary nozzle removed
4.122	No. 2 engine center secondary nozzle removed
4.123	Secondary nozzle structural support removed
2.135	Engine nacelle fairing removed
4.173	No. 2 engine power available spindle aft cable removed
4.178	No. 2 engine load demand spindle aft cable removed
4.8	No. 2 engine removed
4.60	No. 2 engine louver removed
12.44	No. 2 engine fire extinguisher fitting removed
9.148	Stabilator air speed transducer removed
15.2	APU removed
15.38	APU drain hoses removed
15.37	APU plenum fuel drain hose removed
10.100	No. 2 engine crossfeed/shutoff valve removed
4.95	Right nacelle radiation shields removed
7.145	No. 2 engine air start line removed
2.137	Work platform door removed

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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued



2.134.3. Removal

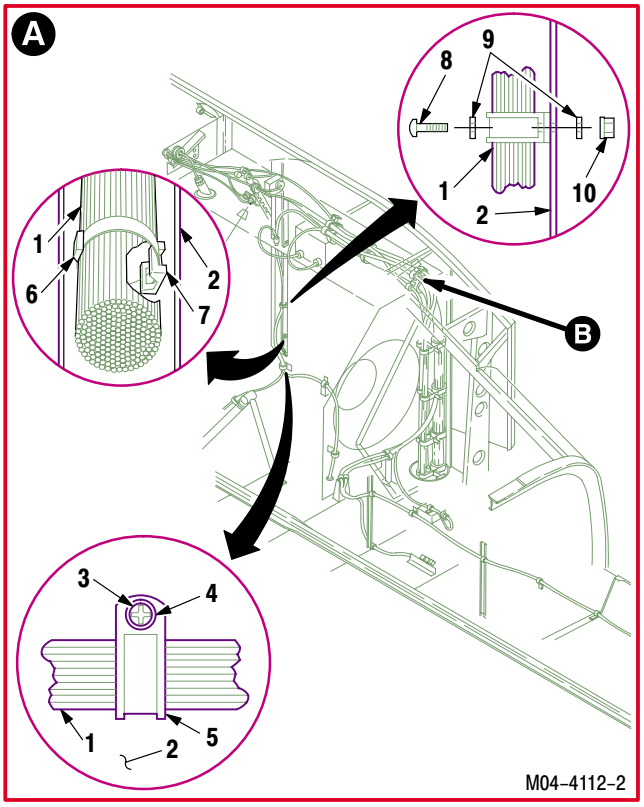
a. **Remove wire harness W102 (1) from firewall (2).**

(1) Remove two screws (3) and washers (4) from clamps (5).

(2) Remove two tiedown straps (6) from tiedown mounting base (7) on firewall (2).

(3) Remove screw (8), two washers (9), and nut (10) from firewall (2).

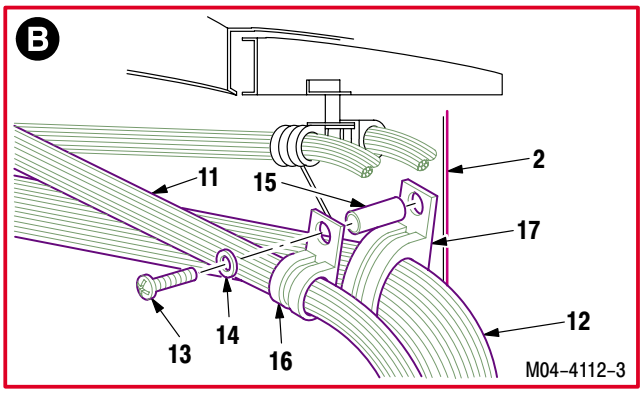
(4) Remove wire harness W102 (1) and reposition away from firewall (2).



b. **Remove wire harness W108 (11) and W266 (12) from firewall (2).**

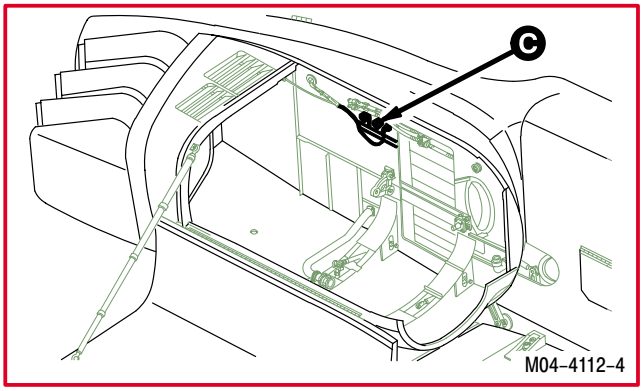
(1) Remove screw (13), washer (14), and spacer (15) from two clamps (16) and (17).

(2) Remove wire harnesses W108 (11) and W266 (12) and reposition away from firewall (2).



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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued



c. **Remove receptacles J22 (18) and J24 (19) from firewall (2).**

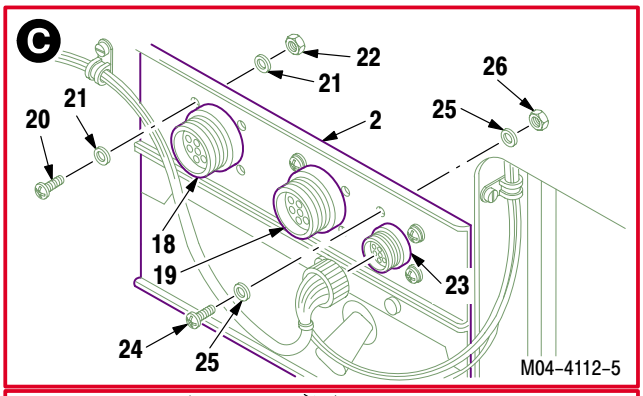
(1) Remove 8 screws (20), 16 washers (21), and 8 nuts (22).

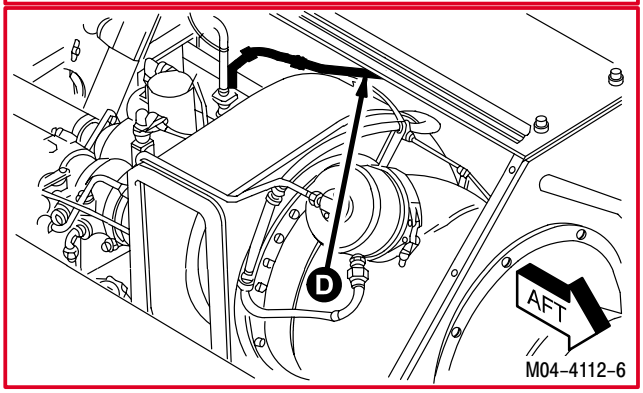
(2) Remove receptacles J22 (18) and J24 (19) and reposition away from firewall (2).

d. **Remove receptacle J214 (23) from firewall (2).**

(1) Remove four screws (24), eight washers (25), and four nuts (26).

(2) Remove receptacle J214 (23) and reposition away from firewall (2).

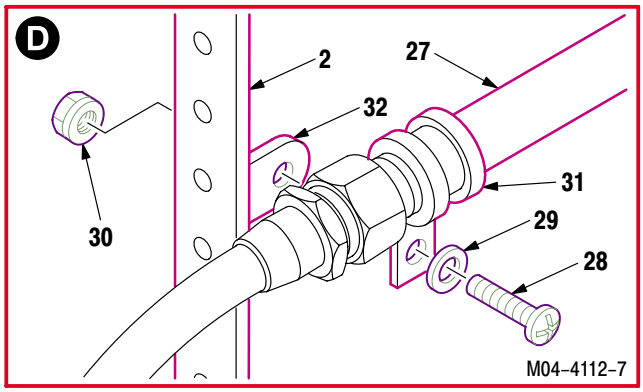




e. **Remove APU start motor return tube (27) from firewall (2).**

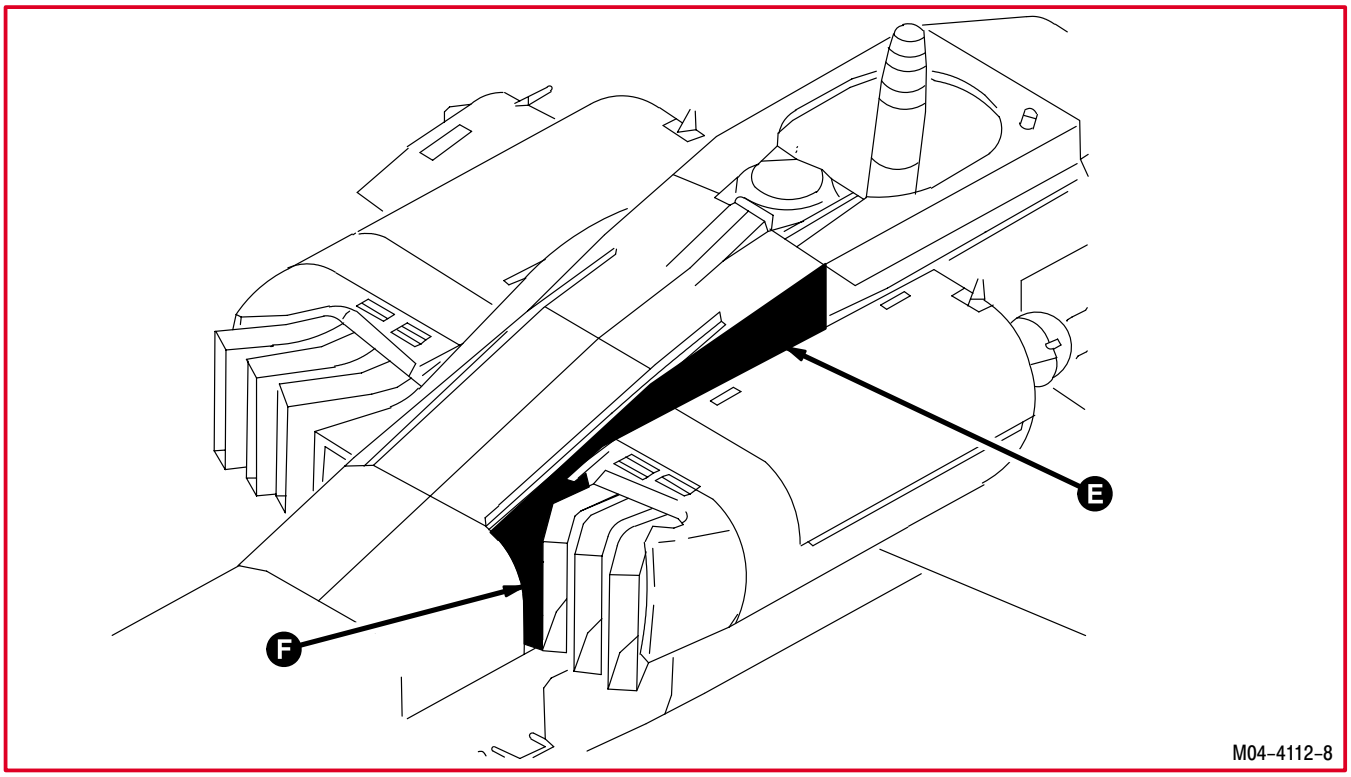
(1) Remove screw (28), washer (29), and nut (30) from clamp (31) and bracket (32).

(2) Remove tube (27) and reposition away from firewall (2).



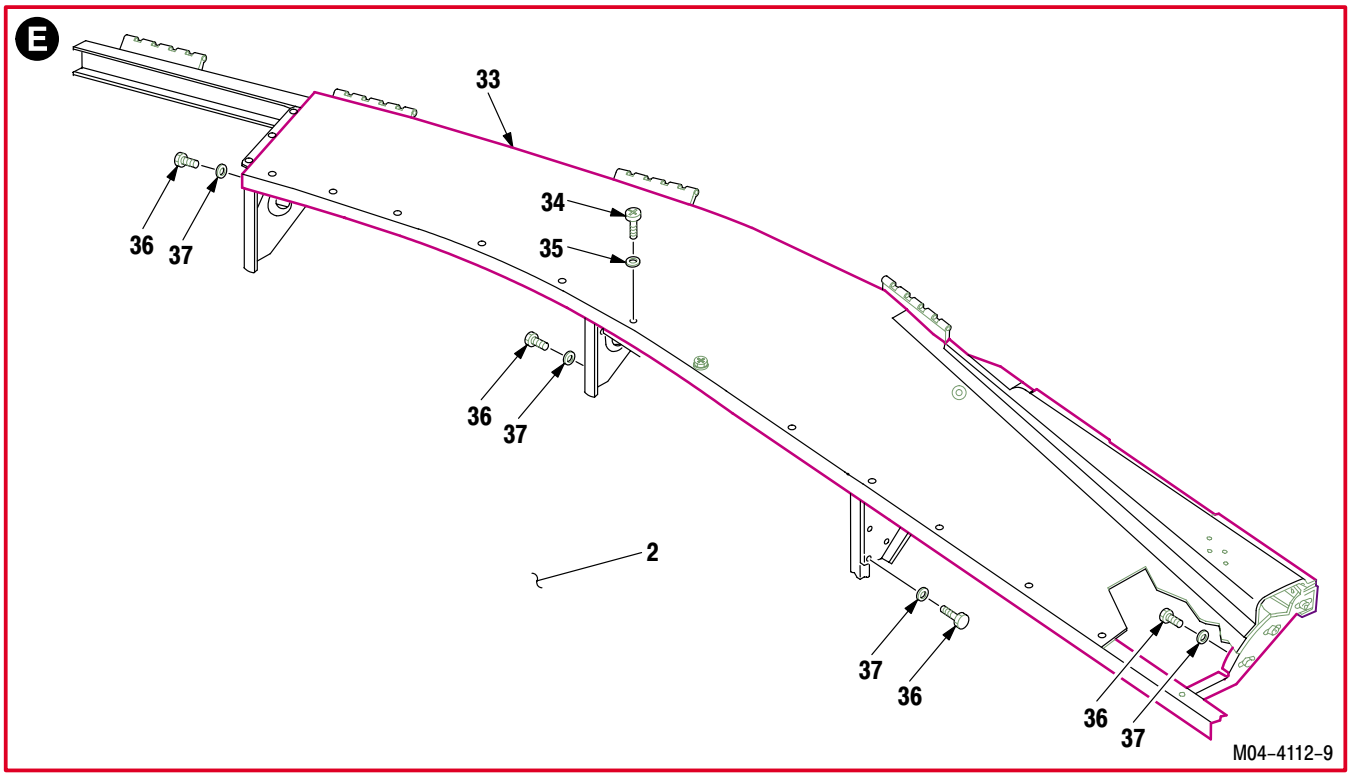
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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued



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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued



f. **Remove upper fuselage fairing (33) from firewall (2).**

(1) Remove 13 screws (34) and washers (35) from fairing (33).

(2) Remove 12 bolts (36) and washers (37) from fairing (33) (4 places).

(3) Remove fairing (33) and reposition away from firewall (2).

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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

NOTE

Six different type/size screws will be removed from RH fuselage fairing. Bag and tag screws and locations for ease of re-installation.

g. **Remove fuselage fairing (38) from fairing (33), deck (34), and strut (39).**

(1) Remove 30 screws (40) and washers (41) from fairing (38).

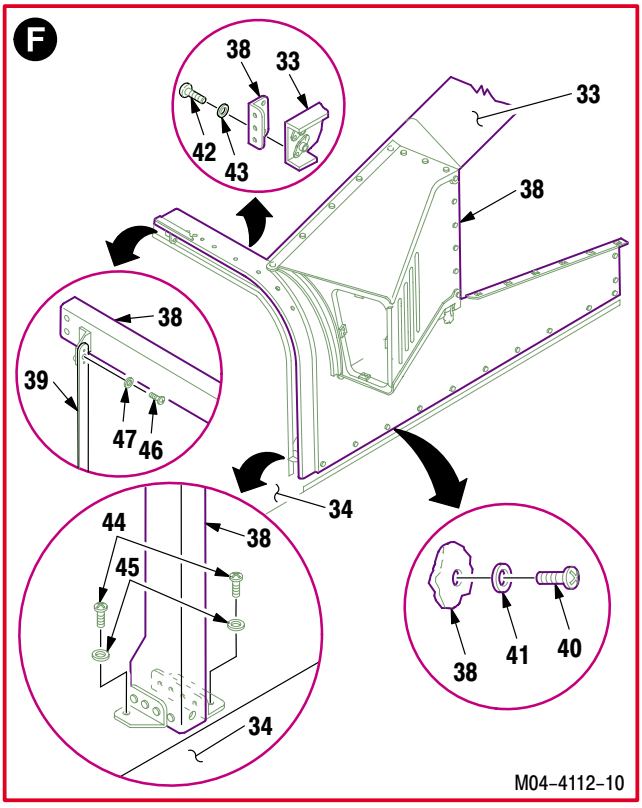
(2) Remove two screws (42) and washers (43) from fairing (38).

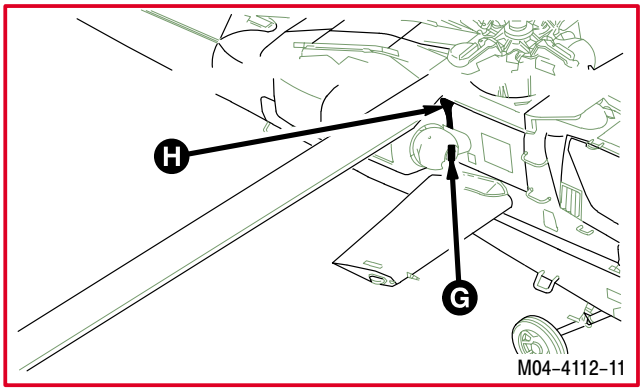
(3) Remove sealant from three screws (44).

(4) Remove three screws (44) and washers (45) from fairing (38).

(5) Remove screw (46) and washer (47) from fairing (38).

(6) Remove fairing (38) from fairing (33), deck (34), and strut (39).

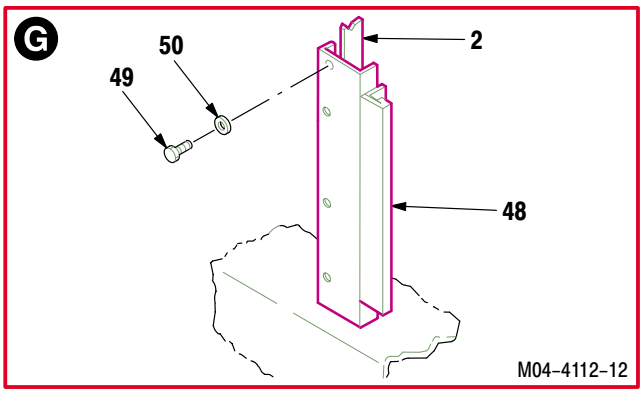




h. **Remove transmission access panel support (48) from firewall (2).**

(1) Remove bolt (49) and washer (50) from support (48).

(2) Remove support (48) from firewall (2).



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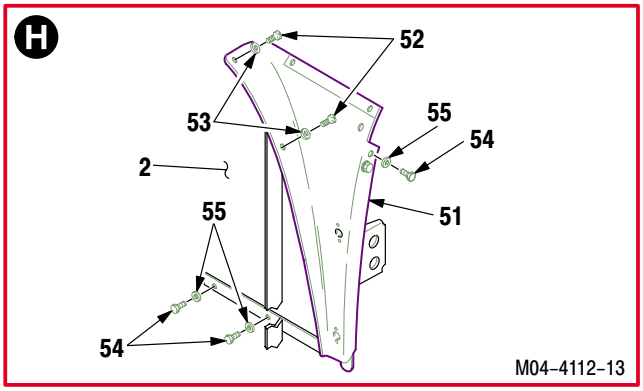
2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

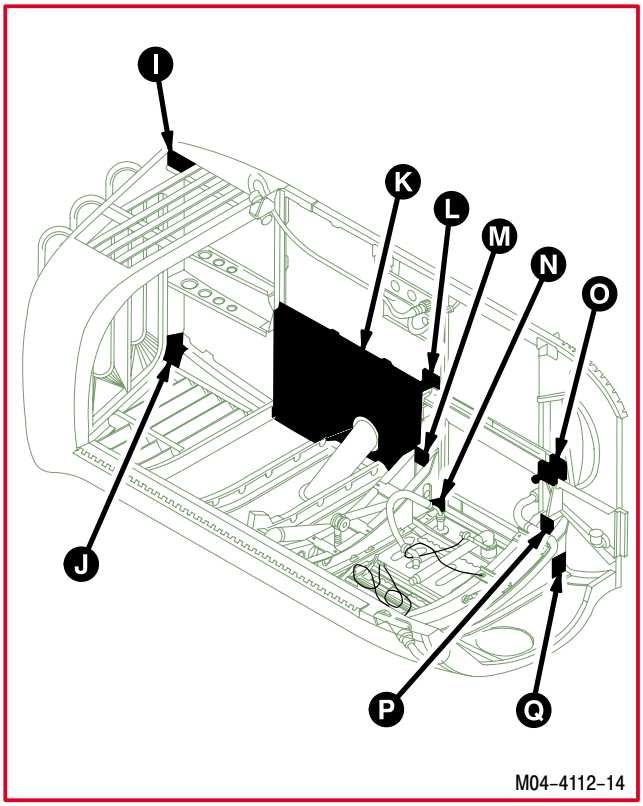
i. **Remove transmission access panel support fairing (51) from firewall (2).**

(1) Remove two screws (52) and washers (53) from fairing (51).

(2) Remove four bolts (54) and washers (55) from fairing (51).

(3) Remove fairing (51) from firewall (2).



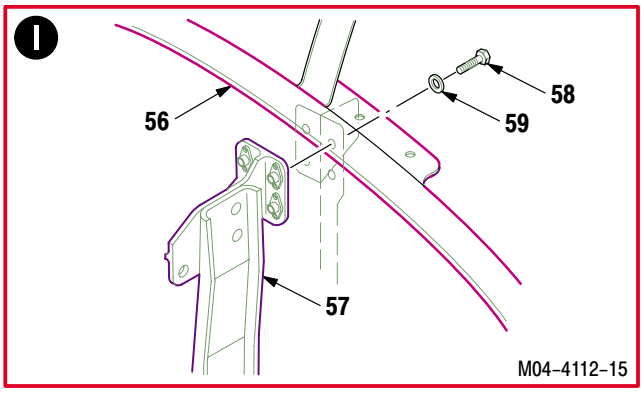


CAUTION

Ensure that all tools and personnel are removed from nacelle prior to removal.

j. **Remove nacelle (56) from top of post (57).**

(1) Remove four bolts (58) and washers (59) from top of post (57).

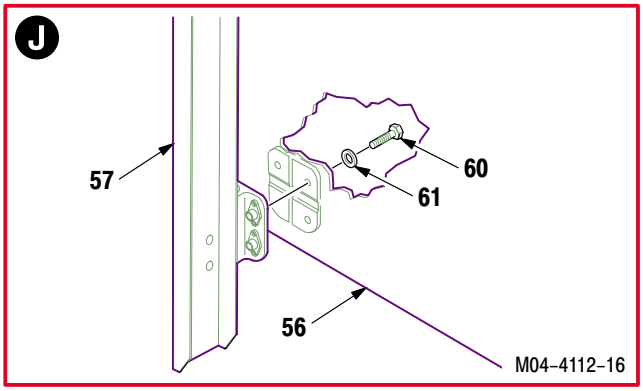


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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

k. **Remove nacelle (56) from post (57).**

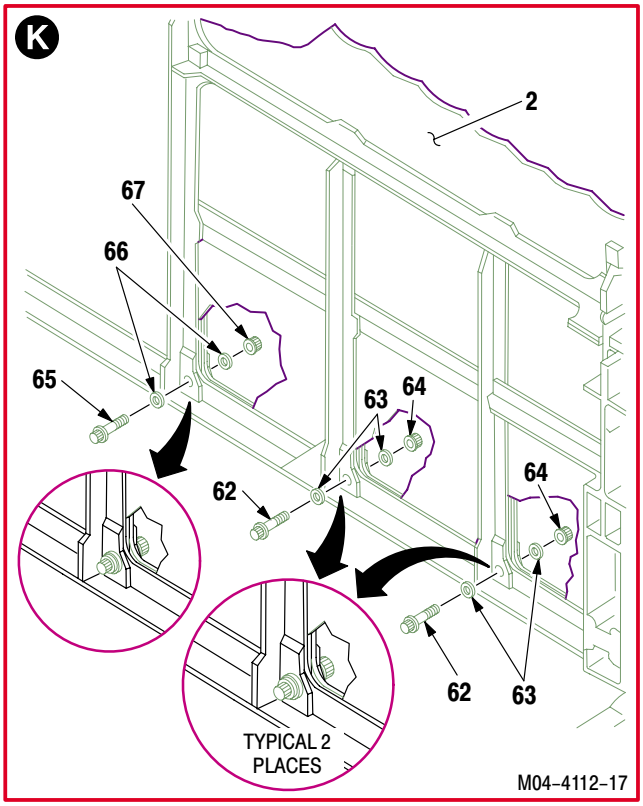
(1) Remove four bolts (60) and washers (61) from bottom of post (57).



l. **Remove two nacelle bolts (62) and bolt (65) from bottom of firewall (2).**

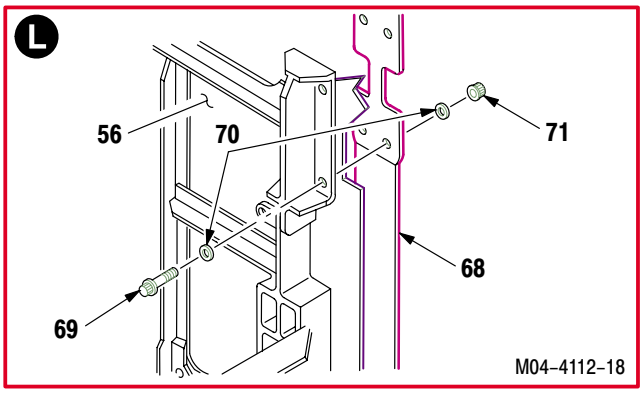
(1) Remove two bolts (62), four washers (63), and nuts (64) from bottom of firewall (2).

(2) Remove bolt (65), two washers (66), and nut (67) from bottom of firewall (2).



m. **Remove nacelle (56) from aft support (68).**

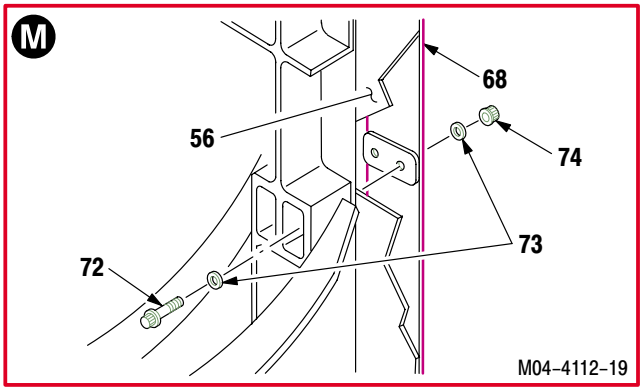
(1) Remove four bolts (69), eight washers (70), and four nuts (71) from top of support (68).



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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

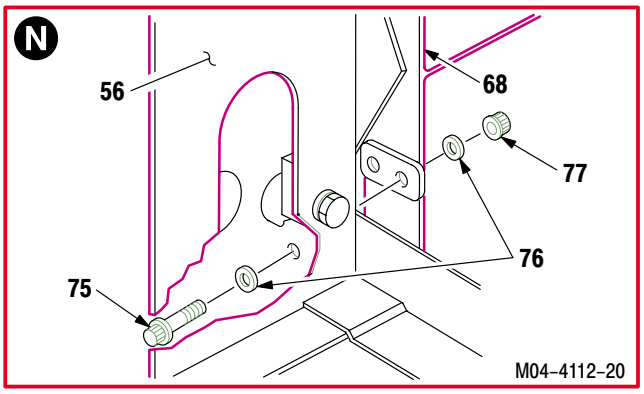
(2) Remove two bolts (72), four washers (73), and two nuts (74) from middle section of support (68).



(3) Remove two bolts (75), four washers (76), and two nuts (77) from bottom section of support (68).

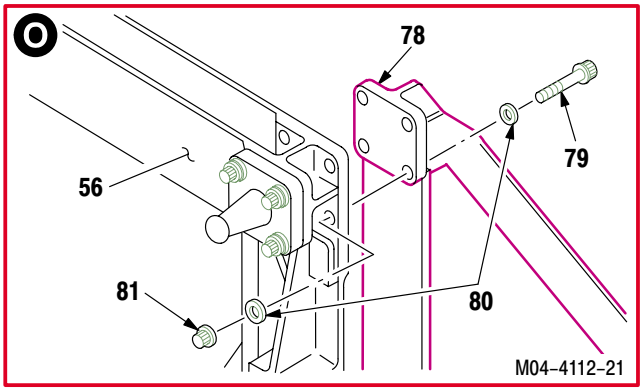
WARNING

Ensure personnel and all tools are removed from nacelle prior to removing attaching hardware. Failure to comply could result in serious injury.

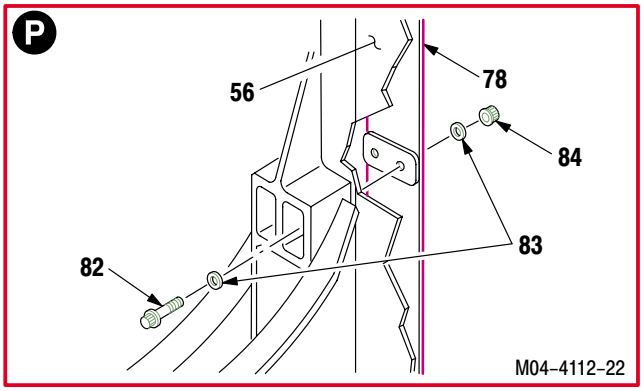


n. **Remove nacelle (56) from forward support (78).**

(1) Remove four bolts (79), eight washers (80), and nuts (81) from top of support (78).



(2) Remove two bolts (82), four washers (83), and two nuts (84) from middle section of support (78).



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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

(3) Remove two bolts (85), four washers (86), and two nuts (87) from bottom section of support (78).

(4) Remove nacelle (56) from supports (68) and (78).

2.134.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.134.5. Inspection

a. **Check nacelle for damage** (para 2.128)**.**

b. **Check nacelle and support mating surfaces for damaged EMI conductive coating.** Repair door and mating surface (para 2.34).

2.134.6. Installation

a. **Lift and aline nacelle (56) with supports (68) and (78).**

b. **Install nacelle (56) on support (78).** Torque bolts (79), (82), and (85) to **110 INCH-POUNDS**.

(1) Install four bolts (79) through eight washers (80), top of nacelle (56), and support (78).

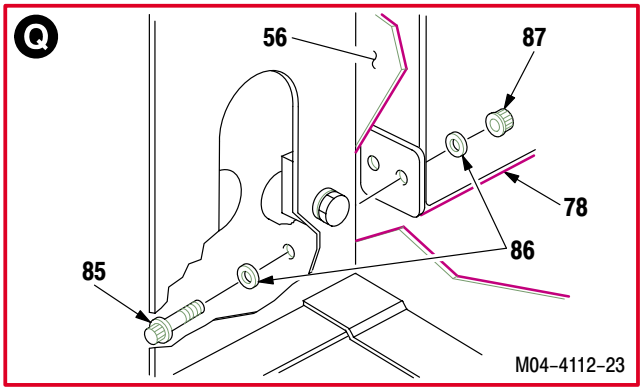
(2) Install four nuts (81).

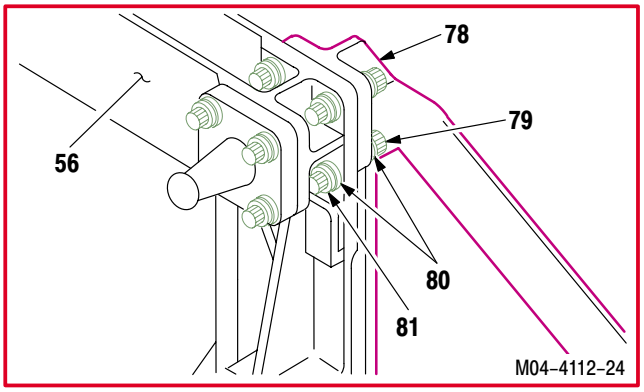
(3) Torque four bolts (79) to **110 INCH-POUNDS**. Use torque wrench.

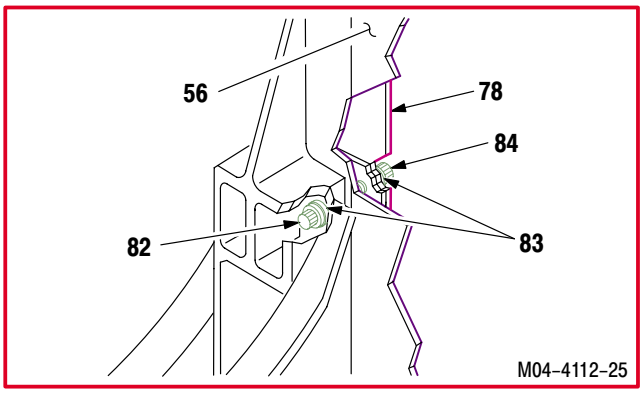
(4) Install two bolts (82) through four washers (83), middle section of nacelle (56), and support (78).

(5) Install two nuts (84).

(6) Torque two bolts (82) to **110 INCH-POUNDS**. Use torque wrench.







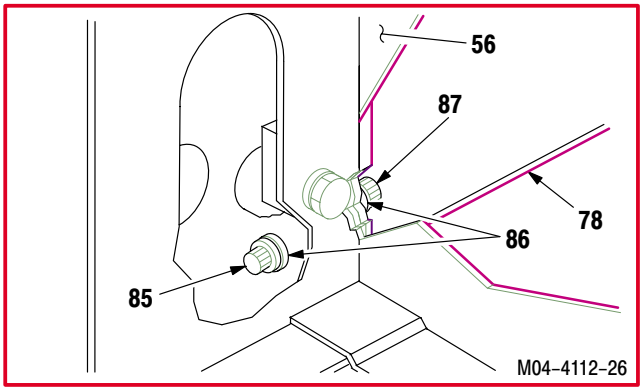
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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

(7) Install two bolts (85) through four washers (86), bottom section of nacelle (56), and support (78).

(8) Install two nuts (87).

(9) Torque two bolts (85) to **110 INCH-POUNDS**. Use torque wrench.



c. **Install nacelle (56) on support (68).** Torque bolts (69), (72), and (75) to **110 INCH-POUNDS**.

(1) Install four bolts (69) through eight washers (70), top of nacelle (56), and support (68).

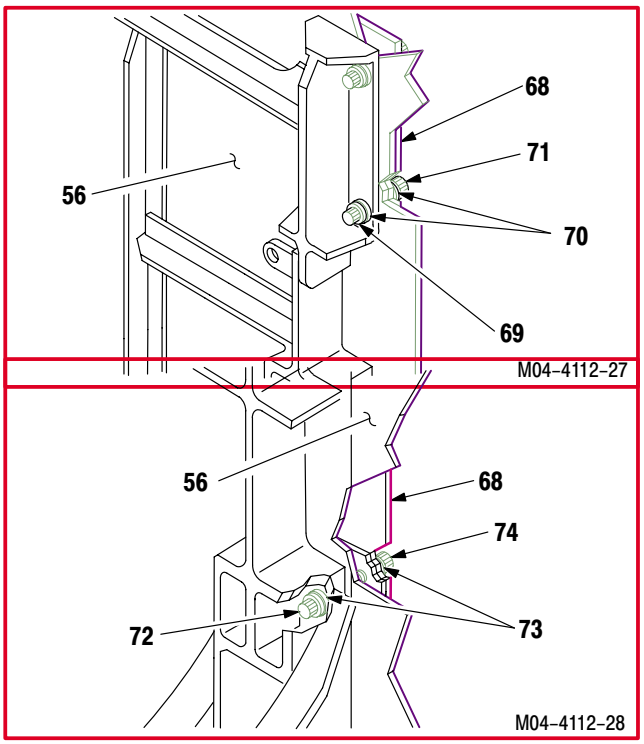
(2) Install four nuts (71).

(3) Torque four bolts (69) to **110 INCH-POUNDS**. Use torque wrench.

(4) Install two bolts (72) and four washers (73) through middle section of nacelle (56) and support (68).

(5) Install two nuts (74).

(6) Torque two bolts (72) to **110 INCH-POUNDS**. Use torque wrench.



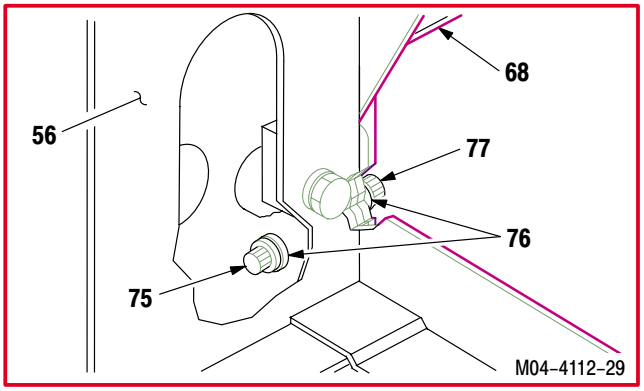
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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

(7) Install two bolts (75) through four washers (76), bottom section of nacelle (56), and support (68).

(8) Install two nuts (77).

(9) Torque two bolts (75) to **110 INCH-POUNDS**. Use torque wrench.



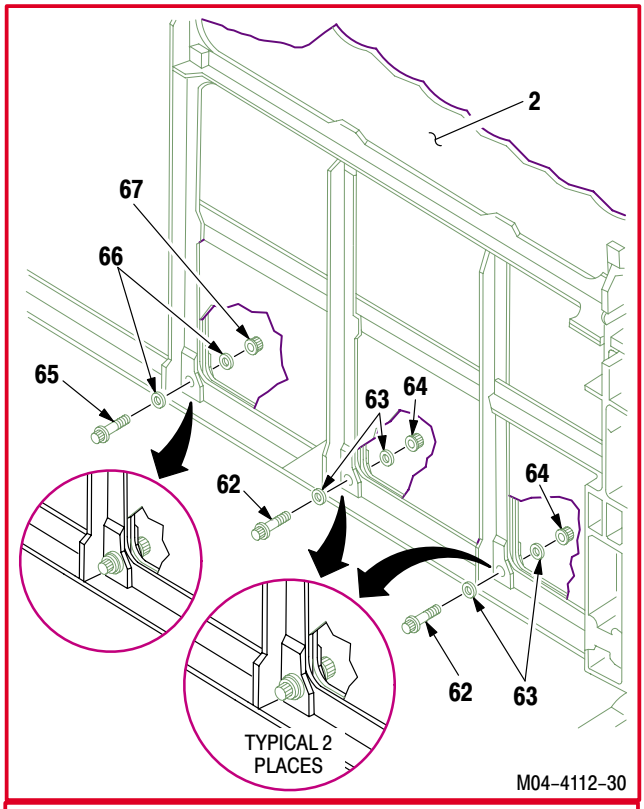
d. **Install two bolts (62) and bolt (65) on bottom firewall (2).** Torque two bolts (62) to **110 INCH-POUNDS** and bolt (65) to **225 INCH-POUNDS**.

(1) Install two bolts (62), four washers (63), and two nuts (64) on firewall (2).

(2) Torque two bolts (62) to **110 INCH-POUNDS**. Use torque wrench.

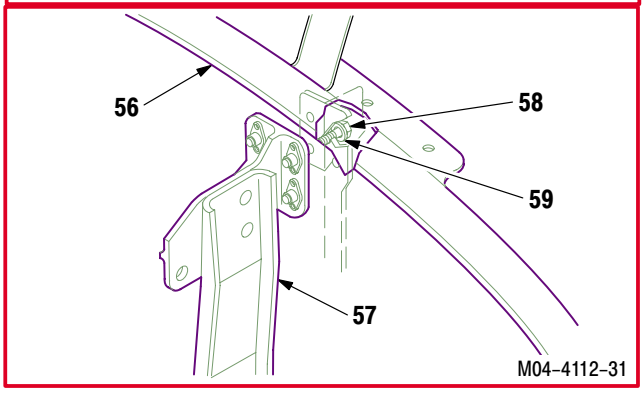
(3) Install bolt (65), two washers (66), and nut (67) on firewall (2).

(4) Torque bolt (65) to **225 INCH-POUNDS**. Use torque wrench.



e. **Install nacelle (56) on post (57).**

(1) Install four bolts (58) through washers (59), top of nacelle (56), and post (57).

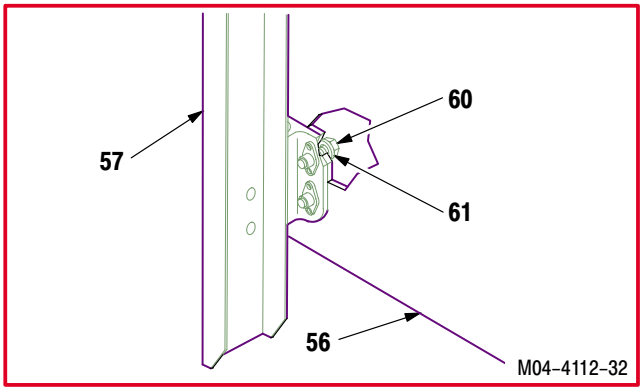


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2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

(2) Install four bolts (60) through washers (61), bottom of nacelle (56), and post (57).

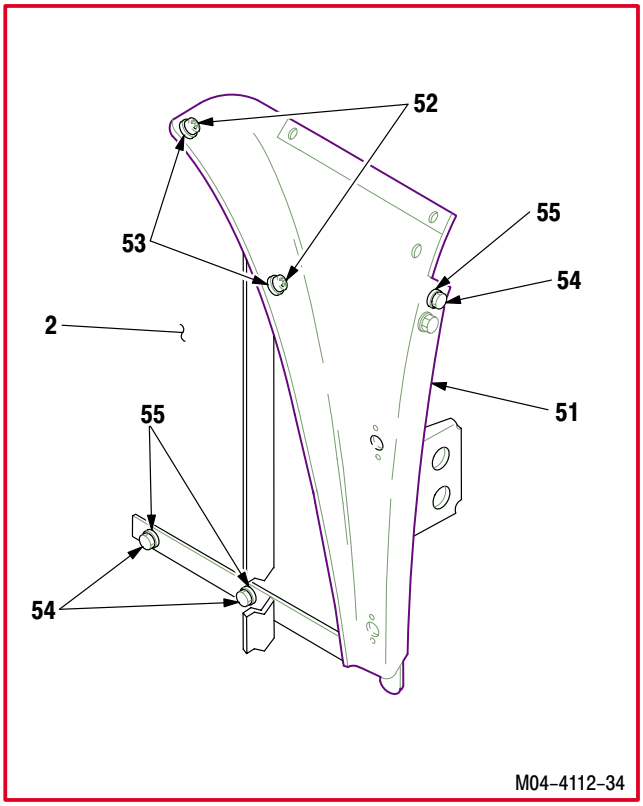
f. **Install work platform door** (para 2.137)**.**



g. **Install fairing (51) on firewall (2).**

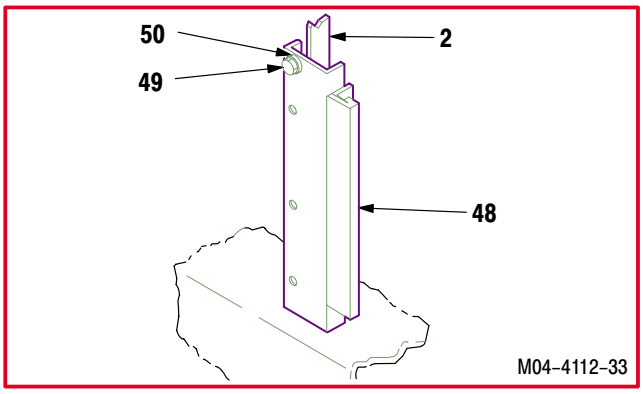
(1) Install two screws (52) through washers (53) and fairing (51) on firewall (2).

(2) Install four bolts (54) through washers (55) and fairing (51) on firewall (2).



h. **Install support (48) on firewall (2).**

(1) Install bolt (49) through washer (50) and support (48) on firewall (2).



GO TO NEXT PAGE

2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

NOTE

Ensure to install the different type/size screws in each respective location.

i. **Install fairing (38) on fairing (33), deck (34), and strut (39).**

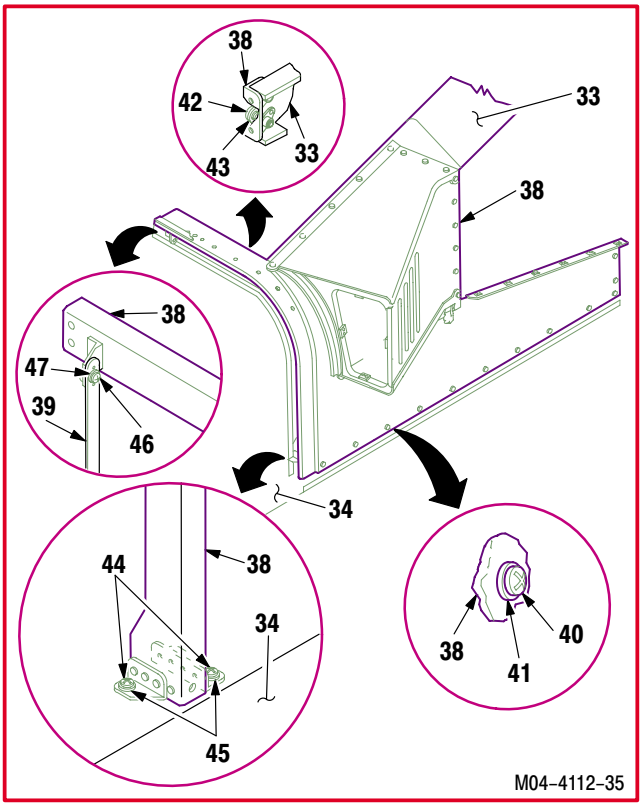
(1) Install 30 screws (40) and washers (41) on fairing (38).

(2) Install two screws (42) and washers (43) to install fairing (38) on fairing (33).

(3) Install three screws (44) and washers (45) to install fairing (38) on deck (34).

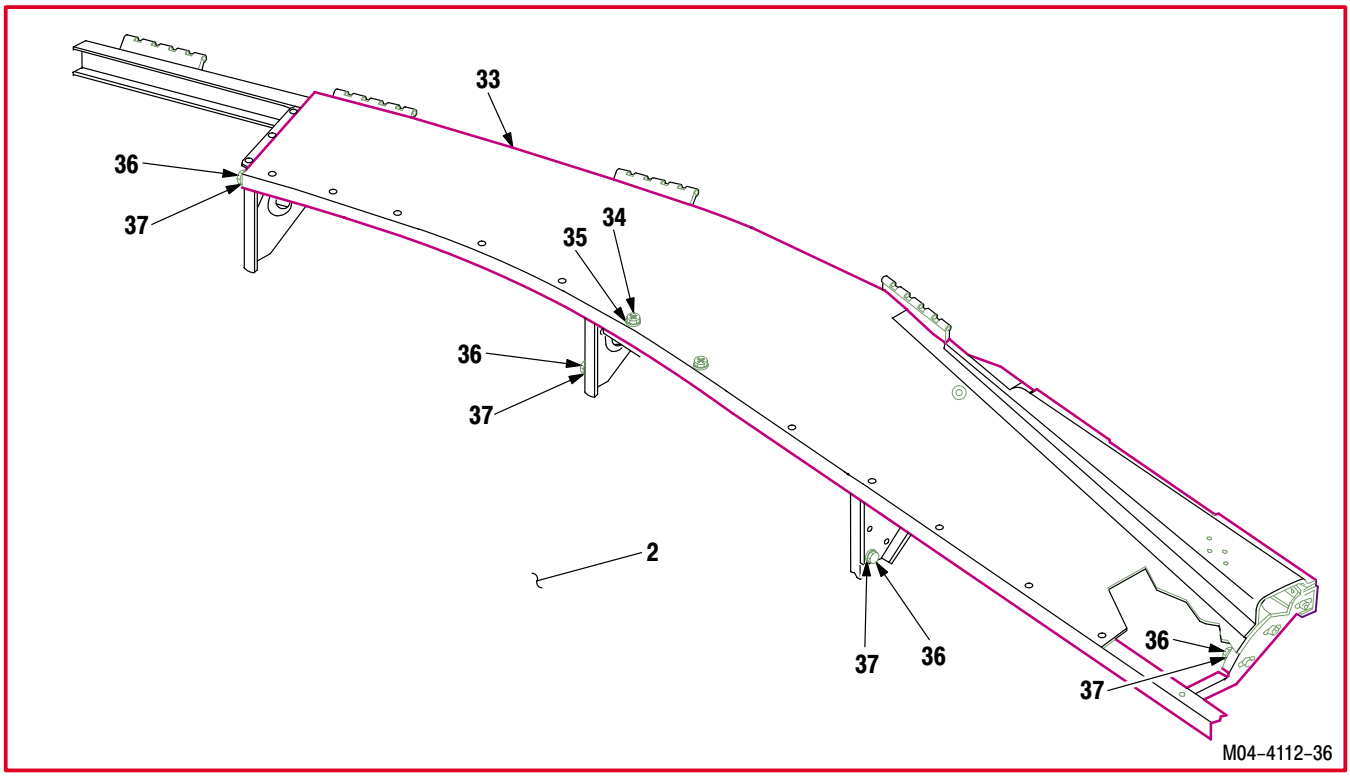
(4) Install screw (46) and washer (47) to install fairing (38) on strut (39).

(5) Seal heads of three screws (44). Use sealing compound (item 174, App F) and brush (item 34, App F).



GO TO NEXT PAGE

2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued



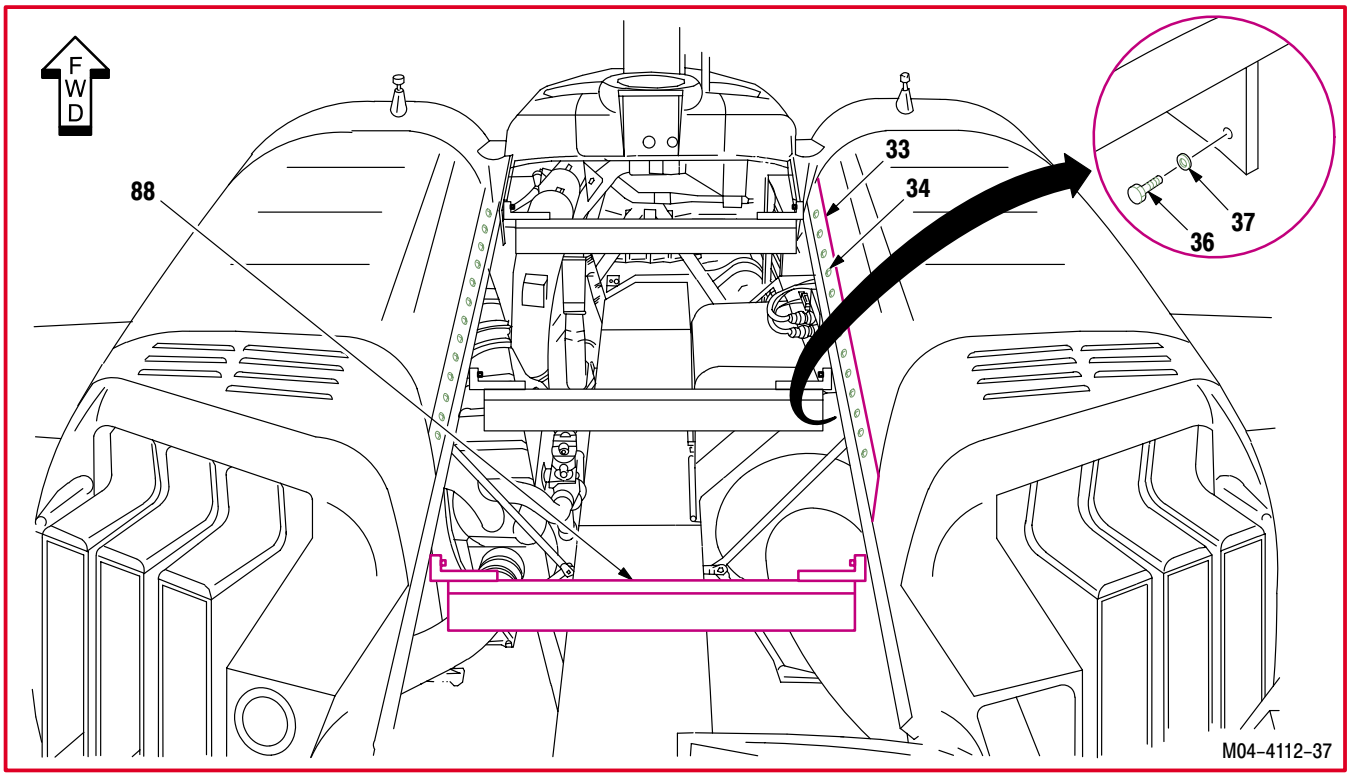
j. **Install fairing (33) on firewall (2).**

(1) Loosely install 13 screws (34) and washers (35) in fairing (33).

(2) Loosely install 12 bolts (36) and washers (37) through fairing (33) in firewall (2) (4 places).

GO TO NEXT PAGE

2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued



k. **Adjust fairing (33).**

(1) Install three spreader bars (88) between fairings (33) at F.S. 247.0, F.S. 272.0, and F.S. 298.0. Use spreader bar.

(2) Secure each end of spreader bars with hardware provided.

(3) Tighten 13 screws (34) and 12 bolts (36) on fairing (33).

(4) Remove attaching hardware at each end of spreader bars (88).

(5) Remove spreader bars (88) from fairing (33).

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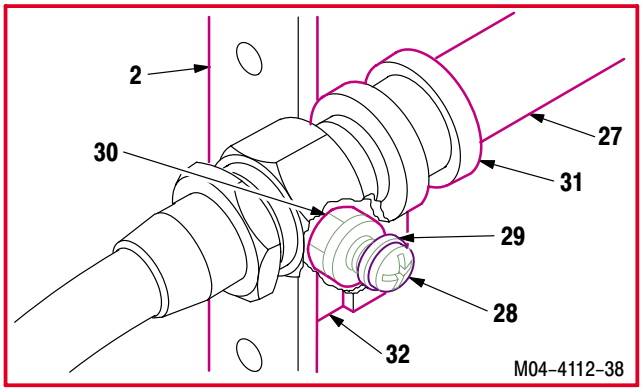
2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

l. **Install tube (27) on firewall (2).**

(1) Aline tube (27) and clamp (31) with bracket (32).

(2) Install screw (28) through washer (29), clamp (31), and bracket (32) on firewall (2).

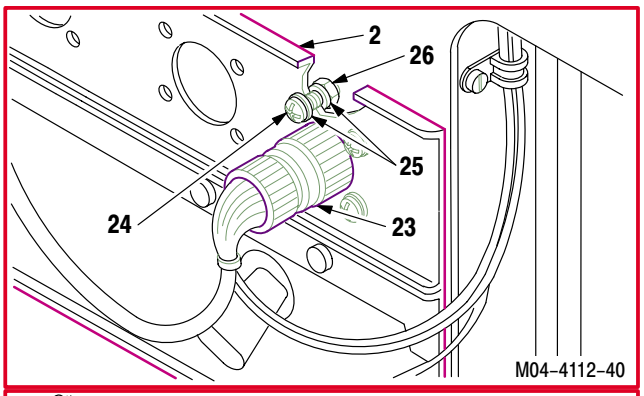
(3) Install nut (30).



m. **Install receptacle J214 (23) on firewall (2).**

(1) Install four screws (24) through eight washers (25) and receptacle (23) on firewall (2).

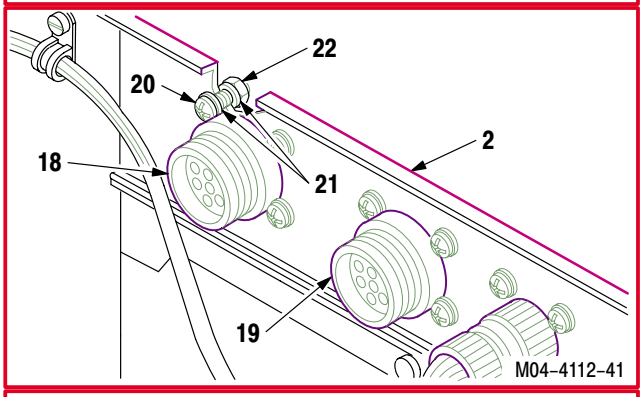
(2) Install four nuts (26).



n. **Install receptacles J22 (18) and J24 (19) on firewall (2).**

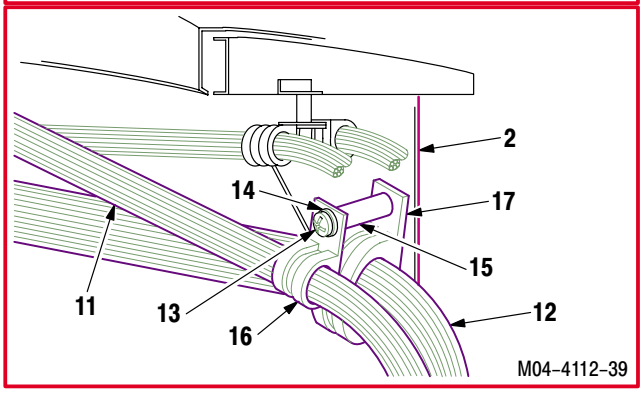
(1) Install eight screws (20) through washers (21) and receptacles (18) and (19) on firewall (2).

(2) Install eight nuts (22).



o. **Install wire harnesses W108 (11) and W266 (12) on firewall (2).**

(1) Install screw (13) through washer (14), clamp (16), spacer (15), and clamp (17) on firewall (2).



GO TO NEXT PAGE

2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

p. **Install wire harness W102 (1) on firewall (2).**

(1) Aline wire harness W102 (1) with firewall (2).

(2) Install clamps (5) on wire harness W102 (1).

(3) Install two screws (3) through washers (4) and clamps (5) on firewall (2).

(4) Install two tiedown straps (6) on wire harness (1) and mounting base (7) on firewall (2).

(5) Install screw (8), two washers (9), and nut (10) in firewall (2).

q. **If nacelle is being replaced, go to step s.**

r. **If nacelle is being reinstalled, go to step z.**

s. **Adjust nacelle rod (89) and link (90).**

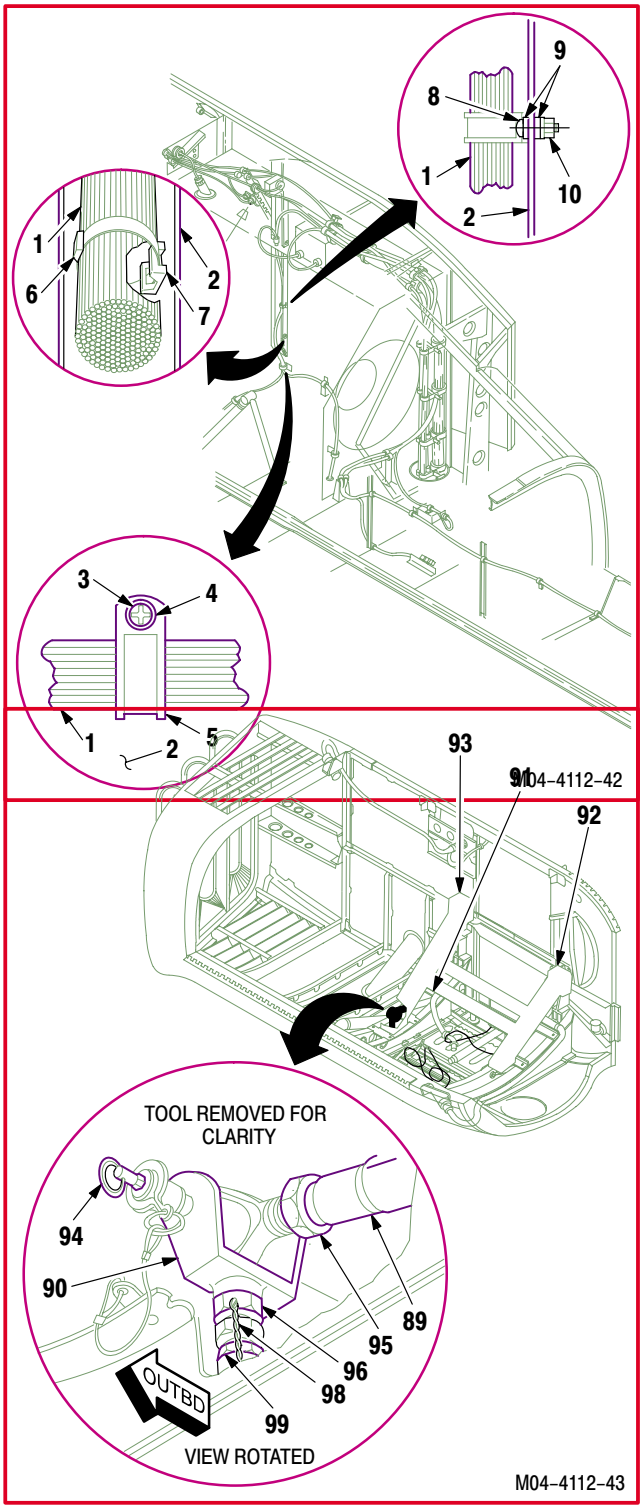
(1) Install adjusting tool (91) on forward engine mount (92) and aft engine mount (93). Use adjusting tool.

(2) Adjust rod (89) and link (90) by lengthening or shortening until ball support pin (94) can be freely inserted through tool (91), rod (89), and link (90).

t. **Tighten nut (95) to 100 INCH-POUNDS.** Use torque wrench.

u. **Tighten nut (96) to 35 INCH-POUNDS.** Use torque wrench.

v. **Lockwire nut (96) to land (98) and nut (99).** Use wire (item 226, App F).



GO TO NEXT PAGE

2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

w. **Lockwire nut (95) to key washer (97).** Use wire (item 226, App F).

x. **Seal rod (89).** Use sealing compound (item 174, App F) and brush (item 34, App F).

y. **Install No. 2 engine fire extinguisher fitting** (para 12.44)**.**

z. **Install No. 2 engine louvers** (para 4.61)**.**

aa. **Install No. 2 engine crossfeed/shutoff valve** (para 10.100)**.**

ab. **Install stabilator air speed transducer** (para 9.148)**.**

ac. **Install right nacelle radiation shields** (para 4.95)**.**

ad. **Install No. 2 engine** (para 4.52)**.**

ae. **Install No. 2 engine power available spindle aft cable** (para 4.174)**.**

af. **Install No. 2 engine load demand spindle aft cable** (para 4.179)**.**

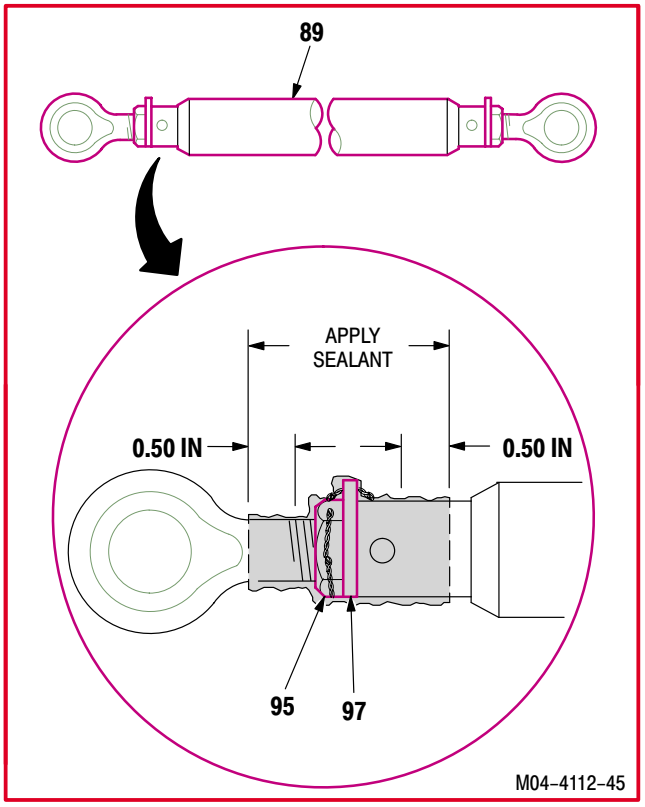
ag. **Install No. 2 engine air start line** (para 7.145)**.**

ah. **Install engine nacelle fairing** (para 2.135)**.**

ai. **Install APU** (para 15.3)**.**

aj. **Install APU drain hoses** (para 15.38)**.**

ak. **Install APU plenum drain hose** (para 15.37)**.**



GO TO NEXT PAGE

2.134. NO. 2 ENGINE NACELLE REMOVAL/INSTALLATION – continued

al. **Install secondary nozzle structural support** (para 4.123)**.**

am. **Install No. 2 engine outboard secondary nozzle** (para 4.120)**.**

an. **Install No. 2 engine inboard secondary nozzle** (para 4.121)**.**

ao. **Install No. 2 engine center secondary nozzle** (para 4.122)**.**

ap. **Install access panels L200, R200, L230, and R230** (para 2.2)**.**

aq. **Install access doors T250L and T250R** (para 2.125)**.**

ar. **Install upper fuselage doors T290L and T290R** (para 2.126)**.**

END OF TASK

2.135. ENGINE NACELLE FAIRING REMOVAL/INSTALLATION

2.135.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.135.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

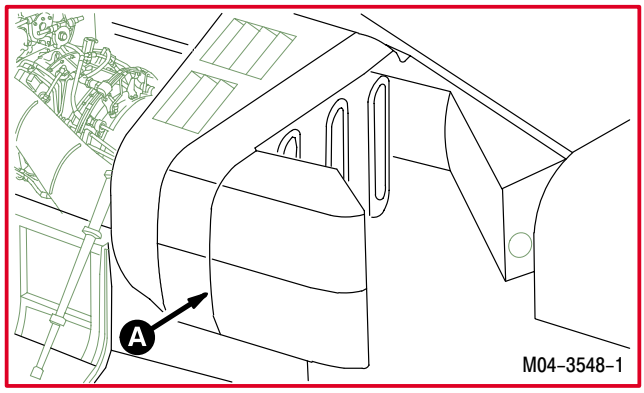
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
4.120	No. 1 or No. 2 engine outboard secondary nozzle removed
4.121	No. 1 or No. 2 engine inboard secondary nozzle removed
4.122	No. 1 or No. 2 engine center secondary nozzle removed
4.123	No. 1 or No. 2 engine secondary nozzle structural support removed
4.124	No. 1 or No. 2 engine secondary nozzle upper support strut and clevis removed

NOTE

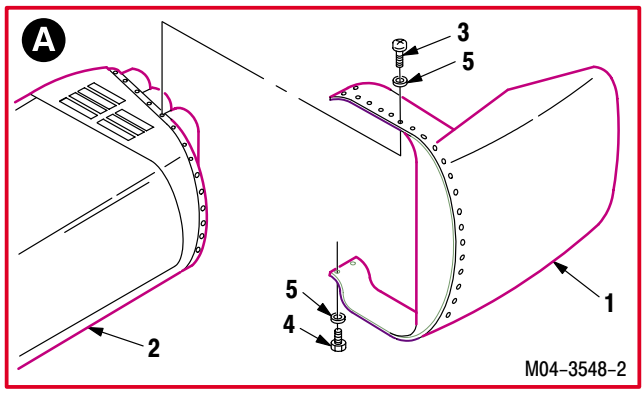
This task is typical for left and/or right nacelle fairing.



2.135.3. Removal

a. **Remove fairing (1) from engine nacelle (2).**

(1) Remove 26 screws (3), 2 screws (4), 28 washers (5), and fairing (1) from nacelle (2).



2.135.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

GO TO NEXT PAGE

2.135. ENGINE NACELLE FAIRING REMOVAL/INSTALLATION – continued

2.135.5. Inspection

a. **Check fairing for cracks and corrosion** (para 2.128)**.**

b. **Check mounting surface for wear caused by movement** (para 2.11)**.**

c. **Check for missing, loose, or damaged anti-abrasion tape that no longer protects surfaces from abrasion** (para 2.30)**.**

2.135.6. Installation

a. **Install fairing (1) on nacelle (2).**

(1) Install 26 screws (3), 2 screws (4), and 28 washers (5) through fairing (1) in nacelle (2).

b. **Inspect (QA).**

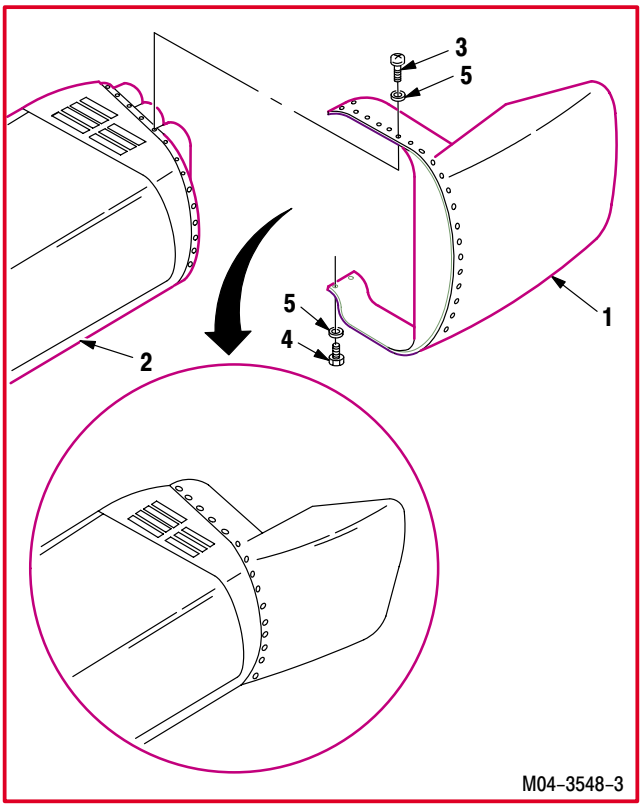
c. **Install No. 1 or No. 2 engine secondary nozzle upper support strut and clevis** (para 4.124)**.**

d. **Install No. 1 or No. 2 engine secondary nozzle structural support** (para 4.123)**.**

e. **Install No. 1 or No. 2 engine center secondary nozzle** (para 4.122)**.**

f. **Install No. 1 or No. 2 engine inboard secondary nozzle** (para 4.121)**.**

g. **Install No. 1 or No. 2 engine outboard secondary nozzle** (para 4.120)**.**



END OF TASK

2.136. ENGINE NACELLE FAIRING ASSEMBLY EYE BOLT REPLACEMENT

2.136.1. Description

This task covers: Removal. Cleaning. Inspection. Installation. Adjustment.

2.136.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

- This task is typical for left and/or right engine nacelle fairing.
- Eye bolt is accessible at outboard secondary nozzle.

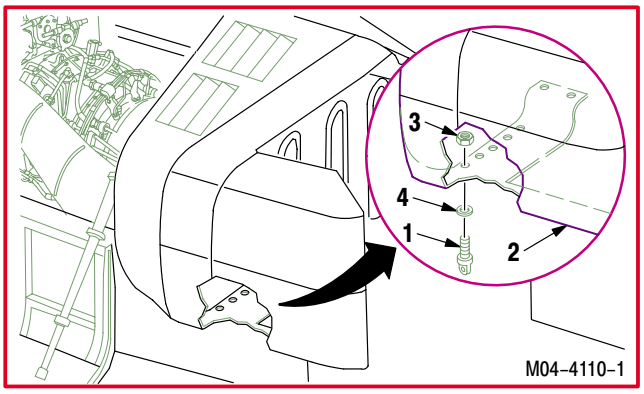
2.136.3. Removal

a. **Remove eye bolt (1) from nacelle fairing (2).**

(1) Hold eye bolt (1). Remove nut (3).

(2) Remove eye bolt (1) and washer (4) from fairing (2).

(3) Discard eye bolt (1).



2.136.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.136.5. Inspection

a. **Check fairing for cracks and corrosion** (para 2.128)**.**

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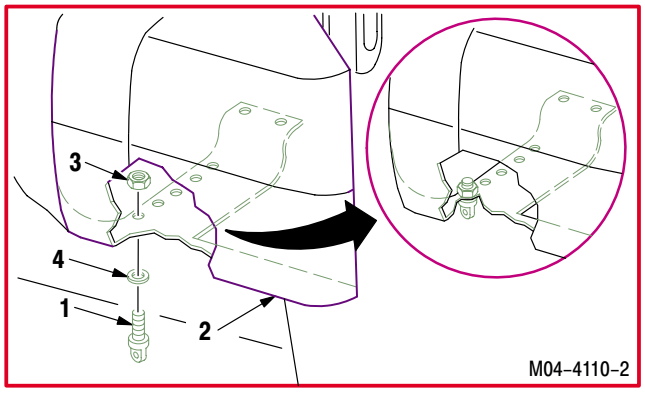
2.136. ENGINE NACELLE FAIRING ASSEMBLY EYE BOLT REPLACEMENT – continued

2.136.6. Installation

a. **Install new eye bolt (1) on fairing (2).**

(1) Install eye bolt (1) and washer (4) through fairing (2).

(2) Hold eye bolt (1). Install nut (3) loosely.



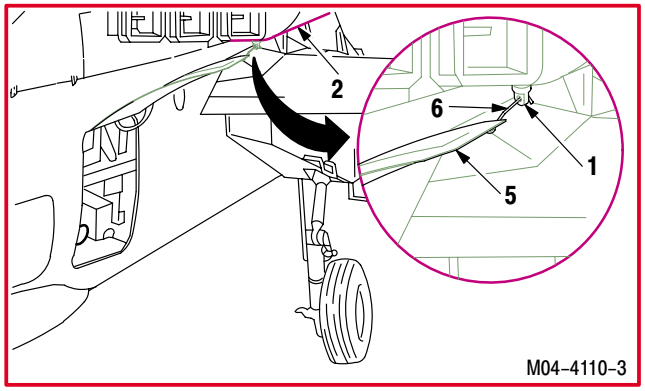
2.136.7. Adjustment

a. **Adjust eye bolt (1) to attach access doors L295 and R295 (5).**

(1) adjust eye bolt (1) to allow installation of latch (6) through eye bolt (1). Provide an **0.10 INCH** minimum gap between fairing (2) and edge of door (5) for easy operation of latch (6).

(2) Hold eye bolt (1). Tighten nut (3).

b. **Inspect (QA).**



END OF TASK

2.137. WORK PLATFORM DOOR REMOVAL/INSTALLATION

2.137.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.137.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23

Materials/Parts:

Cotter pin

Personnel Required:

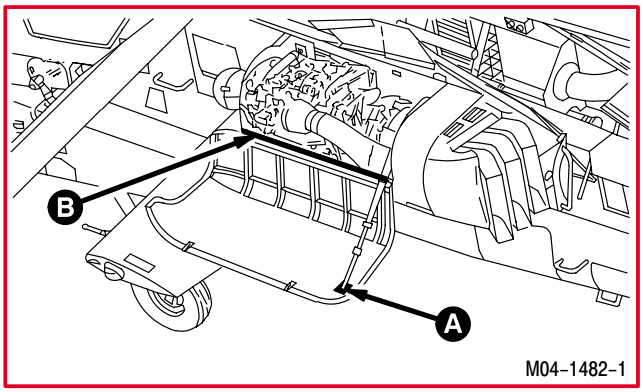
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN1 or RN1 opened

WARNING

Weight on work platform is limited to 400 POUNDS. Excess weight on platform can cause damage to platform and/or strut and injury to personnel. If injury occurs, seek medical help.



NOTE

This task is typical for left and/or right work platform doors.

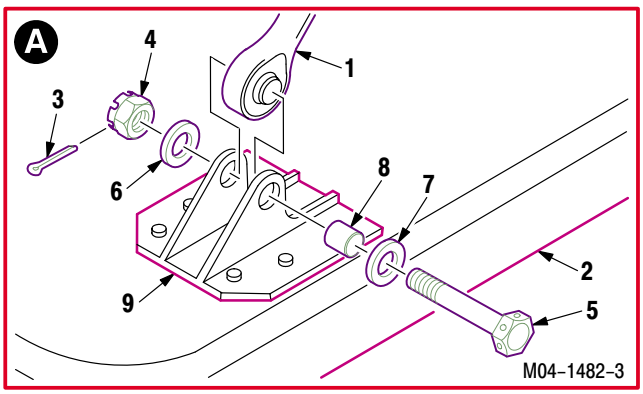
2.137.3. Removal

a. **Remove structural support strut (1) from work platform door (2).**

(1) Remove and discard cotter pin (3) from nut (4).

(2) Hold close tolerance bolt (5). Remove nut (4) and washer (6).

(3) Remove bolt (5), washer (7), and bushing (8) from door bracket (9).



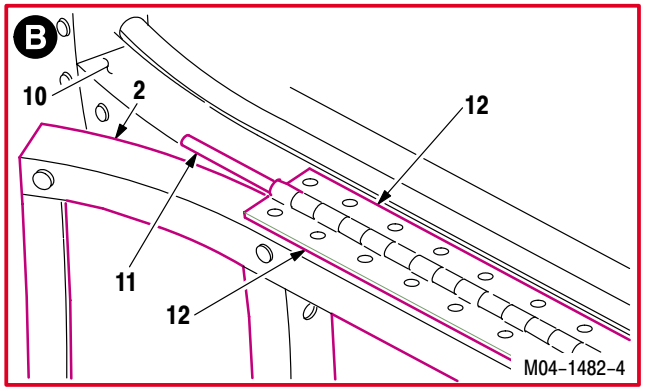
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2.137. WORK PLATFORM DOOR REMOVAL/INSTALLATION – continued

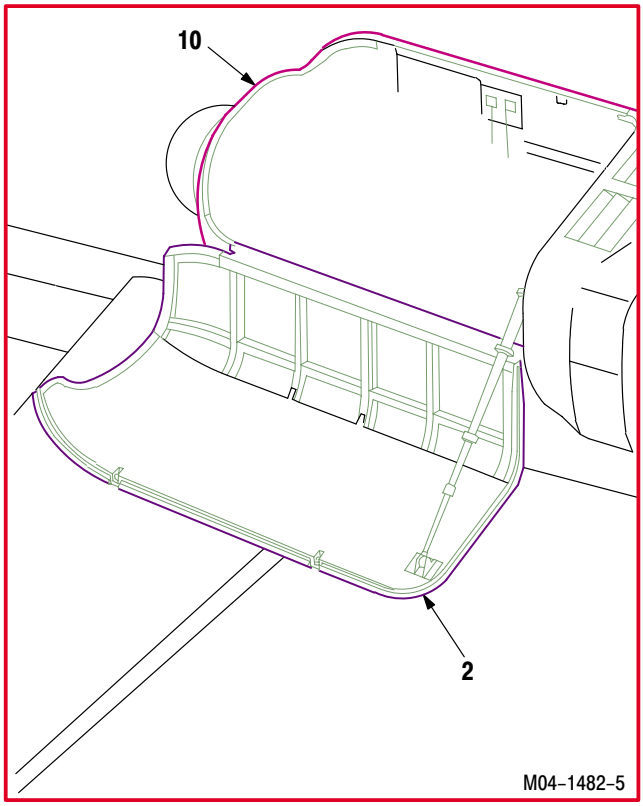
b. **Remove door (2) from engine nacelle (10).**

(1) One person support door (2) during removal of hinge pin (11).

(2) Rotate pin (11) while removing from hinge halves (12) (TM 1-1500-204-23).



(3) Remove door (2) from nacelle (10).



2.137.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.137.5. Inspection

a. **Check hinge halves for damage** (TM 1-1500-204-23)**.**

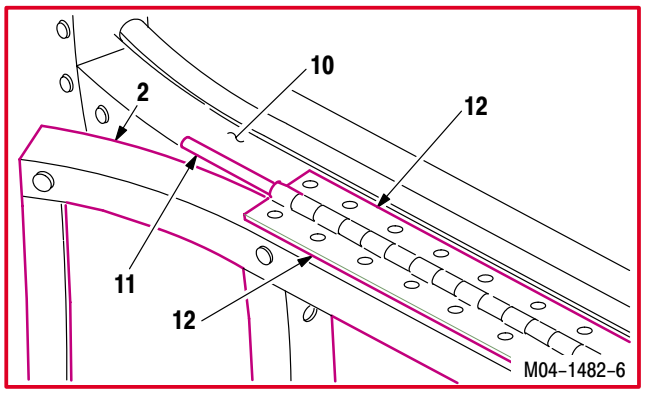
b. **Check door for cracks and corrosion** (para 2.128)**.**

2.137.6. Installation

a. **Install door (2) on nacelle (10).**

(1) One person position and support door (2) during installation of pin (11).

(2) Rotate and install pin (11) in hinge halves (12) (TM 1-1500-204-23).



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2.137. WORK PLATFORM DOOR REMOVAL/INSTALLATION – continued

b. **Install strut (1) in door bracket (9).**

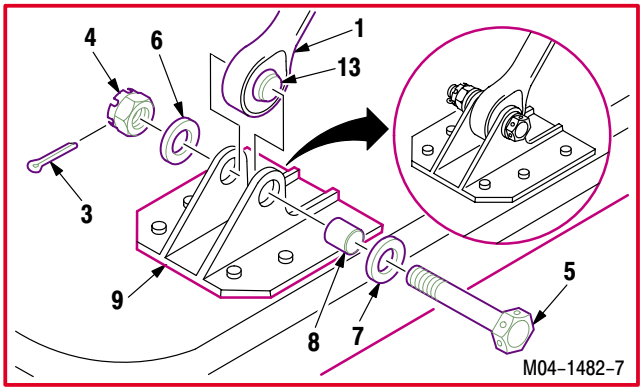
(1) Position bearing (13) in bracket (9).

(2) Install bushing (8) in bracket (9) and through bearing (13).

(3) Install bolt (4) through washer (7), bracket (9), and bushing (8).

(4) Hold bolt (4). Install washer (6) and nut (5).

(5) Install new cotter pin (3).



c. **Inspect (QA).**

d. **Secure access doors LN1 or RN1** (para 2.2)**.**

END OF TASK

2.138. WORK PLATFORM DOOR STRUCTURAL SUPPORT STRUT REMOVAL/INSTALLATION

2.138.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.138.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

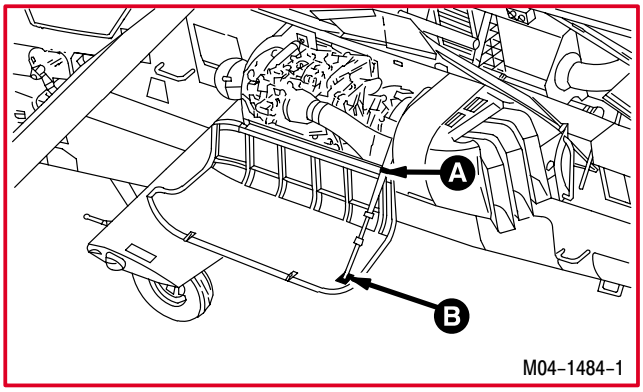
Ref	Condition
1.57	Helicopter safed
2.2	Access door LN1 or RN1 opened

Materials/Parts:

Cotter pin (2)

WARNING

Weight on work platform is limited to 400 POUNDS. Excess weight on platform can cause damage to platform and/or strut and injury to personnel. If injury occurs, seek medical help.



NOTE

This task is typical for left and/or right structural support struts, except as noted.

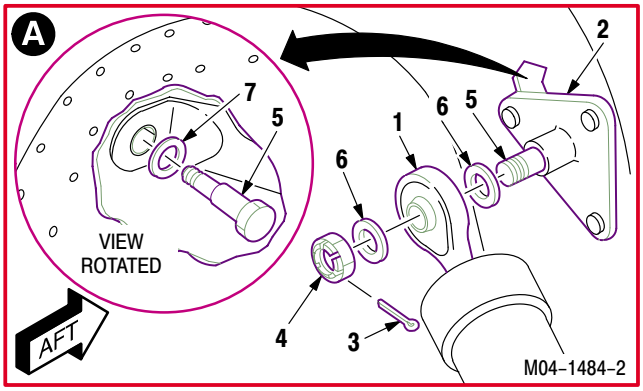
2.138.3. Removal

a. **Remove structural support strut (1) from nacelle bracket (2).**

(1) Remove and discard cotter pin (3) from nut (4).

(2) Hold bolt (5). Remove nut (4), two washers (6), and strut (1).

(3) Remove bolt (5) and washer (7) from bracket (2).



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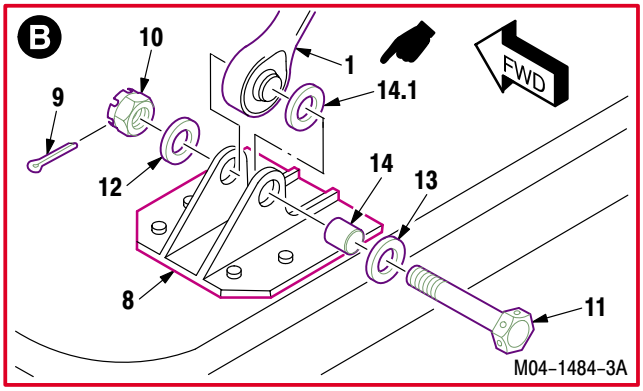
2.138. WORK PLATFORM DOOR STRUCTURAL SUPPORT STRUT REMOVAL/INSTALLATION – continued

b. **Remove strut (1) from door bracket (8).**

(1) Remove and discard cotter pin (9) from nut (10).

(2) Hold bolt (11). Remove nut (10) and washer (12).

(3) Remove bolt (11), washer (13), sleeve bushing (14), and washer (14.1) (left hand nacelle only).



2.138.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.138.5. Inspection

a. **Check door and brackets for cracks and corrosion** (para 2.128)**.**

b. **Check for oil leakage from strut.** None allowed.

c. **Check for strut smooth operation until dampening action at end of cycle.**

(1) Hesitation or sticking is cause for replacement. Dents and scratches are allowable if action is not impeded.

2.138.6. Installation

a. **Install strut (1) on bracket (8).**

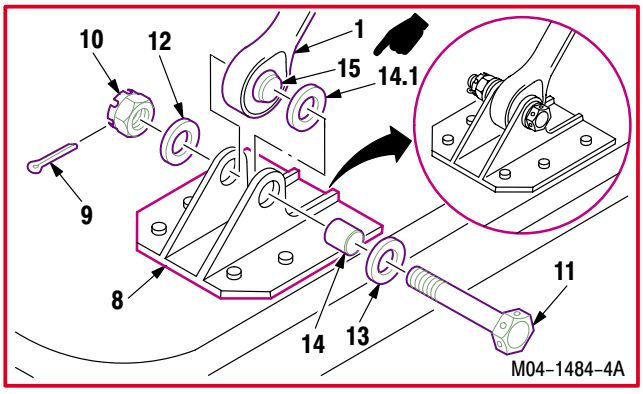
(1) Aline strut (1) with bracket (8).

(2) Install bushing (14) through bracket (8), washer (14.1) (left hand nacelle only), and strut bearing (15).

(3) Install bolt (11) through washer (13) and bushing (14).

(4) Hold bolt (11). Install washer (12) and nut (10).

(5) Install new cotter pin (9).



GO TO NEXT PAGE

2.138. WORK PLATFORM DOOR STRUCTURAL SUPPORT STRUT REMOVAL/INSTALLATION – continued

b. **Install strut (1) on bracket (2).**

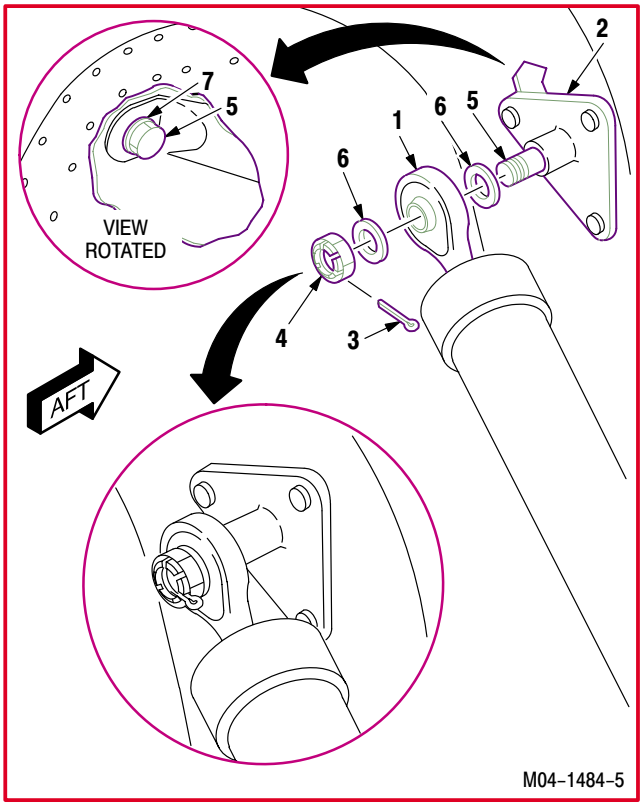
(1) Install bolt (5) through washer (7) and bracket (2).

(2) Hold bolt (5). Install washer (6), strut (1), washer (6), and nut (4).

(3) Install new cotter pin (3).

c. **Inspect (QA).**

d. **Secure access door LN1 or RN1** (para 2.2)**.**



END OF TASK

2.139. WORK PLATFORM DOOR LATCH REPLACEMENT

2.139.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.139.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

Personnel Required:

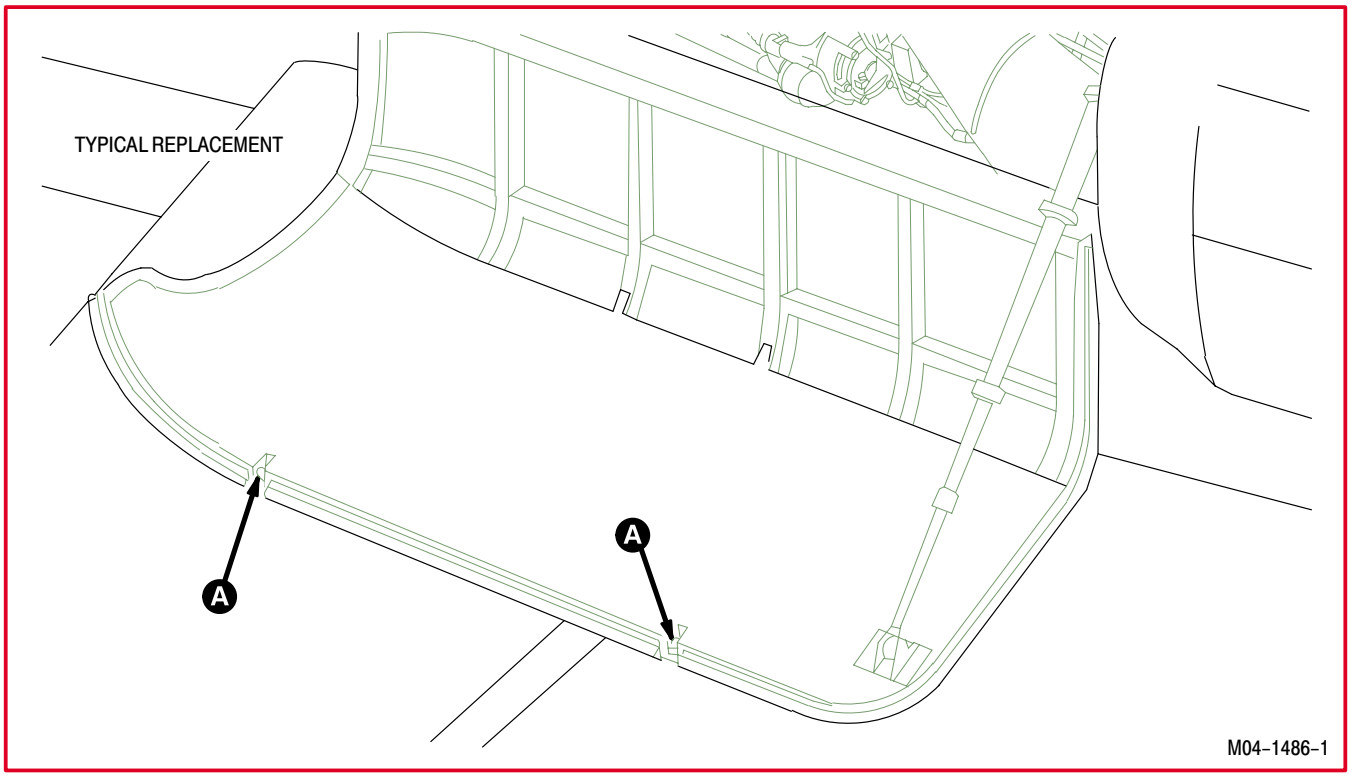
68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN1 or RN1 opened

NOTE

This task is typical for left and/or right work platform door latches.



GO TO NEXT PAGE

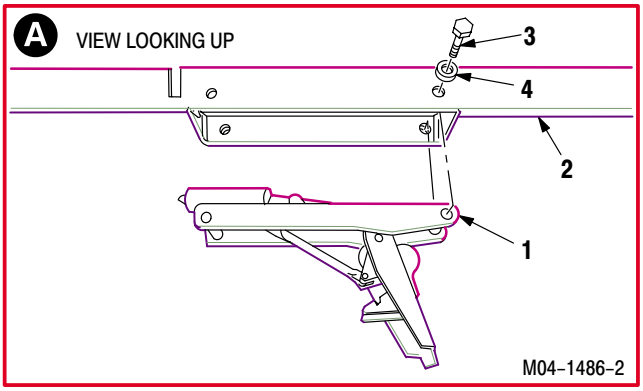
2.139. WORK PLATFORM DOOR LATCH REPLACEMENT – continued

2.139.3. Removal

a. **Remove work platform door latch (1) from airframe (2).**

(1) Remove two bolts (3) and washers (4) from latch (1) and airframe (2).

(2) Remove and discard latch (1) from airframe (2).



2.139.4. Cleaning

a. **Wipe mounting surface with a clean rag.**

2.139.5. Inspection

a. **Check mounting surface for cracks, elongated holes, and corrosion** (para 2.128)**.**

2.139.6. Installation

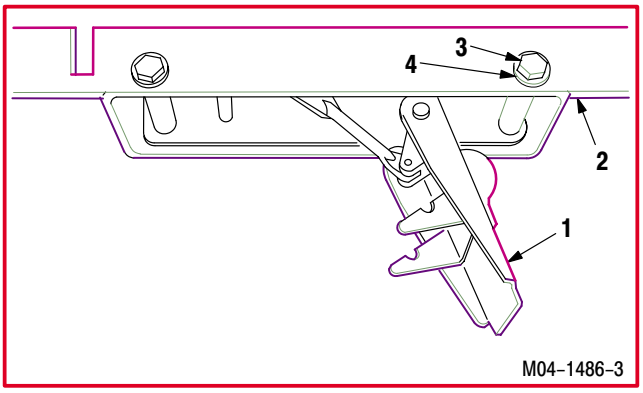
a. **Install new latch (1) on airframe (2).**

(1) Position latch (1) on airframe (2).

(2) Install two bolts (3) through washers (4) and latch (1) in airframe (2).

b. **Inspect (QA).**

c. **Secure access door LN1 or RN1** (para 2.2)**.**



END OF TASK

2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM)

2.140.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly.

2.140.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
4-inch vise jaw caps (item 59, App H)
Chemical protective gloves (item 154, App H)
Body seal pilot (item 225, App H)
2-ton hydraulic hand operated arbor press (item 235, App H)
Adjustable air filtering respirator (item 262, App H)
0.0 - 50.0-pound weighing scale (item 273, App H)
Stopwatch (item 342, App H)
100-foot measuring tape (item 348, App H)
18-inch strap pipe wrench (item 426, App H)

Materials/Parts:

Packing (2)
Lubricating oil (item 120, App F)
Sealant (item 154, App F)
Sealing compound (item 156, App F)
Sealing compound (item 157, App F)
Sealing compound (item 173, App F)
Syringe (item 196, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-322-24

NOTE

This task is typical for left and/or right structural support struts.

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2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

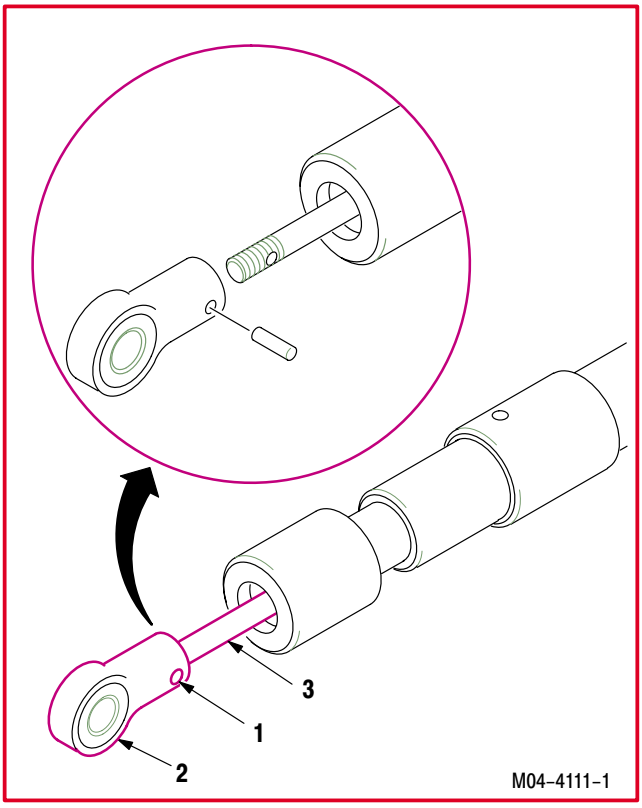
2.140.3. Disassembly

NOTE

- Nacelle strut is filled with fluid.
- Extend nacelle strut enough to expose spring pin.

a. **Remove spring pin (1) from rod end (2).**

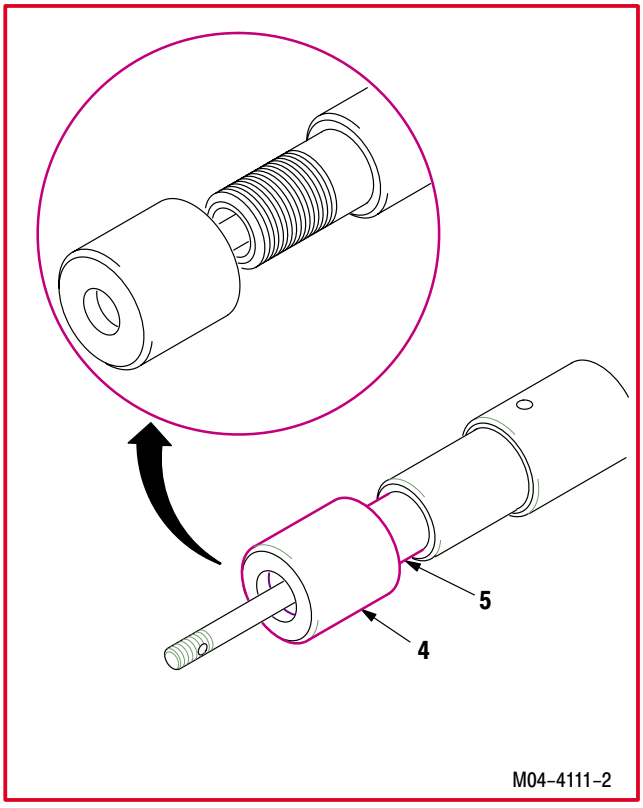
b. **Remove rod end (2) from tube (3).**



c. **Remove retaining end cap (4) from nut cap (5).**

(1) Secure end cap (4) in vice.

(2) Remove end cap (4) from nut cap (5). Use strap wrench.



GO TO NEXT PAGE

2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

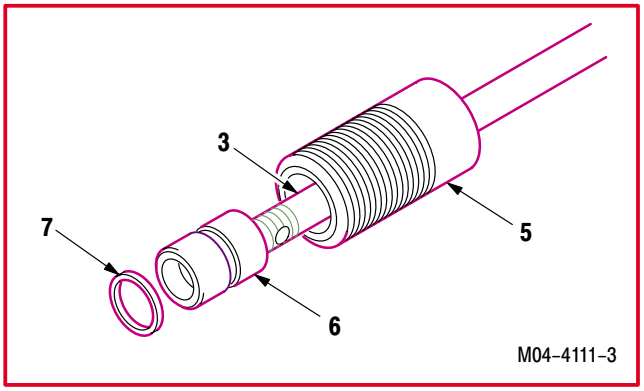
Do not damage threads of nut cap.

d. **Remove seal assembly (6) from nut cap (5).**

(1) Secure nut cap (5) in vice.

(2) Extend tube (3) to clear washer (7) and seal assembly (6) from nut cap (5).

(3) Remove washer (7) and seal assembly (6).

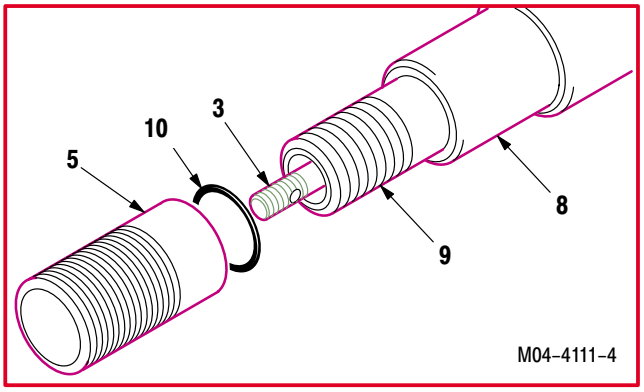


e. **Remove nut cap (5) from nacelle strut (8).**

(1) Place rags under strut (8) to catch residual fluid.

(2) Remove nut cap (5) from intermediate tube (9) and tube (3). Use strap wrench.

(3) Remove and discard packing (10) from inside nut cap (5).

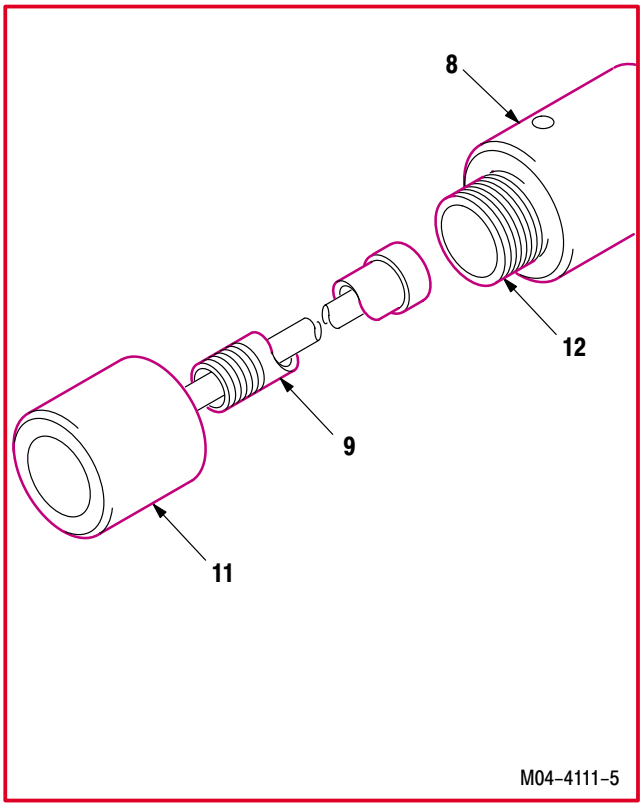


f. **Remove head cap (11) and intermediate tube (9) from strut (8).**

(1) Secure head cap (11) in vice.

(2) Remove head cap (11) from intermediate tube (12). Use strap wrench.

(3) Remove intermediate tube (9) from strut (8).



GO TO NEXT PAGE

2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

g. **Remove piston (13) and tube (3) from intermediate tube (9).**

(1) Secure intermediate tube (9) in vice.

(2) Push piston (13) and tube (3) out of intermediate tube (9).

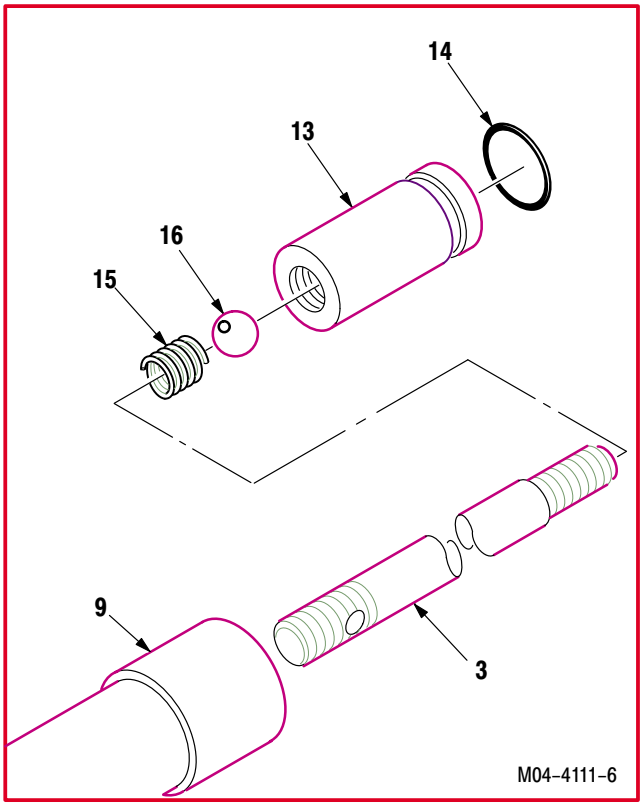
(3) Remove intermediate tube (9) from tube (3).

(4) Remove and discard packing (14) from piston (13).

(5) Secure tube (3) in vice.

(6) Remove piston (13) from tube (3). Use strap wrench.

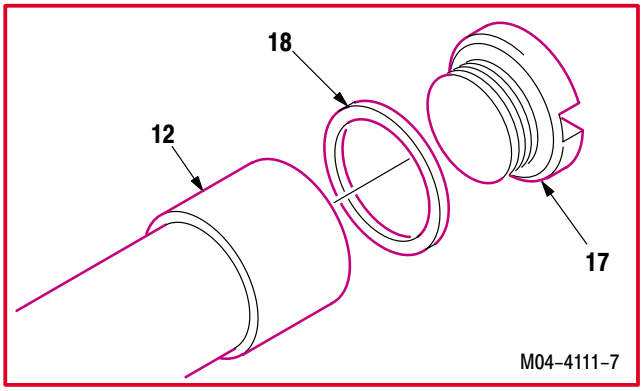
(7) Remove spring (15) and ball (16) by tapping end of piston (13) on hard surface.



h. **Remove special plug (17) and washer (18) from intermediate tube (12).**

(1) Secure intermediate tube (12) in vice.

(2) Remove plug (17) and washer (18) from intermediate tube (12).

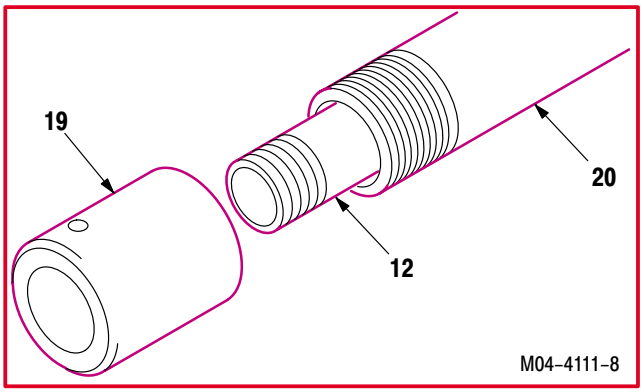


i. **Remove head cap (19) and intermediate tube (12) from outer tube (20).**

(1) Secure outer tube (20) in vice.

(2) Remove head cap (19) from outer tube (20). Use strap wrench.

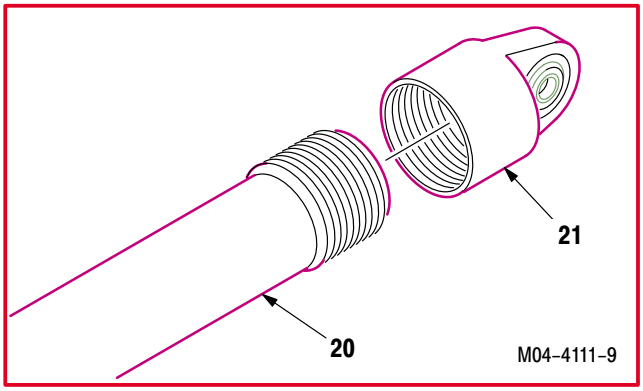
(3) Remove intermediate tube (12) from outer tube (20).



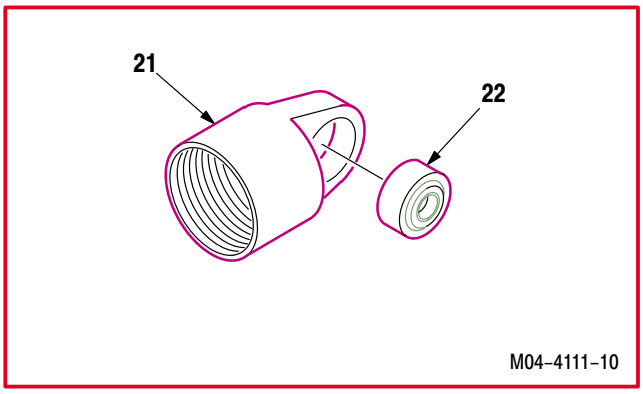
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2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

j. **Remove end cap (21) from outer tube (20).** Use strap wrench.



k. **Remove and discard bearing (22) from end cap (21)** (TM 55-1500-322-24)**.** Use arbor press.



2.140.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

2.140.5. Inspection

a. **Check strut assembly for cracks.** None allowed.

b. **Check strut assembly for corrosion** (para 1.49)**.**

c. **Check strut assembly threads for damage.** None allowed.

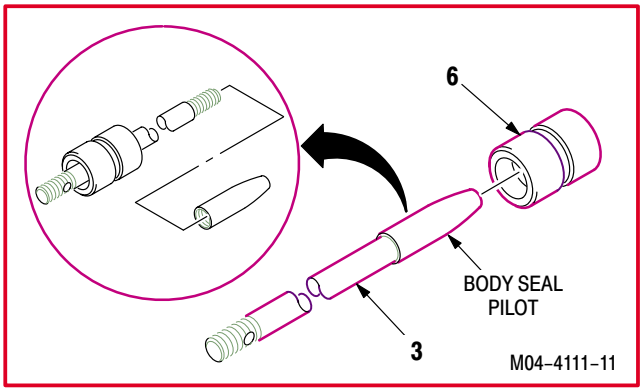
2.140.6. Assembly

a. **Install seal assembly (6) on tube (3).** Use body seal pilot.

(1) Install body seal pilot on end of tube (3) finger tight.

(2) Push rear of tube (3) through seal assembly (6). Position seal assembly (6) just above threads of tube (3).

(3) Remove body seal pilot.



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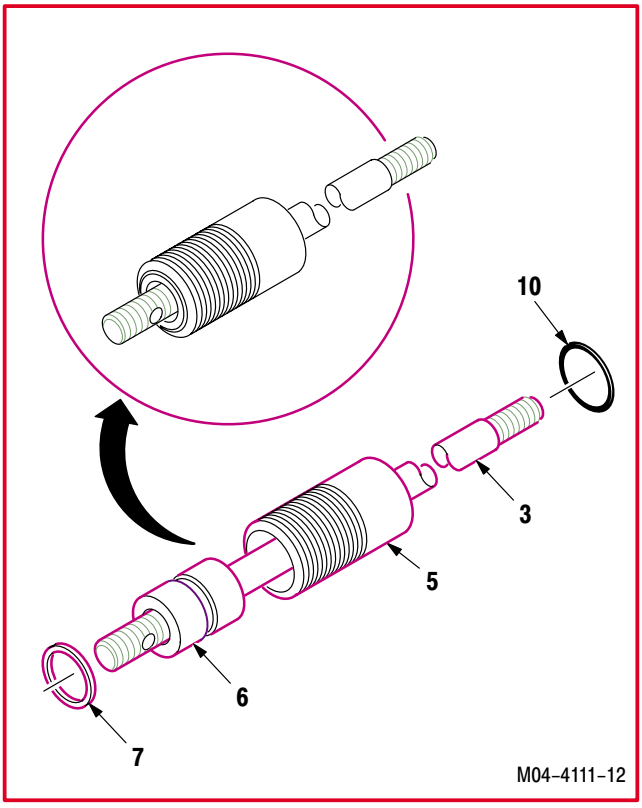
2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

b. **Install seal assembly (6) and tube (3) in nut cap (5).**

(1) Install new packing (10) inside nut cap (5).

(2) Install seal assembly (6) and tube (3) into nut cap (5).

(3) Install washer (7) over tube (3) into nut cap (5).





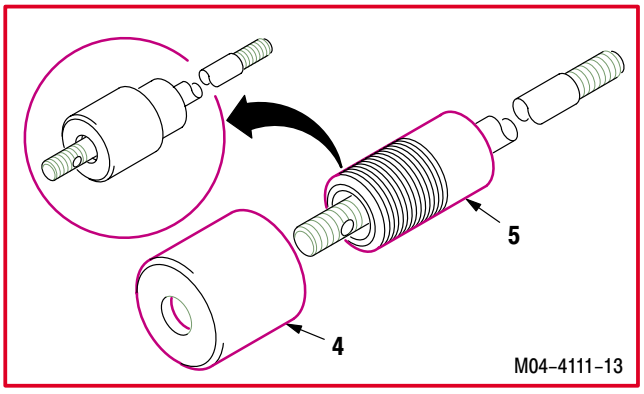
c. **Install end cap (4) on nut cap (5).**

(1) Secure nut cap (5) in vise.

(2) Apply a thin coat of sealing compound to threads of nut cap (5) and end cap (4). Use sealing compound (item 173, App F).

(3) Install end cap (4) on nut cap (5). Use strap wrench.

(4) Wipe excess sealing compound from surface of nut cap (5).

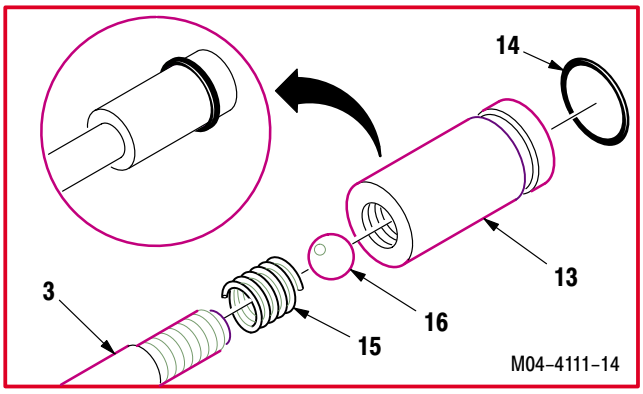


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2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued



d. **Install piston (13) on tube (3).**



(1) Secure tube (3) in vise.

(2) Install ball (16) and spring (15) into piston (13).

(3) Apply thin coat of sealing compound to threads of piston (13) and tube (3). Use sealing compound (item 157, App F).

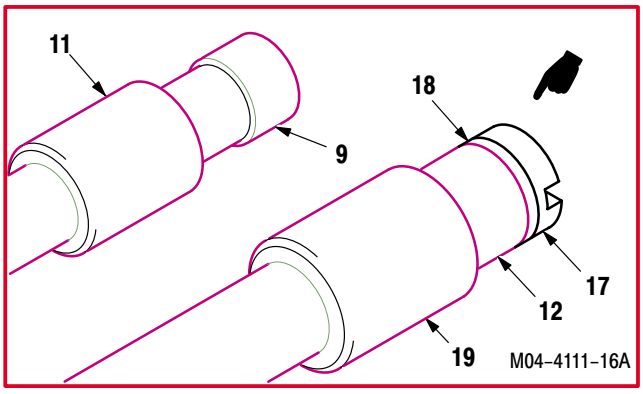
(4) Install piston (13) on tube (3). Use strap wrench.

(5) Wipe excess sealing compound from tube (3).

(6) Install new packing (14) on piston (13).



e. **Install plug (17) and washer (18) in intermediate tube (12).**



(1) Secure intermediate tube (12) in vice.

(2) Apply a thin coat of sealant on threads of plug (17). Use sealant (item 154, App F).

(3) Apply a thin coat of sealing compound to threads of intermediate tube (12). Use sealing compound (item 173, App F).

(4) Install plug (17) and washer (18) in intermediate tube (12).

(5) Wipe excess sealant and sealing compound from plug (17) and intermediate tube (12).

f. **Install intermediate tube (9) through head cap (11).**

g. **Install intermediate tube (12) through head cap (19).**

GO TO NEXT PAGE

2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

h. **Install head cap (11) on intermediate tube (12).**

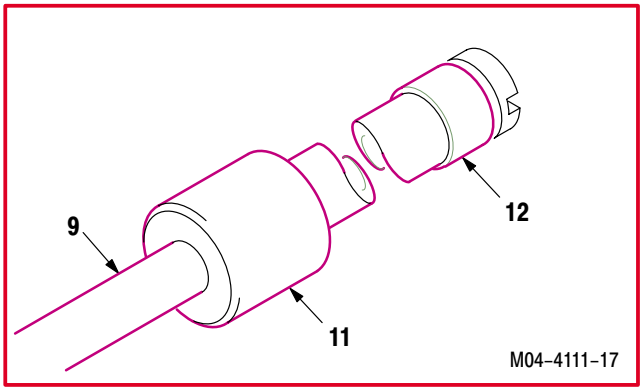
(1) Slide intermediate tube (12) over intermediate tube (9).

(2) Secure intermediate tube (12) in vice.

(3) Apply a thin coat of sealing compound to threads of head cap (11) and intermediate tube (12). Use sealing compound (item 173, App F).

(4) Install head cap (11) on intermediate tube (12). Use strap wrench.

(5) Wipe excess sealing compound from intermediate tube (11).



i. **Install outer tube (20) in head cap (19).**

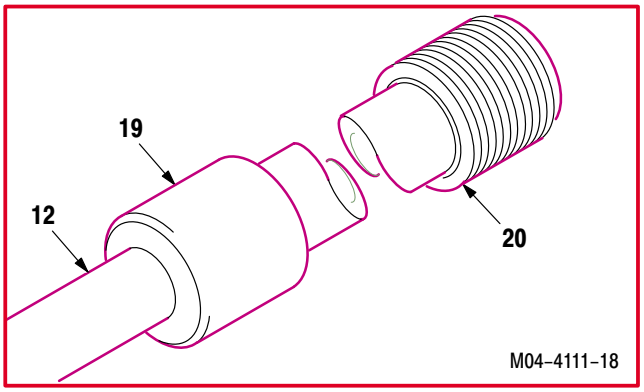
(1) Slide outer tube (20) over intermediate tube (12)

(2) Secure head cap (19) in vice.

(3) Apply a thin coat of sealing compound to threads of head cap (19) and outer tube (20). Use sealing compound (item 173, App F).

(4) Install outer tube (20) in head cap (19). Use strap wrench.

(5) Wipe excess sealing compound from outer tube (20).



GO TO NEXT PAGE

2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

NOTE

Do not damage threads of nut cap.

j. **Install nut cap (5) on intermediate tube (9).**

(1) Slide intermediate tube (9) over piston (13) and tube (3).

(2) Secure intermediate tube (9) vertically in vice. Ensure that bearing end of strut is facing down.

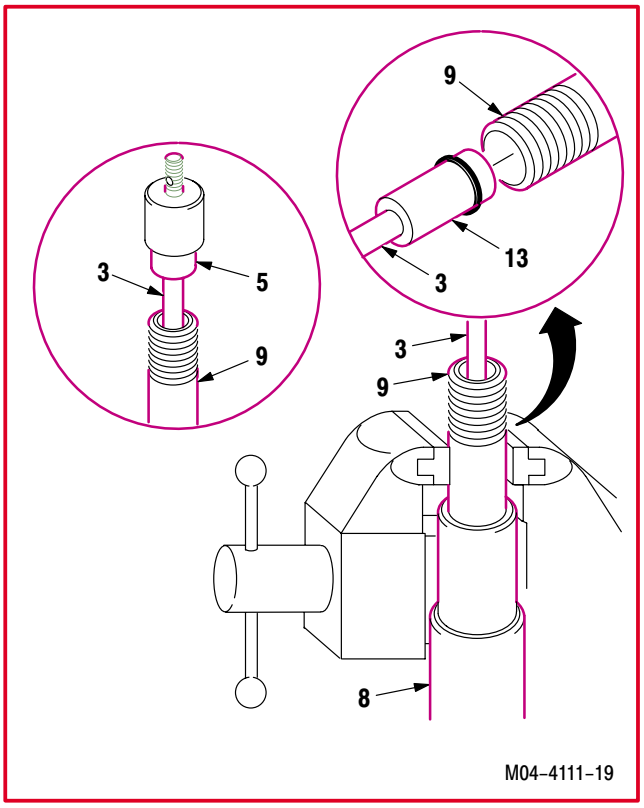
(3) Fully retract strut (8). Fill intermediate tube (9) using 16.40 ±0.05 cc of lubricating oil. Use syringe (item 196, App F) and lubricating oil (item 120, App F).

(4) Apply a thin coat of sealing compound to threads of intermediate tube (9) and nut cap (5). Use sealing compound (item 173, App F).

(5) Slide nut cap (5) over tube (3).

(6) Install nut cap (5) on intermediate tube (9). Use strap wrench.

(7) Wipe excess sealing compound from intermediate tube (9).



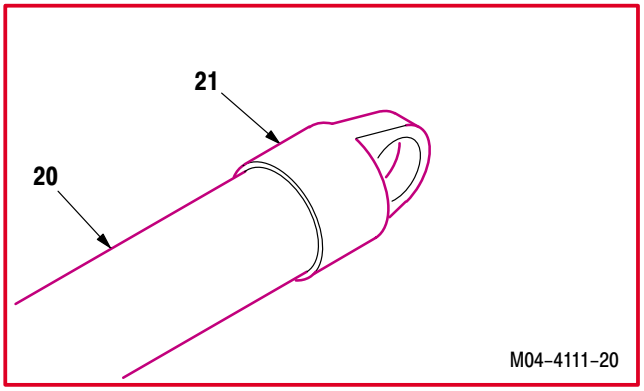
k. **Install end cap (21) on outer tube (20).**

(1) Secure outer tube (20) in vice.

(2) Apply thin coat of sealing compound to threads of end cap (21) and outer tube (20). Use sealing compound (item 173, App F).

(3) Install end cap (21) on outer tube (20). Use strap wrench.

(4) Wipe excess sealing compound from outer tube (20).



GO TO NEXT PAGE

2.140. STRUCTURAL SUPPORT STRUT DISASSEMBLY/ASSEMBLY (AVIM) – continued

CAUTION

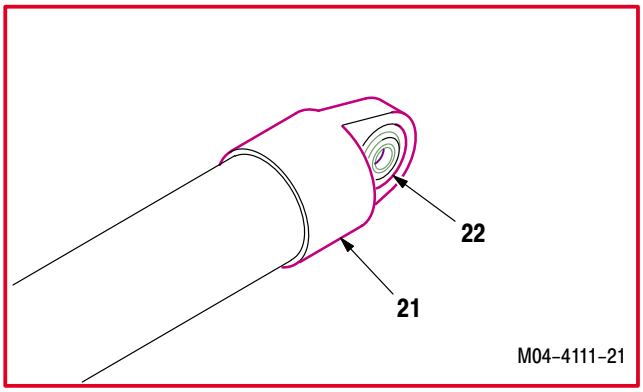
Do not allow sealing compound to enter bearing or contamination will result.

l. **Install new bearing (22) into end cap (21).**

(1) Apply sealing compound to bearing (22). Use sealing compound (item 156, App F).

(2) Install bearing (22) into end cap (21) (TM 55-1500-322-24). Use arbor press.

(3) Form a fillet of sealing compound to the faying edges of bearing (22) and end cap (21). Use sealing compound (item 156, App F).



m. **Install rod end (2) on tube (3).**

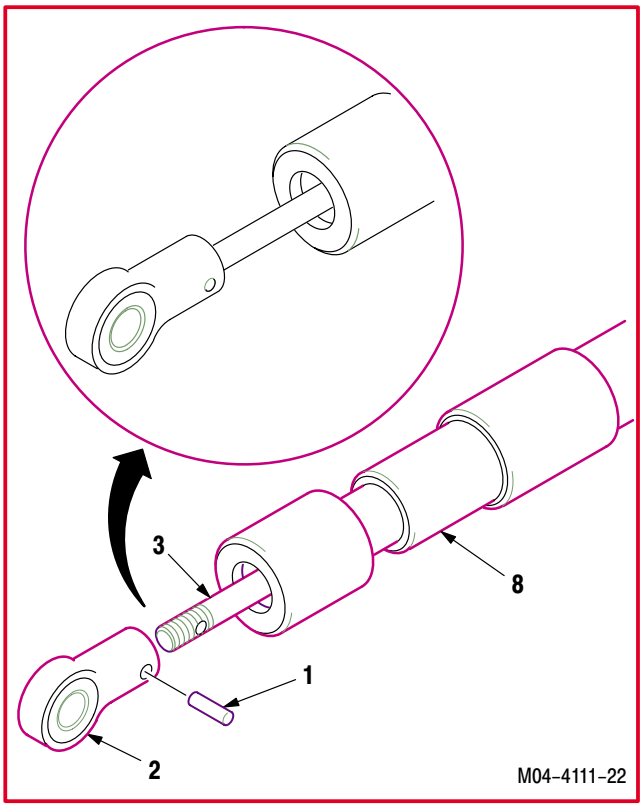
(1) Extend strut (8) to expose hole in tube (3).

(2) Secure tube (3) in vice.

(3) Apply a thin coat of sealing compound to threads of tube (3). Use sealing compound (item 173, App F).

(4) Install rod end (2) on tube (3). Aline holes in rod end (2) and tube (3). Use strap wrench.

(5) Install spring pin (1) in rod end (2).



n. **Check extension rate.**

(1) Extension rate is **1.90 IN/SEC +0.50/–1.00 IN/SEC** at **24 POUNDS** maximum pull force for the last **9.75 INCHES** of stroke. Use measuring tape, stopwatch, and scale.

o. **Inspect (QA).**

END OF TASK

2.141. LEVEL JACK ASSEMBLY REPLACEMENT

2.141.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation. Adjustment.

2.141.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

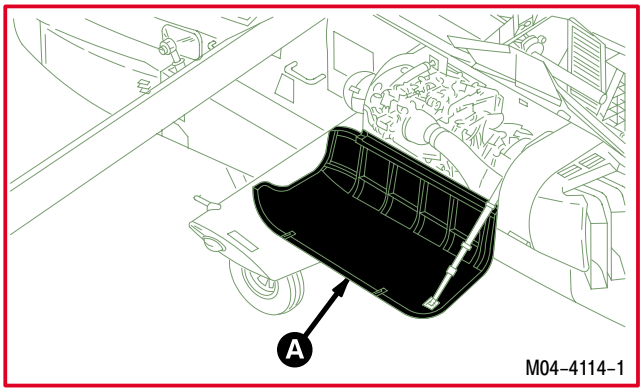
Pad (table D-125, App D)
Adhesive (item 7, App F)
Adhesive (item 14, App F)
Brush (item 34, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN1 or RN1 opened

NOTE

This task is typical for left and/or right level jack assemblies.



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2.141. LEVEL JACK ASSEMBLY REPLACEMENT – continued

2.141.3. Removal

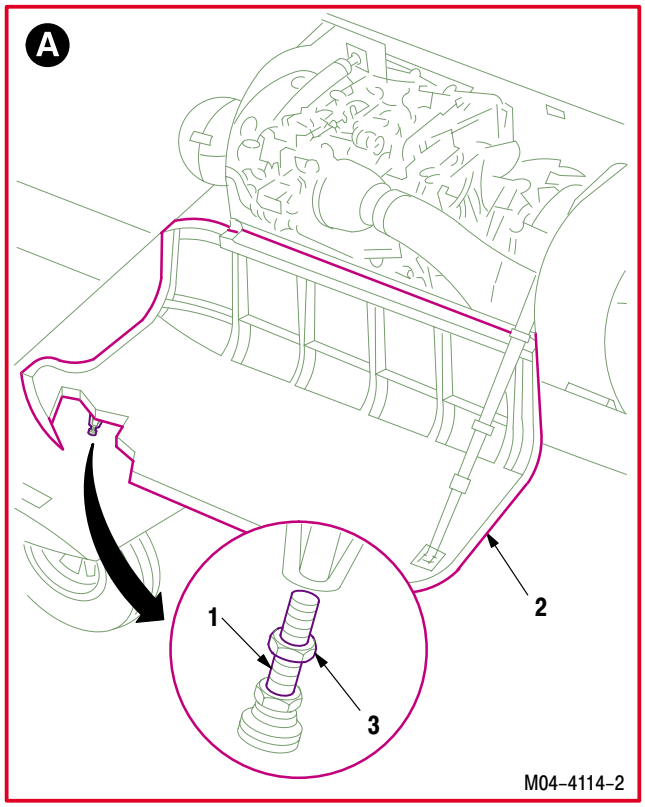
CAUTION

Do not put any weight on work platform door or damage may result.

a. **Remove level jack assembly (1) from engine nacelle door (2).**

(1) Loosen jam nut (3) from door (2).

(2) Remove jack (1) from door (2).



2.141.4. Cleaning

a. **Wipe jack mounting area with a clean rag.**

2.141.5. Inspection

a. **Check jack for damage.** None allowed.

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2.141. LEVEL JACK ASSEMBLY REPLACEMENT – continued

2.141.6. Repair



a. **Repair jack (1) by replacing pad (4).**

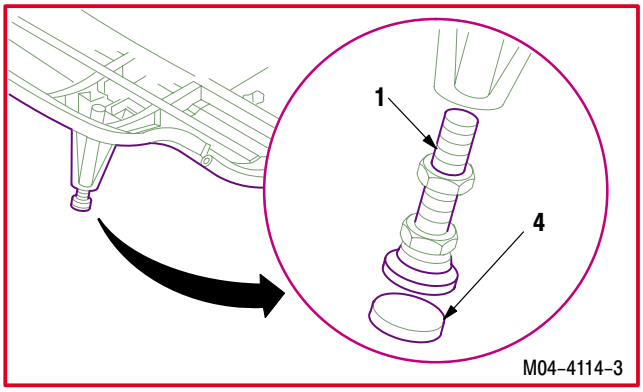
(1) Remove pad (4) from jack (1).

(2) Clean jack (1). Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

(3) Trim new pad (4) to match periphery of jack (1).

(4) Bond pad (4) to jack (1). Use adhesive (item 14, App F) and brush (item 34, App F).

(5) Edge seal pad (4). Use adhesive (item 7, App F) and brush (item 34, App F).



2.141.7. Installation

a. **Install jack (1) on door (2).**

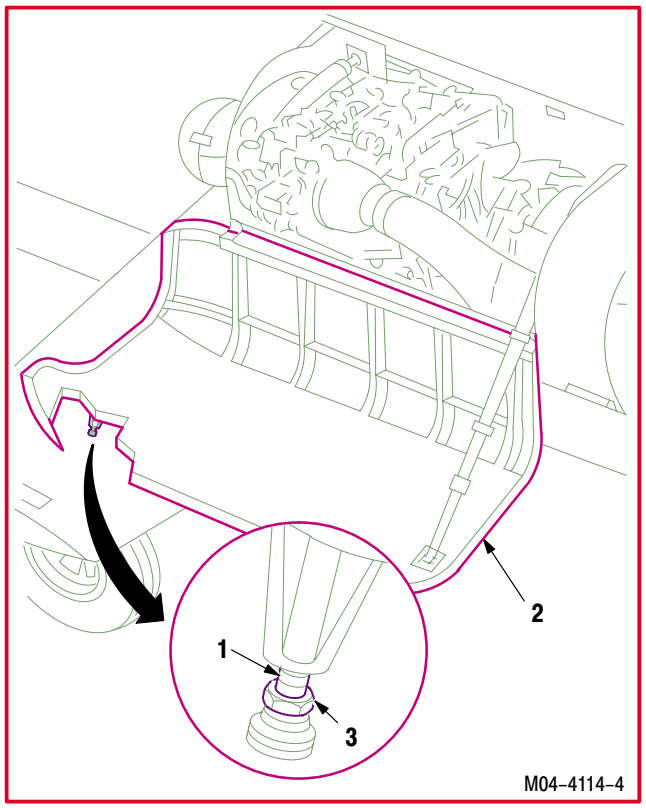
2.141.8. Adjustment

a. **With one person holding door, adjust jack (1) so that jack simultaneously contacts 70 percent spar on wing and door (2) bumper on lower half of nacelle.**

(1) Tighten jam nut (3).

b. **Inspect (QA).**

c. **Secure access door LN1 or RN1** (para 2.2)**.**



END OF TASK

2.142. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY LATCH REPLACEMENT

2.142.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.142.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cotter pin (2)
Lubricant (item NO TAG, App F)

Personnel Required:

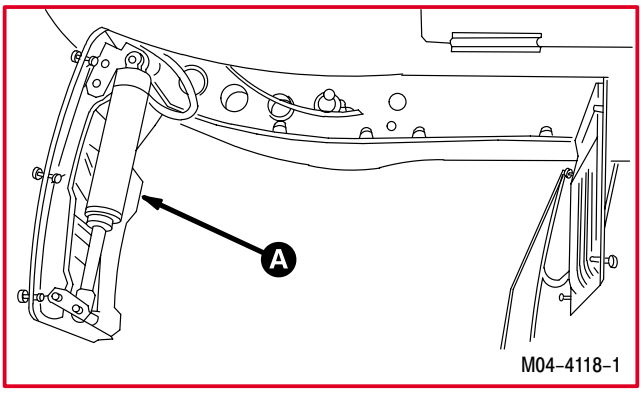
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN3 or RN3 opened

NOTE

This task is typical for left and/or right engine ventilation door latches.



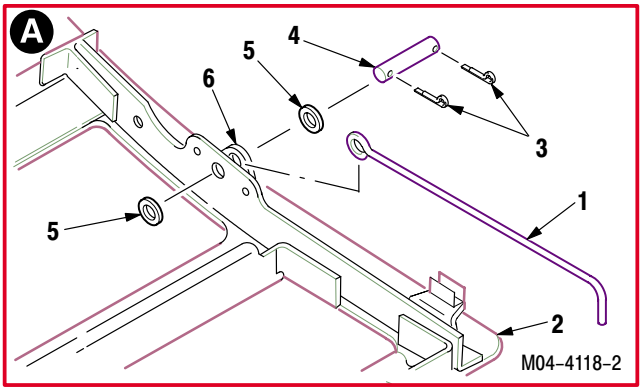
2.142.3. Removal

a. **Remove door latch (1) from engine ventilation door assembly (2).**

(1) Remove and discard two cotter pins (3) from straight headless pin (4).

(2) Remove two washers (5) and pin (4) from clip (6).

(3) Remove and discard latch (1) from clip (6).



GO TO NEXT PAGE

2.142. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY LATCH REPLACEMENT – continued

2.142.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

2.142.5. Inspection

a. **Check pin for cracks.** None allowed.

b. **Check door assembly for cracks and corrosion** (para 2.129)**.**

2.142.6. Installation



a. **Install new door latch (1) on door (2).**

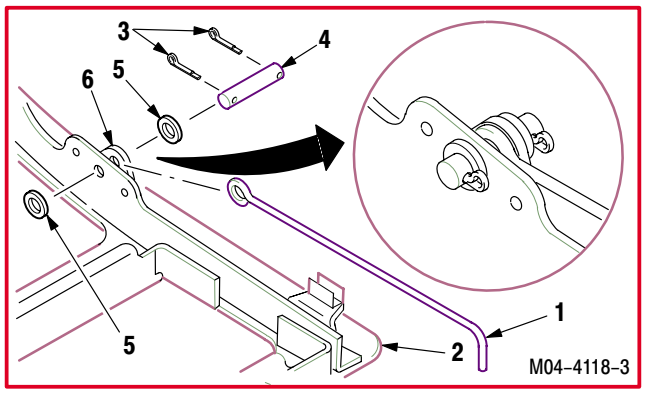
(1) Install latch (1) in clip (6).

(2) Lubricate pin. (4) Use lubricant (item NO TAG, App F).

(3) Install new cotter pin (3) in pin (4).

(4) Install pin (4) through two washers (5), door (2), latch (1), and clip (6).

(5) Install new cotter pin (3) in pin (4).



b. **Inspect (QA).**

c. **Secure access door LN3 or RN3** (para 2.2)**.**

END OF TASK

2.143. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY DOOR LINKAGE IDLER REPLACEMENT

2.143.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.143.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cotter pin (4)
Lubricant (item NO TAG, App F)

Personnel Required:

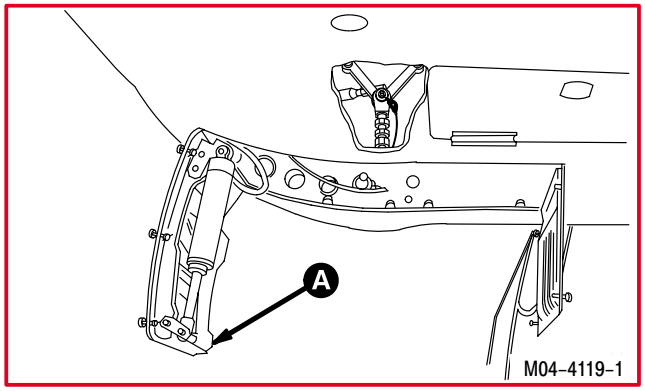
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN3 or RN3 opened

NOTE

This task is typical for left and/or right engine ventilation door linkage idlers.



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2.143. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY DOOR LINKAGE IDLER REPLACEMENT – continued

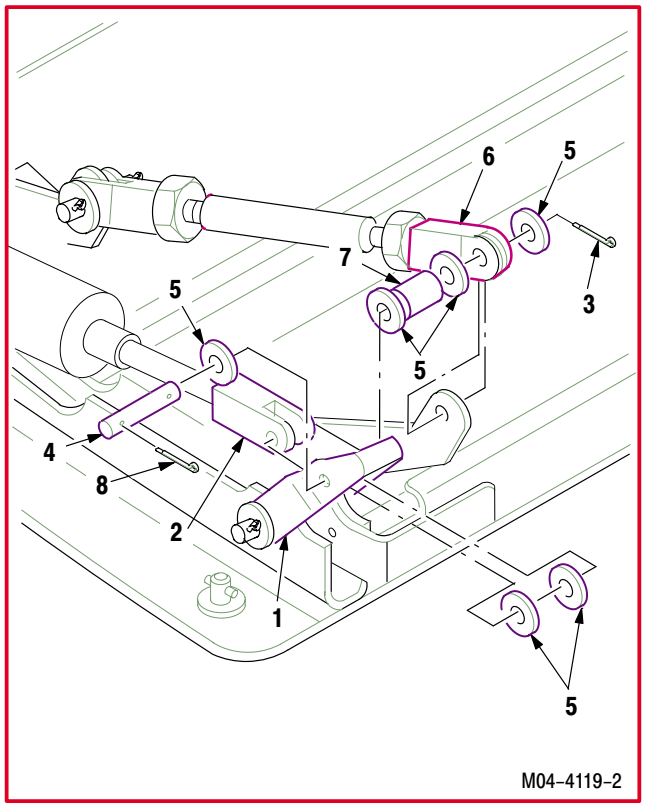
2.143.3. Removal

a. **Remove door linkage idler (1) from cooling door actuator clevis (2).**

(1) Remove and discard cotter pin (3) from straight headless pin (4).

(2) Remove pin (4), six washers (5), rig connecting link rod end clevis (6), sleeve spacer (7), actuator clevis (2), and idler (1).

(3) Remove and discard cotter pin (8) from pin (4).



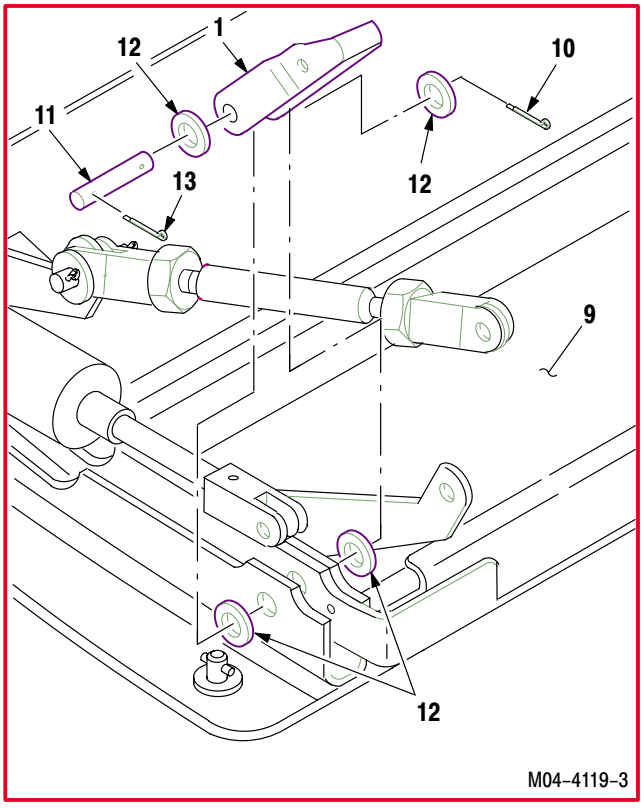
b. **Remove idler (1) from engine access ventilation door (9).**

(1) Remove and discard cotter pin (10) from straight headless pin (11).

(2) Remove pin (11) from idler (1), four washers (12), and door (9).

(3) Remove and discard cotter pin (13) from pin (11).

(4) Remove and discard idler (1) from door (9).



2.143.4. Cleaning

a. **Clean removed and attaching parts and surfaces** (para 1.47)**.**

2.143.5. Inspection

a. **Check removed and attaching parts for cracks.** None allowed.

b. **Check door attachment area for cracks and corrosion** (para 2.129)**.**

GO TO NEXT PAGE

2.143. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY DOOR LINKAGE IDLER REPLACEMENT – continued

2.143.6. Installation



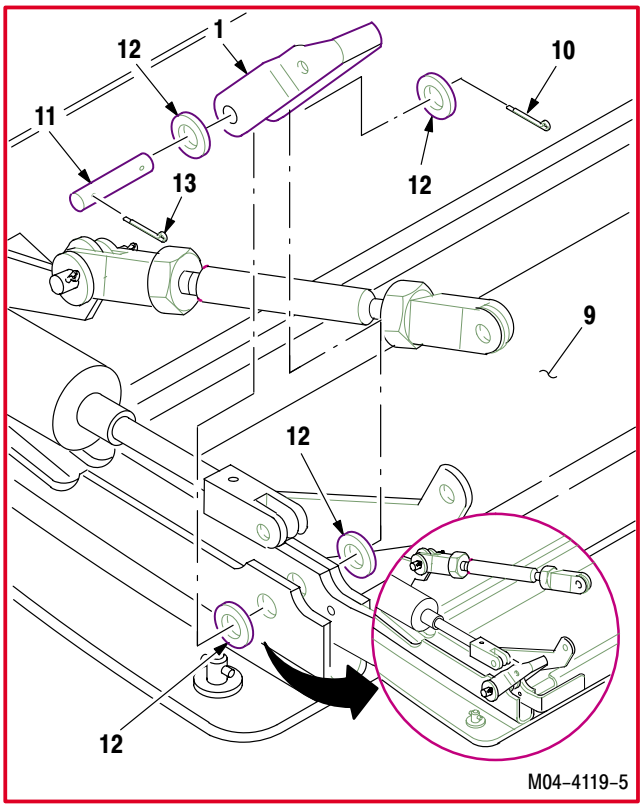
a. **Install new idler (1) on door (9).**

(1) Lubricate pin (11). Use lubricant (item NO TAG, App F).

(2) Install new cotter pin (13) in pin (11).

(3) Install pin (11) through washer (12), idler (1), three washers (12), and door (9).

(4) Install new cotter pin (10) in pin (11).



b. **Install idler (1) on actuator clevis (2).**

(1) Lubricate pin (4). Use lubricant (item NO TAG, App F).

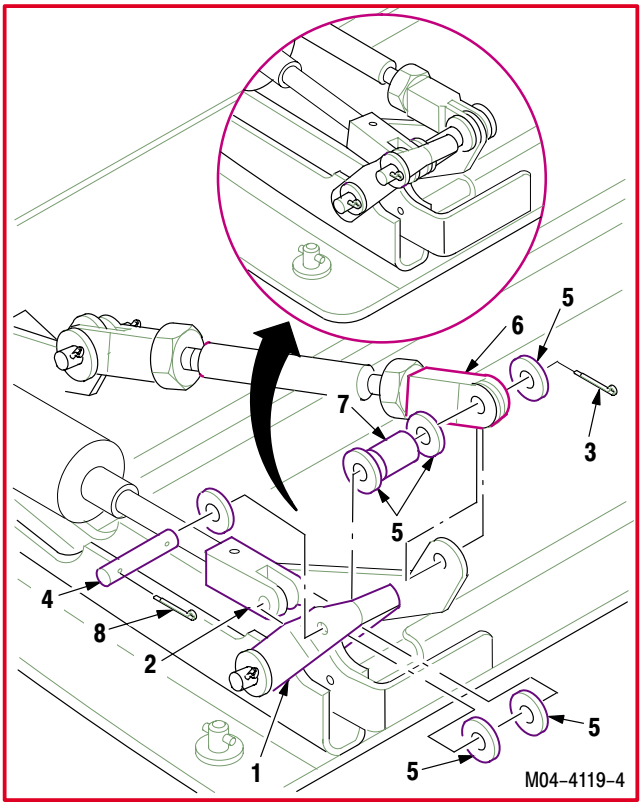
(2) Install new cotter pin (3) in pin (4).

(3) Install pin (4) through washer (5), link clevis (6), washer (5), sleeve spacer (7), washer (5), idler (1), washer (5), actuator clevis (2), and two washers (5).

(4) Install new cotter pin (8) in pin (4).

c. **Inspect (QA).**

d. **Secure access door LN3 or RN3** (para 2.2)**.**



END OF TASK

2.144. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY RIG CONNECTING LINK REMOVAL/INSTALLATION

2.144.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.144.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cotter pin (4)
Lubricant (item NO TAG, App F)

Personnel Required:

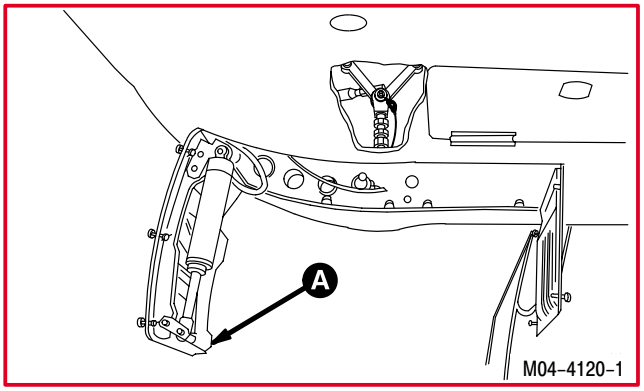
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN3 or RN3 opened

NOTE

This task is typical for left and/or right engine ventilation door rig connecting links.



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2.144. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY RIG CONNECTING LINK REMOVAL/INSTALLATION – continued

2.144.3. Removal

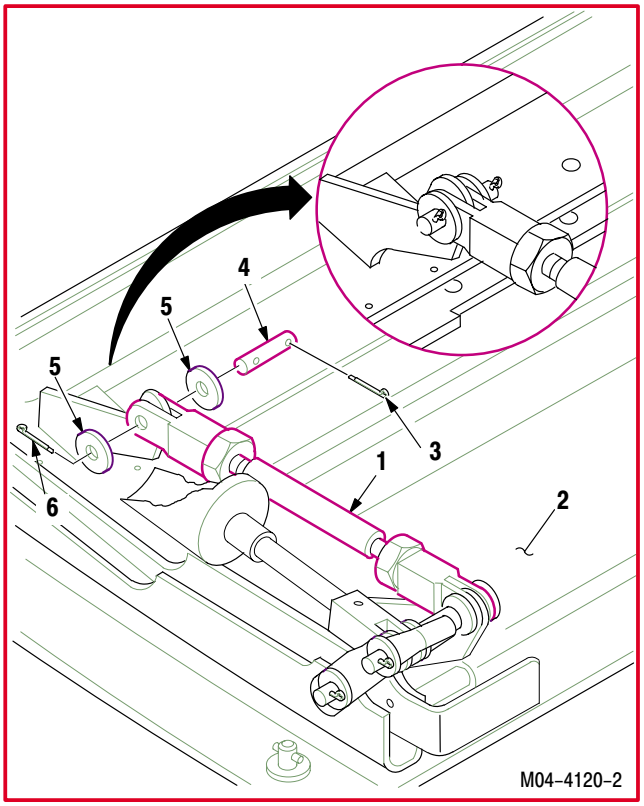
a. **Remove rig connecting link (1) from engine access ventilation door (2).**

(1) Remove and discard cotter pin (3) from straight headless pin (4).

(2) Remove pin (4) from link (1), two washers (5), and door (2).

(3) Remove and discard cotter pin (6) from pin (4).

(4) Remove link (1) from door (2).



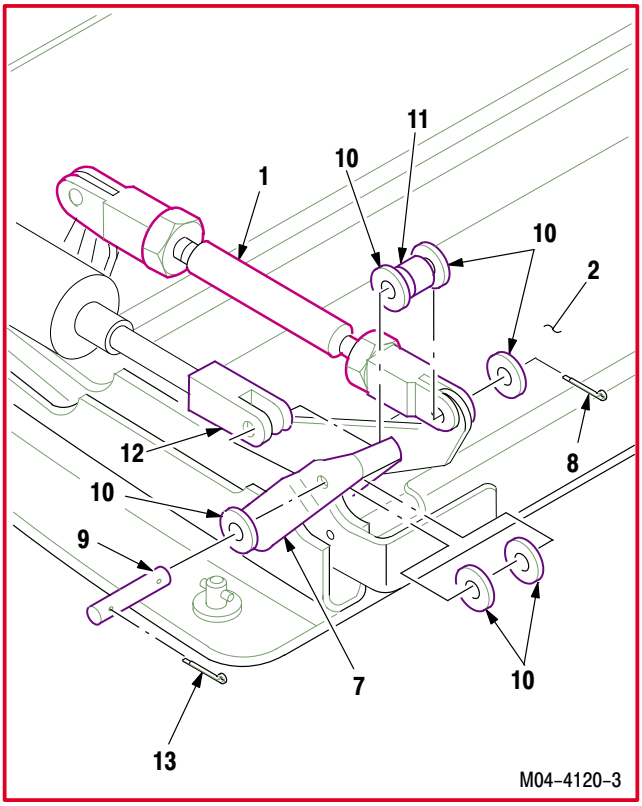
b. **Remove link (1) from door linkage idler (7) and door (2).**

(1) Remove and discard cotter pin (8) from straight headless pin (9).

(2) Remove pin (9), six washers (10), link (1), sleeve spacer (11), idler (7), and actuator clevis (12) from door (2).

(3) Remove link (1) from door (2).

(4) Remove and discard cotter pin (13) from pin (9).



2.144.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

GO TO NEXT PAGE

2.144. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY RIG CONNECTING LINK REMOVAL/INSTALLATION – continued

2.144.5. Inspection

a. **Check removed and attaching parts for damage.** None allowed.

b. **Check door assembly attachment area for cracks and corrosion** (para 2.129)**.**

2.144.6. Installation



a. **Install link (1) on idler (7) and door (2).**

(1) Lubricate pin (9). Use lubricant (item NO TAG, App F).

(2) Install new cotter pin (13) on pin (11).

(3) Install pin (9) through washer (10), link (1), washer (10), sleeve spacer (11), washer (10), idler (7), washer (10), actuator clevis (12), and two washers (10).

(4) Install new cotter pin (8) in pin (9).

b. **Install link (1) on door (2).**

(1) Lubricate pin (4). Use lubricant (item NO TAG, App F).

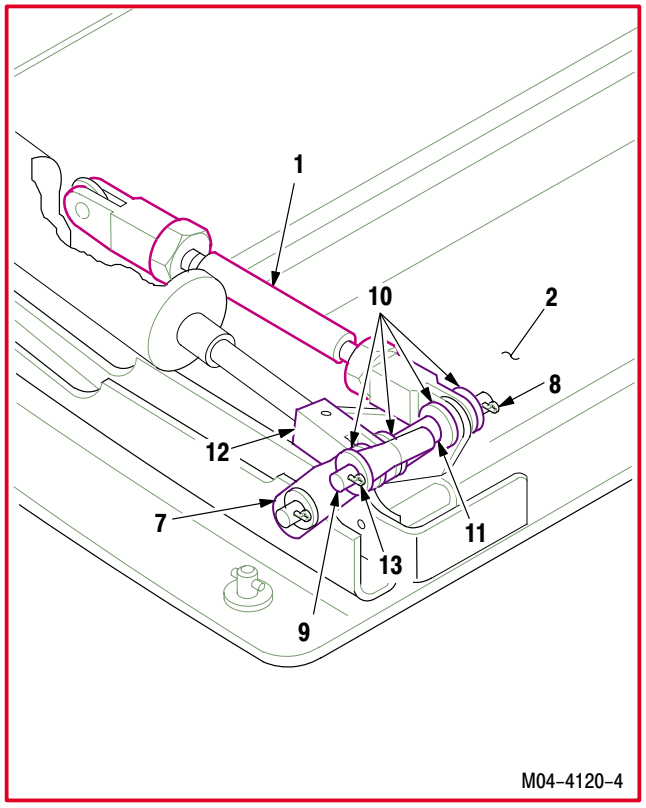
(2) Install new cotter pin (6) in pin (4).

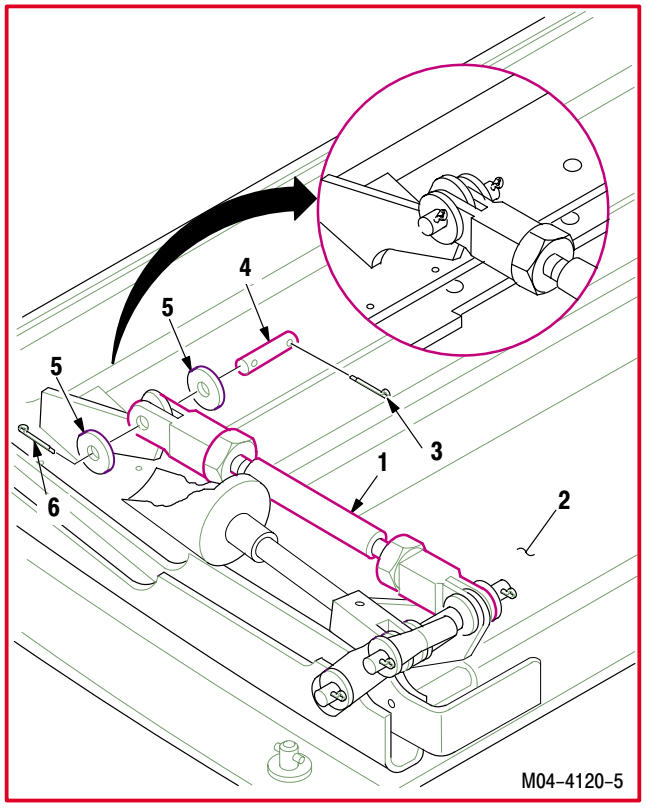
(3) Install pin (4) through washer (5), link (1), door (2), and washer (5).

(4) Install new cotter pin (3) in pin (4).

c. **Inspect (QA).**

d. **Secure access door LN3 or RN3** (para 2.2)**.**





END OF TASK

2.145. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY RIG CONNECTING LINK ACTUATING LINK ROD AND ROD END CLEVIS REPLACEMENT

2.145.1. Description

This task covers: Removal. Cleaning. Installation. Adjustment.

2.145.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Personnel Required:

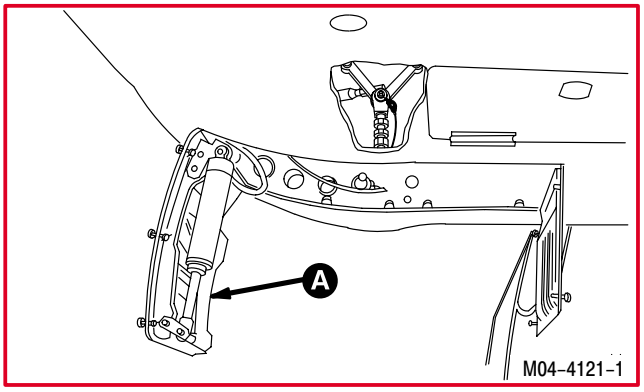
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN3 or RN3 opened
2.144	Engine access and ventilation door rig connecting link removed

NOTE

This task is typical for left and/or right engine ventilation door rig connecting link actuating rods and rod clevises.



GO TO NEXT PAGE

2.145. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY RIG CONNECTING LINK ACTUATING LINK ROD AND ROD END CLEVIS REPLACEMENT – continued

2.145.3. Removal

NOTE

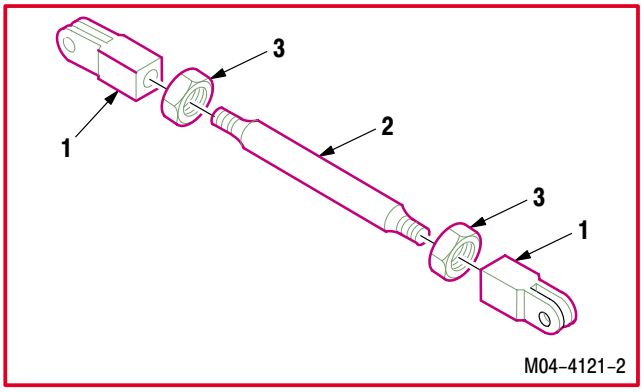
Note location of rod end clevis before removal.

a. **Remove two rod end clevises (1) from actuating link rod (2).**

(1) Break loose two nuts (3) from rod (2).

(2) Remove two clevises (1) and nuts (3) from rod (2).

(3) Discard rod (2) and clevises (1).



2.145.4. Cleaning

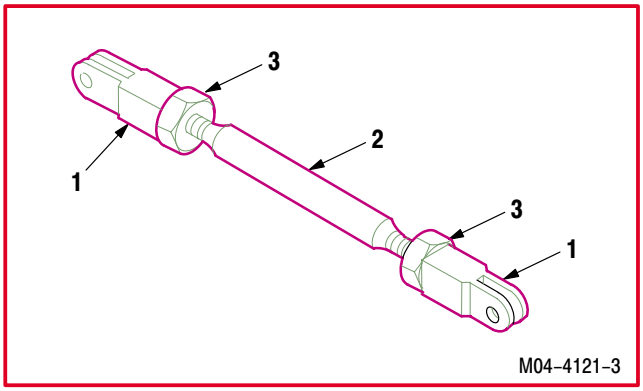
a. **Wipe removed and attaching parts with a clean rag.**

2.145.5. Installation

a. **Install two new clevises (1) on new rod (2).**

(1) Install two nuts (3) and clevises (1) on rod (2) in approximate location previously noted.

b. **Install engine access and ventilation door assembly rig connecting link** (para 2.144)**.**



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2.145. ENGINE ACCESS AND VENTILATION DOOR ASSEMBLY RIG CONNECTING LINK ACTUATING LINK ROD AND ROD END CLEVIS REPLACEMENT – continued

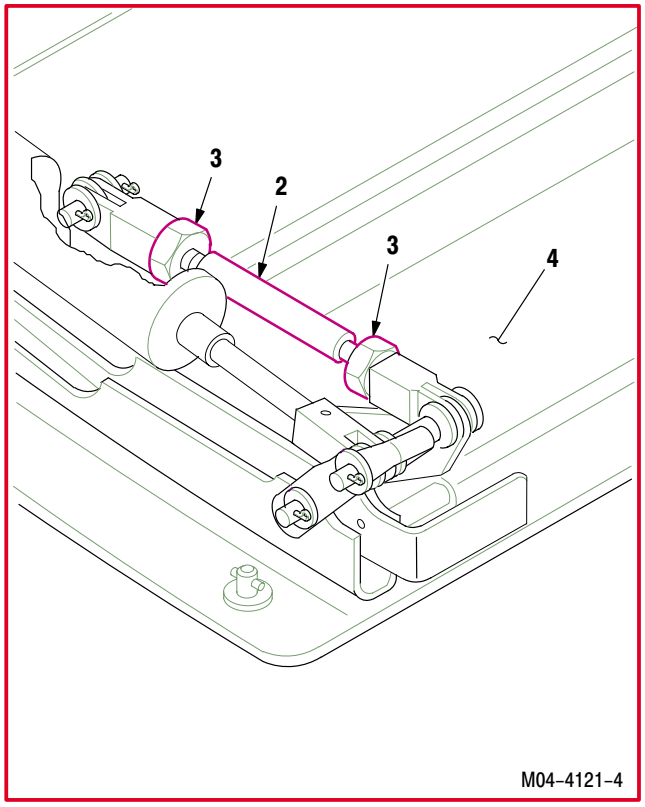
2.145.6. Adjustment

a. **Adjust rod (2) for smooth contour with ventilation door assembly (4) closed.**

b. **Torque two nuts (3) to 20 INCH-POUNDS.** Use torque wrench.

c. **Inspect (QA).**

d. **Secure access door LN3 or RN3** (para 2.2)**.**



END OF TASK

2.146. ENGINE VENTILATION DOOR ASSEMBLY REPLACEMENT

2.146.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.146.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

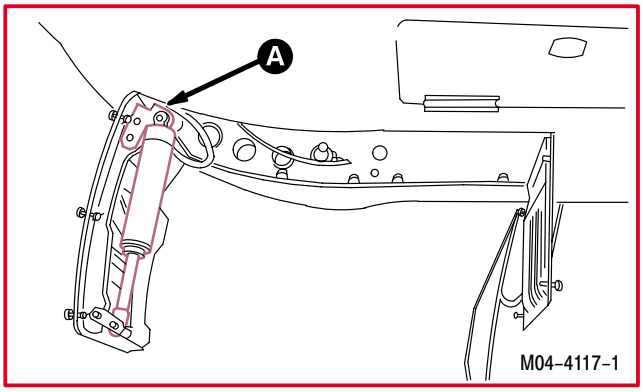
Ref	Condition
1.57	Helicopter safed
2.142	Engine access and ventilation door assembly latch removed
2.143	Engine access and ventilation door assembly linkage idler removed
2.145	Engine access and ventilation door assembly connecting link rod removed
2.147	Engine ventilation door removed

Materials/Parts:

Lubricant (item NO TAG, App F)

NOTE

This task is typical for left and/or right engine ventilation door assembly replacement.

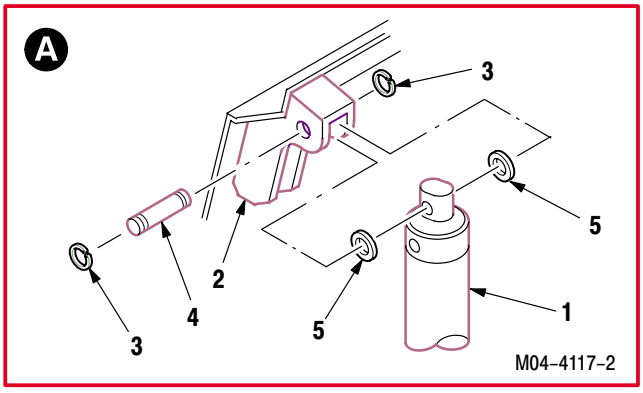


2.146.3. Removal

a. **Remove cylinder actuator (1) from engine ventilation door assembly (2).**

(1) Remove two retaining rings (3) from grooved headless pin (4).

(2) Remove pin (4) from two sleeve spacers (5), actuator (1), and door assembly (2).



GO TO NEXT PAGE

2.146. ENGINE VENTILATION DOOR ASSEMBLY REPLACEMENT – continued

b. **Remove door assembly (2) from nacelle (6).**

(1) Unlock six turnlock receptacles (7) from door (2) and nacelle (6).

(2) Remove 10 screws (8), 20 washers (9),and 10 nuts (10) from hinges (11).

(3) Remove and discard door (2) from nacelle (6).

2.146.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

b. **Wipe hinge attaching area with a clean rag.**

2.146.5. Inspection

a. **Check door assembly hinge attachment area for cracks and corrosion** (para 2.129)**.**

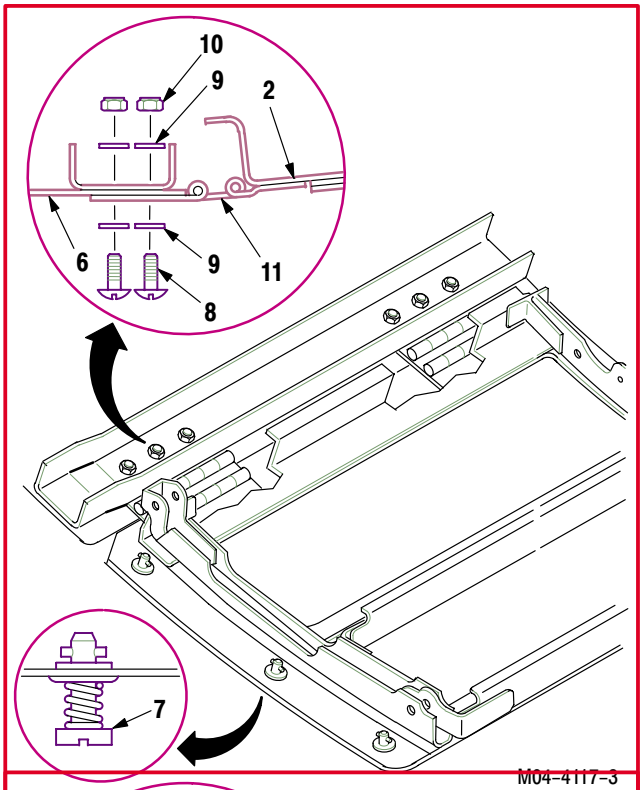
2.146.6. Installation

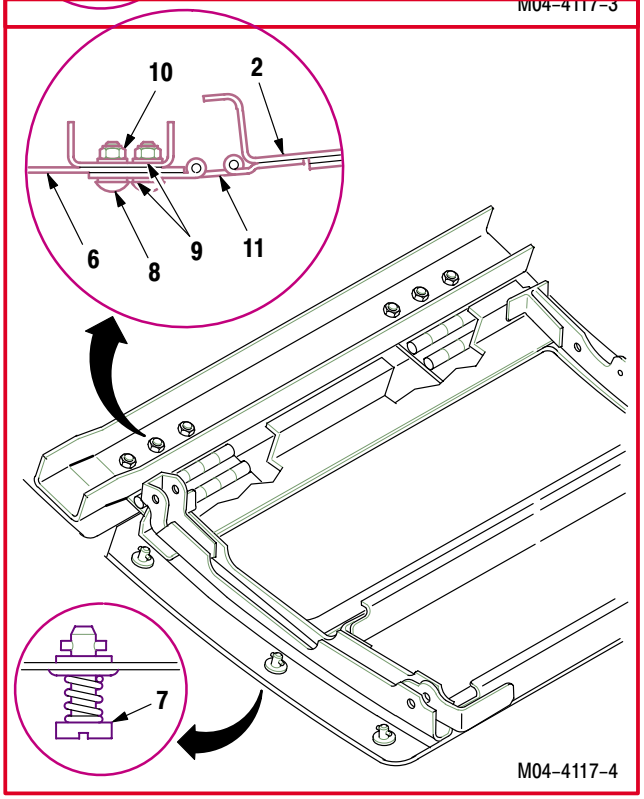
a. **Install new door assembly (2) on nacelle (6).**

(1) Install door (2) on nacelle (6).

(2) Install 10 screws (8), 20 washers (9) and 10 nuts (10) through hinges (11).

(3) Secure six turnlock receptacles (7) on nacelle (6).





GO TO NEXT PAGE

2.146. ENGINE VENTILATION DOOR ASSEMBLY REPLACEMENT – continued

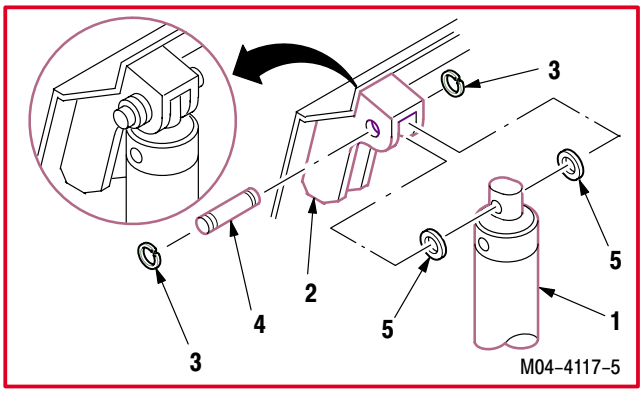


b. **Install actuator (1) on door assembly (2).**

(1) Lubricate pin (4). Use lubricant (item NO TAG, App F).

(2) Install pin (4) through two sleeve spacers (5), actuator (1) and door assembly (2).

(3) Install two retaining rings (3) on pin (4).



c. **Inspect (QA).**

d. **Install engine ventilation doors** (para 2.147)**.**

e. **Install engine access and ventilation door assembly connecting link rod** (para 2.145)**.**

f. **Install engine access and ventilation door assembly linkage idler** (para 2.143)**.**

g. **Install engine access and ventilation door assembly latch** (para 2.142)**.**

END OF TASK

2.147. ENGINE VENTILATION DOOR REPLACEMENT

2.147.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.147.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

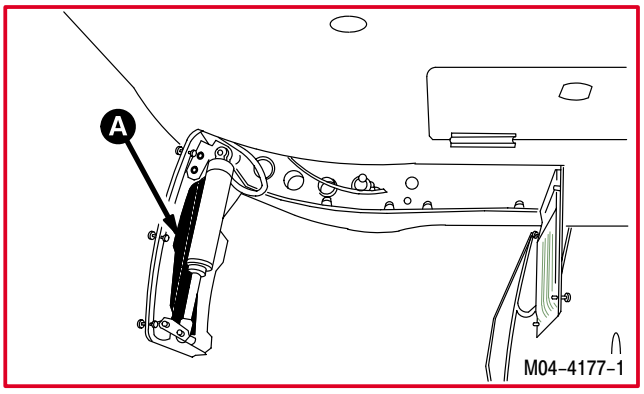
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door LN3 or RN3 opened
2.144	Engine access and ventilation door assembly rig connecting link removed

NOTE

This task is typical for left and/or right engine ventilation doors.



GO TO NEXT PAGE

2.147. ENGINE VENTILATION DOOR REPLACEMENT – continued

2.147.3. Removal

a. **Remove engine ventilation door (1) from engine ventilation door assembly (2).**

(1) Remove six screws (3), washers (4), and nuts (5), from two hinges (6), door (1), and door assembly (2).

(2) Remove and discard door (1) from door assembly (2).

2.147.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.147.5. Inspection

a. **Check door assembly and attachment area for cracks and corrosion** (para 2.129)**.**

2.147.6. Installation

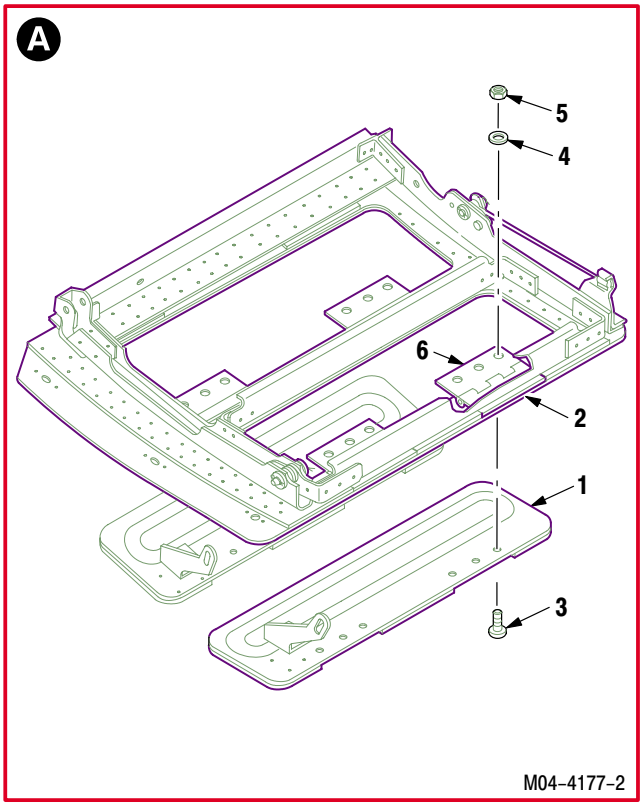
a. **Install new door (1) on door assembly (2).**

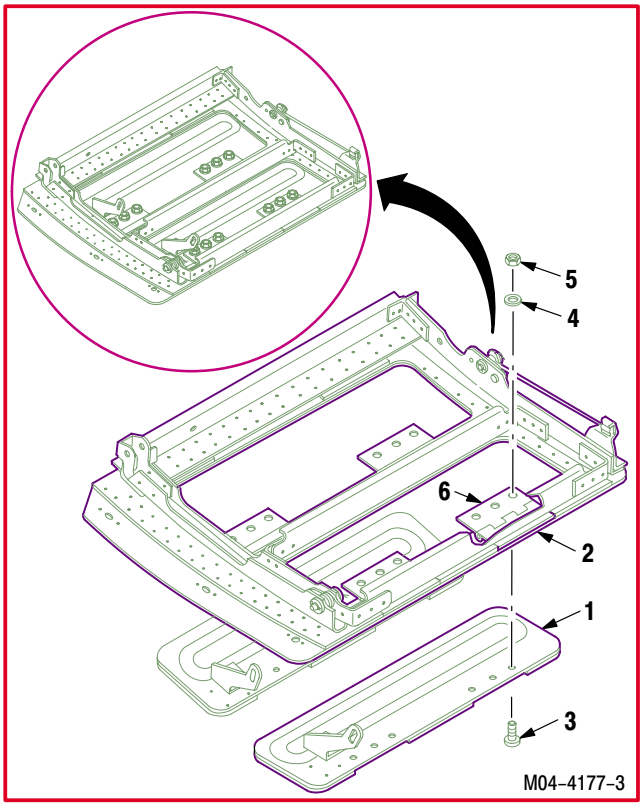
(1) Install six screws (3), washers (4), and nuts (5) on door (1), door assembly (2), and two hinges (6).

b. **Inspect (QA).**

c. **Secure access door LN3 or RN3** (para 2.2)**.**

d. **Install engine access and ventilation door assembly rig connecting link** (para 2.144)**.**





END OF TASK

2.148. ENGINE ACCESS DOOR REPLACEMENT

2.148.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.148.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

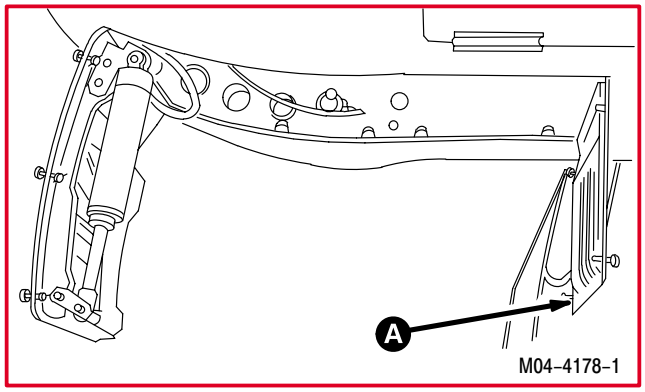
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right engine access doors.



GO TO NEXT PAGE

2.148. ENGINE ACCESS DOOR REPLACEMENT – continued

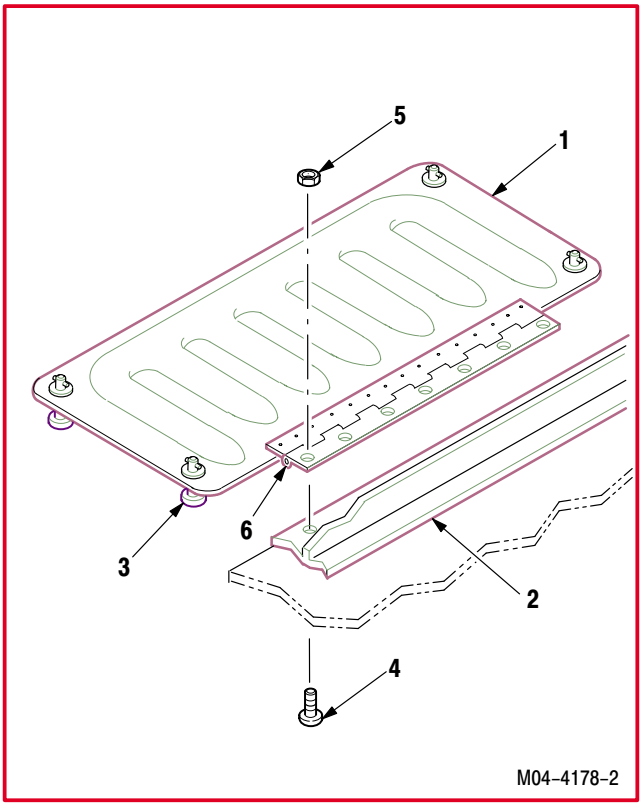
2.148.3. Removal

a. **Remove access door (1) from engine nacelle (2).**

(1) Unlock four turnlock receptacles (3) from door (1).

(2) Remove seven screws (4) and nuts (5) from hinge (6).

(3) Remove door (1) from nacelle (2).



2.148.4. Cleaning

a. **Wipe door and attaching parts with a clean rag.**

2.148.5. Inspection

a. **Check door attachment area for cracks and corrosion** (para 2.129)**.**

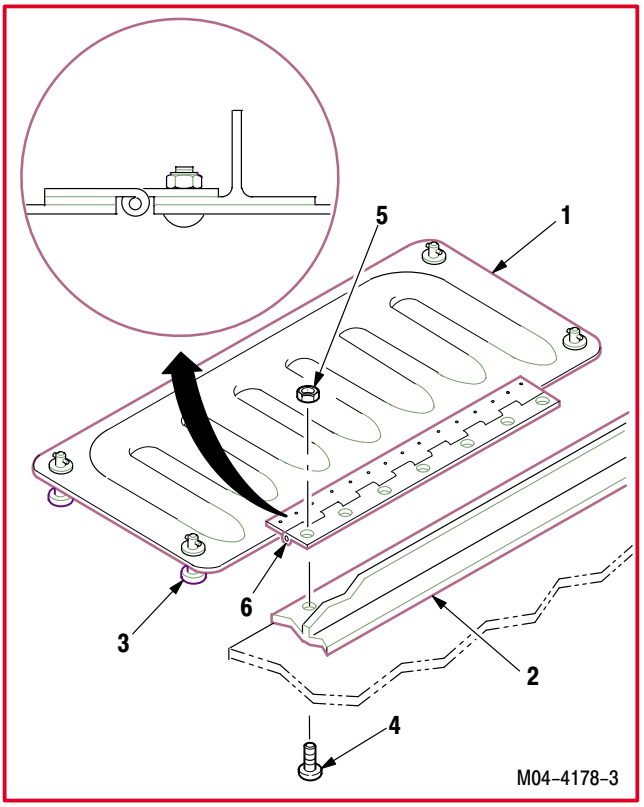
2.148.6. Installation

a. **Install door (1) on engine nacelle (2).**

(1) Install seven screws (4) and nuts (5) through hinge (6) into nacelle (2).

b. **Secure four turnlock receptacles (3) in door (1).**

c. **Inspect (QA).**



END OF TASK

2.149. ENGINE NACELLE DOOR INSTALLATION ASSEMBLY REMOVAL/INSTALLATION

2.149.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.149.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23

Personnel Required:

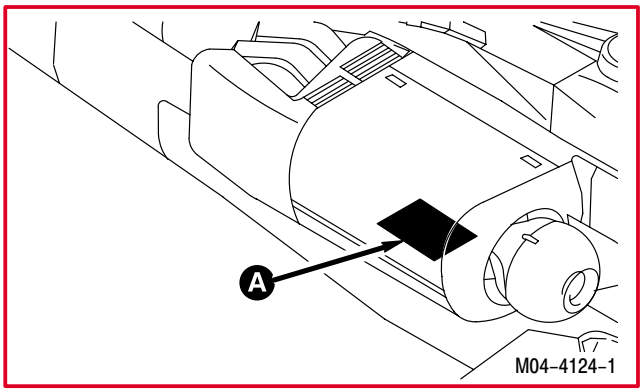
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

- This task is typical for left and/or right engine nacelle fire extinguisher access door installation assemblies.
- This task is accessible through the engine nacelle fire extinguisher access doors.



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2.149. ENGINE NACELLE DOOR INSTALLATION ASSEMBLY REMOVAL/INSTALLATION – continued

2.149.3. Removal

a. **Remove engine nacelle door installation assembly (1) from engine nacelle (2).**

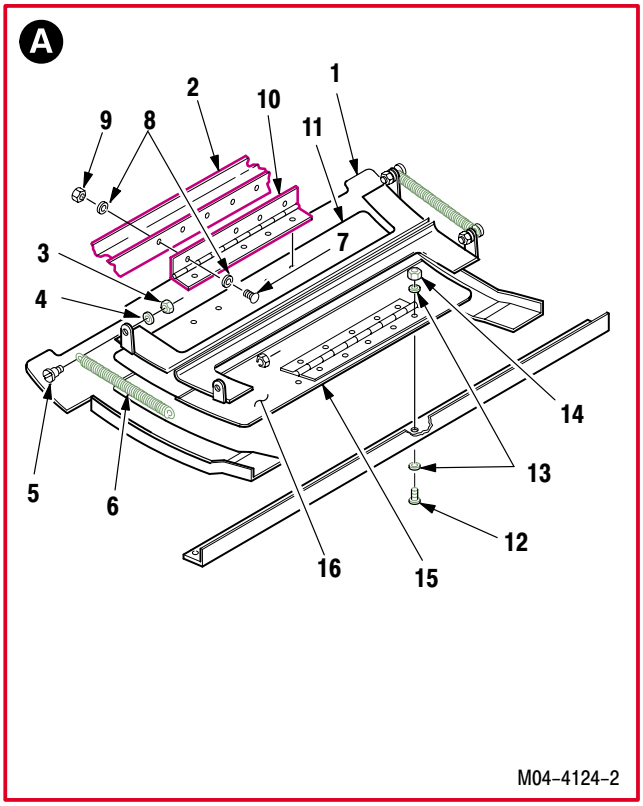
(1) Remove four self-locking nuts (3), washers (4), spring retaining studs (5), and two helical extension springs (6) from door installation assembly (1).

(2) Remove 5 screws (7), 10 washers (8), and 5 self-locking nuts (9) from butt hinge (10) and door assembly (11).

(3) Remove door assembly (11).

(4) Remove 5 screws (12), 10 washers (13), and 5 self-locking nuts (14) from butt hinge (15) and door assembly (16).

(5) Remove door assembly (16).



2.149.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.149.5. Inspection

a. **Check door assembly attachment area for cracks and corrosion** (para 2.129)**.**

b. **Check hinges for damage** (TM 1-1500-204-23)**.**

c. **Check door assembly for stretched and broken springs.** None allowed.

GO TO NEXT PAGE

2.149. ENGINE NACELLE DOOR INSTALLATION ASSEMBLY REMOVAL/INSTALLATION – continued

2.149.6. Installation

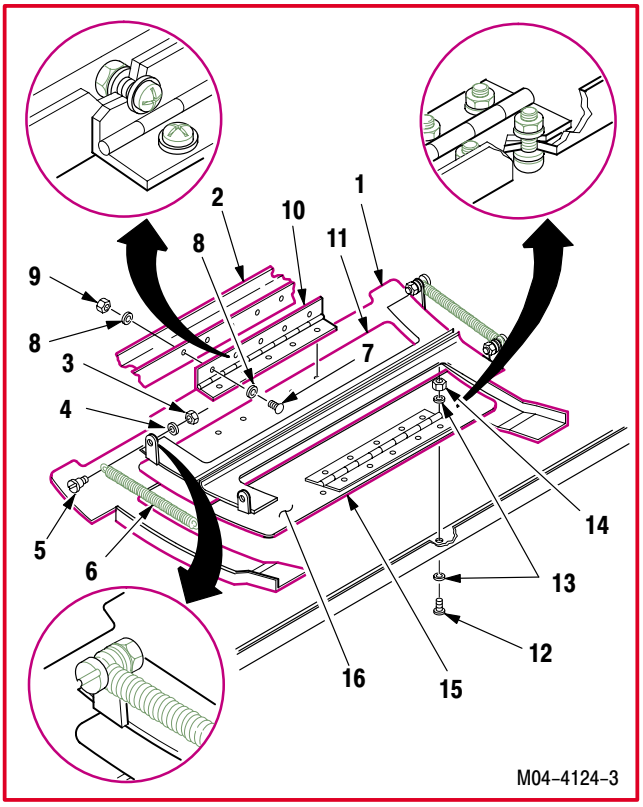
a. **Install door installation assembly (1) on nacelle (2).**

(1) Install 5 screws (12), 10 washers (13), and 5 nuts (14) in hinge (15) and door assembly (16).

(2) Install 5 screws (7), 10 washers (8), and 5 nuts (9) in hinge (10) and door assembly (11).

(3) Install four nuts (3), washers (4), spring return studs (5), and two springs (6) on door installation assembly (1).

b. **Inspect (QA).**



END OF TASK

2.150. FIREWALL ASSEMBLY NO. 1 OR NO. 2 AFT INBOARD ENGINE MOUNT SUPPORT BEARING REPLACEMENT

2.150.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.150.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
0.300 - 24/0 - 24-inch inside/outside vernier caliper (item 54, App H)
Chemical protective gloves (item 154, App H)
Universal puller kit (item 243, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Cellophane (item 41, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound primer (item 146, App F)
Sealing compound (item 167, App F)
Tape (item 206, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

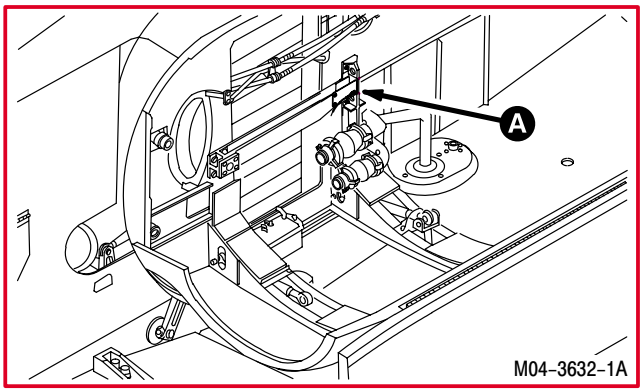
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
4.3	No. 1 engine removed
	or
4.8	No. 2 engine removed
4.85	No. 1 or No. 2 aft engine mount support removed

NOTE

This task is typical for left and/or right aft engine mount bearings.

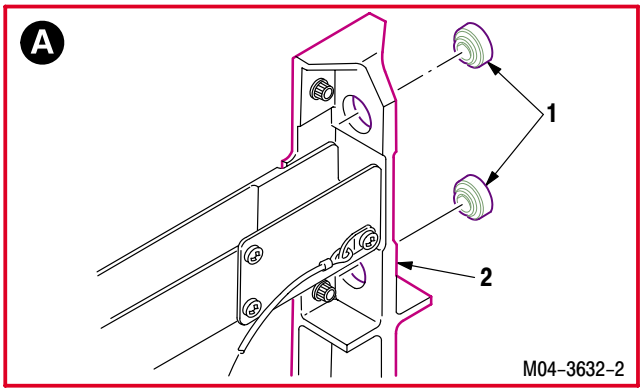


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2.150. FIREWALL ASSEMBLY NO. 1 OR NO. 2 AFT INBOARD ENGINE MOUNT SUPPORT BEARING REPLACEMENT – continued

2.150.3. Removal

a. **Remove and discard bearing (1) from engine mount support (2)** (TM 1-1500-204-23) Use puller kit.



2.150.4. Cleaning



a. **Clean support bearing bore.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

2.150.5. Inspection

a. **Check support for corrosion damage** (para 2.129)**.**

b. **Check support for cracks.**

(1) If cracks are detected, replace support fitting (TM 1-1500-204-23).

c. **Check support bearing bore for elongation.**

(1) Measure bearing bore inside diameter in three places equally spaced apart. Use caliper.

(2) If average measurement is larger than **0.7530 INCH**, and no single measurement exceeds **0.8305 INCH**, repair (para 2.150A).

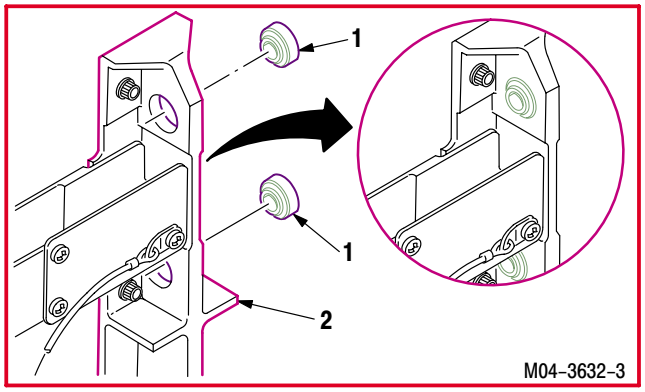
GO TO NEXT PAGE

2.150. FIREWALL ASSEMBLY NO. 1 OR NO. 2 AFT INBOARD ENGINE MOUNT SUPPORT BEARING REPLACEMENT – continued

2.150.6. Installation



a. **Install new bearing (1) in support (2).**



NOTE

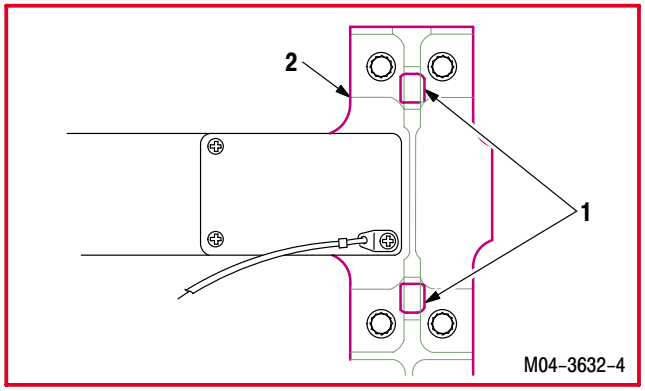
Do not allow primer to penetrate between inner and outer races of bearing.

(1) Apply primer to mating surfaces of bearing (1) and support (2). Use sealing compound primer (item 146, App F). Allow primer to air dry **30 MINUTES**.

NOTE

Do not allow sealing compound to penetrate between inner and outer races of bearing.

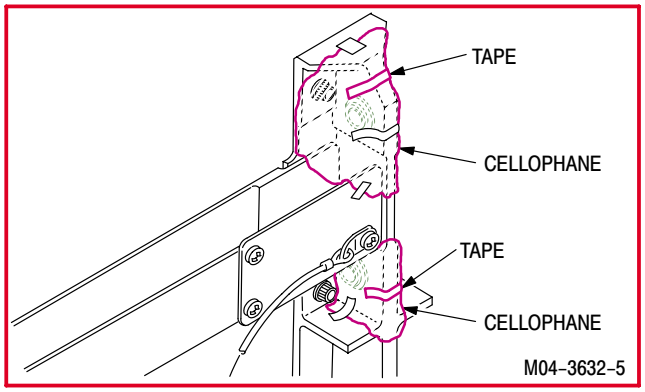
(2) Apply a coat of sealing compound to mating surfaces of bearing (1) and support (2). Use sealing compound (item 167, App F) and brush (item 34, App F).



(3) Hand install bearing (1) in support (2). Ensure outer race of bearing (1) is flush with support (2).

(4) Form a neat fillet of sealing compound around outer race of bearing (1). Remove excess. Use sealing compound (item 167, App F) and brush (item 34, App F).

(5) Cover bearing (1) installation with cellophane and seal with tape. Use cellophane (item 41, App F) and tape (item 206, App F).



(6) Cure **24 HOURS** before removing tape and cellophane.

b. **Inspect (QA).**

c. **Install No. 1 or No. 2 aft engine mount support** (para 4.85)**.**

d. **Install No. 1 or No. 2 engine** (para 4.48 or 4.52)**.**

END OF TASK

2.150A. FIREWALL ASSEMBLY NO. 1 OR NO. 2 AFT INBOARD ENGINE MOUNT SUPPORT BEARING BORE REPAIR

2.150A.1. Description

This task covers: Repair. Installation.

2.150A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
1/2-inch portable pneumatic drill (item 115, App H)
13/16-inch twist drill (item 120A, App H)
Chemical protective gloves (item 154, App H)
Universal puller kit (item 243, App H)
Adjustable hand reamer (item 253A, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Support bushing (figure D-442.2, App D)
Brush (item 34, App F)
Cellophane (item 41, App F)
Sealing compound primer (item 146, App F)
Sealing compound (item 167, App F)
Tape (item 206, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.150	No. 1 or No. 2 aft engine mount support bearing removed

2.150A.3. Repair

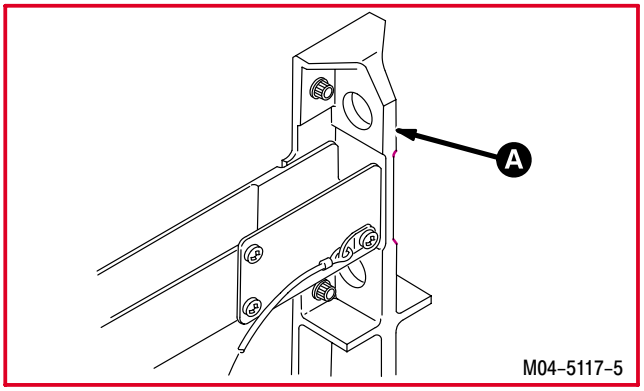
NOTE

This task is typical for left and/or right aft engine mount supports.

a. **Repair elongated hole.**

(1) Drill bearing bore to **0.8125 INCH**. Use pneumatic drill and twist drill.

(2) Ream enlarged bearing bore **0.8295-0.8305 INCH**. Use hand reamer.



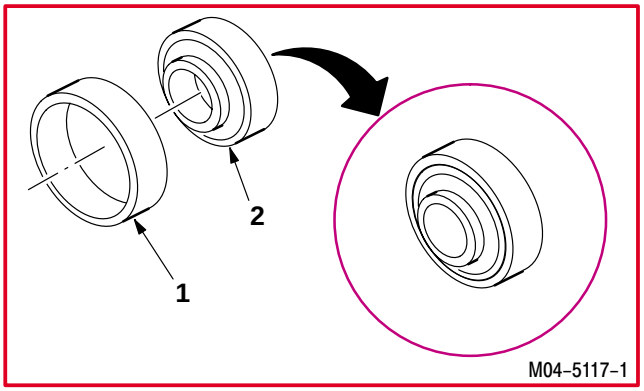
GO TO NEXT PAGE

2.150A. FIREWALL ASSEMBLY NO. 1 OR NO. 2 AFT INBOARD ENGINE MOUNT SUPPORT BEARING BORE REPAIR – continued

2.150A.4. Installation



a. **Install bushing (1) and bearing (2) in support (3).**



CAUTION

Do not allow primer to penetrate between inner and outer races of bearing.

(1) Apply primer to mating surfaces of bushing (1) and bearing (2). Use bushing (figure D-442.2, App D) and sealing compound primer (item 146, App F). Allow primer to air dry **30 MINUTES**.

CAUTION

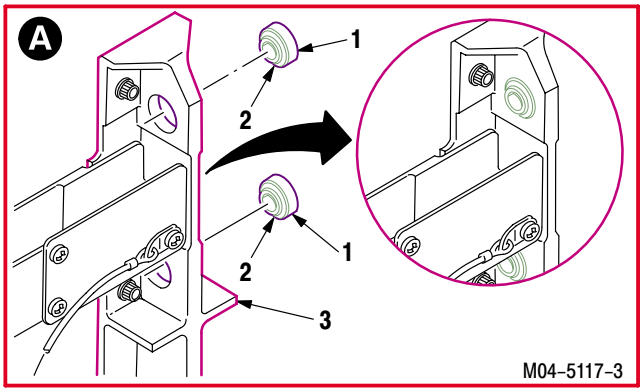
Do not allow sealing compound to penetrate between inner and outer races of bearing.

(2) Apply a coat of sealing compound to mating surfaces of bushing (1) and bearing (2). Use sealing compound (item 167, App F) and brush (item 34, App F).

(3) Press bushing (1) flush in bearing (2). Use puller kit.

(4) Hand install bearing (2) and bushing (1) in support (3). Ensure outer race of bearing (2) is flush with support (3).

(5) Form a fillet of sealing compound around outer race of bearing (2), bushing (1), and support (3). Remove excess sealing compound. Use sealing compound (item 167, App F) and brush (item 34, App F).



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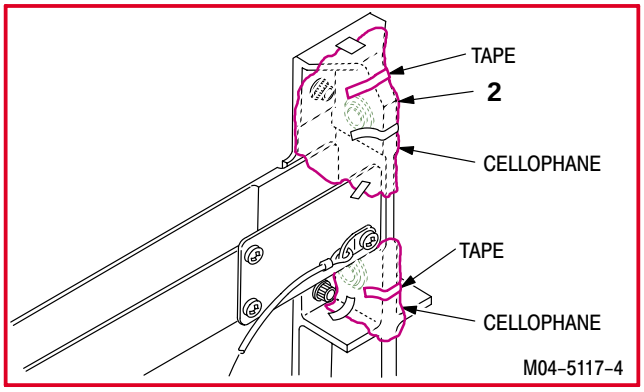
2.150A. FIREWALL ASSEMBLY NO. 1 OR NO. 2 AFT INBOARD ENGINE MOUNT SUPPORT BEARING BORE REPAIR – continued

(6) Cover bearing (2) installation with cellophane and seal with tape. Use cellophane (item 41, App F) and tape (item 206, App F).

(7) Allow sealing compound to cure **24 HOURS** before removing tape and cellophane.

b. **Inspect (QA).**

c. **Install No. 1 and No. 2 engine mount support bearing** (para 2.150)**.**



END OF TASK

2.151. ENGINE NACELLE STRUT ASSEMBLY REMOVAL/INSTALLATION

2.151.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.151.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Shim (item 181, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

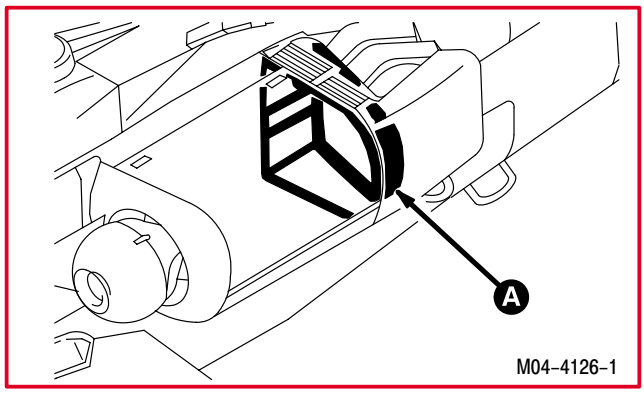
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
4.103	No. 1 or No. 2 engine shroud assembly removed

NOTE

This task is typical for left and/or right engine nacelle strut assemblies.



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2.151. ENGINE NACELLE STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

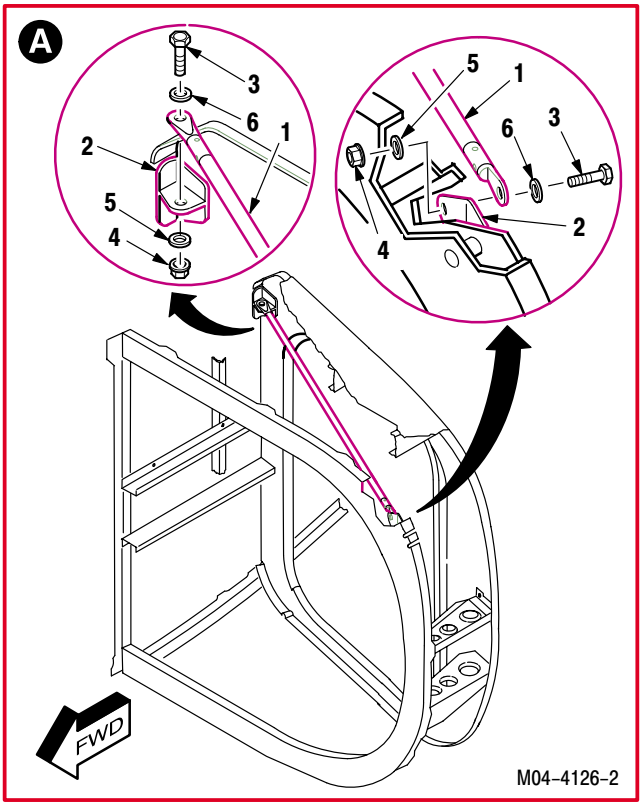
2.151.3. Removal

a. **Remove engine nacelle strut assembly (1) from engine nacelle (2).**

(1) Hold two shear bolts (3). Remove nuts (4) and washers (5).

(2) Remove two bolts (3) and washers (6) from strut (1).

(3) Remove strut (1) from nacelle (2).



2.151.4. Cleaning

a. **Wipe strut attachment area with a clean rag.**

2.151.5. Inspection

a. **Check strut attachment area for corrosion** (para 1.49)**.**

b. **Check strut attachment area for cracks** (TM 1-1500-204-23)**.**

2.151.6. Repair



a. **Repair strut (1) by replacing end fitting (7).**

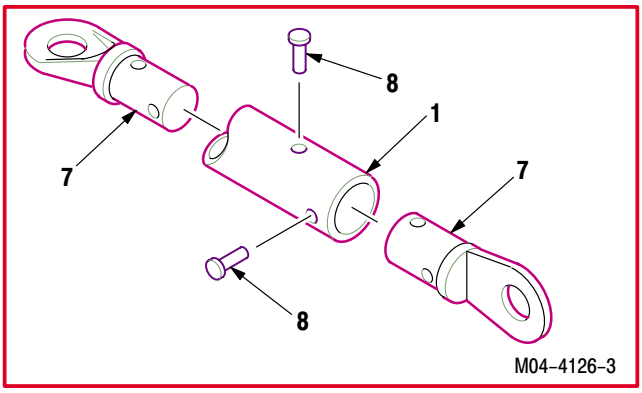
(1) Remove rivets (8) and end fitting (7) from strut (1) (TM 1-1500-204-23).

(2) Clean strut (1) fitting area. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F) (para 1.47).

(3) Pre-fit end fitting (7) to strut (1).

(4) Apply liquid shim to end fitting (7). Use brush (item 34, App F) and shim (item 181, App F).

(5) Install rivets (8) on end fitting (7) and strut (1) (TM 1-1500-204-23).



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2.151. ENGINE NACELLE STRUT ASSEMBLY REMOVAL/INSTALLATION – continued

2.151.7. Installation

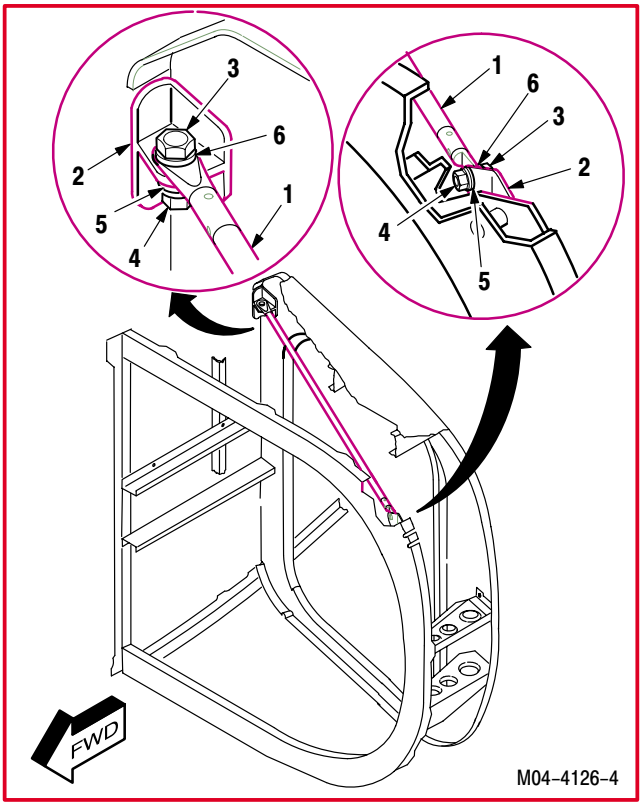
a. **Install strut (1) on nacelle (2).**

(1) Install two bolts (3) and washers (6) in strut (1).

(2) Hold two bolts (3). Install washers (5) and nuts (4).

b. **Inspect (QA).**

c. **Install No. 1 or No. 2 engine shroud assembly** (para 4.103)**.**



END OF TASK

SECTION XII. EQUIPMENT AND FURNISHINGS MAINTENANCE

2.152. CPG GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION

2.152.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.152.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

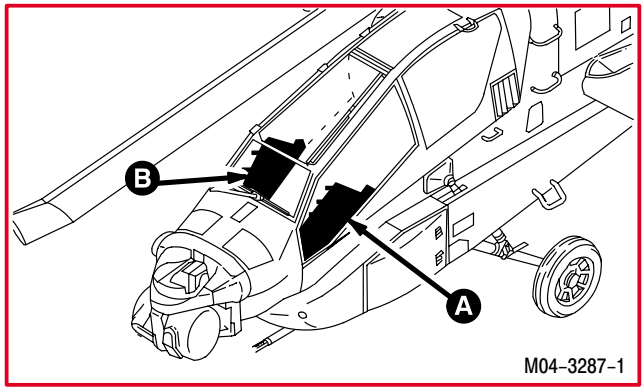
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right side except where noted.



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2.152. CPG GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION – continued

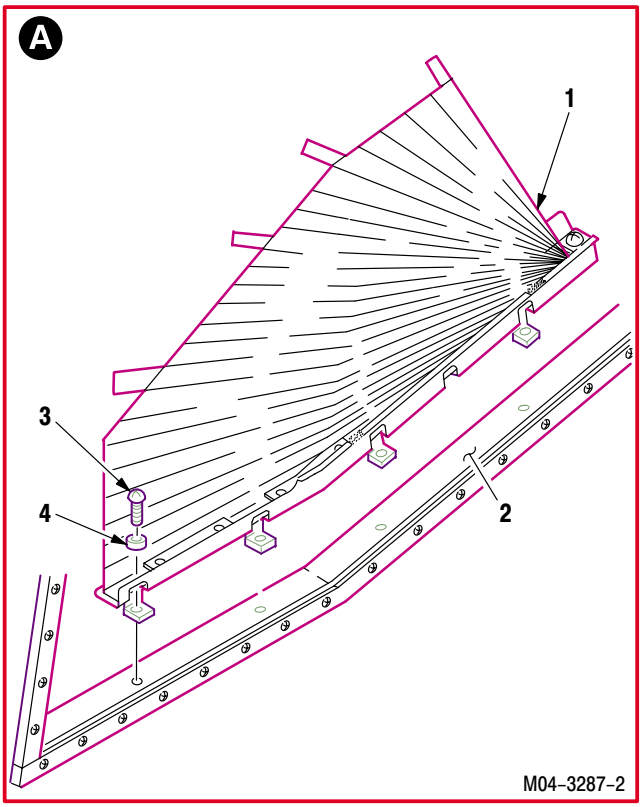
2.152.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove CPG left glareshield curtain/tray (1) from airframe (2).**

(1) Remove four screws (3) and washers (4) from airframe (2).

(2) Remove tray (1) from airframe (2).



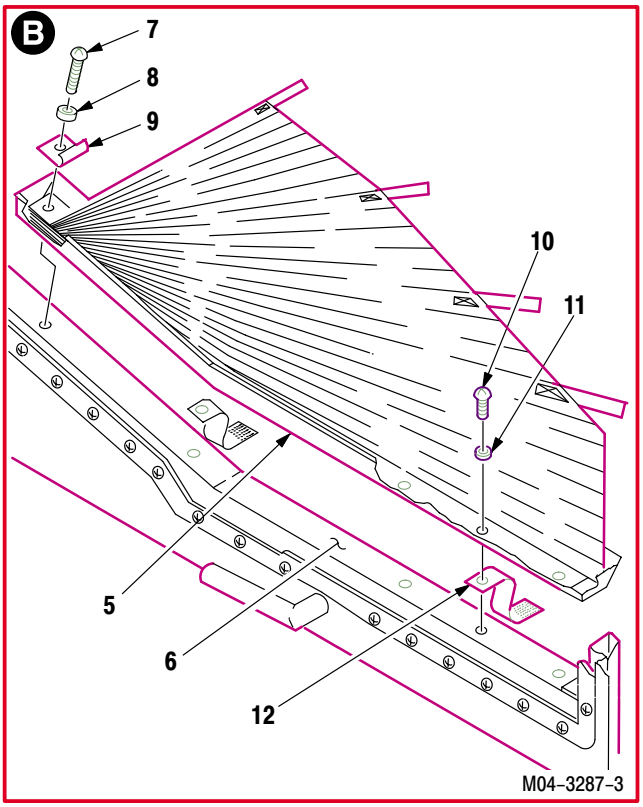
c. **Remove CPG right glareshield curtain/tray (5) from CPG door frame (6).**

(1) Remove screw (7), washer (8), and washer (9) from tray (5).

(2) Remove four screws (10) and washers (11) from tray (5) and frame (6).

(3) Remove tray (5) from frame (6).

(4) Remove two curtain straps assemblies (12) from frame (6).



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2.152. CPG GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION – continued

2.152.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.152.5. Inspection

a. **Check curtain/tray for cracks and tears.**

(1) Tears in curtain up to **0.50 INCH** are allowed. If tear exceeds **0.50 INCH**, replace curtain.

(2) Cracks in curtain tray up to **0.25 INCH** allowed if not in a location that could cause hand injury.

b. **Check straps for cracks.**

(1) Small cracks are allowed if they do not affect deployment of curtain.

2.152.6. Installation

a. **Install curtain/tray (1) on frame (2).**

(1) Install tray (1) on frame (2).

(2) Install four screws (3) through washers (4), tray (1), and frame (2).

b. **Install curtain/tray (5) on frame (6).**

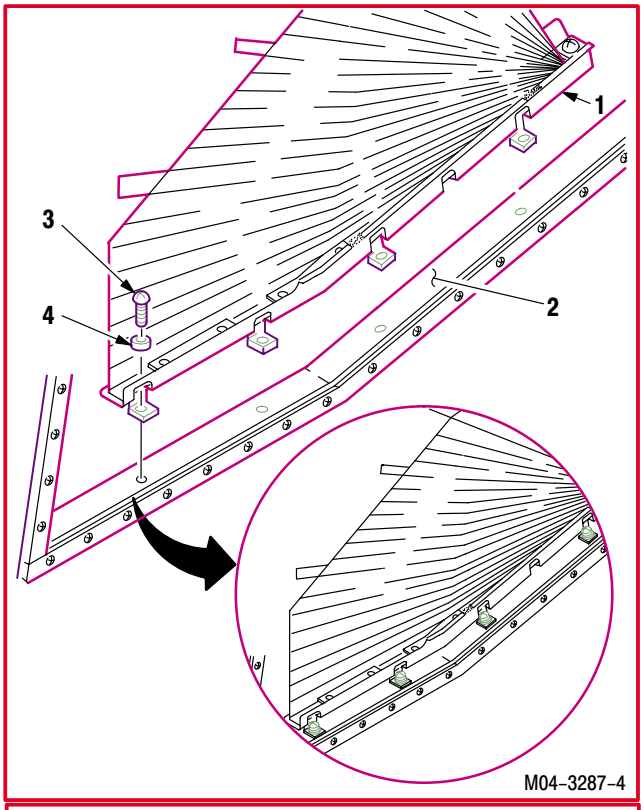
(1) Install two straps (12) on frame (6).

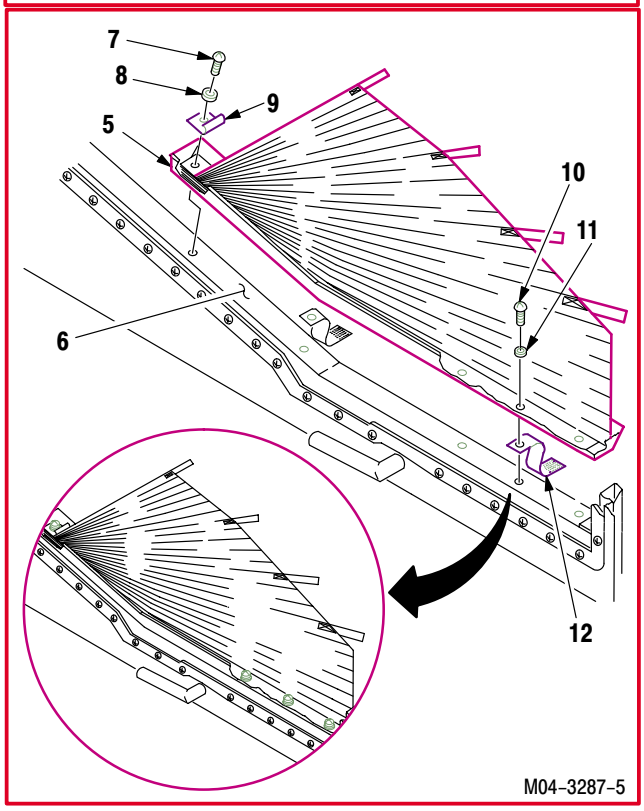
(2) Install tray (5) on frame (6).

(3) Install four screws (10) through washers (11), tray (5), straps (12), and frame (6).

(4) Install screw (7) through washer (8), washer (9), tray (5), and frame (6).

c. **Inspect (QA).**





END OF TASK

2.153. CPG GLARESHIELD EXTENSION ASSEMBLY REMOVAL/INSTALLATION

2.153.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.153.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

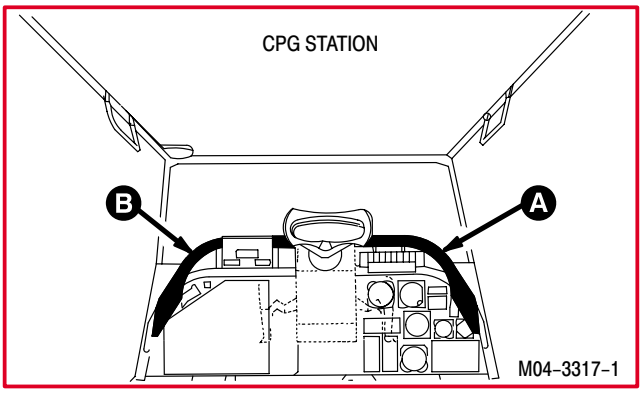
Lubricant (item 112, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.153. CPG GLARESHIELD EXTENSION ASSEMBLY REMOVAL/INSTALLATION – continued

2.153.3. Removal

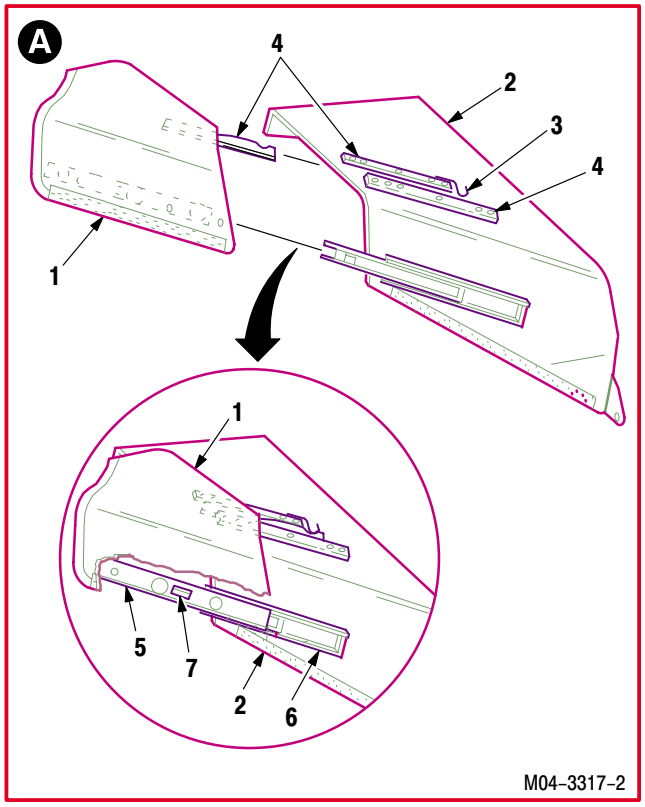
a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove CPG right extension assembly (1) from right fixed glareshield assembly (2).**

(1) Hold spring (3) on guide assembly (4) out of way.

(2) Insert 6-inch scale between glareshield track (5) and channel assembly (6) to release lock (7).

(3) Slide track (5) on extension (1) out of channel (6) on glareshield (2).

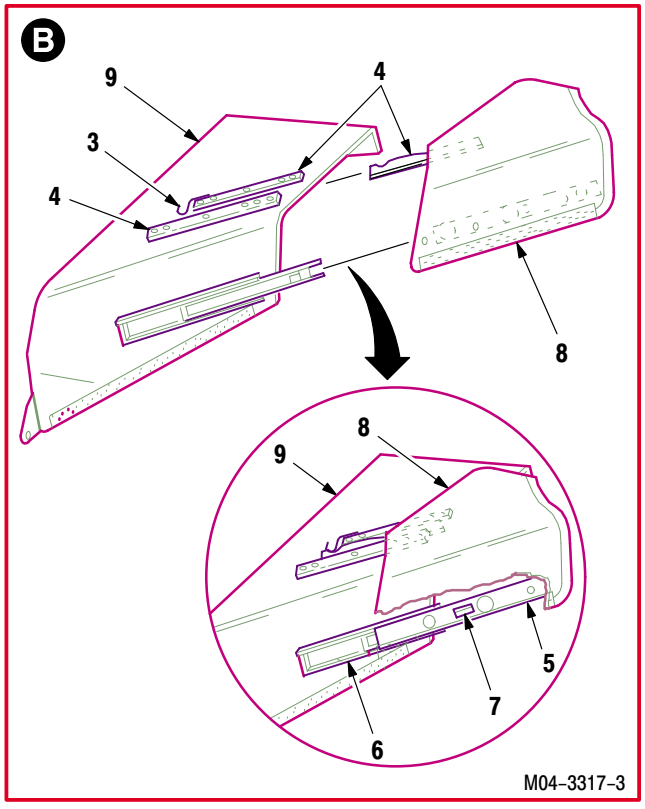


c. **Remove CPG left extension assembly (8) from left fixed glareshield assembly (9).**

(1) Hold spring (3) on guide (4) out of way.

(2) Insert 6-inch scale between track (5) and channel (6) to release lock (7).

(3) Slide track (5) on extension (8) out of channel (6) on glareshield (9).



2.153.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.153.5. Inspection

a. **Check extensions for cracks.** None allowed.

b. **Check channel and track for freedom of movement.**

c. **Check guides on glareshields and extensions for cracks.** None allowed.

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2.153. CPG GLARESHIELD EXTENSION ASSEMBLY REMOVAL/INSTALLATION – continued

2.153.6. Installation



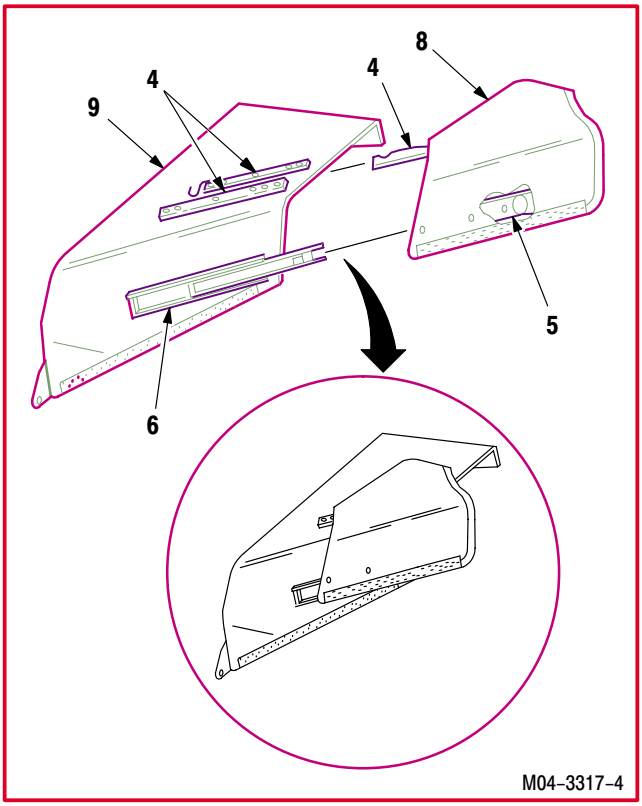
a. **Lubricate channel (6).** Use lubricant (item 112, App F).

b. **Install extension (8) on glareshield (9).**

(1) Aline track (5) on extension (8) with channel (6) on glareshield (9).

(2) Aline guide (4) on extension (8) with two guides (4) on glareshield (9).

(3) Slide track (5) on extension (8) in channel (6) on glareshield (9).



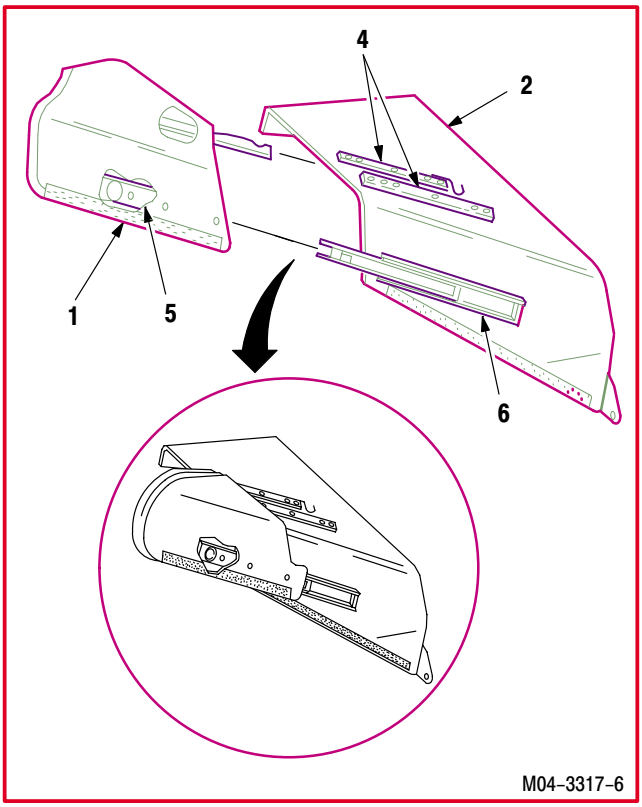
c. **Install extension (1) on glareshield (2).**

(1) Aline track (5) on extension (1) with channel (6) on glareshield.

(2) Aline guide (4) on extension (1) with two guides (4) on glareshield (2).

(3) Slide track (5) on extension (1) in channel (6) on glareshield (2).

d. **Inspect (QA).**



END OF TASK

2.154. CPG FIXED GLARESHIELD REMOVAL/INSTALLATION

2.154.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.154.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)

References:

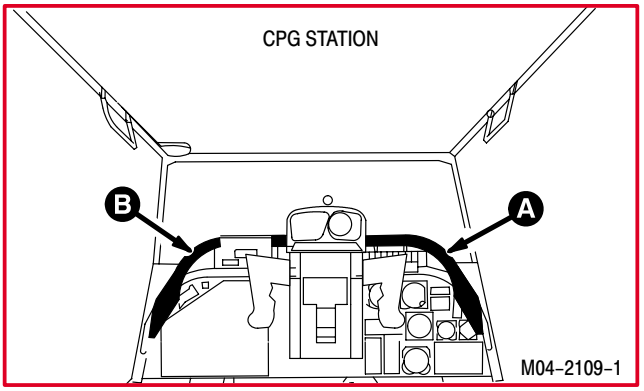
TM 1-1500-204-23
TM 9-1230-476-20-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
9.122	CPG master caution/warning panel removed
12.37	CPG FIRE EMERG panel detached
9.79	CPG instrument glareshield lights removed

Personnel Required:

67R	Attack Helicopter Repairer
68X	Armament/Electrical System Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector



2.154.3. Removal

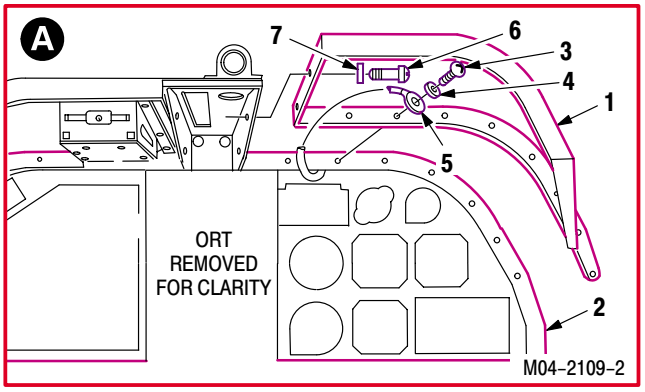
a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove CPG right glareshield (1) from CPG instrument panel (2).**

(1) Remove seven screws (3), washers (4), and electrical lead (5).

(2) Remove two screws (6) and washers (7).

(3) Remove right glareshield (1) from panel (2).



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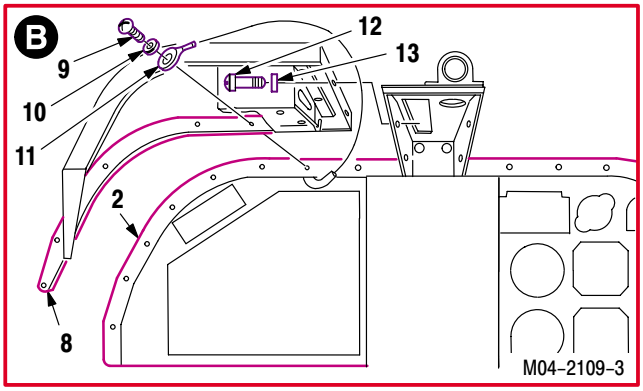
2.154. CPG FIXED GLARESHIELD REMOVAL/INSTALLATION – continued

c. **Remove CPG left glareshield (8) from panel (2).**

(1) Remove eight screws (9), washers (10), and one electrical lead (11).

(2) Remove two screws (12) and washers (13).

(3) Remove left glareshield (8) from panel (2).



2.154.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.154.5. Inspection

a. **Check glareshield for cracks.**

(1) Cracks up to **0.50 INCH** are allowed. Cracks over **0.50 INCH**, replace glareshield.

b. **Check glareshield mounting holes for stripped threads** (TM 1-1500-204-23)**.**

2.154.6. Installation

NOTE

Install all screws and washers before tightening.

a. **Install left glareshield (8) on panel (2).**

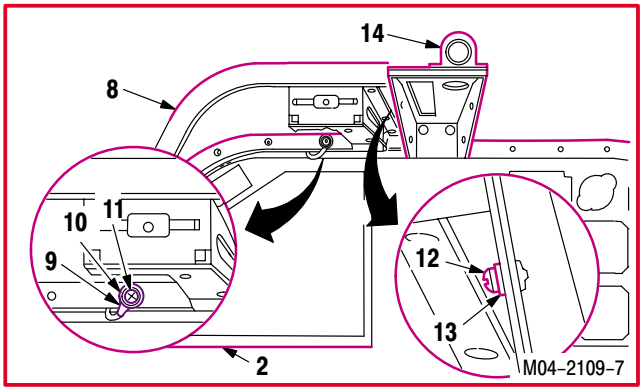
(1) Aline left glareshield (8) with panel (2) and boresight support (14).

NOTE

Electrical lead is installed on third screw outboard of boresight support.

(2) Install eight screws (9), washers (10), and electrical lead (11).

(3) Install two screws (12) and washers (13).



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2.154. CPG FIXED GLARESHIELD REMOVAL/INSTALLATION – continued

b. **Install right glareshield (1) on panel (2).**

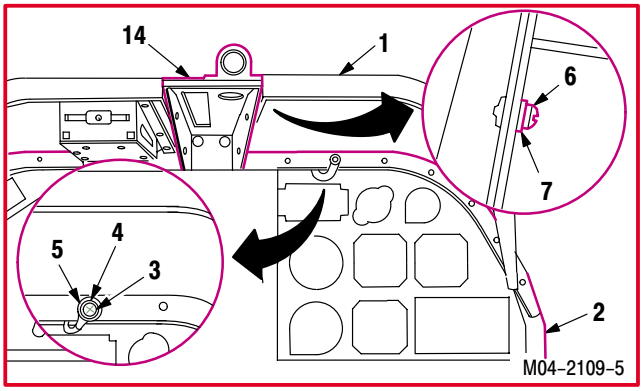
(1) Aline right glareshield (1) with panel (2) and boresight support (14).

NOTE

Electrical lead is installed on second screw outboard right of boresight support.

(2) Install seven screws (3), electrical lead (5), and seven washers (4).

(3) Install two screws (6) and washers (7).



c. **Tighten seven screws (3), eight screws (9), two screws (12), and two screws (6).**

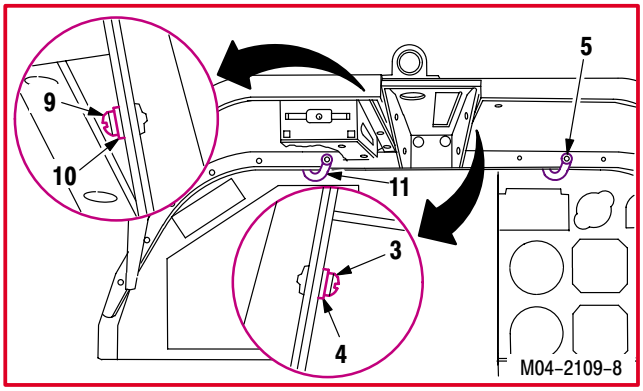
d. **Inspect (QA).**

e. **Attach CPG FIRE EMERG panel** (para 12.37)**.**

f. **Install CPG master caution/warning panel** (para 9.122)**.**

g. **Install CPG flood lights electrical harness** (para 9.79)**.**

h. **Perform boresight reticle unit (BRU) alinement** (TM 9-1230-476-20-1)**.**



END OF TASK

2.155. PILOT GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION

2.155.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.155.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

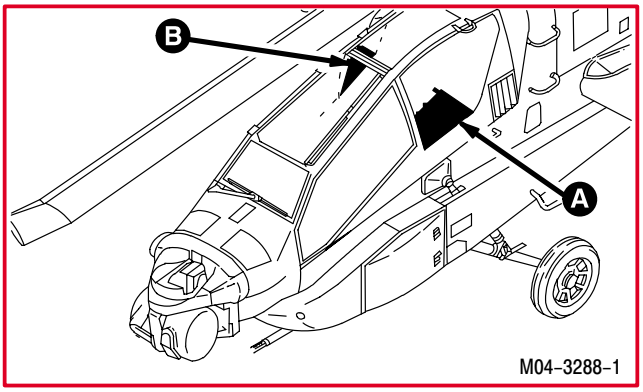
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right side except where noted.



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2.155. PILOT GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION – continued

2.155.3. Removal

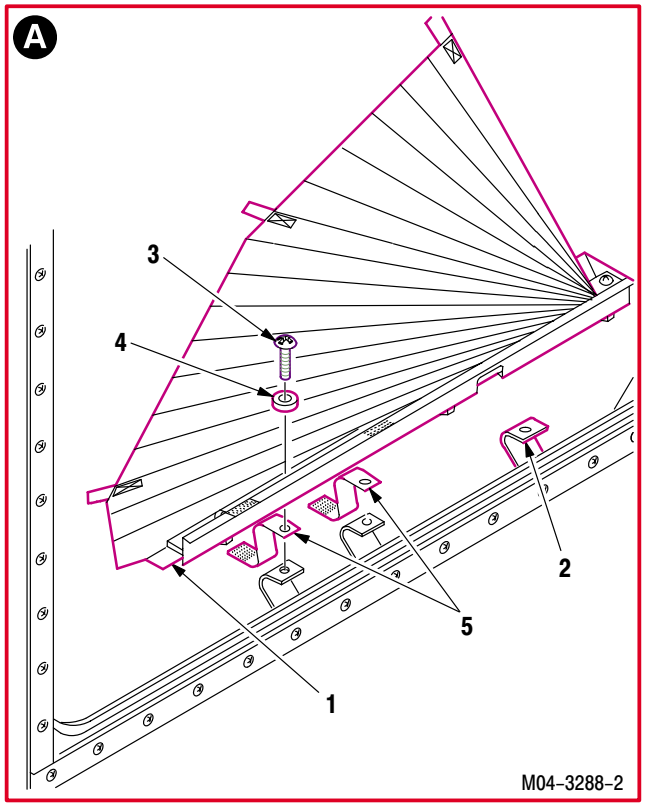
a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove pilot left glareshield curtain/tray (1) from clips (2).**

(1) Remove three screws (3) and washers (4) from tray (1) and clips (2).

(2) Remove tray (1) from clip (2).

(3) Remove two curtain strap assemblies (5) from clips (2).



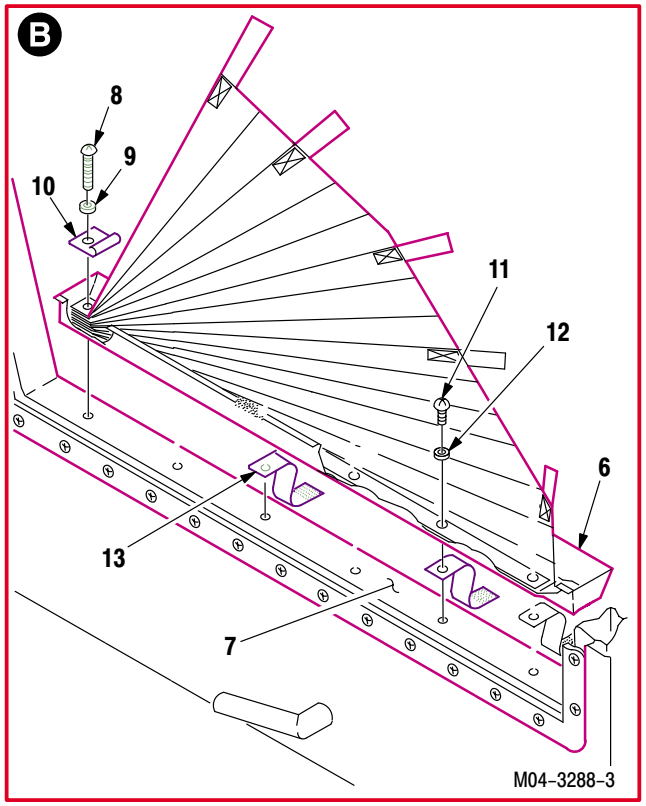
c. **Remove pilot right glareshield curtain/tray (6) from pilot door frame (7).**

(1) Remove screw (8), washer (9), and spring tension clip (10) from tray (6) and frame (7).

(2) Remove five screws (11) and washers (12) from tray (6) and frame (7).

(3) Remove tray (6) from frame (7).

(4) Remove three curtain strap assemblies (13) from frame (7).



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2.155. PILOT GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION – continued

2.155.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.155.5. Inspection

a. **Check curtain/tray for cracks and tears.**

(1) Tears in curtain up to **0.50 INCH** are allowed. If tear exceeds **0.50 INCH**, replace curtain.

(2) Cracks in curtain tray up to **0.25 INCH** are allowed if not in a location that could cause hand injury.

b. **Check straps for cracks.**

(1) Small cracks are allowed if they do not affect deployment of curtain.

2.155.6. Installation

a. **Install curtain/tray (1) on clips (2).**

(1) Install two straps (5) on clips (2).

(2) Install tray (1) on three clips (2).

(3) Install three screws (3) through washers (4), tray (1), strap (5), and clips (2).

b. **Install curtain/tray (6) on frame (7).**

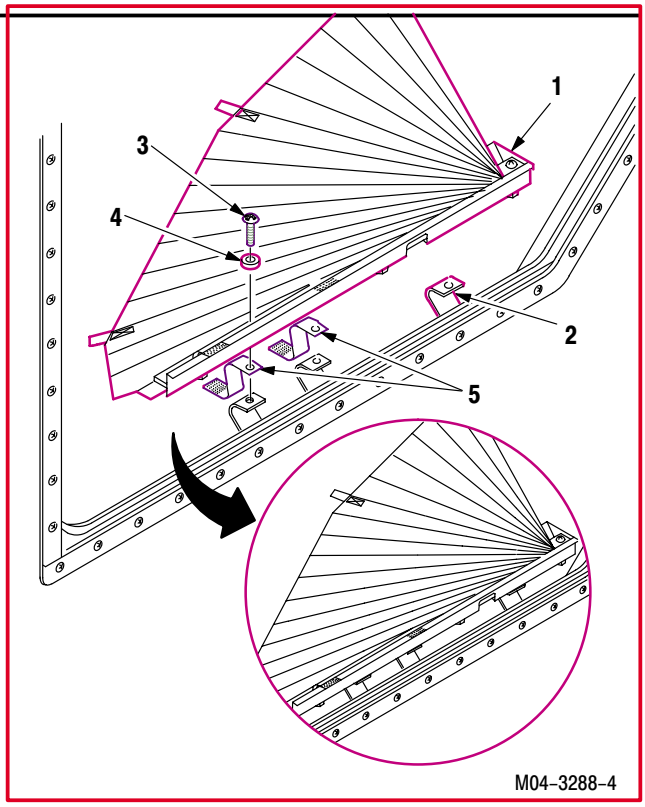
(1) Install three straps (13) on frame (7).

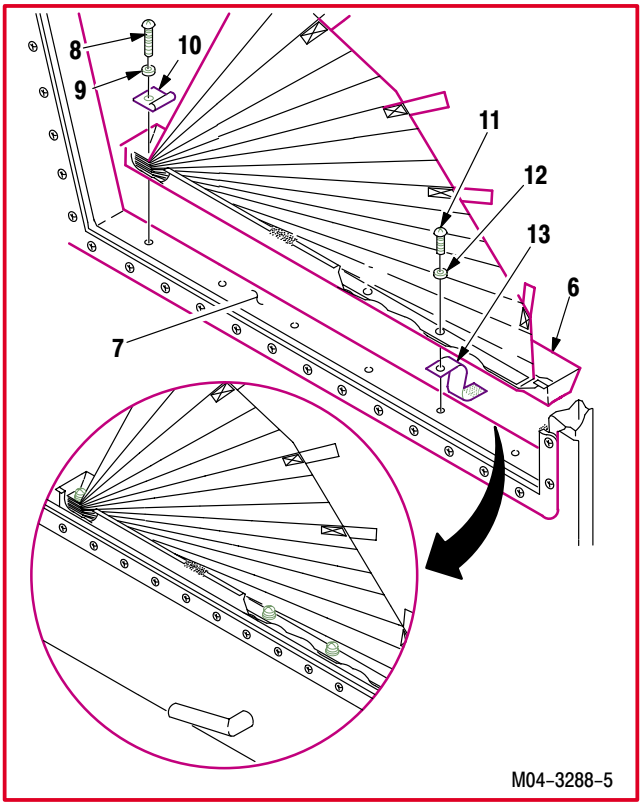
(2) Install tray (6) on frame (7).

(3) Install five screws (11) through five washers (12), tray (6), three straps (13), and frame (7).

(4) Install screw (8) through washer (9), clip (10), tray (6), and frame (7).

c. **Inspect (QA).**





END OF TASK

2.156. PILOT FIXED GLARESHIELD REMOVAL/INSTALLATION

2.156.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.156.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

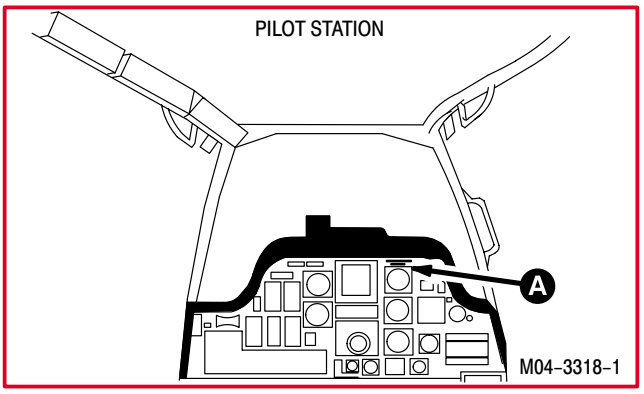
TM 1-1500-204-23

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
8.42	Pilot magnetic compass removed

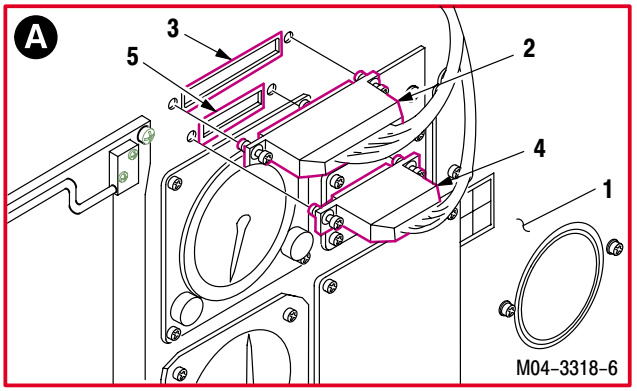


2.156.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **On pilot instrument panel (1), detach connector (DS28)P1 (2) from receptacle J164 (3).**

c. **On panel (1), detach connector (A325)P1 (4) from receptacle J530 (5).**

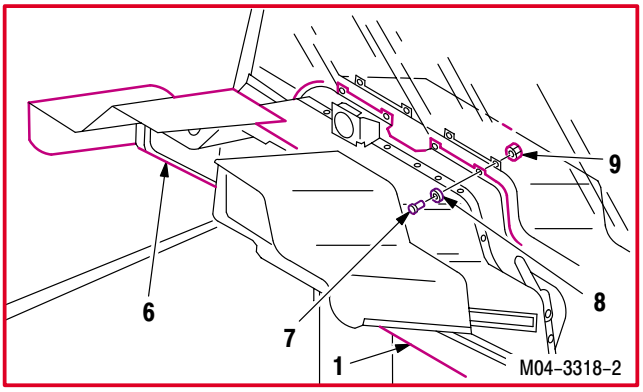


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2.156. PILOT FIXED GLARESHIELD REMOVAL/INSTALLATION – continued

d. **Remove pilot fixed glareshield (6) from panel (1).**

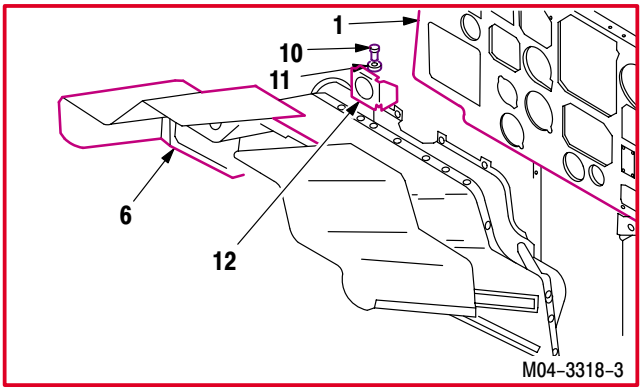
(1) Remove four bolts (7), washers (8), and nuts (9).



(2) Remove 16 screws (10) and washers (11).

(3) Remove compass bracket (12).

(4) Remove glareshield (6) from panel (1).



e. **Remove pilot master caution/warning panel** (para 9.122)**.**

f. **Remove pilot instrument glareshield light** (para 9.79)**.**

2.156.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.156.5. Inspection

a. **Check glareshield for cracks.**

(1) Cracks up to **0.50 INCH** are allowed. Cracks over **0.50 INCH**, replace glareshield.

b. **Check glareshield mounting holes for stripped threads** (TM 1-1500-204-23)**.**

GO TO NEXT PAGE

2.156. PILOT FIXED GLARESHIELD REMOVAL/INSTALLATION – continued

2.156.6. Installation

a. **Install glareshield (6) on panel (1).**

(1) Aline glareshield (6) with panel (2) mounting holes.

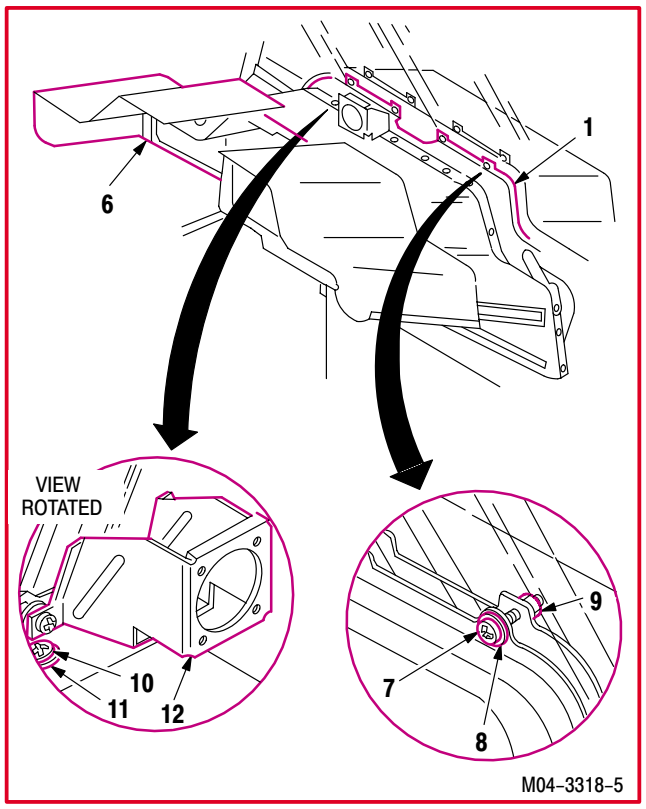
(2) Aline compass bracket (12).

NOTE

Install all screws, bolts, washers, and nuts before tightening.

(3) Install 16 screws (10) and washers (11).

(4) Install four bolts (7), washers (8), and nuts (9).



b. **Attach connector (DS28)P1 (2) to receptacle J164 (3) on panel (1).**

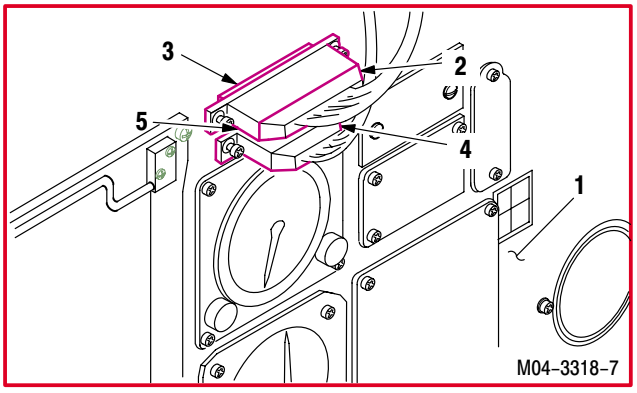
c. **Attach connector (A325)P1 (4) to receptacle J530 (5) on panel (1).**

d. **Install pilot master caution/warning panel** (para 9.122)**.**

e. **Install pilot instrument glareshield light** (para 9.79)**.**

f. **Install pilot magnetic compass** (para 8.42)**.**

g. **Inspect (QA).**



END OF TASK

2.157. PILOT GLARESHIELD EXTENSION ASSEMBLY REMOVAL/INSTALLATION

2.157.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.157.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

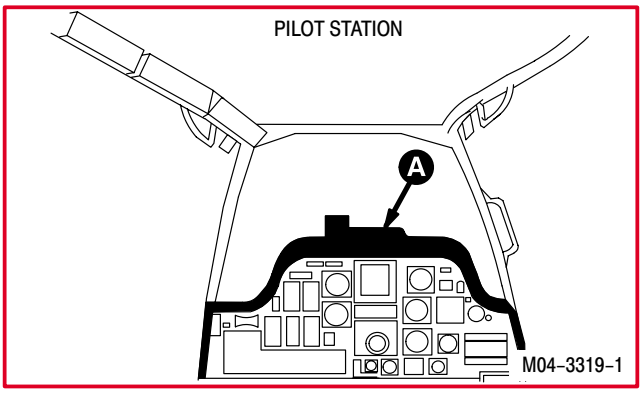
Lubricant (item 112, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



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2.157. PILOT GLARESHIELD EXTENSION ASSEMBLY REMOVAL/INSTALLATION – continued

2.157.3. Removal

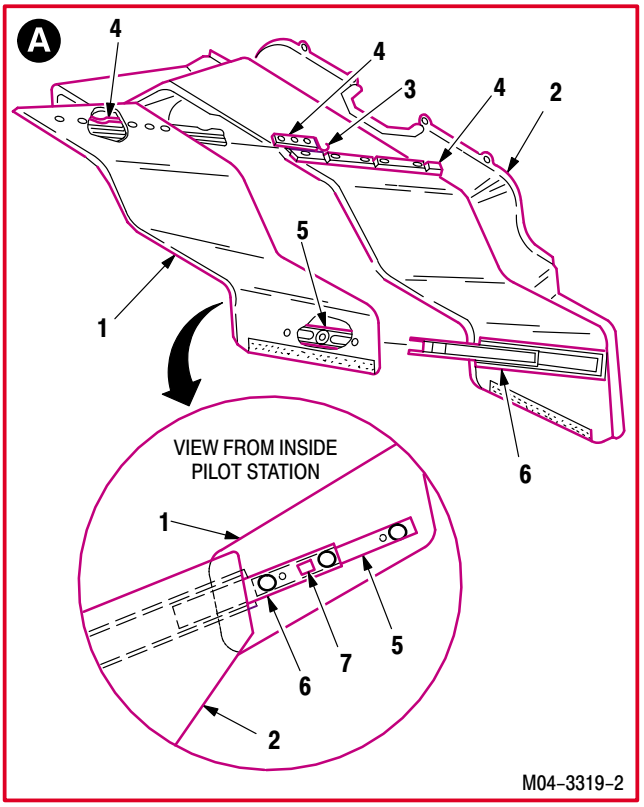
a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove pilot right extension assembly (1) from fixed glareshield assembly (2).**

(1) Hold spring (3) on guide assembly (4) out of way.

(2) Insert 6-inch scale between glareshield track (5) and channel assembly (6) to release lock (7).

(3) Slide track (5) on right extension (1) out of channel (6) on glareshield (2).

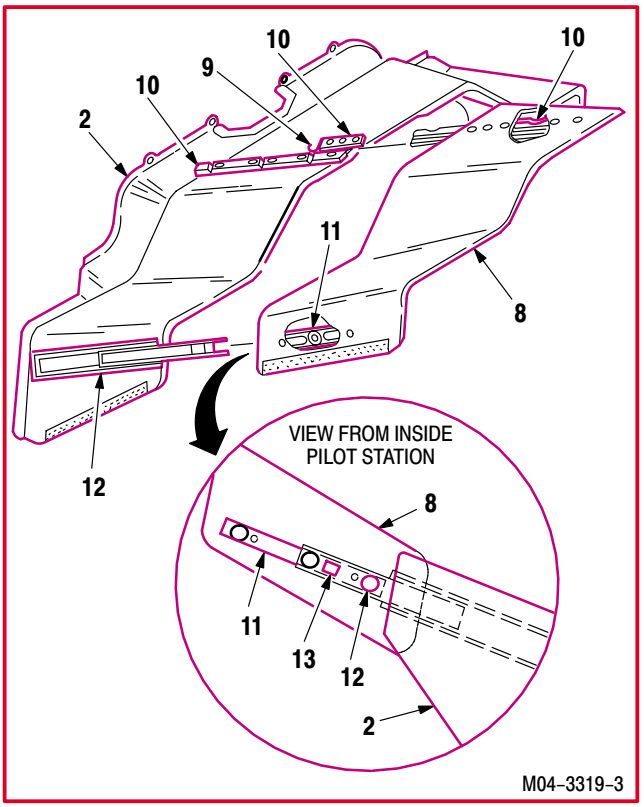


c. **Remove pilot left extension assembly (8) from glareshield (2).**

(1) Hold spring (9) on guide assembly (10) out of way.

(2) Insert 6-inch scale between track (11) and channel assembly (12) to release lock (13).

(3) Slide track (11) on extension (8) out of channel (12) on glareshield (2).



2.157.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.157.5. Inspection

a. **Check extensions for cracks.** None allowed.

b. **Check channel and track for freedom of movement.**

c. **Check guides on glareshield and extensions for cracks.** None allowed.

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2.157. PILOT GLARESHIELD EXTENSION ASSEMBLY REMOVAL/INSTALLATION – continued

2.157.6. Installation



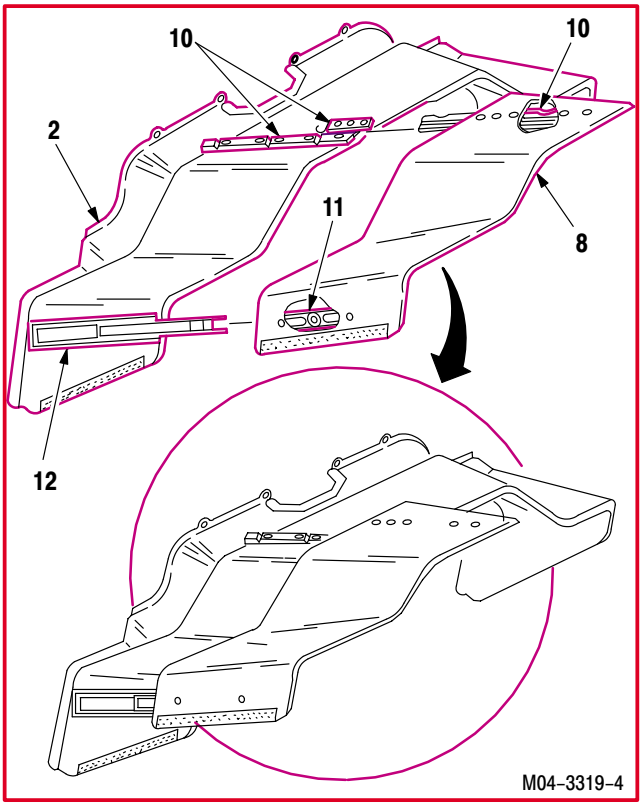
a. **Lubricate channel (6).** Use lubricant (item 112, App F).

b. **Install extension (8) on glareshield (2).**

(1) Aline track (11) on extension (8) with channel (12) on glareshield (2).

(2) Aline guide (10) on extension (8) with two guides (10) on glareshield (2).

(3) Slide track (11) on extension (8) into channel (12) on glareshield (2).



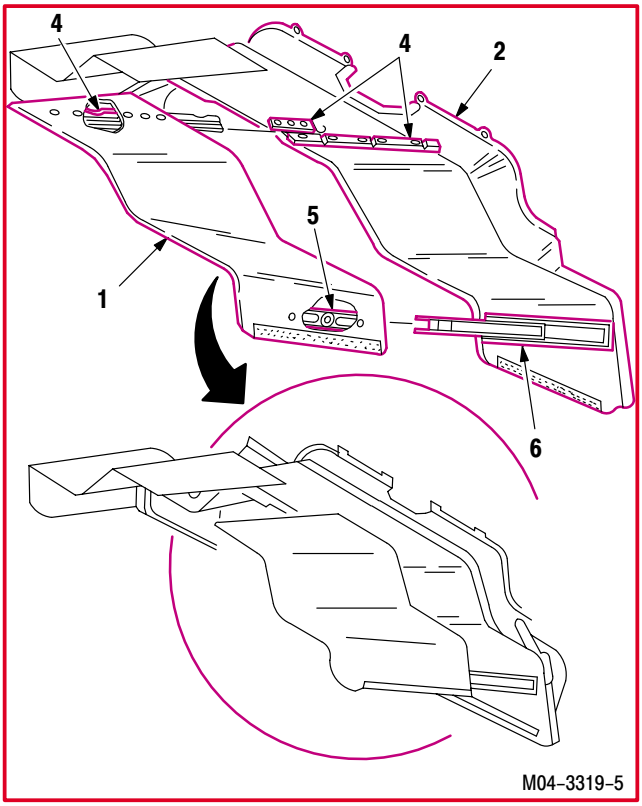
c. **Install extension (1) on glareshield (2).**

(1) Aline track (5) on extension (1) with channel (6) on glareshield (2).

(2) Aline guide (4) on extension (1) with two guides (4) on glareshield (2).

(3) Slide track (5) on extension (1) in channel (6) on glareshield (2).

d. **Inspect (QA).**



END OF TASK

2.158. RIGHT AFT VERTICAL COCKPIT GLARESHIELD REMOVAL/INSTALLATION

2.158.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.158.2. Initial Setup

Tools:

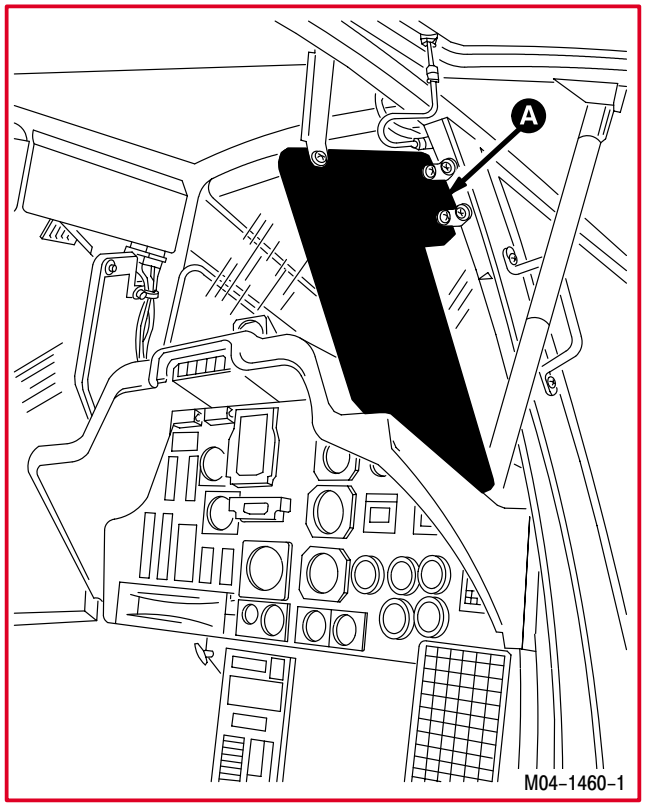
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.158. RIGHT AFT VERTICAL COCKPIT GLARESHIELD REMOVAL/INSTALLATION – continued

2.158.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove right aft vertical aircraft glareshield (1) from four glareshield clips (2) and (3).**

(1) Hold four screws (4). Remove self-locking nuts (5) and washers (6).

(2) Remove four screws (4) and washers (7).

2.158.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.158.5. Inspection

a. **Check clip attaching point for cracks and corrosion** (para 2.12)**.**

b. **Check glareshield for cracks** (para 2.12)**.**

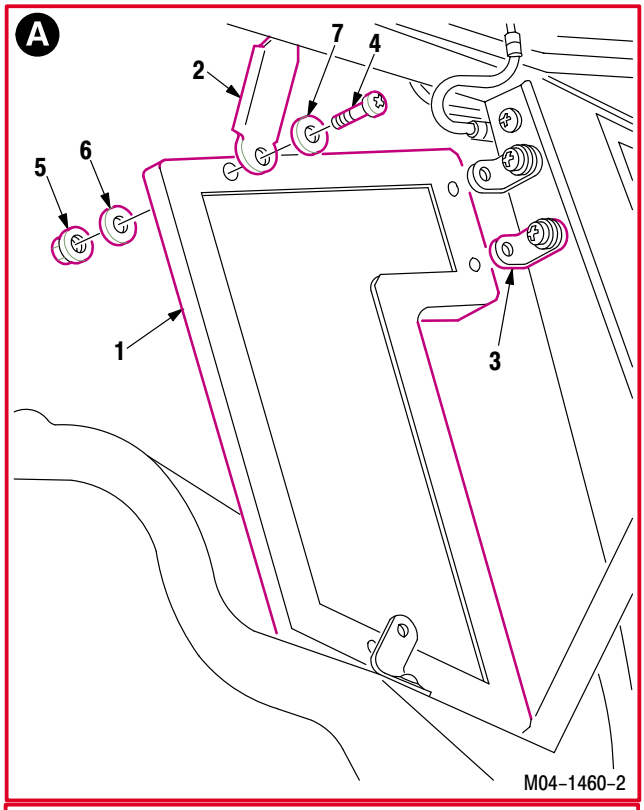
2.158.6. Installation

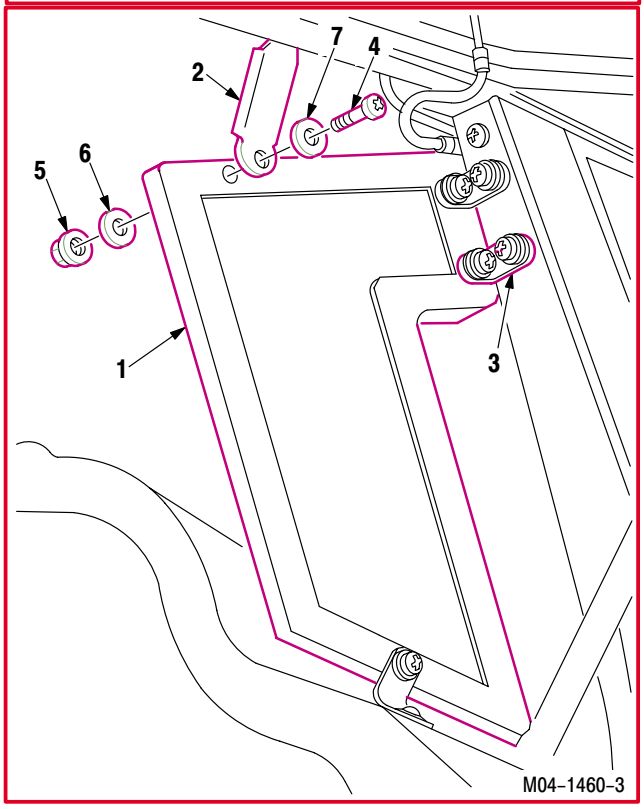
a. **Install glareshield (1) on four clips (2) and (3).**

(1) Install four screws (4) through washers (7), clips (2) and (3), and glareshield (1).

(2) Hold four screws (4). Install washers (6) and nuts (5).

b. **Inspect (QA).**





END OF TASK

2.159. LEFT AFT VERTICAL COCKPIT GLARESHIELD REMOVAL/INSTALLATION

2.159.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.159.2. Initial Setup

Tools:

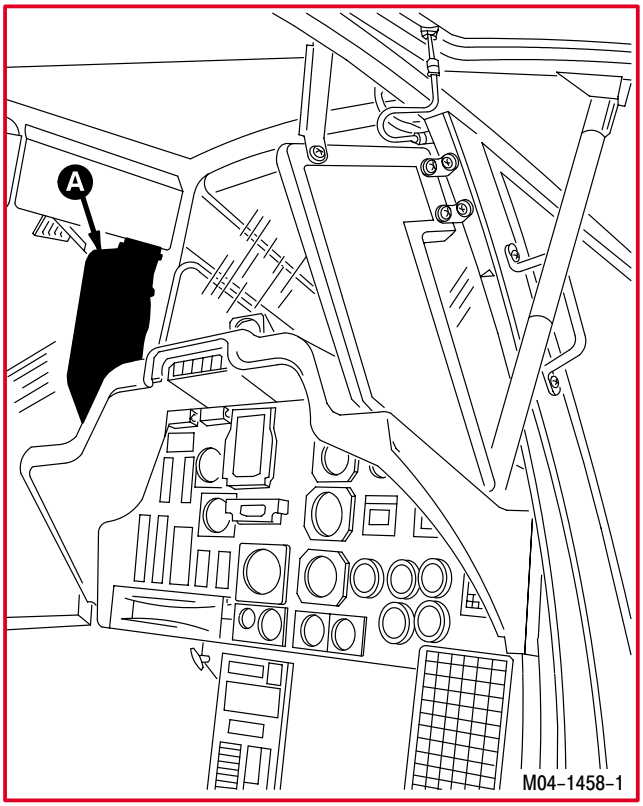
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.159. LEFT AFT VERTICAL COCKPIT GLARESHIELD REMOVAL/INSTALLATION – continued

2.159.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove left aft vertical cockpit glareshield (1) from three glareshield clips (2).**

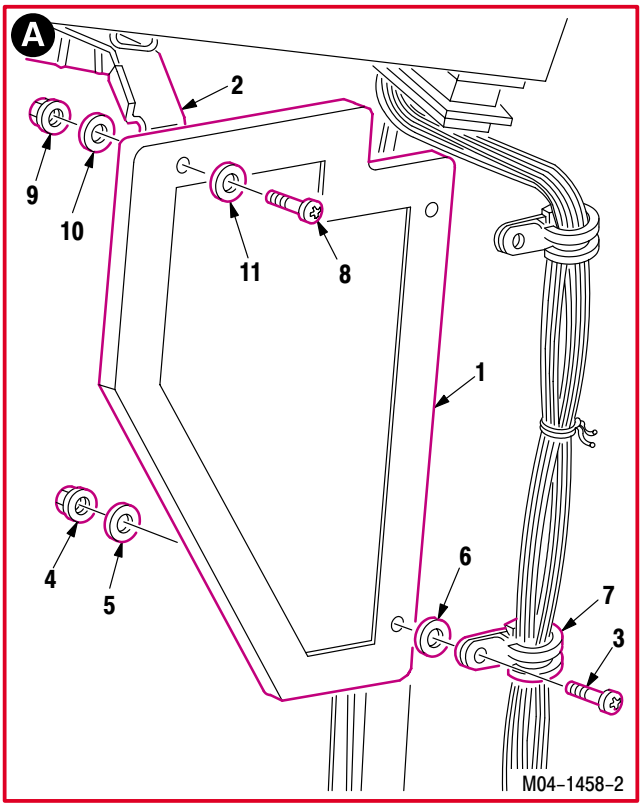
(1) Hold two screws (3). Remove nuts (4) and washers (5).

(2) Remove two screws (3), washers (6), and wire harness loop clamps (7).

(3) Hold screw (8). Remove nut (9) and washer (10).

(4) Remove screw (8) and washer (11).

(5) Remove glareshield (1) from clips (2).



2.159.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.159.5. Inspection

a. **Check clip attaching point for cracks and corrosion** (para 2.12)**.**

b. **Check glareshield for cracks** (para 2.12)**.**

GO TO NEXT PAGE

2.159. LEFT AFT VERTICAL COCKPIT GLARESHIELD REMOVAL/INSTALLATION – continued

2.159.6. Installation

a. **Install glareshield (1) on three clips (2).**

(1) Install two screws (3) through clamps (7), washers (6), glareshield (1), and clips (2).

(2) Install two washers (5) and nuts (4) on screws (3).

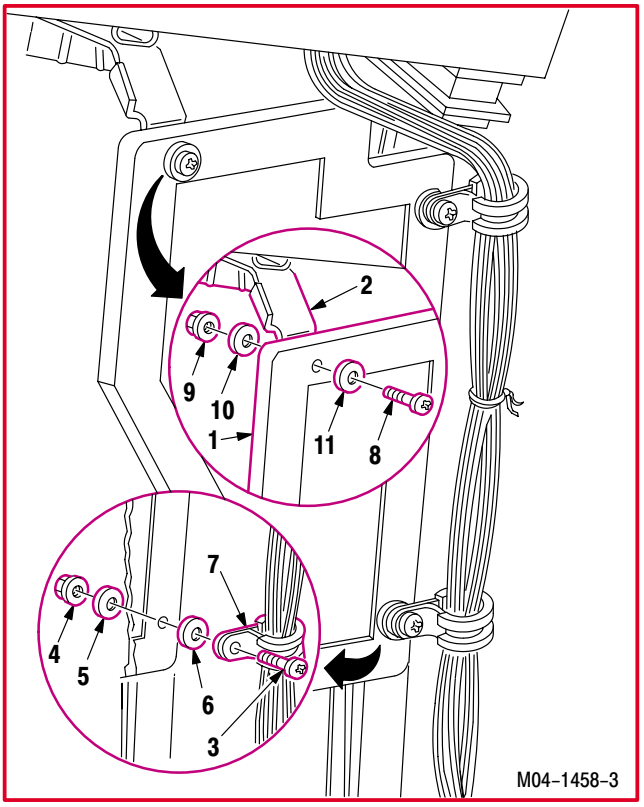
(3) Hold nut (4). Tighten screw (3) (two places).

(4) Install screw (8) through washer (11), glareshield (1), and clip (2).

(5) Install washer (10) and nut (9) on screw (8).

(6) Hold nut (9). Tighten screw (8).

b. **Inspect (QA).**



END OF TASK

2.160. AFT COCKPIT STOW BOX COVER ASSEMBLY REMOVAL/INSTALLATION

2.160.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.160.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Multimeter (item 215, App H)

References:

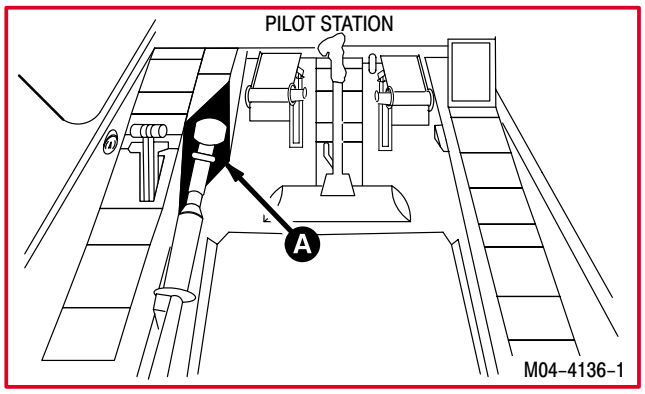
TM 55-1500-323-24

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
13.34	ECS panel removed



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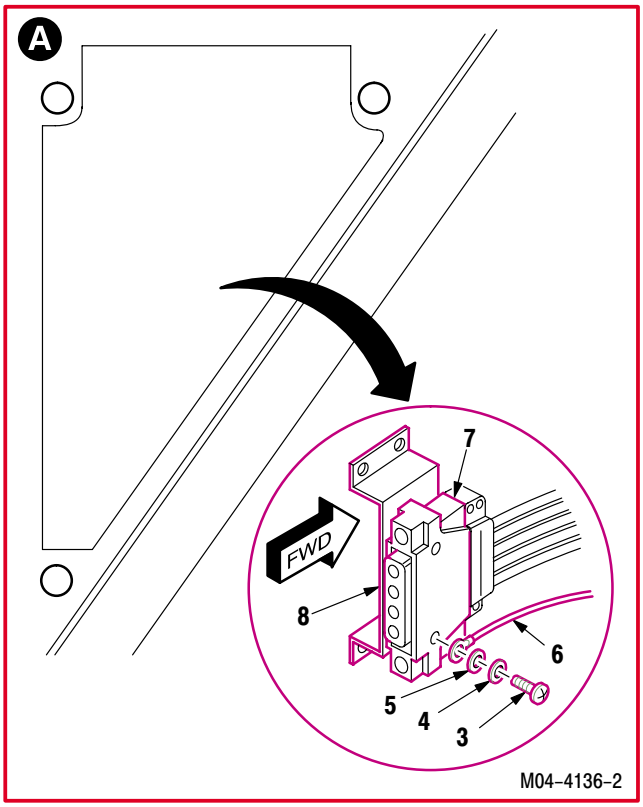
2.160. AFT COCKPIT STOW BOX COVER ASSEMBLY REMOVAL/INSTALLATION – continued

2.160.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

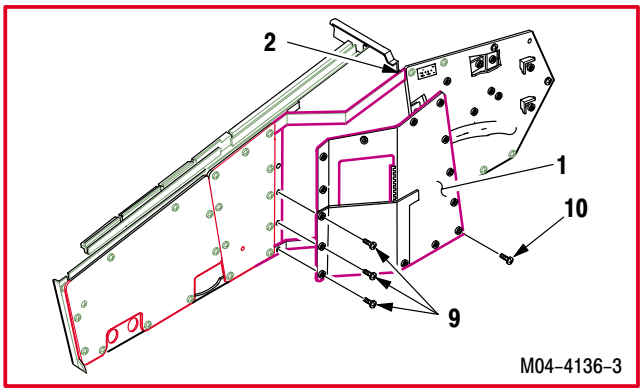
b. **Remove aft cockpit stow box cover assembly (1) from pilot left-hand console (2).**

(1) Remove two screws (3), lockwashers (4), washers (5), and electrical lead (6) from connector (7) and bracket (8).



(2) Remove 3 screws (9) and 12 screws (10) from stow box (1).

(3) Remove stow box (1) from console (2).



2.160.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.160.5. Inspection

a. **Check stow box attachment area for cracks and corrosion** (para 2.12)**.**

b. **Check stow box for cracks** (para 2.12)**.**

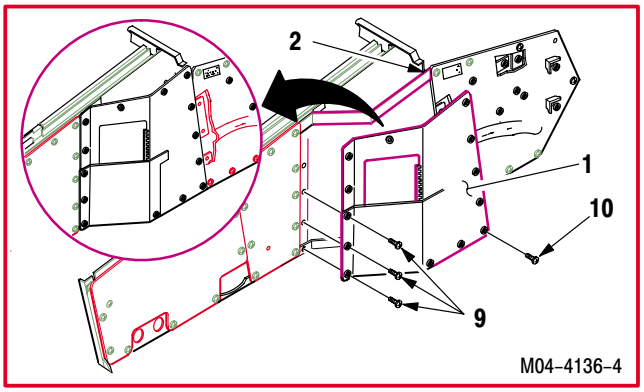
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2.160. AFT COCKPIT STOW BOX COVER ASSEMBLY REMOVAL/INSTALLATION – continued

2.160.6. Installation

a. **Install cockpit stow box (1) in console (2).**

(1) Install 3 screws (9) and 12 screws (10) in stow box (1).



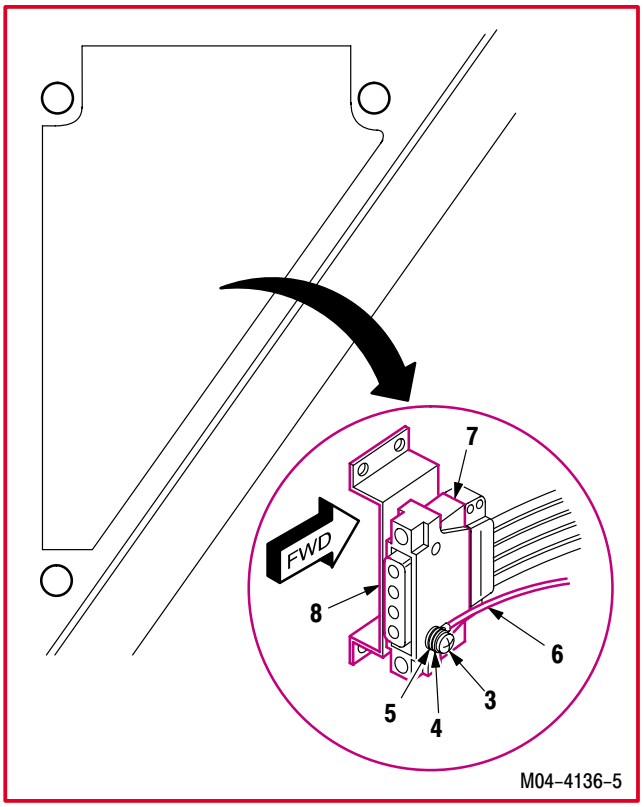
(2) Install two screws (3), lockwashers (4), washers (5), and electrical lead (6) on connector (7) and bracket (8).

b. **Perform electrical bond check on electrical lead** (TM 55-1500-323-24)**.**

(1) Bond shall be **1.00 OHM** or less. Use multimeter.

c. **Inspect (QA).**

d. **Install ECS panel** (para 13.34)**.**



END OF TASK

2.161. PILOT/CPG ARMORED CREW SEAT REMOVAL/INSTALLATION

2.161.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.161.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 9-1270-221-23

Equipment Conditions:

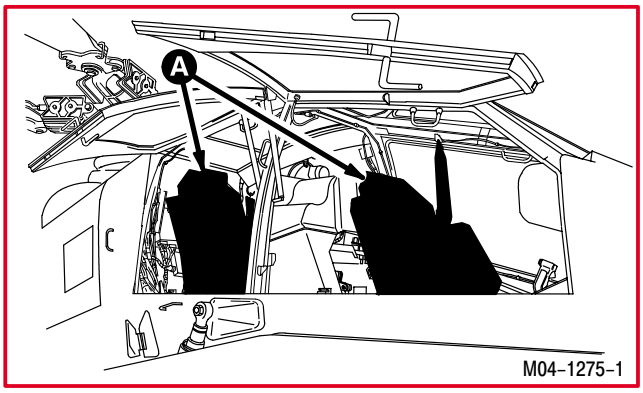
Ref	Condition
1.57	Helicopter safed
2.57	CPG door cylinder assembly lower end removed or
2.65	Pilot door cylinder assembly lower end removed
TM 9-1270-221-23	Helmet display unit (HDU) removed

Personnel Required:

67R	Attack Helicopter Repairer Two persons to assist
67R3F	Attack Helicopter Repairer/Technical Inspector

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



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2.161. PILOT/CPG ARMORED CREW SEAT REMOVAL/INSTALLATION – continued

2.161.3. Removal

CAUTION

To prevent damage to the shear pin activated decoupler (SPAD) shear pin in BUCS activated aircraft, do not force directional pedals and cyclic or collective sticks against any resistance.

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

CAUTION

The seat must be guided out of its station at the proper angle. Damage to canopy can occur if seat removal is not properly directed.

b. **Detach connector (1) P993 (pilot) or P997 (CPG) from receptacle (2) (A148)J1 (pilot) or (A147)J1 (CPG).**

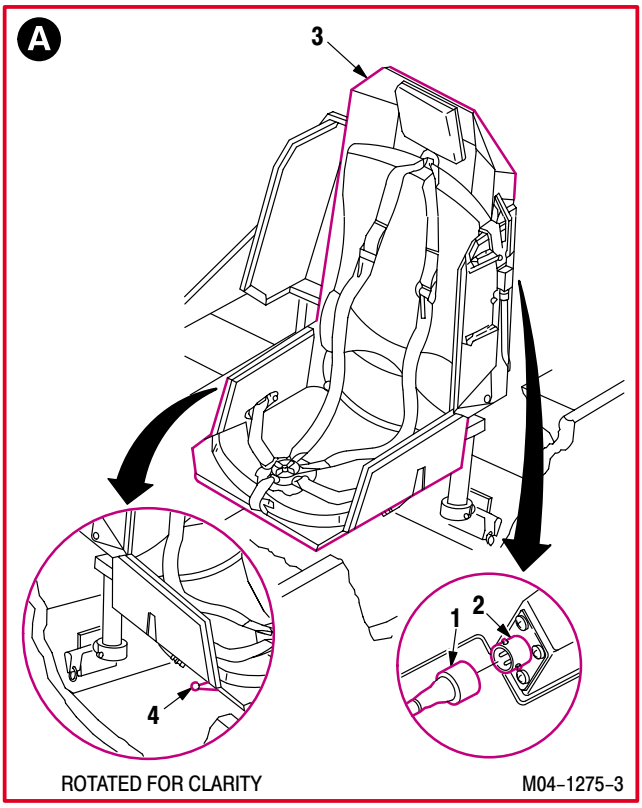
CAUTION

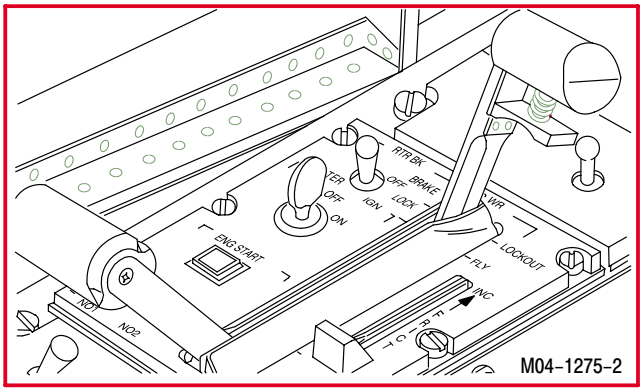
To prevent damage to ICS harness, ensure quick release pin and wire harness are removed before tilting seat.

c. **Remove armored crew seat (3) from station.**

(1) With one person sitting in seat (3), pull seat control handle (4) to move seat (3) to full-up position.

(2) On pilot/CPG power quadrant, set **PWR No. 2** handle to **LOCKOUT**.





GO TO NEXT PAGE

2.161. PILOT/CPG ARMORED CREW SEAT REMOVAL/INSTALLATION – continued

(3) Remove quick release pin (5).

(4) Remove wire harness/bracket assembly (6) from bracket (7).

(5) Remove two upper quick-release pins (8).

(6) Tilt seat (3) forward and hold.

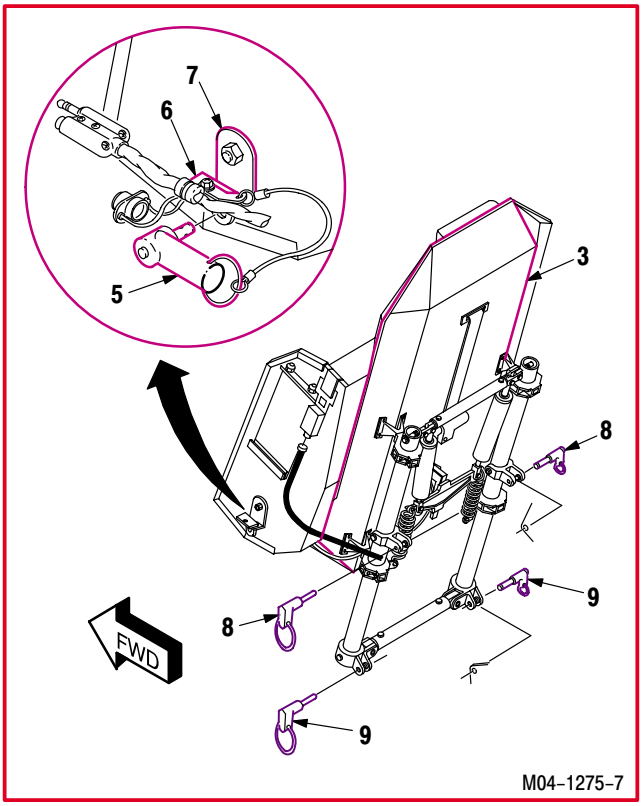
(7) Stop here if only tilting the seat is required.

(8) Remove two lower quick-release pins (9).

NOTE

One person directs the angle of seat during removal.

(9) Remove seat (3).



2.161.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.161.5. Inspection

a. **Check bearing attachment holes for elongation.** None allowed.

b. **Check quick-release pins for excessive wear.** Pins shall fit snugly.

c. **Check balance springs for nicks or scratches.** None allowed.

d. **Check guide tubes for wear.**

(1) Gouges and scratches up to **0.010 INCH** deep shall be blended out.

e. **Check vertical lock pin in hole of tee track assembly.**

(1) Cumulative play not to exceed **0.060 INCH**.

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2.161. PILOT/CPG ARMORED CREW SEAT REMOVAL/INSTALLATION – continued

2.161.6. Installation

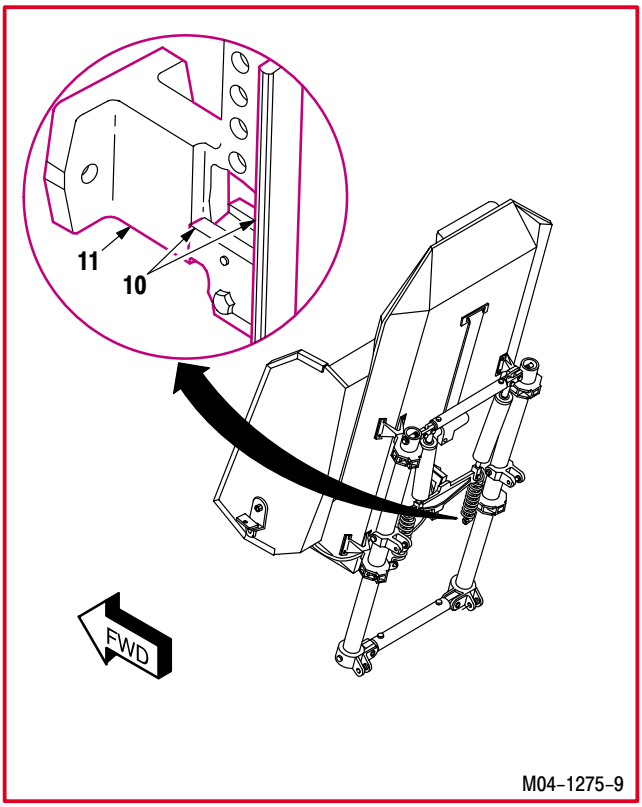
WARNING

Before installation of the CPG seat, two limit spacers must be in seat for proper clearance when the seat is adjusted to the full-up position.

CAUTION

The seat must be guided into the station at the proper angle. If the seat installation is not properly directed, damage to canopy may occur.

a. **If seat is being replaced, install two spacer plates (10) on tee track assembly (11).**



GO TO NEXT PAGE

2.161. PILOT/CPG ARMORED CREW SEAT REMOVAL/INSTALLATION – continued

b. **Install seat (3) in station.**

NOTE

One person directs angle of seat during installation.

(1) Position seat (3) in station.

(2) Tilt seat (3) forward and hold in place.

(3) Install two lower quick-release pins (9).

NOTE

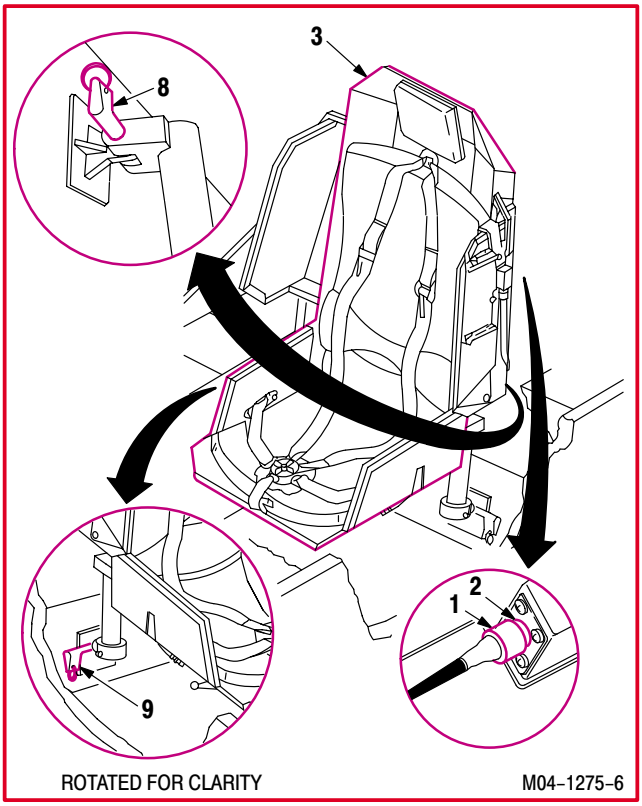
Ensure length of wire harness from clamp to connector is **5 INCHES** long.

(4) Install wire harness/bracket (6) in bracket (7).

(5) Install quick-release pin (5).

(6) Tilt seat (3) back and hold in place.

(7) Install two upper quick-release pins (8).



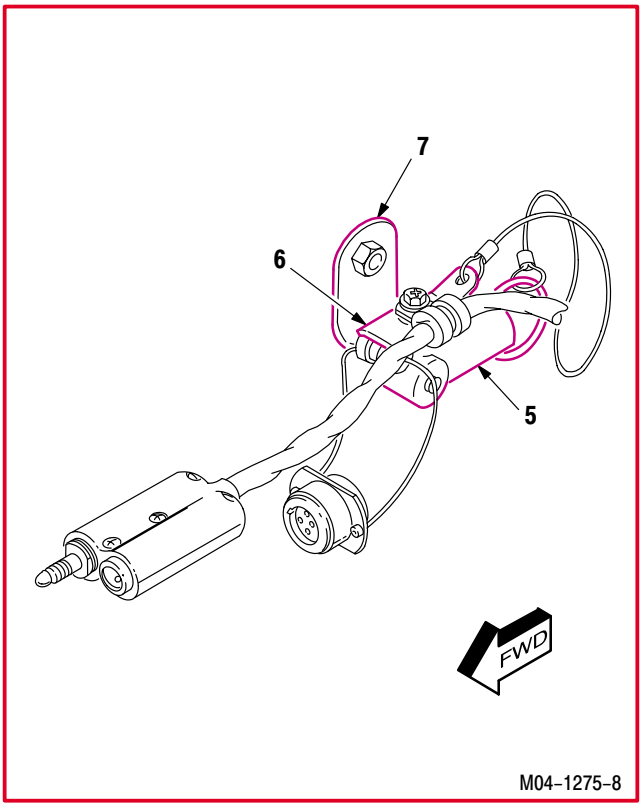
c. **Install door cylinder assembly lower end** (para 2.57 or 2.65)**.**

d. **Check seat (3) for proper operation.**

e. **Attach connector (1) P993 (pilot) or P997 (CPG) to receptacle (2) (A148)J1 (pilot) or (A147)J1 (CPG).**

f. **Inspect (QA).**

g. **Install helmet display unit (HDU)** (TM 9-1270-221-23)**.**



END OF TASK

2.162. PILOT/CPG CANTED BULKHEAD SEAT FITTING BEARING REPLACEMENT

2.162.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.162.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
6-inch C clamp (item 61, App H)
Chemical protective gloves (item 154, App H)
Hand operated arbor press (item 234, App H)
Universal puller kit (item 243, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Cellophane (item 41, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound primer (item 146, App F)
Sealing compound (item 175, App F)
Tape (item 203, App F)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

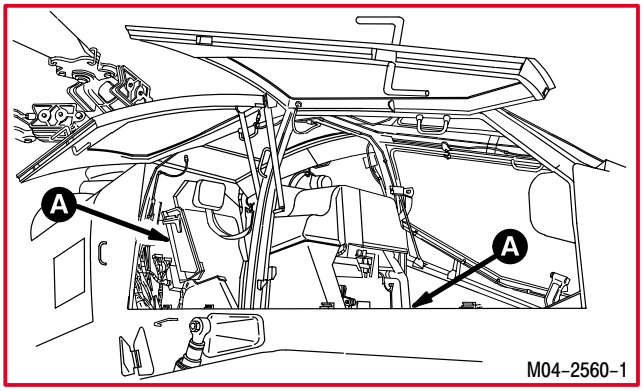
TM 55-1500-322-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	Pilot or CPG armored crew seat removed

NOTE

This task is typical for pilot/CPG left and right seat fitting bearings.



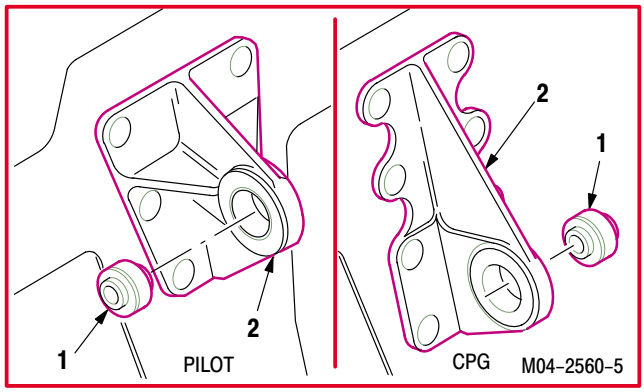
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2.162. PILOT/CPG CANTED BULKHEAD SEAT FITTING BEARING REPLACEMENT – continued

2.162.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove and discard bearing (1) from canted bulkhead seat fitting (2)** (TM 55-1500-322-24)**.** Use arbor press and puller kit.



2.162.4. Cleaning



a. **Clean seat fitting.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F) (para 1.47).

2.162.5. Inspection

a. **Check seat fitting for wear and cracks and corrosion** (para 2.11)**.**

b. **Check canted bulkhead for cracks and corrosion** (para 2.11)**.**

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2.162. PILOT/CPG CANTED BULKHEAD SEAT FITTING BEARING REPLACEMENT – continued

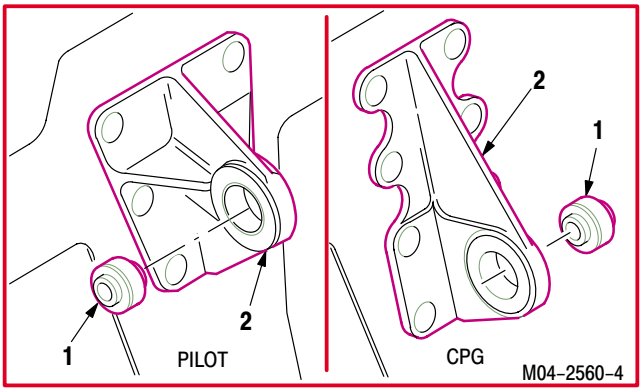
2.162.6. Installation



CAUTION

Do not allow sealing compound or primer to enter bearing races or bearing contamination will result.

a. **Install new bearing (1) in seat fitting (2).**



(1) Apply primer to mating surfaces of bearing (1) and seat fitting (2). Let primer air dry **30 MINUTES**. Use sealing compound primer (item 146, App F).

(2) Apply a coat of sealing compound to mating surfaces of bearing (1) and seat fitting (2). Use sealing compound (item 175, App F).

NOTE

After press-fit installation, the bearing shall not dislodge from housing when pressed with finger.

(3) Aline bearing (1) carefully with seat fitting (2). Press bearing (1) into seat fitting (2) applying pressure to bearing (1) outer race only (TM 55-1500-322-24). Ensure outer surfaces are flush. Use C clamp.

(4) Wipe off excess sealing compound.

(5) Apply a fillet of sealing compound between faying edge of bearing (1) outer race and seat fitting (2), approximately **0.040 INCH** wide. Remove excess sealing compound. Use sealing compound (item 175, App F) and brush (item 34, App F).

GO TO NEXT PAGE

2.162. PILOT/CPG CANTED BULKHEAD SEAT FITTING BEARING REPLACEMENT – continued

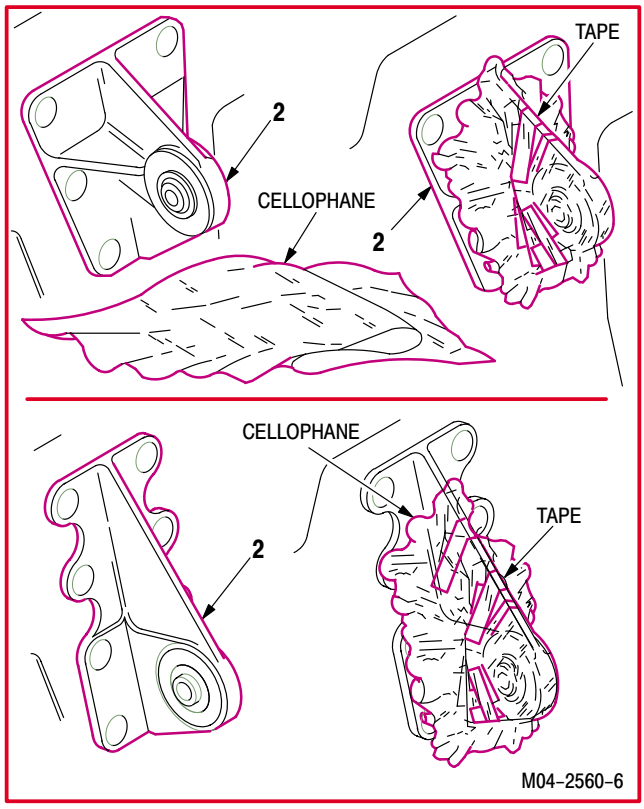
(6) Cover seat fittings (2) with cellophane and seal with tape. Allow to cure **24 HOURS** before removing tape and cellophane. Use cellophane (item 41, App F) and tape (item 203, App F).

(7) Check that dried sealing compound does not interfere with rotation of bearings (1).

(8) Check for smooth fillets of sealing compound.

b. **Inspect (QA).**

c. **Install pilot and/or CPG armored crew seat** (para 2.161)**.**



END OF TASK

2.163. PILOT/CPG CANTED FRAME BEARING REPLACEMENT

2.163.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.163.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Hand operated arbor press (item 234, App H)
Universal puller kit (item 243, App H)
Adjustable air filtering respirator (item 262, App H)
Staking tool kit (item 392, App H)

Materials/Parts:

Brush (item 34, App F)
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 175, App F)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-322-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	Pilot and/or CPG armored crew seat removed

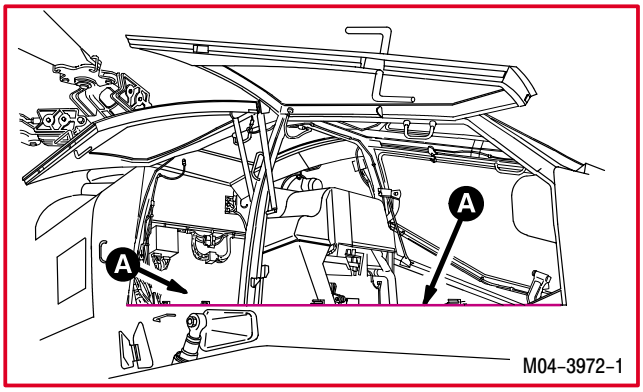
NOTE

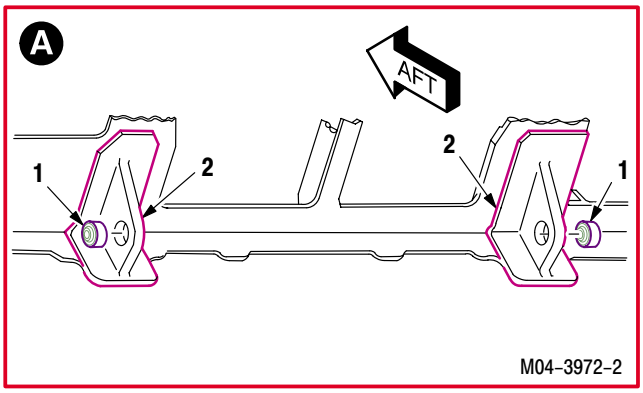
This task is typical for pilot and/or CPG left and/or right canted frame bearings.

2.163.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove and discard bearing (1) from canted frame housing (2)** (TM 55-1500-322-24)**.** Use arbor press and puller kit.





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2.163. PILOT/CPG CANTED FRAME BEARING REPLACEMENT

2.163.4. Cleaning



a. **Clean housing bore and staking area.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

2.163.5. Inspection

a. **Check housings for cracks and corrosion** (para 2.11)**.**

b. **Check canted frame for cracks and corrosion** (para 2.11)**.**

c. **Check housing bore diameter.**

(1) Maximum dimension allowable **0.6870 INCH**.

GO TO NEXT PAGE

2.163. PILOT/CPG CANTED FRAME BEARING REPLACEMENT – continued

2.163.6. Installation



CAUTION

- Do not allow sealing compound to enter bearing races or bearing contamination will result.
- Installation pressure not to exceed **343 POUNDS** or bearing damage will result.
- Staking pressure not to exceed **25,000 POUNDS** or bearing damage will result.

a. **Install new bearing (1) in housing (2).**

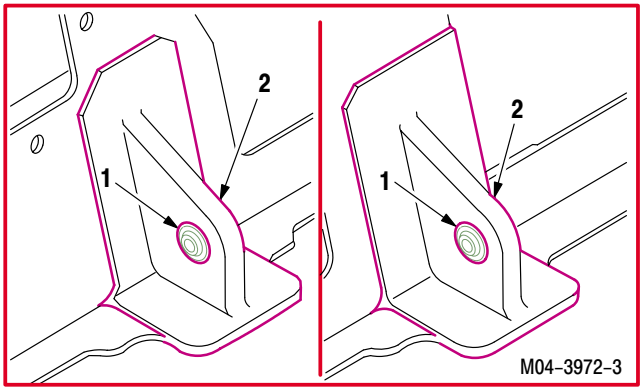
(1) Wear protective gloves when handling bearings. Apply a thin coat of sealing compound to outer contact surface of bearing (1) and inner surface of housing (2). Use sealing compound (item 175, App F) and brush (item 34, App F).

NOTE

After press-fit installation, the bearing shall not dislodge from housing when pressed with finger.

(2) Aline bearing (1) carefully with housing (2). Press bearing (1) into housing (2) applying pressure to bearing (1) outer race only (TM 55-1500-322-24). Bearing (1) shall be flush to **0.005 INCH** below staking surface. Use puller kit.

(3) Wipe off excess sealing compound.



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2.163. PILOT/CPG CANTED FRAME BEARING REPLACEMENT – continued

(4) Apply a fillet of sealing compound between faying edge of bearing (1) outer race and housing (2), approximately **0.125 INCH** wide. Remove excess sealing compound. Use sealing compound (item 175, App F) and brush (item 34, App F).

NOTE

Restaking of bearing housing shall be limited to one time only.

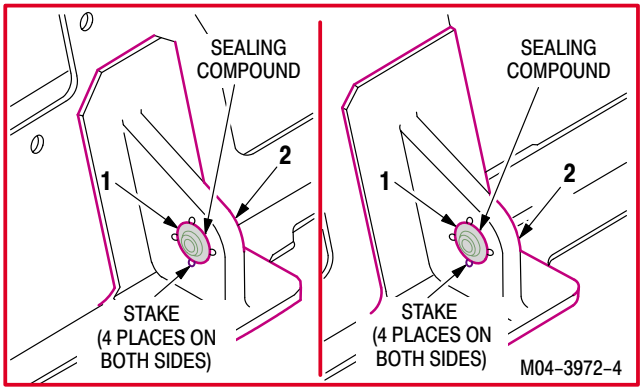
(5) Stake housing (2) over outer race of bearing (1). Stake at four equally spaced points around bearings (1) on both sides of housing (2) (TM 55-1500-322-24). Use staking tool kit.

(6) Check that dried sealing compound does not interfere with rotation of bearings (1).

(7) Check for smooth fillets of sealing compound.

b. **Inspect (QA).**

c. **Install pilot and/or CPG armored crew seat** (para 2.161)**.**



END OF TASK

2.164. PILOT/CPG ARMORED CREW SEAT HANDLE ASSEMBLY REPLACEMENT

2.164.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.164.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Equipment Conditions:

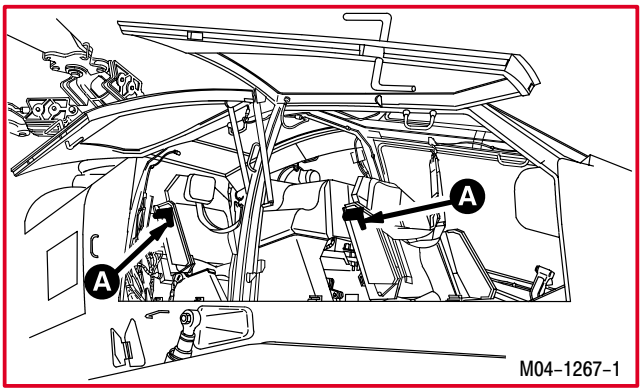
Ref	Condition
1.57	Helicopter safed

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



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2.164. PILOT/CPG ARMORED CREW SEAT HANDLE ASSEMBLY REPLACEMENT – continued

2.164.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove handle assembly (1) from armored swing panel (2).**

(1) Hold two screws (3). Remove self-locking nuts (4) and washers (5).

(2) Remove two screws (3) and finishing washers (6).

(3) Remove and discard handle (1).

2.164.4. Cleaning

a. **Clean attaching area of handle** (para 1.47)**.**

2.164.5. Inspection

a. **Check panel for cracks.** None allowed.

2.164.6. Installation

a. **Install new handle (1) on panel (2).** Torque two nuts (4) to **25 INCH-POUNDS**.

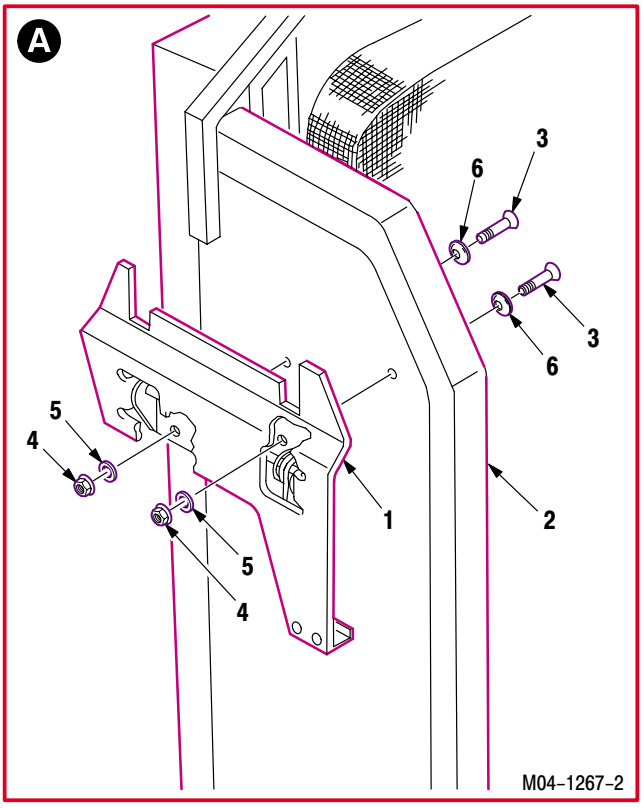
(1) Install two screws (3) and washers (6) through panel (2) and handle (1).

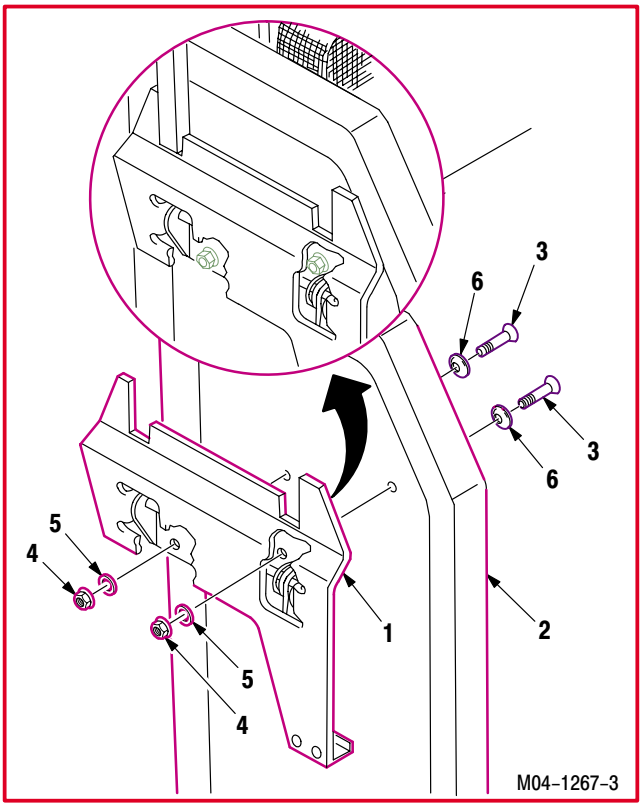
(2) Hold two screws (3). Install washers (5) and nuts (4).

(3) Torque two nuts (4) to **25 INCH-POUNDS**. Use torque wrench.

(4) Check operation by pulling handle (1) to release panel (2).

b. **Inspect (QA).**





END OF TASK

2.165. PILOT/CPG ARMORED CREW SEAT WING PANEL (ARMORED SWING PANEL) REMOVAL/INSTALLATION

2.165.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.165.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

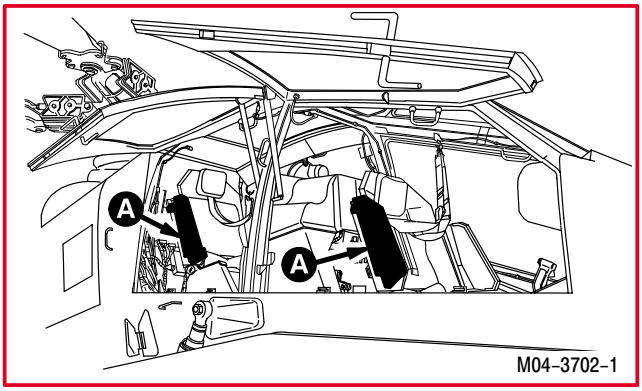
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	Position seat in full up position

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



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2.165. PILOT/CPG ARMORED CREW SEAT WING PANEL (ARMORED SWING PANEL) REMOVAL/INSTALLATION – continued

2.165.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

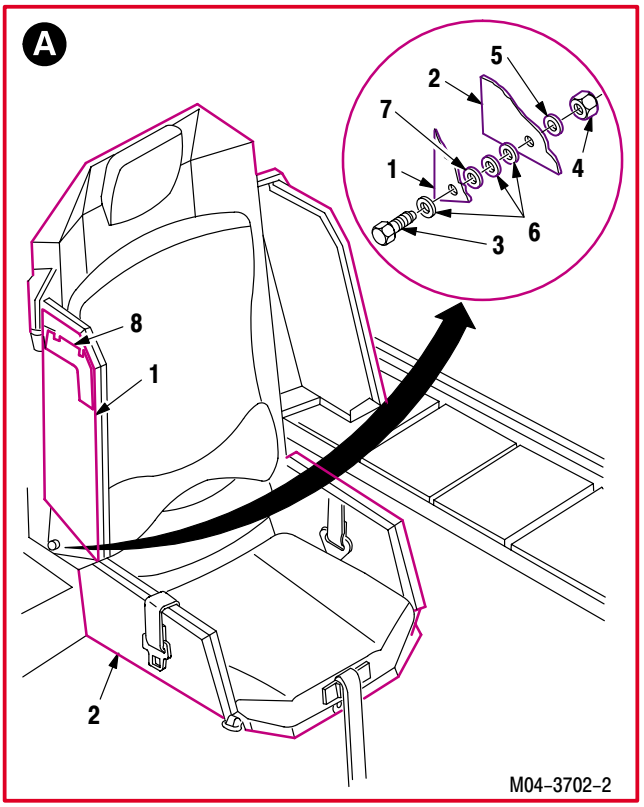
b. **Remove armored swing panel (1) from armored crew seat (2).**

(1) Hold shear bolt (3). Remove self-locking nut (4) and washer (5).

(2) Remove bolt (3), three washers (6), and washer (7) from panel (1).

(3) Release panel (1) by pushing handle assembly (8) and sliding panel (1) forward.

(4) Remove panel (1) from seat (2).



2.165.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.165.5. Inspection

a. **Check attaching area for cracks and corrosion** (para 2.11)**.**

2.165.6. Installation

a. **Install panel (1) in seat (2).**

(1) Hold handle (8) down.

(2) Aline and position panel (1) under upper support of seat (2). Release handle (8) to hold panel (1) in place.

(3) Install bolt (3), three washers (6), and washer (7) from outboard side of panel (1).

(4) Hold bolt (3). Install washer (5) and nut (4).

(5) Tighten nut (4) then back off to allow panel (1) to pivot freely.

b. **Inspect (QA).**

END OF TASK

2.166. PILOT/CPG ARMORED CREW SEAT WING PANEL SLIDER PLATE REMOVAL/INSTALLATION

2.166.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.166.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Equipment Conditions:

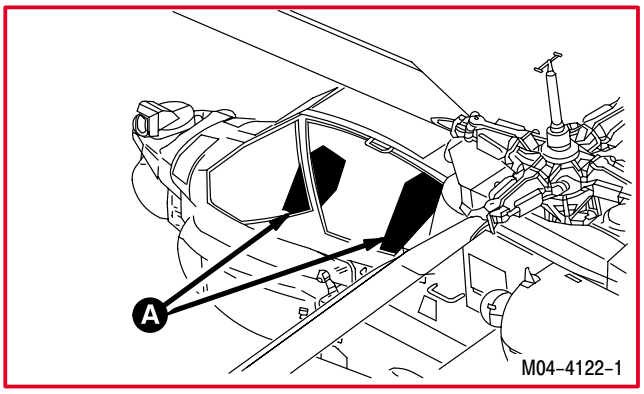
Ref	Condition
1.57	Helicopter safed

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full–up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



2.166.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

GO TO NEXT PAGE

2.166. PILOT/CPG ARMORED CREW SEAT WING PANEL SLIDER PLATE REMOVAL/INSTALLATION – continued

b. **Detach connector (1) P993 (pilot) or P997 (CPG) from receptacle (2) (A148)J1 (pilot) or (AJ147)J1 (CPG) on slider plate (3).**

c. **Remove plate (3) from two brackets (4).**

(1) Remove four screws (5), washers (6), and nuts (7) from two brackets (4).

(2) Remove plate (3) from two brackets (4).

2.166.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.166.5. Inspection

a. **Check connectors and receptacles for damage** (para 2.11)**.**

b. **Check attaching area for cracks and corrosion** (para 2.11)**.**

2.166.6. Installation

a. **Install plate (3) on two brackets (4).** Torque four nuts (6) to **25 INCH-POUNDS**.

(1) Peel existing laminated shims (8) as required from lower bracket (4) so that plate (3) attains a friction fit.

(2) Slide plate (3) on two brackets (4).

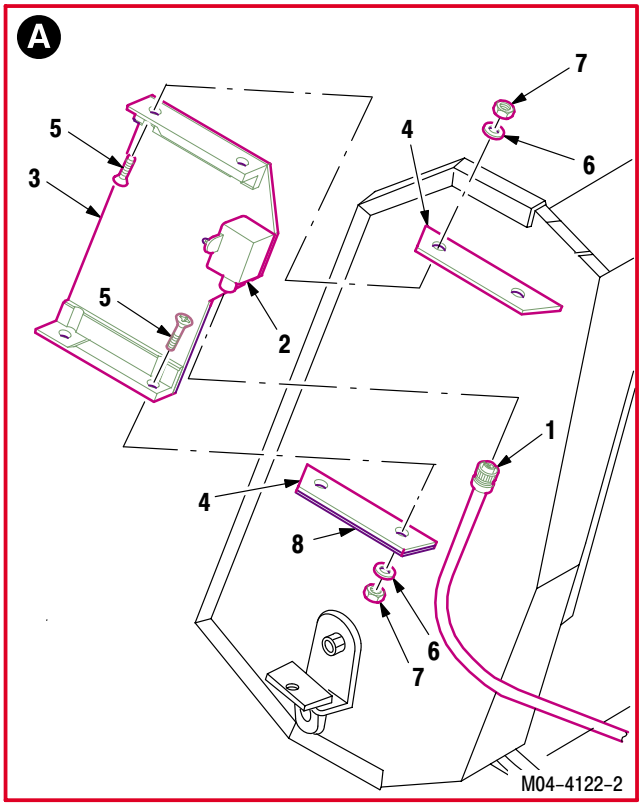
(3) Install four screws (5), washers (6), and nuts (7) in plate (3) and two brackets (4).

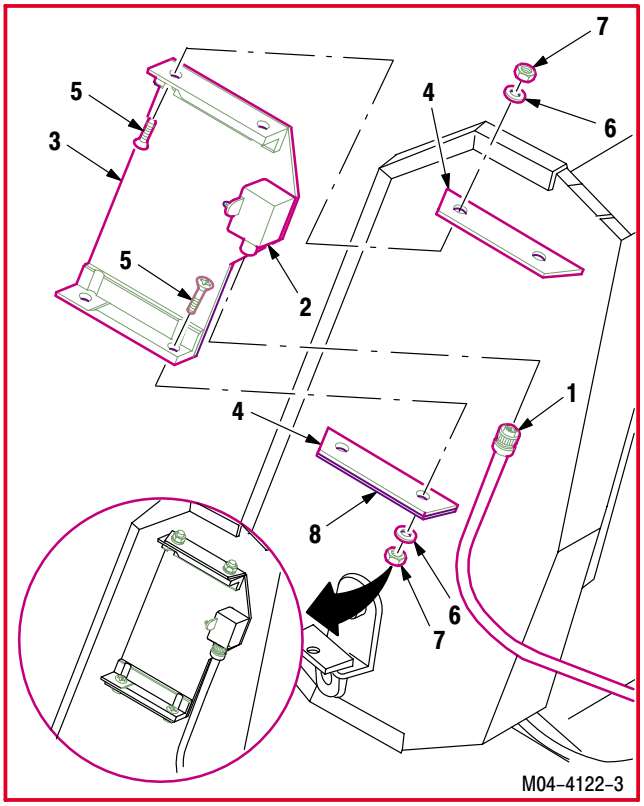
(4) Torque four nuts (6) to **25 INCH-POUNDS**. Use torque wrench.

b. **Attach connector (1) P993 (pilot) or P997 (CPG) to receptacle (2) (A148)J1 (pilot) or (A147)J1 (CPG) on plate (3).**

c. **Inspect (QA).**

END OF TASK





2.167. PILOT/CPG ARMORED CREW SEAT M-43 BLOWER MOUNT BRACKET BONDING

2.167.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

2.167.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
6-inch C clamp (item 61, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)

Materials/Parts:

Self-locking nuts (9)
Adhesive (item 2, App F)
Cloth (item 48, App F)
Cloth (item 52, App F)
Isopropyl alcohol (item 106, App F)

Personnel Required:

68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

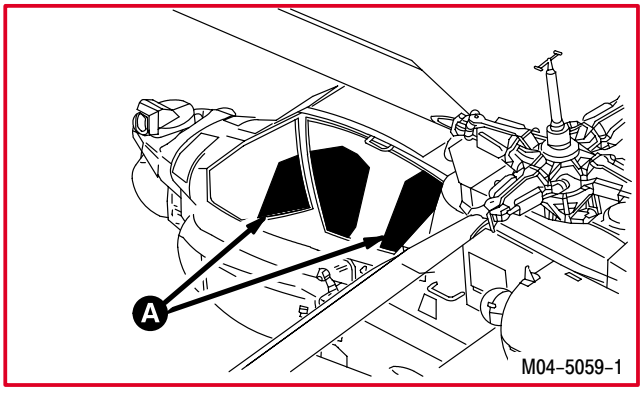
Ref	Condition
1.57	Helicopter safed
2.168	Pilot/CPG armored crew seat cushion removed
2.166	Pilot/CPG armored crew seat wing panel slider plate removed

CAUTION

Armored panels can be damaged if dropped or mishandled.

NOTE

This task is typical for pilot and CPG armored crew seat.



GO TO NEXT PAGE

2.167. PILOT/CPG ARMORED CREW SEAT M-43 BLOWER MOUNT BRACKET BONDING – continued

2.167.3. Removal

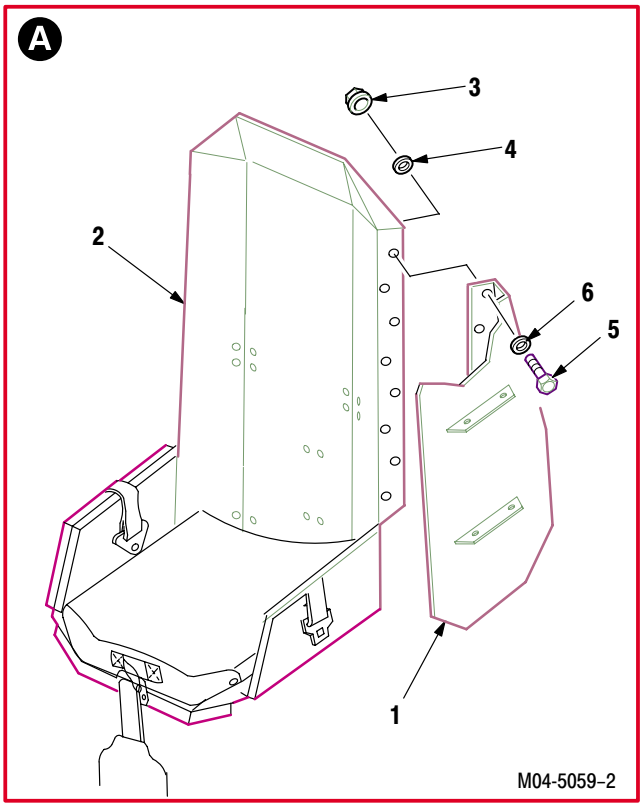
a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove armored wing panel (1) from aircraft armored crew seat (2).**

(1) Remove nine self-locking nuts (3) and washers (4) from shear bolts (5). Discard nuts (3).

(2) Remove nine bolts (5) and washers (6) from panel (1).

(3) Remove panel (1).



CAUTION

Pounding or hammering on armored surface to remove foreign material can damage tile.

2.167.4. Cleaning



a. **Clean and remove all foreign material including any residual adhesive from bonding surfaces.** Use cloth (item 48, App F).

b. **Clean surfaces to be bonded.** Use cloth (item 52, App F) and isopropyl alcohol (item 106, App F).

2.167.5. Inspection

a. **Check removed and attaching parts for damage** (para 2.12)**.**

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2.167. PILOT/CPG ARMORED CREW SEAT M-43 BLOWER MOUNT BRACKET BONDING – continued

2.167.6. Repair



a. **Bond two blower mount brackets (7) on panel (1).**

(1) Mix adhesive according to the manufacturer's instructions and apply to brackets (7) and panel (1) mating surfaces. Use adhesive (item 2, App F).

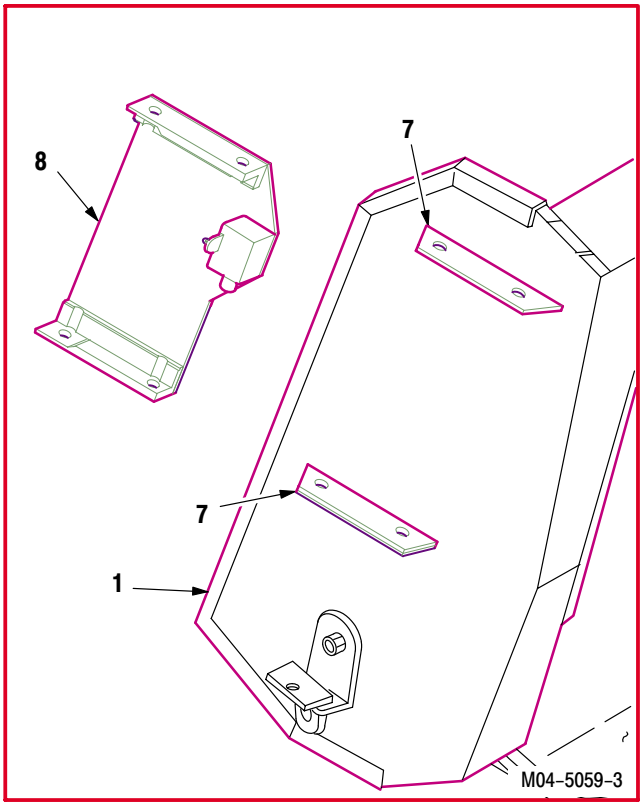
(2) Use slider plate (8) assembled to brackets (7) as locator template.

(3) Place two brackets (7) on panel (1) in its original bonded position and hold using clamp. Do not over clamp. Use C clamp.

(4) Use clamp to maintain contact for a cure time of **24 HOURS** at room temperature.

(5) Apply only enough pressure to force a small amount of adhesive to squeeze out from under edges of brackets (7).

b. **Inspect (QA).**



2.167.7. Installation

a. **Install panel (1) on seat (2).** Torque nuts (3) to **120 INCH-POUNDS**.

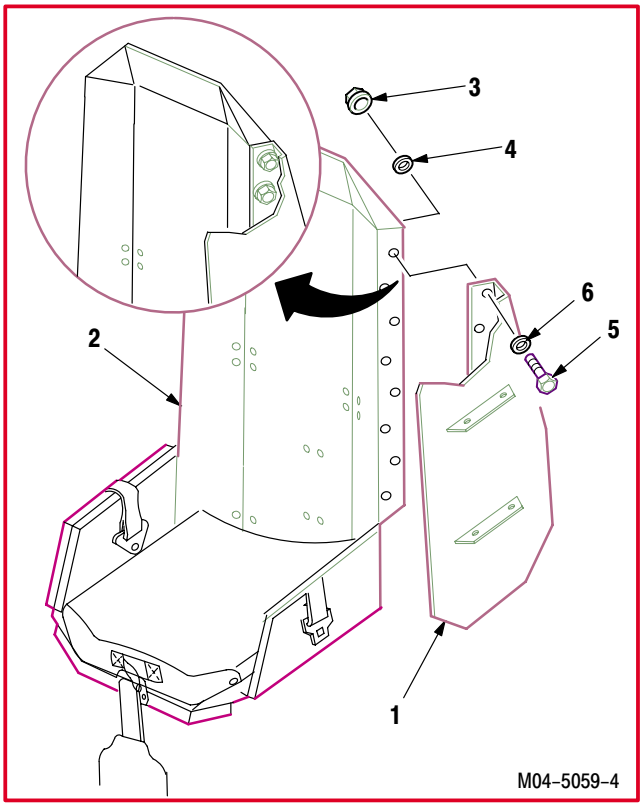
(1) Position panel (1) on seat (2).

(2) Install nine bolts (5) through washers (6), panel (1), and seat (2).

(3) Install washers (4) and new nuts (3) on bolts (5).

(4) Torque nuts to **120 INCH-POUNDS**. Use torque wrench.

b. **Inspect (QA).**



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2.167. PILOT/CPG ARMORED CREW SEAT M-43 BLOWER MOUNT BRACKET BONDING – continued

c. **Install pilot/CPG armored seat cushion** (para 2.168)**.**

d. **Install pilot/CPG armored crew seat wing panel slider plate** (para 2.166)**.**

END OF TASK

2.168. PILOT/CPG ARMORED CREW SEAT CUSHION REMOVAL/INSTALLATION

2.168.1. Description

This task covers: Removal. Inspection. Installation.

2.168.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23

Equipment Conditions:

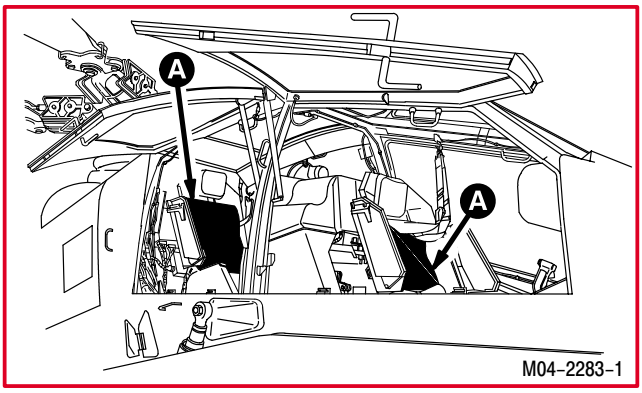
Ref	Condition
1.57	Helicopter safed

Personnel Required:

67R Attack Helicopter Repairer

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



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2.168. PILOT/CPG ARMORED CREW SEAT CUSHION REMOVAL/INSTALLATION – continued

2.168.3. Removal

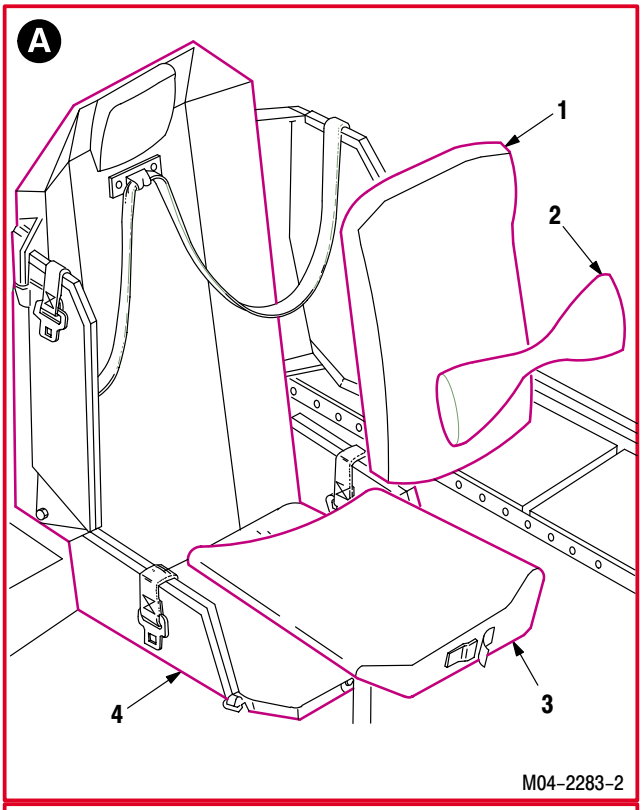
a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove seat back cushions (1) and (2) and seat cushion (3) from armored crew seat (4).**

2.168.4. Inspection

a. **Check cushions for splits or tears** (TM 1-1500-204-23)**.**

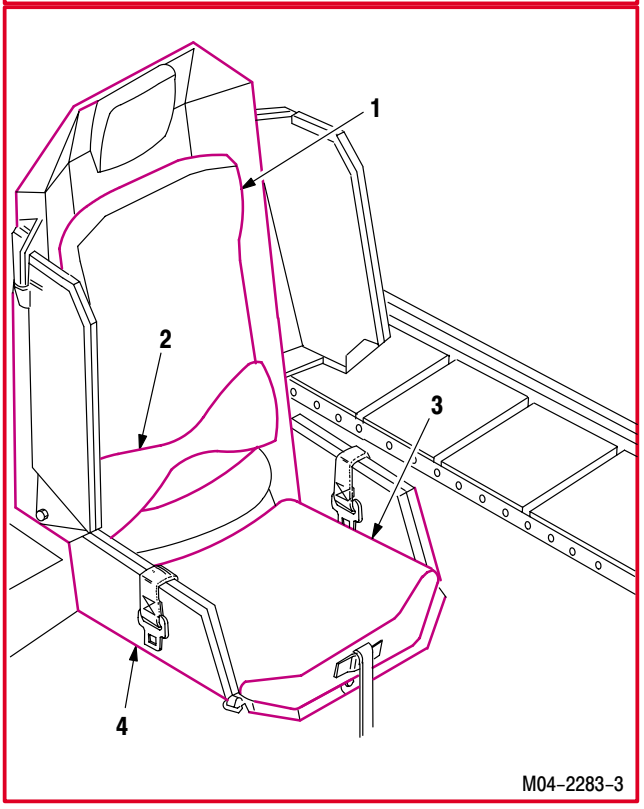
b. **Check security of hook-and-pile fasteners on seat cushions** (para 2.10)**.**



2.168.5. Installation

a. **Install seat cushion (3) in seat (4).**

b. **Install seat back cushions (1) and (2) in seat (4).**



END OF TASK

2.169. PILOT/CPG ARMORED CREW SEAT STRAP GUIDE ASSEMBLY REMOVAL/INSTALLATION

2.169.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.169.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

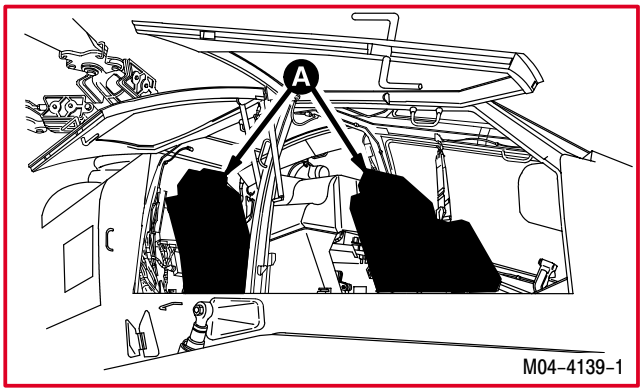
Ref	Condition
1.57	Helicopter safed
2.174	Pilot/CPG armored crew seat shoulder harness removed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe injury to personnel. If injury occurs, seek medical aid.

NOTE

This task is typical for left and/or right armored crew seat pilot/CPG strap guides.



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2.169. PILOT/CPG ARMORED CREW SEAT STRAP GUIDE ASSEMBLY REMOVAL/INSTALLATION – continued

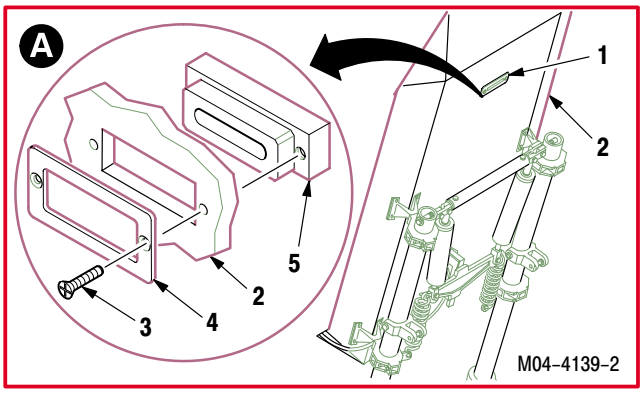
2.169.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove strap guide assembly (1) from armored crew seat (2).**

(1) Remove two screws (3) and retainer plate (4) from seat (2).

(2) Remove strap guide plate (5) from seat (2).



2.169.4. Cleaning

a. **Wipe strap guide attachment area with clean rag.**

2.169.5. Inspection

a. **Check strap guide attachment area for cracks** (para 2.12)**.**

b. **Check strap guide for cracks.** None allowed.

c. **Check strap guide for corrosion** (para 1.49)**.**

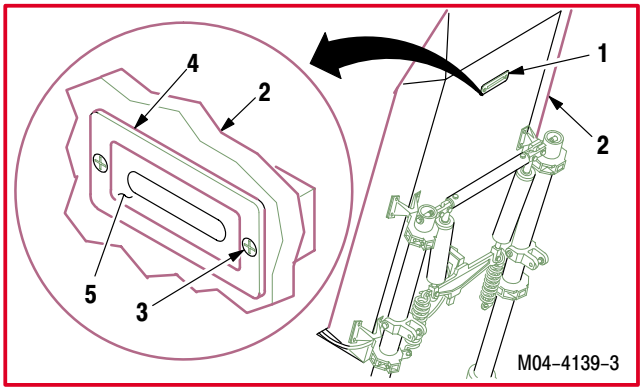
d. **Check plate inserts for stripped or missing threads.** None allowed.

2.169.6. Installation

a. **Install guide assembly (1) in seat (2).**

(1) Install strap guide plate (5) in seat (2).

(2) Install two screws (3) and retainer plate (4) in seat (2).



b. **Inspect (QA).**

c. **Install pilot/CPG armored crew seat shoulder harness** (para 2.174)**.**

END OF TASK

2.170. PILOT/CPG ARMORED CREW SEAT FRAME ASSEMBLY HELICAL EXTENSION SPRING REMOVAL/INSTALLATION

2.170.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.170.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

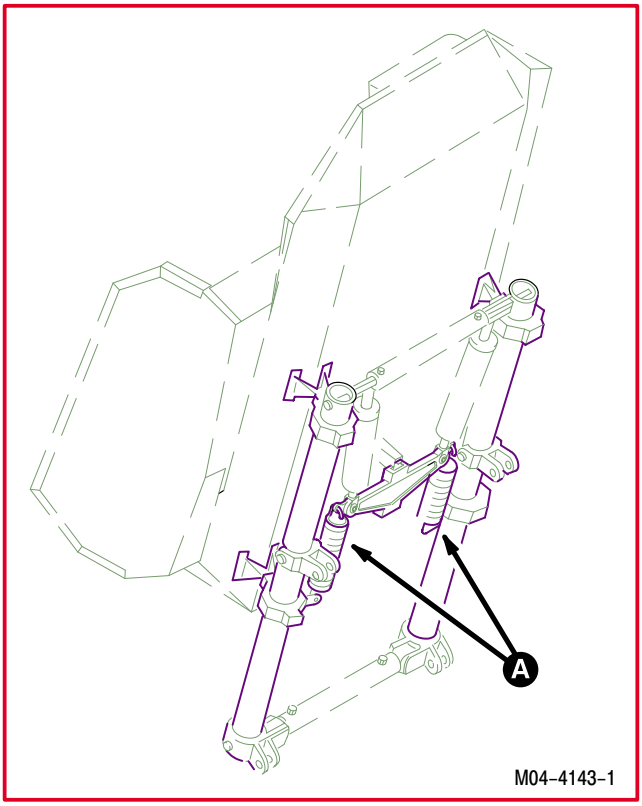
Ref	Condition
1.57	Helicopter safed
2.161	Pilot/CPG armored crew seat tilted forward

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.

NOTE

This task is typical for left and/or right helical extension springs.



GO TO NEXT PAGE

2.170. PILOT/CPG ARMORED CREW SEAT FRAME ASSEMBLY HELICAL EXTENSION SPRING REMOVAL/INSTALLATION – continued

2.170.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove helical extension spring (1) from frame assembly (2).**

(1) Remove spring (1) from yoke assembly (3).

(2) Remove spring (1) from spring bracket (4).

2.170.4. Cleaning

a. **Wipe spring attachment area with a clean rag.**

2.170.5. Inspection

a. **Check spring attachment area for corrosion** (para 1.49)**.**

b. **Check spring attachment area for cracks.** None allowed.

2.170.6. Installation

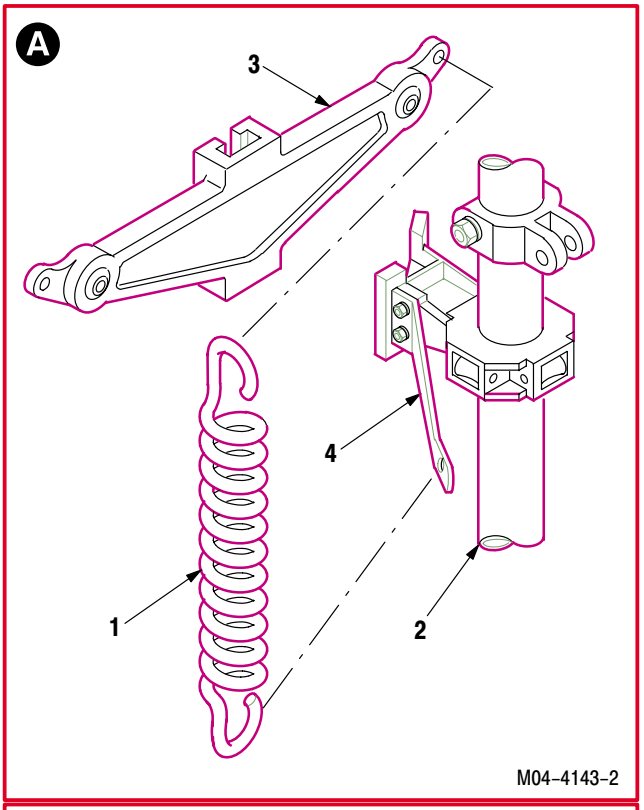
a. **Install spring (1) in frame assembly (2).**

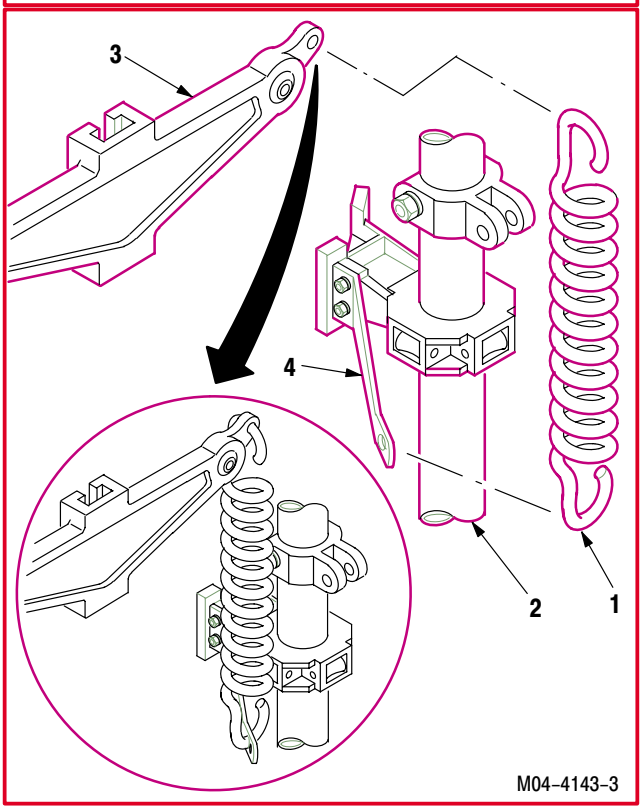
(1) Install spring (1) in yoke (3).

(2) Install spring (1) in spring bracket (4).

b. **Inspect (QA).**

c. **Return pilot/CPG armored crew seat to upright position** (para 2.161)**.**





END OF TASK

2.171. PILOT/CPG ARMORED CREW SEAT FRAME ASSEMBLY ATTENUATOR REMOVAL/INSTALLATION

2.171.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.171.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

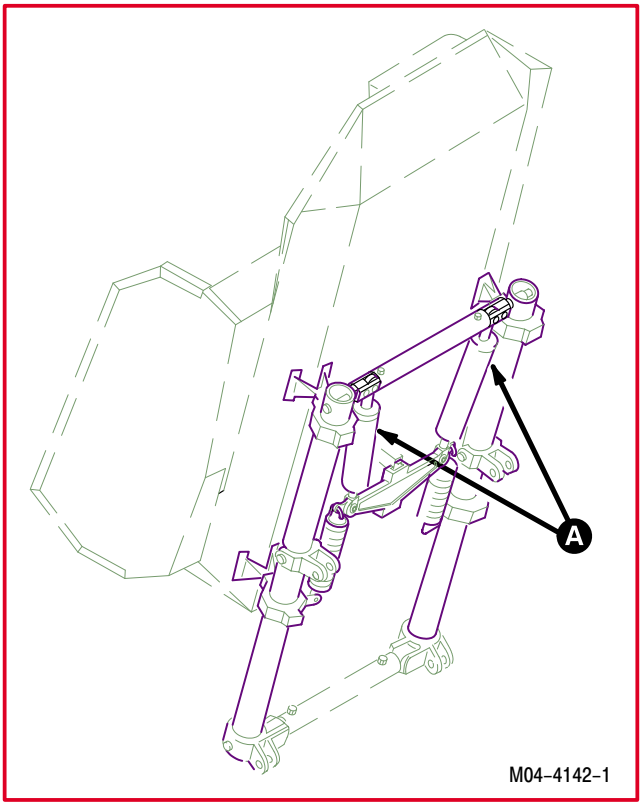
Ref	Condition
1.57	Helicopter safed
2.170	Pilot and/or CPG armored crew seat frame assembly helical extension spring removed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.

NOTE

This task is typical for left and/or right armored crew seat attenuators.



GO TO NEXT PAGE

2.171. PILOT/CPG ARMORED CREW SEAT FRAME ASSEMBLY ATTENUATOR REMOVAL/INSTALLATION – continued

2.171.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove attenuator (1) from frame assembly (2).**

(1) Remove shear bolt (3), self-locking nut (4), and washer (5) from rod end clevis (6).

(2) Remove shear bolt (7), two washers (8), and self-locking nut (9) from yoke assembly (10).

(3) Remove attenuator (1) from frame assembly (2).

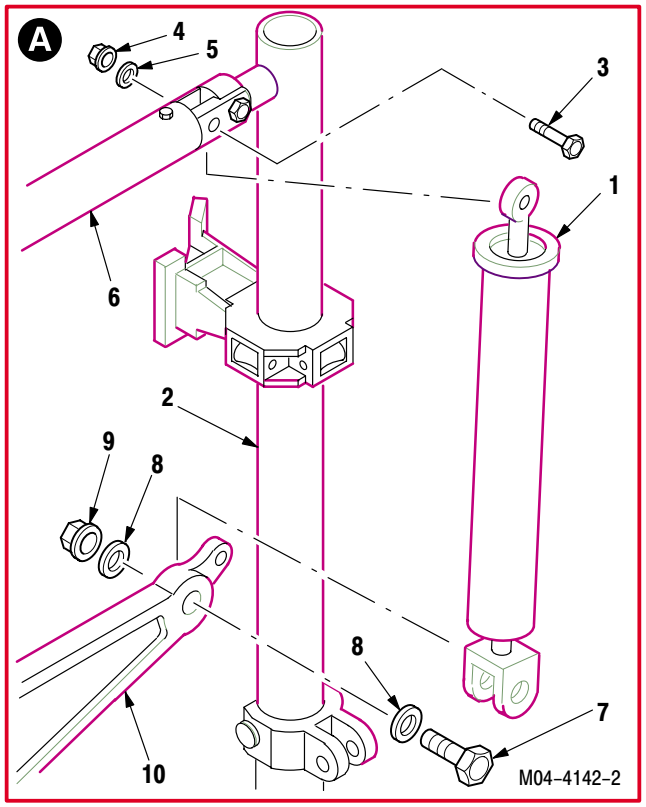
2.171.4. Cleaning

a. **Wipe attenuator attachment area with clean rag.**

2.171.5. Inspection

a. **Check attenuator attachment area for corrosion** (para 1.49)**.**

b. **Check attenuator attachment area for cracks.** None allowed.



GO TO NEXT PAGE

2.171. PILOT/CPG ARMORED CREW SEAT FRAME ASSEMBLY ATTENUATOR REMOVAL/INSTALLATION – continued

2.171.6. Installation

NOTE

Allowable end play is **0.005 to 0.010 INCH**.

a. **Install attenuator (1) on frame assembly (2).**

(1) Install bolt (3) through clevis (6) and attenuator (1).

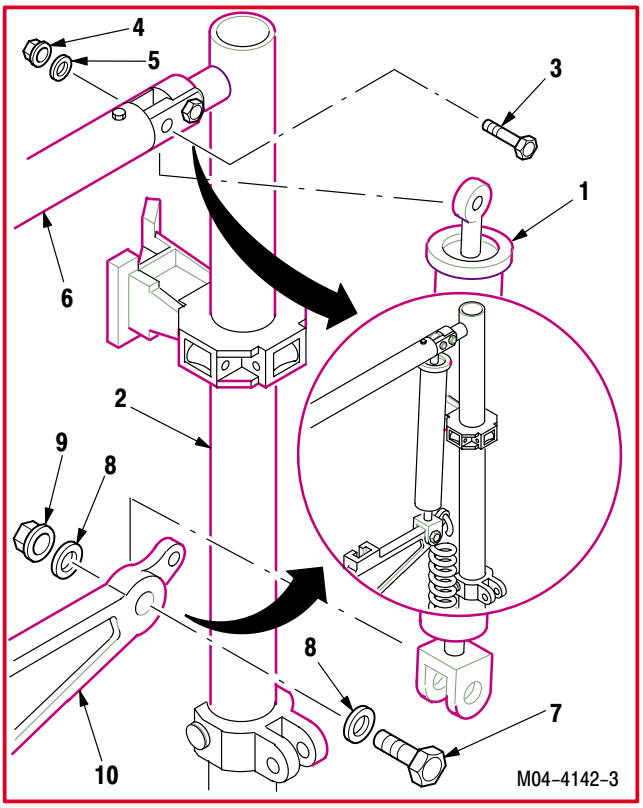
(2) Install washer (5) and nut (4).

(3) Install bolt (7) through yoke (10), two washers (8), and attenuator (1).

(4) Install nut (9).

b. **Inspect (QA).**

c. **Install pilot/CPG armored crew frame assembly helical extension spring** (para 2.170)**.**



END OF TASK

2.172. PILOT/CPG ARMORED CREW SEAT CONTROL ASSEMBLY REMOVAL/INSTALLATION

2.172.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.172.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Strap (item 192, App F)
Wire (item 229, App F)

Personnel Required:

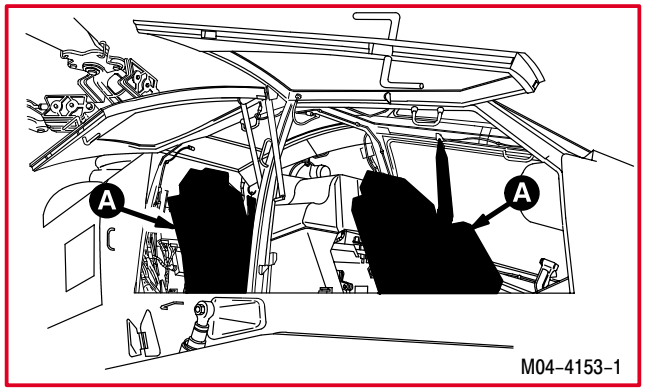
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.171	Pilot/CPG armored crew seat frame assembly attenuators removed

NOTE

This task is typical for pilot and/or CPG pilot armored crew seat.



GO TO NEXT PAGE

2.172. PILOT/CPG ARMORED CREW SEAT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

2.172.3. Removal

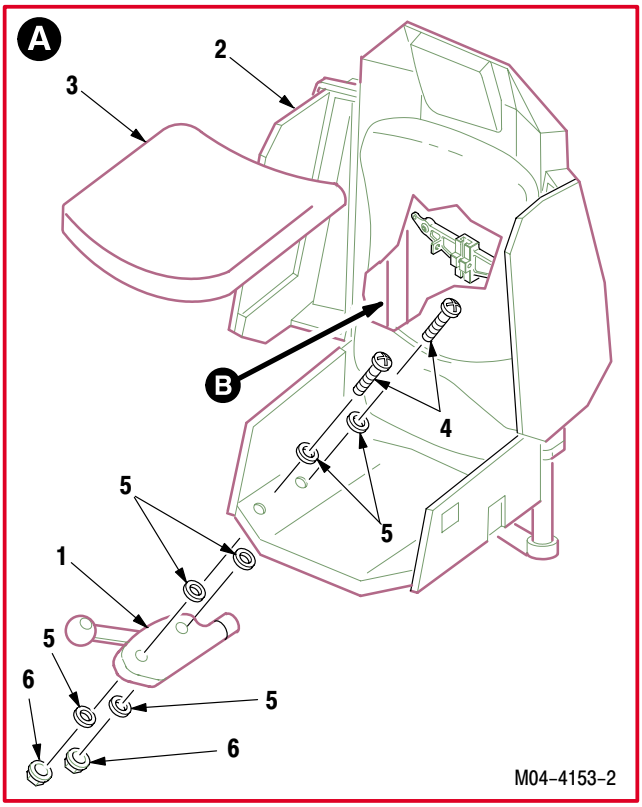
a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove base control handle (1) from armored crew seat (2).**

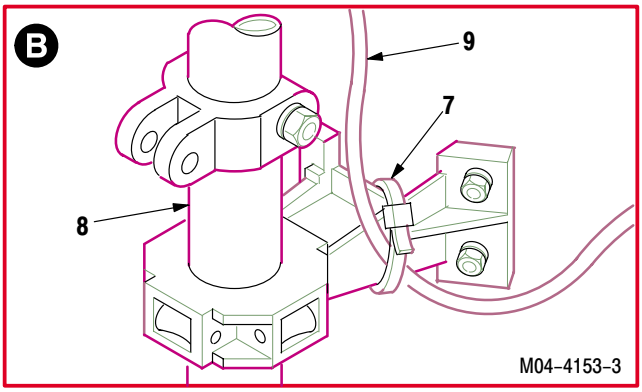
(1) Remove seat cushion (3) from seat (2).

(2) Remove two screws (4), six washers (5), two nuts (6), and base control handle (1) from seat (2).

(3) Remove handle (1) from armored crew seat (2).



c. **Remove tie strap (7) from frame (8) attaching cable (9).**



GO TO NEXT PAGE

2.172. PILOT/CPG ARMORED CREW SEAT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Remove cable (9) from yoke (10).**

(1) Remove lockwire from two jam nuts (11).

(2) Remove pin spring (12) from track (13).

(3) Hold back compression spring (14). Remove slotted washer (15) and vertical lock pin (16).

(4) Hold yoke (10). Remove cable (9), jam nuts (11), and spring (14).

(5) Slide yoke (10) from track (13).

2.172.4. Cleaning

a. **Wipe handle and yoke attachment areas with a clean rag.**

2.172.5. Inspection

a. **Check handle and yoke attachment areas for corrosion** (para 1.49)**.**

b. **Check handle and yoke attachment areas for cracks.** None allowed.

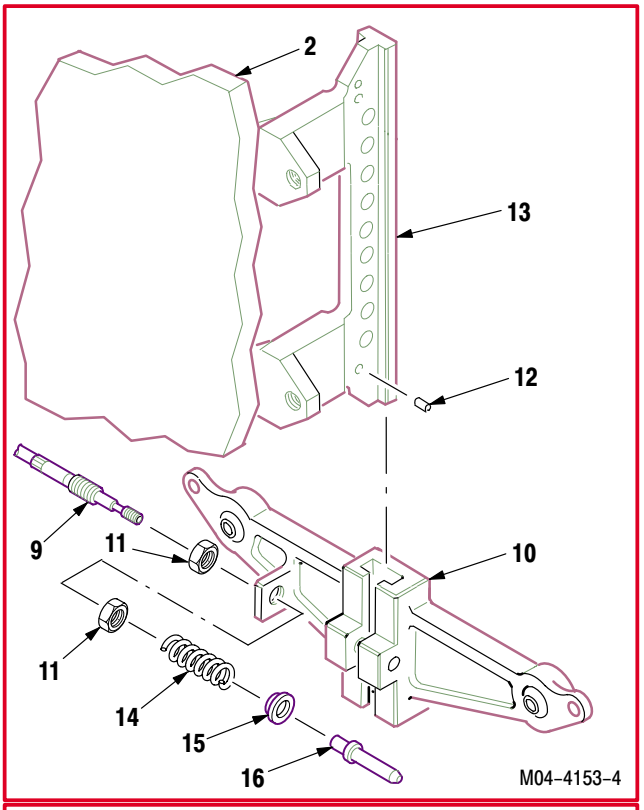
2.172.6. Installation

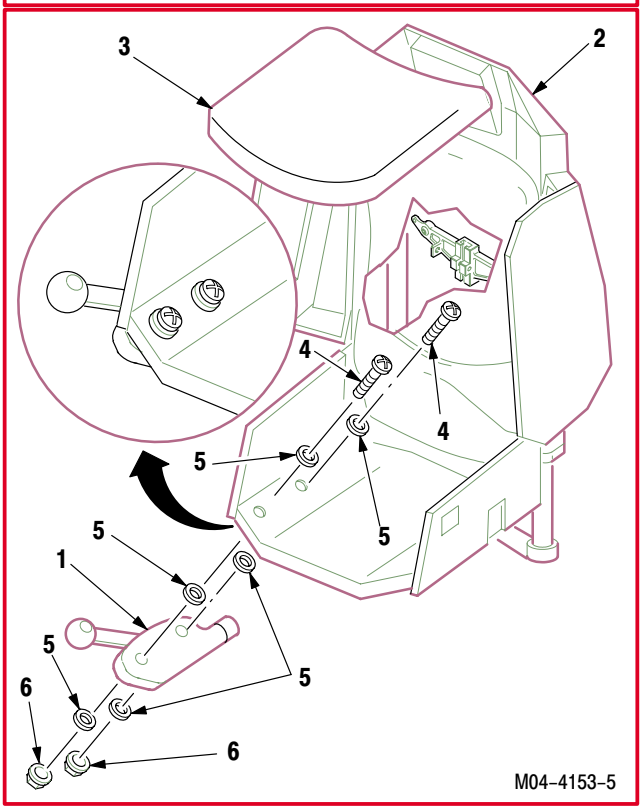
a. **Install handle (1) on seat (2).** Torque two nuts (6) to **15 INCH-POUNDS**.

(1) Install two screws (4), six washers (5), two nuts (6), and handle (1) on seat (2).

(2) Torque two nuts (6) to **15 INCH-POUNDS**. Use torque wrench.

(3) Install seat cushion (3) on seat (2).

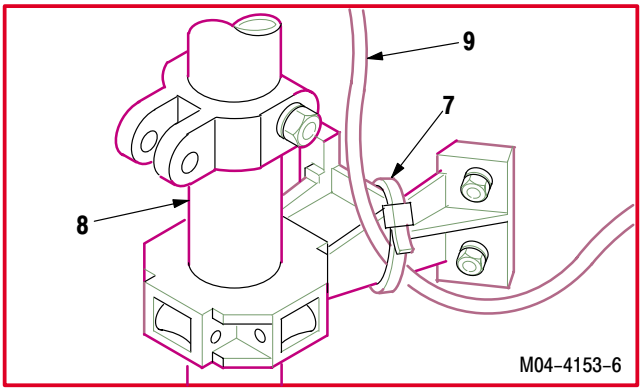




GO TO NEXT PAGE

2.172. PILOT/CPG ARMORED CREW SEAT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

b. **Install strap (7) on frame (8) attaching cable (9).** Use strap (item 192, App F).



c. **Install cable (9) on yoke (10).**

(1) Slide yoke (10) on track (13).

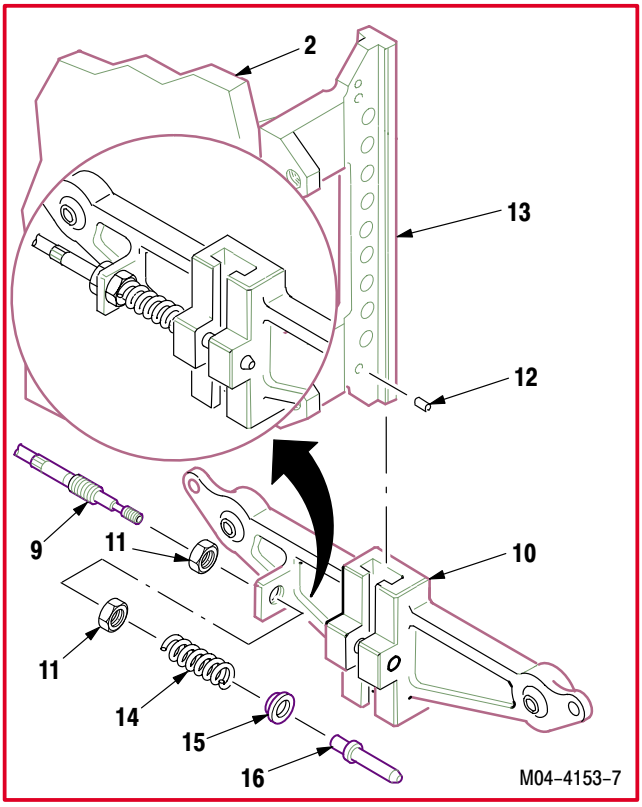
(2) Hold yoke (10). Install cable (9), nuts (11), and spring (14).

(3) Hold spring (14). Install washer (15) and pin (16).

(4) Torque two nuts (11) to **175 INCH-POUNDS**. Use torque wrench.

(5) Lockwire two nuts (11). Use wire (item 229, App F).

(6) Install pin spring (12) in track (13).



d. **Inspect (QA).**

e. **Install pilot/CPG armored crew seat frame assembly attenuators** (para 2.171)**.**

END OF TASK

2.173. PILOT/CPG ARMORED CREW SEAT RESTRAINT CONTROL ASSEMBLY REMOVAL/INSTALLATION

2.173.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.173.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

References:

TM 1-1500-204-23

Materials/Parts:

Strap (item 192, App F)
Wire (item 226, App F)

Personnel Required:

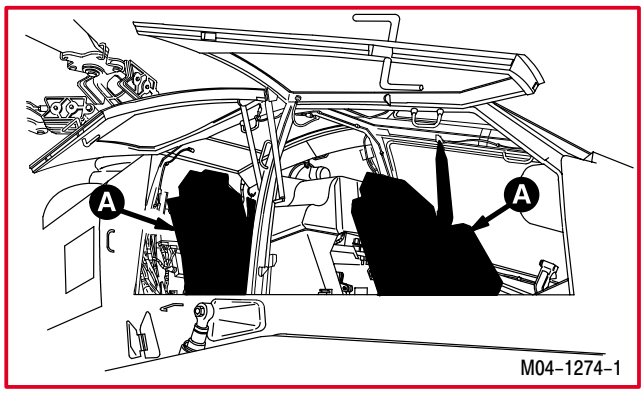
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



GO TO NEXT PAGE

2.173. PILOT/CPG ARMORED CREW SEAT RESTRAINT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

2.173.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Pull handle (1) to move seat (2) to full-up position.**

c. **Remove seat cushion (3) from seat (2).**

d. **Remove control handle (4) from seat (2).**

(1) Remove lockwire from knurled nut (5) and lug washer (6).

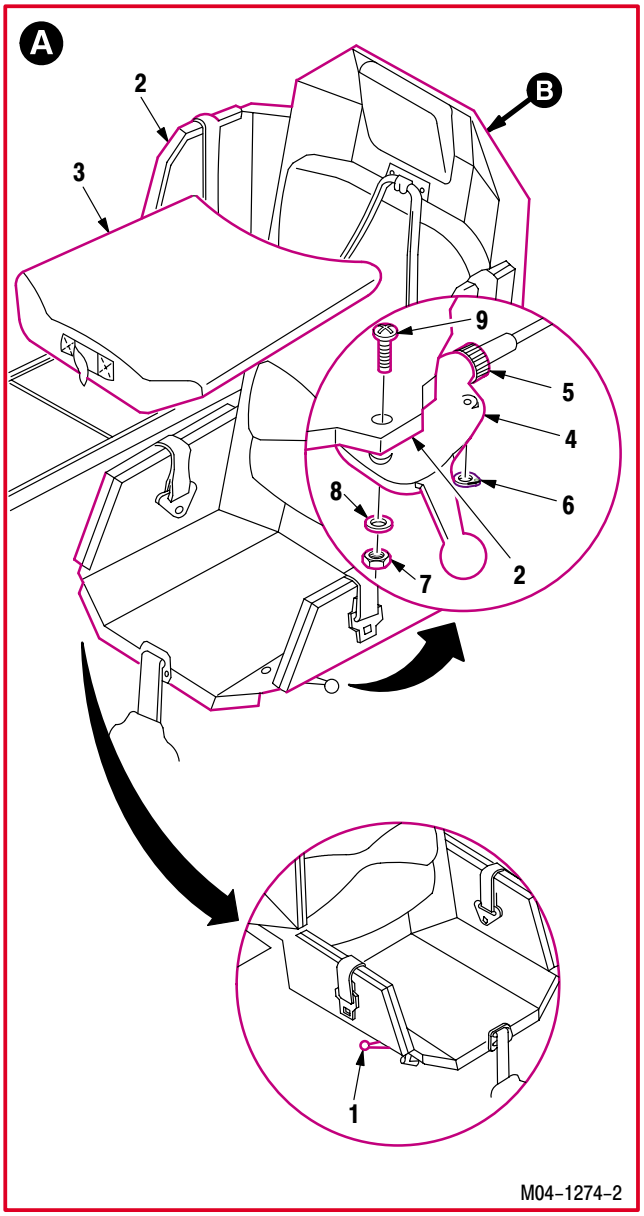
NOTE

Lug washer is removed from aft side of control handle only.

(2) Remove two nuts (7), washer (8), and lug washer (6) from control handle (4).

(3) Remove two screws (9) from seat (2).

(4) Remove control handle (4) from seat (2).



NOTE

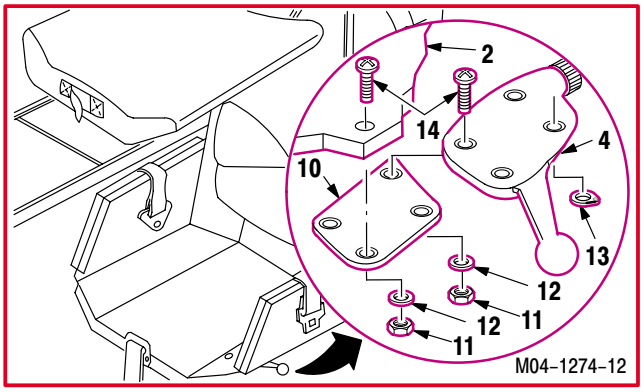
Go to step e for -5 handle configurations.

e. **Remove control handle (4) and bracket (10) from seat (2).**

(1) Remove four nuts (11), three washers (12), and lug washer (13) from bracket (10).

(2) Remove four screws (14) from seat (2) and control handle (4).

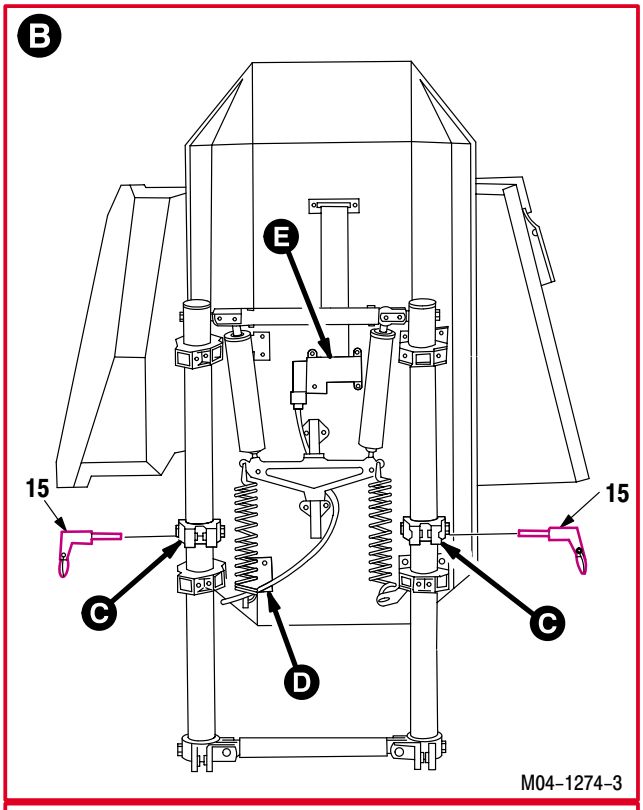
(3) Remove control handle (4) and bracket (10) from seat (2).



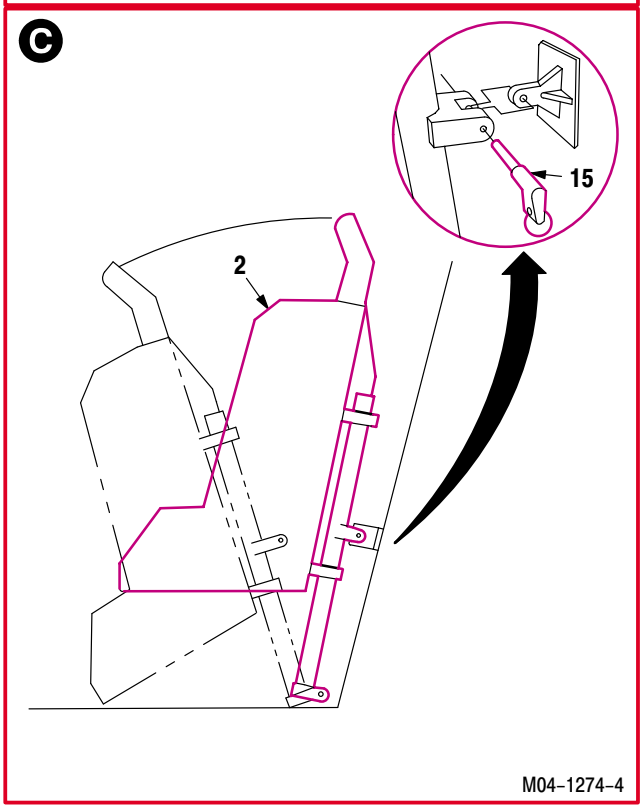
GO TO NEXT PAGE

2.173. PILOT/CPG ARMORED CREW SEAT RESTRAINT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

f. **Remove two upper quick-release pins (15).**



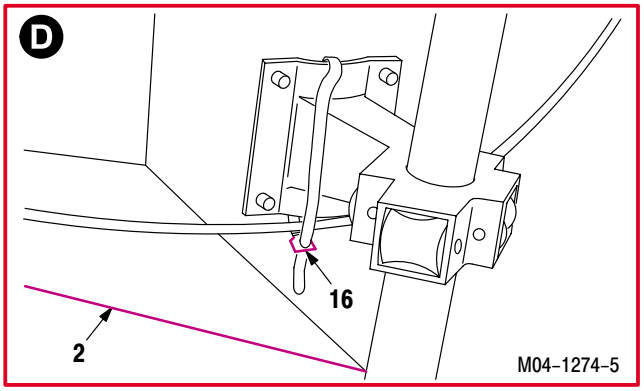
g. **One person tilt seat (2) forward and hold in place.**



GO TO NEXT PAGE

2.173. PILOT/CPG ARMORED CREW SEAT RESTRAINT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

h. **Remove tie strap (16) from seat (2).**

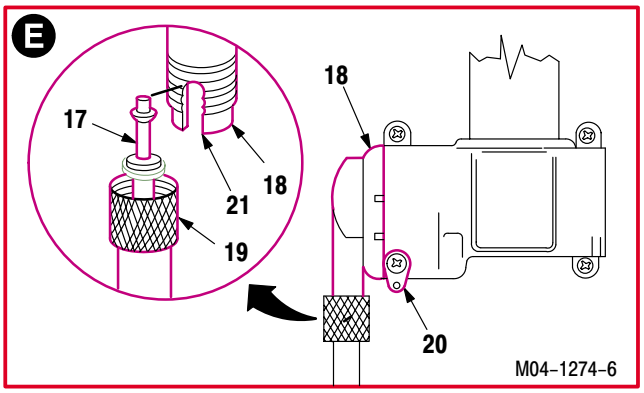


i. **Remove control cable (17) from inertia reel (18).**

(1) Remove lockwire from knurled nut (19) and lug washer (20).

(2) Remove knurled nut (19) from reel (18).

(3) Pull cable (17) through keyhole (21) in reel (18).



2.173.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.173.5. Inspection

a. **Check attachment holes of control assembly for elongation** (para 2.11)**.**

b. **Check mounting holes for control assembly on seat for elongation** (para 2.11)**.**

c. **Check control cable for fraying and wear** (TM 1-1500-204-23)**.**

d. **Check removed and attaching parts for damage.** None allowed.

GO TO NEXT PAGE

2.173. PILOT/CPG ARMORED CREW SEAT RESTRAINT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

2.173.6. Installation

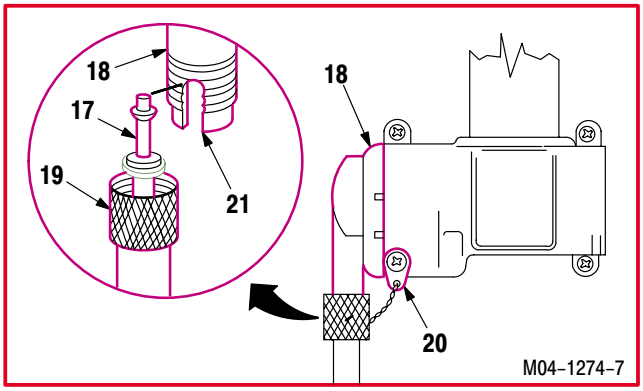
a. **Install cable (17) on reel (18).**

(1) Route cable (17) to back of seat (2).

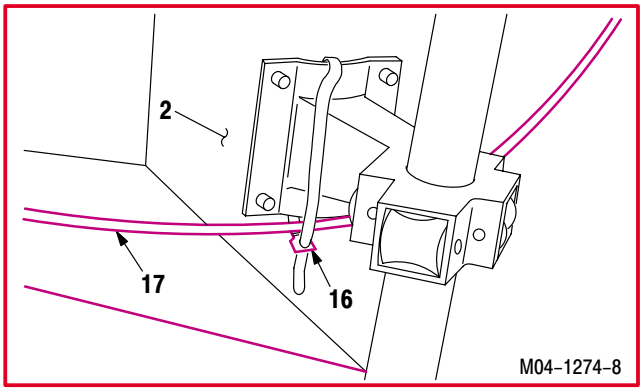
(2) Slide end of cable (17) into keyhole (21) in reel (18).

(3) Install knurled nut (19) on reel (18).

(4) Lockwire from knurled nut (19) to lug washer (20).

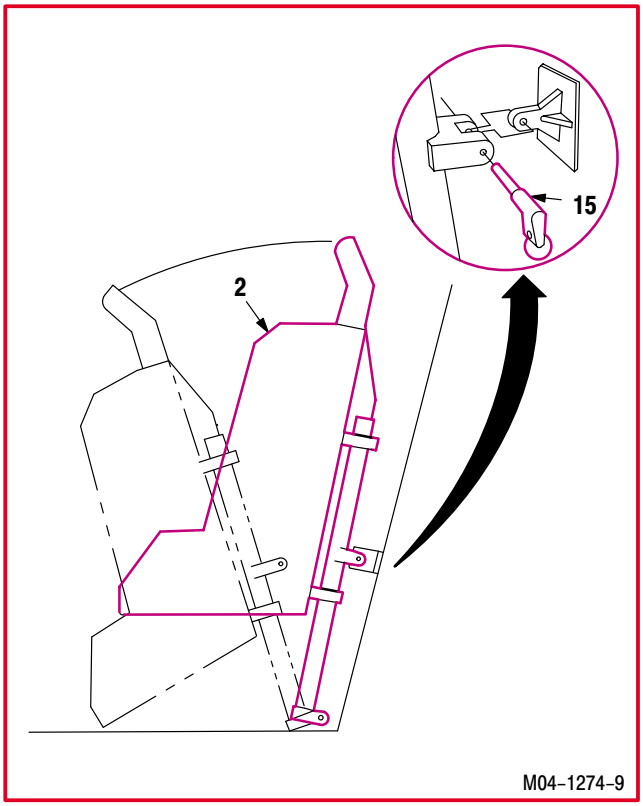


b. **Install tie strap (16) around cable (17) and seat (2).** Use strap (item 192, App F).



c. **Push seat (2) aft and hold in place.**

d. **Install two upper quick-release pins (15).**



GO TO NEXT PAGE

2.173. PILOT/CPG ARMORED CREW SEAT RESTRAINT CONTROL ASSEMBLY REMOVAL/INSTALLATION – continued

NOTE

Go to step e for -5 handle configurations.

e. **Install control handle (4) and bracket (10) on seat (2).** Torque four nuts (11) to **23 INCH-POUNDS**.

(1) Position bracket (10) on seat (2).

(2) Install four screws (14) through bracket (10) and seat (2).

(3) Install three washers (12), lug washer (13), and four nuts (11).

(4) Torque four nuts (11) to **23 INCH-POUNDS**. Use torque wrench.

(5) Lockwire nut (11) to lug washer (13). Use wire (item 226, App F).

f. **Install control handle (4) on seat (2).** Torque two nuts to **23 INCH-POUNDS**.

(1) Position control handle (4) on seat (2).

(2) Install two screws (9) through seat (2) and control handle (4).

(3) Install washer (8), lug washer (6), and two nuts (7) on screws (9).

(4) Torque two nuts (7) to **23 INCH-POUNDS**. Use torque wrench.

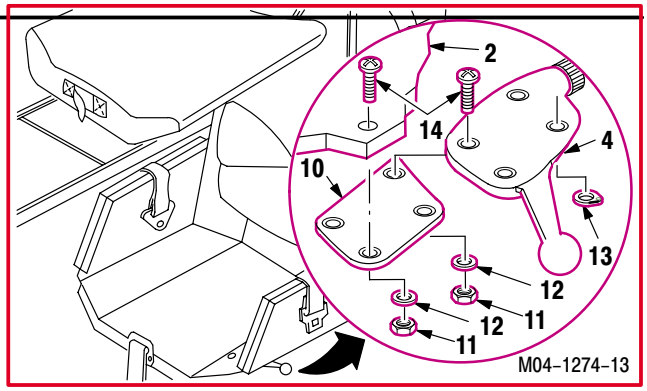
(5) Lockwire nut (5) to lug washer (6). Use wire (item 226, App F).

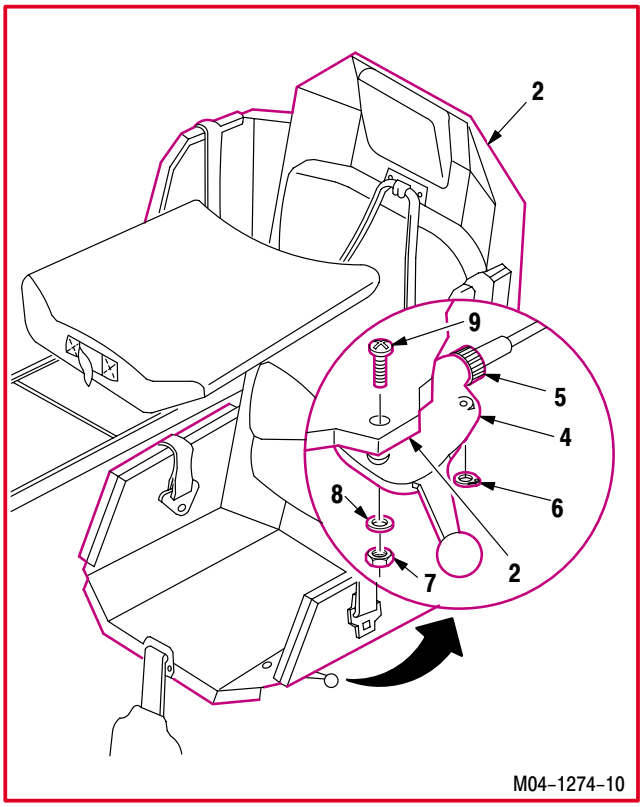
g. **Install seat cushion (3) on seat (2).**

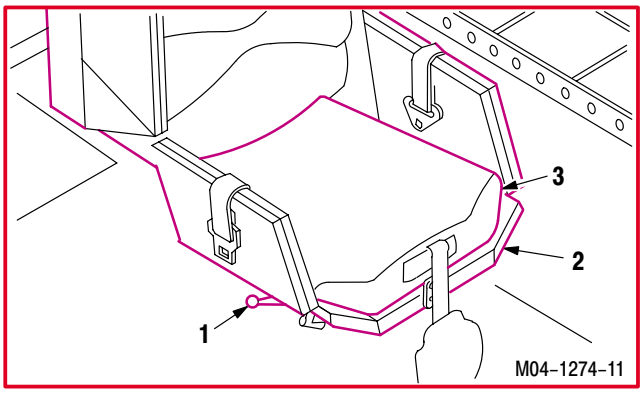
h. **Pull handle (1) to move seat (2) to full up position.**

i. **Check restraint control assembly for proper operation.**

j. **Inspect (QA).**







END OF TASK

2.174. PILOT/CPG ARMORED CREW SEAT SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION

2.174.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.174.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Personnel Required:

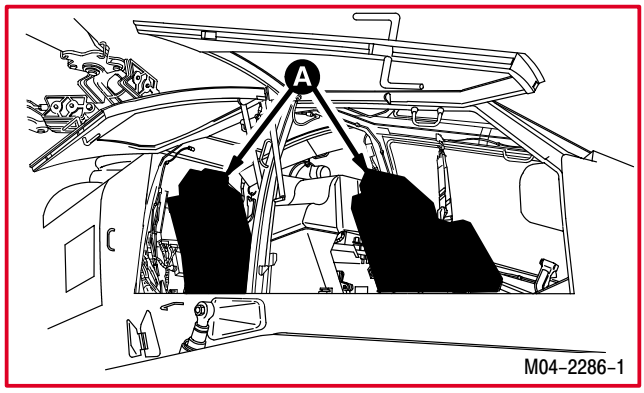
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	Pilot/CPG armored crew seat tilted forward and wire harness removed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.

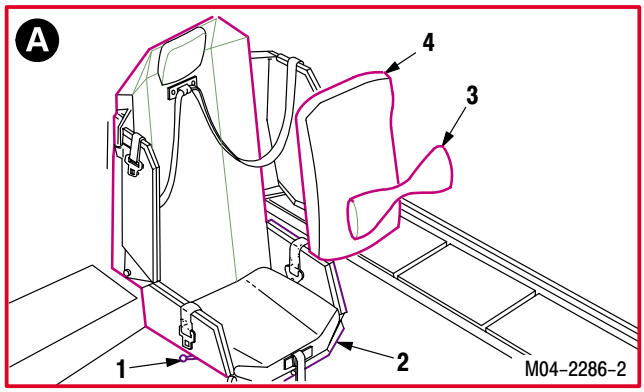


2.174.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Pull handle (1) to move armored crew seat (2) to full-up position.**

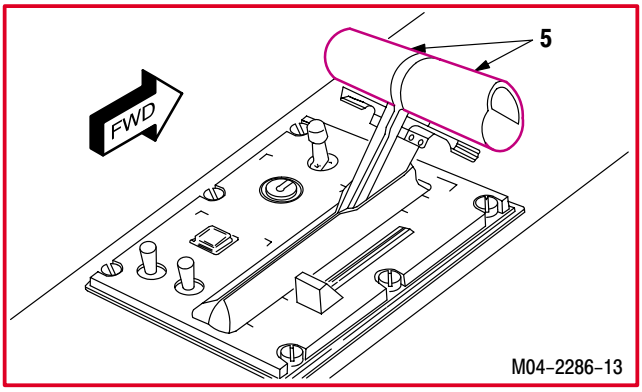
c. **Remove seat cushions (3) and (4) from seat (2).**

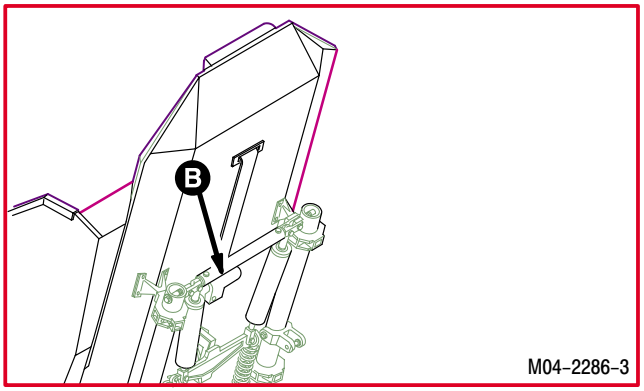


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2.174. PILOT/CPG ARMORED CREW SEAT SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION – continued

d. **Move both engine power levers (5) to LOCK-OUT position.**



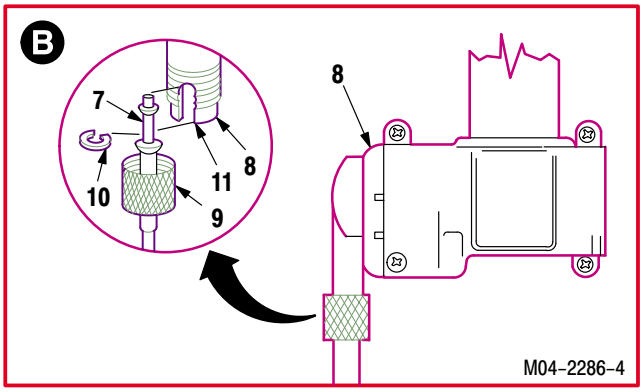


e. **Remove cable (7) from inertia reel (8).**

(1) Remove knurled nut (9) from reel (8).

(2) Remove slotted washer (10) from cable (7).

(3) Pull cable (7) through keyhole (11).



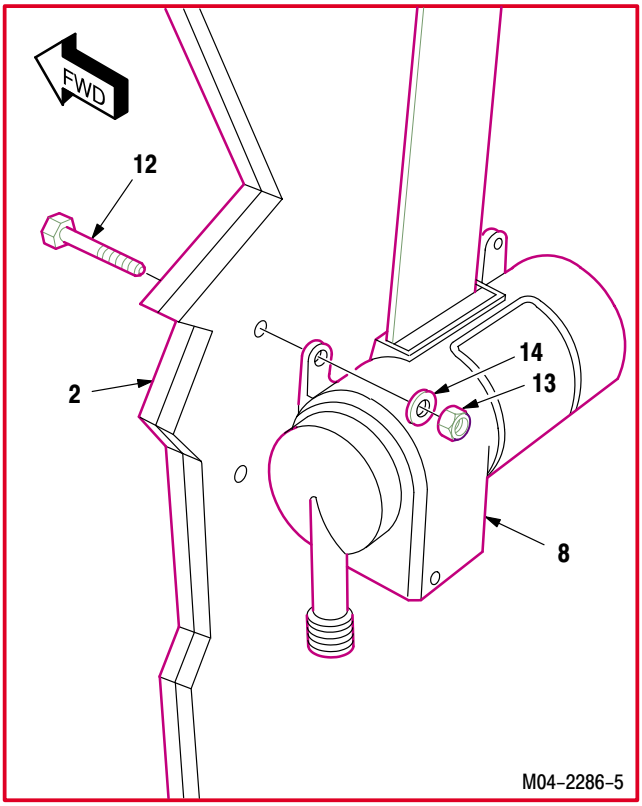
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2.174. PILOT/CPG ARMORED CREW SEAT SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION – continued

f. **Remove reel (8) from seat (2).**

(1) Hold four bolts (12). Remove four nuts (13) and washers (14).

(2) Remove four bolts (12) from seat (2) and reel (8).



g. **Remove shoulder harness strap (15) from reel (8).**

(1) Pull strap (15) out of reel (9) until it stops.

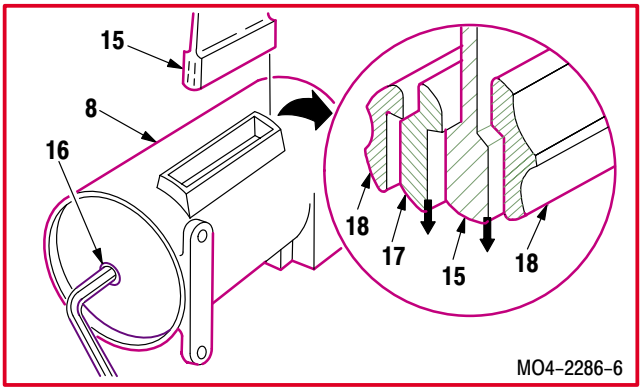
(2) Insert 7/32 key in hex fitting (16) and hold in place.

(3) Push strap (15) and insert (17) in direction of arrows.

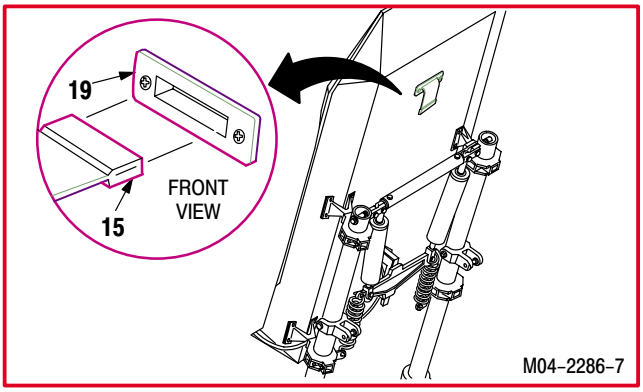
(4) Turn reel (8) upside down and allow insert (17) to fall out of shaft (18).

(5) Pull strap (15) out of shaft (18).

(6) Carefully relieve tension on shaft (18) inside reel (9) by allowing 7/32 key to be rotated clockwise.



h. **Pull strap (15) through grommet (19).**



GO TO NEXT PAGE

2.174. PILOT/CPG ARMORED CREW SEAT SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION – continued

2.174.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.174.5. Inspection

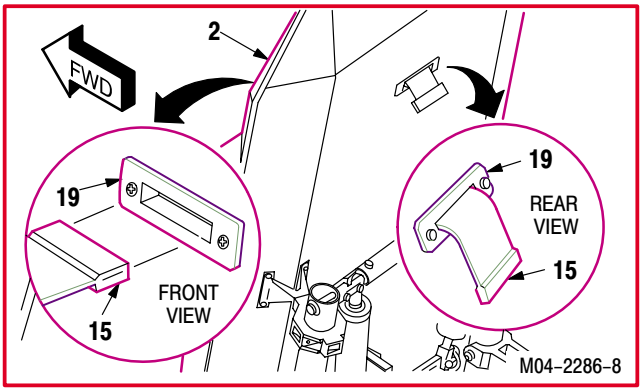
a. **Check seat for cracks** (para 2.12)**.**

b. **Check strap for fraying and wear.**

c. **Check reel for binding.**

2.174.6. Installation

a. **Push strap (15) through grommet (19) from front of seat (2).**



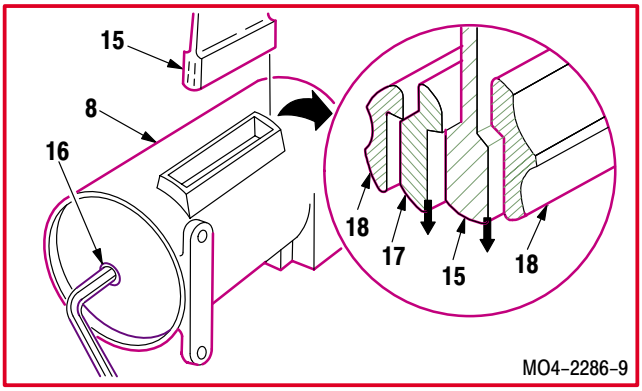
b. **Install strap (15) in reel (8).**

(1) Insert 7/32 key in hex fitting (16) and turn key counterclockwise until it stops, then back off 1/2 to 1-1/2 turns and hold in place.

(2) Push strap (15) in shaft (18).

(3) Install insert (17) in shaft (18) next to strap (15). Ensure strap (15) and insert (17) are secure.

(4) Wind strap (15) in reel (8) by carefully allowing 7/32 key to be rotated counterclockwise.



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2.174. PILOT/CPG ARMORED CREW SEAT SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION – continued

c. **Install reel (8) on seat (2).** Torque four nuts (13) to **20 INCH-POUNDS**.

(1) Install four bolts (12) through seat (2) and reel (8).

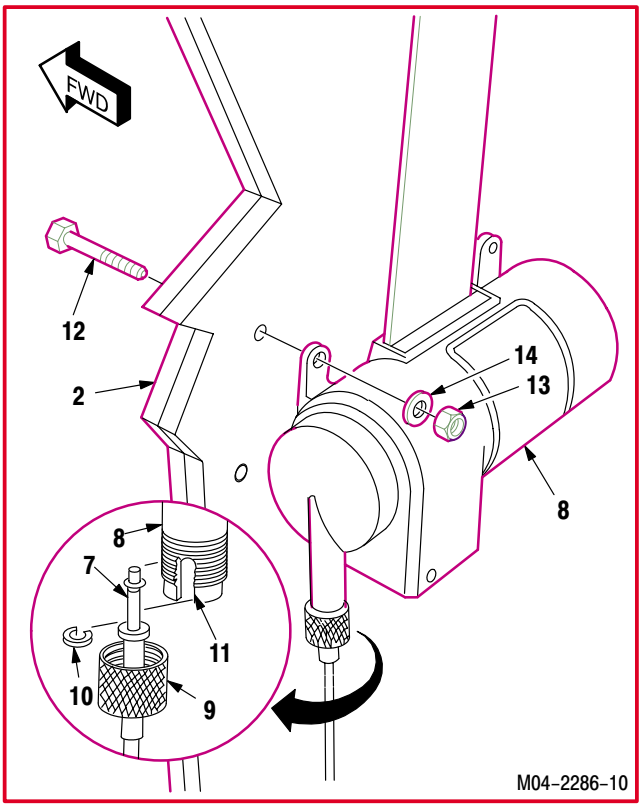
(2) Hold four bolts (12). Install four washers (14) and nuts (13).

(3) Install cable (7) in key hole (11).

(4) Install slotted washer (10) over cable (7).

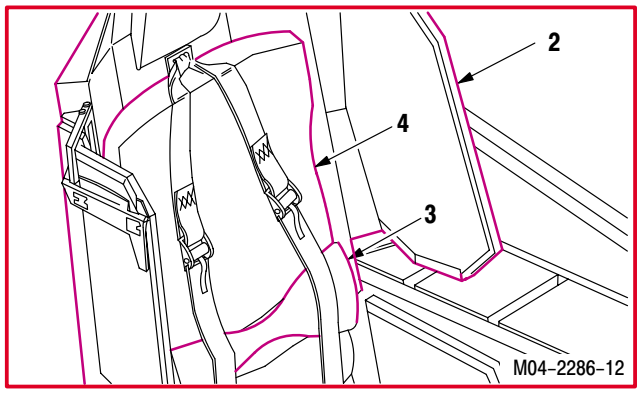
(5) Install knurled nut (9) on reel (8).

(6) Hold four bolts (12). Torque four nuts (13) to **20 INCH-POUNDS**. Use torque wrench.



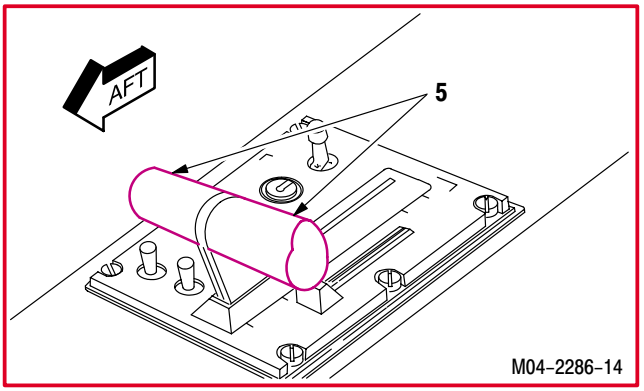
d. **Inspect (QA).**

e. **Install seat cushions (3) and (4) on seat (2).**



f. **Move both engine power levers (5) to OFF position.**

g. **Tilt back pilot/CPG armored crew seat and install wire harness** (para 2.161)**.**



END OF TASK

2.175. PILOT/CPG ARMORED CREW SEAT ROTARY BUCKLE REMOVAL/INSTALLATION

2.175.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.175.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

References:

TM 1-1500-204-23

Personnel Required:

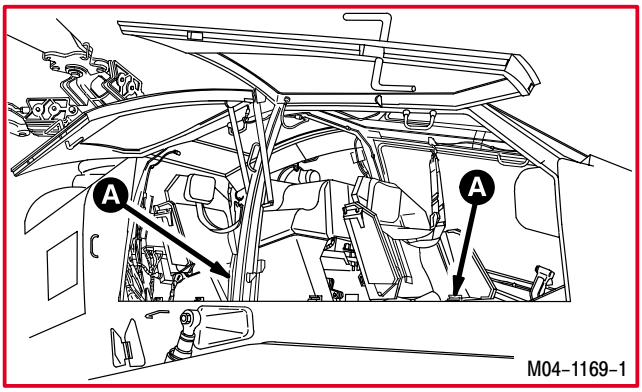
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



2.175.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

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2.175. PILOT/CPG ARMORED CREW SEAT ROTARY BUCKLE REMOVAL/INSTALLATION – continued

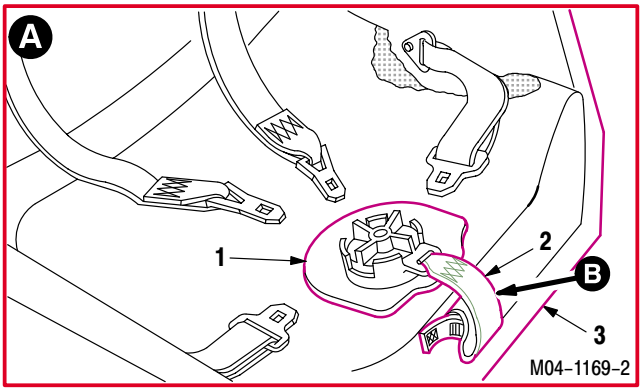
b. **Remove rotary buckle (1) and strap (2) from armored crew seat (3).**

(1) Insert 3/32 key into hex end of two pin rivets (4) to hold rivets in place.

(2) Remove two nuts (5) and washers (6).

(3) Remove two pin rivets (4) and crotch strap anchor (7) from seat (3).

(4) Pull tape (8) at seat cushion (9) and remove strap (2) with rotary buckle (1).



2.175.4. Cleaning

a. **Wipe attaching area of crotch strap anchor on seat with a clean rag.**

2.175.5. Inspection

a. **Check attaching area of crotch strap anchor on seat for excessive wear** (TM 1-1500-204-23)**.**

2.175.6. Installation

a. **Install buckle (1) and strap (2) on seat (3).**

(1) Install two pin rivets (4) and anchor (7) on seat (3).

(2) Install two washers (6) and nuts (5) on two pin rivets (4).

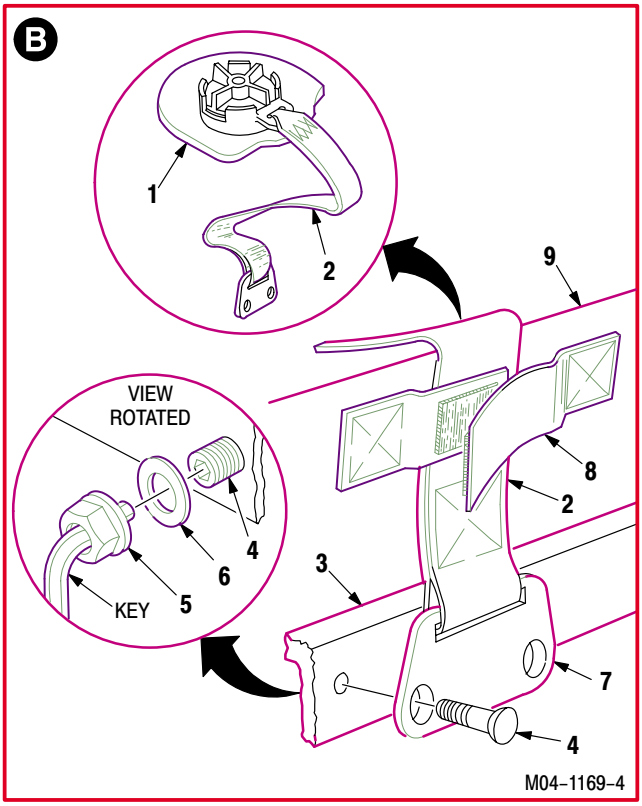
(3) Insert 3/32 key into hex end of pin rivets (4) to hold rivets in place.

(4) Tighten two nuts (5).

(5) Press tape (8) in place over strap (2).

b. **Torque two nuts (5) to 20 INCH-POUNDS.** Use torque wrench.

c. **Inspect (QA).**



END OF TASK

2.176. PILOT/CPG ARMORED CREW SEAT LAP BELT REMOVAL/INSTALLATION

2.176.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.176.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

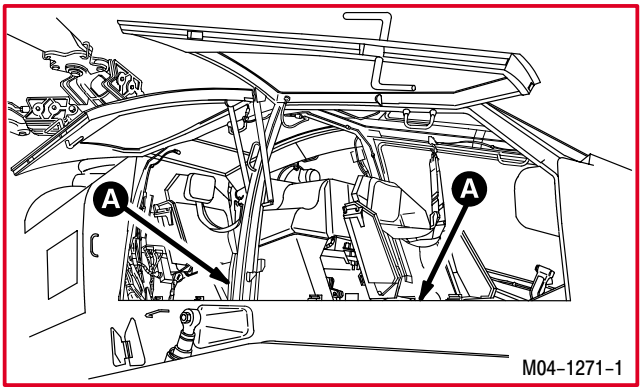
TM 1-1500-204-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



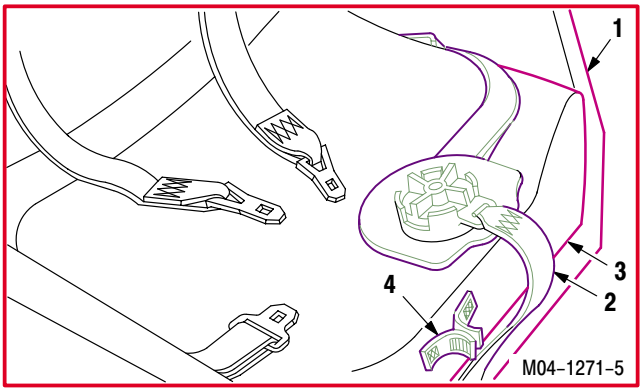
2.176.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Move seat (1) to full-up position.**

c. **Release buckle and crotch strap (2) from seat cushion (3).**

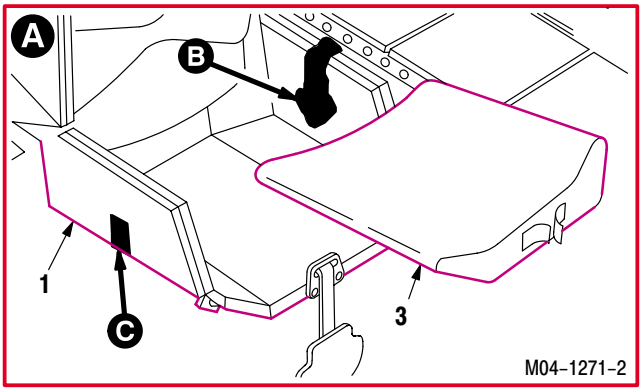
(1) Pull tape (4) to release crotch strap (2) from seat cushion (3).



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2.176. PILOT/CPG ARMORED CREW SEAT LAP BELT REMOVAL/INSTALLATION – continued

d. **Remove seat cushion (3) from seat (1).**

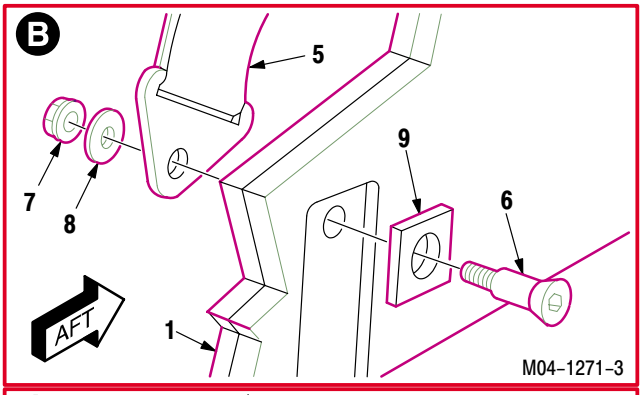


e. **Remove left lap belt (5) from seat (1).**

(1) Hold bolt (6). Remove nut (7) and washer (8).

(2) Remove bolt (6) and spacer (9).

(3) Remove belt (5) from seat (1).

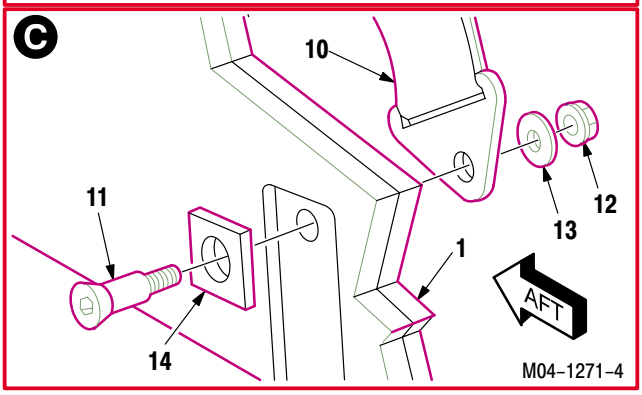


f. **Remove right lap belt (10) from seat (1).**

(1) Hold bolt (11). Remove nut (12) and washer (13).

(2) Remove bolt (11) and spacer (14).

(3) Remove belt (10) from seat (1).



2.176.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.176.5. Inspection

a. **Check attaching areas of belts for wear and damage** (TM 1-1500-204-23)**.**

GO TO NEXT PAGE

2.176. PILOT/CPG ARMORED CREW SEAT LAP BELT REMOVAL/INSTALLATION – continued

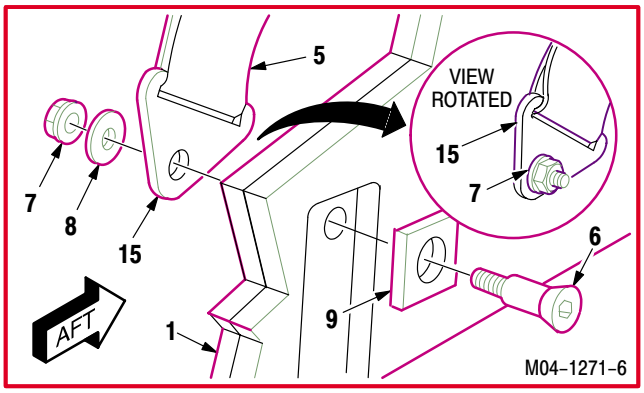
2.176.6. Installation

a. **Install belt (5) on seat (1).**

(1) Install bolt (6) through spacer (9), seat (1), and retainer (15).

(2) Hold bolt (6). Install washer (8) and nut (7).

(3) Tighten, then loosen nut (7) to allow retainer (15) to move freely.

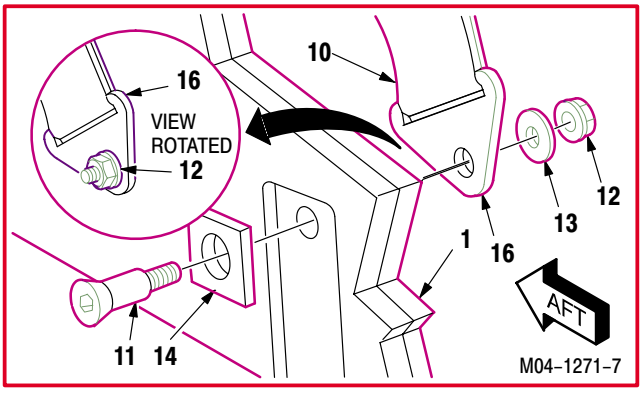


b. **Install belt (10) on seat (1).**

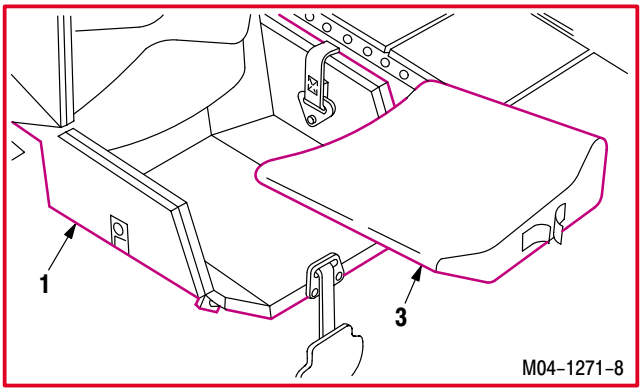
(1) Install bolt (11) through spacer (14), seat (1), and retainer (16).

(2) Hold bolt (11). Install washer (13) and nut (12).

(3) Tighten, then loosen nut (12) to allow retainer (16) to move freely.



c. **Install cushion (3) in seat (1).**

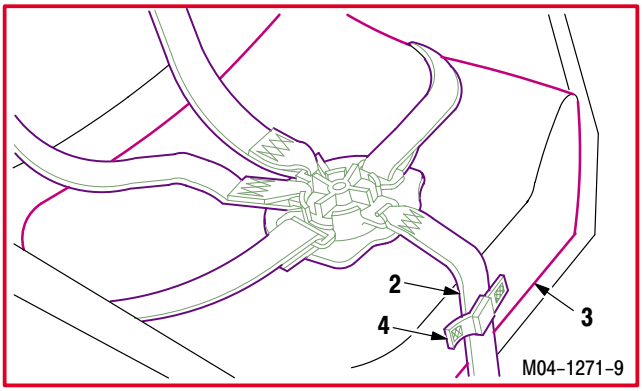


d. **Attach strap (2) to seat cushion (3).**

(1) Lay buckle and strap (2) on seat cushion (3).

(2) Fasten straps (4) around strap (2).

e. **Inspect (QA).**



END OF TASK

2.177. PILOT/CPG ARMORED CREW SEAT BUCKET ASSEMBLY REPLACEMENT

2.177.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.177.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)

Personnel Required:

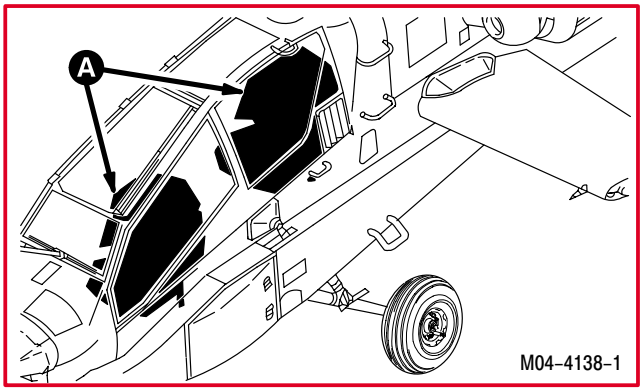
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.161	Pilot/CPG armored crew seat removed
2.165	Pilot/CPG armored crew seat wing panel (armored swing panel) removed
2.168	Pilot/CPG armored crew seat cushions removed
2.169	Pilot/CPG armored crew seat strap guide assembly removed
2.172	Pilot/CPG armored crew seat control assembly removed
2.173	Pilot/CPG armored crew seat restraint control assembly removed
2.175	Pilot/CPG armored crew seat rotary buckle removed
2.176	Pilot/CPG armored crew seat lap belt removed

NOTE

This task is typical for pilot/CPG armored crew seat.



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2.177. PILOT/CPG ARMORED CREW SEAT BUCKET ASSEMBLY REPLACEMENT – continued

2.177.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove frame assembly (1) from armored bucket assembly (2).**

(1) Remove 16 bolts (3) and washers (4) from frame assembly (1) and bucket assembly (2).

(2) Remove frame (1) from bucket assembly (2).

c. **Remove tee track assembly (5) from bucket assembly (2).**

(1) Remove four bolts (6) and washers (7) from bucket assembly (2) and track (5).

(2) Remove track (5) from bucket assembly (2).

d. **Remove left-hand armor panel (8) from bucket assembly (2).**

(1) Remove 9 bolts (9), 18 washers (10), and 9 nuts (11) from panel (8) and bucket assembly (2).

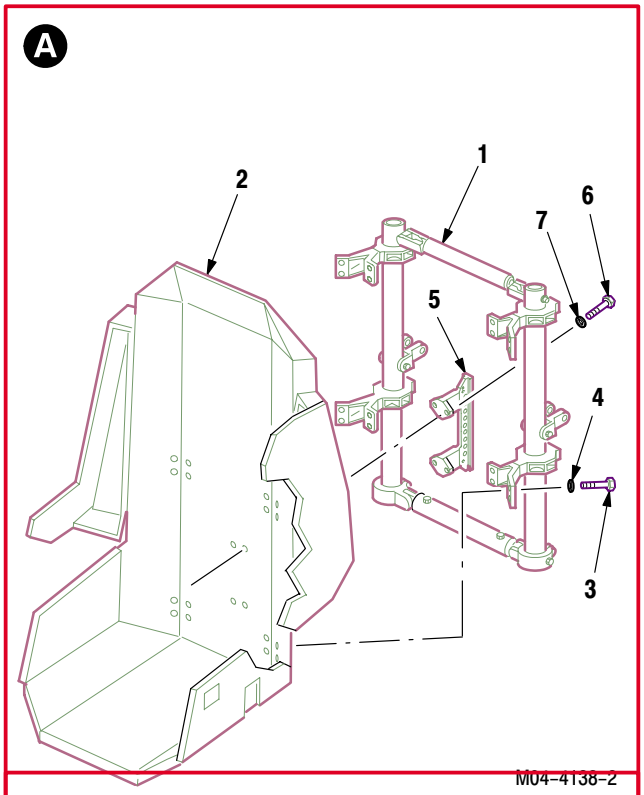
(2) Remove panel (8) from bucket assembly (2).

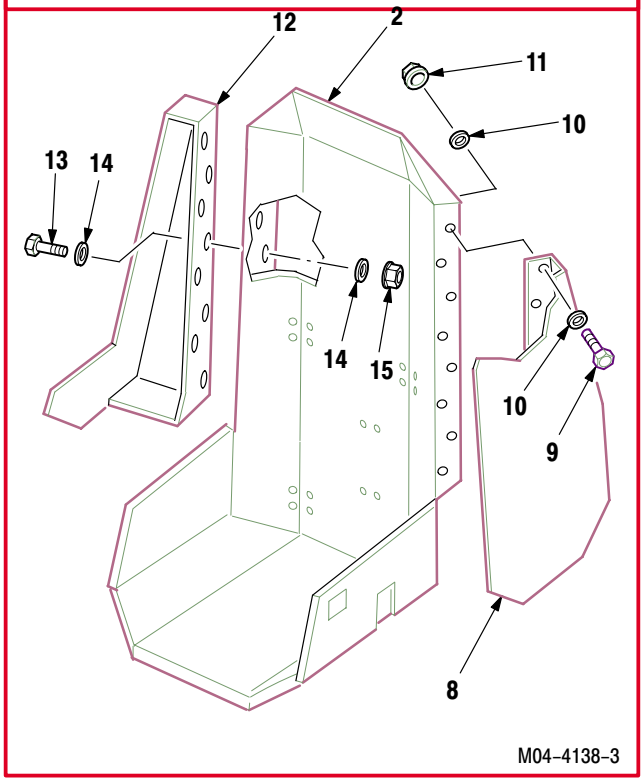
e. **Remove right-hand armor panel (12) from bucket assembly (2).**

(1) Remove 8 bolts (13), 16 washers (14), and 8 nuts (15) from panel (12) and bucket assembly (2).

(2) Remove panel (12) from bucket assembly (2).

(3) Discard bucket assembly (2).





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2.177. PILOT/CPG ARMORED CREW SEAT BUCKET ASSEMBLY REPLACEMENT – continued

2.177.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.177.5. Inspection

a. **Check removed and attaching parts for damage** (para 2.12)**.**

2.177.6. Installation

a. **Install panel (12) on new bucket assembly (2).**

(1) Install 8 bolts (13), 16 washers (14), and 8 nuts (15) on panel (12) and bucket assembly (2).

b. **Install panel (8) on bucket assembly (2).**

(1) Install 9 bolts (9), 18 washers (10), and 9 nuts (11) on panel (8) and bucket assembly (2).

c. **Install track (5) on bucket assembly (2).** Torque four bolts (6) to **120 INCH-POUNDS**.

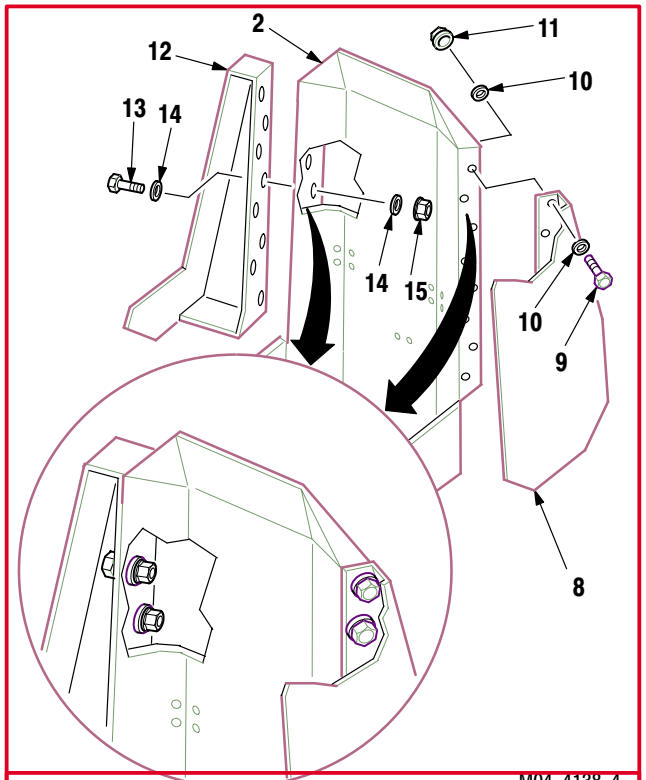
(1) Install four bolts (6) and washers (7) on track (5) and bucket assembly (2).

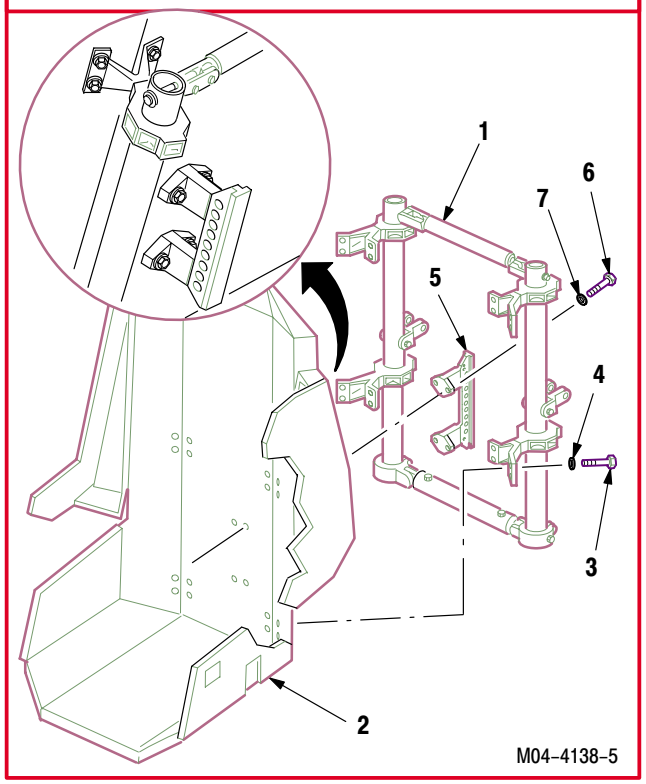
(2) Torque four bolts (6) to **120 INCH-POUNDS**. Use torque wrench.

d. **Install frame (1) on bucket assembly (2).** Torque 16 bolts (3) to **120 INCH-POUNDS**.

(1) Install 16 bolts (3) and washers (4) on frame (1) and bucket assembly (2).

(2) Torque 16 bolts (3) to **120 INCH-POUNDS**. Use torque wrench.





GO TO NEXT PAGE

2.177. PILOT/CPG ARMORED CREW SEAT BUCKET ASSEMBLY REPLACEMENT – continued

e. **Inspect (QA).**

f. **Install pilot/CPG armored crew seat lap belt** (para 2.176)**.**

g. **Install pilot/CPG armored crew seat rotary buckle** (para 2.175)**.**

h. **Install pilot/CPG armored crew seat restraint control assembly** (para 2.173)**.**

i. **Install pilot/CPG armored crew seat control assembly** (para 2.172)**.**

j. **Install pilot/CPG armored crew seat strap guide assembly** (para 2.169)**.**

k. **Install pilot/CPG armored crew seat cushions** (para 2.168)**.**

l. **Install pilot/CPG armored crew seat armored wing panel (armored swing panel)** (para 2.165)**.**

m. **Install pilot/CPG armored crew seat seat** (para 2.161)**.**

END OF TASK

2.178. NONTRANSPARENT BARRIER ARMOR ASSEMBLY REMOVAL/INSTALLATION

2.178.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.178.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

References:

TM 9-1230-476-20-1
TM 9-1270-221-23

Equipment Conditions:

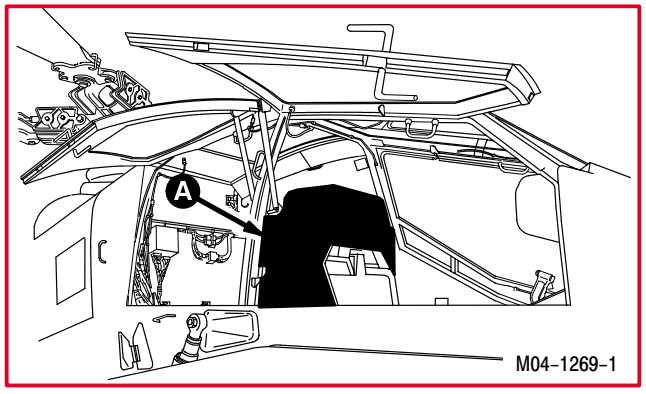
Ref	Condition
1.57	Helicopter safed
2.161	CPG seat tilted forward
2.179	Nontransparent barrier armor pass thru tray removed
13.28	ECS crew station ducts No. 16 and No. 26 removed

Personnel Required:

67R	Attack Helicopter Repairer One person to assist
67R3F	Attack Helicopter Repairer/Technical Inspector

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



GO TO NEXT PAGE

2.178. NONTRANSPARENT BARRIER ARMOR ASSEMBLY REMOVAL/INSTALLATION – continued

2.178.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

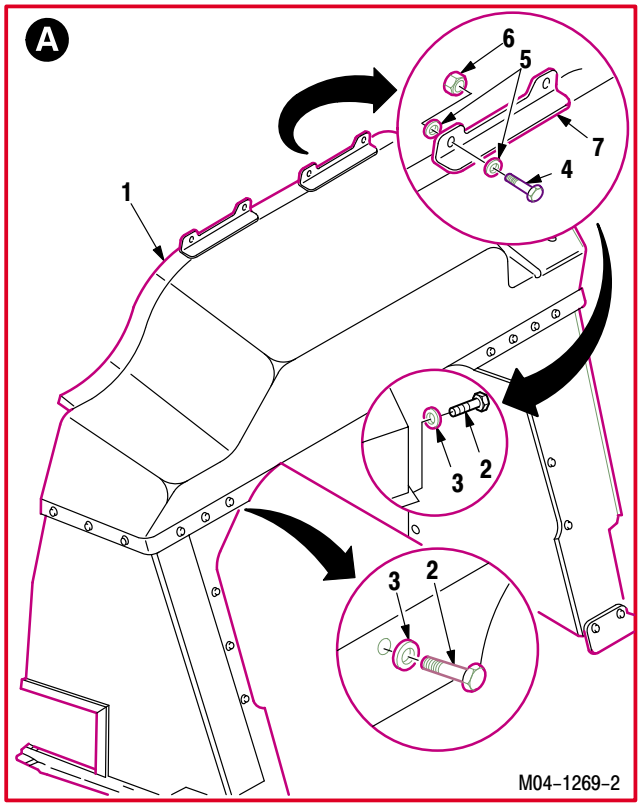
b. **Detach connectors P930 and P924 from CPG sensor surveying units (SSU)** (TM 9-1270-221-23)**.**

c. **Remove upper nontransparent barrier assembly crew protection armor (1).**

(1) Remove 13 screws (2) and washers (3).

(2) Remove four shear bolts (4), eight washers (5), and four nuts (6) from clip (7).

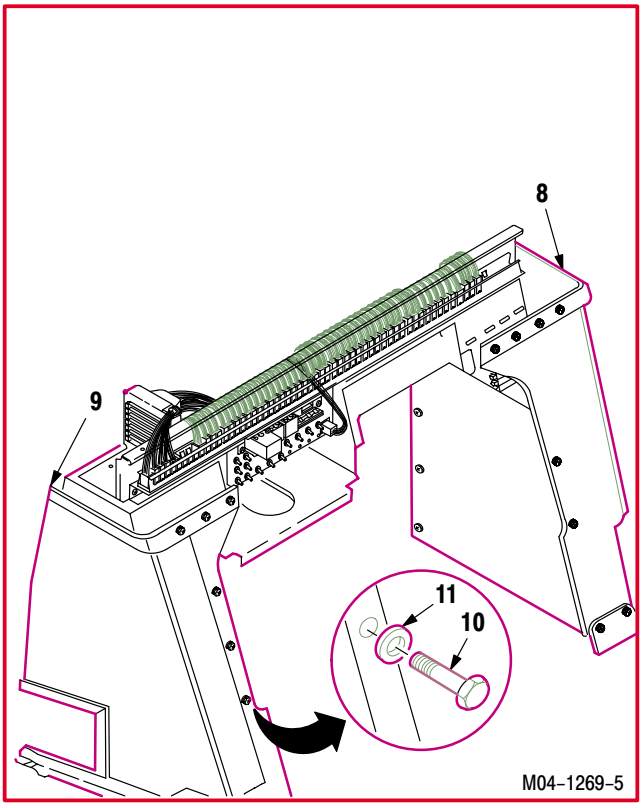
(3) Remove upper armor (1).



d. **Remove lower left (8) and lower right (9) nontransparent barrier assembly crew protection armor.**

(1) Remove seven screws (10) and washers (11).

(2) Remove left armor (8) and right armor (9).



2.178.4. Cleaning

a. **Wipe armor with a clean rag.**

2.178.5. Inspection

a. **Check armor for wear, cracks, dents, and delamination** (para 2.12)**.**

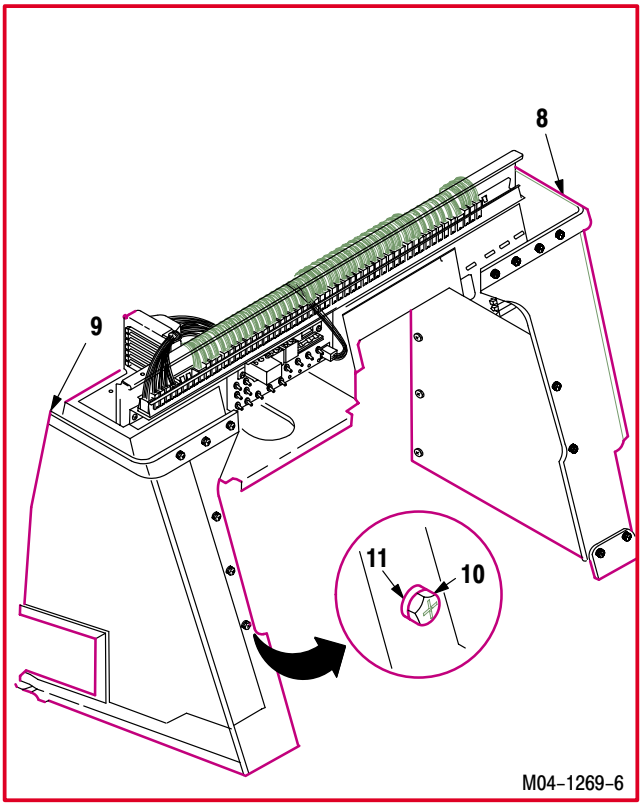
GO TO NEXT PAGE

2.178. NONTRANSPARENT BARRIER ARMOR ASSEMBLY REMOVAL/INSTALLATION – continued

2.178.6. Installation

a. **Install left armor (8) and right armor (9).**

(1) Install seven washers (11) and screws (10).



b. **Install upper armor (1).** Torque four bolts (4) to **20 INCH-POUNDS**.

(1) Aline upper armor (1) with four bolts (4).

(2) Install four bolts (4), eight washers (5), and four nuts (6) on clip (7).

(3) Torque four bolts (4) to a maximum of **20 INCH-POUNDS**. Use torque wrench.

(4) Install 13 washers (3) and screws (2).

c. **Inspect (QA).**

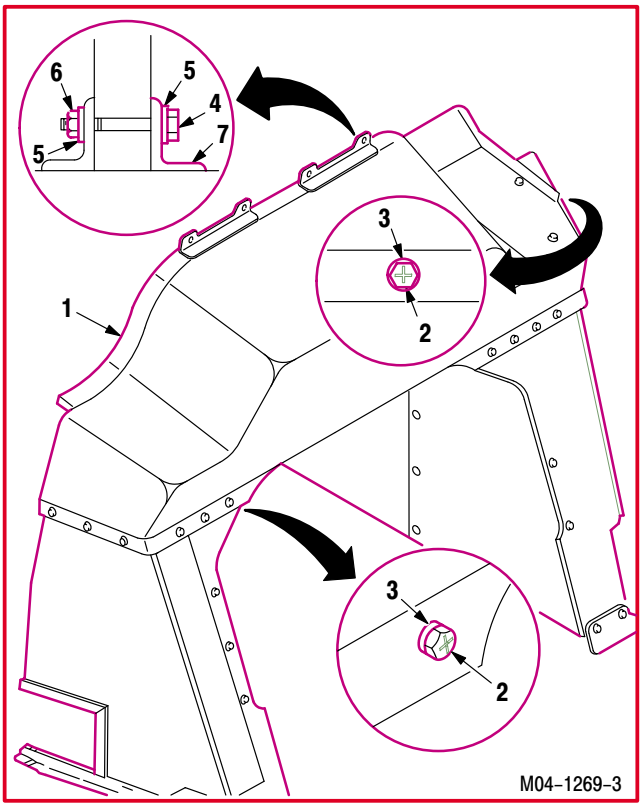
d. **Attach connectors P930 and P924 to CPG sensor surveying units (SSU)** (TM 9-1270-221-23)**.**

e. **Install ECS crew station ducts No. 16 and No. 26** (para 13.28)**.**

f. **Install nontransparent barrier armor pass thru tray** (para 2.179)**.**

g. **Return CPG armored crew seat to upright position** (para 2.161)**.**

h. **Perform boresight reticle unit (BRU) alinement** (TM 9-1230-476-20-1)**.**



END OF TASK

2.179. NONTRANSPARENT BARRIER ARMOR PASS-THRU TRAY REMOVAL/INSTALLATION

2.179.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.179.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

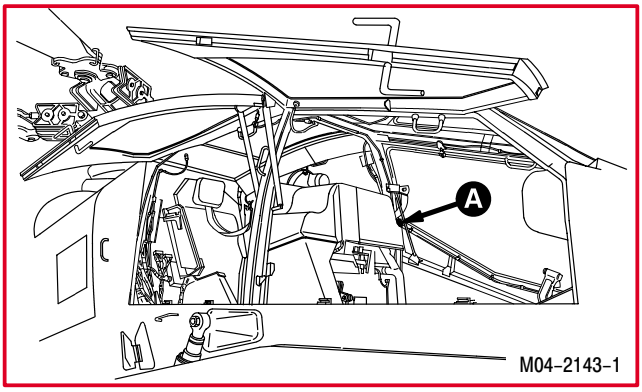
67R Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full-up position. This could cause severe injury to personnel. If injury occurs, seek medical aid.



GO TO NEXT PAGE

2.179. NONTRANSPARENT BARRIER ARMOR PASS-THRU TRAY REMOVAL/INSTALLATION – continued

2.179.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove pass–thru tray (1) from upper non-transparent barrier assembly crew protection armor (2).**

(1) Remove three screws (3) and finishing washers (4) from tray (1).

(2) Remove tray (1) from armor (2).

2.179.4. Cleaning

a. **Wipe removed and attaching surface with a clean rag.**

2.179.5. Inspection

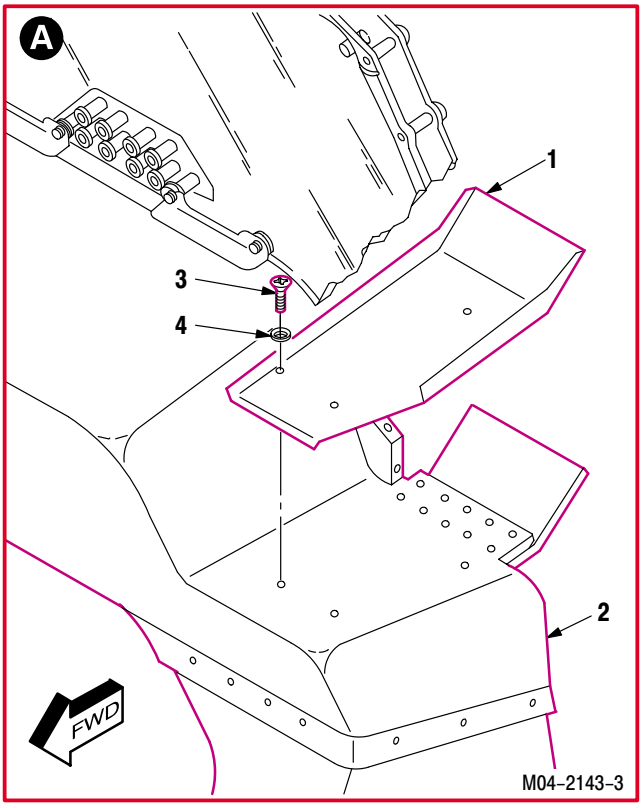
a. **Check attaching surface for excessive wear** (para 2.12)**.**

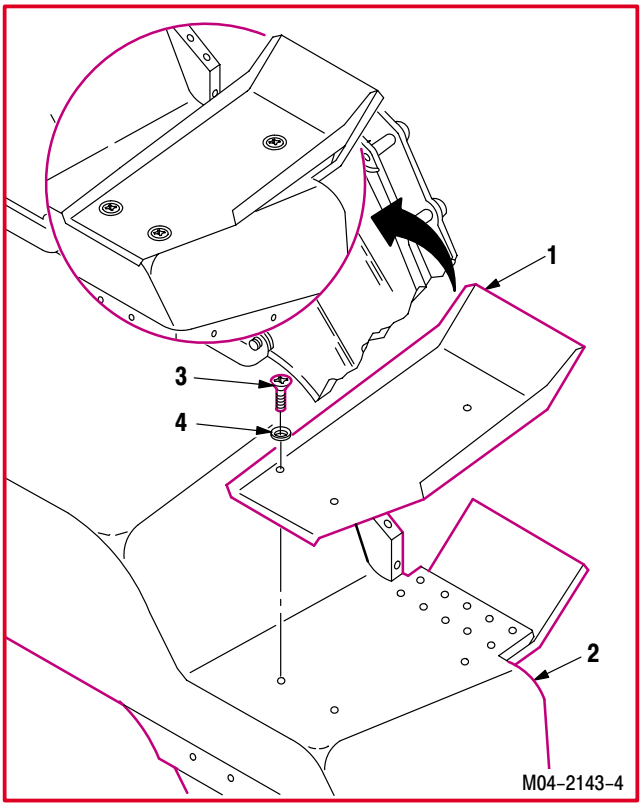
2.179.6. Installation

a. **Install tray (1) on armor (2).**

(1) Aline tray (1) with five attachment points on armor (2).

(2) Install three screws (3) and washers (4).





END OF TASK

2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT

2.180.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.180.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Materials/Parts:

Cloth (item 52, App F)
Tape (item 201, App F)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 9-1230-476-20-1
TM 9-1270-221-23
TM 11-1520-238-23-1

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.62	Pilot station access door removed
2.54	CPG station access door removed
2.68	Canopy door anchor strut rods removed
2.159	Left aft vertical cockpit glareshield removed
2.158	Right aft vertical cockpit glareshield removed
2.156	Pilot fixed glareshield removed
2.178	Upper nontransparent barrier armor assembly removed
2.188	Pilot boresight reticle unit (BRU) mount support removed
8.9	Pilot turbine gas temperature (TGT) indicator removed
9.2	Pilot circuit breaker panel removed
12.77	Canopy severance device components on both sides of transparent barrier removed
13.45	CPG right and left defog hoses detached from pilot station and pulled clear of transparent barrier
TM 11-1520-238-23-1	Video display unit (VDU) removed

GO TO NEXT PAGE

2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

CAUTION

Do not damage canopy transparent panels when performing maintenance in or around pilot and CPG stations.

2.180.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove right outboard strap (1) from rollover structure (2).**

(1) Remove 22 screws (3), 4 screws (4), and 26 washers (5) from strap (1) and structure (2).

(2) Remove strap (1) from structure (2).

c. **Remove right inboard strap (6) from structure (2).**

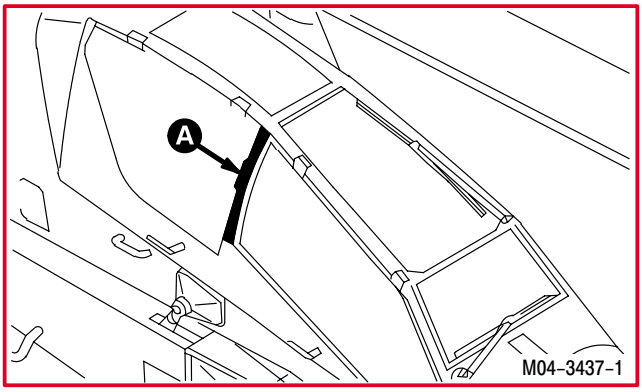
(1) Remove six nuts (7), washers (8), and screws (9).

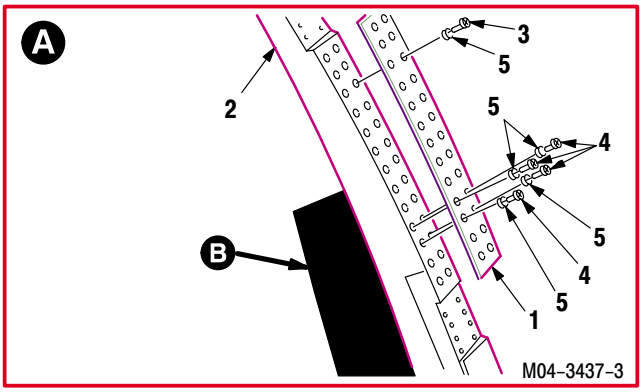
(2) Remove three bolts (10), two bolts (11), four bolts (12), bolt (13), and three bolts (14).

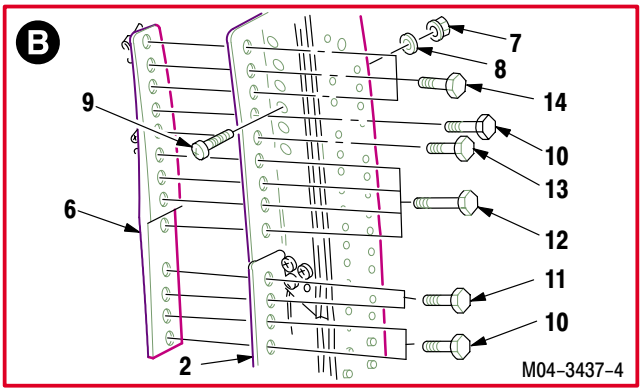
(3) Remove strap (6) from structure (2).

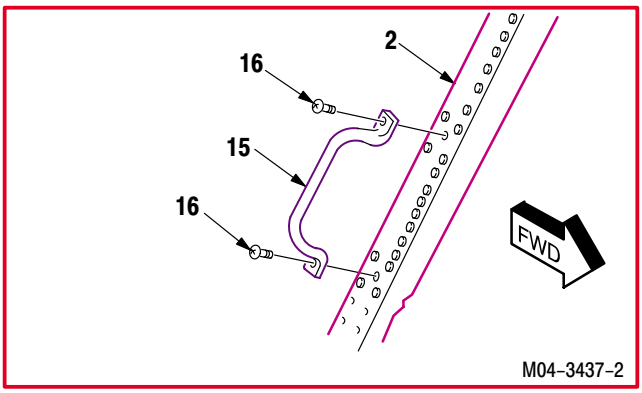
d. **Remove handle (15) from structure (2).**

(1) Remove two screws (16) and handle (15) from structure (2).









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2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

e. **Remove right zee channel (17) from structure (2).**

(1) Remove 10 screws (3), 14 screws (18), and 24 washers (5) from channel (17) and structure (2).

(2) Remove five nuts (19), washers (20), three screws (21), two screws (22), upper right clip (23), lower right clip (24), and two washers (25) from channel (17) and barrier (26).

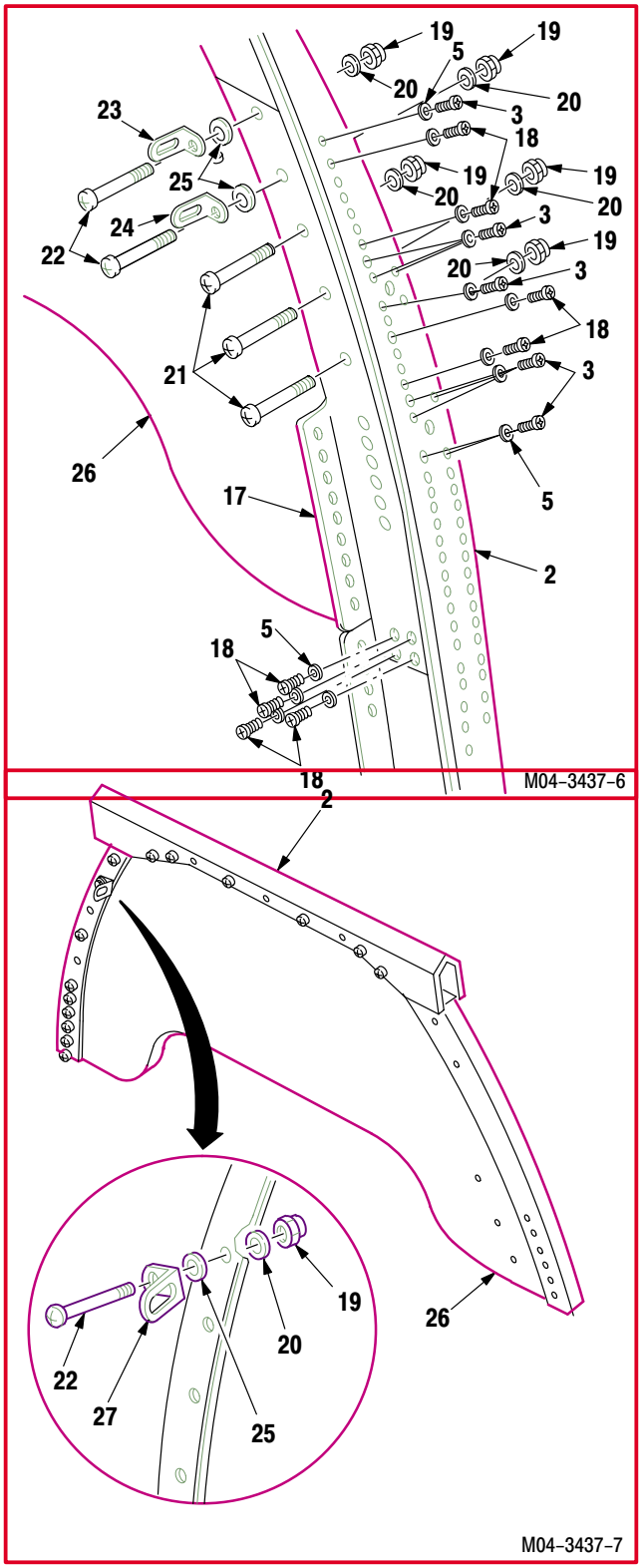
(3) Remove right channel (17) from structure (2).

NOTE

Pilot left vertical visor lower mounting clip was removed with severance device mounting components.

f. **Remove pilot vertical visor upper left mounting clip (27) from barrier (26) and structure (2).**

(1) Remove nut (19), washer (20), screw (22), clip (27), and washer (25) from barrier (26).



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2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

NOTE

- **FIRE PULL** switches are manufactured with the T-handle mounting screws installed from top or bottom of switch shaft.
- Pilot **FIRE PULL** switches are removed to provide clearance for removal/installation of the transparent barrier, and are not completely removed from the helicopter for this task.

g. **Remove pilot FIRE PULL switches (28) and (29) from pilot instrument panel (30).**

(1) Pull T-handles (31) and (32) to extended position.

(2) Remove two screws (33).

(3) Remove T-handles (31) and (32) from switches (28) and (29).

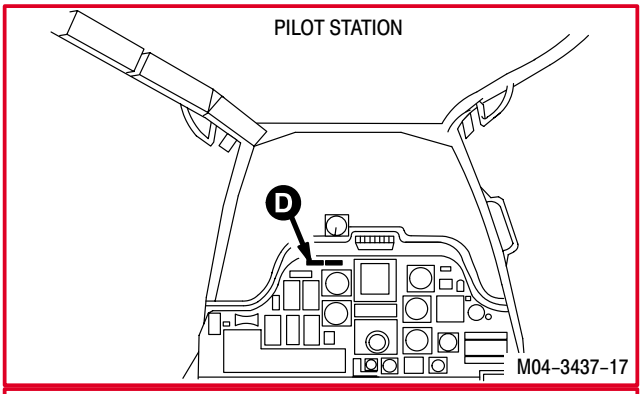
(4) Remove four screws (34) from panel (30).

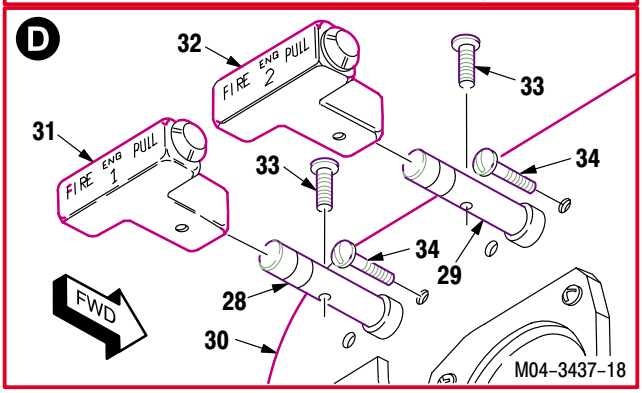
(5) Withdraw switches (28) and (29) forward from back of panel (30).

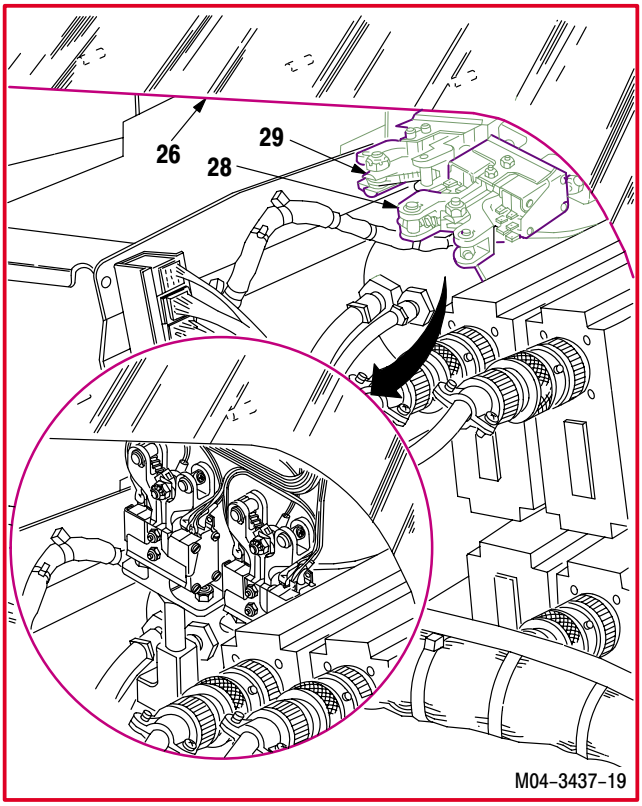
(6) Install T-handle (31) and screw (33) on switch (28).

(7) Install T-handle (32) and screw (33) on switch (29).

(8) Position switches (28) and (29) clear of area directly under transparent barrier (26).







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2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

CAUTION

- Do not damage transparent barrier or pilot instrument panel when handling or positioning barrier.
- To prevent damage to transparent barrier, ensure that all sharp edges or corners of structure are covered with tape. Use tape (item 201, App F).
- Do not damage canopy transparent panels when performing maintenance in or around pilot or CPG stations.

h. **Remove barrier (26) from structure (2).**

(1) Remove 11 nuts (7) and washers (8).

(2) Remove two nuts (19) and washers (20).

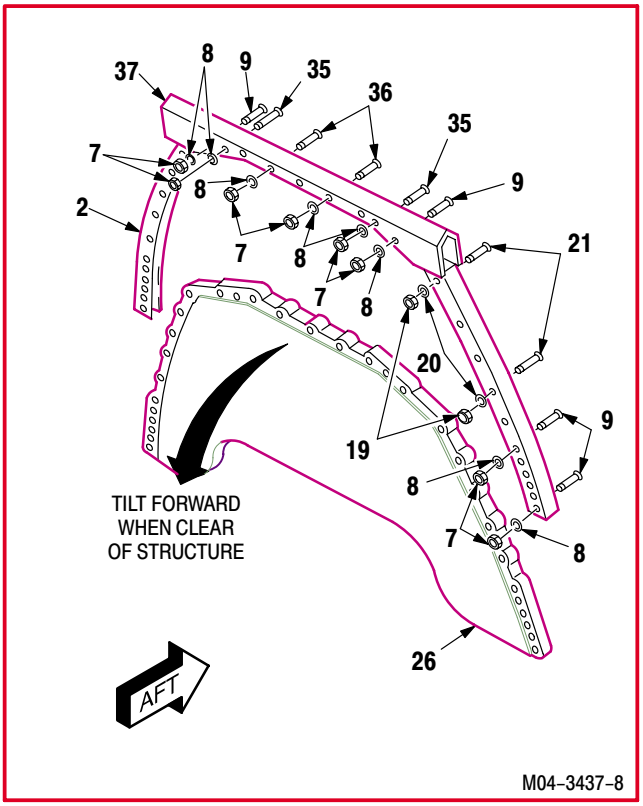
(3) Remove eight screws (9), two screws (21), and two screws (35).

(4) Have assistant support weight of barrier (26) from CPG station.

(5) Remove two screws (36). Lower barrier (26) to clear upper channel (37) of structure (2).

(6) Tilt top of barrier (26) approximately **1.5 INCHES** forward as barrier clears stop of upper channel (37).

(7) Place barrier (26) in suitable container to prevent damage.



2.180.4. Cleaning

a. **Clean structure** (para 1.47)**.**

b. **Clean barrier.** Use cloth (item 52, App F).

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2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

2.180.5. Inspection

a. **Check barrier attaching area for wear** (para 2.11)**.**

b. **Check barrier for surface scratches, gouges, and severe crazing** (para 2.11)**.**

c. **Check structure for damage** (para 2.12)**.**

2.180.6. Installation

CAUTION

Do not damage transparent barrier when handling, positioning, and installing in helicopter.

a. **Position barrier (26) in structure (2).**

(1) Carefully position barrier (26) from pilot station over panel (30) with top of barrier (26) tilted slightly forward.

(2) Carefully lower barrier (26) until top can be inserted into upper channel (37).

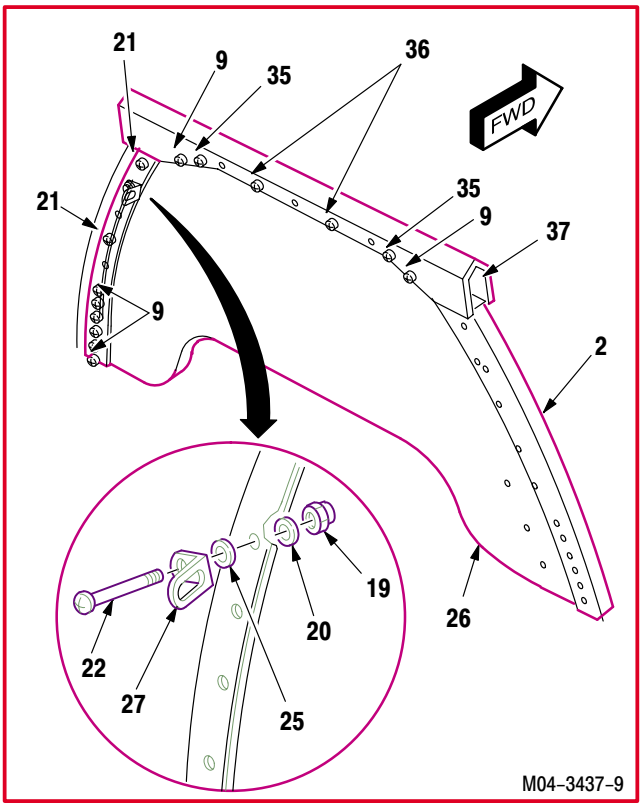
(a) Raise barrier (26) into structure (2) to aline mounting holes.

(3) With one person holding barrier (26) in place, install two screws (36) through channel (37) and barrier (26).

(4) Install two screws (35), screws (21), and eight screws (9) through structure (2) and barrier (26).

(5) Install screw (22) through pilot vertical visor upper left mounting clip (27), washer (25), structure (2), and barrier (26).

(6) Install washer (20) and nut (19). Tighten nut (19) finger tight.



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2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

b. **Install right channel (17) in structure (2).**

(1) Aline channel (17) with structure (2) and barrier (26) mounting holes.

(2) Install 14 screws (18) and 10 screws (3) through 24 washers (5), channel (17), and structure (2).

(3) Install two screws (22) through upper right clip (23), lower right clip (24), two washers (25), channel (17), and barrier (26).

(4) Install two washers (20) and nuts (19). Tighten nuts (19) finger tight.

(5) Install three screws (21), washers (20), and nuts (19) on channel (17) and barrier (26). Tighten nuts (19) finger tight.

c. **Install handle (15) on structure (2).**

(1) Install two screws (16) through handle (15) in structure (2).

NOTE

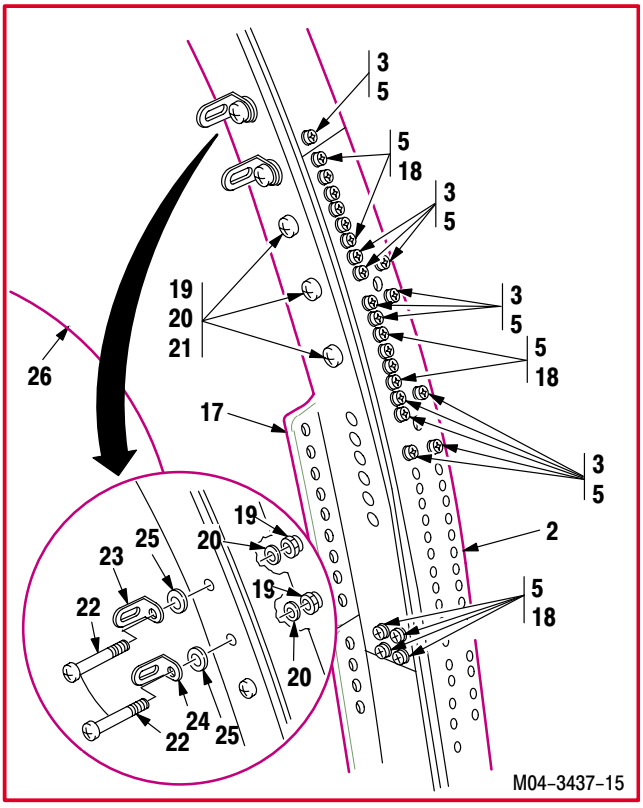
Steps d. and e. install mounting provisions for canopy severance devices and the pilot vertical glareshield. System installation shall be completed after the transparent barrier is installed.

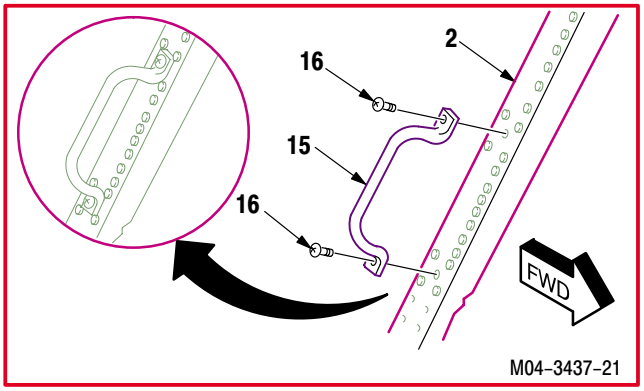
d. **Install strap (6) on inside of structure (2).**

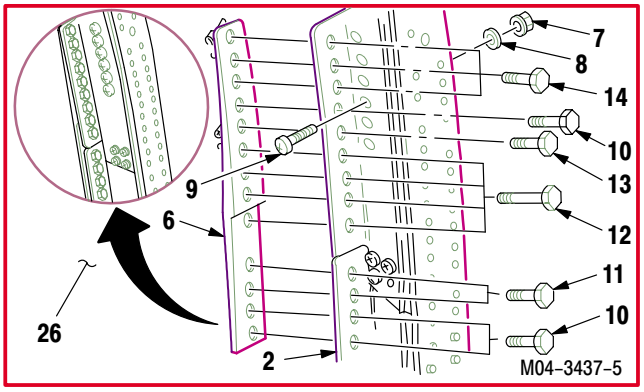
(1) Position strap (6) against inboard side of channel (17) and structure (2) to aline mounting holes.

(2) Install three bolts (10), two bolts (11), four bolts (12), bolt (13), and three bolts (14) through channel (17) and inboard strap (6) in structure (2).

(3) Install six screws (9), washers (8), and nuts (7) on channel (17) and barrier (26). Tighten nuts (7) finger tight.





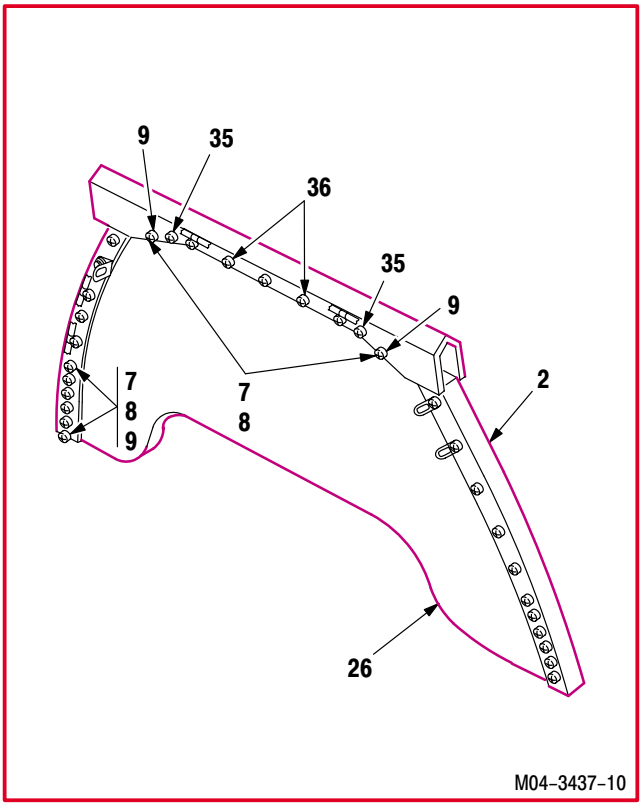


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2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

e. **Install removed components of pilot and CPG severance device on both sides of transparent barrier** (para 12.77)**.**

(1) Tighten line connections and mounting hardware finger tight. Do not complete system connections at this time.



CAUTION

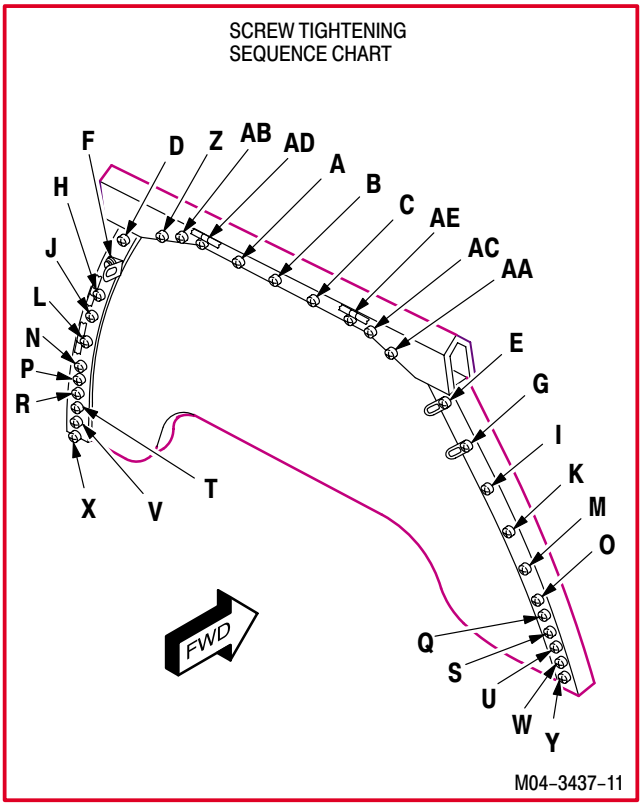
To prevent damage to transparent barrier, do not over tighten attaching hardware. Standard torques are in TM 1-1500-204-23.

f. **Complete installation of barrier (26) in structure (2).**

(1) Install 8 screws (9), 2 screws (36), screws (35), 12 washers (8), and nuts (7) on forward side of barrier (26).

(2) Tighten attaching hardware. Use sequence chart.

(3) Remove protective tape from structure (2) and barrier (26).



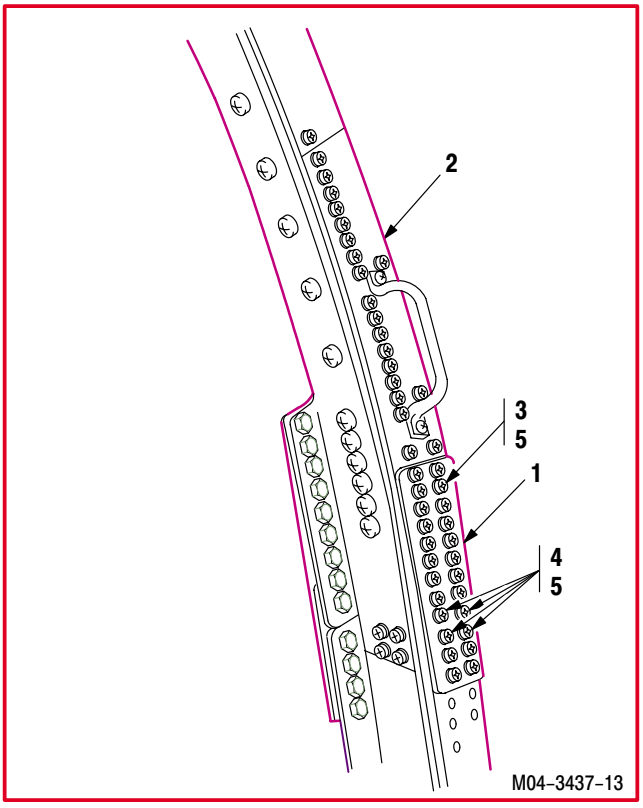
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2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

g. **Install strap (1) on structure (2).**

(1) Install 22 screws (3) through washers (5) and strap (1) in structure (2).

(2) Install four screws (4) through washers (5) and strap (1) in structure (2).



CAUTION

- To prevent damage to **FIRE PULL** switches and wiring, do not twist wires when positioning switches.
- To ensure correct installation, check placard on T-handles before final installation of switch in instrument panel. Failure to do so could result in placard being upside down.

h. **Install pilot FIRE PULL switches (28) and (29) on panel (30).**

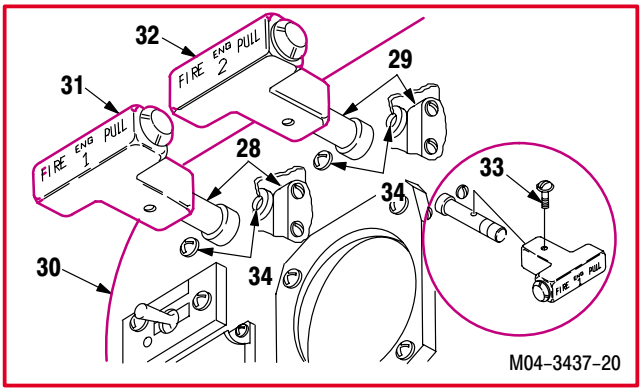
(1) Remove screw (33) and T-handle (31) from switch (28).

(2) Insert switch (28) through panel (30) to aline mounting holes.

(3) Install two screws (34) through panel (30) in switch (28).

(4) Install T-handle (31) and screw (33) on switch (28).

(5) Repeat steps h.(1) thru h.(4) for switch (29), T-handle (32), screw (33), and two screws (34).



GO TO NEXT PAGE

2.180. TRANSPARENT CREW PROTECTION ARMOR BARRIER REPLACEMENT – continued

i. **Inspect (QA).**

j. **Install video display unit (VDU)** (TM 11-1520-238-23-1)**.**

k. **Install CPG left and right defog hoses** (para 13.45)**.**

l. **Complete installation of canopy severance device components on both sides of transparent barrier** (para 12.77)**.**

m. **Install pilot circuit breaker panel** (para 9.2)**.**

n. **Install pilot turbine gas temperature (TGT) indicator** (para 8.9)**.**

o. **Install pilot boresight reticle unit (BRU) mount support** (para 2.188)**.**

p. **Perform boresight reticle unit (BRU) alinement** (TM 9-1230-476-20-1)**.**

q. **Install upper nontransparent barrier armor** (para 2.178)**.**

r. **Install pilot fixed glareshield** (para 2.156)**.**

s. **Install pilot right aft vertical cockpit glareshield** (para 2.158)**.**

t. **Install pilot left aft vertical cockpit glareshield** (para 2.159)**.**

u. **Install canopy door anchor strut rods** (para 2.68)**.**

v. **Install CPG station access door** (para 2.54)**.**

w. **Install pilot station access door** (para 2.62)**.**

END OF TASK

2.181. CPG FLOOR ARMOR PANEL REMOVAL/INSTALLATION

2.181.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.181.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 11-1520-238-23-1

Equipment Conditions:

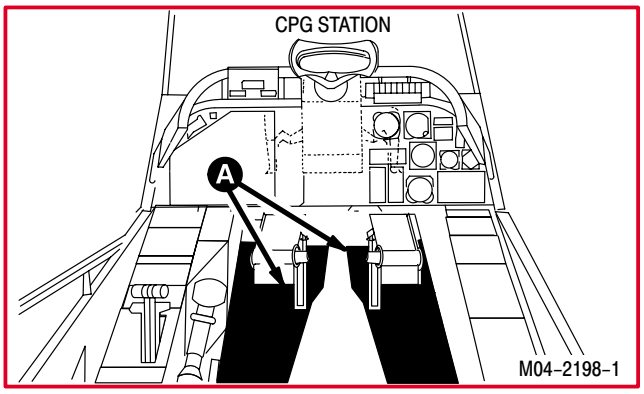
Ref	Condition
1.57	Helicopter safed
11.244	CPG directional pedal protective covers removed
2.183	CPG scuff plate assemblies removed
11.239	CPG directional control pedals removed
TM 11-1520-238-23-1	ICS foot switches removed

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

NOTE

This is typical for CPG left and/or right floor armor panels.



GO TO NEXT PAGE

2.181. CPG FLOOR ARMOR PANEL REMOVAL/INSTALLATION – continued

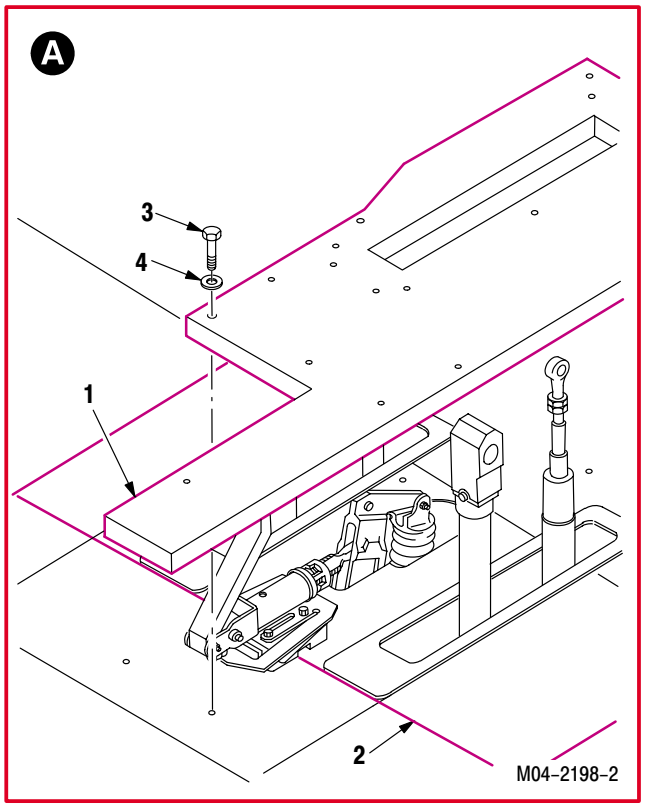
2.181.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove CPG floor armor panel (1) from CPG floor (2).**

(1) Remove five bolts (3) and washers (4).

(2) Remove armor panel (1) from floor (2).



2.181.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.181.5. Inspection

a. **Check armor panel for damage** (para 2.12)**.**

2.181.6. Installation

a. **Install armor panel (1) in floor (2).**

(1) Position armor panel (1) on floor (2) attachment holes.

(2) Install five bolts (3) and washers (4).

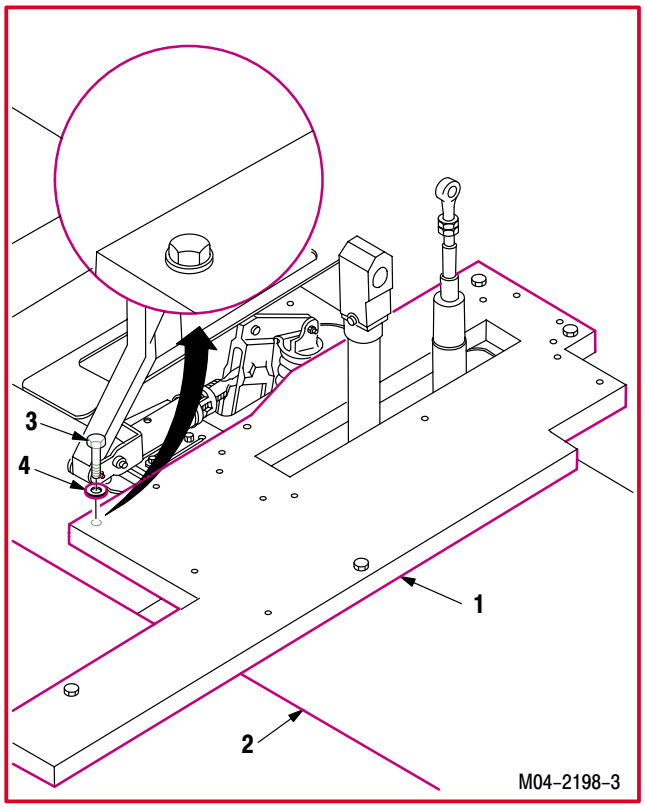
b. **Inspect (QA).**

c. **Install CPG directional pedal protective covers** (para 11.244)**.**

d. **Install CPG scuff plate assemblies** (para 2.183)**.**

e. **Install CPG directional control pedals** (para 11.239)**.**

f. **Install ICS foot switches** (TM 11-1520-238-23-1)**.**



END OF TASK

2.181A. PILOT LEFT HAND OR RIGHT HAND ARMORED SIDE PANEL REMOVAL/INSTALLATION

2.181A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.181A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

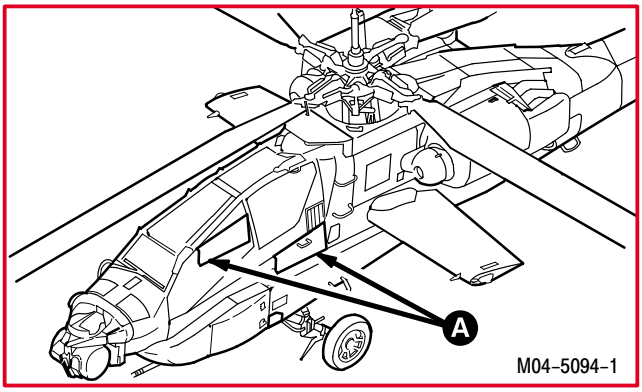
TM 55-1500-344-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left or right hand armored side panel.

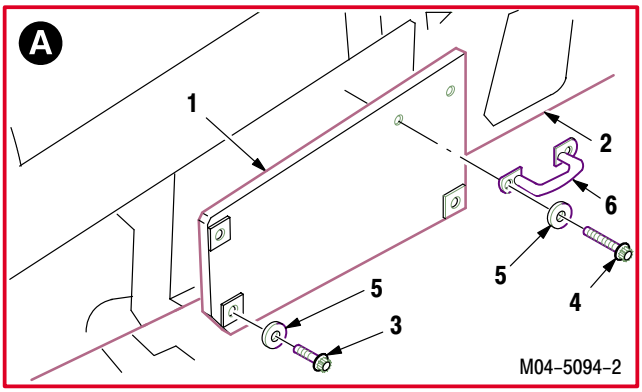


2.181A.3. Removal

a. **Remove armored side panel (1) from airframe (2).**

(1) Remove three bolts (3), two bolts (4), five washers (5) and handle (6).

(2) Remove panel (1) from airframe (2).



GO TO NEXT PAGE

2.181A. PILOT LEFT HAND OR RIGHT HAND ARMORED SIDE PANEL REMOVAL/INSTALLATION – continued

2.181A.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.181A.5. Inspection

a. **Check panel for cracks.** None allowed.

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

c. **Check seal for damage and/or wear. Replace seal if necessary** (para 2.181D)**.**

2.181A.6. Installation

a. **Install panel (1) on airframe (2).**

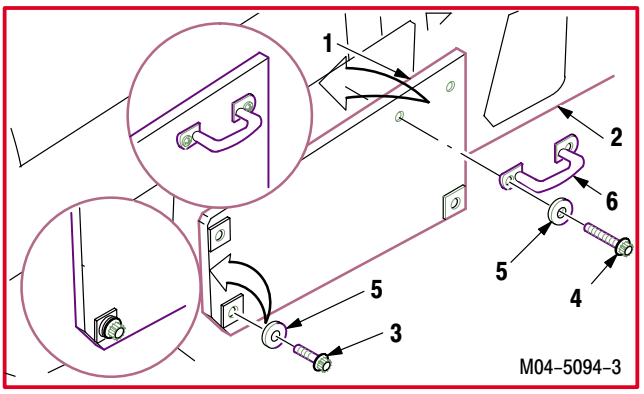
(1) Aline panel (1) on airframe (2).

(2) Install three bolts (3) through three washers (5), panel (1) and airframe (2).

(3) Aline handle (6) on panel (1).

(4) Install two bolts (4) through two washers (5), handle (6), panel (1) and airframe (2).

b. **Inspect (QA).**



END OF TASK

2.181B. CPG LEFT HAND OR RIGHT HAND ARMORED SIDE PANEL REMOVAL/INSTALLATION

2.181B.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.181B.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Epoxy primer coating kit (item 77, App F)

References:

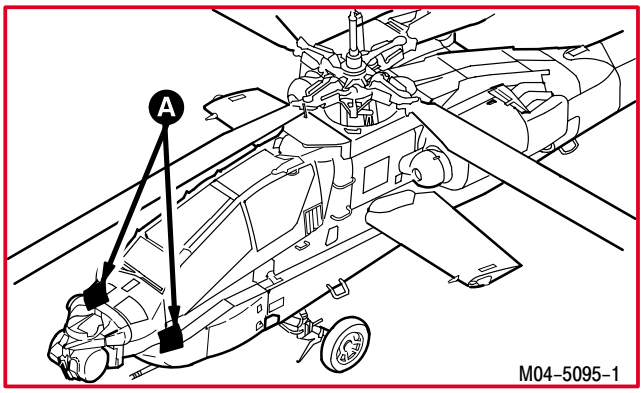
TM 9-1230-476-20-1
TM 9-1427-475-20
TM 11-1520-238-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	CPG left console panels CL3, CL5, and CL7 or right console panels CR4 and CR6 removed
12.66	Windshield anti-ice temperature control box removed (left side only)
12.53	CPG auxiliary panel assembly removed (right side only)
13.28	ECS duct removed
TM 9-1230-476-20-1	CPG data entry keyboard removed (left side only)
TM 9-1427-475-20	CPG missile control panel removed (left side only)
TM 11-1520-238-23	Video recorder panel removed (left side only)
TM 11-1520-238-23	CPG VHF AM-FM receiver/transmitter removed (right side only)
	Signal data converter (AN/ASN-128) or (AN/ASN-137) removed (right side only)

NOTE

This task is typical for left or right hand armored side panel.



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2.181B. CPG LEFT HAND OR RIGHT HAND ARMORED SIDE PANEL REMOVAL/INSTALLATION – continued

2.181B.3. Removal

a. **Remove bracket (1) from airframe (2).** (Left side only).

(1) Remove seven screws (3) and washers (4).

(2) Remove coating from faying surface of bracket (1) and airframe (2).

(3) Remove bracket (1).

NOTE

Remove clamps as required to position wires for access.

b. **Remove side panel (5) from airframe (2).**

(1) Remove eight nuts (6) and washers (7).

(2) Remove eight bolts (8) and one spacer (9).

(3) Remove panel (5) from airframe (2).

c. **Remove four clips (10) from panel (5).**

(1) Remove eight bolts (11).

(2) Remove four clips (10).

2.181B.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

b. **Remove coating from bracket and attaching area** (para 1.47)**.**

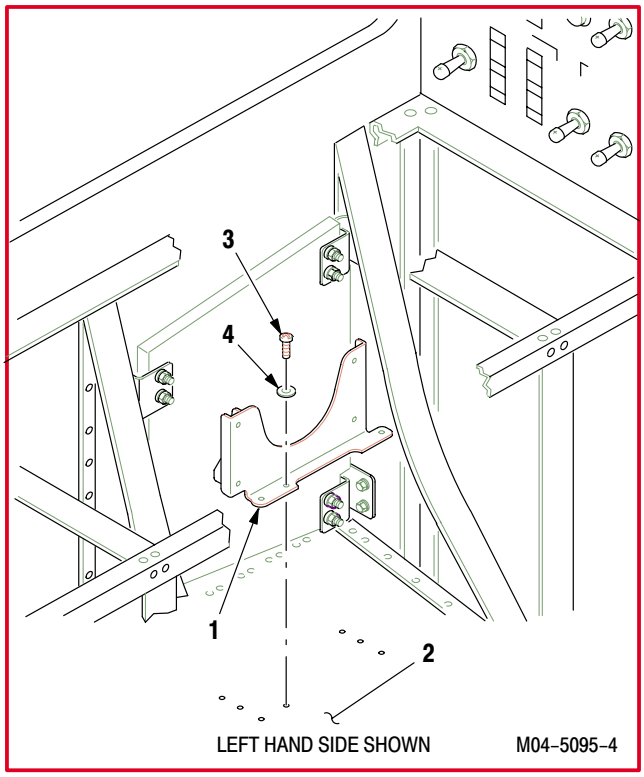
2.181B.5. Inspection

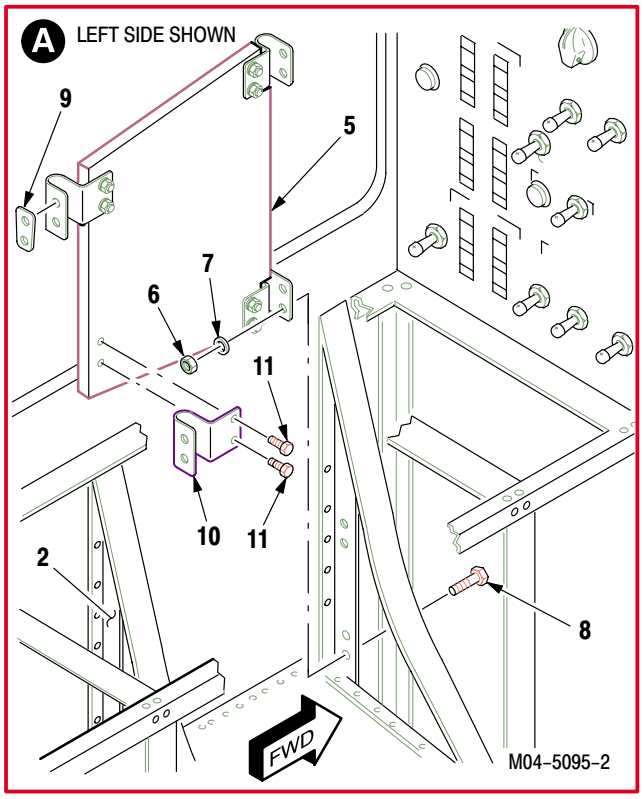
a. **Check panel for cracks.** None allowed.

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

c. **Check seal for damage and/or wear. Replace seal if necessary** (para 2.181D)**.**

d. **Check for loose or missing hardware.** None allowed.





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2.181B. CPG LEFT HAND OR RIGHT HAND ARMORED SIDE PANEL REMOVAL/INSTALLATION – continued

2.181B.6. Installation

a. **Install four clips (10) on panel (5).**

(1) Position four clips (10) on panel (5).

(2) Install eight bolts (11).

b. **Install new panel (5) on airframe (2).**

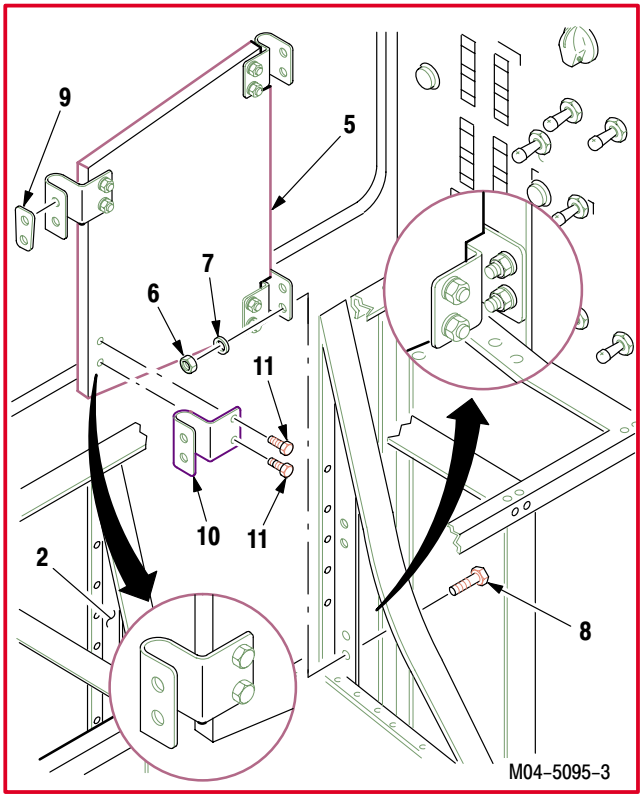
(1) Aline panel (5) on airframe (2).

(2) Position spacer (9) between clip (10) and airframe (2).

(3) Install eight bolts (8), washers (7), and nuts (6).

NOTE

- Reposition wires and install clamps as required.
- For left hand side panel perform steps c. thru l.
- For right hand side panel perform steps m. thru q.

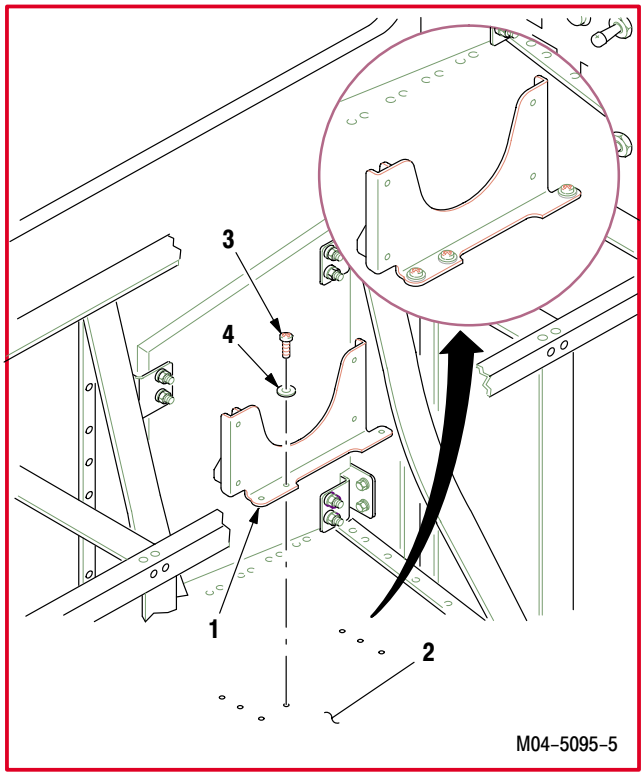


c. **Install bracket (1) on airframe (2).**

(1) Position bracket (1) on airframe (2).

(2) Install seven washers (4) and screws (3).





d. **Apply a primer coating to faying surface of bracket (1) and airframe (2).** Use epoxy primer coating (item 77, App F).

e. **Inspect (QA).**

f. **Install video recorder panel** (TM 11-1520-238-23)**.**

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2.181B. CPG LEFT HAND OR RIGHT HAND ARMORED SIDE PANEL REMOVAL/INSTALLATION – continued

g. **Install CPG missile control panel** (TM 9-1427-475-20)**.**

h. **Install CPG data entry keyboard** (TM 9-1230-476-20-1)**.**

i. **Install ECS duct** (para 13.28)**.**

j. **Install windshield anti-ice temperature control box** (para 12.66)**.**

k. **Install CPG left console panels CL3, CL5, and CL7** (para 2.2)**.**

l. **Inspect (QA).**

m. **Install signal data converter (AN/ASN-128) or (AN/ASN-137)** (TM 11-1520-238-23)**.**

n. **Install CPG VHF AM-FM receiver/transmitter** (TM 11-1520-238-23)**.**

o. **Install CPG auxiliary panel assembly** (para 12.53)**.**

p. **Install CPG right console panels CR4 and CR6** (para 2.2)**.**

q. **Inspect (QA).**

END OF TASK

2.181C. PILOT LEFT HAND UPPER ARMORED SIDE PANEL REMOVAL/INSTALLATION

2.181C.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.181C.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

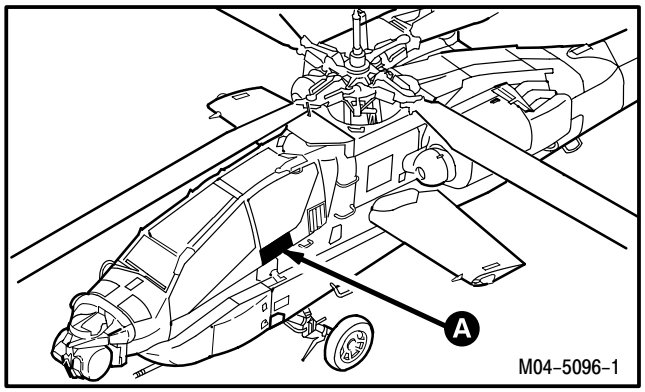
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 9-1090-208-23
TM 9-1427-475-20

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Pilot left console panels PL3, PL5, and PL7 removed
4.166	Pilot power quadrant removed
9.33	Pilot electrical power panel removed
11.191	ASE panel removed
13.34	ECS panel removed
TM 9-1090-208-23	Rocket control panel removed
	Stores jettison power distribution panel removed
TM 9-1427-475-20	Pilot missile control panel removed



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2.181C. PILOT LEFT HAND UPPER ARMORED SIDE PANEL REMOVAL/INSTALLATION – continued

2.181C.3. Removal

NOTE

Remove clamps as required to position wires for access.

a. **Remove channel (1) and armored panel (2) from airframe (3).**

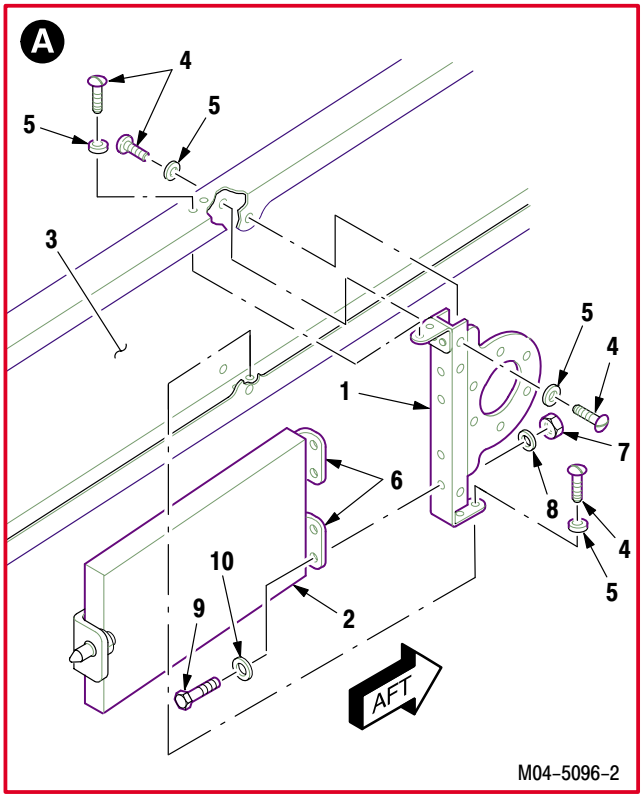
(1) Remove nine screws (4) and washers (5).

(2) Remove channel (1) and panel (2).

b. **Remove channel (1) from two clips (6).**

(1) Remove four nuts (7) and washers (8) from bolts (9).

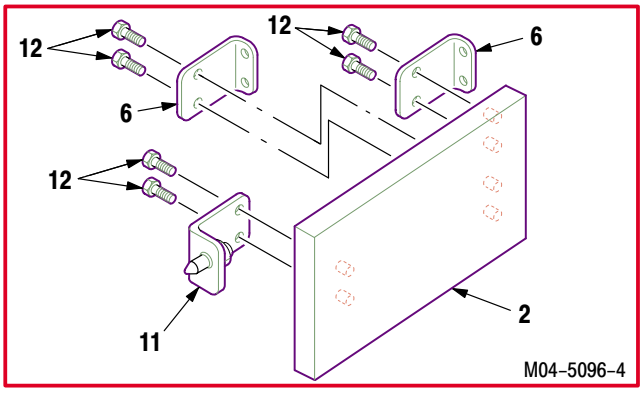
(2) Remove four bolts (9), washers (10) and channel (1).



c. **Remove two clips (6) and clip (11) from panel (2).**

(1) Remove six bolts (12).

(2) Remove two clips (6) and clip (11).



2.181C.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.181C.5. Inspection

a. **Check panel for cracks.** None allowed.

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

c. **Check for loose or missing hardware.** None allowed.

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2.181C. PILOT LEFT HAND UPPER ARMORED SIDE PANEL REMOVAL/INSTALLATION – continued

2.181C.6. Installation

NOTE

Do not tighten four aft bolts when installing clips on new panel.

a. **Install two clips (6) and clip (11) on panel (2).**
   (1) Position two clips (6) and clip (11) on panel (2).
   (2) Install six bolts (12).

b. **Install channel (1) on panel (2).**
   (1) Position channel (1) on two clips (6).
   (2) Install four bolts (9) and washers (10) through clips (6) and channel (1).
   (3) Install four washers (8) and nuts (7).

c. **Install panel (2) on airframe (3).**
   (1) Position panel (2) on airframe.
   (2) Install nine washers (5) and screws (4).

d. **Tighten four bolts (12) on two clips (6).**

NOTE

Reposition wires and install clamps as required.

e. **Inspect (QA).**

f. **Install pilot missile control panel** (TM 9-1427-475-20)**.**

g. **Install stores jettison power distribution panel** (TM 9-1090-208-23)**.**

h. **Install rocket control panel** (TM 9-1090-208-23)**.**

i. **Install ECS panel** (para 13.34)**.**

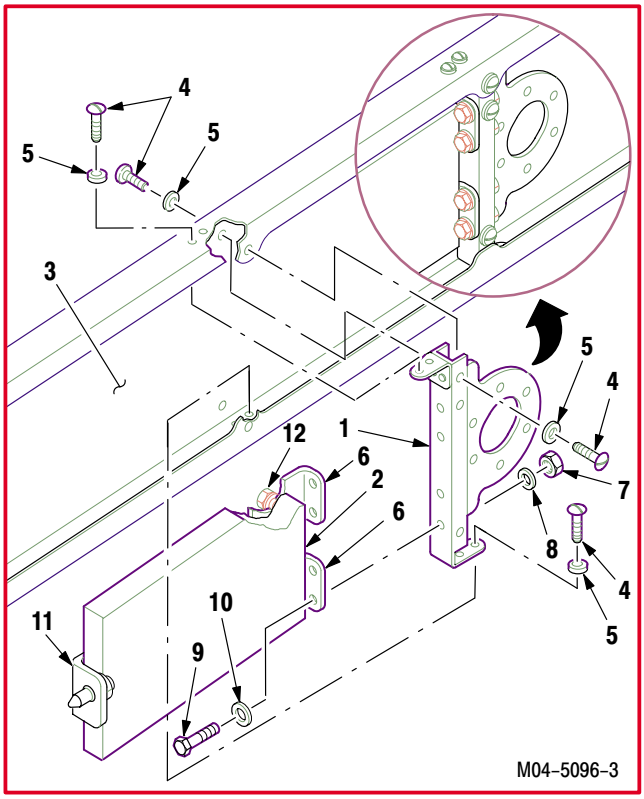
j. **Install ASE panel** (para 11.191)**.**

k. **Install pilot electrical power panel** (para 9.33)**.**

l. **Install pilot power quadrant** (para 4.166)**.**

m. **Install pilot left console panels PL3, PL5, and PL7** (para 2.2)**.**

n. **Inspect (QA).**



END OF TASK

2.181D. ARMORED PANEL SEAL REMOVAL/INSTALLATION

2.181D.1. Description

This task covers: Removal. Inspection. Installation.

2.181D.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Electric gun type heater (item 163, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Adhesive (item 3, App F)
Cloth (item 52, App F)
Naphtha (item 127, App F)
Paper (item 133, App F)
Tape (item 206, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.181A	Pilot left hand or right hand armored side panel removed or
2.181B	CPG left hand or right hand armored side panel removed or
2.181C	Pilot left hand upper armored side panel removed

2.181D.3. Removal

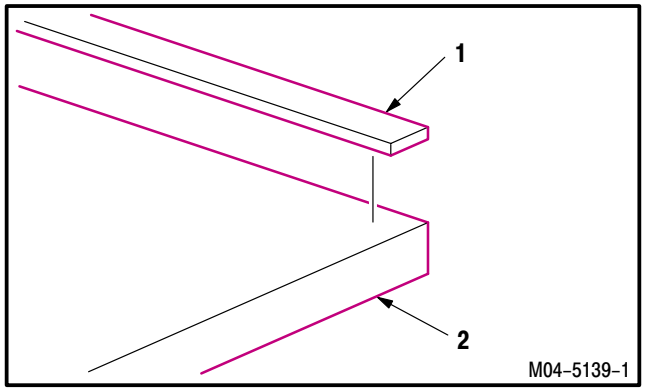


a. **Remove seal (1) from armored panel (2).**

(1) Mask off affected area. Use tape (item 206, App F).

(2) Remove seal (1) from panel (2). Use cloth (item 52, App F) dampened with naphtha (item 127, App F).

(3) Rinse area with water and wipe dry.



GO TO NEXT PAGE

2.181D. ARMORED PANEL SEAL REMOVAL/INSTALLATION – continued

2.181D.4. Inspection

a. **Check panel for cracks.** None allowed.

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

2.181D.5. Installation



WARNING

When using heater gun, avoid any contact with skin. Heat gun touching bare skin can cause serious burns. If burns occur, seek immediate medical aid.

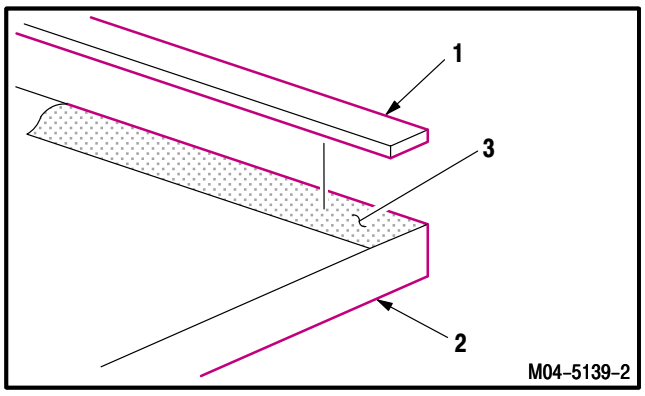
NOTE

- If abrasive paper is used, wipe surface with solvent dampened cloth to remove dust.
- No pressure is required other than necessary to ensure adequate contact to maintain the seal in required position.

a. **Install seal (1) on armored panel (2).**

(1) Wipe rubber surface of seal (1) to remove soapstone. Use cloth (item 52, App F) dampened with naphtha (item 127, App F).

(2) If panel (2) seal adhesion area (3) is glossy, abrade with abrasive paper to remove gloss. Use paper (item 133, App F).



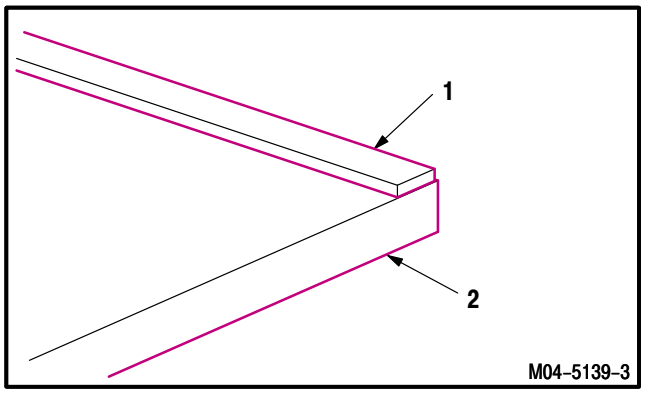
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2.181D. ARMORED PANEL SEAL REMOVAL/INSTALLATION – continued

(3) Apply a thin uniform layer of adhesive on surface of seal (1) and attaching area of panel (2). Use adhesive (item 3, App F).

(4) Install seal (1) on panel (2) and press firmly together.

(5) Cure for **24 HOURS** at **75° F** or cure for a minimum of **ONE HOUR** at **200 ±10° F**. Use heater.



b. **Remove tape from affected area.**

c. **Inspect (QA).**

d. **Install pilot left hand or right hand armored side panel** (para 2.181A)**, or install CPG left hand or right hand armored side panel** (para 2.181B)**, or install pilot left hand upper armored side panel** (para 2.181C)**.**

END OF TASK

2.182. PILOT SCUFF PLATE ASSEMBLY REMOVAL/INSTALLATION

2.182.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.182.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

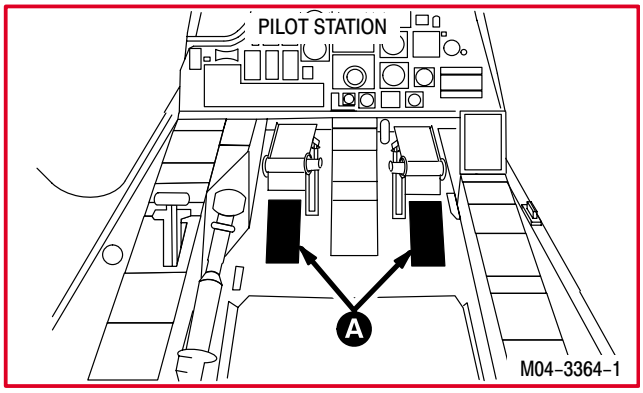
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right pilot scuff plate assemblies.



GO TO NEXT PAGE

2.182. PILOT SCUFF PLATE ASSEMBLY REMOVAL/INSTALLATION – continued

2.182.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove scuff plate assembly (1) from pilot floor (2).**

(1) Remove four screws (3) from nutplates (4).

(2) Remove plate (1) from floor (2).

2.182.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.182.5. Inspection

a. **Check plate for cracks or chips.** None allowed.

b. **Check nutplates for stripped threads.** None allowed.

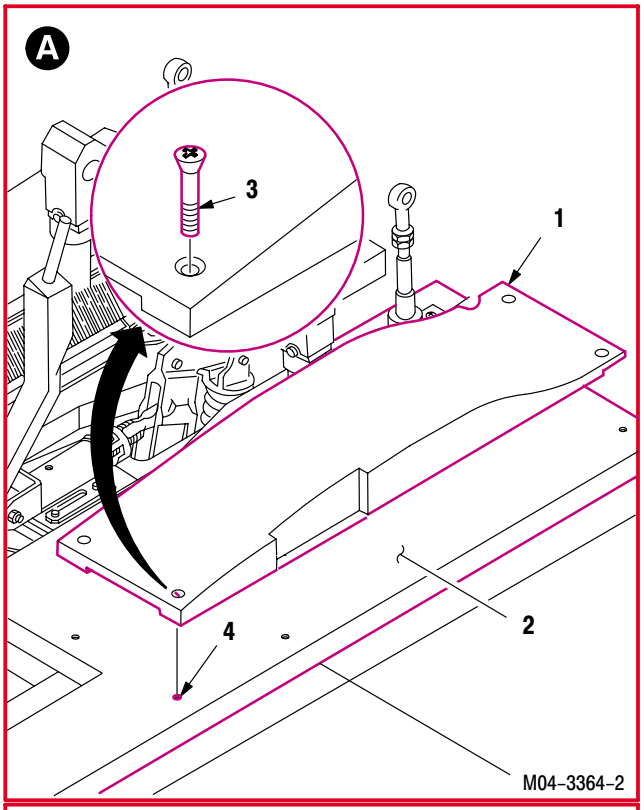
2.182.6. Installation

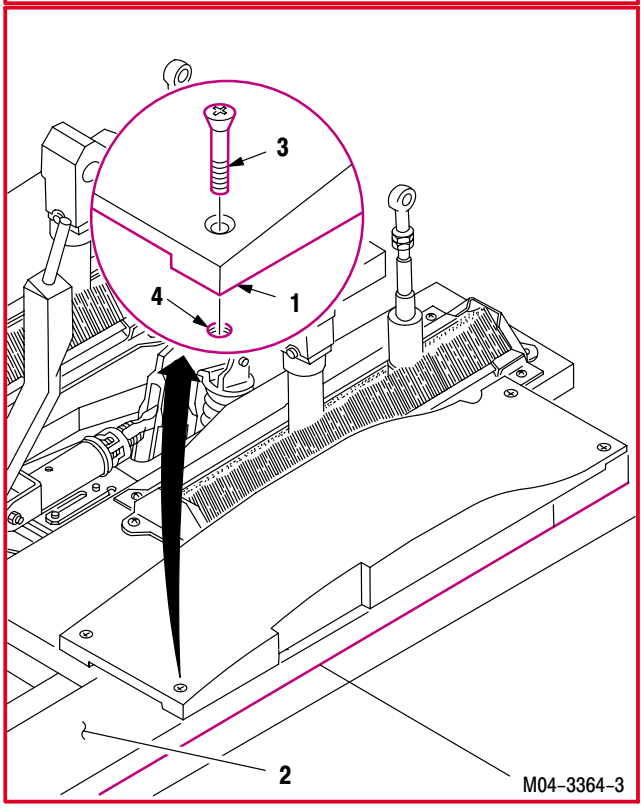
a. **Install plate (1) on floor (2).**

(1) Aline plate (1) with four nutplates (4).

(2) Install four screws (3) through plate (1) in four nutplates (4).

b. **Inspect (QA).**





END OF TASK

2.183. CPG SCUFF PLATE ASSEMBLY REMOVAL/INSTALLATION

2.183.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.183.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

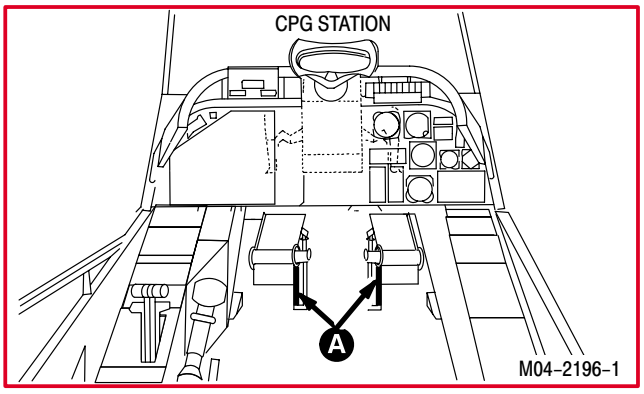
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right CPG scuff plate assemblies.



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2.183. CPG SCUFF PLATE ASSEMBLY REMOVAL/INSTALLATION – continued

2.183.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove scuff plate assembly (1) from CPG floor (2).**

(1) Remove four screws (3) from nutplates (4).

(2) Remove plate (1) from floor (2).

2.183.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.183.5. Inspection

a. **Check plate for cracks and chips.** None allowed.

b. **Check nutplates for stripped threads.** None allowed.

2.183.6. Installation

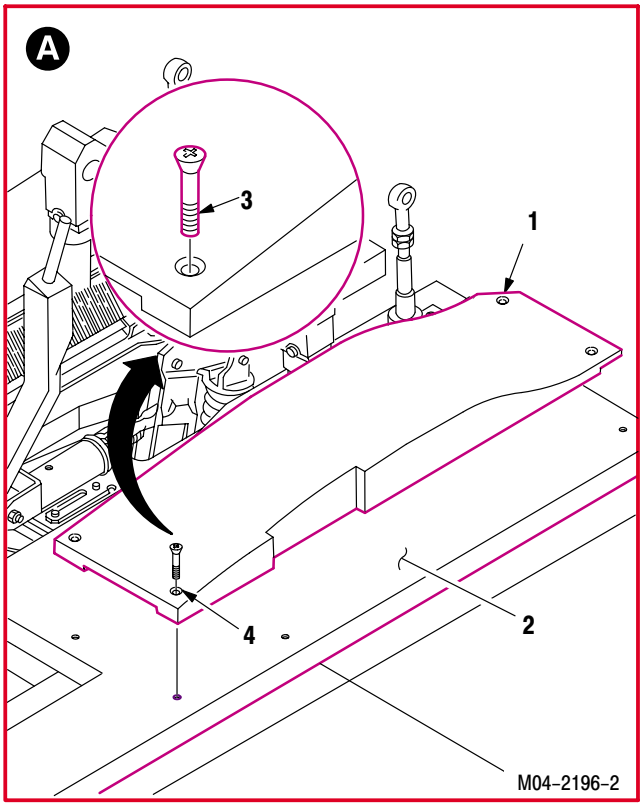
a. **Install plate (1) on floor (2).**

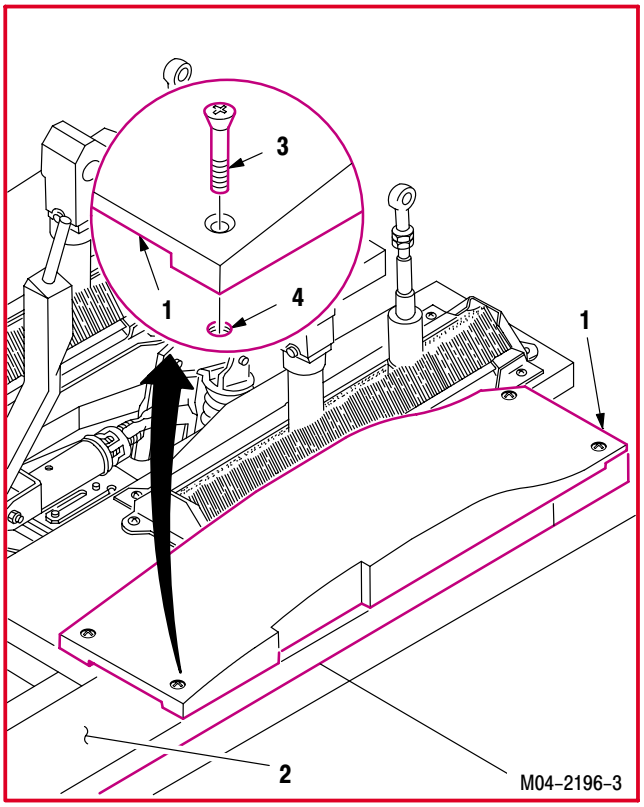
(1) Aline plate (1) with nutplates (4).

(2) Install four screws (3) through plate (1) in nutplates (4).

b. **Inspect (QA).**

END OF TASK





2.184. CPG MAP STOWAGE COMPARTMENT REMOVAL/INSTALLATION

2.184.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.184.2. Initial Setup

Tools:

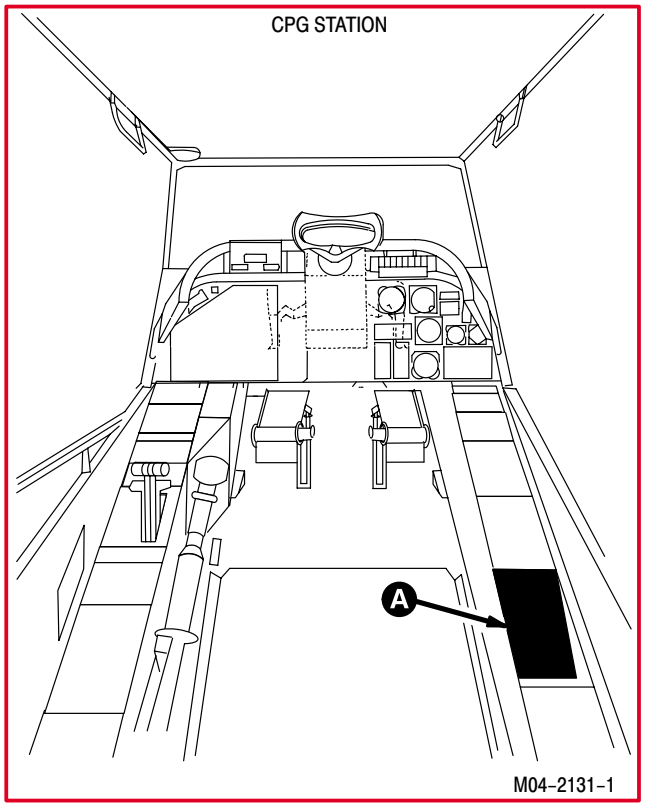
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

2.184. CPG MAP STOWAGE COMPARTMENT REMOVAL/INSTALLATION – continued

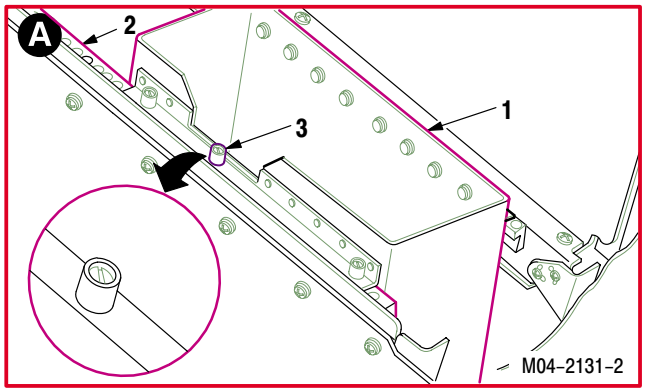
2.184.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove map stowage compartment (1) from CPG right-hand console (2).**

(1) Unlock six fasteners (3).

(2) Remove map compartment (1) from console (2).



2.184.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.184.5. Inspection

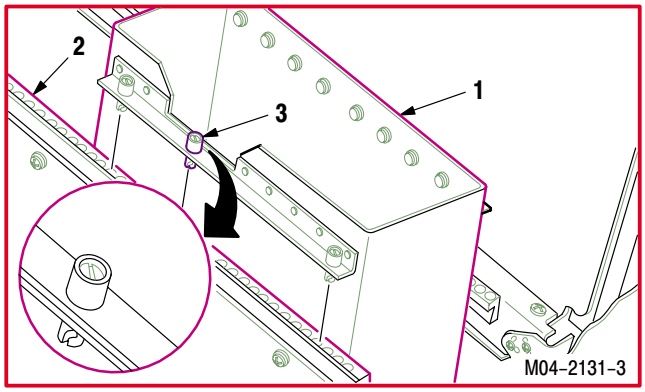
a. **Check map compartment for cracks** (para 2.12)**.**

2.184.6. Installation

a. **Install map compartment (1) in console (2).**

(1) Install map compartment (1) in console (2).

(2) Lock six fasteners (3).



END OF TASK

2.185. HDU HELMET HOLSTER AND COVER ASSEMBLY REMOVAL/INSTALLATION

2.185.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.185.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23

Personnel Required:

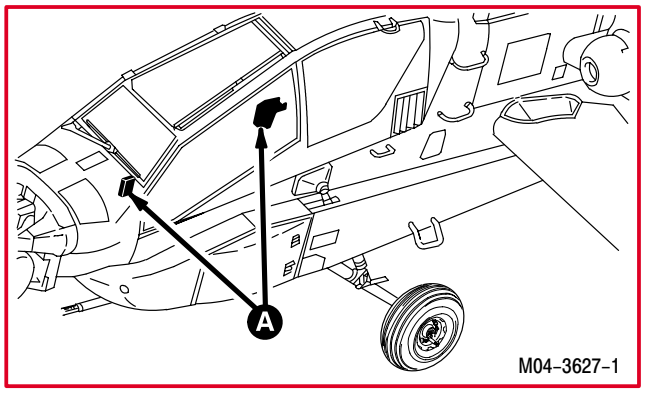
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for either pilot and/or CPG HDU holster and cover assembly.



GO TO NEXT PAGE

2.185. HDU HELMET HOLSTER AND COVER ASSEMBLY REMOVAL/INSTALLATION – continued

2.185.3. Removal

a. **Enter pilot or CPG station** (para 1.56)**. Observe all safety precautions.**

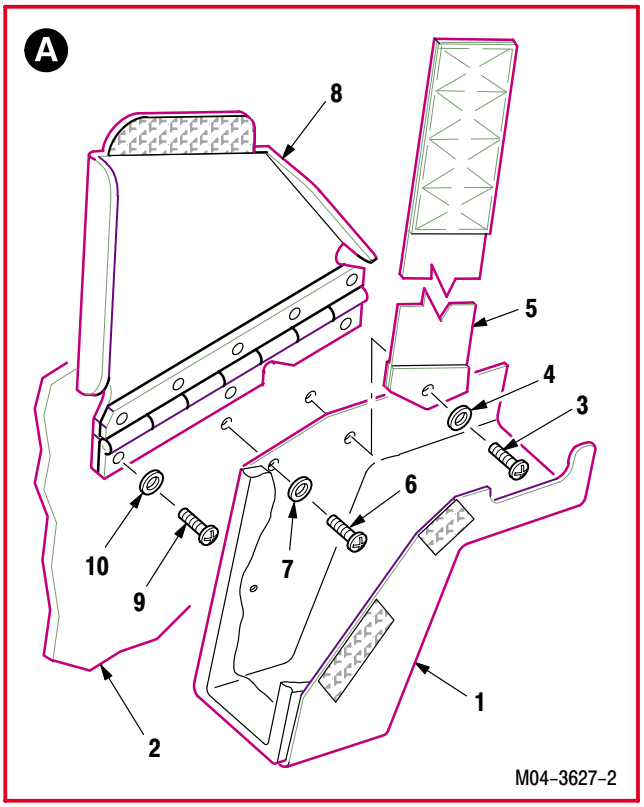
b. **Remove HDU holster assembly (1) from console panel (2).**

(1) Remove screw (3), washer (4), and holster strap assembly (5) from holster (1).

(2) Remove two screws (6) and washers (7) from holster (1) and panel (2).

c. **Remove HDU holster cover assembly (8) from console panel (2).**

(1) Remove three screws (9) and washers (10) from holster cover (8) and panel (2).



2.185.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.185.5. Inspection

a. **Check holster and cover hook tape for looseness and cracks.** None allowed.

b. **Check holster and cover attachment areas for corrosion** (para 1.49)**.**

c. **Check holster and cover attachment areas for cracks** (TM 1-1500-204-23)**.**

GO TO NEXT PAGE

2.185. HDU HELMET HOLSTER AND COVER ASSEMBLY REMOVAL/INSTALLATION – continued

2.185.6. Installation

a. **Install holster cover (8) on panel (2).**

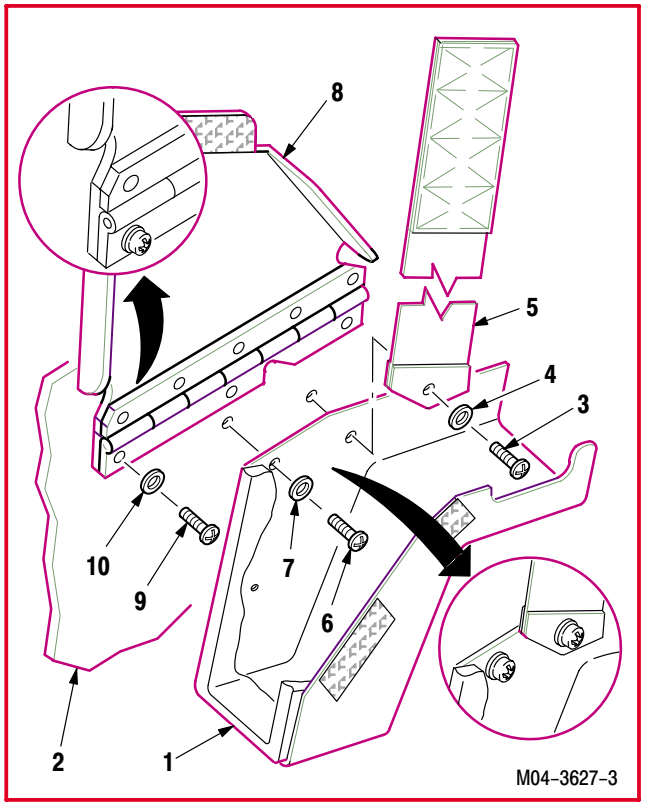
(1) Install three screws (9) through washers (10) and holster cover (8) in panel (2).

b. **Install holster (1) on panel (2).**

(1) Install two screws (6) and washers (7) in panel (2).

(2) Install screw (3) through washer (4) and strap (5) in holster (1).

c. **Inspect (QA).**



END OF TASK

2.186. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT REMOVAL/INSTALLATION

2.186.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.186.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

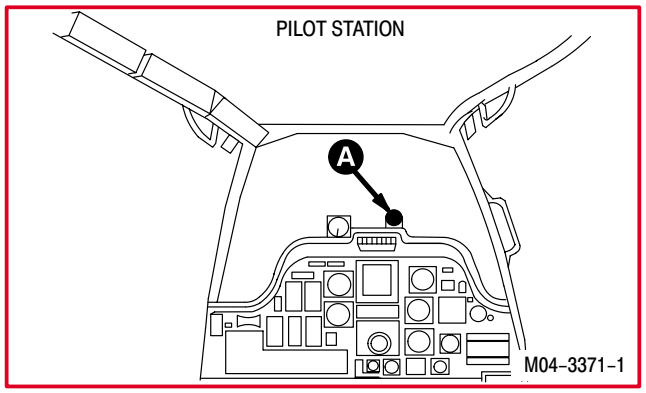
TM 9-1270-221-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
TM 9-1270-221-23	Pilot boresight reticle unit removed

Personnel Required:

67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector



2.186.3. Removal

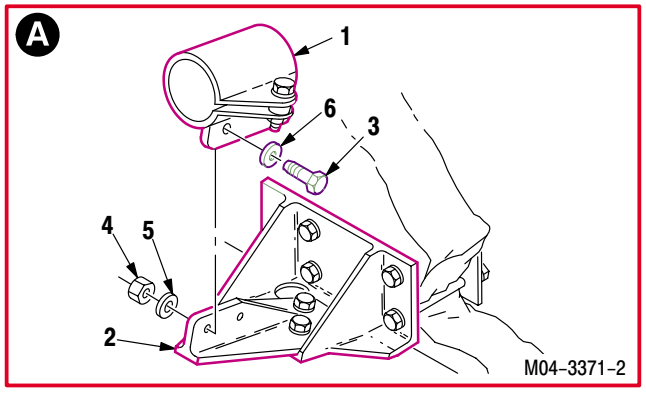
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove boresight reticle unit (BRU) mount (1) from BRU mount adapter (2).**

(1) Hold two bolts (3). Remove nuts (4) and washers (5).

(2) Remove two bolts (3) and washers (6).

(3) Remove mount (1) from adapter (2).



2.186.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

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2.186. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT REMOVAL/INSTALLATION – continued

2.186.5. Inspection

a. **Check adapter and support for cracks.** None allowed.

b. **Check adapter and support for corrosion** (para 1.49)**.**

2.186.6. Installation

a. **Install mount (1) on adapter (2).**

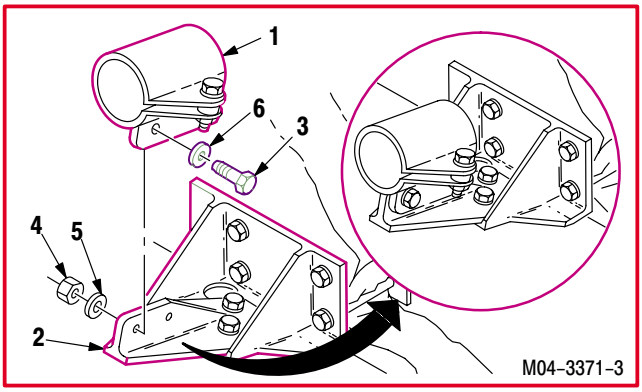
(1) Aline mount (1) with adapter (2).

(2) Install two bolts (3) through washers (6) in mount (1) and adapter (2).

(3) Hold two bolts (3). Install washers (5) and nuts (4).

b. **Inspect (QA).**

c. **Install boresight reticle unit** (TM 9-1270-221-23)**.**



END OF TASK

2.187. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT ADAPTER REMOVAL/INSTALLATION

2.187.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.187.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

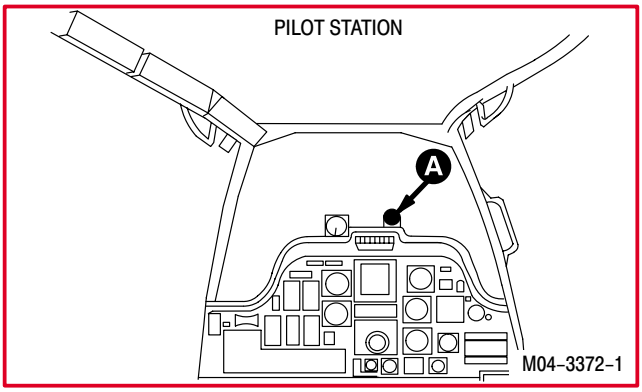
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.186	Pilot boresight mount removed

2.187.3. Removal

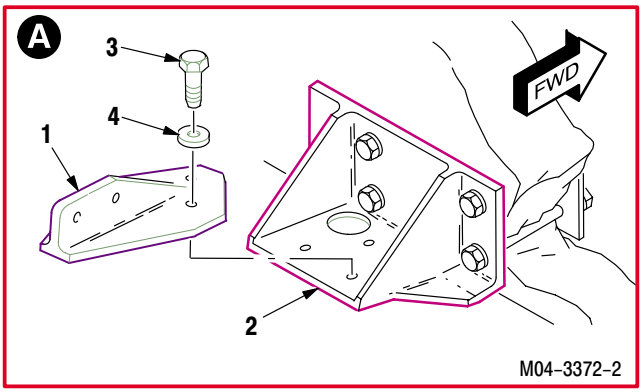
a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



b. **Remove boresight reticle unit (BRU) mount adapter (1) from support assembly (2).**

(1) Remove three shear bolts (3) and washers (4).

(2) Remove adapter (1) from support (2).



GO TO NEXT PAGE

2.187. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT ADAPTER REMOVAL/INSTALLATION – continued

2.187.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.187.5. Inspection

a. **Check adapter and support for cracks.** None allowed.

b. **Check adapter and support for corrosion** (para 1.49)**.**

2.187.6. Installation

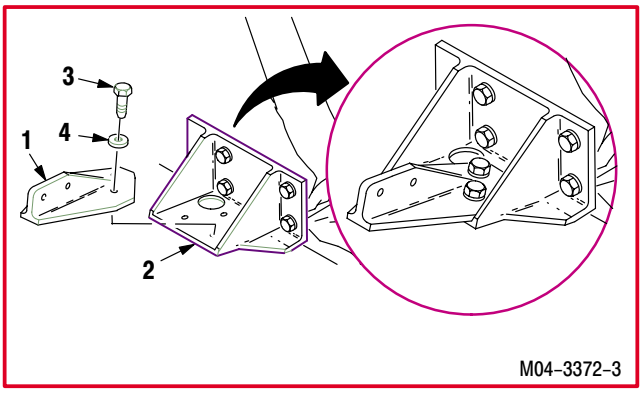
a. **Install adapter (1) on support (2).**

(1) Aline adapter (1) with support (2).

(2) Install three bolts (3) through washers (4) and adapter (1) in support (2).

b. **Inspect (QA).**

c. **Install boresight reticle unit (BRU) mount** (para 2.186)**.**



END OF TASK

2.188. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT SUPPORT REMOVAL/INSTALLATION

2.188.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.188.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

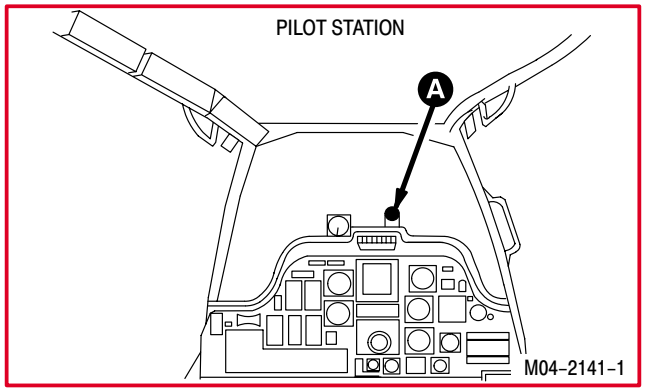
67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

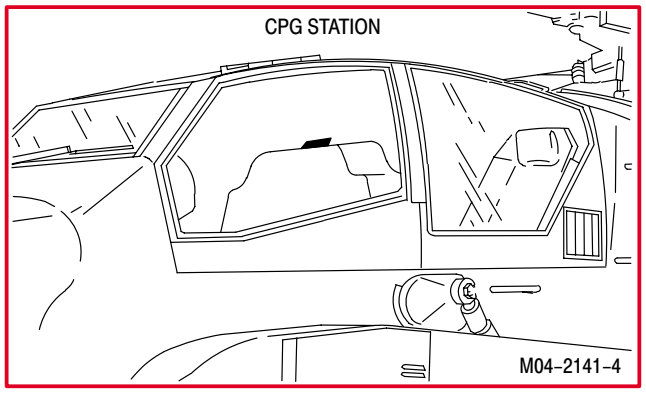
Ref	Condition
1.57	Helicopter safed
2.187	Pilot boresight reticle unit (BRU) mount adapter removed

2.188.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



b. **One person enter CPG station** (para 1.56)**. Observe all safety precautions.**



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2.188. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT SUPPORT REMOVAL/INSTALLATION – continued

c. **Remove boresight reticle unit mount support (1) from transparent barrier (2).**

(1) Hold eight shear bolts (3). Remove eight self-locking nuts (4) and washers (5).

(2) Remove support (1) from barrier (2).

(3) Remove eight bolts (3), washers (6), and doubler (7) from barrier (2).

2.188.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.188.5. Inspection

a. **Check transparent barrier for surface scratches, gouges, and severe crazing** (para 2.11)**.**

b. **Check support and doubler for cracks.** None allowed.

c. **Check support and doubler for corrosion** (para 1.49)**.**

2.188.6. Installation

a. **Install support (1) on barrier (2).**

(1) Aline doubler (7) with barrier (2).

(2) Install eight bolts (3) through washers (6), doubler (7), and barrier (2).

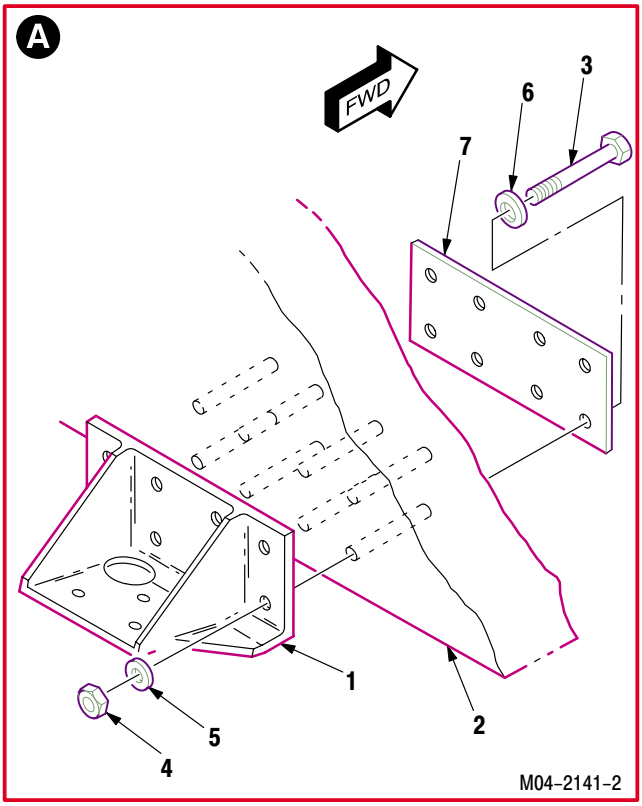
(3) Position support (1) on eight bolts (3).

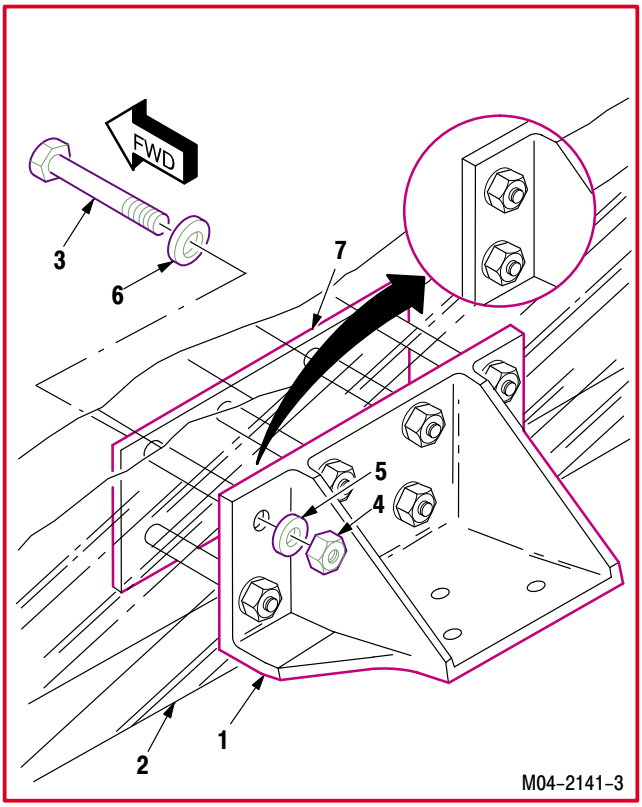
(4) Hold eight bolts (3). Install washers (5) and nuts (4).

b. **Inspect (QA).**

c. **Install pilot boresight reticle unit (BRU) mount adapter** (para 2.187)**.**

END OF TASK





2.189. PILOT/CPG FOOT GUARD REMOVAL/INSTALLATION

2.189.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.189.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer

Equipment Conditions:

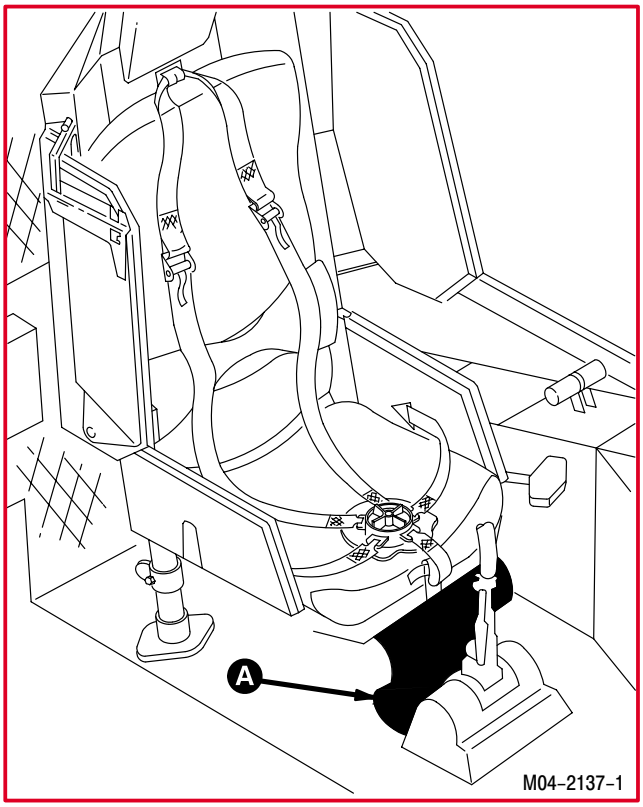
Ref	Condition
1.57	Helicopter safed

NOTE

CPG foot guard is removed/installed under cyclic stick cover.

2.189.3. Removal

a. **Enter pilot/CPG station** (para 1.56)**. Observe all safety precautions.**



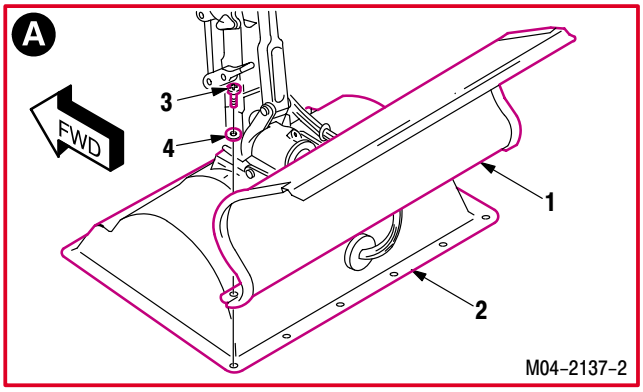
GO TO NEXT PAGE

2.189. PILOT/CPG FOOT GUARD REMOVAL/INSTALLATION – continued

b. **Remove foot guard (1) from strip (2).**

(1) Remove six screws (3) and washers (4).

(2) Remove guard (1) from strip (2).



2.189.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.189.5. Inspection

a. **Check for missing screws or stripped threads.**

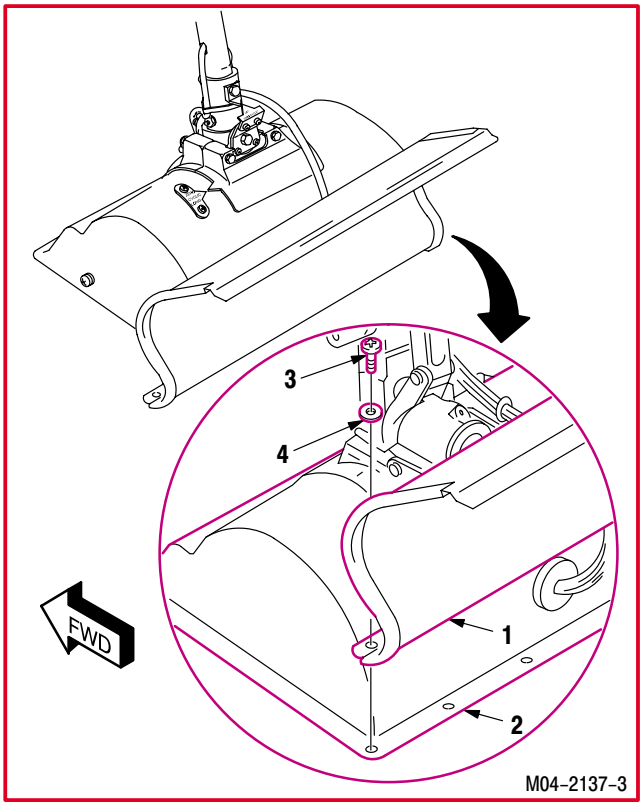
b. **Check guard for cracks.** None allowed.

2.189.6. Installation

a. **Install guard (1) on strip (2).**

(1) Aline guard (1) with strip (2) holes.

(2) Install six screws (3) through washers (4) and guard (1) in strip (2).



END OF TASK

2.190. CPG REAR VIEW MIRROR ASSEMBLY REMOVAL/INSTALLATION

2.190.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.190.2. Initial Setup

Tools:

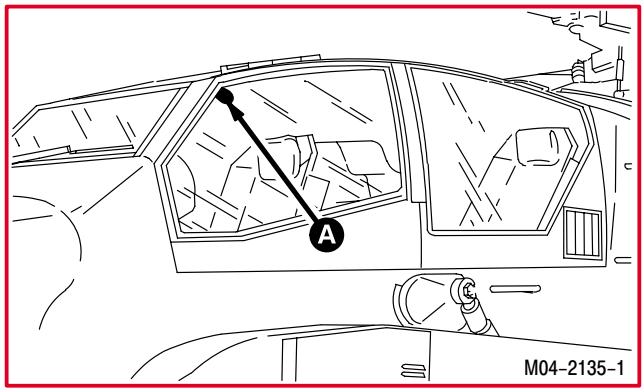
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



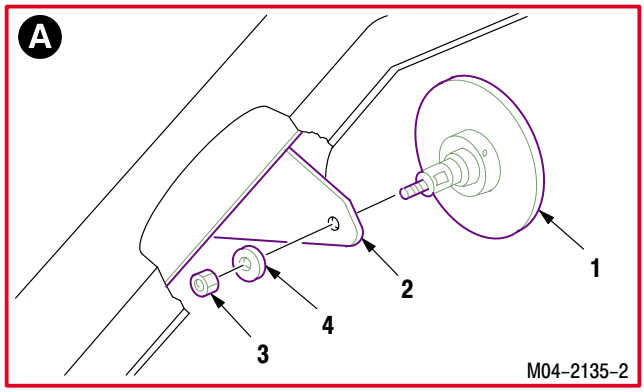
2.190.3. Removal

a. **Enter pilot and/or CPG station** (para 1.56)**. Observe all safety precautions.**

b. **Remove CPG rear view mirror assembly (1) from mount (2).**

(1) Hold bolt on mirror (1). Remove nut (3) and washer (4).

(2) Remove mirror (1) from mount (2).



GO TO NEXT PAGE

2.190. CPG REAR VIEW MIRROR ASSEMBLY REMOVAL/INSTALLATION – continued

2.190.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.190.5. Inspection

a. **Check mount for cracks.** None allowed.

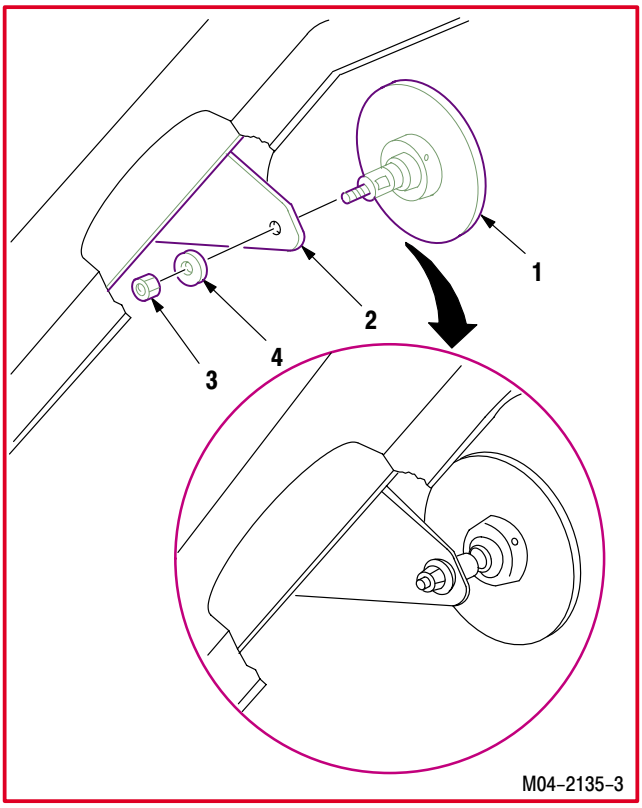
b. **Check mirror for damage or stripped threads.** None allowed.

2.190.6. Installation

a. **Install mirror (1) on mount (2).**

(1) Position mirror (1) on mount (2).

(2) Hold bolt on mirror (1). Install washer (4) and nut (3).



END OF TASK

2.191. SENSOR SURVEYING UNIT (SSU) MOUNT REMOVAL/INSTALLATION

2.191.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.191.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 9-1270-221-23

Equipment Conditions:

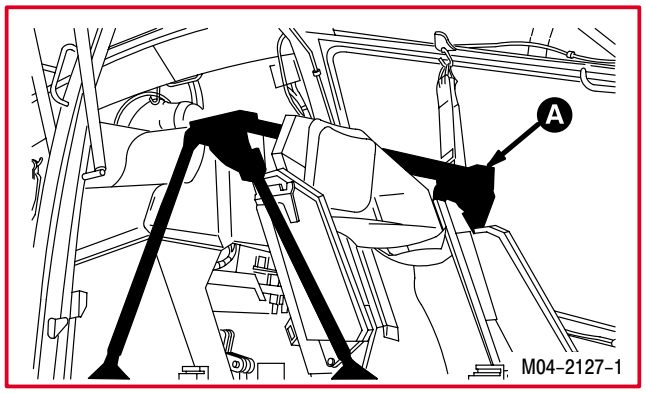
Ref	Condition
1.57	Helicopter safed
TM 9-1270-221-23	Sensor surveying unit (SSU) removed

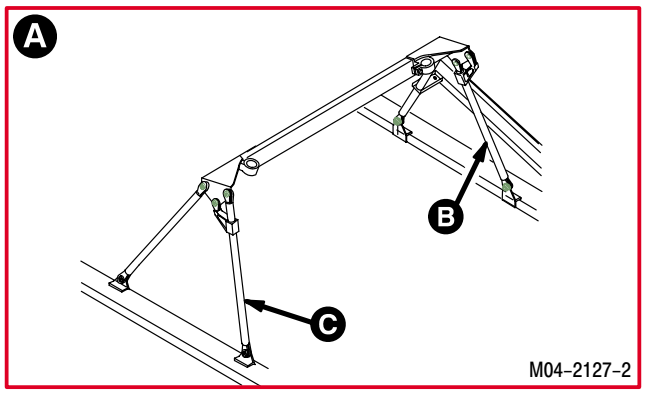
Personnel Required:

67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

2.191.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**





GO TO NEXT PAGE

2.191. SENSOR SURVEYING UNIT (SSU) MOUNT REMOVAL/INSTALLATION – continued

b. **Remove sensor surveying unit mount (1) from bracket (2).**

(1) Hold screw (3). Remove nut (4) and washer (5) from bracket (2).

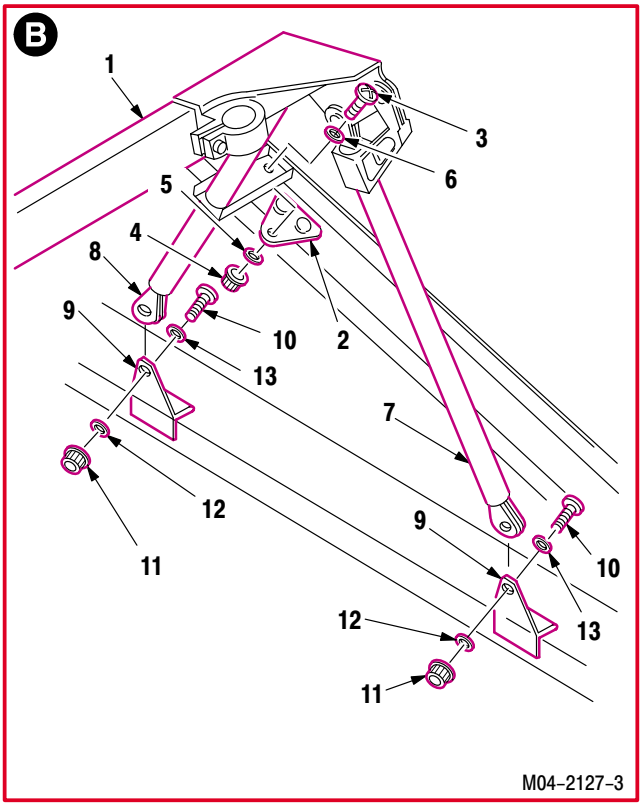
(2) Remove screw (3) and washer (6) from mount (1) and bracket (2).

c. **Remove left strut assemblies (7) and (8) from two brackets (9).**

(1) Hold two screws (10). Remove nuts (11) and washers (12).

(2) Remove two screws (10) and washers (13) from brackets (9).

(3) Remove struts (7) and (8) from brackets (9).



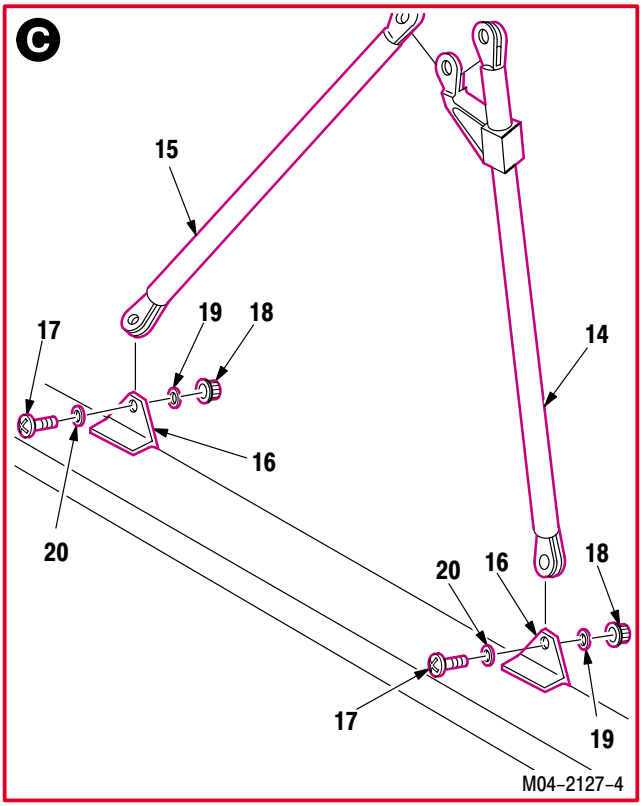
d. **Remove right strut assembly (14) and structural support (15) from two brackets (16).**

(1) Hold two screws (17). Remove nuts (18) and washers (19).

(2) Remove two screws (17) and washers (20) from brackets (16).

(3) Remove strut (14) and support (15) from brackets (16).

e. **Remove mount (1) from CPG station.**



2.191.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.191.5. Inspection

a. **Check struts, support, and brackets for damage** (para 2.11)**.**

GO TO NEXT PAGE

2.191. SENSOR SURVEYING UNIT (SSU) MOUNT REMOVAL/INSTALLATION – continued

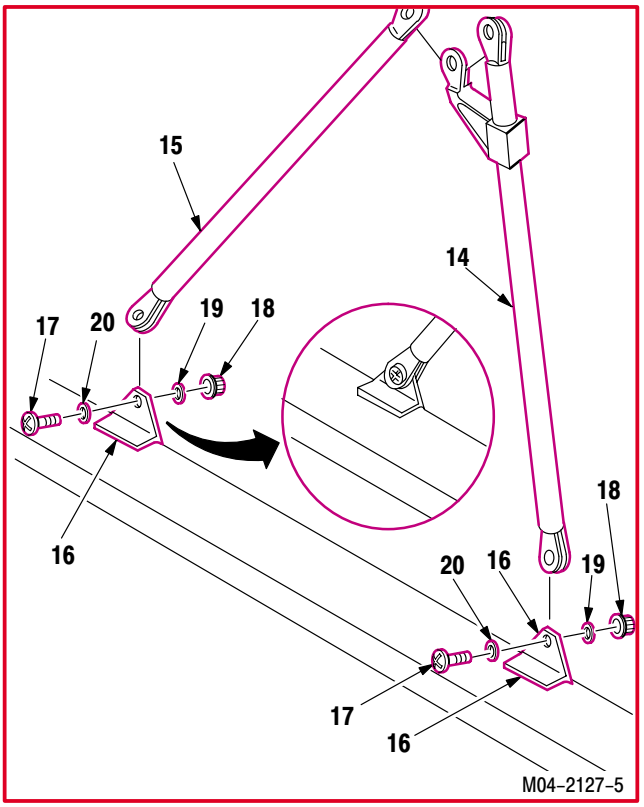
2.191.6. Installation

a. **Install strut (14) and support (15) on two brackets (16).**

(1) Aline strut (14) and support (15) on two brackets (16).

(2) Install two screws (17) through washers (20), strut (14), support (15), and two brackets (16).

(3) Hold two screws (17). Install washers (19) and nuts (18).

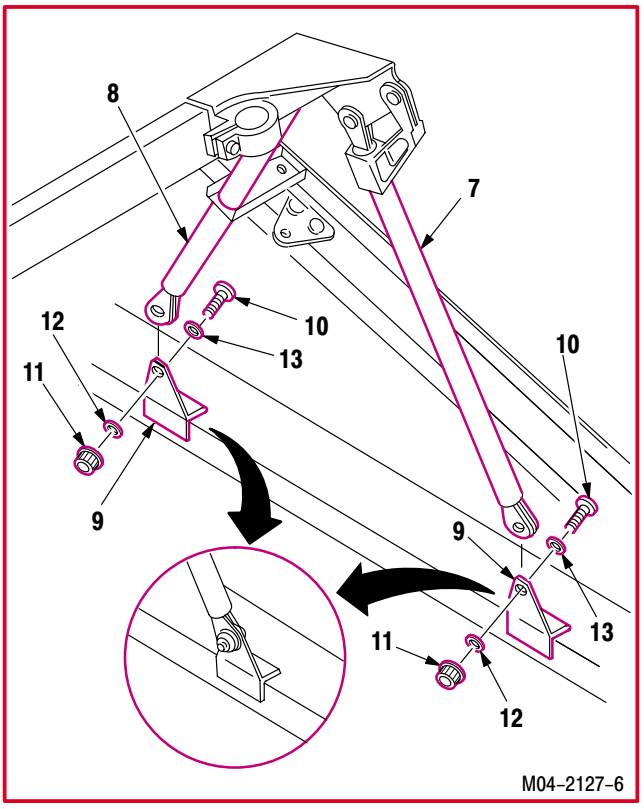


b. **Install struts (7) and (8) on two brackets (9).**

(1) Aline struts (7) and (8) on two brackets (9).

(2) Install two screws (10) through washers (13), struts (7) and (8), and two brackets (9).

(3) Hold two screws (10). Install washers (12) and nuts (11).



GO TO NEXT PAGE

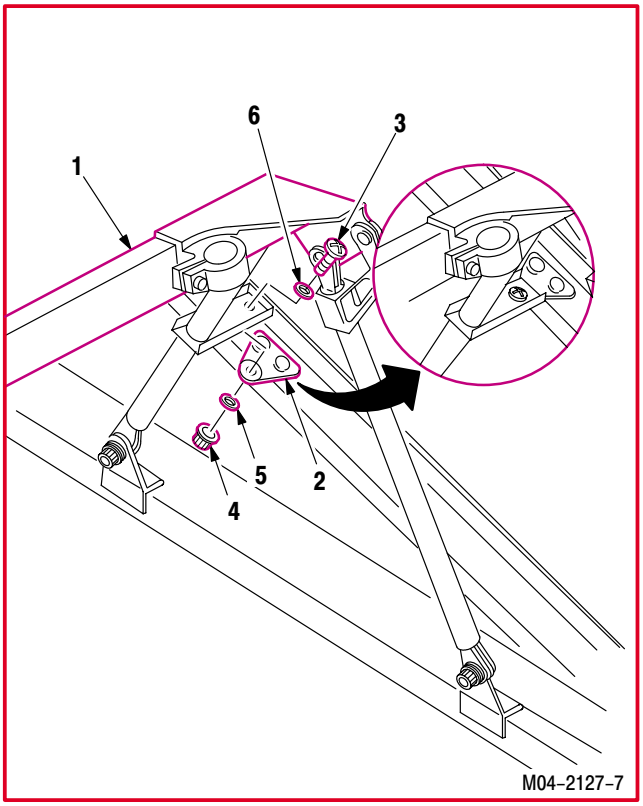
2.191. SENSOR SURVEYING UNIT (SSU) MOUNT REMOVAL/INSTALLATION – continued

c. **Install mount (1) on bracket (2).**

(1) Install screw (3) through washer (6), mount (1), and bracket (2).

(2) Install washer (5) and nut (4) on screw (3).

(3) Tighten nut (4).



d. **Inspect (QA).**

e. **Install sensor surveying unit (SSU)** (TM 9-1270-221-23)**.**

NOTE

Boresighting after removal and installation of SSU mount must be performed by a factory team.

f. **Perform SSU boresight alinement.**

END OF TASK

2.192. WIRE STRIKE LOWER DEFLECTOR EXTENSION REPLACEMENT (AVIM)

2.192.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.192.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)

Personnel Required:

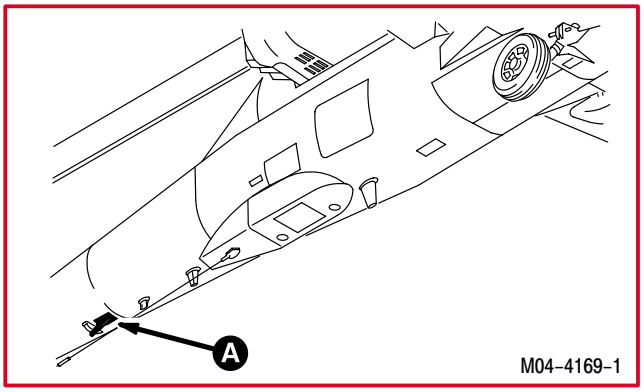
68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Materials/Parts:

Cotter pin



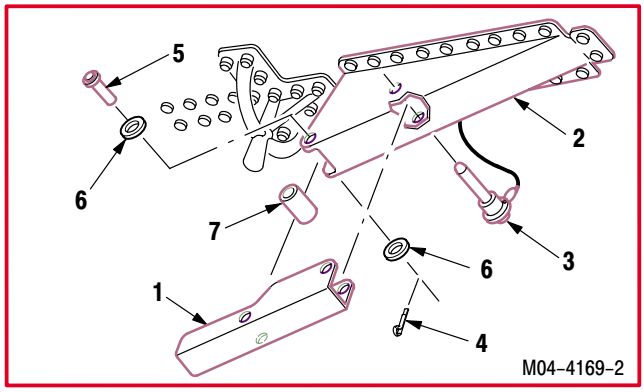
2.192.3. Removal

a. **Remove deflector extension (1) from deflector (2).**

(1) Remove quick release pin (3) from deflector (2).

(2) Remove and discard cotter pin (4) from straight headed pin (5).

(3) Remove pin (5), two washers (6), metallic tube (7), and extension (1) from deflector (2).



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2.192. WIRE STRIKE LOWER DEFLECTOR EXTENSION REPLACEMENT (AVIM) – continued

2.192.4. Cleaning

a. **Wipe removed and attaching parts with clean rag.**

2.192.5. Inspection

a. **Check attachment parts for corrosion** (para 1.49)**.**

b. **Check removed and attaching parts for cracks** (para 2.12)**.**

2.192.6. Installation

a. **Install extension (1) in deflector (2).**

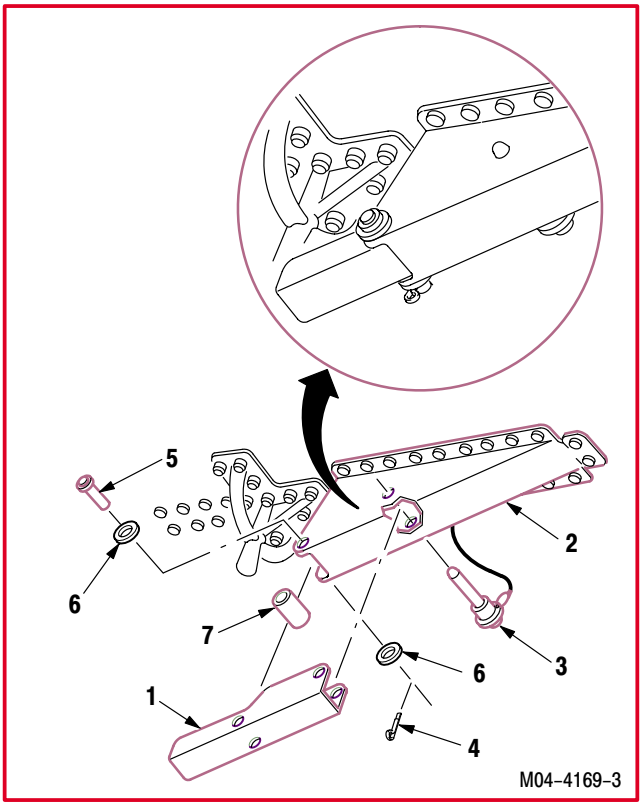
(1) Aline extension (1) and tube (7) with mount holes in deflector (2).

(2) Install pin (5) through two washers (6), extension (1), tube (7), and deflector (2).

(3) Install new cotter pin (4) in pin (5).

(4) Install quick release pin (3) in deflector (2).

b. **Inspect (QA).**



END OF TASK

2.193. WIRE STRIKE PROTECTION AIRCRAFT CABLE CUTTER REMOVAL/INSTALLATION (AVIM)

2.193.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.193.2. Initial Setup

Tools:

Airframe repairman's tool kit (item 377, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Sealing compound (item 177, App F)

Personnel Required:

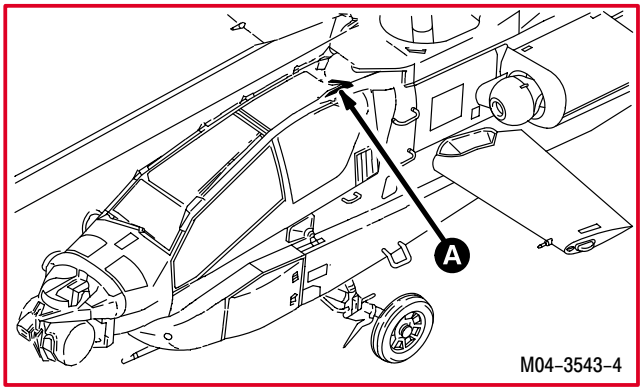
68G Aircraft Structural Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for fuselage mounted cutters unless otherwise noted.



GO TO NEXT PAGE

2.193. WIRE STRIKE PROTECTION AIRCRAFT CABLE CUTTER REMOVAL/INSTALLATION (AVIM) – continued

2.193.3. Removal

a. **If required, remove cutter support strut (1) from aircraft cable cutter (2).**

(1) Remove nut (3), two washers (4), and bolt (5).

(2) Remove bolt (6) and washer (7).

(3) Remove strut (1) from cutter (2).

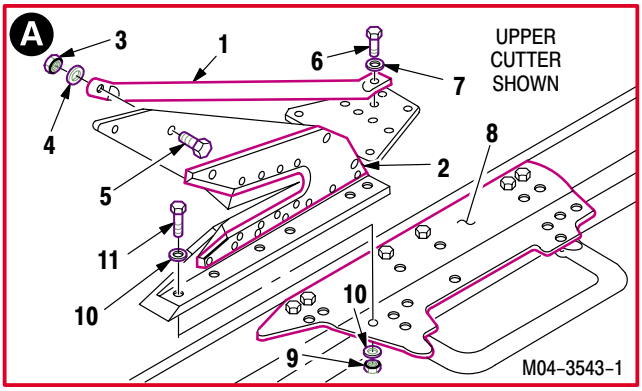
NOTE

Quantities of mounting hardware may vary, depending on the cutter assembly.

b. **Remove cutter (2) from upper fitting (8).**

(1) Remove 6 nuts (9), 12 washers (10), and 6 bolts (11).

(2) Remove cutter (6) from fitting (8).



2.193.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

2.193.5. Inspection

a. **Check cutter for bends, cracks, nicks, and alinement.** None allowed.

b. **Check mounting surface for cracks, punctures, corrosion, and loose or missing fasteners** (para 2.11)**.**

c. **Replace cutter blades which show evidence of wire strike.** Use existing hardware.

GO TO NEXT PAGE

2.193. WIRE STRIKE PROTECTION AIRCRAFT CABLE CUTTER REMOVAL/INSTALLATION (AVIM) – continued

2.193.6. Installation

NOTE

Quantities of mounting hardware may vary, depending on cutter assembly.

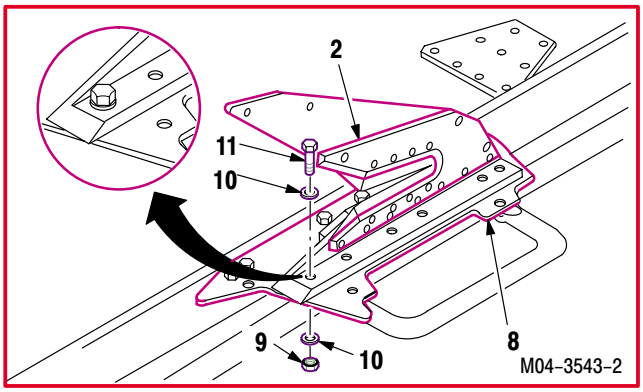
a. **Install cutter (2) on fitting (8).**

(1) Apply a thin coat of sealing compound to mating surfaces of cutter (2) and fitting (8). Use sealing compound (item 177, App F) and brush (item 34, App F).

(2) Position cutter (2) with fitting (8) mounting holes.

(3) Install 6 bolts (11), 12 washers (10), and 6 nuts (9) on cutter (2) and fitting (8).

(4) Apply a thin coat of sealing compound to edges of cutter (2) and fitting (8). Use sealing compound (item 177, App F) and brush (item 34, App F).

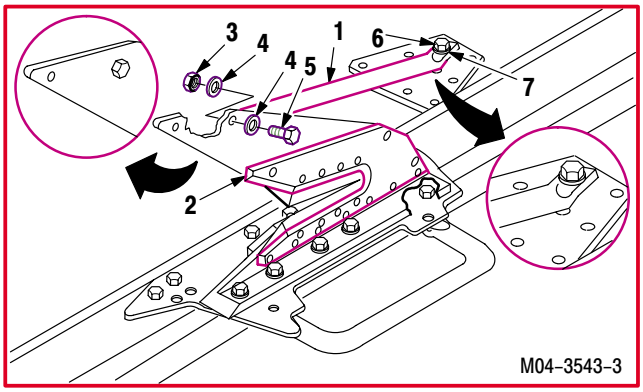


b. **If required, install strut (1) on cutter (2).**

(1) Position support (1) with cutter (2) mounting holes.

(2) Install bolt (6) and washers (7) through strut (1).

(3) Install bolt (5), two washers (4), and nut (3) on strut (1).



c. **Inspect (QA).**

END OF TASK

2.194. GUN WIRE STRIKE PROTECTION CUTTER AND DEFLECTOR REMOVAL/INSTALLATION

2.194.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.194.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

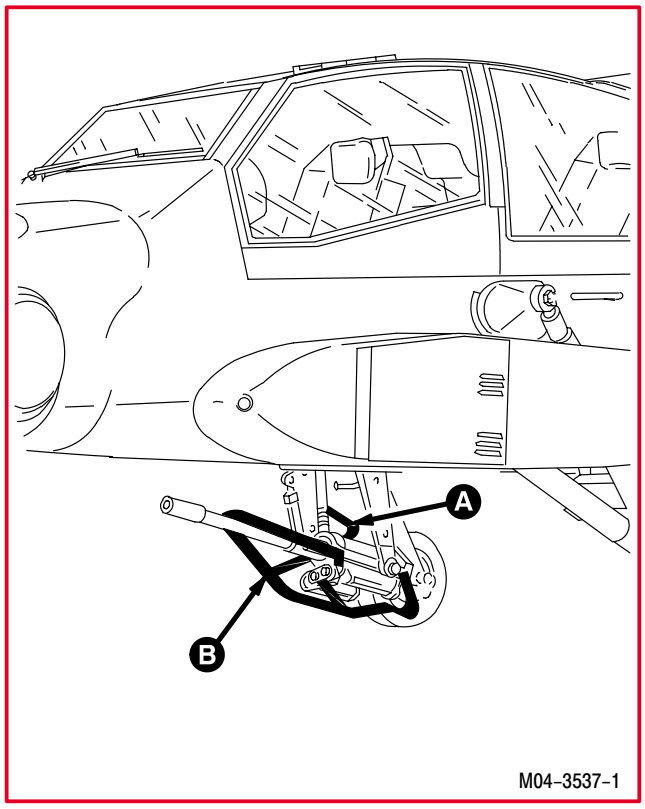
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Materials/Parts:

Shims (item D-442.5, Appx D)



GO TO NEXT PAGE

2.194. GUN WIRE STRIKE PROTECTION CUTTER AND DEFLECTOR REMOVAL/INSTALLATION – continued

2.194.3. Removal

NOTE

Retain shims for installation (if installed).

a. **Remove aircraft cable cutter (1) and angle bracket (2).**

(1) Remove two self-locking nuts (3), four washers (4), and two shear bolts (5) from bracket (2).

(2) Remove two shims (6) (if installed), from between deflector (7) and angle bracket (2).

(3) Remove six self-locking nuts (9), 12 washers (10), and six shear bolts (11) from cutter (1).

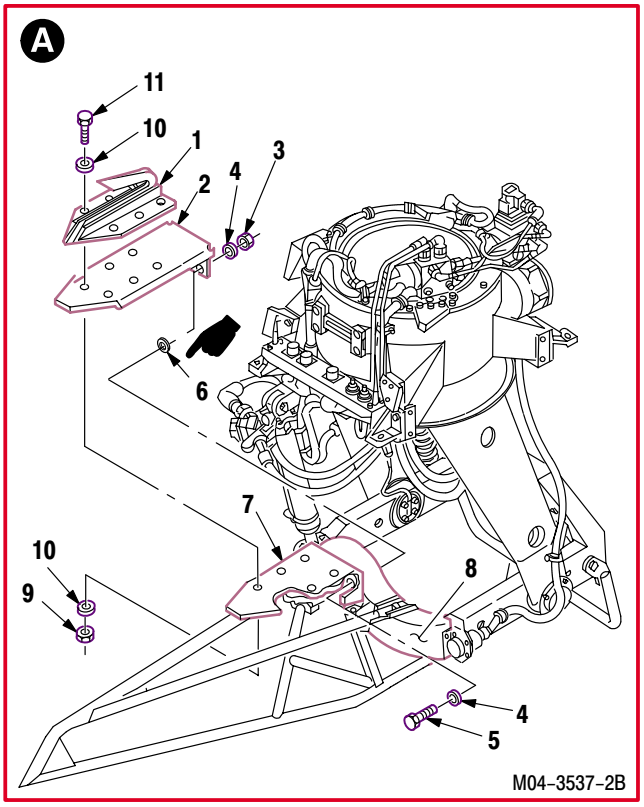
(4) Remove cutter (1) and bracket (2) off deflector (7).

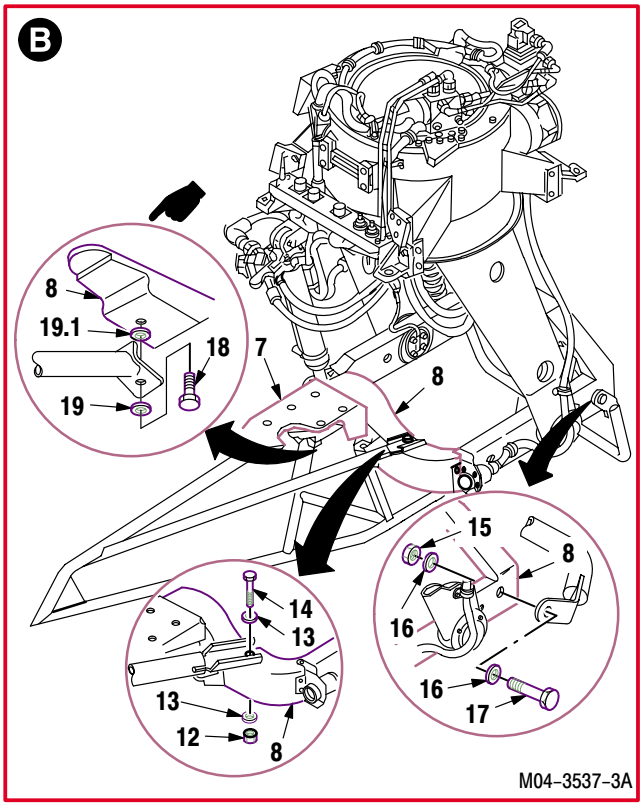
b. **Remove deflector (7) from cradle (8).**

(1) Remove self-locking nut (12), two washers (13), and bolt (14).

(2) Remove self-locking nut (15), two washers (16), and shear bolt (17).

(3) Remove shear bolt (18), washer (19), and shim (19.1) (if installed) from cradle (8).





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2.194. GUN WIRE STRIKE PROTECTION CUTTER AND DEFLECTOR REMOVAL/INSTALLATION – continued

(4) Remove self-locking nut (20), two washers (21), shim (21.1) (if installed), and shear bolt (22).

(5) Remove self-locking nut (23), two washers (24), and shear bolt (25).

2.194.4. Cleaning

a. **Wipe removed and attaching parts and surfaces with a clean rag.**

2.194.5. Inspection

a. **Check mounting surfaces for cracks.** None allowed.

b. **Check mounting surface for corrosion** (para 1.49)**.**

(1) Replace deflector if corrosion exceeds **0.025 INCH**.

c. **Check deflector for damage.**

(1) Replace deflector if nicks, scratches, and dents exceed a depth of **0.050 INCH**.

2.194.6. Installation

NOTE

Shims must be installed, if previously removed.

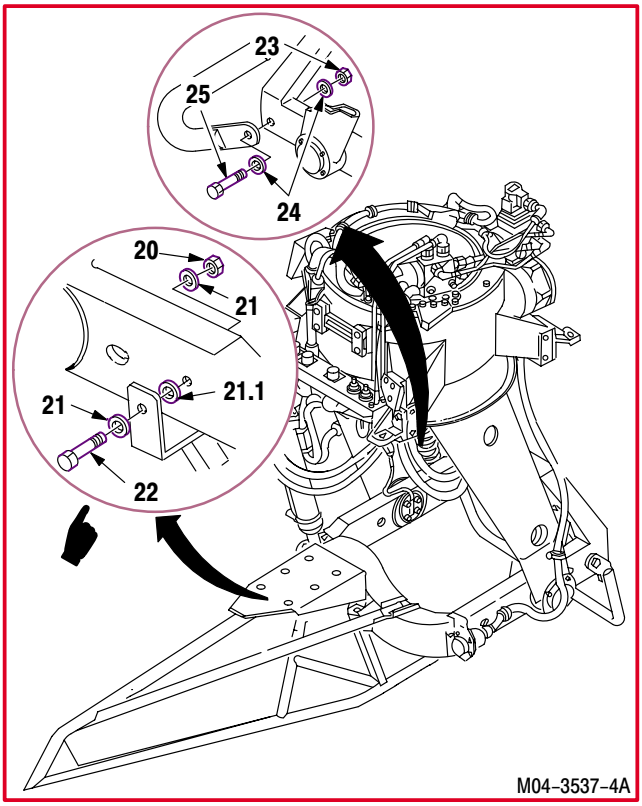
a. **Install deflector (7) on cradle (8).**

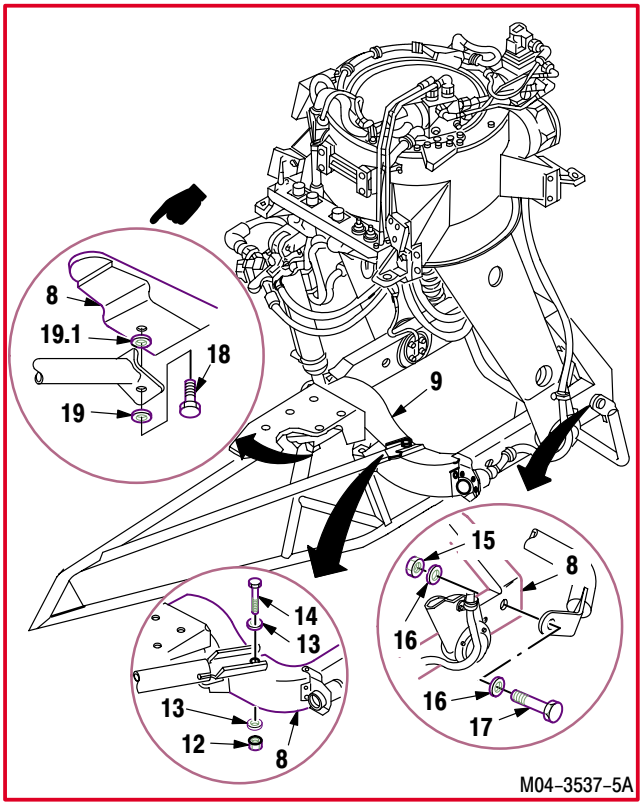
(1) Aline deflector (7) with cradle (8) mounting holes.

(2) Install bolt (14), two washers (13), and nut (12) on deflector (7) and cradle (8).

(3) Install bolt (18), washer (19), and shim (19.1) (if required) in cradle (8).

(4) Install bolt (17), two washers (16), and nut (15) in deflector (7) and cradle (8).



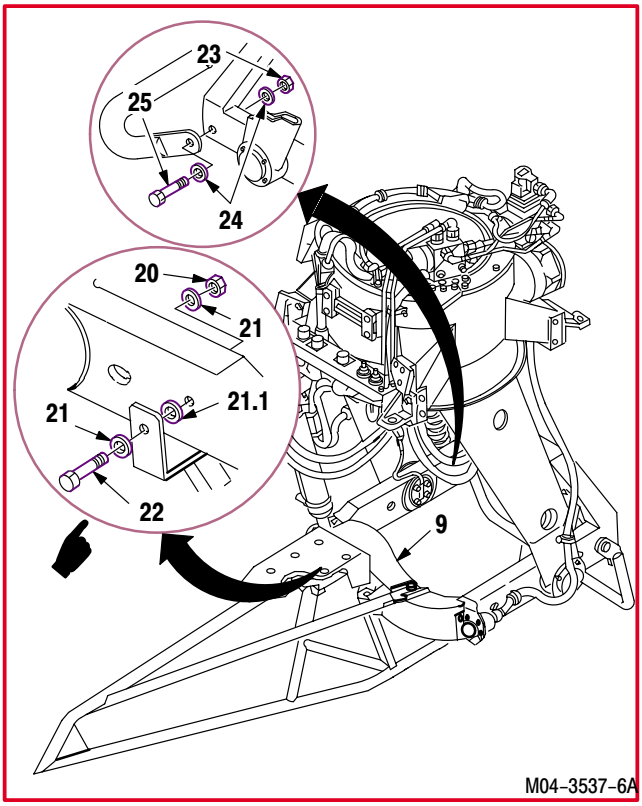


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2.194. GUN WIRE STRIKE PROTECTION CUTTER AND DEFLECTOR REMOVAL/INSTALLATION – continued

(5) Install bolt (22), two washers (21), shim (21.1), (if required) and nut (20) in deflector (7) and cradle (8).

(6) Install bolt (25), two washers (24), and nut (23) in deflector (7) and cradle (8).



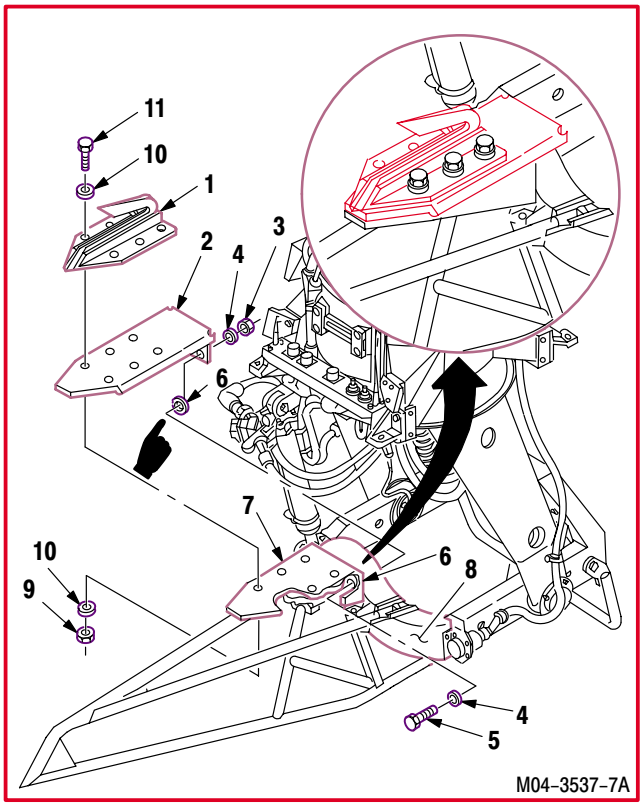
b. **Install bracket (2) and cutter (1).**

(1) Aline bracket (2) with cradle (8) mounting holes.

(2) Install two bolts (5), four washers (4), two nuts (3), and two shims (6) (if required) in deflector (7) and angle bracket (2).

(3) Aline cutter (1) with bracket (2) mounting holes.

(4) Install six bolts (11), 12 washers (10), and six nuts (9) in bracket (2) and deflector (7).



c. **Inspect (QA).**

END OF TASK

2.195. WIRE STRIKE PROTECTION AIRCRAFT CABLE CUTTER BLADES REPLACEMENT

2.195.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.195.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
L-style socket head key set (item 187, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Brush (item 34, App F)
Sealing compound (item 177, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for all fuselage mounted cutter blades.

2.195.3. Removal

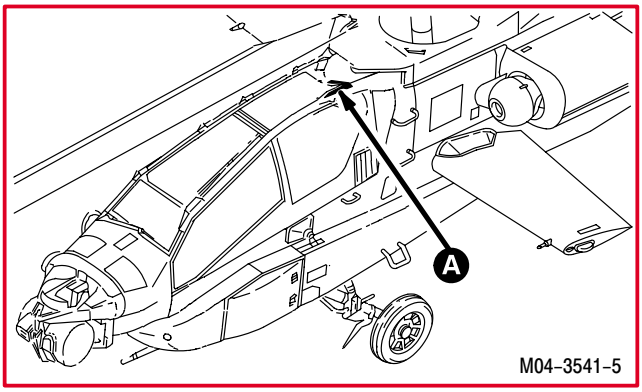
a. **Remove cutter blades (1) and (2).**

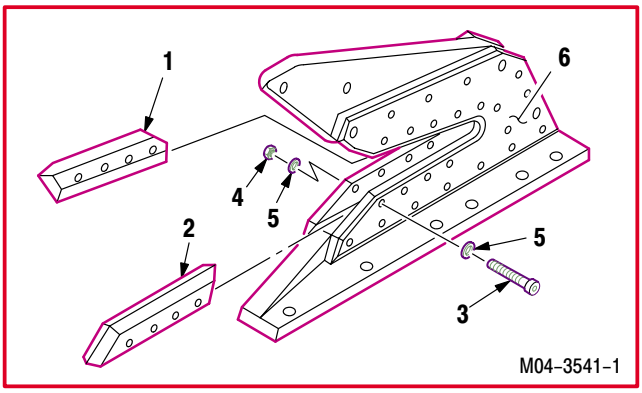
(1) Remove 8 screws (3), nuts (4), and 16 washers (5). Use socket head key set.

(2) Slide upper blade (1) out from between two check plates (6). Discard blade (1).

(3) Slide lower blade (2) out from between two plates (6). Discard blade (2).

(4) If installed, remove shims (7) from between two plates (6).





2.195.4. Cleaning

a. **Clean sealing compound residue** (para 1.47)**.**

2.195.5. Inspection

a. **Check mounting surfaces for cracks and corrosion** (para 2.11)**.**

GO TO NEXT PAGE

2.195. WIRE STRIKE PROTECTION AIRCRAFT CABLE CUTTER BLADES REPLACEMENT – continued

2.195.6. Installation



a. **Install new blades (1) and (2).**

(1) Aline blades (1) and (2) with mounting holes of two plates (6).

(2) Add shims (7) (as required) between blades (1) and (2).

(a) Check two plates (6) to provide a gap of **0.16 INCH** maximum.

(b) Ensure cutting edge of blades (1) and (2) are alined.

(3) Remove blades (1) and (2) from between two plates (6).

NOTE

Blades must be installed while sealant is wet.

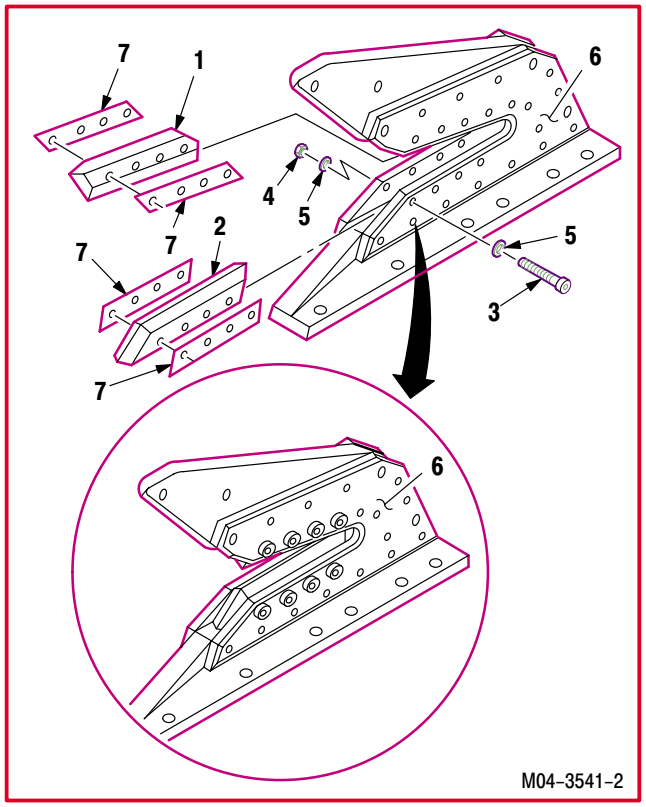
(4) Apply a thin coat of sealant to blades (1) and (2). Use sealing compound (item 177, App F) and brush (item 34, App F).

(5) Install 8 screws (3), 16 washers (5), and 8 nuts (4) on 2 plates (6) and cutters (1) and (2).

(6) Measure gap at rear of blades (1) and (2) with blades (1) and (2) forced apart. Gap should be no more than **0.020 INCH**.

(7) Tighten eight nuts (4). Use socket head key set.

(8) Apply a coat of sealant to exposed portions of blades (1) and (2). Allow to air dry. Use sealing compound (item 177, App F) and brush (item 34, App F).



b. **Inspect (QA).**

END OF TASK

2.196. TAILBOOM UTILITY HYDRAULIC TUBES ARMOR CHANNEL ASSEMBLIES REMOVAL/INSTALLATION

2.196.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.196.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1500-204-23

Materials/Parts:

Grommets
Brush (item 34, App F)
Sealing compound (item 174, App F)

Personnel Required:

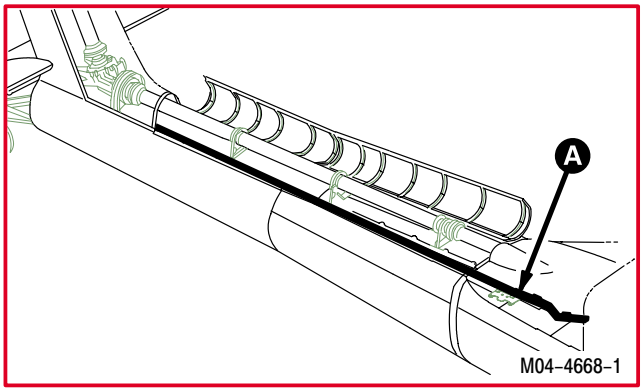
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
7.108	Utility low level shutoff valve removed (if required)
2.2	Access fairings R410 and R475 opened; fairings R510 and T355 removed

NOTE

This task is typical for the tailboom utility hydraulic tube armor channel assemblies (seven).

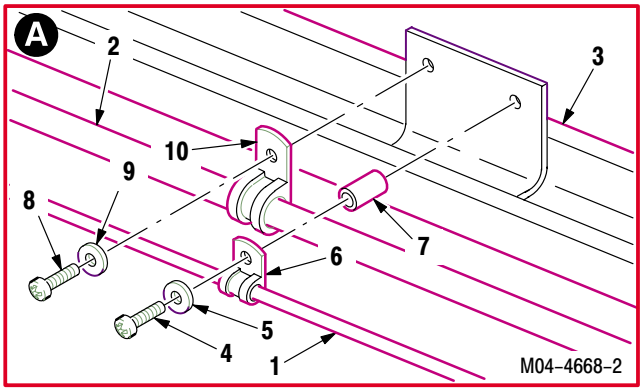


2.196.3. Removal

a. **Remove hydraulic tubes (1) and (2) from armor channel assembly (3).**

(1) Remove screw (4), washer (5), clamp (6), tube (1), and spacer (7) from channel (3).

(2) Remove screw (8), washer (9), clamp (10), and tube (2) from channel (3).



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2.196. TAILBOOM UTILITY HYDRAULIC TUBES ARMOR CHANNEL ASSEMBLIES REMOVAL/INSTALLATION – continued

NOTE

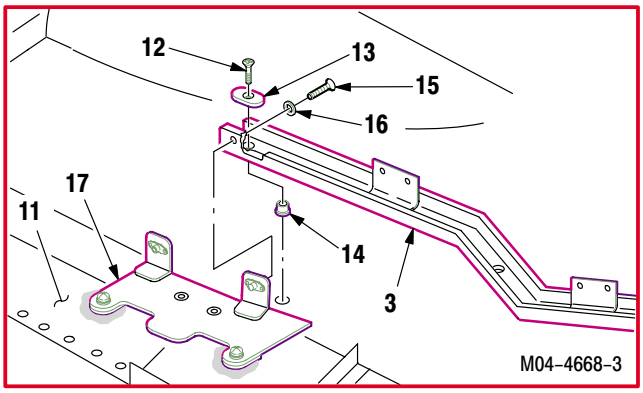
Some channel stack-ups will have a washer or shim between the grommet and airframe.

b. **Remove channel (3) from airframe (11).**

(1) Remove screws (12), shims (13), and grommets (14) from airframe (11).

(2) Remove screw (15) and washer (16) from channel (3) and armor plate (17) (if required).

(3) Remove channel (3).



2.196.4. Cleaning

a. **Clean sealing compound from removed and attaching parts** (para 1.47)**.**

b. **Wipe removed and attaching parts with a clean rag.**

2.196.5. Inspection

a. **Check grommets for cracks and damage.** Replace defective grommets.

b. **Check channel for cracks and damage.** None allowed.

c. **Check channel nutplates for loose rivets and stripped or damaged threads** (TM 1-1500-204-23)**.**

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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2.196. TAILBOOM UTILITY HYDRAULIC TUBES ARMOR CHANNEL ASSEMBLIES REMOVAL/INSTALLATION – continued

2.196.6. Installation

NOTE

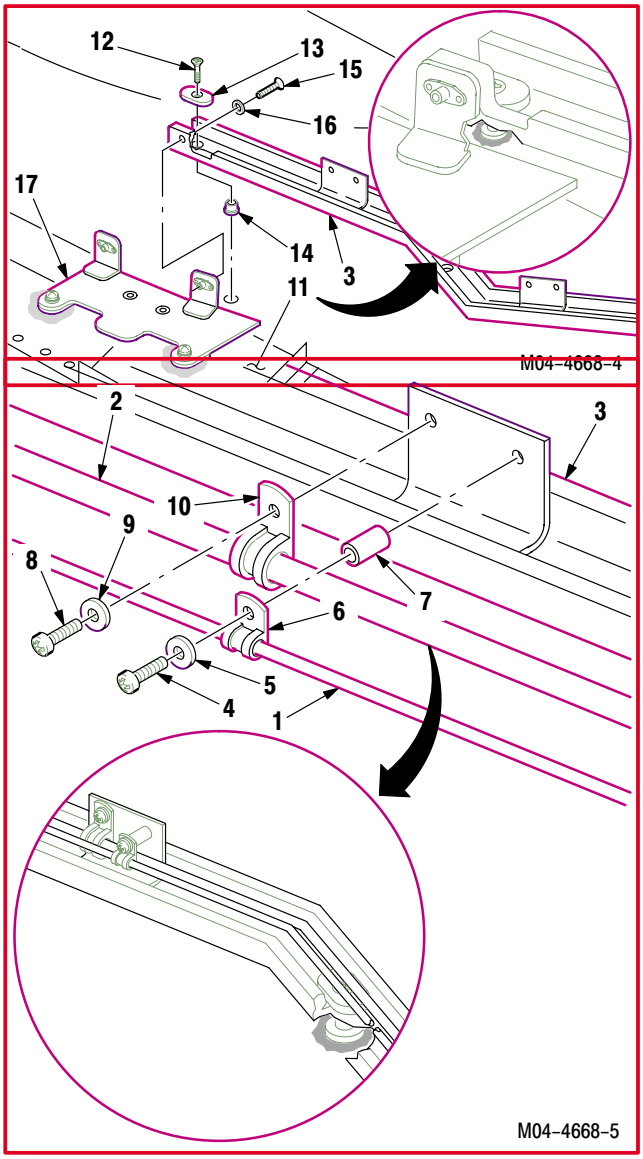
Some channel stack-ups will have a washer or shim between the grommet and airframe.

a. **Install channel (3) on airframe (11).**

(1) Position channel (3) on airframe (11).

(2) Install screws (12) through shims (13), channel (3), and grommets (14) into airframe (11).

(3) Install screw (15) through washer (16), and channel (3) into armor plate (17) (if required).



b. **Install hydraulic tubes (1) and (2) on channel (3).**

(1) Install screw (8) through washer (9) and clamp (10) into channel (3).

(2) Install screw (4) through washer (5), clamp (6), and spacer (7) into channel (3).

NOTE

Sealing compound is required only on the five forward grommets that contact aft deck.



c. **Apply sealing compound to grommets (14).** Use sealing compound (item 174, App F) and brush (item 34, App F).

GO TO NEXT PAGE

2.196. TAILBOOM UTILITY HYDRAULIC TUBES ARMOR CHANNEL ASSEMBLIES REMOVAL/INSTALLATION – continued

d. **Inspect (QA).**

e. **Install utility low level shutoff valve (if required)** (para 7.108)**.**

f. **Secure access fairings R410 and R475; install fairings R510 and T355** (para 2.2)**.**

END OF TASK

2.197. TAILBOOM PRIMARY HYDRAULIC TUBES ARMOR CHANNELS REMOVAL/INSTALLATION

2.197.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.197.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

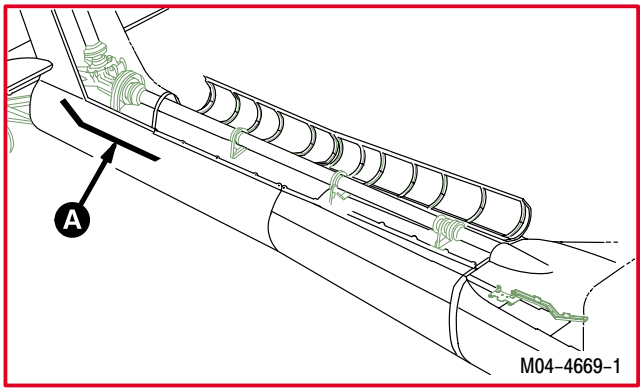
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access door R330 opened

CAUTION

Use caution when entering tailboom interior to prevent damage to electrical wiring, antenna cables, and related components.



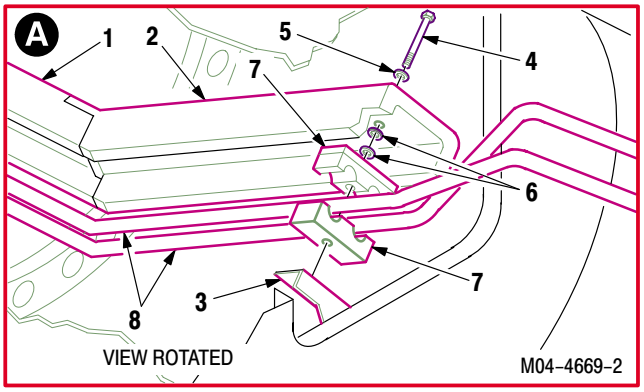
2.197.3. Removal

a. **Remove forward armor channel (1) and aft armor channel (2) from airframe (3).**

(1) Remove four screws (4), washers (5), and eight washers (6) from channels (1) and (2).

(2) Remove channels (1) and (2).

(3) Remove clamp blocks (7) from hydraulic tubes (8).



GO TO NEXT PAGE

2.197. TAILBOOM PRIMARY HYDRAULIC TUBES ARMOR CHANNELS REMOVAL/INSTALLATION – continued

2.197.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

2.197.5. Inspection

a. **Check channels for cracks and damage.** None allowed.

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

2.197.6. Installation

a. **Install channels (1) and (2) on airframe (3).**

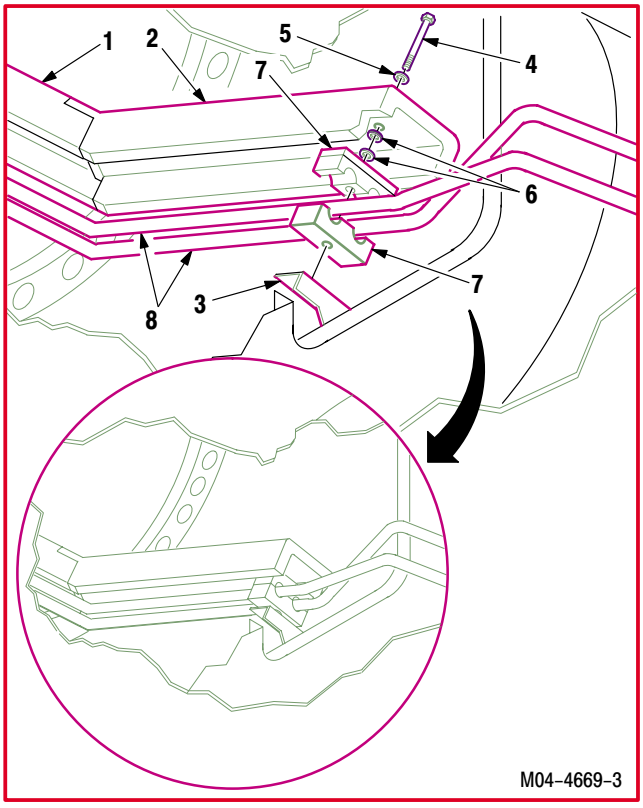
(1) Install clamp blocks (7) on hydraulic tubes (8).

(2) Position channels (1) and (2) on clamp blocks (7).

(3) Install four screws (4) through washers (5), channels (1) and (2), eight washers (6), and clamp blocks (7) into airframe (3).

b. **Inspect (QA).**

c. **Secure access door R330** (para 2.2)**.**



END OF TASK

2.198. TAILBOOM UTILITY LOW LEVEL SHUTOFF VALVE ARMOR PLATE REMOVAL/INSTALLATION

2.198.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

2.198.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

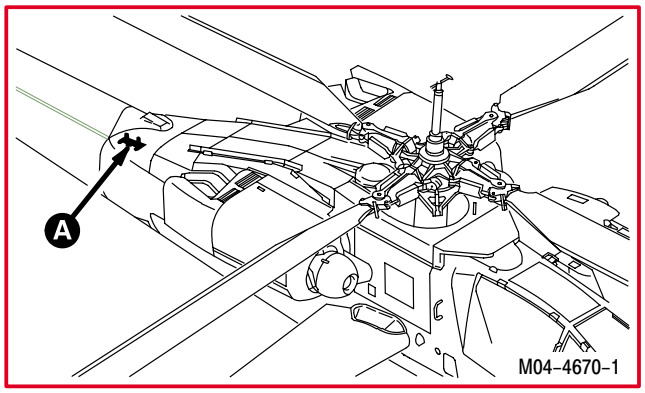
Brush (item 34, App F)
Sealing compound (item 174, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
7.108	Utility low level shutoff valve removed



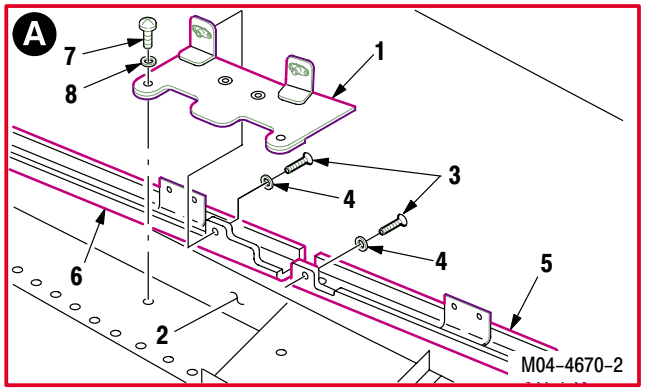
2.198.3. Removal

a. **Remove armor plate (1) from deck (2).**

(1) Remove two screws (3) and washers (4) from channels (5) and (6) and plate (1).

(2) Remove two screws (7) and washers (8).

(3) Remove plate (1).



GO TO NEXT PAGE

2.198. TAILBOOM UTILITY LOW LEVEL SHUTOFF VALVE ARMOR PLATE REMOVAL/INSTALLATION – continued

2.198.4. Cleaning

a. **Clean sealing compound from removed and attaching parts** (para 1.47)**.**

b. **Wipe removed and attaching parts with a clean rag.**

2.198.5. Inspection

a. **Check plate for cracks and damage.** None allowed.

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

2.198.6. Installation

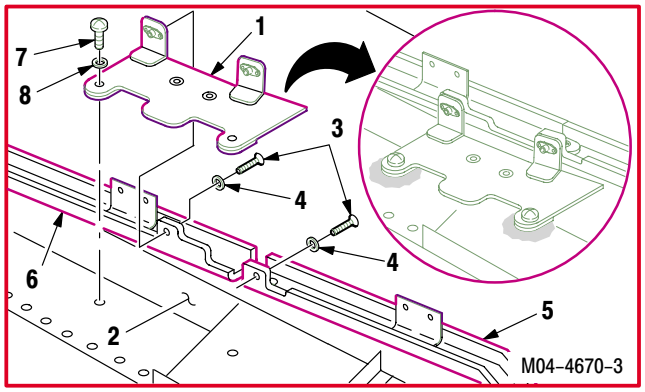
a. **Install armor plate (1) on deck (2).**

(1) Position plate (1) on deck (2).

(2) Install two screws (7) and washers (8) on plate (1).

(3) Install two screws (3) through washers (4) and channels (5) and (6) into plate (1).





b. **Apply sealing compound around edge of plate (1) where it contacts aft deck (2).** Use sealing compound (item 174, App F) and brush (item 34, App F).

c. **Inspect (QA).**

d. **Install utility low level shutoff valve** (para 7.108)**.**

END OF TASK

CHAPTER 3
LANDING GEAR SYSTEM

CHAPTER OVERVIEW

Chapter 3 contains the maintenance instructions for the landing gear system. Landing gear system description, operation, and troubleshooting information is contained in TM 1-1520-238-T.

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SECTION I. MAIN LANDING GEAR MAINTENANCE

3.1. MAIN LANDING GEAR INSPECTION

3.1.1. Description

This task covers: Main Landing Gear. General (Fittings, Castings, Forgings).

3.1.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1500-204-23
TM 1-1520-264-23
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Personnel Required:

67R Attack Helicopter Repairer

3.1.3. Main Landing Gear

a. **Check components for damage and loose mounting.**

b. **Check for loose, missing, or damaged mounting hardware.**

c. **Check static ground cable for cracks, broken strands, wear, and looseness.** No cracks allowed on upper or lower terminal. Lower terminal may be worn to a minimum length of **1.00 INCH**. Scratches and gouges to **0.030 INCH** deep in lower terminal and **0.020 INCH** deep in upper terminal are acceptable. Maximum of **25 percent** broken strands of cable is acceptable.

d. **Check trailing arms for cracks, looseness, or misalignment.**

e. **Check tires for tread damage or uneven wear** (TM 55-2620-200-24)**.**

f. **Check wheels for cracks, deformation, or hub grease leakage.**

g. **Check eight bolt wheel assembly keys and key insert for damage and wear.** If width is less than **0.842 INCH** replace wheel assembly.

h. **Check nine bolt wheel assembly keys and key insert for damage and wear.** If width is less than **0.830 INCH** replace wheel assembly.

i. **Check squat switch and wiring for cracked, broken, or burned insulation.** Check switch bracket and target for looseness or misalignment.

j. **Check shock struts for external fluid leakage and for rod end cracks, looseness, or misalignment** (TM 1-1500-204-23)**.**

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3.1. MAIN LANDING GEAR INSPECTION – continued

k. **Check pivot landing gear bolts for broken torque stripe.**

l. **Check bore of main landing mounts for corrosion.** Remove corrosion (para 1.49). Ensure that inside diameter of bore does not exceed **0.950 INCH** after removal of corrosion.

3.1.4. General (Fittings, Castings, Forgings)

a. **Nicks, scratches, and gouges which do not develop into cracks are generally acceptable if sharp edges can be blended and damage does not interfere with operational characteristics of the affected components.**

b. **Remove minimal material to smooth sharp edges if blending is required.**

c. **Check for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

END OF TASK

3.2. MAIN LANDING GEAR CABLE ASSEMBLY REPLACEMENT

3.2.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.2.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Ohmmeter (item 218, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Wire (item 224, App F)
Sealing compound (item 175, App F)

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

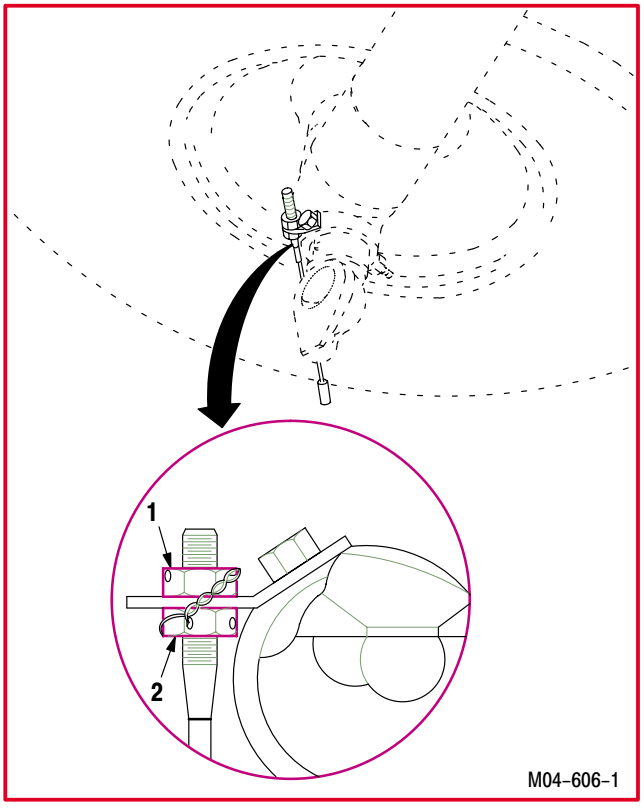
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

3.2.3. Removal

a. **Remove lockwire from nuts (1) and (2).**



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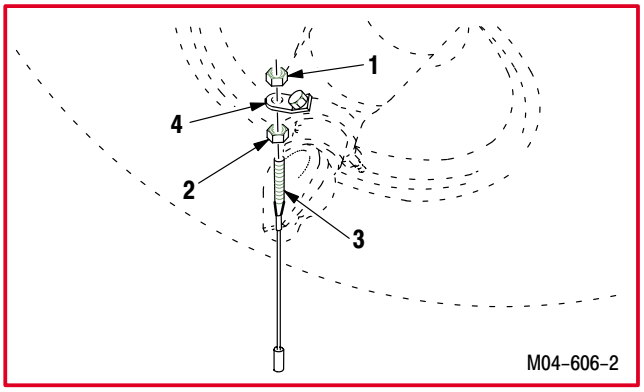
3.2. MAIN LANDING GEAR CABLE ASSEMBLY REPLACEMENT – continued

b. **Remove cable assembly (3).**

(1) Hold nut (2). Remove nut (1).

(2) Remove cable (3) from static ground bracket (4).

(3) Remove nut (2) from cable (3).



3.2.4. Cleaning

a. **Clean mounting hardware** (para 1.47)**.**

3.2.5. Inspection

a. **Check cable for broken strands, cracks, and wear** (para 3.1)**.**

b. **Check cable attaching area for cracks.** None allowed.

c. **Check cable attaching area for corrosion** (para 1.49)**.**

GO TO NEXT PAGE

3.2. MAIN LANDING GEAR CABLE ASSEMBLY REPLACEMENT – continued

3.2.6. Installation



a. **Install cable (3) on bracket (4).**

(1) Install nut (2) on cable (3). Run down full length of threads.

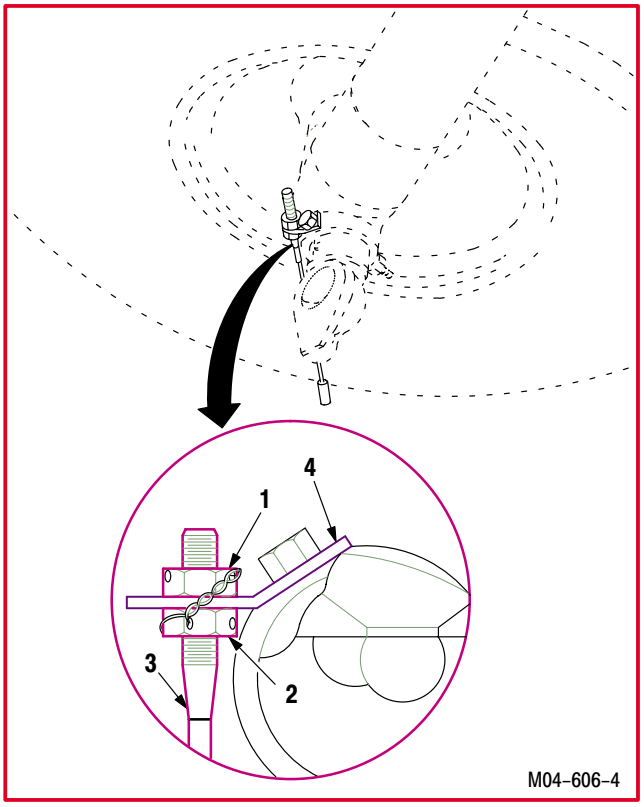
(2) Install cable (3) up through bracket (4).

(3) Install nut (1) on end of cable (3).

(4) Turn nut (1) until bottom of cable (3) touches ground, then back off nut (1) **0.50 INCH**.

(5) Run up nut (2) until cable (3) is secure.

(6) Apply sealing compound around base of nut (1) and top of nut (2). Use sealing compound (item 175, App F).



b. **Perform electrical bond check** (TM 55-1500-323-24)**.**

(1) Bond shall be **0.1 OHM** or less. Use ohmmeter.

c. **Lockwire nuts (1) and (2) together.** Use wire (item 224, App F).

d. **Inspect (QA).**

END OF TASK

3.3. MAIN LANDING GEAR UPPER STRUCTURAL SUPPORT REMOVAL/INSTALLATION

3.3.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.3.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

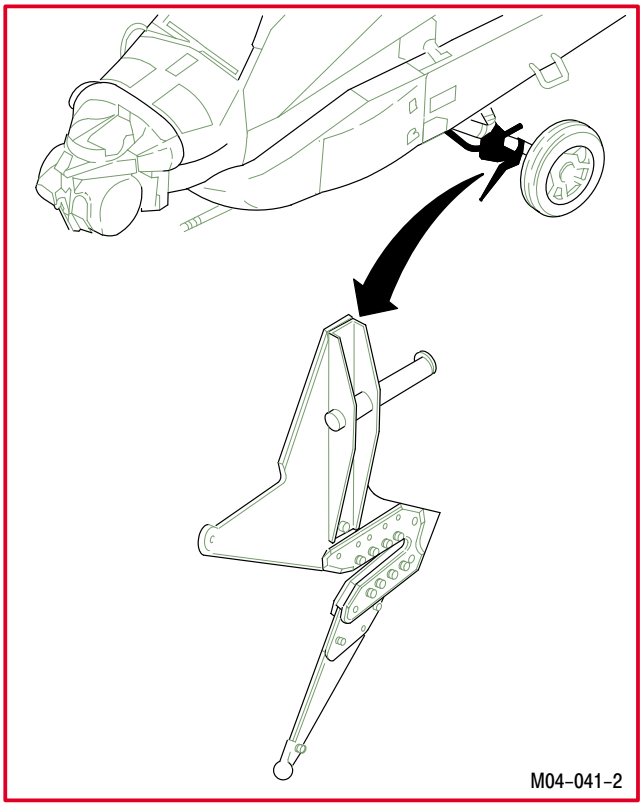
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.26	Main landing gear cable cutter removed

NOTE

This task is typical for right and/or left main landing gear upper structural support.



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3.3. MAIN LANDING GEAR UPPER STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

3.3.3. Removal

a. **Remove upper structural support (1) from cable cutter (2).**

(1) Hold six screws (3). Remove six self-locking nuts (4) and washers (5).

(2) Remove six screws (3).

(3) Remove support (1) from cutter (2).

3.3.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.3.5. Inspection

a. **Check attachment area for wear, elongation of holes, and cracks.** None allowed.

b. **Check components for corrosion** (para 1.49)**.**

3.3.6. Installation

a. **Install support (1) on cutter (2).**

(1) Position support (1) on cutter (2).

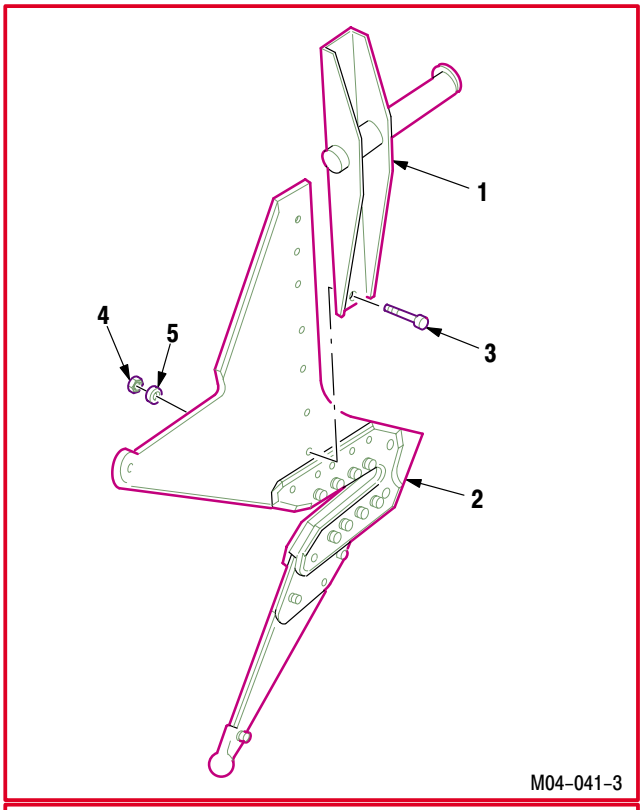
(2) Aline support (1) with six mounting holes on cutter (2).

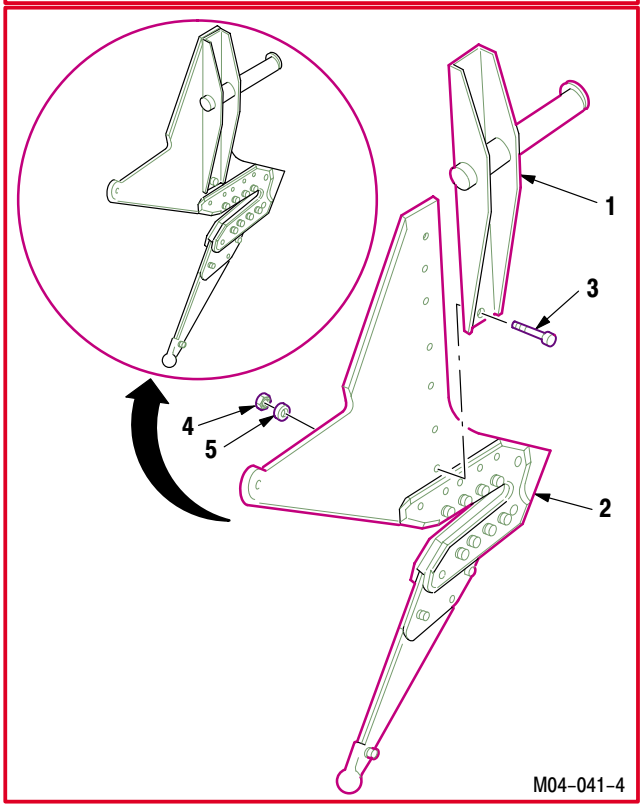
(3) Install six screws (3).

(4) Hold six screws (1). Install six washers (5) and nuts (4).

b. **Inspect (QA).**

c. **Install main landing gear cable cutter** (para 3.26)**.**





END OF TASK

3.4. MAIN LANDING GEAR LOWER STRUCTURAL SUPPORT REMOVAL/INSTALLATION

3.4.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.4.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for right and/or left main landing gear lower structural support.

3.4.3. Removal

a. **Remove lower structural support (1) from trailing arm assembly (2) and cable cutter (3).**

(1) Hold shear bolt (4). Remove nut (5) and washer (6).

(2) Remove bolt (4) and washer (7) from cutter (3) and support (1).

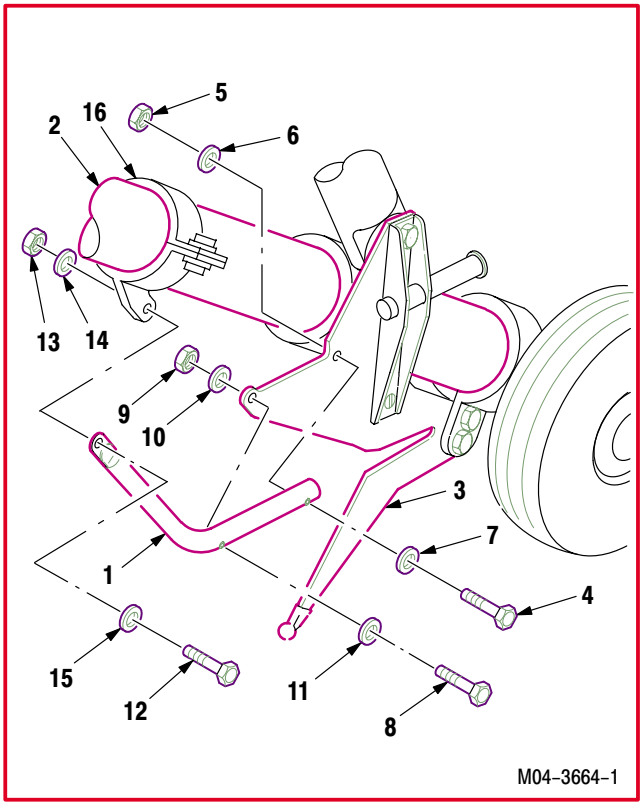
(3) Hold shear bolt (8). Remove nut (9) and washer (10).

(4) Remove bolt (8) and washer (11) from cutter (3) and support (1).

(5) Hold shear bolt (12). Remove nut (13) and washer (14).

(6) Remove bolt (12) and washer (15) from rim clenching clamp (16).

(7) Remove support (1) from trailing arm (2) and cutter (3).



GO TO NEXT PAGE

3.4. MAIN LANDING GEAR LOWER STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

b. **Remove clamp (16) from trailing arm (2).**

(1) Hold shear bolt (17). Remove nut (18) and washer (19).

(2) Remove bolt (17) and washer (20) from clamp (16).

(3) Remove clamp (16) from trailing arm (2).

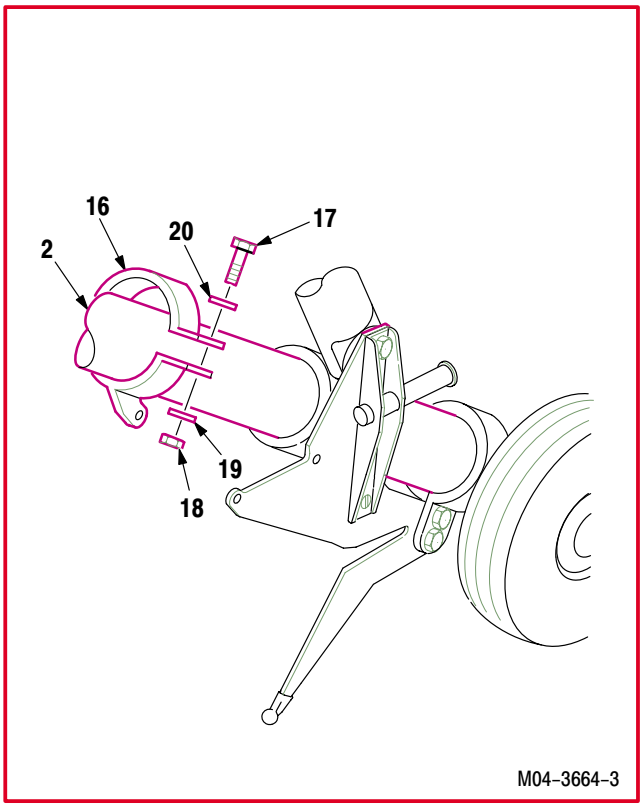
3.4.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.4.5. Inspection

a. **Check attachment area for wear, elongation of holes, and cracks.** None allowed.

b. **Check support, trailing arm, cutter, and clamp for corrosion** (para 1.49)**.**



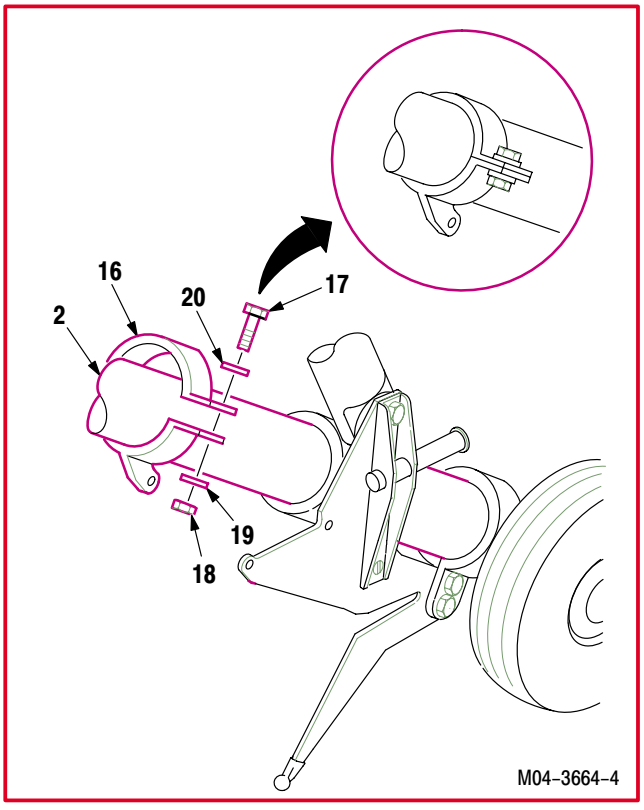
3.4.6. Installation

a. **Install clamp (16) on trailing arm (2).**

(1) Install clamp (16) on trailing arm (2).

(2) Install bolt (17) and washer (20) through clamp (16).

(3) Hold bolt (17). Install washer (19) and nut (18).



GO TO NEXT PAGE

3.4. MAIN LANDING GEAR LOWER STRUCTURAL SUPPORT REMOVAL/INSTALLATION – continued

b. **Install support (1) on trailing arm (2) and cutter (3).**

(1) Position support (1) on trailing arm (2) and cutter (3).

(2) Aline support (1) with six mounting holes on trailing arm (2), cutter (3), and clamp (16).

(3) Install bolt (12) and washer (15) through support (1) and clamp (16).

(4) Install washer (14) and nut (13).

(5) Install bolt (8) and washer (11) through support (1) and cutter (3).

(6) Install washer (10) and nut (9).

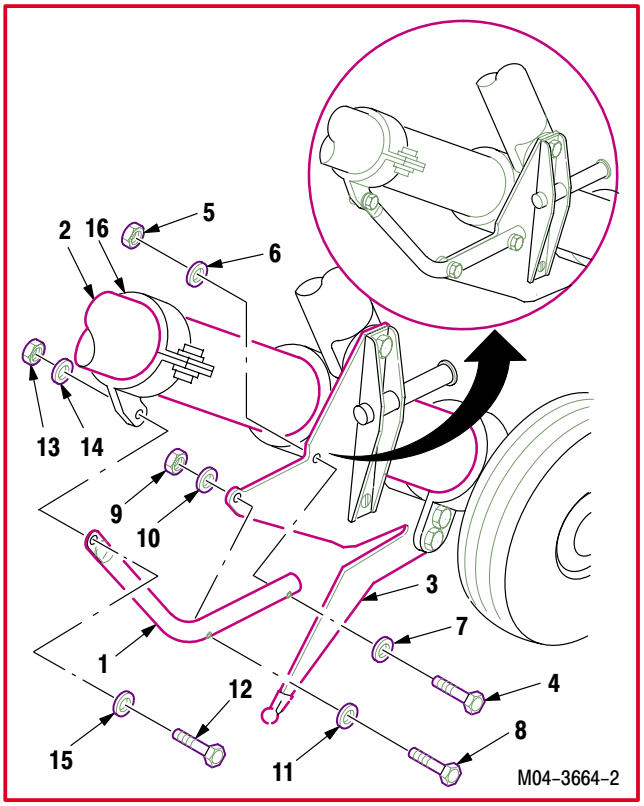
NOTE

The number of washers required in step b(7) will be “as required” to ensure proper alinement of support.

(7) Install bolt (4) and washer(s) (7) (as required) through support (1) and cutter (3).

(8) Install washer (6) and nut (5).

c. **Inspect (QA).**



END OF TASK

3.5. MAIN LANDING GEAR JACK PAD ADAPTER REMOVAL/INSTALLATION

3.5.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.5.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23
TM 55-1500-323-24

Materials/Parts:

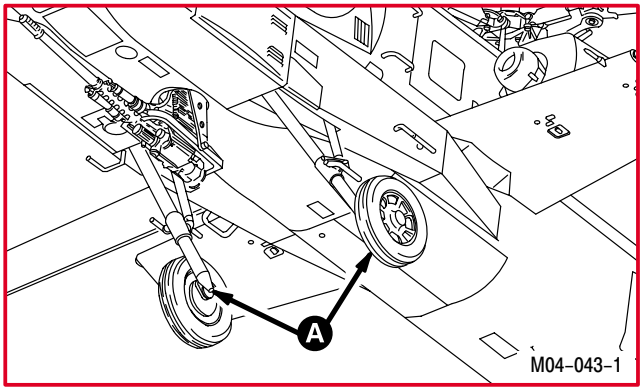
Epoxy primer coating kit (item 78, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

This task is typical for left and/or right side landing gear assemblies except as noted.

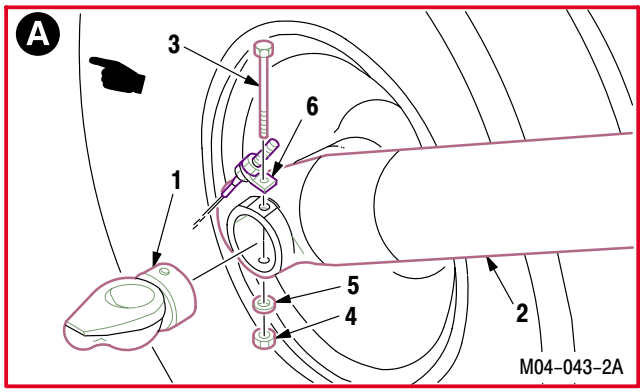


3.5.3. Removal

a. **Remove jack pad adapter (1) from trailing arm assembly (2).**

(1) Hold bolt (3). Remove nut (4) and washer (5).

(2) Remove bolt (3), static ground bracket (6) (left trailing arm only), and adapter (1).



GO TO NEXT PAGE

3.5. MAIN LANDING GEAR JACK PAD ADAPTER REMOVAL/INSTALLATION – continued

3.5.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.5.5. Inspection

a. **Check adapter for nicks, or scratches.** None allowed.

b. **Check adapter for corrosion** (para 1.49)**.**

c. **Check adapter for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

3.5.6. Installation



a. **Install adapter (1) in trailing arm (2).** Torque nut (4) to **60 INCH-POUNDS**.

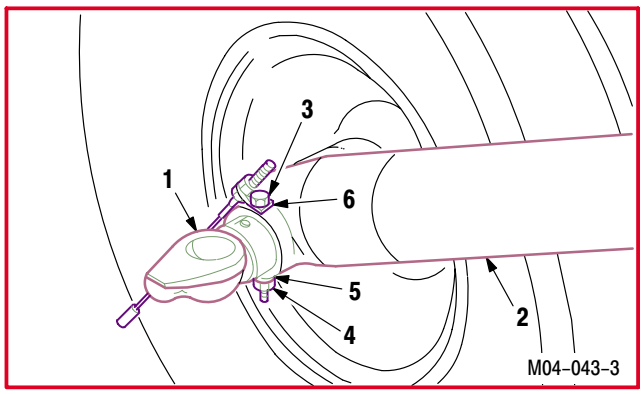
(1) Aline adapter (1) in trailing arm (2).

(2) Coat bolt (3) with epoxy primer coating kit (item 78, App F). Install wet.

(3) Aline bracket (6) (left trailing arm only).

(4) Install bolt (3) through bracket (6) and trailing arm (2).

(5) Hold bolt (3). Install washer (5) and nut (4). Torque nut (4) to **60 INCH-POUNDS**. Use torque wrench.



b. **Perform electrical bond check on cable assembly** (TM 55-1500-323-24)**.**

(1) Bond shall be **1.00 OHM** or less. Use multimeter.

c. **Inspect (QA).**

END OF TASK

3.6. MAIN LANDING GEAR WHEEL AND TIRE REMOVAL/INSTALLATION

3.6.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.6.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
15-inch adjustable wrench (item 406, App H)

Materials/Parts:

Grease (item 87, App F)
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes set
1.67	Main landing gear jacked (at one point)

NOTE

- This task is typical for eight-bolt or nine-bolt wheels except as noted.
- The eight-bolt wheel has no bearing retainer; therefore the bearing may fall out when wheel is being removed from axle and must remain in position when wheel is being installed.

GO TO NEXT PAGE

3.6. MAIN LANDING GEAR WHEEL AND TIRE REMOVAL/INSTALLATION – continued

3.6.3. Removal

WARNING

Deflate tire before handling the wheel. Pressure on loosened valve core could cause core to be blown from boss stem and injure personnel. If injury occurs, seek medical aid.

NOTE

The brake disk is held in place with parking brake set. One person may remove wheel.

a. **Remove landing gear axle nut (1) and wheel (2) from trailing arm assembly axle (3).**

(1) Remove lockwire from two screws (4) and (5).

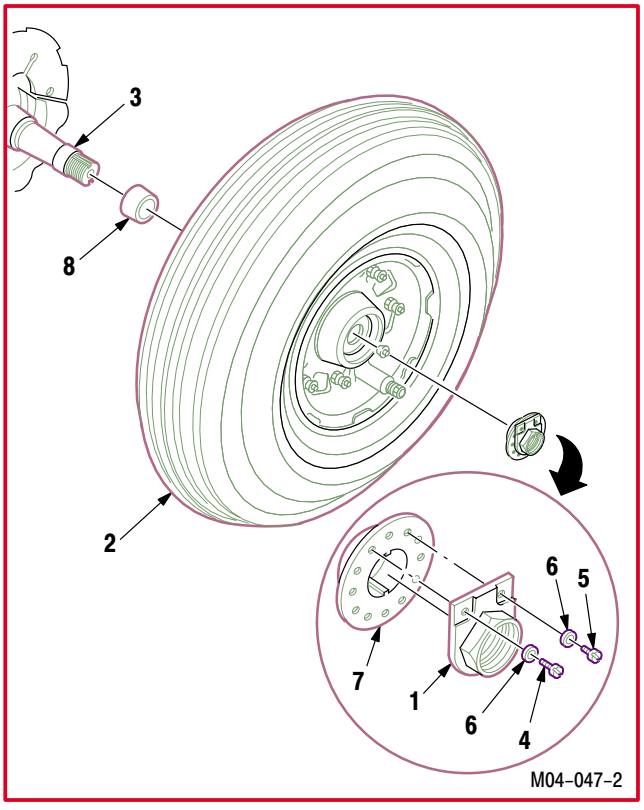
(2) Remove two screws (4) and (5) and washers (6).

(3) Remove nut (1). Use adjustable wrench.

(4) Slide keyed lock ring (7) from axle (3).

(5) Pull wheel (2) from axle (3).

(6) Remove sleeve spacer (8) from axle (3).



3.6.4. Cleaning

a. **Clean axle and attaching hardware** (para 1.47)**.**

3.6.5. Inspection

a. **Check axle and attaching hardware for wear and gouges.** None allowed.

b. **Check axle for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

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3.6. MAIN LANDING GEAR WHEEL AND TIRE REMOVAL/INSTALLATION – continued

3.6.6. Installation



a. **Install wheel (2) on axle (3).**

(1) Release parking brake (para 1.61).

(2) Push brake disk (9) inboard to retract brake pistons.

(3) Spin brake disk (9) to ensure no brake drag exists. If brake drag exists, replace brake (para 3.65 or 3.66).

(4) Coat spacer (8) with grease (item 87, App F).

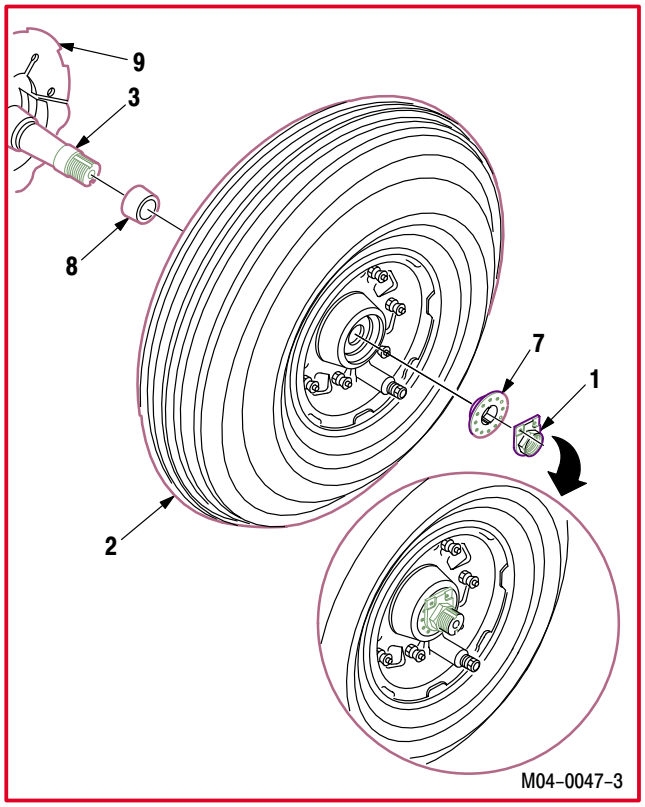
(5) Slide spacer (8) on axle (3) with beveled side toward strut.

NOTE

The nine-bolt wheel has a bearing retainer which holds the bearing in place while wheel is being installed.

(6) Position wheel (2) on axle (3). Aline brake disk grooves in wheel with lugs on brake disk (9). To engage brake disk (9), slide wheel inboard.

(7) Install lock ring (7) and axle nut (1) on axle (3).



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3.6. MAIN LANDING GEAR WHEEL AND TIRE REMOVAL/INSTALLATION – continued

CAUTION

To prevent damage to wheel bearings, tighten axle nut until a slight drag is felt.

(8) While rotating wheel, tighten axle nut (1) until a slight drag in bearings can be felt. Use adjustable wrench.

(9) Back off axle nut (1) one complete turn.

(10) While rotating wheel (2), retighten axle nut (1) until a slight drag in bearings can be felt.

(11) Rotate wheel (2). Check for smooth rotation.

(12) Shake wheel (2). Check that all free play in bearings and axle (3) is removed. Repeat steps a.(8) thru a.(12) to remove free play.

(13) Back off axle nut (1) sufficiently to aline long screw hole.

b. **Install long screw (4) and washer (6) in axle nut (1).**

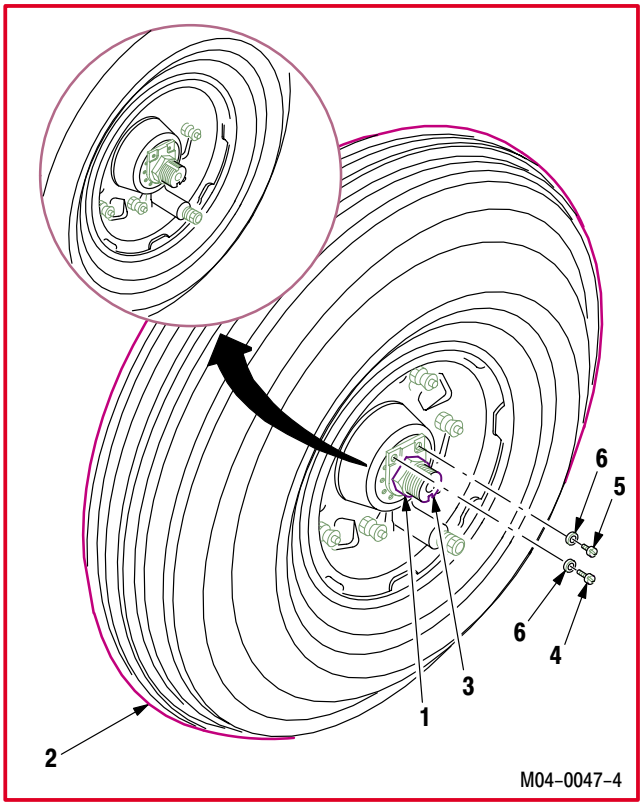
c. **Install short screw (5) and washer (6) in axle nut (1).**

d. **Lockwire screws (4) and (5) together.** Use wire (item 224, App F).

e. **Inflate tire to 105 ±5 psi.** Use nitrogen truck and inflator assembly.

f. **Inspect (QA).**

g. **Remove main landing gear jack** (para 1.67)**.**



END OF TASK

3.7. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (GOODYEAR)

3.7.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.7.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Tire bead breaker (item 30, App H)
Tire inflation cage (item 49, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Pneumatic tire valve repair tool (item 260, App H)
Adjustable air filtering respirator (item 262, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
0 - 600 inch-pound 3/8-inch drive dial indicator torque wrench (item 447, App H)

Materials/Parts:

Packing
Antiseize compound (item 26, App F)
Antiseize compound (item 27, App F)
Grease (item 87, App F)
Leak test compound (item 109, App F)
Enamel (item 74A, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 1-1520-264-23
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.6	Main landing gear wheel and tire removed
3.15	Main landing gear wheel tapered cone and rollers packed

CAUTION

Main landing gear wheel assembly parts (bolts, nuts, bearings, and air valves), that are manufactured by one company cannot be intermixed with wheel assembly parts which are manufactured by a different company.

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3.7. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (GOODYEAR) – continued

3.7.3. Removal

WARNING

- **Deflate tire before handling the wheel. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate. Personnel nearby could be injured by flying parts. If injury occurs, seek medical aid.**
- **Do not remove valve core from stem boss until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.**

a. **Break tire bead (1).** Use bead breaker.

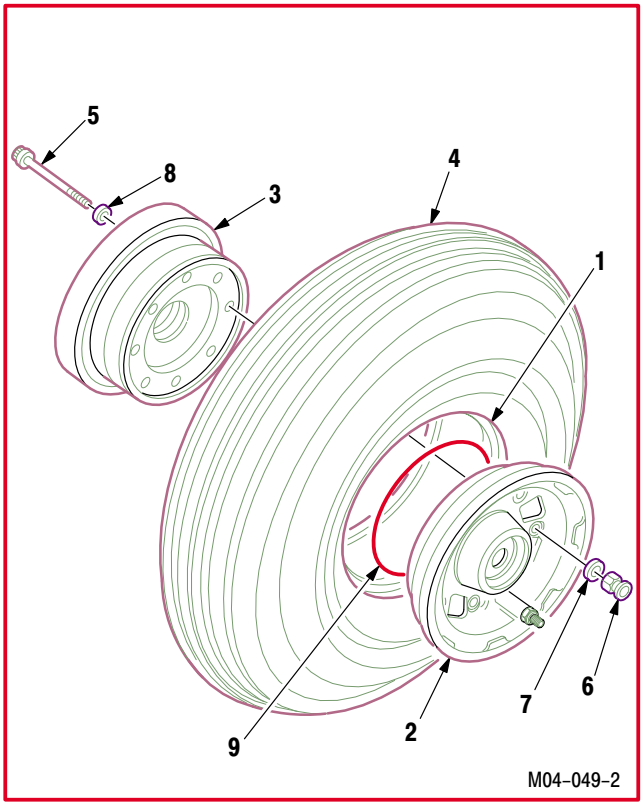
b. **Remove outboard and inboard wheel subassemblies (2) and (3) from tire (4).**

(1) Hold eight bolts (5). Remove eight self-locking nuts (6) and washers (7).

(2) Remove eight bolts (5) and recessed washers (8).

(3) Remove wheels (2) and (3) from tire (4).

(4) Remove and discard packing (9) from wheel (2).



3.7.4. Cleaning

a. **Remove old antiseize compound from bolts, nuts, and bolt holes** (para 1.47)**.**

b. **Clean dirt and grease from wheels** (para 1.47)**.**

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3.7. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (GOODYEAR) – continued

3.7.5. Inspection

a. **Check wheels for dents, or nicks.** (TM 1-1500-204-23).

b. **Check wheels for galling and discoloration caused by overheating.** None allowed.

c. **Check wheels for corrosion** (para 1.49)**.**

d. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cord, and contamination** (TM 55-2620-200-24)**.**

e. **Check wheels for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

3.7.6. Installation



a. **Install new packing (9) on wheel (2).**

(1) Lubricate packing (9). Use grease (item 87, App F).

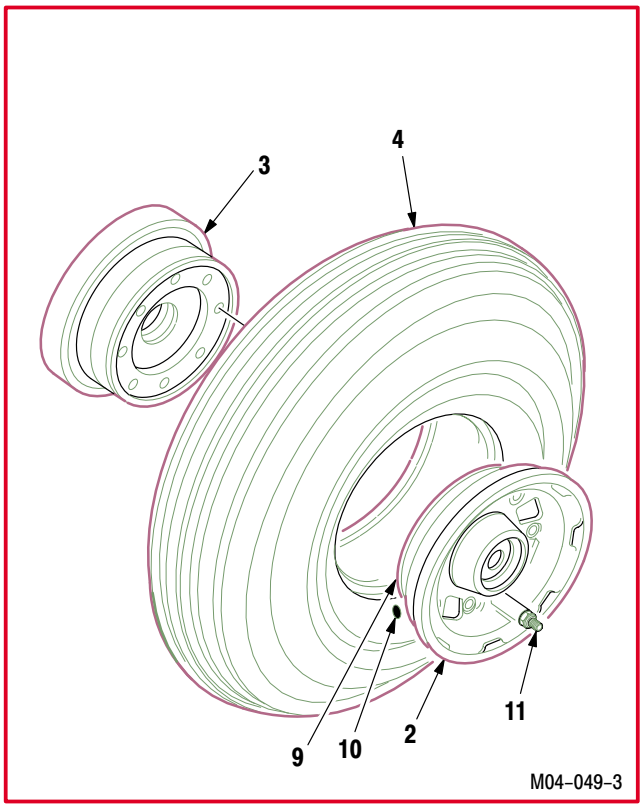
(2) Install packing (9) on shoulder of outboard wheel (2).

b. **Install wheel (2) in tire (4).**

(1) Aline dot (10) on tire (4) with pneumatic tire valve (11).

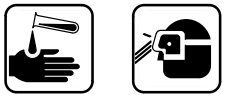
c. **Install wheel (3) in tire (4).**

(1) Aline bolt holes in wheels (2) and (3).



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3.7. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (GOODYEAR) – continued



d. **Coat threads of eight bolts (5).** Use antiseize compound (item 26, App F).



e. **Coat bearing surfaces of eight bolts (5), washers (7) and (8), and nuts (6).** Use antiseize compound (item 27, App F).

f. **Install eight bolts (5), washers (8) and (7), and nuts (6).** Torque nuts (6) to **300 INCH-POUNDS**.

(1) Install recessed washers (8) on bolts (5) with recess against bolt (5) heads.

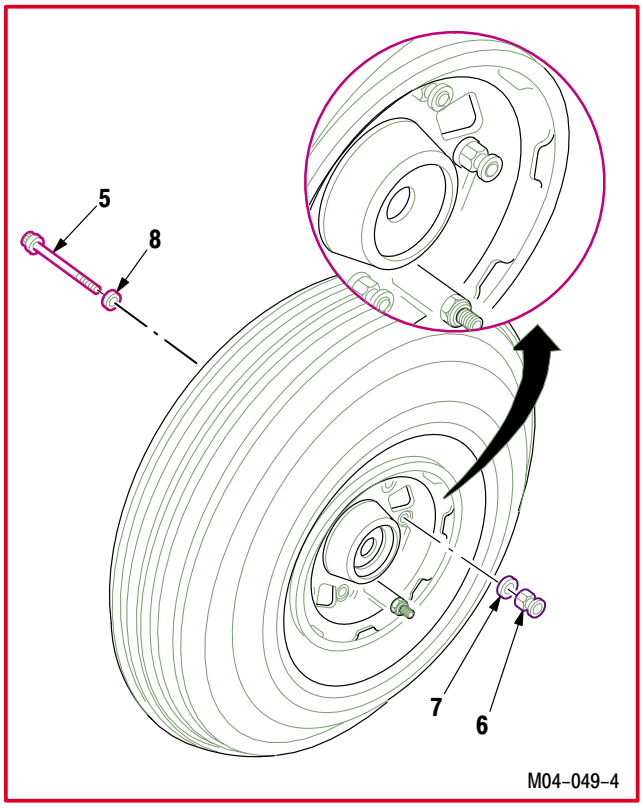
(2) Install eight bolts (5) and washers (8) through wheels (3) and (2).

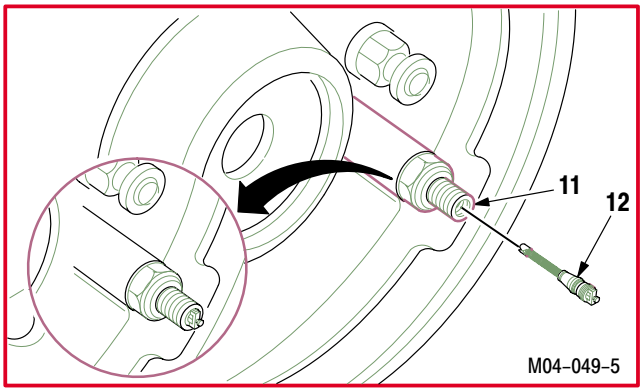
(3) Hold eight bolts (5). Install eight washers (7) and nuts (6) on eight bolts (5). Torque eight nuts (6) to **300 INCH-POUNDS**. Use torque wrench.



g. **Apply sealant to area around heads of bolts (5) and nuts (6).** Use enamel (item 74A, App F).

h. **Install valve core (12) in valve (11).** Use tire valve tool.





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3.7. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (GOODYEAR) – continued

WARNING

Wheel and tire must be in safety cage when tire is being inflated. Tire could blow off wheel, or wheel subassemblies could separate. Flying parts could injure personnel. If injury occurs, seek medical aid.

i. **Place tire (4) in cage (13)** (TM 55-2620-200-24)**.**

(1) Allow **30 MINUTES** before removing inflated tire from safety cage.

j. **Inflate tire (4) to 105 ±5 psi.**

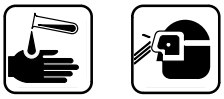
(1) Install hose (14) and chuck (15) on valve (11).

(2) Inflate tire (4) to **105 ±5 psi**. Use inflator assembly and nitrogen truck.

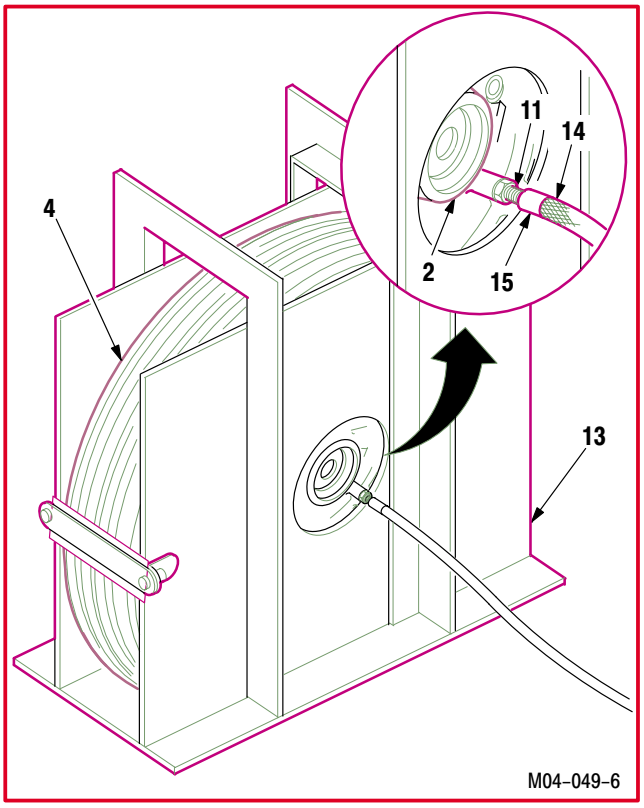
(3) Shut off inflator assembly.

(4) Remove chuck (15) from valve (11).

k. **Remove tire (4) from cage (13).**



l. **Check valve (11) and wheel (2) rim for leaks.** Use leak test compound (item 109, App F).



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3.7. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (GOODYEAR) – continued

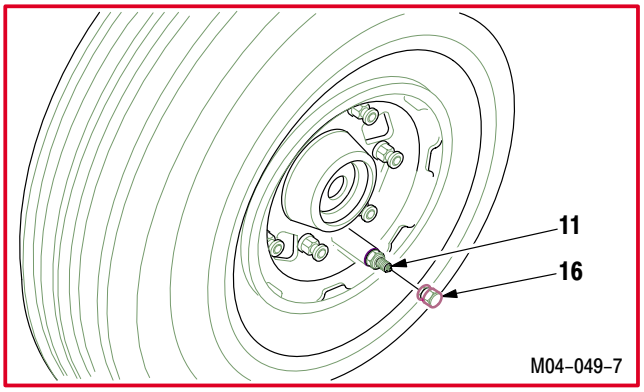
NOTE

This step is typical for eight-bolt or nine-bolt wheels. If wheel is to be transported or stored prior to installation, reduce air pressure to 20 psi and tag assembly stating pressure.

m. **Install valve cap (16) on valve (11).**

n. **Inspect (QA).**

o. **Install main landing gear wheel and tire** (para 3.6)**.**



END OF TASK

3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM)

3.7A.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.7A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
0.000 - 6.000-inch outside micrometer caliper set (item 52, App H)
Metal stamping die set (item 107, App H)
0.6300 - 1.0000-inch cylinder gage (item 142, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Instruction Plate (2)
Adhesive (item 12, App F)
Antiseize compound (item 27, App F)
Brush (item 34, App F)
Cloth (item 48, App F)
Cloth (item 50, App F)
Cloth (item 52, App F)
Corrosion resistant coating (item 66, App F)
Epoxy primer coating kit (item 78, App F)
Polyurethane coating (item 141, App F)
Remover (item 149, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23
TM 55-1500-322-24
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
3.7	Main landing gear tire removed (Goodyear/ABSC)
3.8	Main landing gear tire valve removed (Goodyear/ABSC)
3.9	Main landing gear wheel disk drive key assembly removed (Goodyear/ABSC)
3.10	Main landing gear wheel tapered cone and rollers removed (Goodyear/ABSC)

WARNING

Injury to personnel and damage to equipment may occur if wheel halves are not inspected whenever wheel is disassembled. Make sure wheel halves are inspected whenever wheel is disassembled.

CAUTION

Wheel assembly parts (wheel halves, bolts, and gaskets) manufactured by one company cannot be intermixed with parts manufactured by a different company.

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3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM) – continued

3.7A.3. Removal

NOTE

This step is typical for both inboard and outboard main landing gear wheels.

a. **Remove main landing gear wheel instruction plate (1) from main landing gear wheel (2).**

(1) Peel up corner of plate (1). Use putty knife.

(2) Remove and discard plate (1) from main landing gear wheel (2).

NOTE

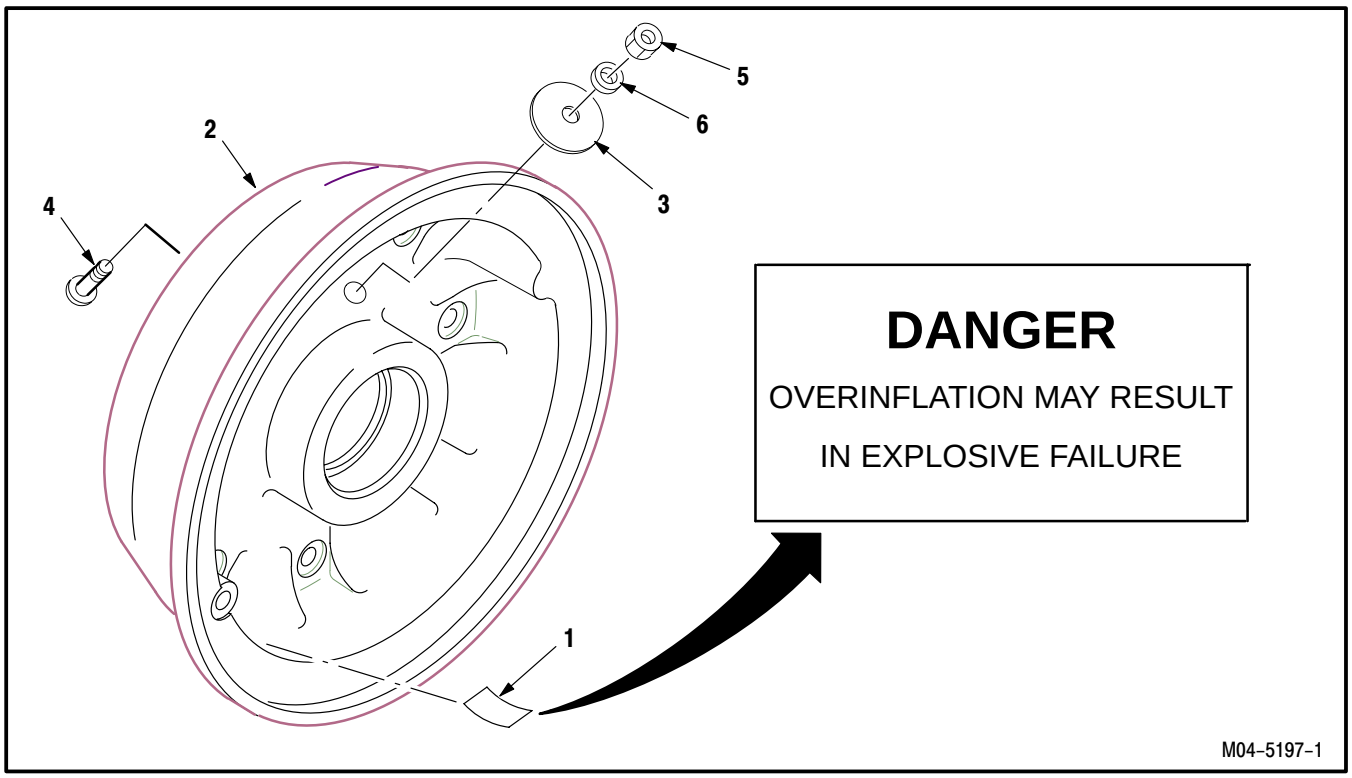
This step applies to outboard main landing gear wheels only.

b. **Remove main landing gear wheel tire change counter (3) from main landing gear wheel (2).**

(1) Hold screw (4), remove nut (5).

(2) Remove washer (6) and counter (3) from screw (4).

(3) Remove screw (4) from main landing gear wheel (2).



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3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM) – continued



c. **Remove paint from wheels (2).** Use remover (item 149, App F).

d. **Remove paint residue from wheels (2).** Use cloth (item 52, App F).

e. **Remove main landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**

3.7A.4. Cleaning

a. **Clean removed and attaching parts.** (para 1.47)**.**

3.7A.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check wheels for cracks or structural damage by fluorescent penetrant inspection method** (TM 1-1520-264-23)**.**

c. **Check wheels for scratches, nicks, or pits.** Repair per step 3.7A.6.

d. **Check tire valve for stripped or crossed threads.** None allowed.

e. **Inspect wheel bearing cup housing bore(s) for damage.**

(1) Diameter of (Goodyear) inboard wheel mating bore shall not exceed **3.3407 INCHES** maximum. Use appropriate cylinder gage and caliper set.

(2) Diameter of (Goodyear) outboard wheel mating bore shall not exceed **2.6831 INCHES** maximum. Use appropriate cylinder gage and caliper set.

3.7A.6. Repair

WARNING

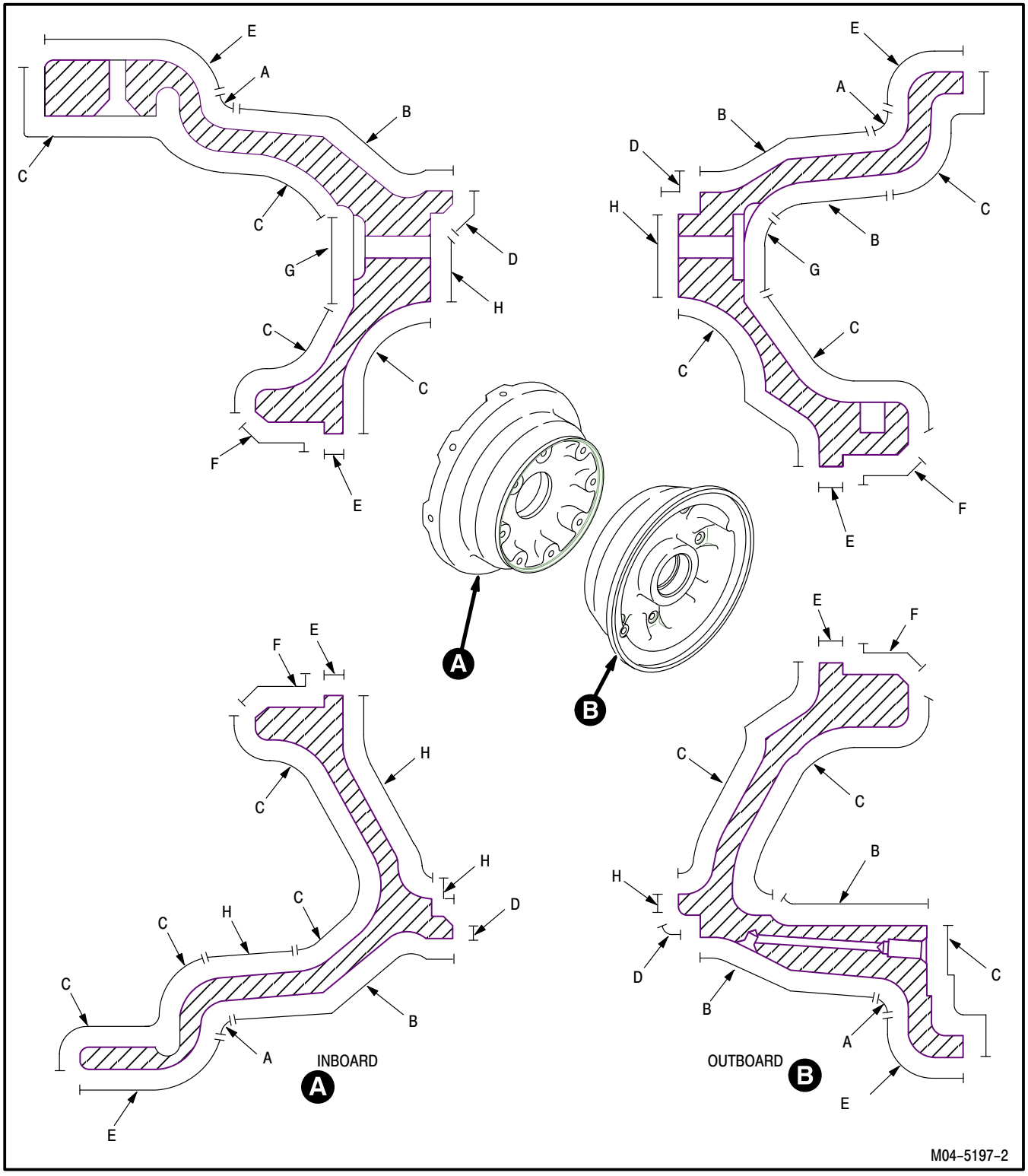
Injury to personnel and damage to equipment may occur if hardware is reused on wheel. Replace all bolts and nuts. If injury occurs, seek medical aid.

NOTE

Wheels are not a matched set and can be replaced individually provided correct part number and manufacturer is used.

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3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM) – continued



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3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM) – continued

a. **Blend or polish scratches, nicks, or pits per the following limits:**

(1) Repair area A as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.015 INCH** deep and **0.50 INCH** long. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

NOTE

Damage shall not be opposite other damage or previously repaired area.

(2) Repair area B as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.020 INCH** deep and **1.00 INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(3) Repair area C as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.020 INCH** deep and **1.00 INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

NOTE

Repair after blending and polishing, shall not interfere with sealing qualities in male/female mating surface areas.

(4) Repair area D as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits. or if sealing qualities in male/female mating surface area is not maintained.

(5) Repair area E as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.030 INCH** deep and **0.50 SQUARE INCH** in area, in a maximum of two places. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

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3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM) – continued

NOTE

Repair after blending and polishing shall not affect bearing cup retention.

(6) Repair area F as follows:

(a) Blend and polish scratches or corrosion. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs affect bearing cup retention.

(7) Repair area G as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep on face of each bolt boss. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(8) Repair area H as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep and **0.50 SQUARE INCH** on each interface boss. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

3.7A.7. Installation

a. **Install main landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**



b. **Paint main landing gear wheels (2).**

(1) Apply corrosion resistant coating to wheels (2) and allow to dry for a minimum of **ONE HOUR** at a minimum temperature of 65° F (18° C). Use corrosion resistant coating (item 66, App F).

NOTE

Apply primer to male/female mating surfaces and bolt bosses only.

(2) Apply primer to wheels (2)). Use epoxy primer coating kit (item 78, App F) (TM 55-1500-345-23).

(3) Apply paint to wheels (2). Use polyurethane coating (item 141, App F) (TM 55-1500-345-23).

GO TO NEXT PAGE

3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM) – continued



c. **Install main landing gear wheel tire change counter (3) on outboard main landing gear wheel (2).**

(1) Apply a coat of antiseize compound to mounting surfaces of nut (5), washer (6), counter (3), and screw (4) head. Use brush (item 34, App F) and antiseize compound (item 27, App F).

(2) Install screw (4) through main landing gear wheel (2).

(3) Install counter (3) and washer (6) on screw (4).

(4) Install nut (5) on screw (4).



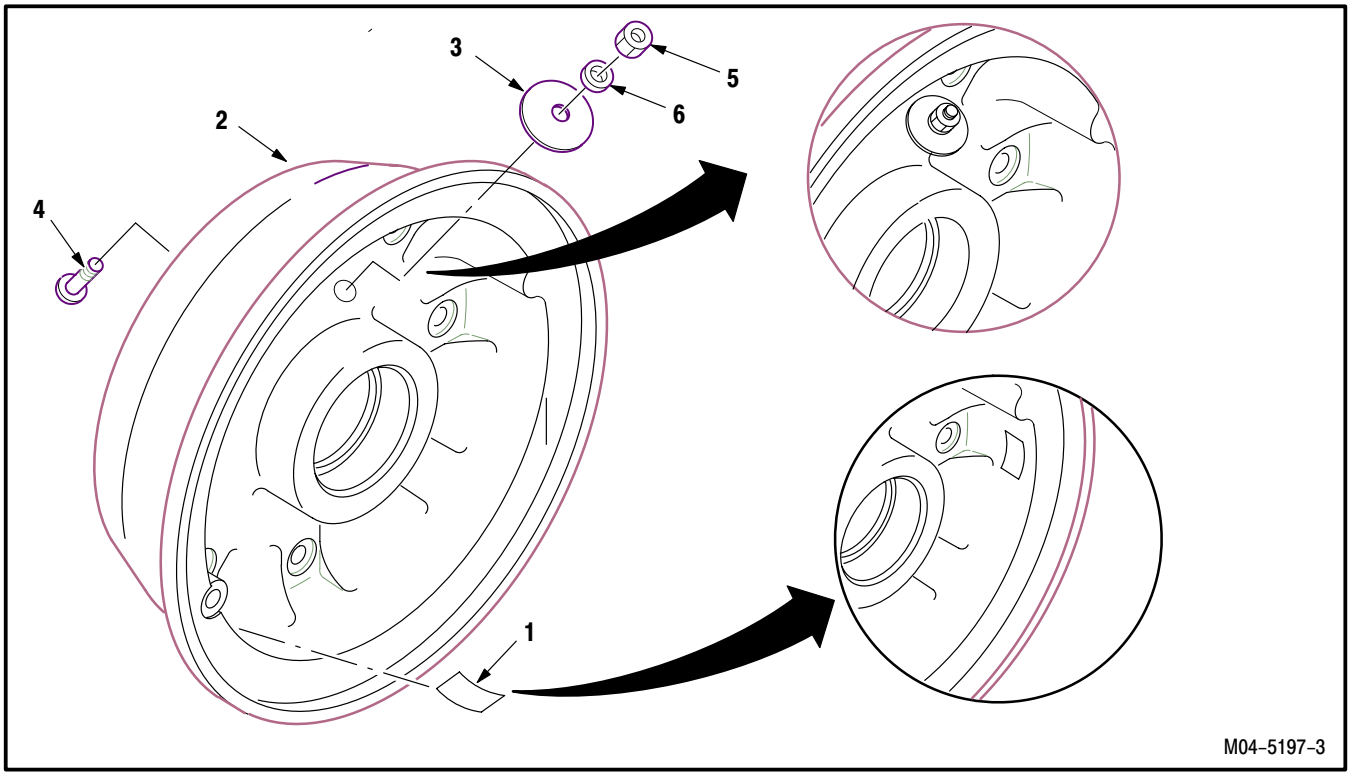
d. **Install new instruction plate (1) on main landing gear wheels (2).**

(1) Lightly abrade wheels (2) in same location as old plate (1). Use cloth (item 48, App F).

(2) Remove lining from back side of plate (1).

(3) Install plate (1) on wheel (2) as close as possible to tire valve assembly location.

(4) Place a bead of adhesive around the edge of plate (1). Use adhesive (item 12, App F).



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3.7A. MAIN LANDING GEAR WHEEL REPAIR (GOODYEAR/ABSC) (AVIM) – continued

NOTE

If wheel is not installed on helicopter, rollers shall be protected (TM 55-1500-322-24).

e. **Install main landing gear wheel tapered cone and rollers (Goodyear/ABSC)** (para 3.10)**.**

f. **Install main landing gear disk key assembly (Goodyear/ABSC)** (para 3.9)**.**

g. **Install main landing gear tire valve assembly (Goodyear/ABSC)** (para 3.8)**.**

h. **Install main landing gear tire (Goodyear/ABSC)** (para 3.7)**.**

END OF TASK

3.8. MAIN LANDING GEAR TIRE VALVE ASSEMBLY REPLACEMENT (GOODYEAR/ABSC)

3.8.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.8.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Pneumatic tire valve repair tool (item 260, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Materials/Parts:

Packing
Leak test compound (item 109, App F)
Petrolatum (item 138, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.67	Main landing gear wheel jacked (axle jack)

3.8.3. Removal

WARNING

Deflate tire before handling wheel. Pressure on loosened valve core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.

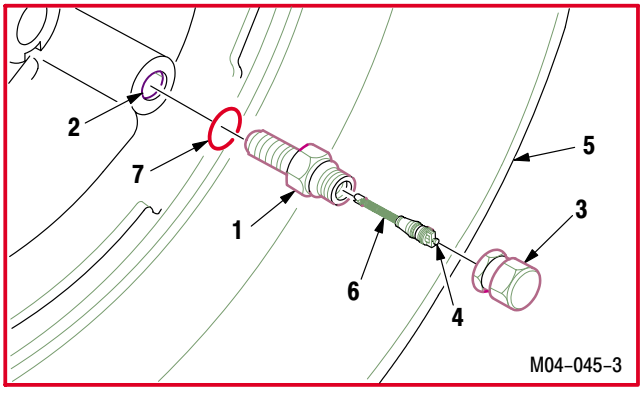
a. **Remove valve (1) from outer half wheel stem boss (2).**

(1) Remove valve cap (3) from valve (1).

(2) Press valve core end (4) to deflate tire (5).

(3) Remove valve core (6) from valve (1). Use tire valve tool.

(4) Remove valve (1) and packing (7) from stem (2). Discard packing (7).



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3.8. MAIN LANDING GEAR TIRE VALVE ASSEMBLY REPLACEMENT (GOODYEAR/ABSC) – continued

3.8.4. Cleaning

a. **Clean lower valve threads** (para 1.47)**.**

3.8.5. Inspection

a. **Check threads and area around hole for cracks and distortions.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

3.8.6. Installation



a. **Install valve (1) in stem (2).** Torque valve (1) to **60 INCH-POUNDS**.

(1) Lubricate new packing (7) and threads of valve (1). Use petrolatum (item 138, App F).

(2) Install packing (7) on valve (1).

(3) Install valve (1) in stem (2).

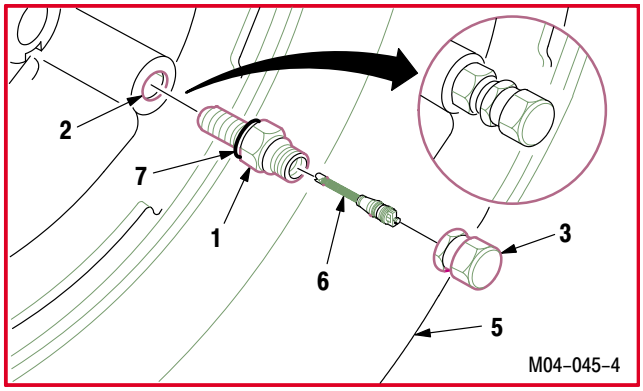
(4) Install valve core (6) in valve (1). Use tire valve tool.

(5) Torque valve (1) to **60 INCH-POUNDS**. Use torque wrench.

(6) Inflate tire (5) to **105 ±5 psi**. Use inflator assembly and nitrogen truck.

(7) Check for leaks around valve (1). Use leak test compound (item 109, App F).

(8) Install cap (3) on valve (1).



b. **Inspect (QA).**

c. **Remove main landing gear jack** (para 1.67)**.**

END OF TASK

3.9. MAIN LANDING GEAR WHEEL DISK DRIVE KEY ASSEMBLY REPLACEMENT (GOODYEAR/ABSC)

3.9.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.9.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.7	Main landing gear tire removed

CAUTION

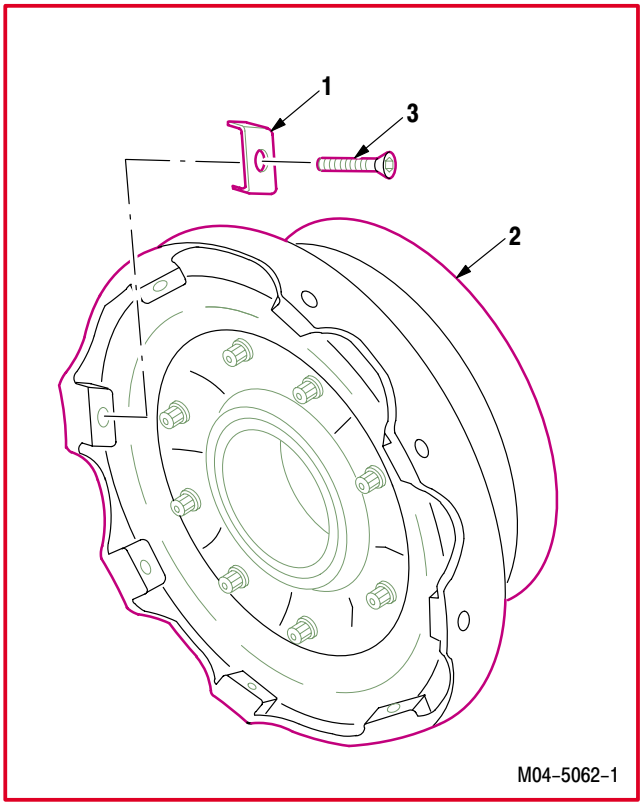
Main landing gear wheel assembly parts (bolts and disk drive keys), that are manufactured by one company cannot be intermixed with wheel assembly parts which are manufactured by a different company.

3.9.3. Removal

a. **Remove eight disk drive keys (1) from wheel inner half (2).**

(1) Remove eight screws (3) from keys (1) and wheel (2).

(2) Remove keys (1).



GO TO NEXT PAGE

3.9. MAIN LANDING GEAR WHEEL DISK DRIVE KEY ASSEMBLY REPLACEMENT (GOODYEAR/ABSC) – continued

3.9.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.9.5. Inspection

a. **Check removed and attaching parts for cracks.** None allowed.

b. **Check threads and area around screw thread insert for cracks and distortions** (para 3.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

3.9.6. Installation

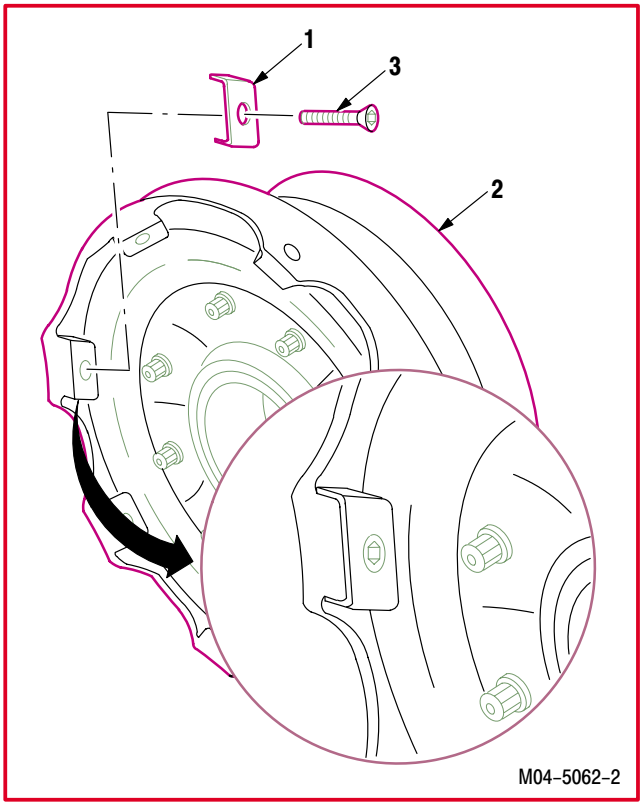
a. **Install eight keys (1) to wheel inner half (2).**

(1) Aline keys (1) to wheel (2).

(2) Install eight screws (3) through keys (1) and wheel (2).

b. **Inspect (QA).**

c. **Install main landing gear tire** (para 3.7)**.**



END OF TASK

3.10. MAIN LANDING GEAR WHEEL TAPERED CONE AND ROLLERS REMOVAL/INSTALLATION (NINE-BOLTS)

3.10.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.10.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 55-1500-322-24
TM 55-2620-200-24

Materials/Parts:

Gasket (2)
Grease (item 87, App F)

Personnel Required:

67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.6	Main landing gear wheel and tire removed

CAUTION

Wheel assembly parts (cones and rollers, bolts, gaskets, retaining rings, snap rings) manufactured by one company cannot be intermixed with parts manufactured by a different company.

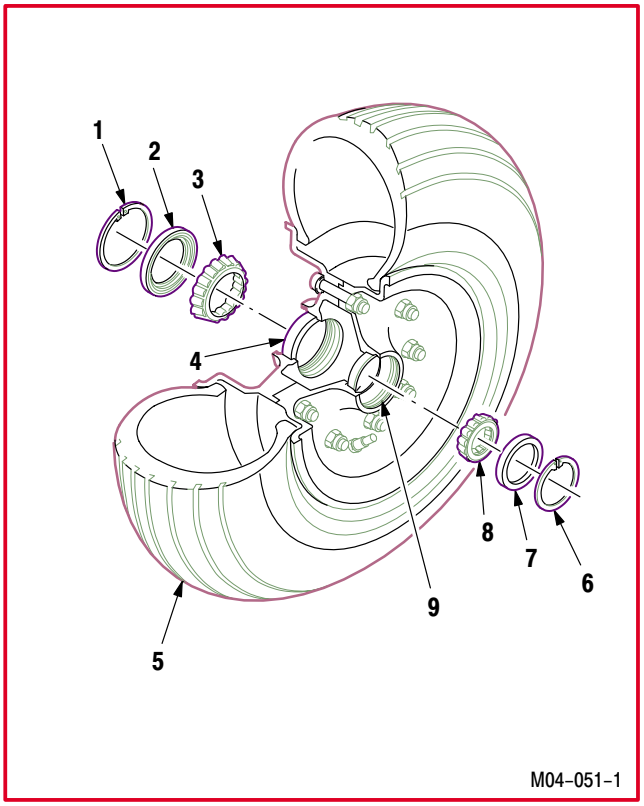
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3.10. MAIN LANDING GEAR WHEEL TAPERED CONE AND ROLLERS REMOVAL/INSTALLATION (NINE-BOLTS) – continued

3.10.3. Removal

a. **Remove retaining ring (1), gasket (2), and tapered cone and rollers (3) from tapered roller cup (4) of wheel (5).**

b. **Remove snap ring (6), gasket (7), and tapered cone and rollers (8) from tapered roller cup (9) of wheel (5).**



3.10.4. Cleaning

CAUTION

Do not spin rollers with compressed air. This could damage unlubricated rollers.

a. **Clean rollers and removed and attaching parts** (para 1.47)**.**

3.10.5. Inspection

a. **Check tapered cone and rollers for wear, fretting, and looseness.** None allowed.

b. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cord, and contamination** (TM 55-2620-200-24)**.**

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3.10. MAIN LANDING GEAR WHEEL TAPERED CONE AND ROLLERS REMOVAL/INSTALLATION (NINE-BOLTS) – continued

3.10.6. Installation

a. **Grease rollers (3) and (8)** (para 3.15)**.**



b. **Coat cups (4) and (9), and new gaskets (2) and (7) with grease.** Use grease (item 87, App F).

c. **Install roller (8) and new gasket (7) in cup (9) of wheel (5).**

(1) Position roller (8) in cup (9).

(2) Install gasket (7) in cup (9). Ensure edge of gasket (7) is facing roller (8).

(3) Press gasket (7) in place with hand pressure.

(4) Install snap ring (6).

d. **Install roller (3) and new gasket (2) in cup (4) of wheel (5).**

(1) Position roller (3) in cup (4).

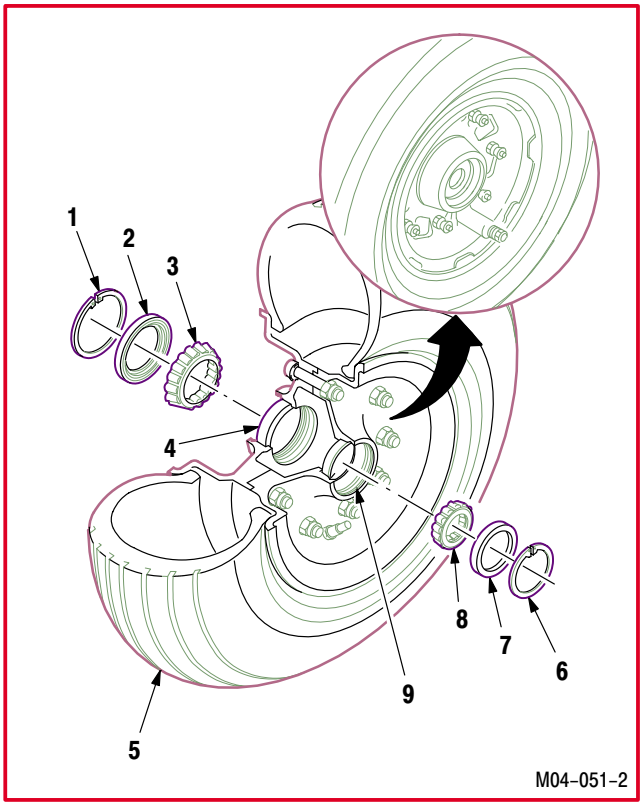
(2) Install gasket (2) in cup (4). Ensure edge of gasket (2) is facing roller (3).

(3) Press gasket (2) in place with hand pressure.

(4) Install retaining ring (1).

e. **Inspect (QA).**

f. **Install main landing gear wheel and tire** (para 3.6)**.**



END OF TASK

3.11. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (PARKER-HANNIFIN)

3.11.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.11.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Tire bead breaker (item 30, App H)
Tire inflation cage (item 49, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Pneumatic tire valve repair tool (item 260, App H)
Adjustable air filtering respirator (item 262, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
0 - 600 inch-pound 3/8-inch drive dial indicator torque wrench (item 447, App H)

Materials/Parts:

Packing
Antiseize compound (item 26, App F)
Antiseize compound (item 27, App F)
Grease (item 87, App F)
Leak test compound (item 109, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
3.6	Main landing gear wheel and tire removed
3.15	Main landing gear wheel tapered cone and rollers packed

CAUTION

Main landing gear wheel assembly parts (bolts, nuts, bearings, and air valves), that are manufactured by one company cannot be intermixed with wheel assembly parts which are manufactured by a different company.

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3.11. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

3.11.3. Removal

WARNING

- **Deflate tire before handling the wheel. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate. Personnel nearby could be injured by flying parts. If injury occurs, seek medical aid.**
- **Do not remove valve core from stem boss until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.**

a. **Break tire bead (1).** Use bead breaker.

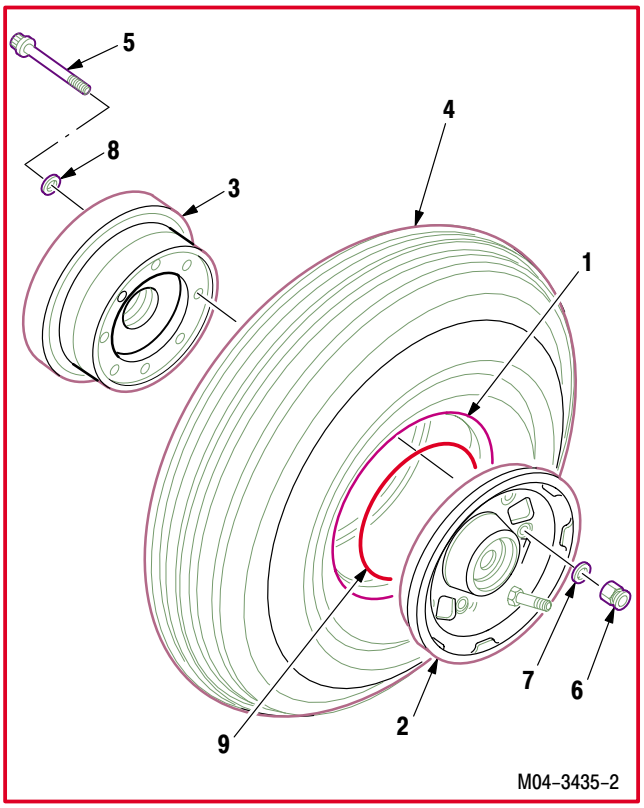
b. **Remove outer half wheel (2) and inner half wheel (3) from tire (4).**

(1) Hold nine shear bolts (5). Remove nuts (6) and washers (7).

(2) Remove nine bolts (5) and washers (8).

(3) Remove wheels (2) and (3) from tire (4).

(4) Remove and discard packing (9) from wheel (2).



3.11.4. Cleaning

a. **Remove old antiseize compound from bolts, nuts, and bolt holes** (para 1.47)**.**

b. **Clean dirt and grease from wheels** (para 1.47)**.**

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3.11. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

3.11.5. Inspection

a. **Check wheels for cracks, dents, or nicks** (TM 1-1500-204-23)**.**

b. **Check wheels for galling and discoloration caused by overheating.** None allowed.

c. **Check wheels for corrosion** (para 1.49)**.**

d. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cord, and contamination** (TM 55-2620-200-24)**.**

3.11.6. Installation



a. **Install new packing (9) on wheel (3).**

(1) Lubricate new wheel packing (9). Use grease (item 87, App F).

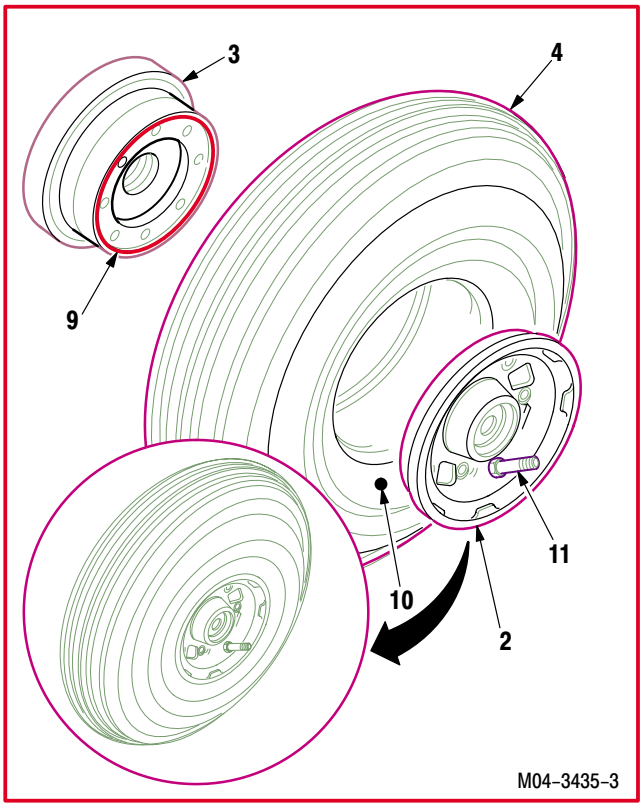
(2) Install packing (9) on shoulder of inner wheel (3).

b. **Install wheel (2) in tire (4).**

(1) Aline dot (10) on tire (4) with valve (11).

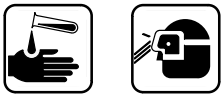
c. **Install wheel (3) in tire (4).**

(1) Aline bolt holes in wheel halves (2) and (3).



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3.11. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued



d. **Coat threads of nine bolts (5).** Use antiseize compound (item 26, App F).



e. **Coat bearing surfaces of nine bolts (5), washers (7) and (8), and nuts (6).** Use antiseize compound (item 27, App F).

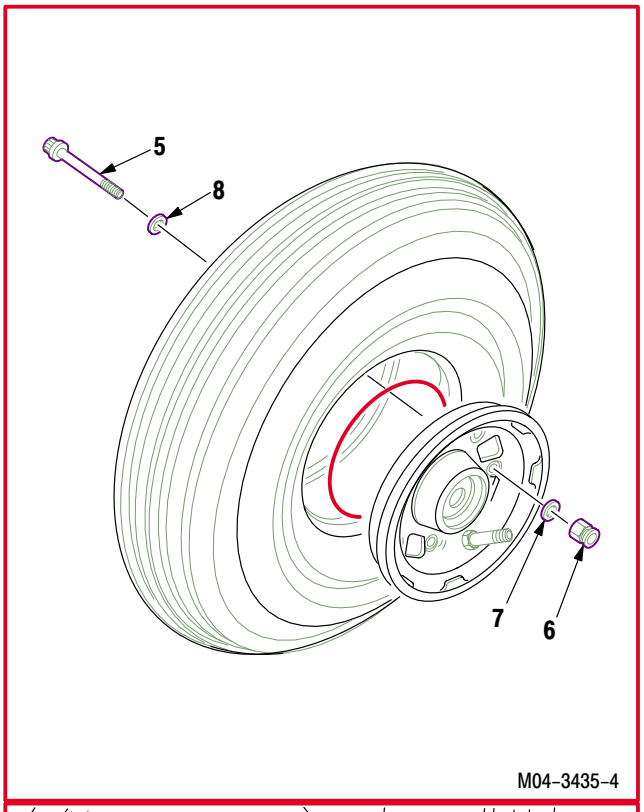
f. **Install nine bolts (5), washers (8) and (7), and nuts (6).** Torque nuts (6) to **300 INCH-POUNDS**.

(1) Install recessed washers (8) on bolts (5) with recess against bolt (5) heads.

(2) Install nine bolts (5) and washers (8) through wheels (2) and (3).

(3) Hold nine bolts (5). Install nine washers (7) and nuts (6). Torque nuts (6) to **300 INCH-POUNDS**. Use torque wrench.

g. **Install valve core (12) in valve (11).** Use tire valve tool.



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3.11. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

WARNING

Wheel and tire must be in safety cage when tire is being inflated. Tire could blow off wheel, or wheel subassemblies could separate. Flying parts could injure personnel. If injury occurs, seek medical aid.

h. **Place tire (4) in cage (13)** (TM 55-2620-200-24)**.**

(1) Allow **30 MINUTES** before removing inflated tire from safety cage.

i. **Inflate tire (4) to 105 ±5 psi.**

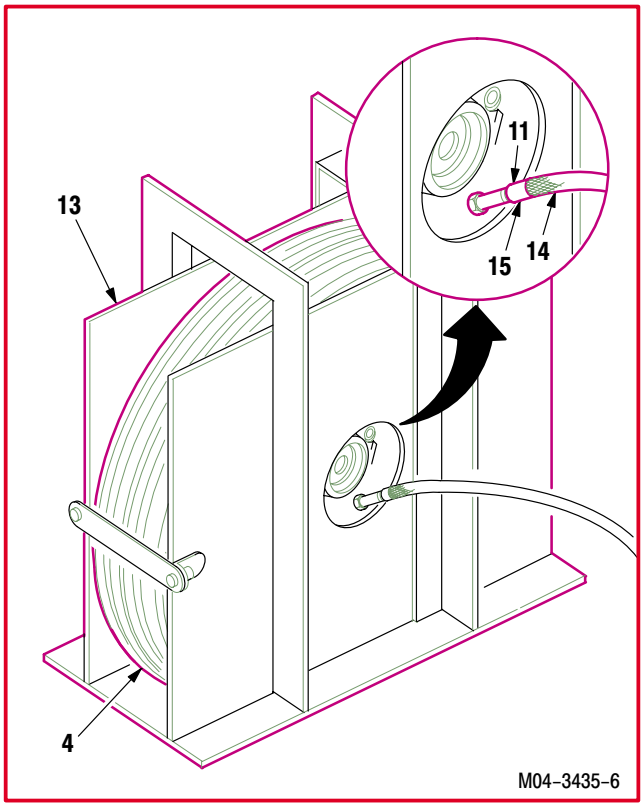
(1) Install hose (14) and chuck (15) on valve (11).

(2) Inflate tire (4) to **105 ±5 psi**. Use inflator assembly and nitrogen truck.

(3) Shut off inflator assembly.

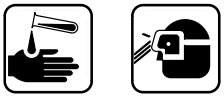
(4) Remove chuck (15) from valve (11).

j. **Remove tire (4) from cage (13).**



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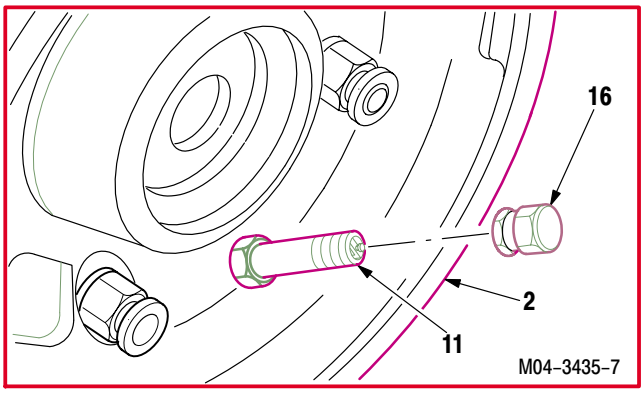
3.11. MAIN LANDING GEAR TIRE REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued



k. **Check valve (11) and wheel (2) rim for leaks.** Use leak test compound (item 109, App F).

NOTE

This step is typical for eight–bolt or nine–bolt wheels. If wheel is to be transported or stored prior to installation, reduce air pressure to 20 psi and tag assembly stating pressure.



l. **Install valve cap (16) on valve (11).**

m. **Inspect (QA).**

n. **Install main landing gear wheel and tire** (para 3.6)**.**

END OF TASK

3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM)

3.11A.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.11A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
0.000 - 6.000-inch outside micrometer caliper set (item 52, App H)
Metal stamping die set (item 107, App H)
0.6300 - 1.0000-inch cylinder gage (item 142, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Name Plate (2)
Adhesive (item 2, App F)
Brush (item 34, App F)
Cloth (item 48, App F)
Cloth (item 50, App F)
Cloth (item 52, App F)
Corrosion resistant coating (item 66, App F)
Epoxy primer coating kit (item 78, App F)
Polyurethane coating (item 141, App F)
Remover (item 149, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 1-1520-264-23
TM 55-1500-322-24
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
3.11	Main landing gear tire removed (Parker-Hannifin)
3.12	Main landing gear tire valve assembly removed (Parker-Hannifin)
3.13	Main landing gear wheel machine key assembly removed (Parker-Hannifin)
3.14	Main landing gear wheel tapered cone and rollers removed (Parker-Hannifin)

WARNING

Injury to personnel and damage to equipment may occur if wheel halves are not inspected whenever wheel is disassembled. Make sure wheel halves are inspected whenever wheel is disassembled.

CAUTION

Wheel assembly parts (wheel halves, bolts, and gaskets) manufactured by one company cannot be intermixed with parts manufactured by a different company.

GO TO NEXT PAGE

3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM) – continued

3.11A.3. Removal

NOTE

This step is typical for both inboard and outboard main landing gear wheels.

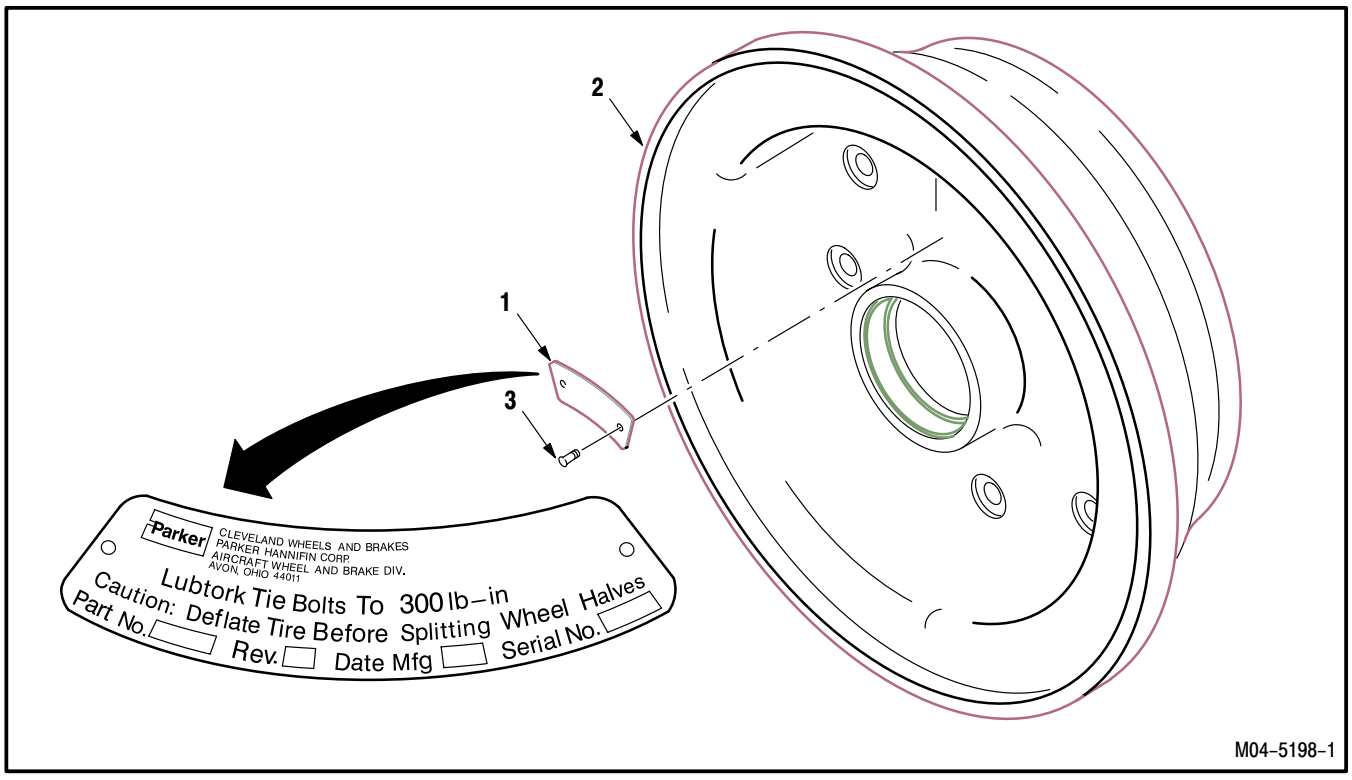
a. **Remove main landing gear wheel name plate (1) from main landing gear wheels (2).**

(1) Record all data found on existing name plate (1)**.**

(2) Remove two drive screws (3) from name plate (1) and wheels (2).

(3) Peel up corner of plate (1). Use putty knife.

(4) Remove and discard plate (1) from main landing gear wheels (2).





b. **Remove paint from wheels (2).** Use remover (item 149, App F).

c. **Remove paint residue from wheels (2).** Use cloth (item 52, App F).

d. **Remove main landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**

GO TO NEXT PAGE

3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM) – continued

3.11A.4. Cleaning

a. **Clean removed and attaching parts.** (para 1.47)**.**

3.11A.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check wheels for cracks or structural damage by fluorescent penetrant inspection method** (TM 1-1520-264-23)**.**

c. **Check wheels for scratches, nicks, or pits.** Repair per step 3.7A.6.

d. **Check tire valve for stripped or crossed threads.** None allowed.

e. **Inspect wheel bearing cup housing bore(s) for damage.**

(1) Diameter of (Parker/Hannifin) inboard wheel mating bore shall not exceed **3.3731 INCHES** maximum. Use appropriate cylinder gage and caliper set.

(2) Diameter of (Parker/Hannifin) outboard wheel mating bore shall not exceed **2.5601 INCHES** maximum. Use appropriate cylinder gage and caliper set.

3.11A.6. Repair

WARNING

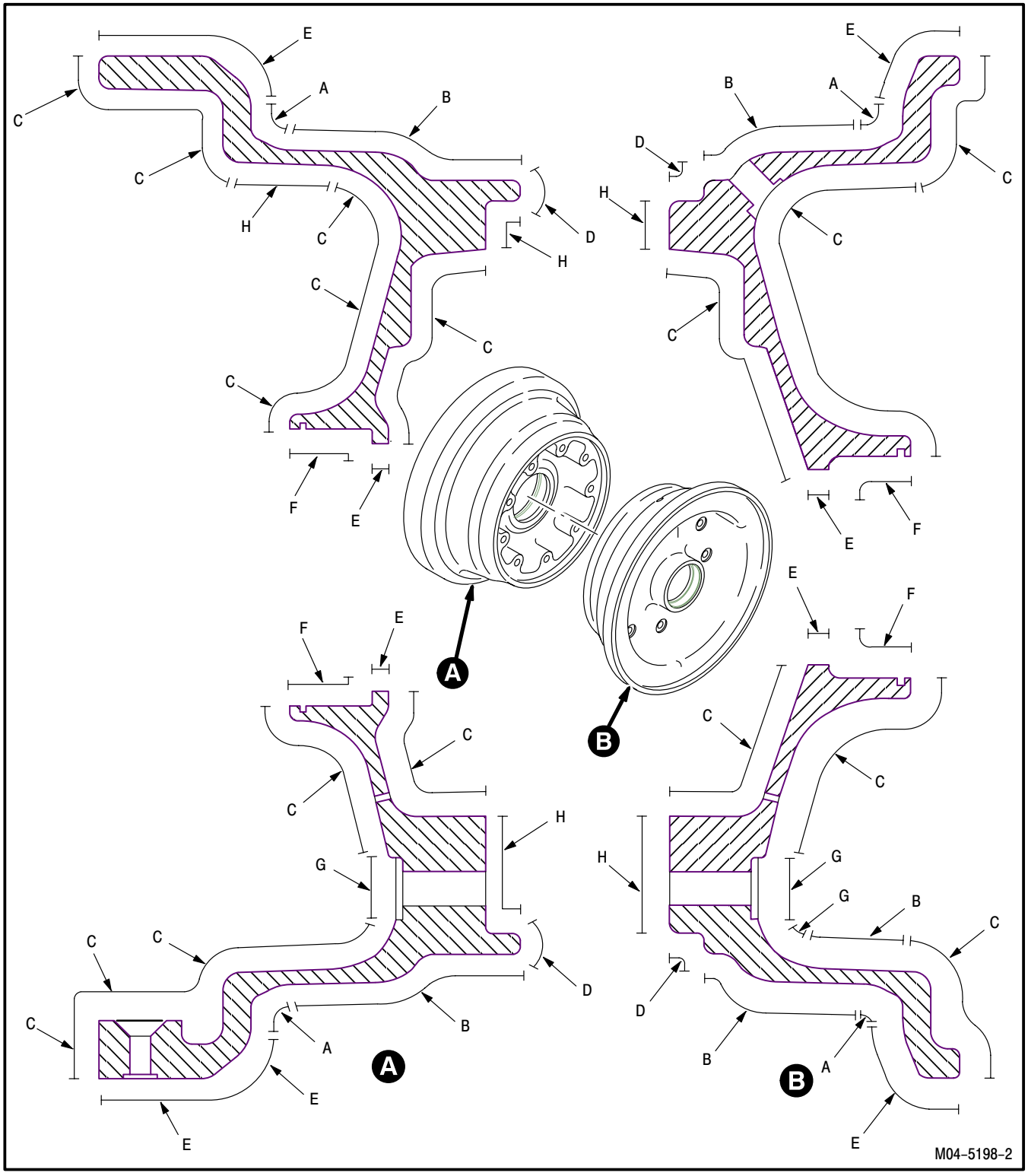
Injury to personnel and damage to equipment may occur if hardware is reused on wheel. Replace all bolts and nuts. If injury occurs, seek medical aid.

NOTE

- Inspection areas are different for (Goodyear/ABS) and (Parker-Hannifin) wheels. See correct figure when repairing wheels.
- Wheels are not a matched set and can be replaced individually provided correct part number and manufacturer is used.

GO TO NEXT PAGE

3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM) – continued



GO TO NEXT PAGE

3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM) – continued

a. **Blend or polish scratches, nicks, or pits per the following limits:**

(1) Repair area A as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.015 INCH** deep and **0.50 INCH** long. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

NOTE

Damage shall not be opposite other damage or previously repaired area.

(2) Repair area B as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.020 INCH** deep and **1.00 INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(3) Repair area C as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.020 INCH** deep and **1.00 INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

NOTE

Repair after blending and polishing, shall not interfere with sealing qualities in male/female mating surface areas.

(4) Repair area D as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits. or if sealing qualities in male/female mating surface area is not maintained.

(5) Repair area E as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.030 INCH** deep and **0.50 SQUARE INCH** in area, in a maximum of two places. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

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3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM) – continued

NOTE

Repair after blending and polishing shall not affect bearing cup retention.

(6) Repair area F as follows:

(a) Blend and polish scratches or corrosion. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs affect bearing cup retention.

(7) Repair area G as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep on face of each bolt boss. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(8) Repair area H as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep and **0.50 SQUARE INCH** on each interface boss. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

3.11A.7. Installation

a. **Install main landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**



b. **Paint main landing gear wheels (2).**

(1) Apply corrosion resistant coating to wheels (2) and allow to dry for a minimum of **ONE HOUR** at a minimum temperature of 65° F (18° C). Use corrosion resistant coating (item 66, App F).

NOTE

Apply primer to male/female mating surfaces and bolt bosses only.

(2) Apply primer to wheels (2)). Use epoxy primer coating kit (item 78, App F) (TM 55-1500-345-23).

(3) Apply paint to wheels (2). Use polyurethane coating (item 141, App F) (TM 55-1500-345-23).

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3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM) – continued

NOTE

This step typical for both inboard and outboard main landing gear wheels.

c. **Install new name plate (1) on main landing gear wheels (2).**

(1) Transcribe recorded data from old plate (1) to new plate (1). Use die set.

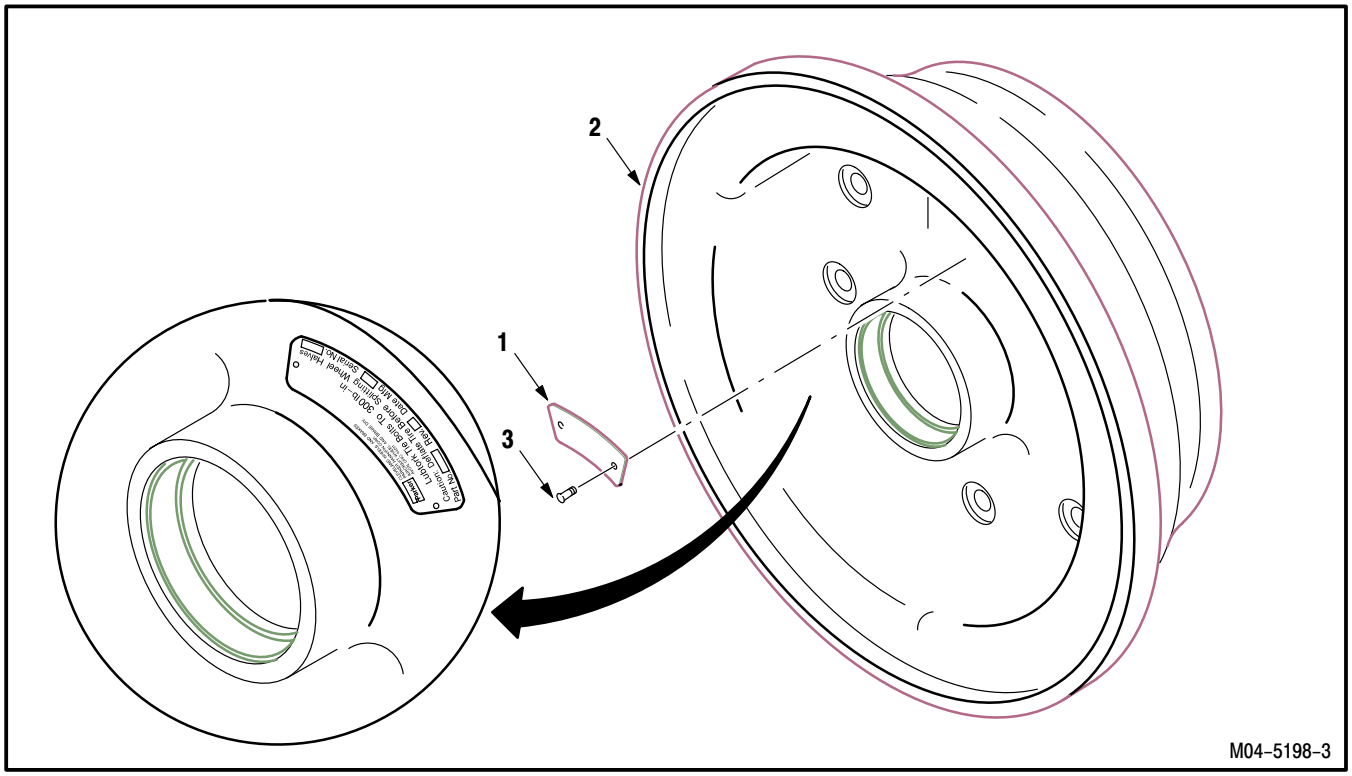
(2) Lightly abrade wheels (2) in same location as old plate (1). Use cloth (item 48, App F).



(3) Apply a smooth continuous coat of adhesive to mounting surface of plate (1). Use brush (item 34, App F) and adhesive (item 2, App F).

(4) Install plate (1) on wheel (2) in same location as old plate (1).

(5) Install two drive screws (3) coated with adhesive (item 2, App F) through plate (1) and wheel (2). (TM 1-1500-204-23).



GO TO NEXT PAGE

3.11A. MAIN LANDING GEAR WHEEL REPAIR (PARKER HANNIFIN) (AVIM) – continued

NOTE

If wheel is not installed on helicopter, rollers shall be protected (TM 55-1500-322-24).

d. **Install main landing gear wheel tapered cone and rollers (Parker-Hannifin)** (para 3.14)**.**

e. **Install main landing gear disk key assembly (Parker-Hannifin)** (para 3.13)**.**

f. **Install main landing gear tire valve assembly (Parker-Hannifin)** (para 3.12)**.**

g. **Install main landing gear tire (Parker-Hannifin)** (para 3.11)**.**

h. **Inspect (QA).**

END OF TASK

3.12. MAIN LANDING GEAR TIRE VALVE ASSEMBLY REPLACEMENT (PARKER-HANNIFIN)

3.12.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.12.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Pneumatic tire valve repair tool (item 260, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Packing
Hydraulic fluid (item 93, App F)
Leak test compound (item 109, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.67	Main landing gear jacked

3.12.3. Removal

WARNING

Deflate tire before handling wheel. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.

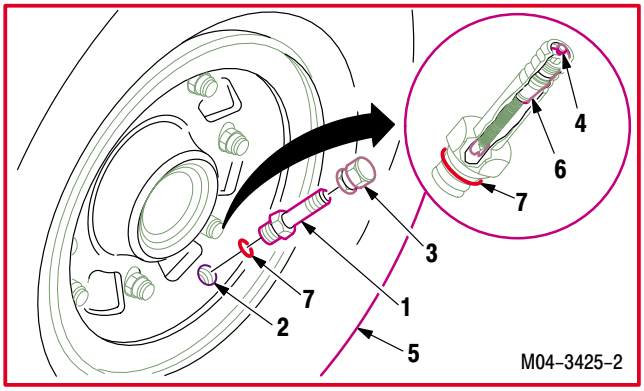
a. **Remove valve assembly (1) from outer half wheel stem boss (2).**

(1) Remove valve cap (3) from valve (1).

(2) Press valve assembly core end (4) to deflate tire (5).

(3) Remove valve assembly (6) from valve (1). Use tire valve tool.

(4) Remove valve (1) and packing (7) from wheel (2). Discard packing (7).



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3.12. MAIN LANDING GEAR TIRE VALVE ASSEMBLY REPLACEMENT (PARKER-HANNIFIN) – continued

3.12.4. Cleaning

a. **Clean lower valve threads** (para 1.47)**.**

3.12.5. Inspection

a. **Check threads and area around hole for cracks and distortions.** None allowed.

3.12.6. Installation



a. **Install valve (1) in wheel (2).** Torque valve (1) to **60 INCH–POUNDS**.

(1) Lubricate new packing (7) and threads of valve (1). Use hydraulic fluid (item 93, App F).

(2) Install packing (7) on valve (1).

(3) Install valve (1) in wheel (2).

(4) Install valve assembly (6) in valve (1). Use tire valve tool.

(5) Torque valve (1) to **60 INCH–POUNDS**. Use torque wrench.

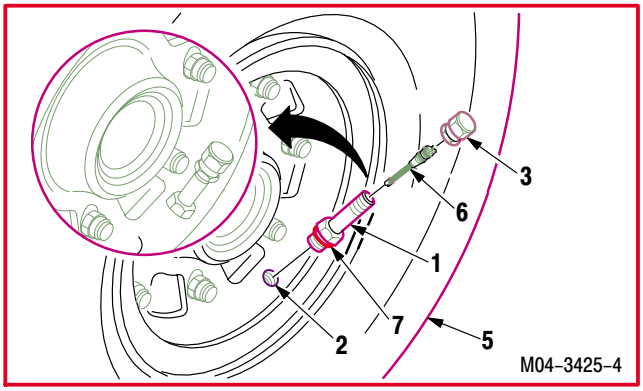
(6) Inflate tire (5) to **105 ±5 psi**. Use inflator assembly and nitrogen truck.

(7) Check for leaks around valve (1). Use leak test compound (item 109, App F).

(8) Install cap (3) on valve (1).

b. **Inspect (QA).**

c. **Remove main landing gear jack** (para 1.67)**.**



END OF TASK

3.13. MAIN LANDING GEAR WHEEL MACHINE KEY ASSEMBLY REPLACEMENT (PARKER-HANNIFIN)

3.13.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.13.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

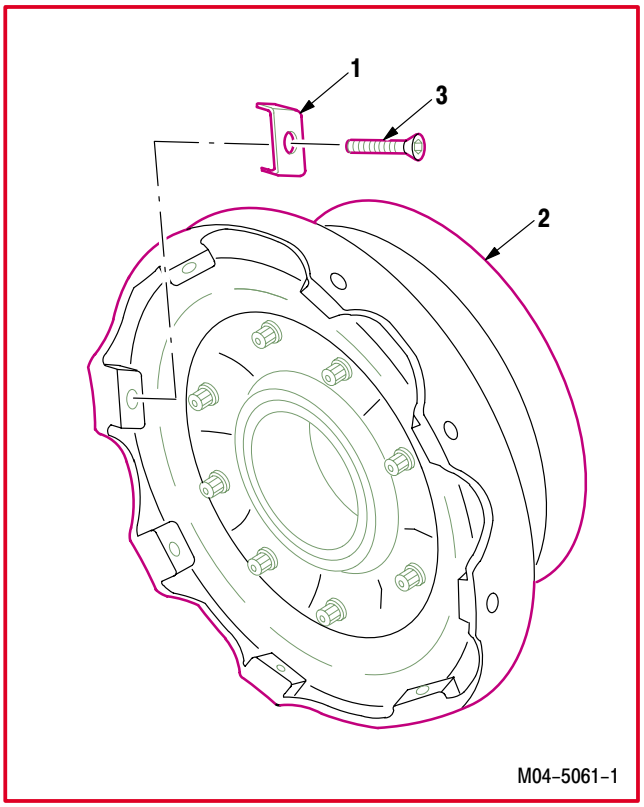
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.11	Main landing gear tire removed

CAUTION

Main landing gear wheel assembly parts (bolts and disk drive keys), that are manufactured by one company cannot be intermixed with wheel assembly parts which are manufactured by a different company.



3.13.3. Removal

a. **Remove eight machine keys (1) from wheel inner half (2).**

(1) Remove eight screws (3) from keys (1) and wheel (2).

(2) Remove keys (1).

GO TO NEXT PAGE

3.13. MAIN LANDING GEAR WHEEL MACHINE KEY ASSEMBLY REPLACEMENT (PARKER-HANNIFIN) – continued

3.13.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.13.5. Inspection

a. **Check removed and attaching parts for cracks.** None allowed.

b. **Check threads and area around screw thread inserts for cracks and distortions** (para 3.1)**.**

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

3.13.6. Installation

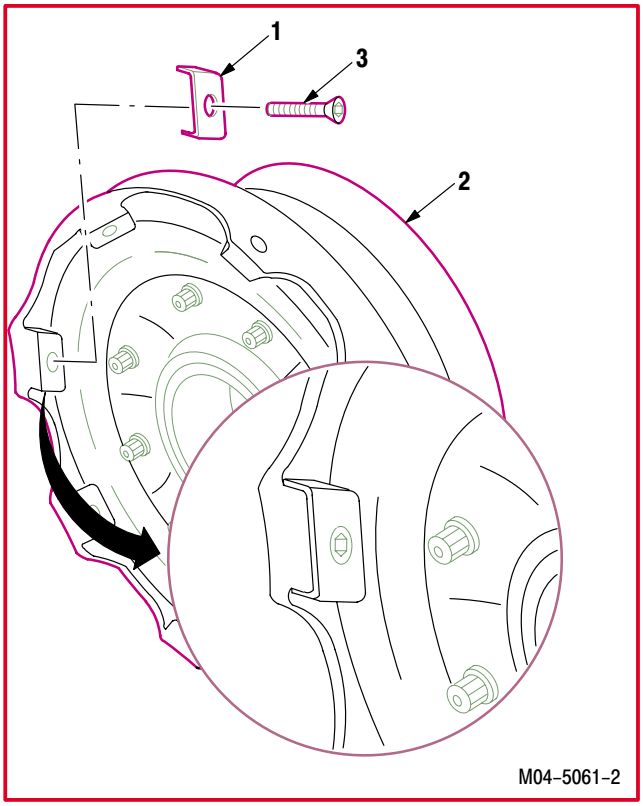
a. **Install eight keys (1) to wheel inner half (2).**

(1) Aline keys (1) to wheel (2).

(2) Install eight screws (3) through keys (1) and wheel (2).

b. **Inspect (QA).**

c. **Install main landing gear tire** (para 3.11)**.**



END OF TASK

3.14. MAIN LANDING GEAR WHEEL TAPERED CONE AND ROLLERS REMOVAL/INSTALLATION (EIGHT-BOLTS)

3.14.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.14.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 55-1500-322-24
TM 55-2620-200-24

Materials/Parts:

Seal (2)
Grease (item 87, App F)

Personnel Required:

67R	Attack Helicopter Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.6	Main landing gear wheel and tire removed

CAUTION

Wheel assembly parts (cones and rollers, bolts, gaskets, retaining rings, snap rings) manufactured by one company cannot be intermixed with parts manufactured by a different company.

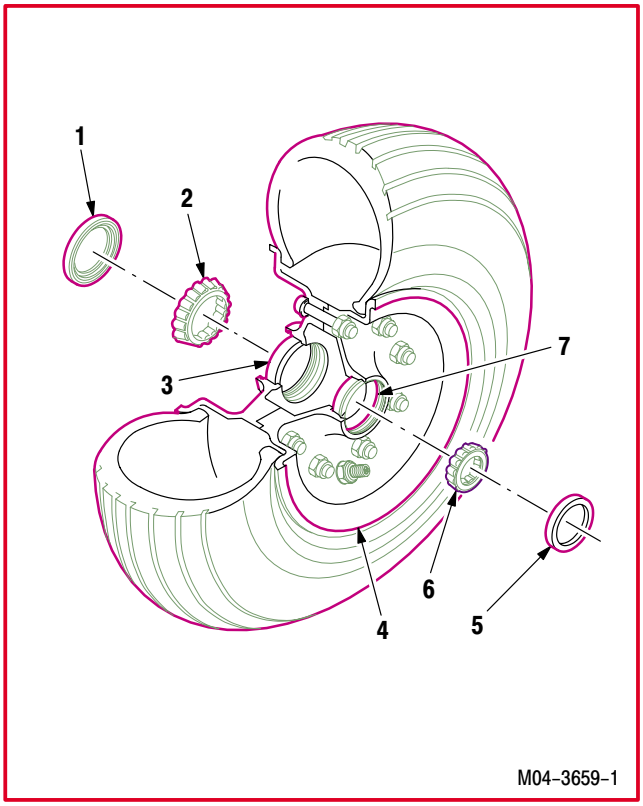
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3.14. MAIN LANDING GEAR WHEEL TAPERED CONE AND ROLLERS REMOVAL/INSTALLATION (EIGHT-BOLTS) – continued

3.14.3. Removal

a. **Remove special seal (1) and tapered cone and roller (2) from tapered roller cup (3) of wheel (4).**

b. **Remove seal (5) and tapered cone and roller (6) from tapered roller cup (7) of wheel (4).**



3.14.4. Cleaning

CAUTION

Do not spin rollers with compressed air. This could damage unlubricated rollers.

a. **Clean rollers and removed and attaching parts** (para 1.47)**.**

3.14.5. Inspection

a. **Check rollers for wear, fretting, and looseness.** None allowed.

b. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cord, and contamination** (TM 55-2620-200-24)**.**

c. **Check tapered roller cups for looseness, scratches, pitting, and signs of overheating. Replace cups** (TM 55-1500-322-24)**.**

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3.14. MAIN LANDING GEAR WHEEL TAPERED CONE AND ROLLERS REMOVAL/INSTALLATION (EIGHT-BOLTS) – continued

3.14.6. Installation

a. **Grease rollers (2) and (6)** (para 3.15)**.**



b. **Coat cups (3) and (7) and new seals (1) and (5) with grease.** Use grease (item 87, App F).

c. **Install roller (6) and seal (5) in cup (7) of wheel (4).**

(1) Position roller (6) in cup (7).

(2) Install seal (5) in cup (7). Ensure edge of seal (5) is facing roller (6).

(3) Press seal (5) in place with hand pressure.

d. **Install roller (2) and seal (1) in cup (3) of wheel (4).**

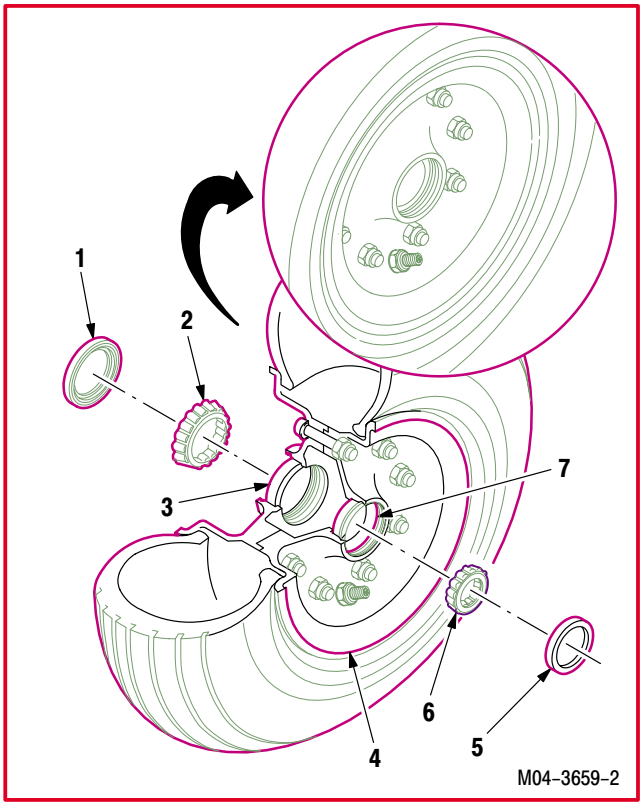
(1) Position roller (2) in cup (3).

(2) Install seal (1) in cup (3). Ensure edge of seal (1) is facing roller (2).

(3) Press seal (1) in place with hand pressure.

e. **Inspect (QA).**

f. **Install main landing gear wheel and tire** (para 3.6)**.**



END OF TASK

3.15. MAIN LANDING GEAR WHEEL TAPERED CONE AND ROLLERS PACKING

3.15.1. Description

This task covers: Tapered Cone and Rollers Packing.

3.15.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cloth (item 52, App F)
Grease (item 87, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.10	Main landing gear wheel tapered cones and rollers removed (nine–bolts)
	or
3.14	Main landing gear wheel tapered cones and rollers removed (eight–bolts)

3.15.3. Tapered Cone and Rollers Packing



a. **Pack tapered cone and rollers (1).**

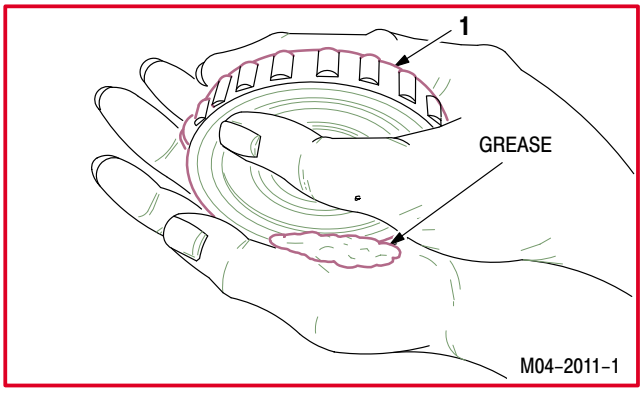
(1) Place grease in palm of glove. Use grease (item 87, App F).

(2) Using a cupping motion, force grease into large diameter side of roller (1).

(3) Turn roller (1) and repeat step a.(2) until grease protrudes from other side of roller (1).

(4) Continue turning and packing roller (1) until it is completely packed.

(5) Wipe excess grease from rollers. Use cloth (item 52, App F).



b. **Inspect (QA).**

END OF TASK

3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION

3.16.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.16.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
Scratch wire brush (item 44, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)
1/2-inch drive 1 3/4 - 4-inch socket wrench spanner attachment set (item 335, App H)
12-inch combination square (item 340, App H)
700 - 1600 inch-pound 1/2-inch drive click type torque wrench (item 433, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Cotter pin (2)
Packing (2)
Brush (item 34, App F)
Lubricant (item 116, App F)
Lubricating oil (item 119, App F)
Petrolatum (item 138, App F)
Sealing compound (item 178, App F)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
68H Aircraft Pneudraulics Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 9-1090-208-23-1
TM 11-1520-238-23-1
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
3.18	Shock strut removed
3.26	Wire strike cutter removed
3.66	Wheel brake removed
TM 11-1520-238-23-1	Radar jammer blower assembly removed (left trailing arm only)
TM 9-1090-208-23-1	Rounds counter mounting bracket and rounds counter removed (left trailing arm only)

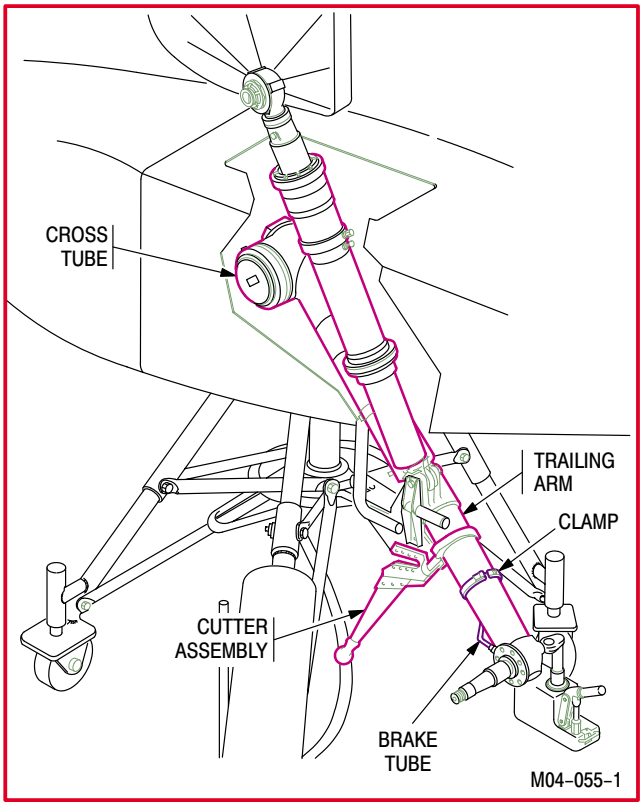
WARNING

FLIGHT SAFETY PART

The main landing gear subassembly contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

GO TO NEXT PAGE

3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued



NOTE

This task is typical for left and/or right side main landing gear trailing arm assemblies except as noted.

3.16.3. Removal

a. **Remove brake tube (1) and jumper (2) from trailing arm assembly (3).**

(1) Remove three nuts (4) from clamps (5).

(2) Remove three clamps (5).

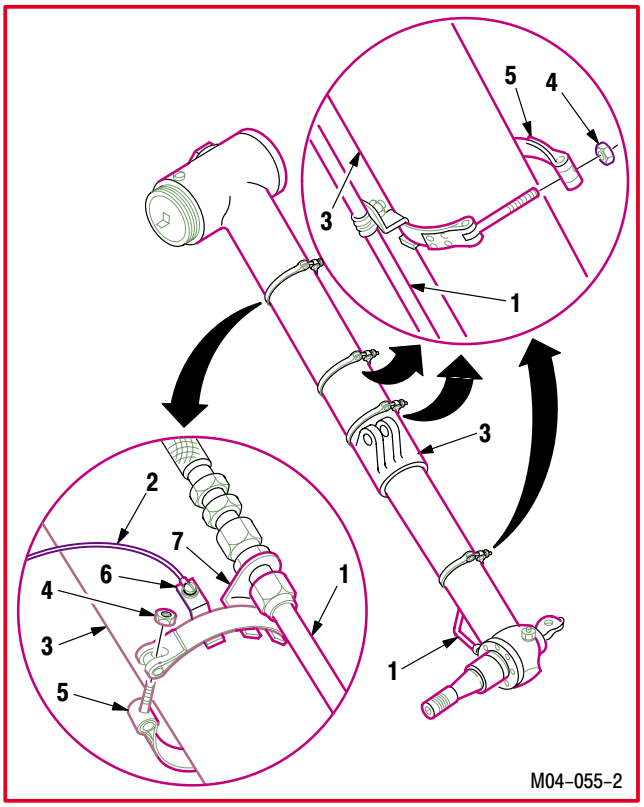
(3) Remove sealant from clamp (5), bracket (6), and bracket (7).

(4) Remove nut (4) from clamp (5).

(5) Remove clamp (5) from trailing arm (3).

(6) Reposition jumper (2) away from trailing arm (3).

(7) Reposition brake tube (1) away from trailing arm (3).



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3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued

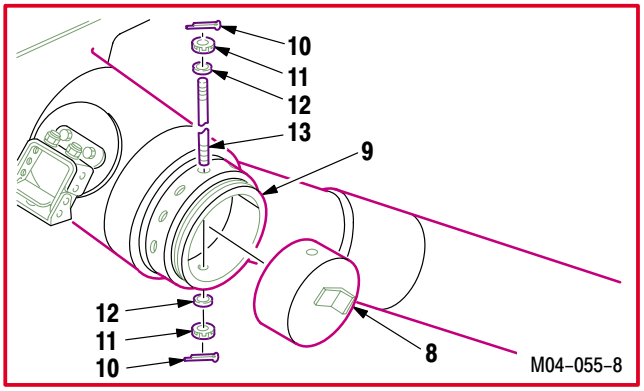
b. **Remove end cap (8) from cross tube (9).**

(1) Remove and discard two cotter pins (10).

(2) Remove two nuts (11) and washers (12) from threaded stud (13).

(3) Remove threaded stud (13) from end cap (8) and cross tube (9).

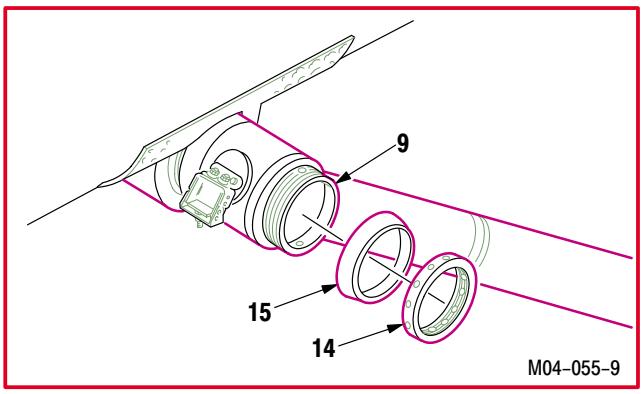
(4) Remove end cap (8) from cross tube (9).



c. **Remove retaining ring (14) and spacer ring (15) from cross tube (9).** Use spanner attachment set.

WARNING

Injury to personnel could occur during trailing arm removal. Trailing arm weighs about 50 pounds. Two persons are required to lift trailing arm from helicopter. If injury occurs, seek medical aid.



CAUTION

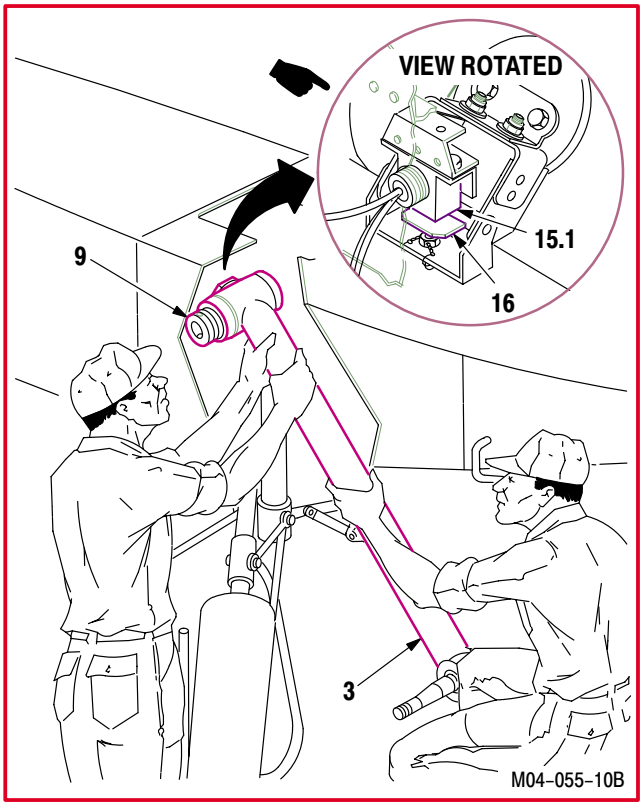
Squat switch and target could be damaged during removal of trailing arm assembly. Do not allow trailing arm to hang straight down. Squat switch and target are at upper end of trailing arm near cross tube.

d. **Remove trailing arm (3) from cross tube (9).**

(1) One person hold upper end of trailing arm (3).

(2) Second person hold lower end of trailing arm (3), taking care not to allow trailing arm (3) to hang vertical and damage squat switch (15.1) and target (16).

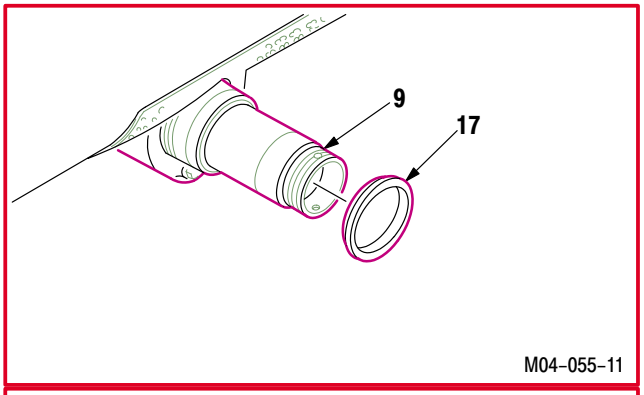
(3) Remove trailing arm (3) from cross tube (9).



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3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued

e. **Remove spacer ring (17) from cross tube (9).**



NOTE

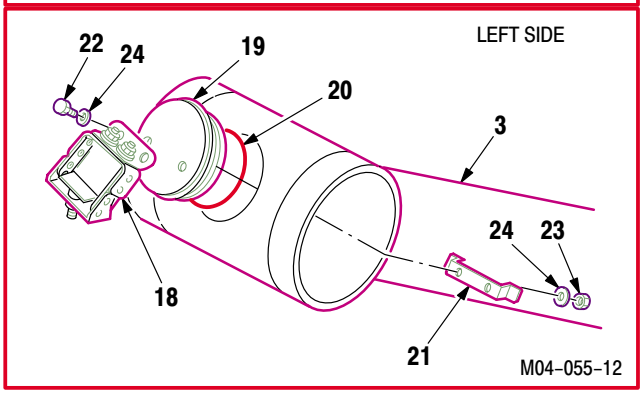
Squat switch is on left trailing arm cap. If left trailing arm is to be replaced, go to step f. If right trailing arm is to be replaced, go to step g.

f. **Remove squat switch bracket (18), cap (19), packing (20), and retainer (21) from trailing arm (3).**

(1) Hold two bolts (22). Remove two nuts (23), washers (24), and retainer (21) from bolts (22).

(2) Remove two bolts (22), washers (24), switch bracket (18), and cap (19) from trailing arm (3).

(3) Remove and discard packing (20) from cap (19).

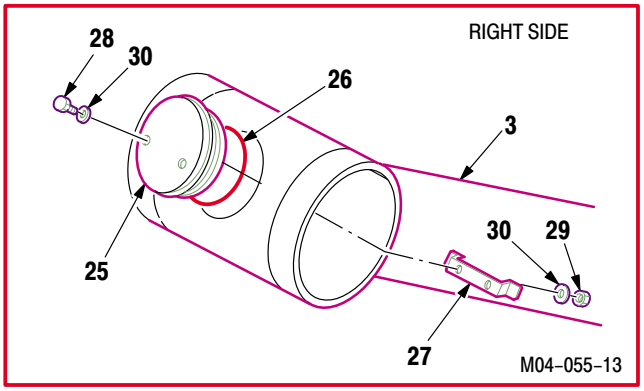


g. **Remove cap (25), packing (26), and retainer (27) from trailing arm (3).**

(1) Hold two bolts (28). Remove two nuts (29), washers (30), and retainer (27) from bolts (28).

(2) Remove two bolts (28), washers (30), and cap (25) from trailing arm (3).

(3) Remove and discard packing (26) from cap (25).



GO TO NEXT PAGE

3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued

3.16.4. Cleaning

a. **Clean attach points before trailing arm installation** (para 1.47)**.**

b. **Clean jumper bonding area** (para 1.47)**.**

3.16.5. Inspection

a. **Check attach points before trailing arm installation** (para 3.1)**.**

b. **Check trailing arm before installation.**

(1) Measure inside diameter of trailing arm upper attachment bushings. Bushing inside diameter shall not exceed **4.5067 INCHES**.

(2) Measure inside diameter of arm shock strut attachment bushings. Bushing inside diameter shall not exceed **1.2534 INCHES**; maximum allowable elongation is **0.002 INCH**.

c. **Check trailing arm for corrosion** (para 1.49)**.**

d. **Check trailing arm for nicks and scratches.** Maximum depth **0.015 INCH**. Blend out any nicks and scratches.

e. **Check axle for nicks and axially oriented scratches.** Maximum depth **0.005 INCH**.

f. **Check axle for circumferential scratches.** None allowed.

3.16.6. Installation

NOTE

Squat switch assembly is mounted on left trailing arm cap. If left trailing arm is to be replaced, perform steps b. through t. If right trailing arm is to be replaced, perform step a., and steps d. through q.

GO TO NEXT PAGE

3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued



a. **Install cap (25) packing (26) and retainer (27) on right trailing arm (3).** Torque two bolts (28) to **20 INCH-POUNDS**.

(1) Lubricate new packing (26). Use petrolatum (item 138, App F).

(2) Install packing (26) on cap (25).

(3) Install cap (25) on trailing arm (3).

(4) Install retainer (27) inside trailing arm (3) under cap (25). Install two bolts (28) through washers (30), cap (25), and retainer (27).

(5) Hold two bolts (28). Install washers (30) and nuts (29).

(6) Torque two bolts (28) to **20 INCH-POUNDS**. Use torque wrench.

b. **Install cap (19) and packing (20) with squat switch bracket (18) and retainer (21) on left trailing arm (3).**

(1) Lubricate new packing (20). Use petrolatum (item 138, App F).

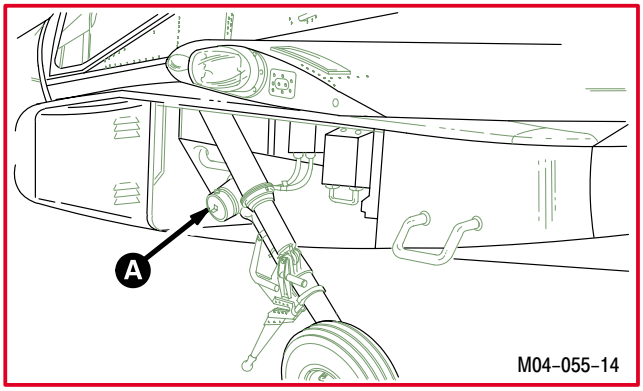
(2) Install packing (20) on cap (19).

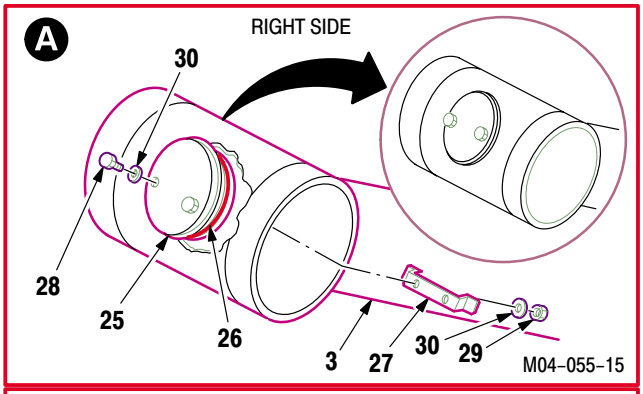
(3) Install cap (19) on trailing arm (3).

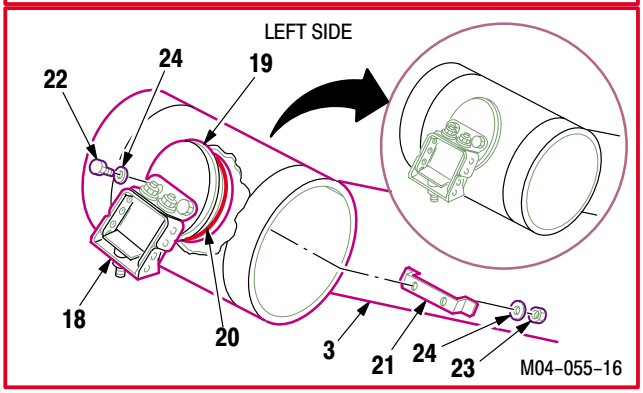
(4) Install bracket (18) on cap (19) so that face of bracket (18) is facing forward when trailing arm (3) is installed.

(5) Position retainer (21) inside trailing arm (3) under cap (19). Install two bolts (22) and washers (24) through bracket (18), cap (19), and retainer (21).

(6) Hold two bolts (22). Install two washers (24) and nuts (23). Do not tighten.







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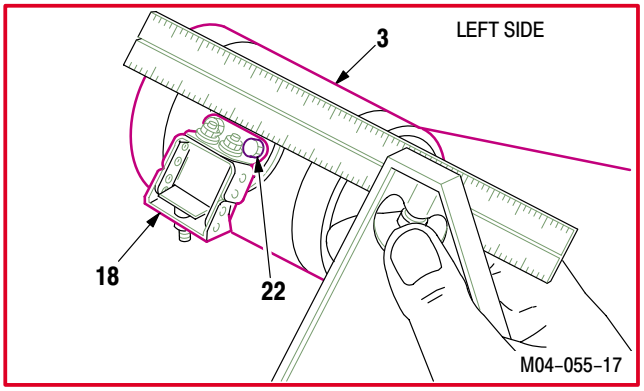
3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued

c. **Aline bracket (18) with center of trailing arm (3) and secure.** Torque two bolts (22) to **20 INCH-POUNDS**.

(1) Aline face of bracket (18) with center of trailing arm (3). Use combination square.

(2) Torque two bolts (22) to **20 INCH-POUNDS**. Use torque wrench.

(3) Check alinement (para 9.149).



d. **Inspect (QA).**

e. **Clean trailing arm (3)** (para 1.47)**.**



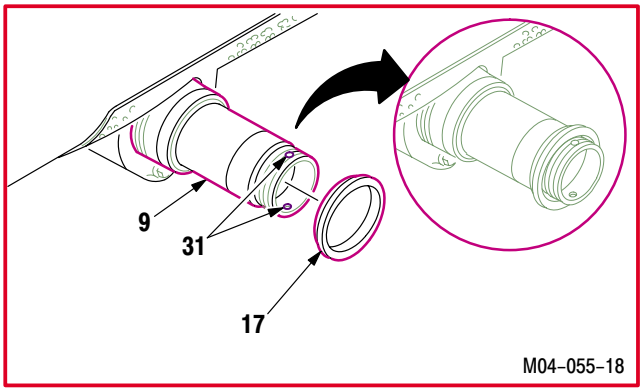
f. **Clean threads on cross tube (9).** Use lubricating oil (item 119, App F) and brush (item 34, App F) to remove dry film lubricant (para 1.47).

g. **Check threads on cross tube (9) for burrs at safety stud holes (31).**

h. **Check for cracks on cross tube (9).** None allowed.

i. **Install spacer ring (17) on cross tube (9).** Small side should face inboard.

j. **Inspect (QA).**



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3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued



WARNING

Injury to personnel could occur during trailing arm installation. Trailing arm weighs about 50 pounds. Two persons are required to lift trailing arm on helicopter. If injury occurs, seek medical aid.

CAUTION

Squat switch and target could be damaged during installation of trailing arm assembly. Do not allow trailing arm to hang straight down. Squat switch and target are at upper end of trailing arm near cross tube.

k. **Install trailing arm (3) on cross tube (9).** Torque retaining ring (14) to **1200 INCH-POUNDS**.

(1) Install trailing arm (3) on tube (9). Do not damage squat switch (15.1) and target (16).

(2) Install jack pad adapter (para 3.5).

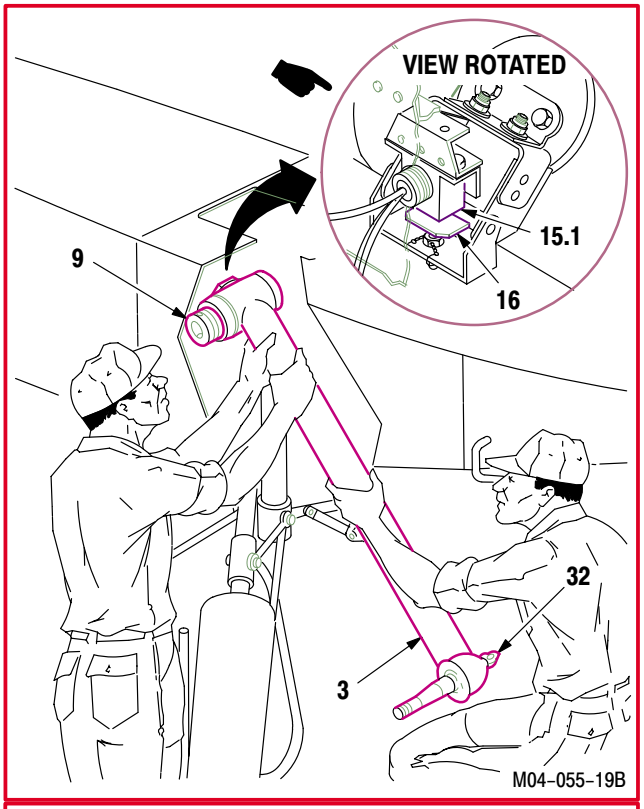
(3) Support trailing arm (3) at jack pad adapter (32) until shock strut can be installed.

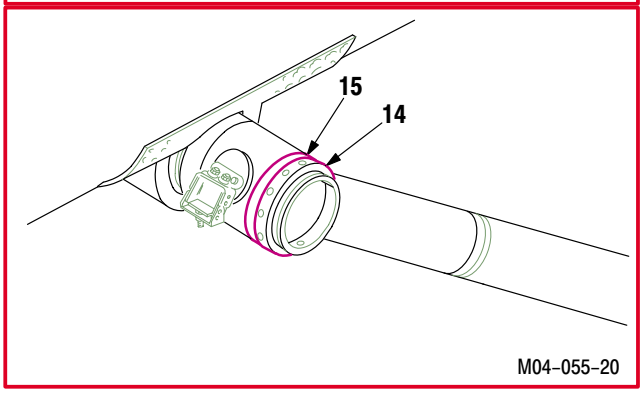
(4) Install spacer ring (15), small side out.

(5) Spray a light coat of lubricant on retaining ring (14) threads. Use lubricant (item 116, App F). Install wet.

(6) Install retaining ring (14). Torque to **1200 INCH-POUNDS**. Use spanner attachment set and torque wrench.

(7) Back off retaining ring (14) two holes.





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3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued

l. **Install end cap (8) in cross tube (9).** Torque two nuts (11) **65 to 70 INCH-POUNDS**.

(1) Install end cap (8) in tube (9).

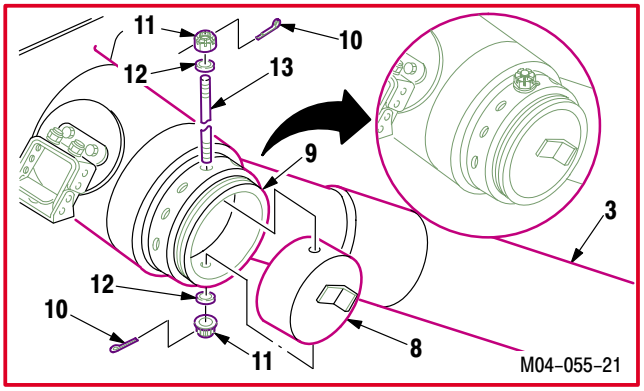
(2) Install threaded stud (13) through tube (9) and end cap (8).

(3) Install two washers (12) and nuts (11).

(4) Hold two nuts (11). Torque each nut (11) to **65 INCH-POUNDS**. Use torque wrench.

(5) Increase torque to aline cotter pin holes, but do not exceed **70 INCH-POUNDS**.

(6) Install two new cotter pins (10).





m. **Install brake tube (1) and jumper (2) on trailing arm (3).**

(1) Install jumper (2) with bracket (6) and brake tube (1) with bracket (7) under clamp (5).

(2) Install nut (4) on clamp (5).

(3) Perform electrical bond check on bonding jumper (2) (TM 55-1500-323-24).

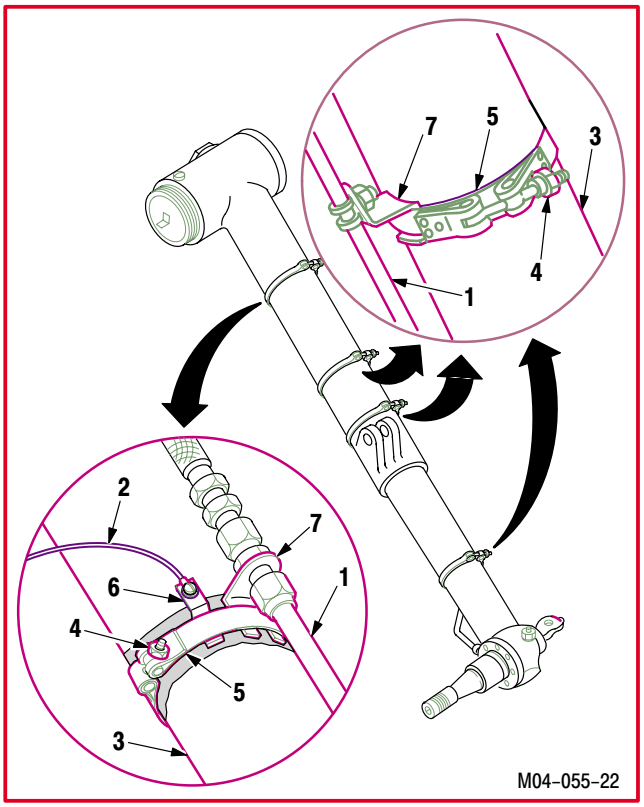
(a) Bond shall be **1.0 OHM** or less. Use multimeter.

(4) Seal jumper (2) and clamp (5) bonding area. Use sealing compound (item 178, App F).

(5) Install three clamps (5) on brackets (7).

(6) Install three nuts (4) on clamps (5).

n. **Inspect (QA).**



GO TO NEXT PAGE

3.16. MAIN LANDING GEAR TRAILING ARM ASSEMBLY REMOVAL/INSTALLATION – continued

o. **Install shock strut** (para 3.18)**.**

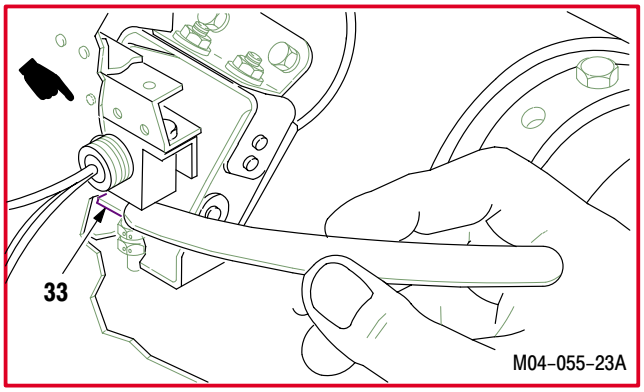
p. **Install wheel brake** (para 3.66)**.**

q. **Install cable cutter** (para 3.26)**.**

r. **Ensure that gap (33) between squat switch and target is between 0.150 to 0.190 INCH.** If necessary, adjust gap (para 9.149).

s. **Install radar jammer blower assembly (left trailing arm only)** (TM 11-1520-238-23-1)**.**

t. **Install rounds counter mounting bracket and rounds counter (left trailing arm only)** (TM 9-1090-208-23-1)**.**



END OF TASK

3.17. MAIN LANDING GEAR SQUAT SWITCH TARGET AND BRACKET DISASSEMBLY/ASSEMBLY

3.17.1. Description

This task covers: Disassembly. Assembly.

3.17.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.66	Helicopter jacked (tripod jacks)
2.2	Access door L115 open
3.18	Main landing gear shock strut removed
3.16	Main landing gear trailing arm and squat switch target bracket assembly removed

Materials/Parts:

Wire (item 226, App F)

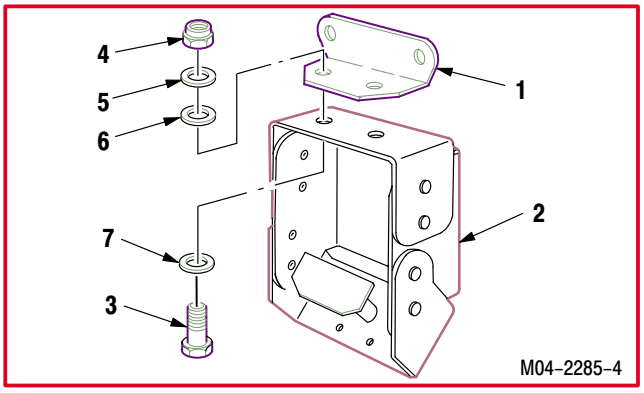
3.17.3. Disassembly

a. **Remove angle bracket (1) from squat switch bracket assembly (2).**

(1) Hold two bolts (3). Remove nuts (4), washers (5), and washers (6).

(2) Remove two bolts (3) and washers (7).

(3) Remove bracket (1) from bracket assembly (2).



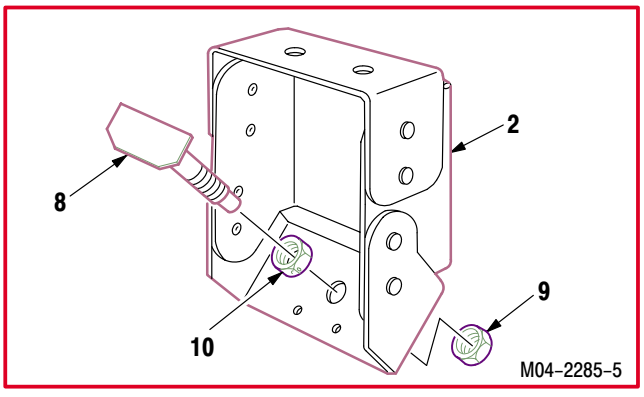
b. **Remove squat switch target (8) from bracket assembly (2).**

(1) Remove lockwire from nuts (9) and (10).

(2) Hold target (8). Remove nut (9).

(3) Remove target (8) from bracket assembly (2).

(4) Hold target (8). Remove nut (10).



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3.17 MAIN LANDING GEAR SQUAT SWITCH TARGET AND BRACKET DISASSEMBLY/ASSEMBLY – continued

3.17.4. Assembly

a. **Install target (8) in bracket assembly (2).**

(1) Install nut (10) on target (8).

(2) Position target (8) on bracket assembly (2).

(3) Hold target (8). Install nut (10).

b. **Install bracket (1) on bracket assembly (2).** Torque two nuts (4) to **60 INCH-POUNDS**.

(1) Install two bolts (3) and washers (7).

(2) Hold two bolts (3). Install bracket (1), washers (6), washers (5), and nuts (4).

(3) Torque two nuts (4) to **60 INCH-POUNDS**. Use torque wrench.

c. **Inspect (QA).**

d. **Install main landing gear trailing arm and squat switch target bracket assembly** (para 3.16)**.**

NOTE

Leave helicopter on jacks until squat switch target adjustments are made (para 9.149).

e. **Install main landing gear shock strut** (para 3.18)**.**

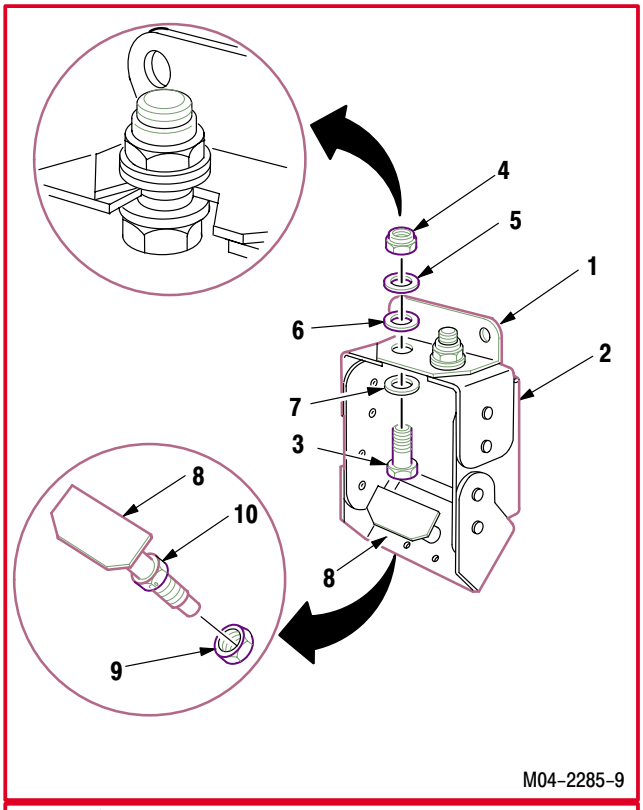
f. **Adjust squat switch target plate** (para 9.149)**.**

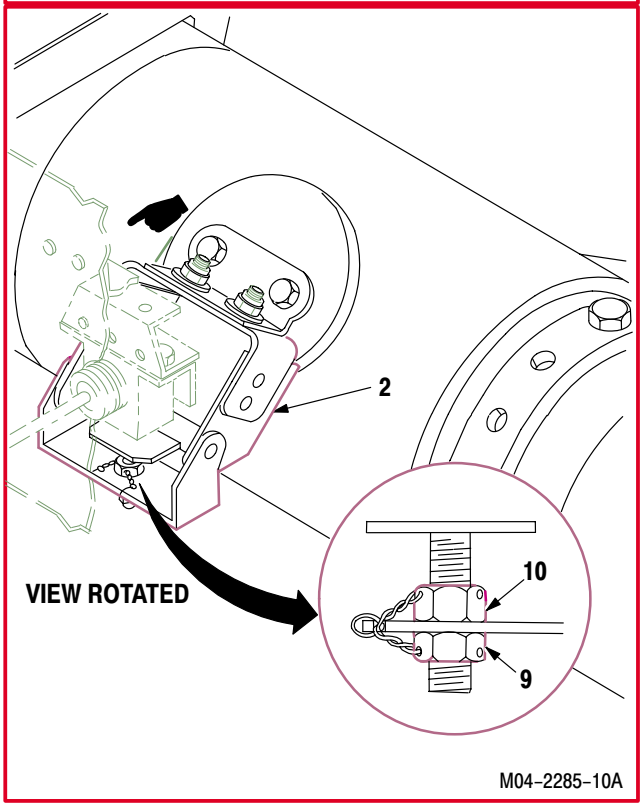
g. **Lockwire nuts (9) and (10) to bracket assembly (2).** Use wire (item 226, App F).

h. **Remove tripod jacks** (para 1.66)**.**

i. **Secure access door L115** (para 2.2)**.**

j. **Inspect (QA).**





END OF TASK

3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION

3.18.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.18.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
1/2 x 4-inch long driftpin (item 112, App H)
Chemical protective gloves (item 154, App H)
5-ton aircraft landing gear jack (item 183, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)
1 3/4 x 3/4-inch drive socket wrench socket (item 312A, App H)
100 - 500 foot-pound 3/4-inch drive click type torque wrench (item 438, App H)

Materials/Parts:

Cotter pin
Retaining ring
Antiseize compound (item 26, App F)
Sealing compound (item 174, App F)

Personnel Required:

67R	Attack Helicopter Repairer
	One person to assist
68X	Armament/Electrical System Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.66	Helicopter jacked (tripod jacks)
2.2	Access doors L135 and/or R135 opened; fairings L140 and/or R140 removed

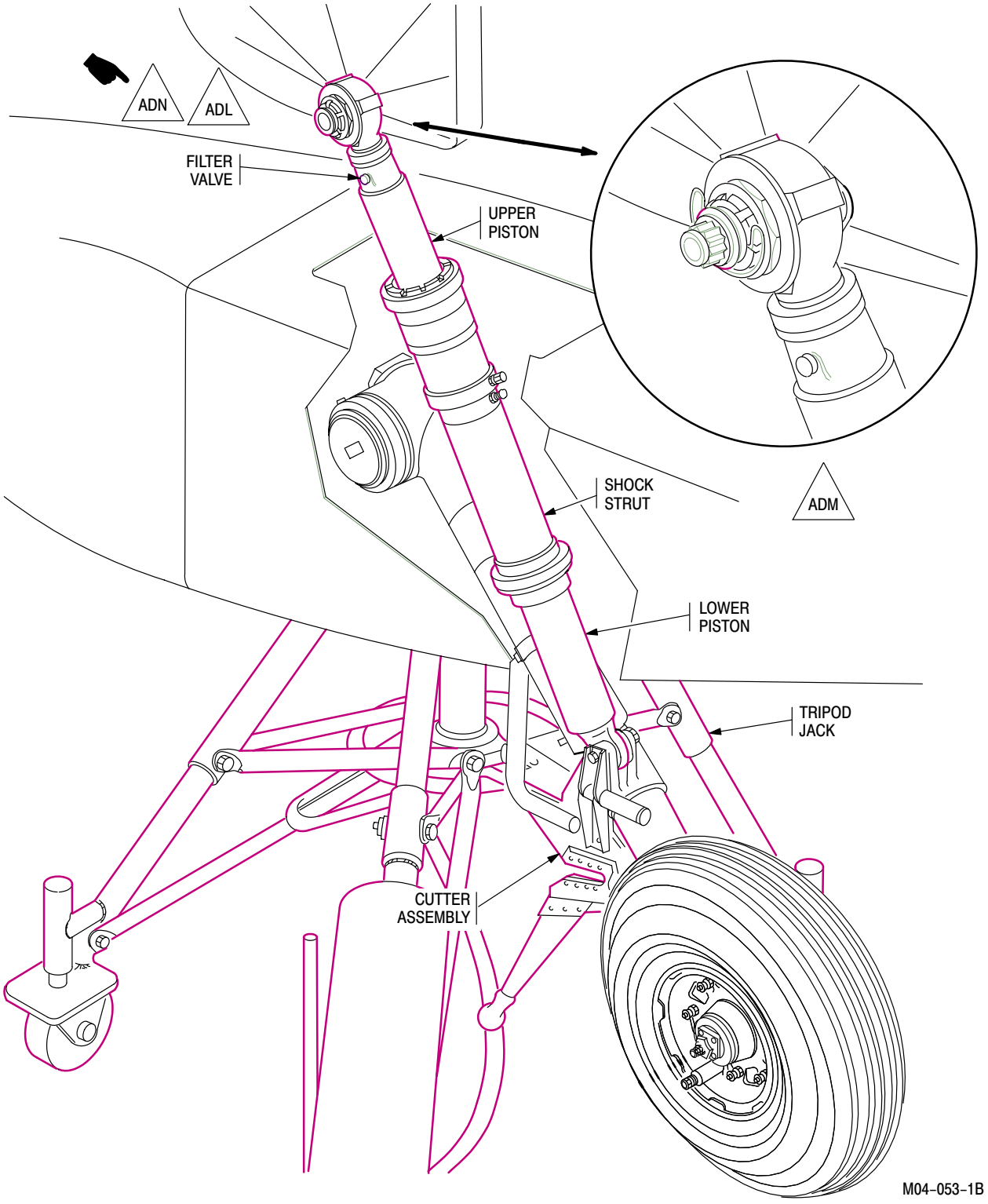
WARNING

FLIGHT SAFETY PART

- **The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.**
- **The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.**
- **Injury to personnel could occur during shock strut removal. Shock strut weighs about 45 pounds. Two persons are required to lift shock strut from helicopter. If injury occurs, seek medical aid.**

GO TO NEXT PAGE

3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued



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3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

3.18.3. Removal

NOTE

- This task is typical for left and/or right shock struts, except where noted.
- The presence of hydraulic fluid at the gas servicing port is a normal condition.

a. **Deflate main landing gear shock strut (1).**

(1) Remove valve cap (2) from shock strut air valve (3).

(2) Turn outboard air valve nut (4) counterclockwise. Allow nitrogen pressure to bleed off.

b. **Remove nut (5) and recessed washer (6) from mount shaft (7).**

(1) Remove and discard retaining ring (ADM) or cotter pin (ADL)(ADN) (8).

(2) Remove nut (5) from shaft (7). Use socket and hinged handle.

(3) Remove washer (6) from shaft (7).

c. **Remove jumper (9) from shock strut (1).**

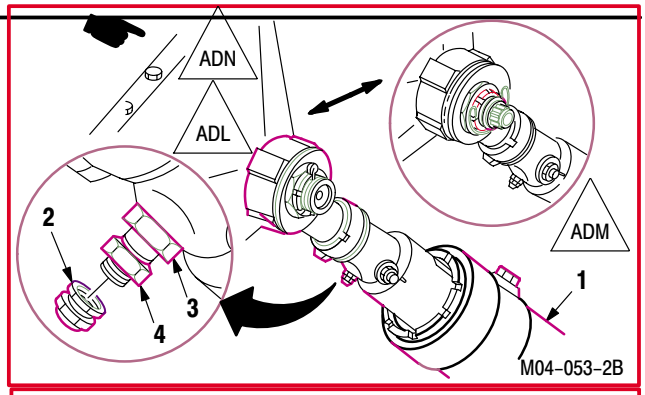
(1) Remove sealant from clamp (10) and bracket (11).

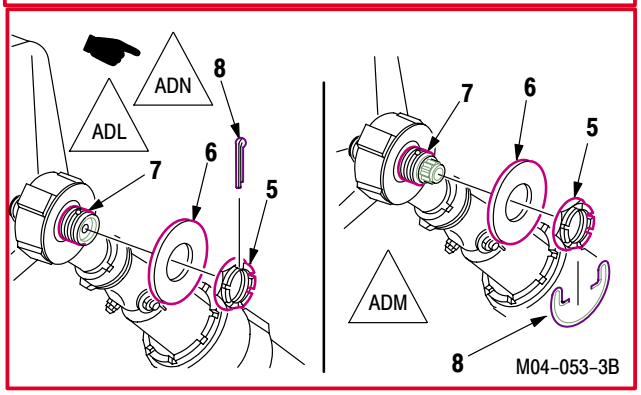
(2) Remove nut (12) from clamp (10).

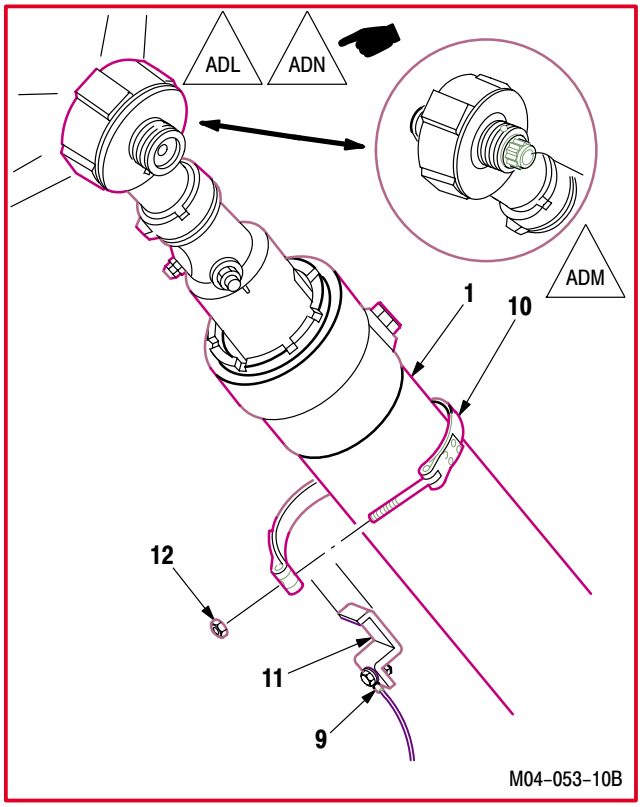
(3) Remove clamp (10) from shock strut (1).

(4) Reposition jumper (9) and bracket (11) away from shock strut (1).

d. **Remove cable cutter** (para 3.26)**.**







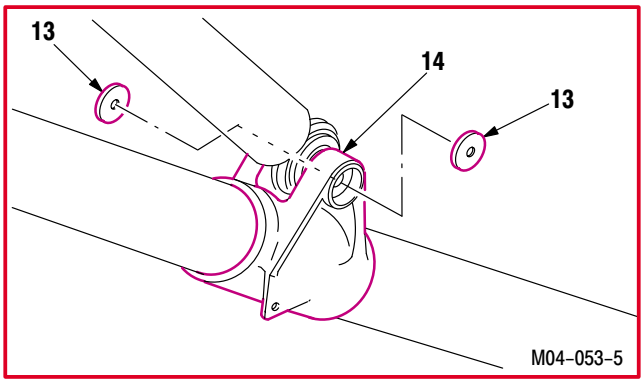
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3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

e. **Remove two trailing arm caps (13) from lugs (14).**

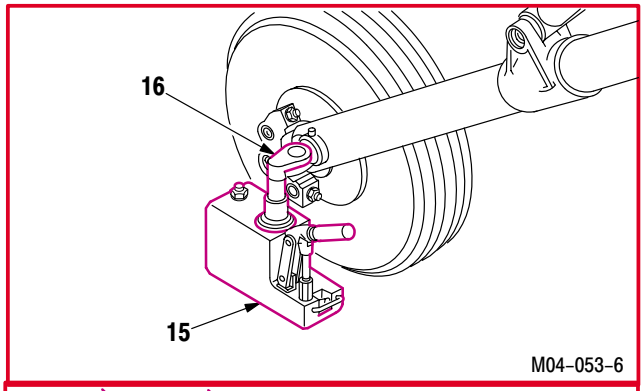
f. **Place hydraulic axle jack (15) under main landing gear jack pad adapter (16).**

(1) Operate jack until jack piston contacts adapter. Use jack.



WARNING

Shock rod end shall move downward when shock strut pin is removed. Removal of pin with fingers could cause injury to personnel. If injury occurs, seek medical aid.



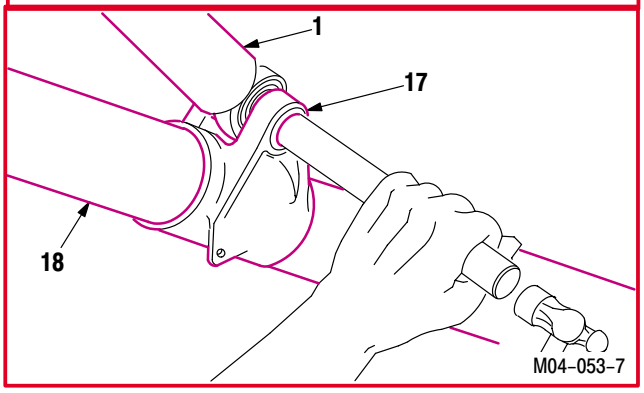
CAUTION

Do not remove jack after left shock strut is removed. Removal of jack will allow trailing arm to move down. This could damage squat switch and bracket at upper end of trailing arm.

g. **Remove shock strut pin (17) from shock strut (1) and trailing arm (18).**

(1) Operate jack (15) until pin (17) is loose in trailing arm (18).

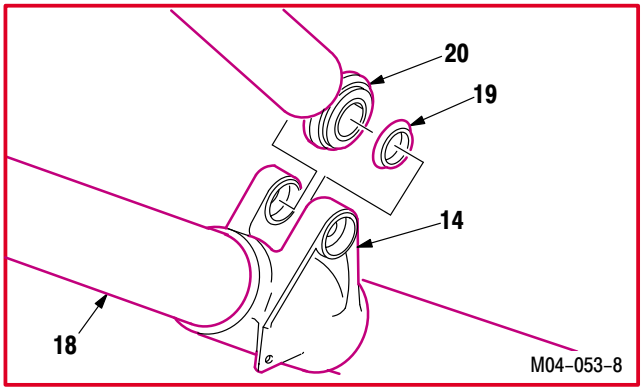
(2) Remove pin (17). Use driftpin.



h. **Remove recessed washer (19) from rod end (20) and lugs (14).**

(1) Lift shock strut rod end (20) until it clears lugs (14).

(2) Remove washer (19).



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3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

i. **With one person holding shock strut (1) upper end and second person lifting lower end, slide shock strut upper rod end (21) off shaft (7).**

(1) Guide strut (1) down and away from helicopter.

j. **Remove inboard washer (22) from shaft (7).**

3.18.4. Cleaning

a. **Wipe shock strut with a clean rag.**

b. **Clean jumper bonding area** (para 1.47)**.**

3.18.5. Inspection

a. **Check shock strut piston for nicks, dents, scratches, or cracks.** None allowed.

b. **Check shock strut main housing for nicks, dents, and scratches.**

(1) Maximum allowable depth **0.020 INCH**. Blend out any nicks, dents, or scratches (TM 1-1500-204-23).

NOTE

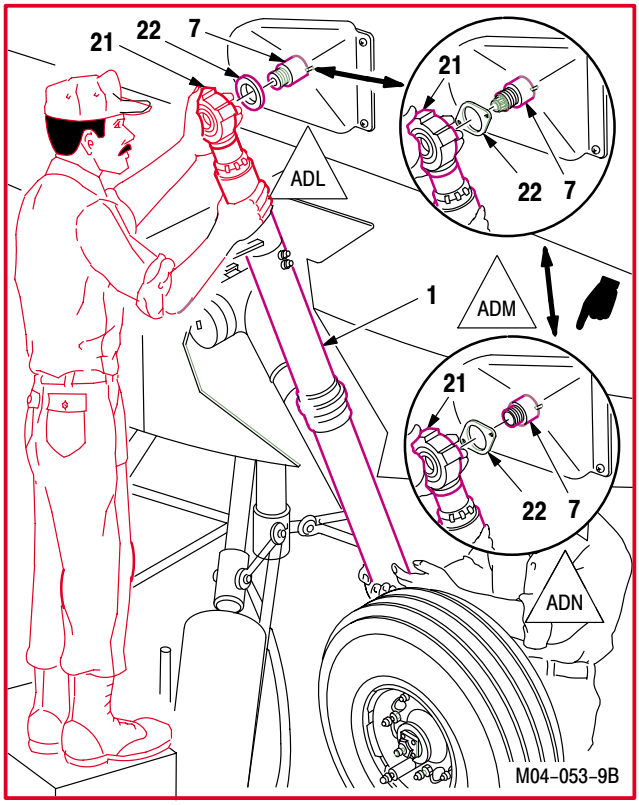
Slight wetting of strut cylinder and seals insufficient to form a drop is normal.

c. **Check shock strut for leaks.** None allowed.

NOTE

Squat switch and target are installed only on left trailing arm.

d. **Check squat switch and target for loose attachment, loose electrical connections, frayed wires, and cracks.** None allowed.



GO TO NEXT PAGE

3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

e. **Check mount shaft for cracks or deformation.**

(1) Not more than **0.001 INCH** deformation of the diameter is allowed.

(2) Check mount shaft for corrosion (para 1.49).

f. **Check if cad plating on mount shaft has been removed** (para 1.49)**.**

g. **Check rod ends for bearing hole elongation.** Maximum elongation is **0.002 INCH**.

h. **Check shock strut bearings for play.**

(1) Maximum allowable play is **0.010 INCH**.

i. **Check bore of main landing gear mounts for corrosion** (para 1.49)**.**

j. **If corrosion is removed from main landing gear mount bore, measure inside diameter of bore.**

(1) If measurement exceeds **0.950 INCH**, replace mount.

k. **Check shock strut and mount shaft for corrosion** (para 1.49)**.**

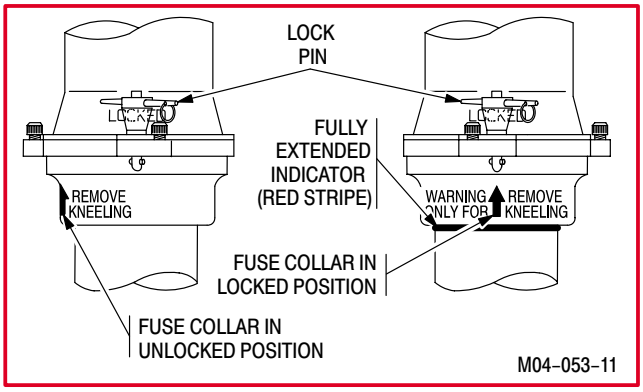
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3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

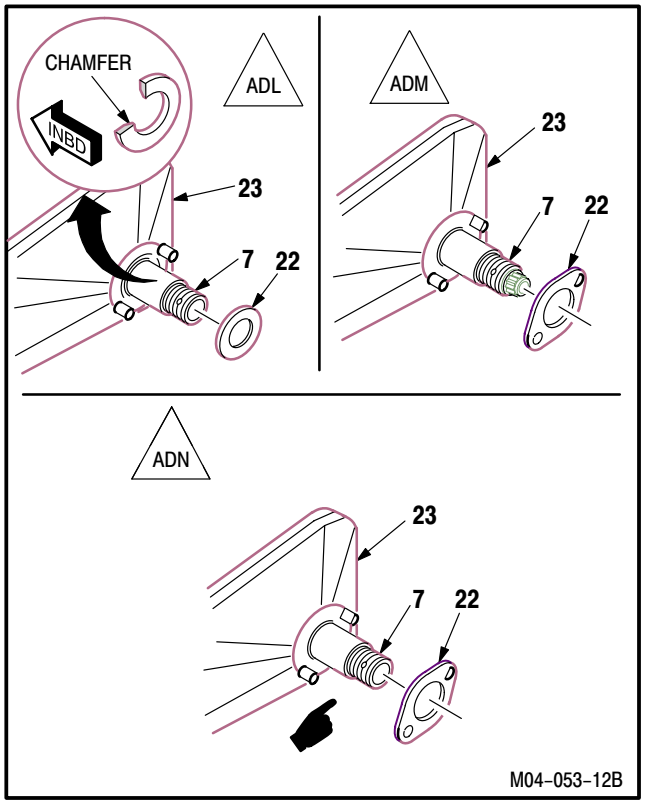
3.18.6. Installation

WARNING

To prevent injury to personnel or damage to equipment, ensure that strut is in fully extended position and the read ring on the shock strut is visible. Ensure fuse collar is in "LOCKED" position and the "WARNING – REMOVE ONLY FOR KNEELING" arrow is alined with lock pin. Unpinned or improper position of collar can result in sudden helicopter tilt or drop when jack is removed. If injury occurs, seek medical aid.



a. **Install inboard washer (22) on shaft (7) with chamfered surface of washer inboard against landing gear mount (23).**



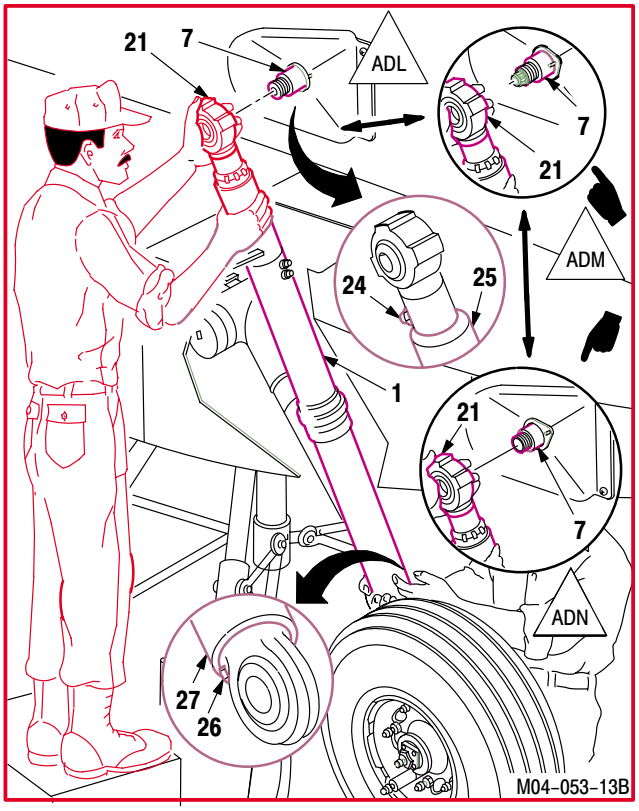
GO TO NEXT PAGE

3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

b. **Guide shock strut (1) from under helicopter up through opening in walkway.**

c. **Position shock strut (1) so filler valve (24) in upper piston (25) is forward and facing down, and drain plug (26) in lower piston (27) is facing down.**

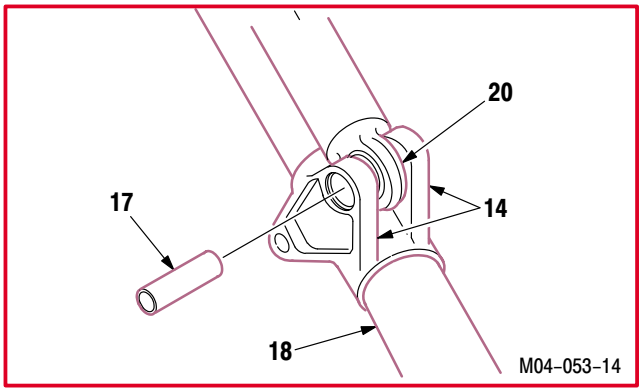
d. **Slide strut upper rod end (21) on mount shaft (7).**



e. **Check alinement of strut rod end (20) and lugs (14).**

(1) Position rod end (20) between lugs (14).

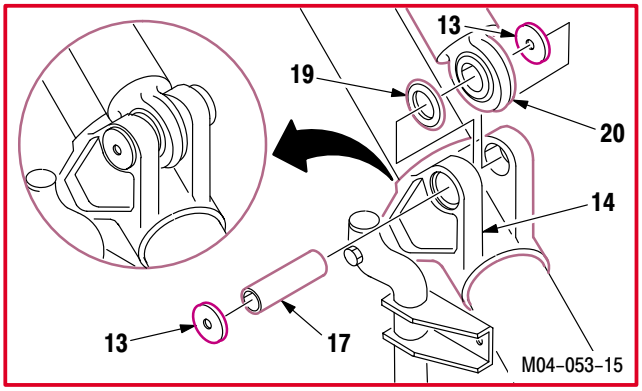
(2) Raise or lower trailing arm (18) with axle jack until pin (17) can be inserted.



f. **Install pin (17) through outboard lug (14), washer (19), strut rod end (20), and inboard lug (14).**

g. **Install trailing arm caps (13) on lugs (14).**

h. **Install cable cutter** (para 3.26)**.**



GO TO NEXT PAGE

3.18. MAIN LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

i. **Install outboard washer (6) on mount shaft (7).**



j. **Lubricate mount shaft and threads (7).** Use antiseize compound (item 26, App F).

k. **Install nut (5) on mount shaft (7).** Torque nut (5) **208 to 333 FOOT-POUNDS**.

(1) Torque nut (5) to **208 FOOT-POUNDS**. Use torque wrench and socket.

(2) Increase torque to aline cotter pin holes, but do not exceed **333 FOOT-POUNDS**.

(3) Install new retaining ring (ADM) or cotter pin (ADL) (ADN) (8) through nut (5) and mount shaft (7).



l. **Install jumper (9) on shock strut (1).**

(1) Place jumper (9) with bracket (11) under clamp (10).

(2) Install clamp (10) on strut (1).

(3) Perform electrical bond check on jumper (9) (TM 55-1500-323-24).

(a) Bond shall be **1.0 OHM** or less. Use multimeter.

(4) Seal jumper bonding area. Use sealing compound (item 174, App F).

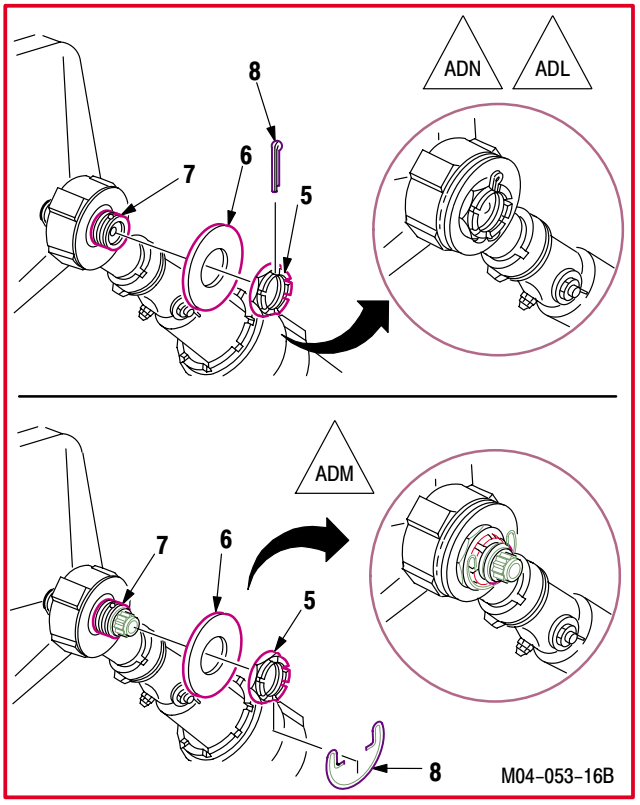
m. **Inspect (QA).**

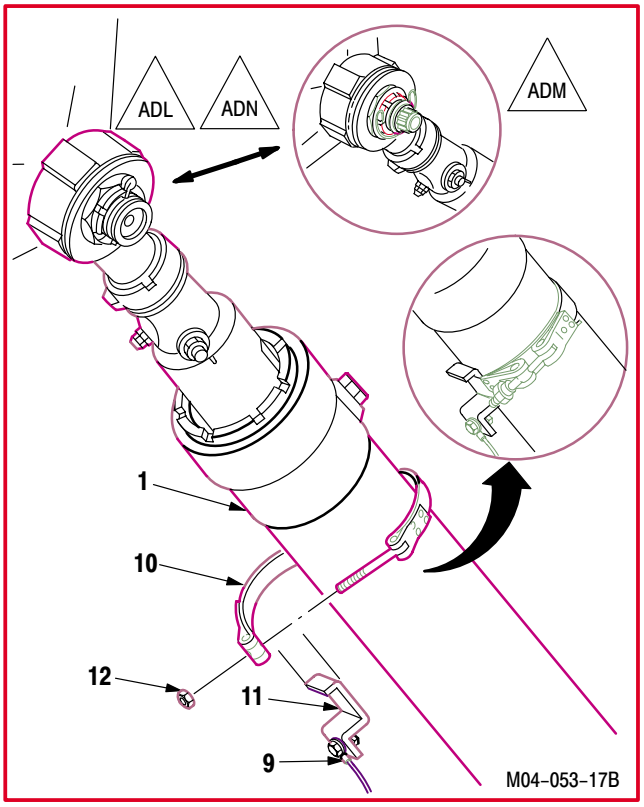
n. **Remove axle jack** (para 1.67)**.**

o. **Service shock strut** (para 1.40 and 1.41)**.**

p. **Remove tripod jacks** (para 1.66)**.**

q. **Secure access doors L135 and/or R135; install fairings L140 and/or R140** (para 2.2)**.**





END OF TASK

3.19. MAIN LANDING GEAR SHOCK STRUT PNEUMATIC VALVE REPLACEMENT

3.19.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.19.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Materials/Parts:

Packing
Hydraulic fluid (item 93, App F)
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.66	Helicopter jacked (tripod jacks)

WARNING

FLIGHT SAFETY PART

- **The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.**
- **The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.**

GO TO NEXT PAGE

3.19. MAIN LANDING GEAR SHOCK STRUT PNEUMATIC VALVE REPLACEMENT – continued

3.19.3. Removal

a. **Remove pneumatic valve (1) from shock strut (2).**

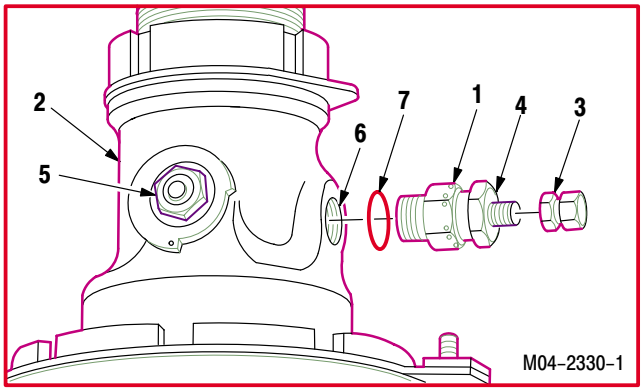
(1) Hold valve. Remove valve cap (3).

(2) Turn valve nut (4) counterclockwise until resistance is felt, then loosen 1/2 to 3/4 turn to off seat valve (1). Allow high pressure nitrogen to bleed off and deflate strut (2).

(3) Remove lockwire from valve (1) and bleed plug (5).

(4) Remove valve (1) from shock strut port (6).

(5) Remove and discard packing (7).



3.19.4. Cleaning

a. **Clean valve and port** (para 1.47)**.**

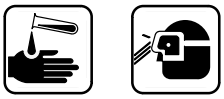
3.19.5. Inspection

a. **Check port and removed parts for damaged threads and cracks.** None allowed.

GO TO NEXT PAGE

3.19. MAIN LANDING GEAR SHOCK STRUT PNEUMATIC VALVE REPLACEMENT – continued

3.19.6. Installation



a. **Install valve (1) on strut (2).** Torque valve (1) to **60 INCH-POUNDS**.

(1) Lubricate new packing (7). Use hydraulic fluid (item 93, App F).

(2) Install new packing (7) on valve (1).

(3) Install valve (1) in port (6).

(4) Torque valve (1) to **60 INCH-POUNDS**. Use torque wrench.

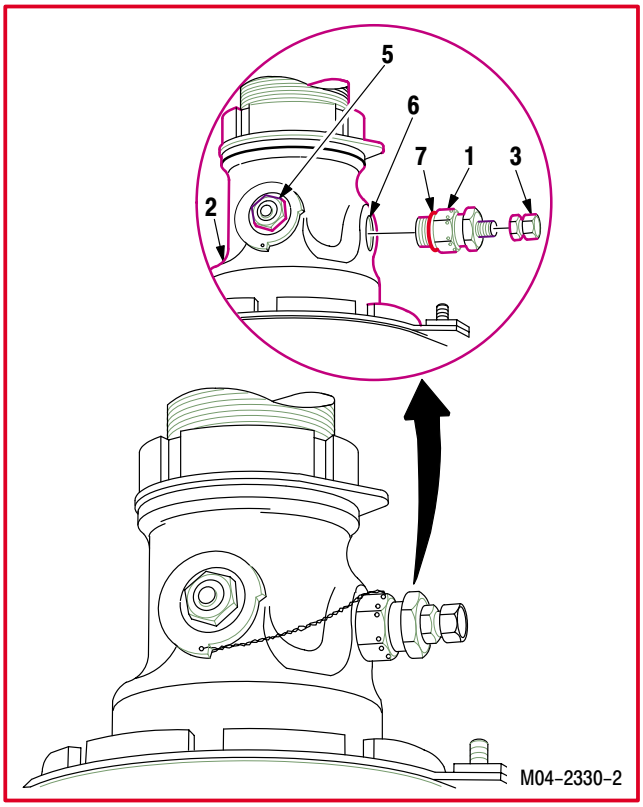
(5) Lockwire valve (1) to plug (5). Use wire (item 224, App F).

(6) Service strut (2) with nitrogen (para 1.40).

(7) Install cap (3) on valve (1).

b. **Inspect (QA).**

c. **Remove tripod jacks** (para 1.66)**.**



END OF TASK

3.19A. MAIN LANDING GEAR SHOCK STRUT CAM VALVE REPLACEMENT (AVIM)

3.19A.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.19A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Packing (2)
Packing retainer (2)
Hydraulic fluid (item 93, App F)
Wire (item 224, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.66	Helicopter jacked (tripod jacks)

WARNING

FLIGHT SAFETY PART

- **The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.**
- **The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.**

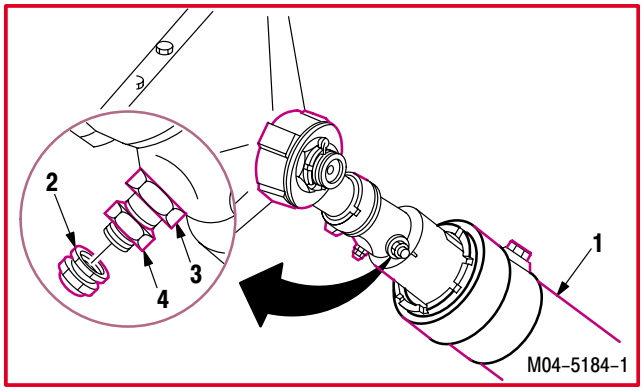
NOTE

This task is typical for left and/or right main landing gear shock strut cam valve replacement.

GO TO NEXT PAGE

3.19A. MAIN LANDING GEAR SHOCK STRUT CAM VALVE REPLACEMENT (AVIM) – continued

3.19A.3. Removal



a. **Deflate main landing gear shock strut (1).**

(1) Remove valve cap (2) from shock strut air valve (3).

(2) Turn outboard air valve nut (4) counterclockwise. Allow nitrogen pressure to bleed off.

(3) Install valve cap (2) on shock strut air valve (3).

b. **Remove shock strut cam valve (5) from shock strut (1).**

(1) Remove lockwire from valve cam collar (6) and cam shock retainer (7).

(2) Remove spring pin (8) from collar (6) and valve (5).

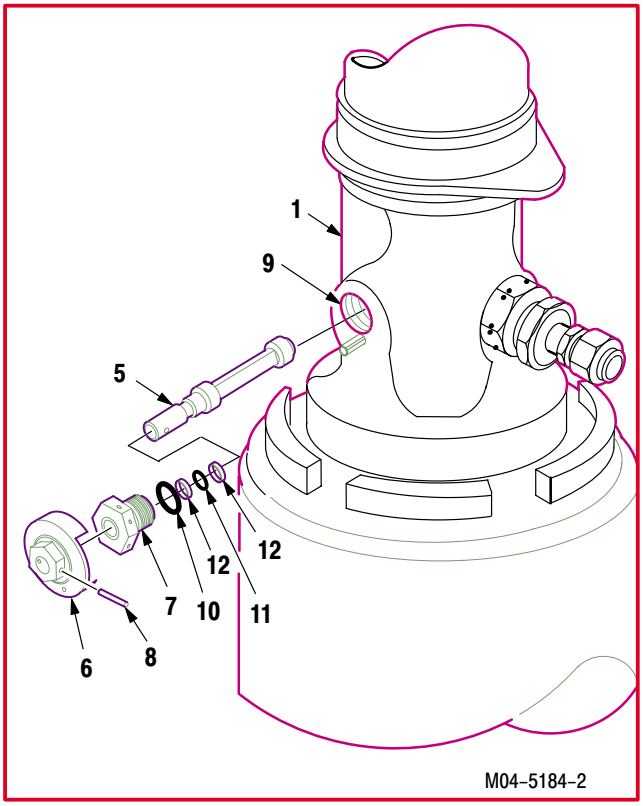
(3) Remove collar (6) from retainer (7).

(4) Remove retainer (7) from strut (1).

(5) Remove and discard packing (10) from retainer (7).

(6) Remove valve (5) from strut port (9).

(7) Remove and discard packing (11) and two packing retainers (12) from valve (5).



3.19A.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

GO TO NEXT PAGE

3.19A. MAIN LANDING GEAR SHOCK STRUT CAM VALVE REPLACEMENT (AVIM) – continued

3.19A.5. Inspection

a. **Check port and retainer for damaged threads.** None allowed.

b. **Check removed and attaching parts for cracks.** None allowed.

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

3.19A.6. Installation



a. **Install valve (5) on strut (1).**

(1) Lubricate packings (10) and (11), and two packing retainers (12). Use hydraulic fluid (item 93, App F).

(2) Install packing (11) and two packing retainers (12) on valve (5).

(3) Install packing (10) on retainer (7).

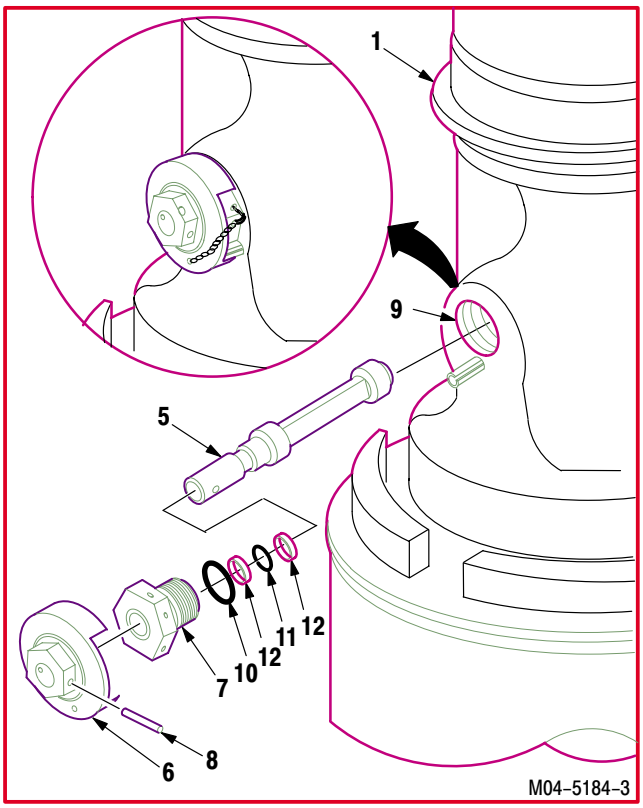
(4) Install retainer (7) on valve (5).

(5) Install valve (5) and retainer (7) into port (9).

(6) Install collar (6) on retainer (7).

(7) Install spring pin (8) through collar (6) and valve (5).

(8) Lockwire collar (6) to retainer (7). Use wire (item 224, App F).



b. **Inspect (QA).**

c. **Service strut with nitrogen** (para 1.40)**.**

d. **Remove tripod jacks** (para 1.66)**.**

END OF TASK

3.20. UPPER MAIN LANDING GEAR SHOCK STRUT EXTERNAL LEAKAGE REPAIR

3.20.1. Description

This task covers: Deflate Shock Strut. Bleed Plug Packing Replacement. Check Valve Packing Replacement.

3.20.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Packing (2)
Hydraulic fluid (item 93, App F)
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.66	Helicopter jacked (tripod jacks)

WARNING

FLIGHT SAFETY PART

- **The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.**
- **The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.**

GO TO NEXT PAGE

3.20. UPPER MAIN LANDING GEAR SHOCK STRUT EXTERNAL LEAKAGE REPAIR – continued

3.20.3. Deflate Shock Strut

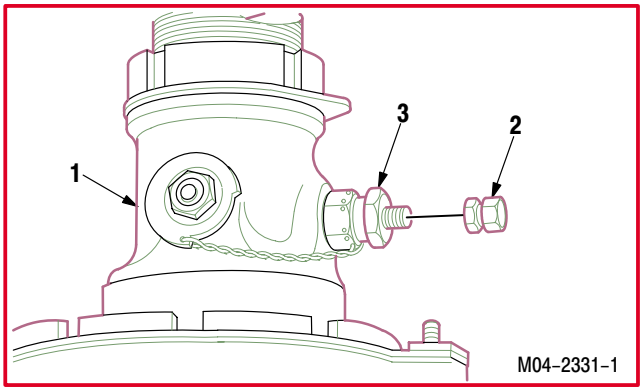
a. **Deflate shock strut assembly (1).**

(1) Remove pneumatic valve cap (2) from shock strut (1).

(2) Turn pneumatic valve nut (3) counterclockwise until resistance is felt, then loosen 1/2 to 3/4 turn to off seat strut (1). Allow high pressure nitrogen to bleed off.

(3) Turn nut (3) clockwise after nitrogen has bled off.

(4) Install cap (2) on strut (1).



3.20.4. Bleed Plug Packing Replacement

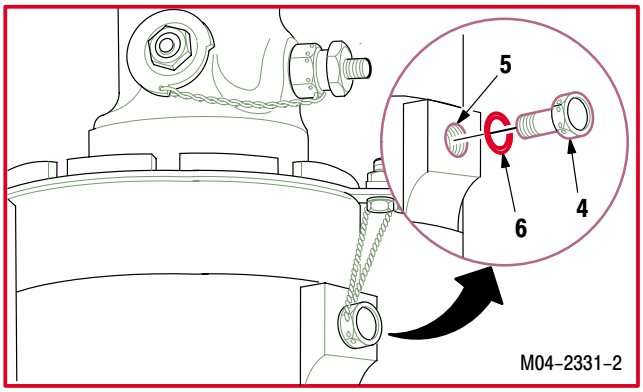
a. **Deflate strut (1)** (para 3.20.3)**.**

b. **Remove plug (4) from strut (1).**

(1) Remove lockwire from plug (4).

(2) Remove plug (4) from port (5).

(3) Remove and discard packing (6).



c. **Check plug (4) and plug port (5) for damage.** None allowed.



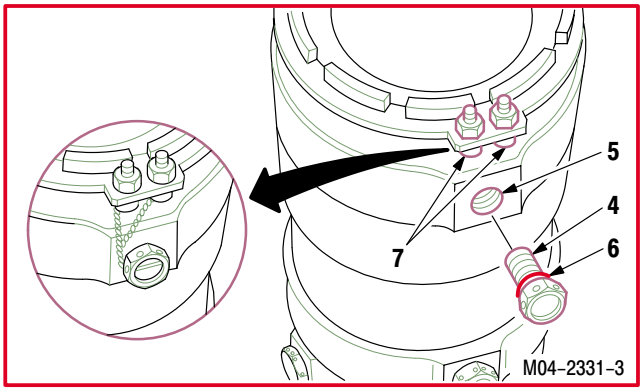
d. **Install plug (4) in strut (1).**

(1) Lubricate new packing (6). Use hydraulic fluid (item 93, App F).

(2) Install packing (6) on plug (4).

(3) Install plug (4) on port (5).

(4) Lockwire plug (4) to two screws (7). Use wire (item 224, App F).



e. **Inspect (QA).**

GO TO NEXT PAGE

3.20. UPPER MAIN LANDING GEAR SHOCK STRUT EXTERNAL LEAKAGE REPAIR – continued

f. **Service strut (1) with fluid** (para 1.41)**.**

g. **Service strut (1) with nitrogen** (para 1.40)**.**

3.20.5. Check Valve Packing Replacement

a. **Deflate strut (1)** (para 3.18.3)**.**

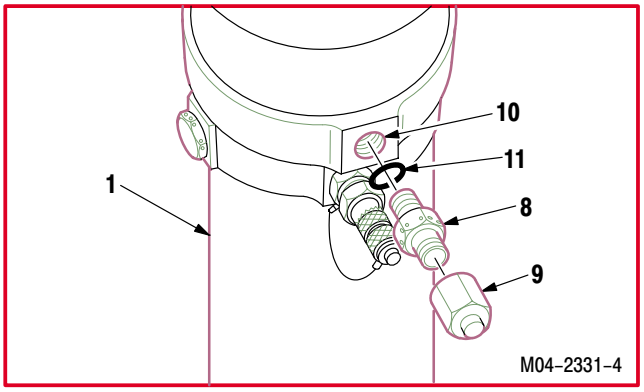
b. **Remove check valve (8) from strut (1).**

(1) Remove lockwire from valve (8).

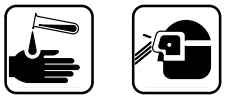
(2) Remove tube cap (9) from strut (1).

(3) Remove valve (8) from fill port (10).

(4) Remove and discard packing (11).



c. **Check cap (9), valve (8), and port (10) for damage.** None allowed.



d. **Install valve (8) on strut (1).**

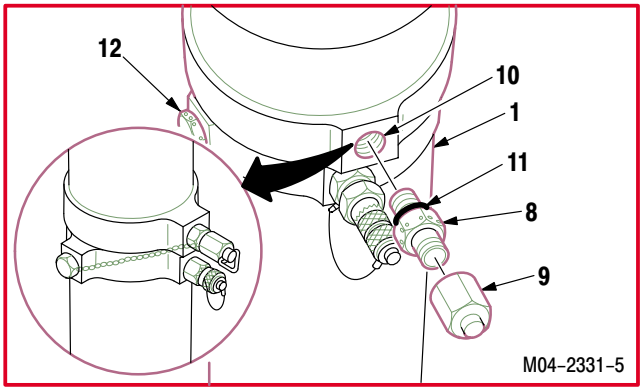
(1) Lubricate new packing (11). Use hydraulic fluid (item 93, App F).

(2) Install packing (11) on valve (8).

(3) Install valve (8) on port (10).

(4) Lockwire valve (8) to plug (12). Use wire (item 224, App F).

(5) Install cap (9) on strut (1).



e. **Inspect (QA).**

f. **Service strut with fluid** (para 1.41)**.**

g. **Service strut with nitrogen** (para 1.40)**.**

h. **Remove tripod jacks** (para 1.66)**.**

END OF TASK

3.21. MAIN LANDING GEAR SHOCK STRUT CYLINDER EXTERNAL LEAKAGE REPAIR

3.21.1. Description

This task covers: Fluid Fill Coupling Packing Replacement. Outboard Bleed Plug Packing Replacement. Inboard Bleed Plug Packing Replacement. Lower Plug Packing Replacement.

3.21.2. Initial Setup

Tools:

Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Packing (4)
Hydraulic fluid (item 93, App F)
Wire (item 224, App F)

Personnel Required:

68H Aircraft Pneudraulics Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access fairing L140 removed
3.20	Shock strut deflated

WARNING

FLIGHT SAFETY PART

- **The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.**
- **The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.**

GO TO NEXT PAGE

3.21. MAIN LANDING GEAR SHOCK STRUT CYLINDER EXTERNAL LEAKAGE REPAIR – continued

3.21.3. Fluid Fill Coupling Packing Replacement

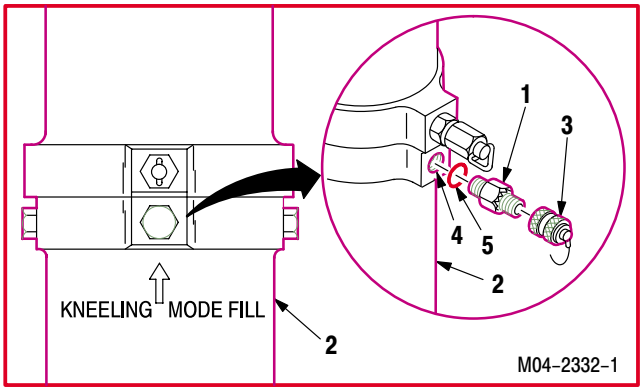
a. **Remove fluid fill coupling (1) from shock strut assembly (2).**

(1) Remove lockwire from coupling (1).

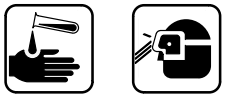
(2) Remove cap (3) from coupling (1).

(3) Remove coupling (1) from kneeling port (4).

(4) Remove and discard packing (5).



b. **Check coupling (1) and port (4) for damage.** None allowed.



c. **Install coupling (1) in strut (2).**

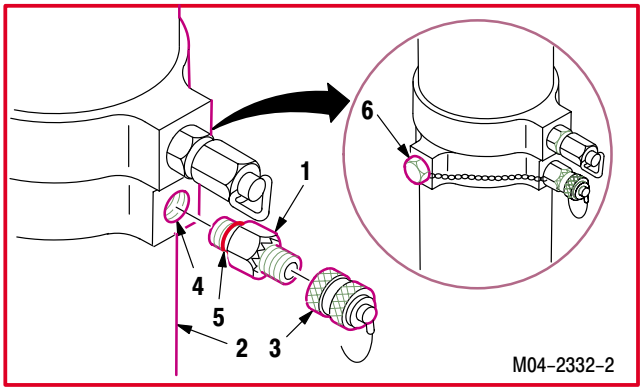
(1) Lubricate new packing (5). Use hydraulic fluid (item 93, App F).

(2) Install packing (5) on coupling (1).

(3) Install coupling (1) in port (4).

(4) Lockwire coupling (1) to plug (6). Use wire (item 224, App F).

(5) Install cap (3) on coupling (1).



d. **Inspect (QA).**

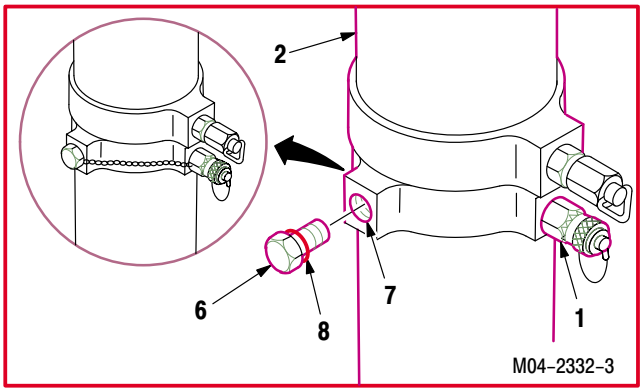
e. **Service strut with fluid** (para 1.41)**.**

f. **Service strut with nitrogen** (para 1.40)**.**

GO TO NEXT PAGE

3.21. MAIN LANDING GEAR SHOCK STRUT CYLINDER EXTERNAL LEAKAGE REPAIR – continued

3.21.4. Outboard Bleed Plug Packing Replacement



a. **Remove outboard plug (6) from strut (2).**

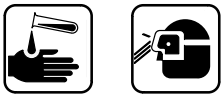
(1) Place rags under strut (2) to catch hydraulic fluid spills.

(2) Remove lockwire from plug (6).

(3) Remove plug (6) from port (7).

(4) Remove and discard packing (8).

b. **Check plug (6) and port (7) for damage.** None allowed.



c. **Install plug (6) in strut (2).**

(1) Lubricate new packing (8). Use hydraulic fluid (item 93, App F).

(2) Install packing (8) on plug (6).

(3) Install plug (6) in port (7).

(4) Lockwire plug (6) to coupling (1). Use wire (item 224, App F).

d. **Inspect (QA).**

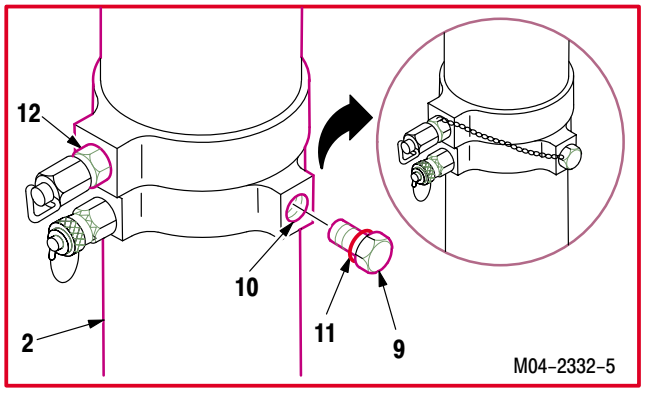
e. **Service strut with fluid** (para 1.41)**.**

f. **Service strut with nitrogen** (para 1.40)**.**

GO TO NEXT PAGE

3.21. MAIN LANDING GEAR SHOCK STRUT CYLINDER EXTERNAL LEAKAGE REPAIR – continued

3.21.5. Inboard Bleed Plug Packing Replacement



a. **Remove inboard plug (9) from strut (2).**

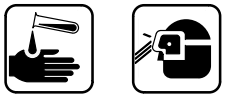
(1) Place rags under strut (2) to catch hydraulic fluid spills.

(2) Remove lockwire from plug (9).

(3) Remove plug (9) from port (10).

(4) Remove and discard packing (11).

b. **Check plug (9) and port (10) for damage.** None allowed.



c. **Install plug (9) in strut (2).**

(1) Lubricate new packing (11). Use hydraulic fluid (item 93, App F).

(2) Install packing (11) on plug (9).

(3) Install plug (9) in port (10).

(4) Lockwire plug (9) to valve (12). Use wire (item 224, App F).

d. **Inspect (QA).**

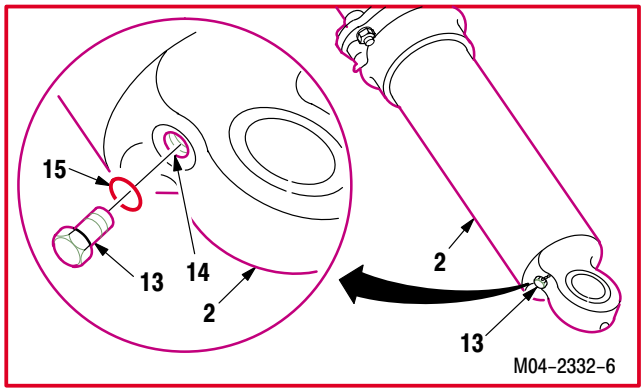
e. **Service strut with fluid** (para 1.41)**.**

f. **Service strut with nitrogen** (para 1.40)**.**

GO TO NEXT PAGE

3.21. MAIN LANDING GEAR SHOCK STRUT CYLINDER EXTERNAL LEAKAGE REPAIR – continued

3.21.6. Lower Plug Packing Replacement



a. **Remove lower plug (13) from strut (2).**

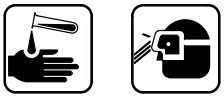
(1) Place rags under strut (2) to catch hydraulic fluid spills.

(2) Remove lockwire from plug (13).

(3) Remove plug (13) from port (14).

(4) Remove and discard packing (15).

b. **Check plug (13) and port (14) for damage.** None allowed.



c. **Install plug (13) in strut (2).**

(1) Lubricate new packing (15). Use hydraulic fluid (item 93, App F).

(2) Install packing (15) on plug (13).

(3) Install plug (13) on port (14).

(4) Lockwire plug (13) to strut (2). Use wire (item 224, App F).

d. **Inspect (QA).**

e. **Service strut with fluid** (para 1.41)**.**

f. **Service strut with nitrogen** (para 1.40)**.**

g. **Remove tripod jacks** (para 1.66)**.**

h. **Install access fairing L140** (para 2.2)**.**

END OF TASK

3.22. MAIN LANDING GEAR SHOCK STRUT CHECK VALVE REMOVAL/INSTALLATION

3.22.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.22.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R Attack Helicopter Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Packing
Hydraulic fluid (item 93, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.66	Helicopter jacked (tripod jacks)
2.2	Access fairings L140 and R140 removed

WARNING

FLIGHT SAFETY PART

- **The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.**
- **The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.**

GO TO NEXT PAGE

3.22. MAIN LANDING GEAR SHOCK STRUT CHECK VALVE REMOVAL/INSTALLATION – continued

3.22.3. Removal

a. **Deflate shock strut assembly (1).**

(1) Remove valve cap (2) from pneumatic valve (3).

(2) Hold valve (3). Slowly turn nut (4) counterclockwise until resistance is felt, then loosen 1/2 to 3/4 turn to off seat valve (3). Allow high pressure nitrogen to bleed off.

(3) Install cap (2) on valve (3).

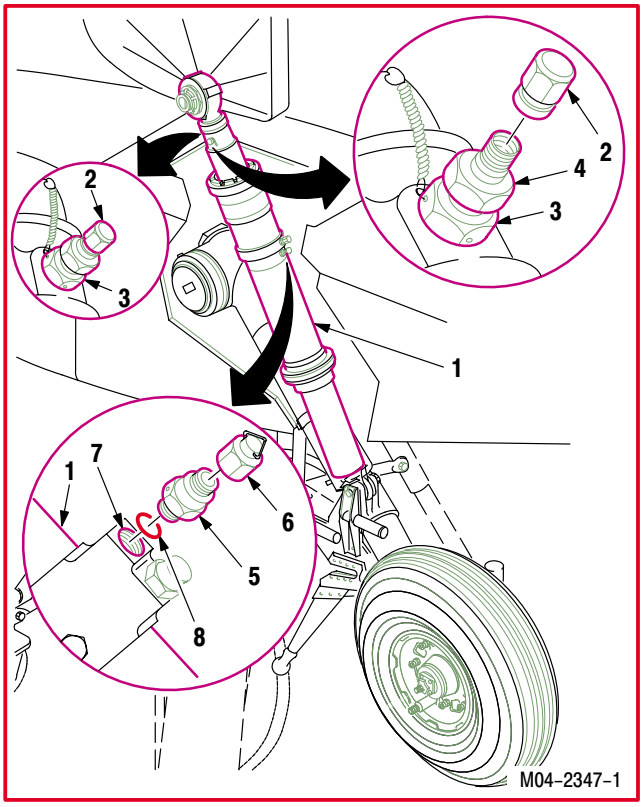
b. **Remove check valve (5) from strut (1).**

(1) Remove tube cap (6) from valve (5).

(2) Remove lockwire from valve (5).

(3) Remove valve (5) from port (7).

(4) Remove and discard packing (8).



3.22.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.22.5. Inspection

a. **Check valve and port for damage.** None allowed.

GO TO NEXT PAGE

3.22. MAIN LANDING GEAR SHOCK STRUT CHECK VALVE REMOVAL/INSTALLATION – continued

3.22.6. Installation



a. **Install valve (5) in strut (1).**

(1) Lubricate new packing (8). Use hydraulic fluid (item 93, App F).

(2) Install new packing (8) on valve (5).

(3) Install valve (5) in port (7).

(4) Install cap (6) on valve (5).

(5) Lockwire cap (6) to plug (9).

b. **Install axle jack** (para 1.67)**.**

(1) Raise axle jack until piston is fully seated in shock strut.

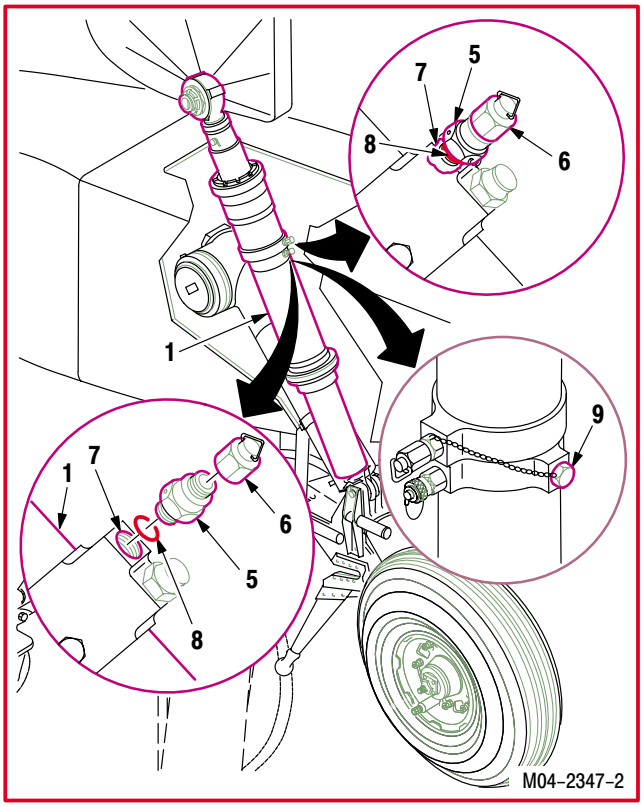
c. **Service strut with fluid** (para 1.41)**.**

d. **Inspect (QA).**

e. **Remove axle jack** (para 1.67)**.**

f. **Install access fairings L140 and R140** (para 2.2)**.**

g. **Remove tripod jacks** (para 1.66)**.**



END OF TASK

3.23. MAIN LANDING GEAR SHOCK STRUT UPPER ROD END REPLACEMENT (AVIM)

3.23.1. Description

This task covers: Removal. Cleaning. Inspection. Installation. Adjustment.

3.23.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
1/2-inch drive 1 3/4 - 4-inch socket wrench spanner attachment set (item 335, App H)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)

Materials/Parts:

Antiseize compound (item 27, App F)
Brush (item 34, App F)
Wire (item 229, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

WARNING

FLIGHT SAFETY PART

The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

GO TO NEXT PAGE

3.23. MAIN LANDING GEAR SHOCK STRUT UPPER ROD END REPLACEMENT (AVIM) – continued

3.23.3. Removal

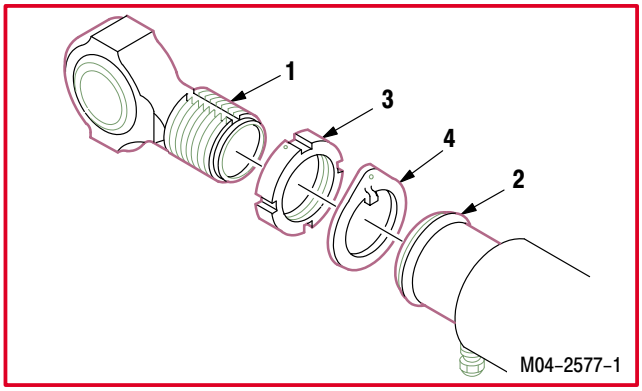
a. **Remove rod end assembly (1) from shock strut (2).**

(1) Remove lockwire from nut (3).

(2) Loosen nut (3). Use spanner attachment set.

(3) Remove and discard rod end (1) from strut (2).

(4) Remove key washer (4) and nut (3) from rod end (1).



3.23.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.23.5. Inspection

a. **Check strut and nut for thread damage or dents.** None allowed.

b. **Check washer for dishing, bending, or scoring.** None allowed.

3.23.6. Installation

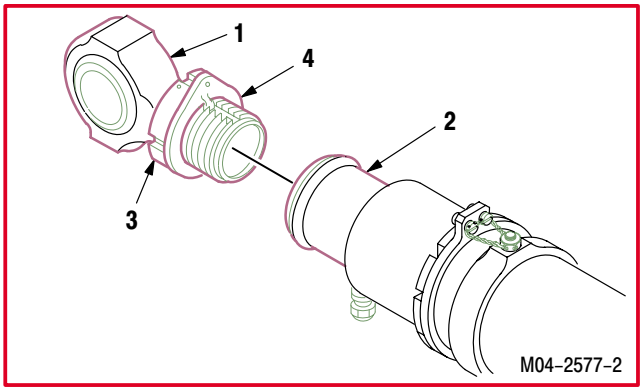


a. **Install new rod end (1) on strut (2).**

(1) Install nut (3) and washer (4) on rod end (1).

(2) Lubricate threads of rod end (1). Use anti-seize compound (item 27, App F) and brush (item 34, App F).

(3) Install rod end (1) in strut (2).



GO TO NEXT PAGE

3.23. MAIN LANDING GEAR SHOCK STRUT UPPER ROD END REPLACEMENT (AVIM) – continued

3.23.7. Adjustment

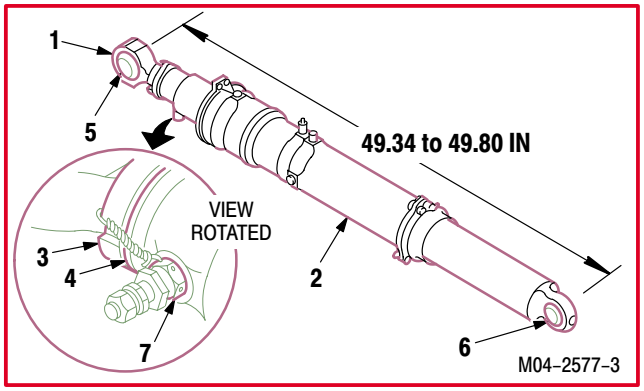
a. **Adjust rod end (1).** Torque nut (3) to **600 INCH-POUNDS**.

(1) Adjust upper rod end (1) to a fully extended unpressurized strut (2) length of **49.34 to 49.80 INCHES** measured from center of upper rod end bearing (5) to center of strut lower bearing (6).

(2) Torque nut (3) to **600 INCH-POUNDS**. Use torque wrench.

(3) Lockwire nut (3) to washer (4) and pneumatic valve (7). Use wire (item 229, App F).

b. **Inspect (QA).**



END OF TASK

3.24. MAIN LANDING GEAR SHOCK STRUT UPPER SEAL ASSEMBLY REPLACEMENT (AVIM)

3.24.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.24.2. Initial Setup

Tools:

Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
9-inch x 1/2-inch drive hinged socket wrench handle (item 171, App H)
Adjustable air filtering respirator (item 262, App H)
3/8-inch drive 3/4 - 2-inch socket wrench spanner attachment set (item 336, App H)
12-inch strap pipe wrench (item 425, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Personnel Required:

68H Aircraft Pneudraulics Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Bearing
Packing
Retaining ring (2)
Seal
Wiper ring
Antiseize compound (item 27, App F)
Brush (item 34, App F)
Epoxy primer coating kit (item 78, App F)
Hydraulic fluid (item 93, App F)
Wire (item 226, App F)

Equipment Conditions:

Ref	Condition
3.23	Rod end removed
3.19	Pneumatic valve removed
3.21	Bleeder plug removed

WARNING

FLIGHT SAFETY PART

The main landing gear shock strut contains a flight safety part. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

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3.24. MAIN LANDING GEAR SHOCK STRUT UPPER SEAL ASSEMBLY REPLACEMENT (AVIM) – continued

3.24.3. Removal

a. **Remove ring (1) from shock strut (2).**

(1) Remove lockwire from two screws (3).

(2) Hold two screws (3). Remove self–locking nuts (4).

(3) Remove two screws (3) and washers (5).

(4) Remove shock strut lock (6) from ring (1) and strut (2).

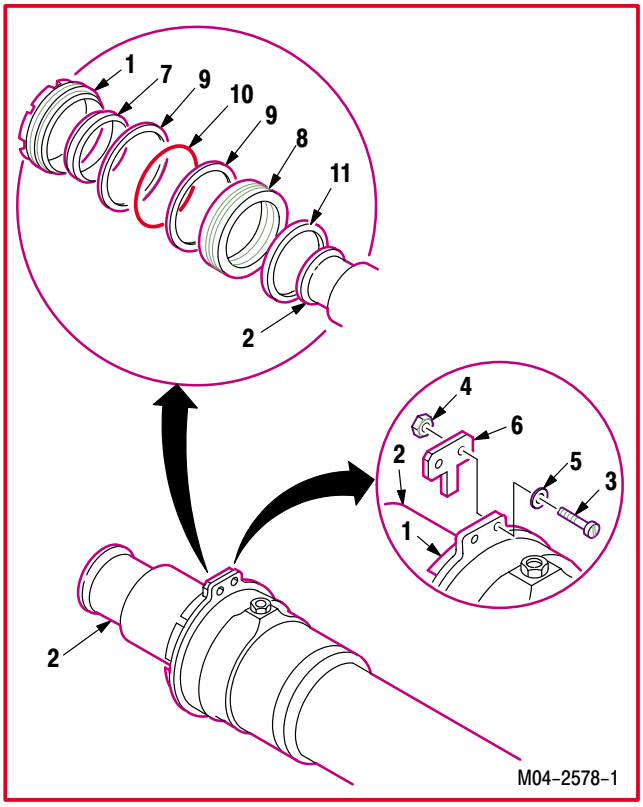
(5) Hold strut (2) with strap wrench. Remove ring (1). Use spanner attachment set and hinged handle.

(6) Remove and discard wiper ring (7).

b. **Remove upper piston bearing (8) from strut (2).**

(1) Remove and discard two retaining rings (9) and retainer packing (10) from bearing (8) outer groove.

(2) Remove and discard bearing (8) and seal assembly (11).



3.24.4. Cleaning

a. **Clean strut, lock, and externally threaded ring** (para 1.47)**.**

3.24.5. Inspection

a. **Check externally threaded ring and strut for damaged threads, dents, or other conditions which may cause leakage.** None allowed.

GO TO NEXT PAGE

3.24. MAIN LANDING GEAR SHOCK STRUT UPPER SEAL ASSEMBLY REPLACEMENT (AVIM) – continued

3.24.6. Installation



a. **Install new bearing (8) on strut (2).**

(1) Lubricate new seal (11). Use hydraulic fluid (item 93, App F).

(2) Install seal (11) on bearing (8) inner groove.

(3) Lubricate new packing (10) and two new retaining rings (9). Use hydraulic fluid (item 93, App F).

(4) Install packing (10) and rings (9) on bearing (8) outer groove.

CAUTION

Ensure packing and rings do not catch on lip of piston or damage will result.

(5) Install bearing (8) on strut (2).



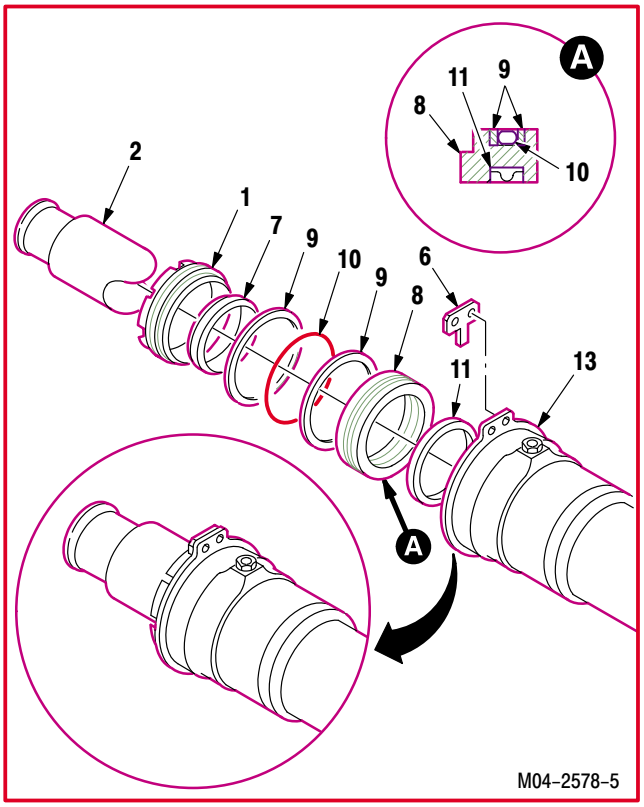
b. **Install ring (1) with ring (7) on strut (2).**

(1) Lubricate new wiper ring (7). Use hydraulic fluid (item 93, App F).

(2) Install wiper ring (7) on inside groove of ring (1).

(3) Lubricate threads of ring (1). Use antiseize compound (item 27, App F) and brush (item 34, App F).

(4) Slide ring (1), with wiper ring (7) installed, on strut (2). Turn ring (1) until it bottoms.



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3.24. MAIN LANDING GEAR SHOCK STRUT UPPER SEAL ASSEMBLY REPLACEMENT (AVIM) – continued

(5) Back off ring (1) until lock (6) will aline with nearest slot in ring (1) and strut boss (13).



c. **Install lock (6) on ring (1).** Torque two nuts (4) to **20 INCH-POUNDS**.

(1) Coat surfaces of lock (6) with primer. Use epoxy primer coating kit (item 78, App F) and brush (item 34, App F). Install wet.

(2) Install lock (6) on ring (1).

(3) Coat surfaces of two screws (3), washers (5), and nuts (4) with primer. Use epoxy primer coating kit (item 78, App F) and brush (item 34, App F). Install wet.

(4) Install two screws (3), washers (5), and nuts (4) in alined holes in lock (6) and strut boss (13).

(5) Torque two nuts (4) to **20 INCH-POUNDS**. Use torque wrench.

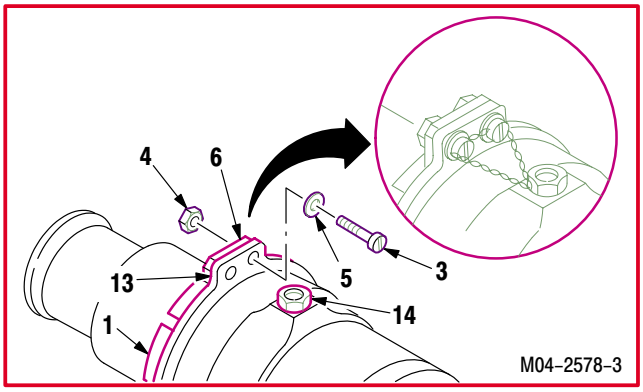
(6) Lockwire two screws (3) to bleed plug (14). Use wire (item 226, App F).

d. **Inspect (QA).**

e. **Install bleeder plug** (para 3.21)**.**

f. **Install pneumatic valve** (para 3.19)**.**

g. **Install rod end** (para 3.23)**.**



END OF TASK

3.25. MAIN LANDING GEAR SHOCK STRUT IDENTIFICATION PLATE REPLACEMENT

3.25.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.25.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Metal stamping die set (item 107, App H)
1 1/4-inch blade putty knife (item 199, App H)

Materials/Parts:

Identification plate
Adhesive (item 12, App F)
Cloth (item 48, App F)

Personnel Required:

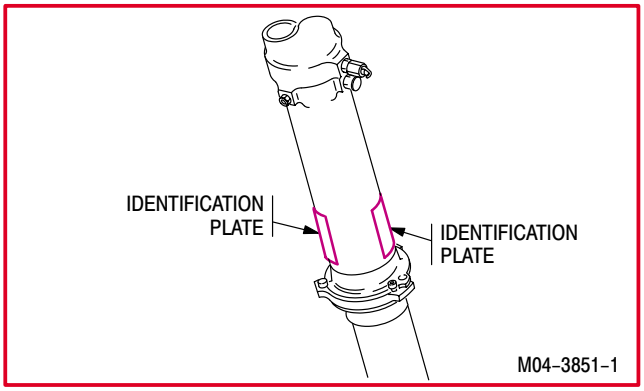
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access fairing L140 or R140 removed

NOTE

This task is typical for both identification plates.



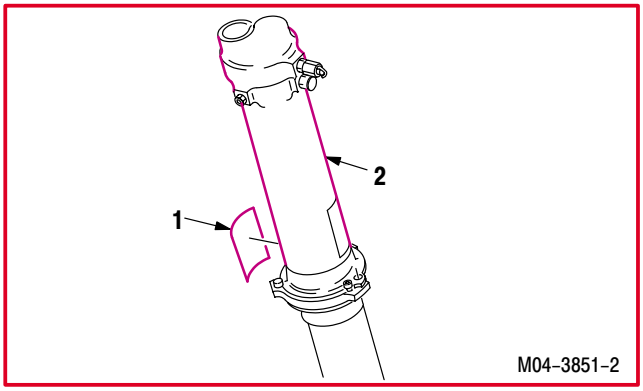
3.25.3. Removal

a. **Record all data on identification plate (1).**

b. **Remove plate (1) from main landing gear shock strut (2).**

(1) Peel up corner of plate (1). Use putty knife.

(2) Remove and discard plate (1) from shock strut (2).



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3.25. MAIN LANDING GEAR SHOCK STRUT IDENTIFICATION PLATE REPLACEMENT – continued

3.25.4. Cleaning

a. **Clean plate mounting area** (para 1.47)**.**

3.26.5. Inspection

a. **Check shock strut for cracks.** None allowed.

b. **Check shock strut for corrosion** (para 1.49)**.**

3.25.6. Installation

a. **Transcribe recorded data on new plate (1).** Use die set.

b. **Install plate (1) on shock strut (2).**

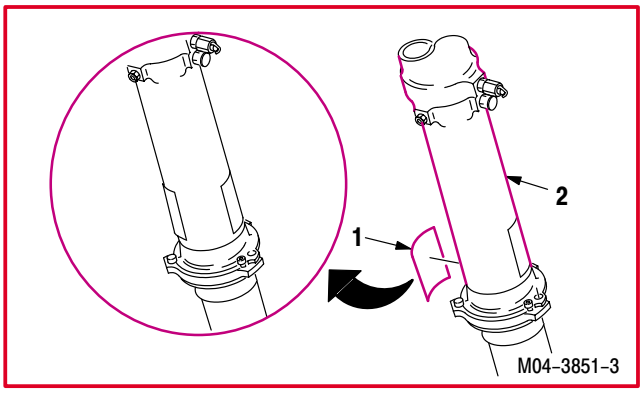
(1) Lightly abrade shock strut (2) in same location as old plate (1). Use cloth (item 48, App F).

(2) Install plate (1) on shock strut (2) in same location as old plate.

(3) Place a bead of adhesive around the edge of plate (1). Use adhesive (item 12, App F).

c. **Install access fairing L140 or R140** (para 2.2)**.**

d. **Inspect (QA).**



END OF TASK

SECTION II. WIRE STRIKE PROTECTION MAINTENANCE

3.26. MAIN LANDING GEAR CABLE CUTTER REMOVAL/INSTALLATION

3.26.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.26.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Cotter pin
Brush (item 34, App F)
Sealing compound (item 177, App F)
Tape (item 206, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.4	Lower structural support removed

NOTE

This task is typical for left and/or right main landing gear cable cutters.

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3.26. MAIN LANDING GEAR CABLE CUTTER REMOVAL/INSTALLATION – continued

3.26.3. Removal

a. **Remove rim clenching clamp halves (1) and (2) from trailing arm assembly (3).**

(1) Clean sealant from clamp halves (1) and (2) (para 1.47).

(2) Remove two self-locking nuts (4) and washers (5).

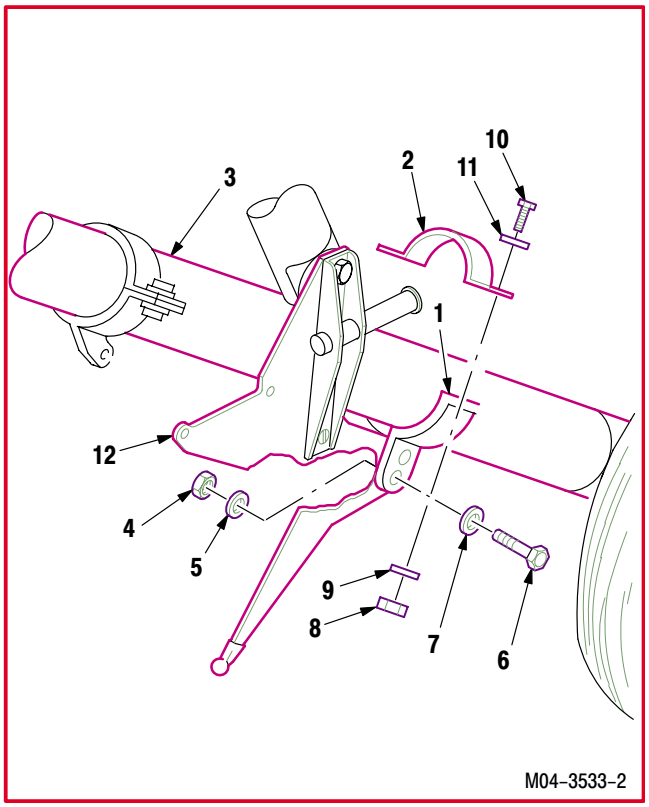
(3) Remove two shear bolts (6) and washers (7).

(4) Remove two self-locking nuts (8) and washers (9).

(5) Remove two shear bolts (10) and washers (11).

(6) Remove clamp halves (1) and (2) from trailing arm (3).

(7) Remove tape from clamp halves (1) and (2).



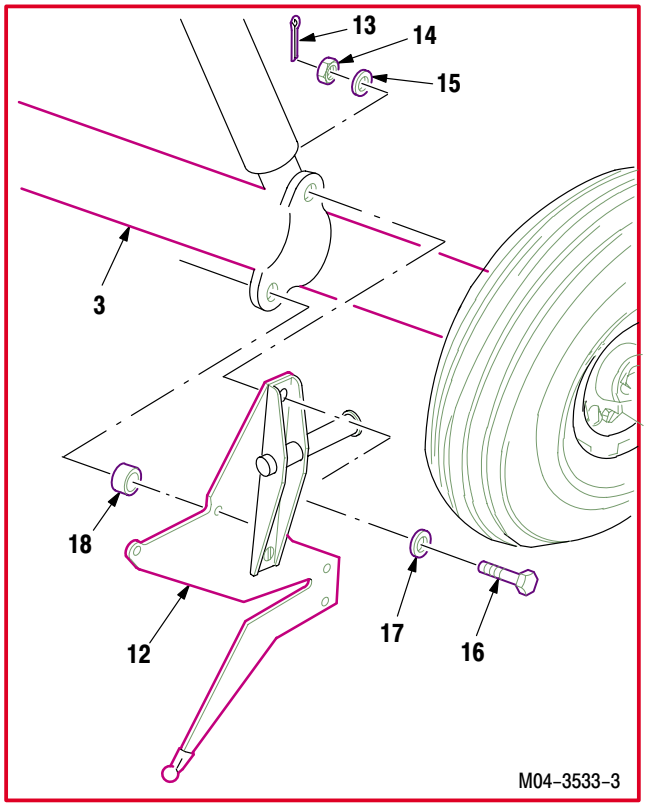
b. **Remove cable cutter (12) from trailing arm (3).**

(1) Remove cotter pin (13) from nut (14).

(2) Remove nut (14) and washer (15).

(3) Remove shear bolt (16) and washer (17).

(4) Remove cutter (12) and spacer (18) from trailing arm (3).



GO TO NEXT PAGE

3.26. MAIN LANDING GEAR CABLE CUTTER REMOVAL/INSTALLATION – continued

3.26.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.26.5. Inspection

a. **Check mounting areas for cracks.** None allowed.

b. **Check mounting areas for corrosion** (para 1.49)**.**

3.26.6. Installation

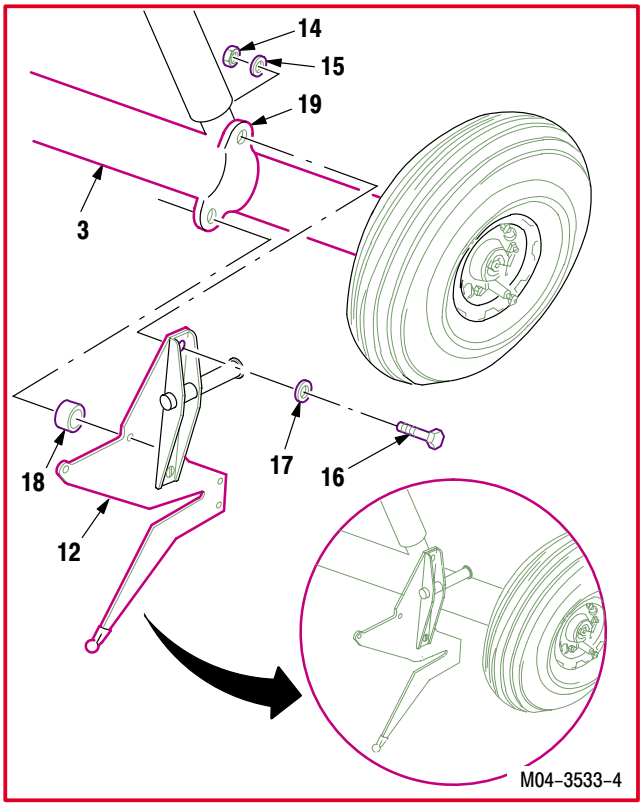
a. **Install cutter (12) on trailing arm (3).**

(1) Aline cutter (12) with mounting hole in upper clevis (19).

(2) Install bolt (16) and washer (17) through cutter (12) and clevis (19).

(3) Install washer (15) and nut (14). Do not tighten nut (14).

(4) Install spacer (18) between cutter (12) and clevis (19).



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3.26. MAIN LANDING GEAR CABLE CUTTER REMOVAL/INSTALLATION – continued



b. **Install clamp halves (1) and (2) on trailing arm (3) and cutter (12).**

(1) Apply tape to inner mating surfaces of clamp halves (1) and (2). Use tape (item 206, App F).

(2) Position clamp halves (1) and (2) on trailing arm (3) with chamfered edges (20) facing inboard, and alined.

(3) Install two bolts (10) and washers (11) through clamp halves (1) and (2).

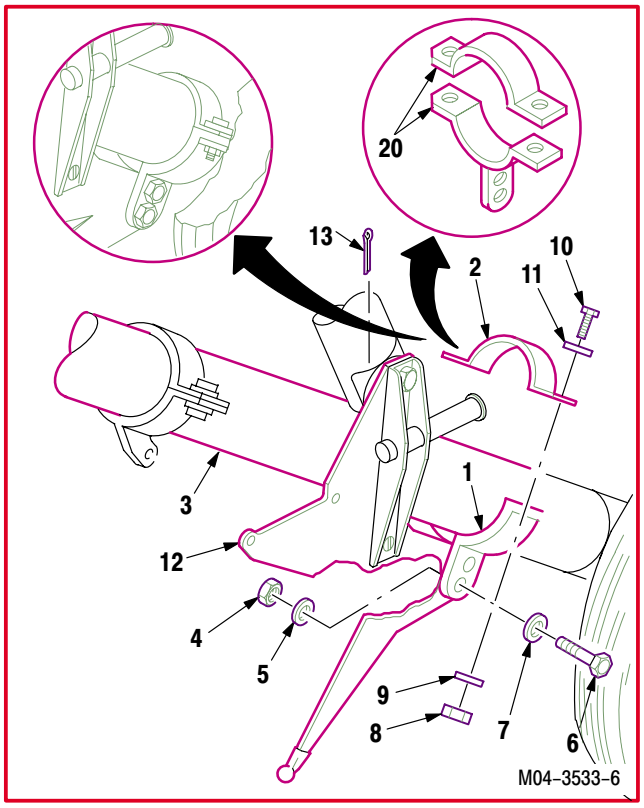
(4) Install washers (9) and nuts (8). Do not tighten.

(5) Install two bolts (6) and washers (7) through aft clamp half (1) and cutter (12).

(6) Install washers (5) and nuts (4) on bolts (6).

(7) Tighten all nuts previously installed and install cotter pin (13). Ensure clamp halves (1) and (2) alinement is maintained.

(8) Seal around edges of clamp halves (1) and (2). Use sealing compound (item 177, App F) and brush (item 34, App F).



c. **Inspect (QA).**

END OF TASK

3.27. TAIL LANDING GEAR TAIL WHEEL DEFLECTOR, STRUCTURAL SUPPORT, AND TAIL WHEEL BRACKETS REMOVAL/INSTALLATION

3.27.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.27.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.69	Tail landing gear jacked (tripod jack)

Materials/Parts:

Cotter pin

3.27.3. Removal

a. **Remove tail wheel deflector (1) from structural support (2) and tail wheel fork (3).**

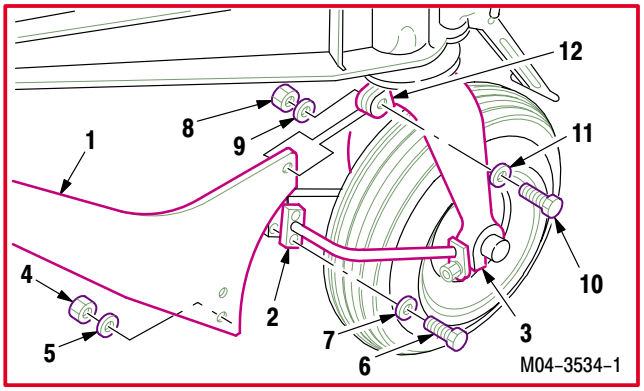
(1) Remove two nuts (4) and washers (5) from bolts (6).

(2) Remove two bolts (6) and washers (7) from support (2) and deflector (1).

(3) Remove nut (8) and washer (9) from bolt (10).

(4) Remove bolt (10) and washer (11) from clevis (12) and deflector (1).

(5) Remove deflector (1) from support (2) and fork (3).



GO TO NEXT PAGE

3.27. TAIL LANDING GEAR TAIL WHEEL DEFLECTOR, STRUCTURAL SUPPORT, AND TAIL WHEEL BRACKETS REMOVAL/INSTALLATION – continued

CAUTION

Do not move aircraft after removal of deflector and support; unsecured tail wheel could fall off.

NOTE

Removal of support is typical for left and right struts.

b. **Remove support (2) from fork (3).**

(1) Remove and discard cotter pin (13).

(2) Remove nut (14), washer (15), support (2), and washer (16) from bolt (17) on fork (3).

NOTE

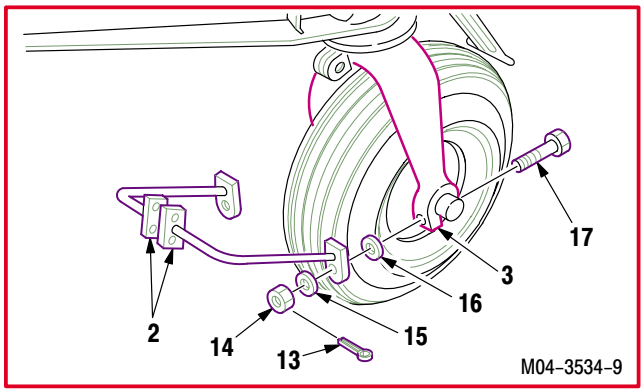
Removal of arm deflectors is typical for left or right deflector.

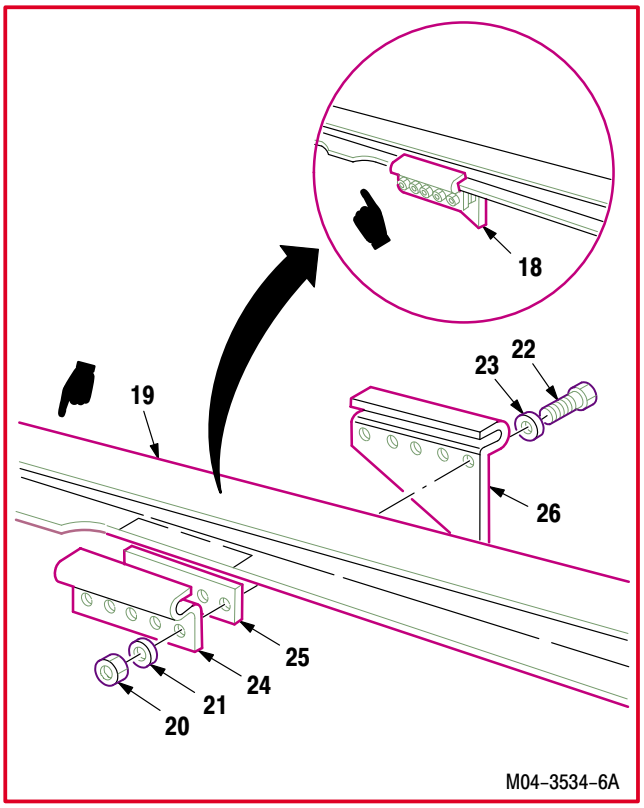
c. **Remove two tail wheel brackets (18) from trailing arm (19).**

(1) Remove five nuts (20) and washers (21).

(2) Remove five bolts (22) and washers (23) from bracket (18).

(3) Remove inner bracket (24), shim (25), and outer bracket (26) from arm (19).





3.27.4. Cleaning

a. **Clean removed and attaching parts** (para 1.57)**.**

3.27.5. Inspection

a. **Check mounting surfaces for cracks.** None allowed.

GO TO NEXT PAGE

3.27. TAIL LANDING GEAR TAIL WHEEL DEFLECTOR, STRUCTURAL SUPPORT, AND TAIL WHEEL BRACKETS REMOVAL/INSTALLATION – continued

3.27.6. Installation

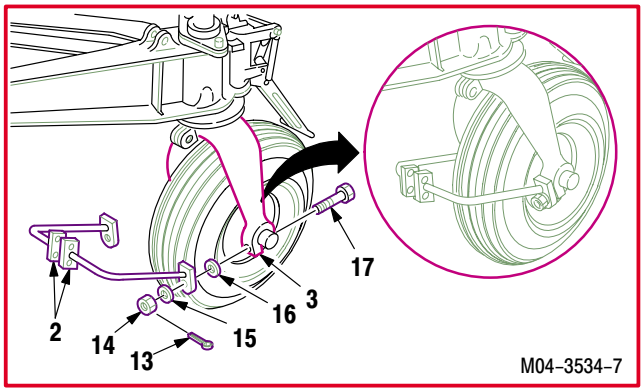
NOTE

Installation of support is typical for left and right struts.

a. **Install support (2) on fork (3).**

(1) Install washer (16) and aft end of support (2) on bolt (17).

(2) Install washer (15) and nut (14). Do not tighten nut (14).



b. **Install deflector (1) on fork (3) and support (2).**

(1) Aline deflector (1) with clevis (12).

(2) Install bolt (10) and washer (11) through clevis (12) and deflector (1).

(3) Install washer (9) and nut (8). Do not tighten nut (8).

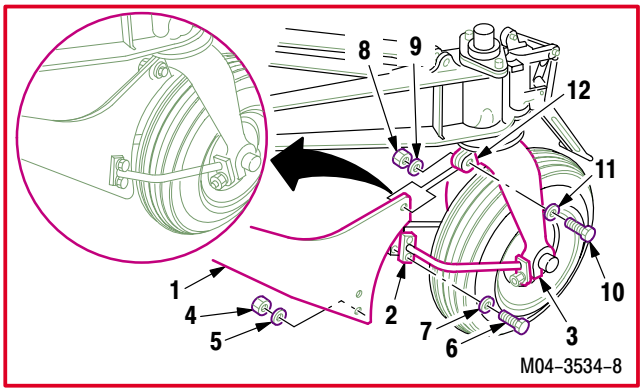
(4) Aline deflector (1) with support (2).

(5) Install bolt (6) and washer (7) through support (2) and deflector (1).

(6) Install two washers (5) and nuts (4).

(7) Tighten nuts (14) and (8).

(8) Install new cotter pin (13) through nut (14) and bolt (17).



GO TO NEXT PAGE

3.27. TAIL LANDING GEAR TAIL WHEEL DEFLECTOR, STRUCTURAL SUPPORT, AND TAIL WHEEL BRACKETS REMOVAL/INSTALLATION – continued

CAUTION

To prevent damage to trailing arms, ensure brackets are installed aft of tooling points.

NOTE

Installation of the brackets is typical for left and right arm brackets.

c. **Install two tail wheel brackets (18).**

(1) Aline forward end of deflector (1) with center of arm (19).

(2) Take measurement of **0.10 ±0.030 INCH** from end of deflector (1) forward along arm (19). Mark arm (19) where measurement is achieved. This will become the aft point for installing the bracket (18) and will allow a free swing of the deflector (1).

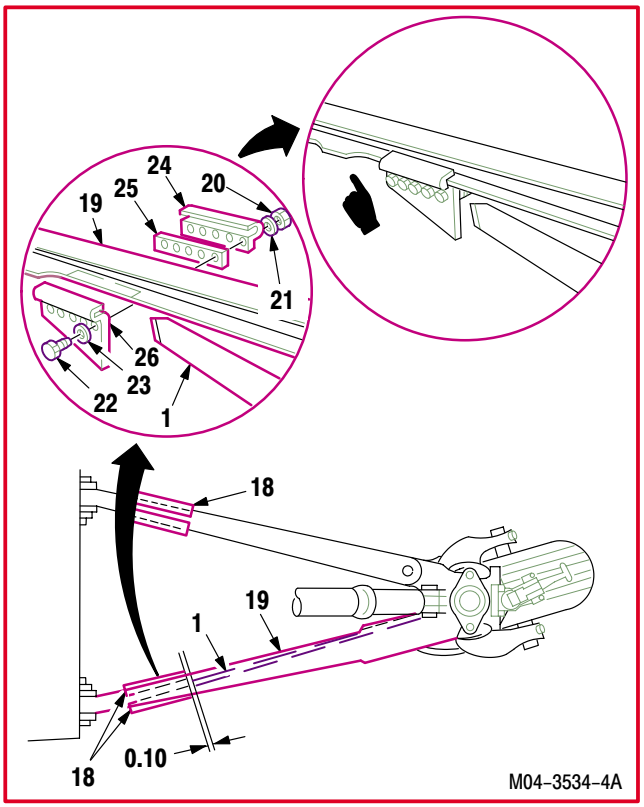
(3) Position bracket outer half (26) with aft edge on marked line on arm (19).

(4) Position bracket inner half (24) on arm (19) opposite outer half (26).

(5) Install shims (25) as required between inner half (24) and outer half (26) so bracket halves (24) and (26) will firmly grip arm (19) when holes are alined and bolts tightened.

(6) Install five bolts (22) and washers (23) through bracket halves (24) and (26) and shims (25).

(7) Install five washers (21) and nuts (20).



d. **Remove tail landing gear jack** (para 1.69)**.**

END OF TASK

SECTION III. TAIL LANDING GEAR MAINTENANCE

3.28. TAIL LANDING GEAR INSPECTION

3.28.1. Description

This task covers: Tail Landing Gear. General (Fittings, Castings, and Forgings).

3.28.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 55-2620-200-24
TM 1-1500-204-23

Personnel Required:

67R Attack Helicopter Repairer
67R3T Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

NOTE

Refer to para 19.1 for additional limits and corrective actions.

3.28.3. Tail Landing Gear

a. **Check components for damage and loose mounting.**

b. **Check for loose, missing, and damaged mounting hardware.**

c. **Check wheel fork for cracks, looseness, or misalinement.**

d. **Check tire for tread damage or uneven wear** (TM 55-2620-200-24)**.**

e. **Check wheel for cracks, looseness, deformation, and hub grease leakage.**

(1) Check wheel halves for cracks, dents, nicks, and corrosion (TM 1-1500-204-23).

f. **Check lock actuator and hydraulic lines for external fluid leakage.**

g. **Check proximity switch and wiring for cracked, broken, and burned insulation.**

(1) Check switch bracket and target for looseness or misalinement.

h. **Check shock strut for external fluid leakage and for cracks, looseness, and misalinement.**

GO TO NEXT PAGE

3.28. TAIL LANDING GEAR INSPECTION – continued

i. **Check shock strut for proper extension.**

(1) Strut extends **30.73 to 30.97 INCHES** with tailwheel clear of ground.

j. **Check shock strut rod end and bolt hole clearance; maximum 0.001 INCH clearance (or elongation) allowed.**

k. **Check trailing arms for cracks, distortion, and loose mounting.**

l. **Check trailing arm pivot bolt hole clearance; maximum 0.002 INCH clearance (or elongation) allowed.**

3.28.4. General (Fittings, Castings, And Forgings)

a. **If sharp edges can be blended and damage does not interfere with operational characteristics of affected components, nicks, scratches, and gouges which do not develop into cracks are generally acceptable.**

b. **If blending is required, remove minimal material to smooth sharp edges.**

c. **Cracks are generally not acceptable.** Use approved nondestructive testing methods to determine if cracks exist.

END OF TASK

3.29. REMOTE CONTROL LEVER REMOVAL/INSTALLATION

3.29.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.29.2. Initial Setup

Tools:

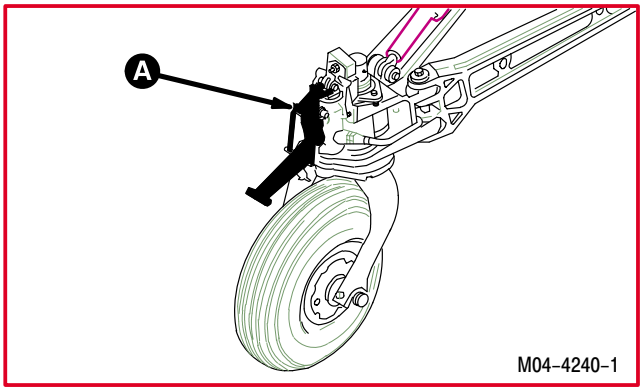
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



GO TO NEXT PAGE

3.29. REMOTE CONTROL LEVER REMOVAL/INSTALLATION – continued

3.29.3. Removal

a. **Remove remote control lever (1) from actuator (2).**

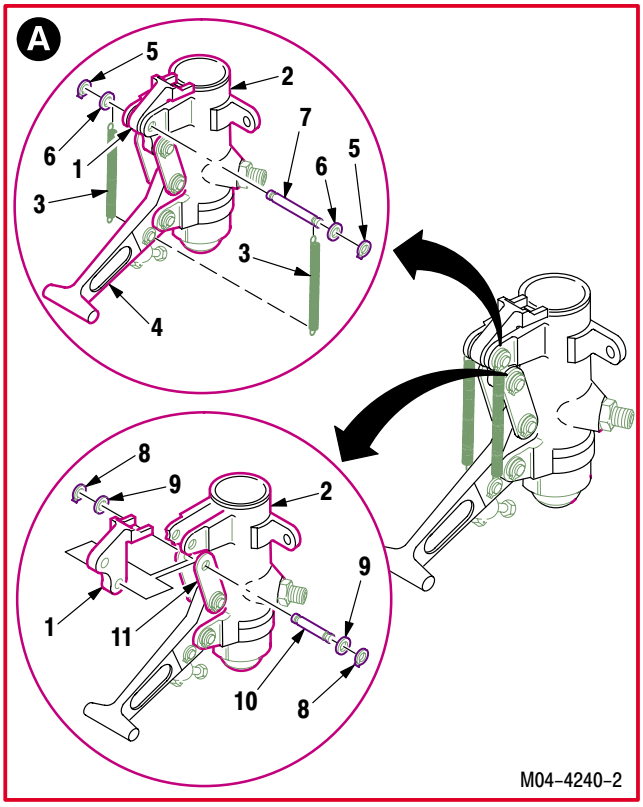
(1) Remove two springs (3) from handle (4) and lever (1).

(2) Remove two retaining rings (5) and washers (6) from pin (7).

(3) Remove pin (7) from actuator (2) and lever (1).

(4) Remove two retaining rings (8) and washers (9) from pin (10).

(5) Remove pin (10) from two connecting links (11) and lever (1).



3.29.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.29.5. Inspection

a. **Check retaining rings, springs, pins, and actuator assembly for cracks or corrosion.** None allowed.

GO TO NEXT PAGE

3.29. REMOTE CONTROL LEVER REMOVAL/INSTALLATION – continued

3.29.6. Installation

a. **Install lever (1) on actuator (2).**

(1) Install pin (10) through two connecting links (11) and lever (1).

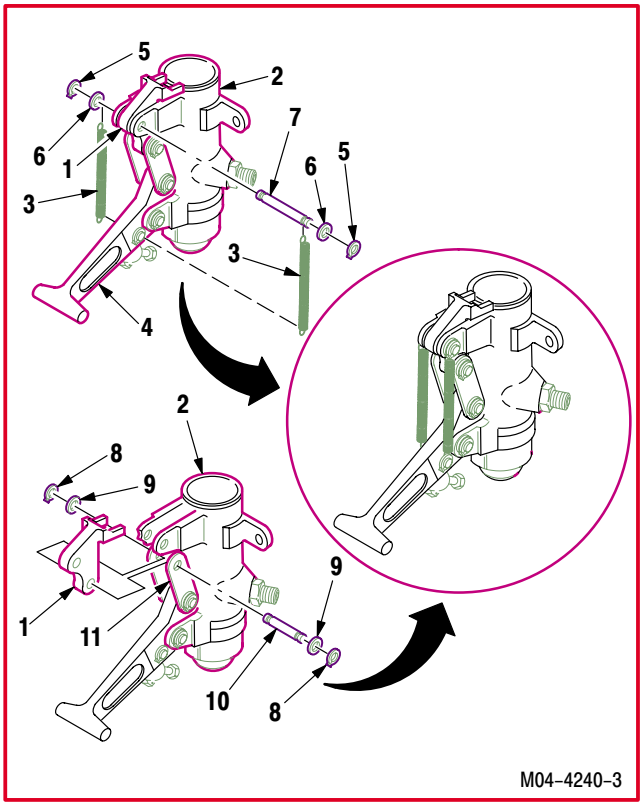
(2) Install two washers (9) and retaining rings (8) on pin (10).

(3) Install pin (7) through actuator (2) and lever (1).

(4) Install two washers (6) and retaining rings (5) on pin (7).

(5) Install two springs (3) on handle (4) and lever (1).

b. **Inspect (QA).**



END OF TASK

3.30. REMOTE CONTROL LEVER SLEEVE BEARING REPLACEMENT

3.30.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.30.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 55-1500-322-24

Materials/Parts:

Sleeve bearing
Epoxy primer coating kit (item 78, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

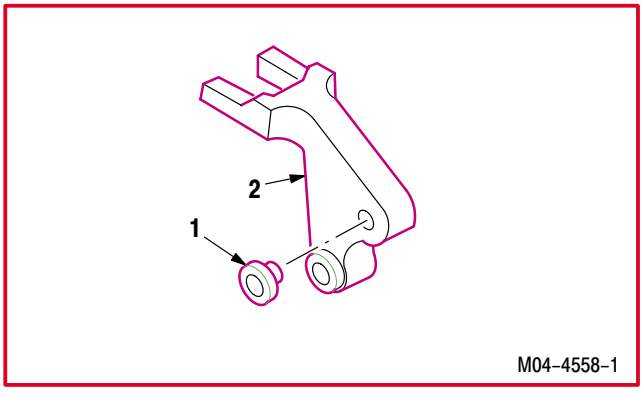
Ref	Condition
1.57	Helicopter safed
3.29	Remote control lever removed

NOTE

This task is typical for bearing sleeves installed four places on lever.

3.30.3. Removal

a. **Remove and discard sleeve bearing (1) from lever (2)** (TM 55-1500-322-24)**.**



3.30.4. Cleaning

a. **Clean primer from bearing holes** (para 1.47)**.**

3.30.5. Inspection

a. **Check lever for cracks.** None allowed.

b. **Check lever for corrosion** (para 1.49)**.**

c. **Check lever bearing hole diameter.**

(1) Diameter allowable **0.2965 to 0.2975 INCHES**.

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3.30. REMOTE CONTROL LEVER SLEEVE BEARING REPLACEMENT – continued

3.30.6. Installation



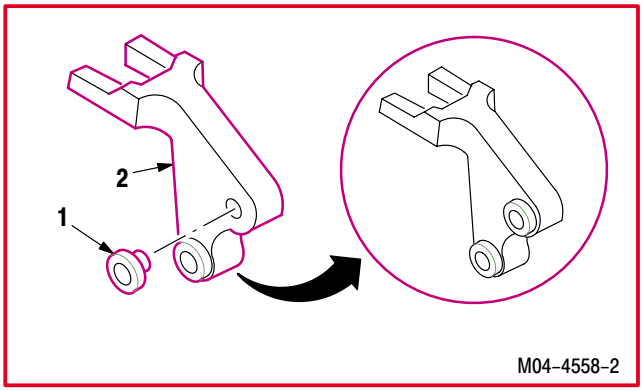
a. **Coat holes in lever (2).** Use epoxy primer coating kit (item 78, App F).

b. **Install bearing (1) in lever (2)** (TM 55-1500-322-24)**.**

c. **Wipe excess primer from bearing (1) and lever (2).**

d. **Inspect (QA).**

e. **Install remote control lever** (para 3.29)**.**



END OF TASK

3.31. TAIL LANDING GEAR UPPER CAM HOUSING REPAIR

3.31.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.31.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Retaining ring pliers (item 227, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 600 inch-pound 3/8-inch drive dial indicator torque wrench (item 447, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Packing
Retaining ring
Grease (item 87, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

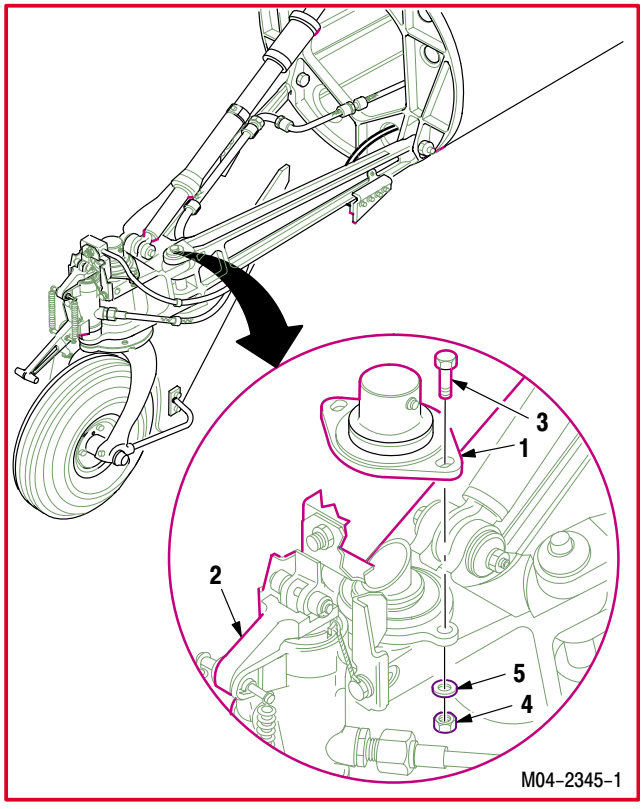
3.31.3. Removal

a. **Remove upper cam housing (1) from tail landing gear (2).**

(1) Hold two bolts (3). Remove self-locking nuts (4) and washers (5).

(2) Remove two bolts (3).

(3) Removing housing (1) from tail landing gear (2).



3.31.4. Cleaning

a. **Clean housing, lower cam, and fork** (para 1.47)**.**

3.31.5. Inspection

a. **Check housing, lower cam, and fork for damage.** None allowed.

GO TO NEXT PAGE

3.31. TAIL LANDING GEAR UPPER CAM HOUSING REPAIR – continued

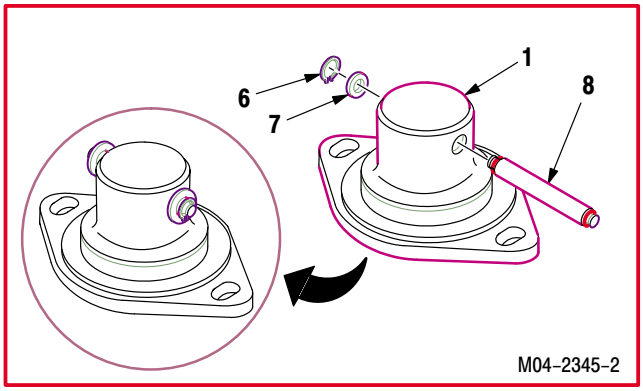
3.31.6. Repair

a. **Remove retaining ring (6) and washer (7) from end of pin (8).** Discard retaining ring (6). Use retaining ring pliers.

b. **Remove pin (8) from housing (1).**

c. **Install pin (8) in housing (1).**

d. **Install washer (7) and new retaining ring (6) on pin (8).** Use retaining ring pliers.



3.31.7. Installation



a. **Install new packing (9) in tail landing gear (2).**

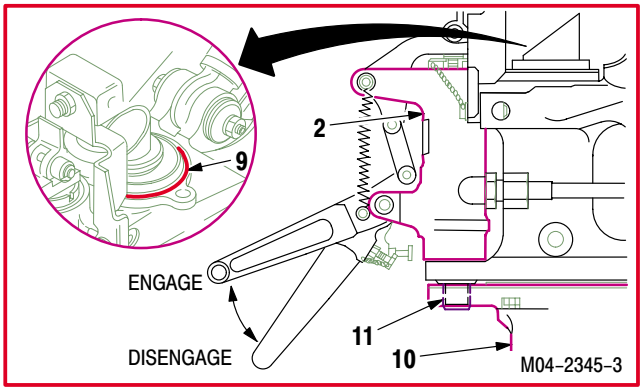
(1) Remove and discard packing (9).

(2) Lubricate new packing (9). Use grease (item 87, App F).

(3) Install packing (9).

b. **Position fork (10) in lock position.**

(1) Manually engage tail wheel lock (11).



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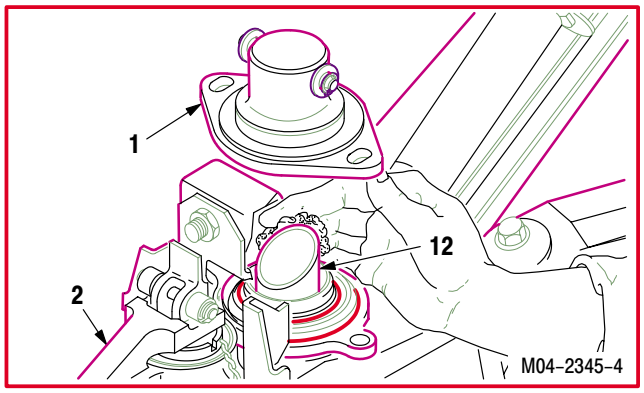
3.31. TAIL LANDING GEAR UPPER CAM HOUSING REPAIR – continued

c. **Install housing (1) on tail landing gear (2).** Torque two nuts (4) to **140 INCH-POUNDS**.

(1) Apply heavy coat of grease to cam (12). Use grease (item 87, App F).

(2) Place housing (1) over cam (12).

(3) Rotate housing (1) until it reaches lowest obtainable position.

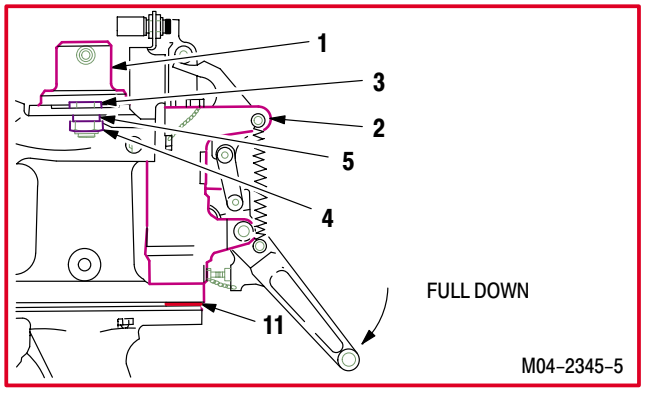


(4) Install two bolts (3).

(5) Hold two bolts (3). Install washers (5) and nuts (4).

(6) Hold two bolts (3). Torque nuts (4) to **140 INCH-POUNDS**. Use torque wrench.

(7) Disengage tail wheel lock (11).



d. **Inspect (QA).**

END OF TASK

3.32. TAIL LANDING GEAR ACTUATING CYLINDER REMOVAL/INSTALLATION

3.32.1. Description

This task covers: Removal. Cleaning. Inspection. Installation

3.32.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
14-quart utility pail (item 222, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)
30 - 200 inch-pound 1/4-inch drive click type torque wrench (item 436, App H)

References:

TM 1-1520-238-T

Materials/Parts:

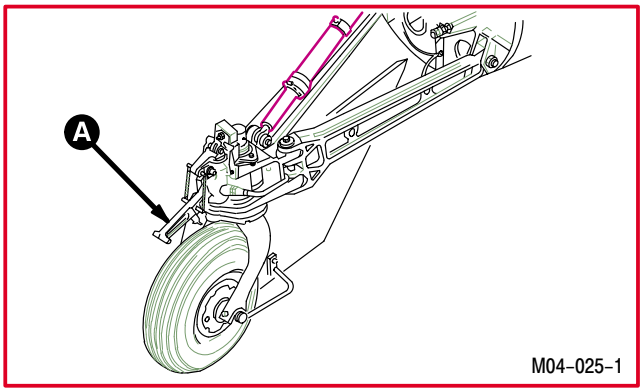
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.69	Tail landing gear jacked (tripod jack)



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3.32. TAIL LANDING GEAR ACTUATING CYLINDER REMOVAL/INSTALLATION – continued

3.32.3. Removal

a. **Remove hose (1) from actuating cylinder (2).**

(1) Hold boss nipple (3). Remove nut (4). Use pail to catch hydraulic fluid spills.

(2) Expel hydraulic fluid from actuator (2) by moving lock release handle (5) up and down several times. Use pail to catch fluid.

(3) Leave handle (5) up.

b. **Remove cylinder (2) and switch tail bracket (6) from trailing arm (7).**

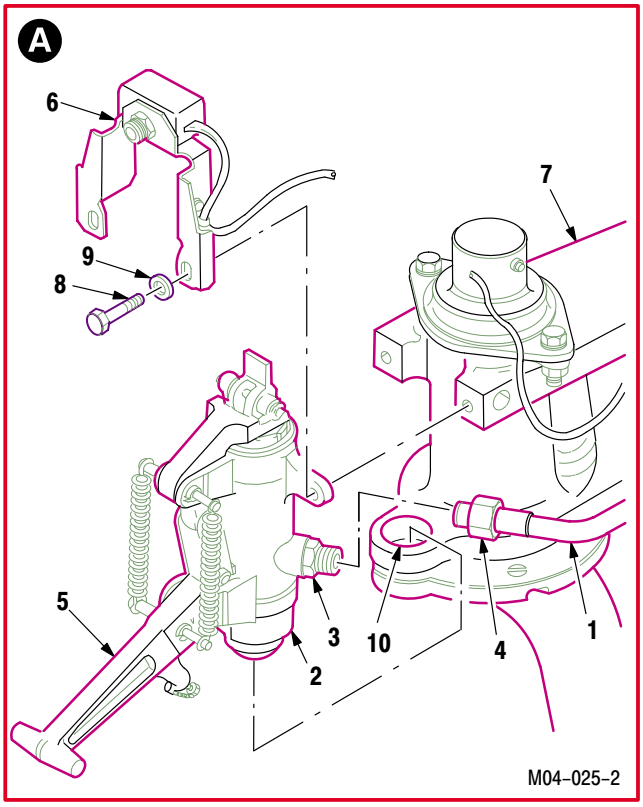
(1) Remove lockwire from two bolts (8).

(2) Remove two bolts (8) and washers (9).

(3) Remove bracket (6).

(4) Lay bracket (6) on trailing arm (7).

(5) Lift cylinder (2) from socket (10).



3.32.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.32.5. Inspection

a. **Check removed and attaching parts for damage.** None allowed.

b. **Check removed and attaching parts for corrosion** (para 1.49)**.**

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3.32. TAIL LANDING GEAR ACTUATING CYLINDER REMOVAL/INSTALLATION – continued

3.32.6. Installation

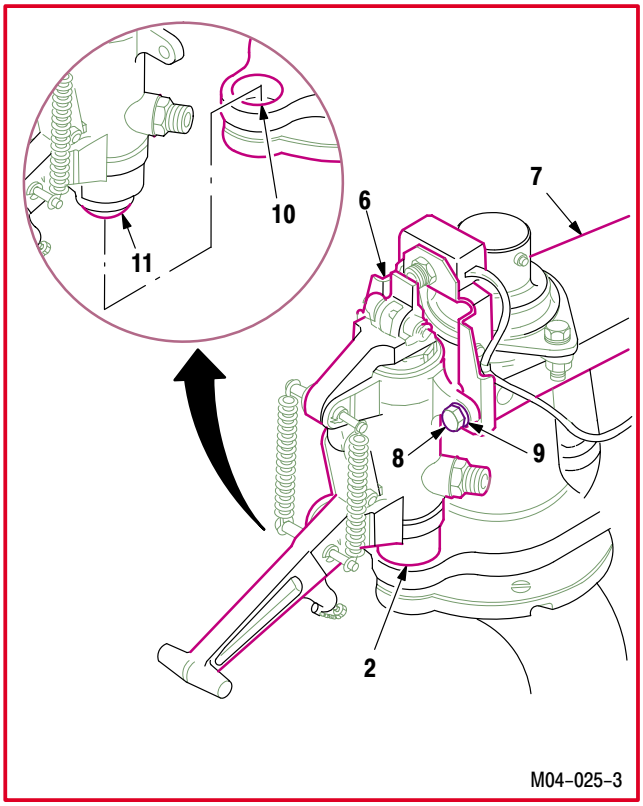
a. **Install cylinder (2) and bracket (6) on trailing arm (7).** Torque two bolts (8) to **30 INCH-POUNDS**.

(1) Install two bolts (8) and washers (9) through bracket (6) and cylinder (2) mounting holes.

(2) Install cylinder (2) and bracket (6) on socket (10) with wheel lock fuse pin (11) centered in socket (10) on trailing arm (7).

(3) Install two bolts (8) and washers (9) in mounting holes of trailing arm (7). Torque bolts (8) to **30 INCH-POUNDS**. Use torque wrench.

(4) Lockwire two bolts (8). Use wire (item 224, App F).



b. **Check free movement of pin (11).**

(1) Move handle (5) up and down.

(2) Check that pin (11) does not rub or bind.

(3) If pin (11) rubs or binds, go to steps c thru e. If pin (11) does not bind, go to step f.

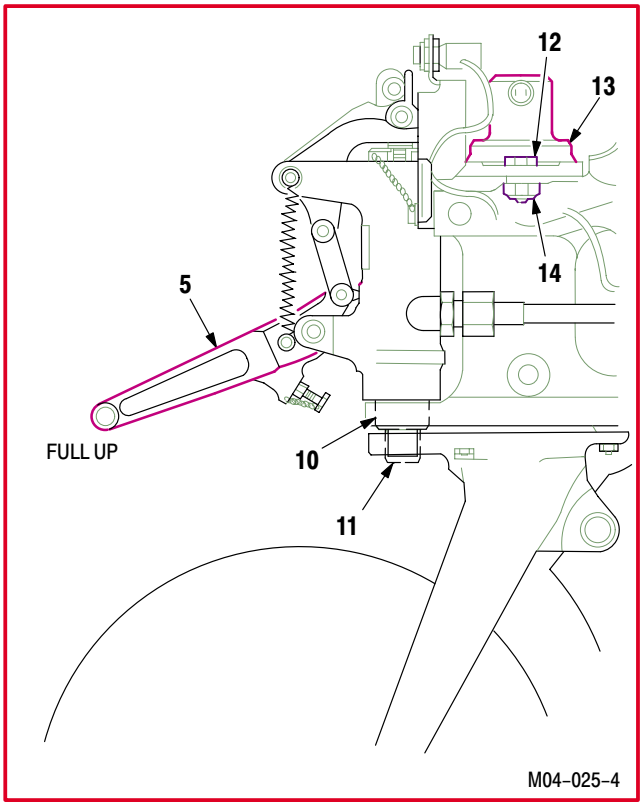
c. **Loosen two bolts (12) installed in housing (13).**

(1) Hold two bolts (12). Loosen nuts (14).

d. **Adjust housing (13) to pin (11) in socket (10).**

e. **Torque two nuts (14) to 150 INCH-POUNDS.**

(1) Hold two bolts (12). Torque nuts (14) to **150 INCH-POUNDS.** Use torque wrench.



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3.32. TAIL LANDING GEAR ACTUATING CYLINDER REMOVAL/INSTALLATION – continued

f. **Install hose (1) to nipple (3) in cylinder (2).**

(1) Hold nipple (3). Tighten nut (4).

(2) Bleed all air from hydraulic line (para 1.35).

NOTE

If cylinder is being replaced, go to steps g. thru h. If cylinder is not being replaced, go to step i.

g. **Adjust handle (5).**

(1) Remove and discard lockwire from bolt (15).

(2) Loosen self-locking nut (16).

(3) Turn bolt (15) until it bottoms.

(4) Slowly move handle (5) down to a point where it will not go back up automatically.

(5) Turn bolt (15) out to seat on cylinder (2).

(6) Turn bolt (15) clockwise two turns.

(7) Hold bolt (15). Tighten nut (16).

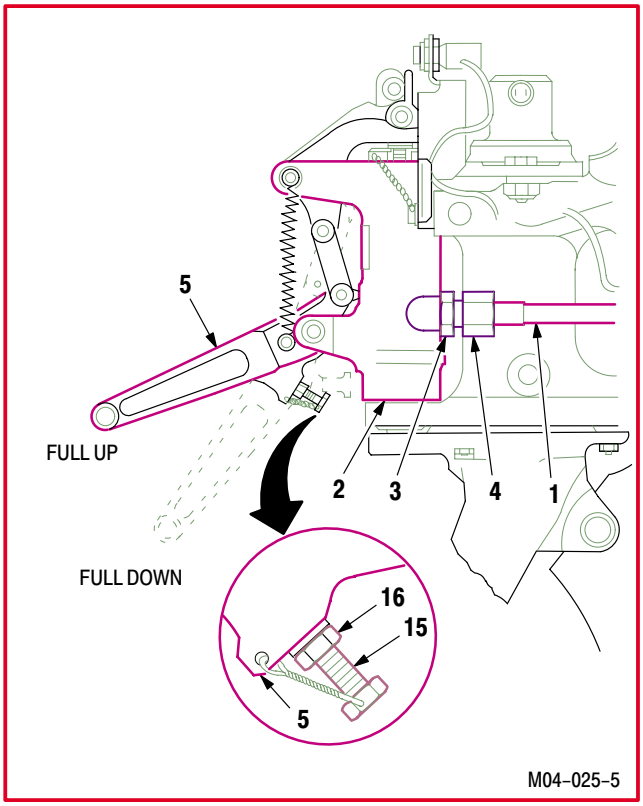
(8) Lockwire bolt (15) to hole in handle (5). Use wire (item 224, App F).

h. **Adjust proximity switch** (para 3.36)**.**

i. **Inspect (QA).**

j. **Perform tail landing gear maintenance operational check** (TM 1-1520-238-T)**.**

k. **Remove tripod jack** (para 1.69)**.**



END OF TASK

3.33. TAIL LANDING GEAR ACTUATING CYLINDER SPRING REPLACEMENT (AVIM)

3.33.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly. Testing.

3.33.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
14-quart utility pail (item 222, App H)
Adjustable air filtering respirator (item 262, App H)
Hydraulic system components test stand (item 359, App H)
12-inch strap pipe wrench (item 425, App H)
Spanner wrench (item 429, App H)
30 - 150 inch-pound 3/8-inch drive click type torque wrench (item 441, App H)

Materials/Parts:

Packing (3)
Seal (2)
Wiper ring
Antiseize compound (item 27, App F)
Hydraulic fluid (item 93, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

3.33.3. Disassembly

a. **Remove actuator assembly spring (1) from actuating cylinder (2).**

(1) Remove packing nut (3) from cylinder (2). Use spanner wrench. Hold cylinder (2) with strap wrench.

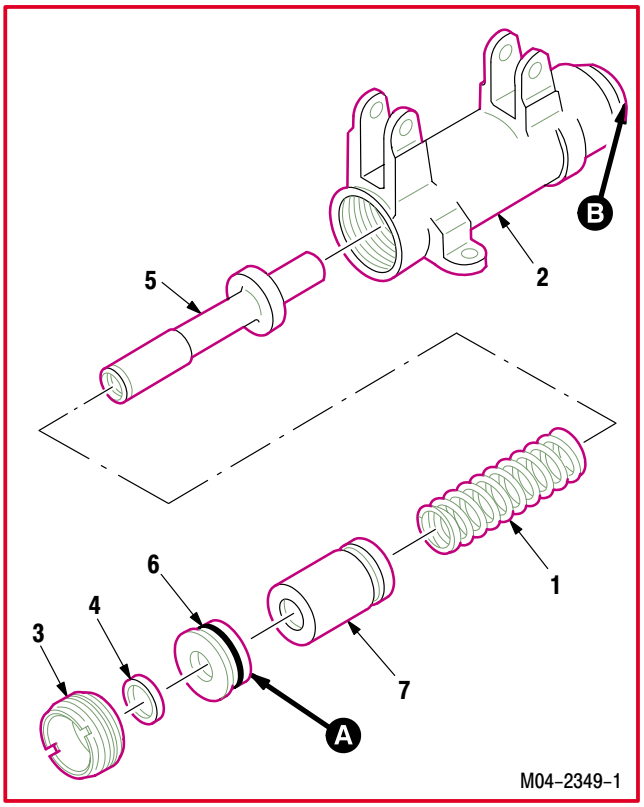
(2) Remove and discard wiper ring (4) from actuator piston (5).

(3) Remove actuator lock bearing (6) from cylinder (2).

(4) Remove piston stop (7) from cylinder (2).

(5) Remove and discard spring (1) from cylinder (2).

(6) Remove piston (5) from cylinder (2).



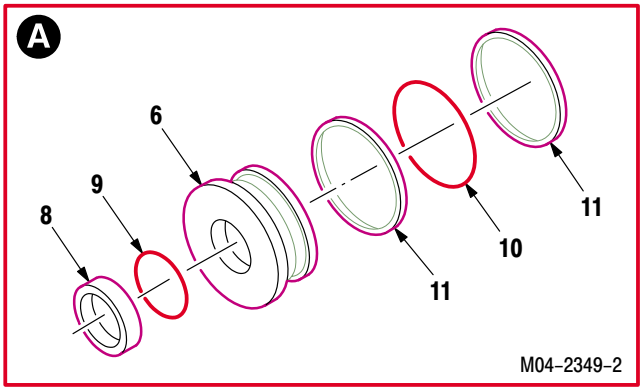
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3.33. TAIL LANDING GEAR ACTUATING CYLINDER SPRING REPLACEMENT (AVIM) – continued

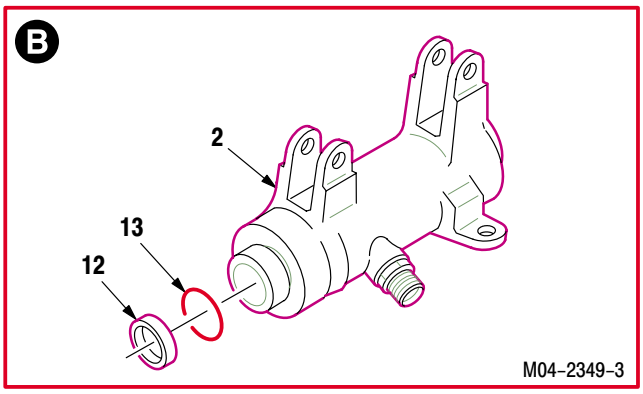
b. **Disassemble bearing (6).**

(1) Remove and discard seal (8) and packing (9) from bearing (6).

(2) Remove packing (10) and two packing retainers (11) from bearing (6). Discard packing (10).



c. **Remove and discard seal (12) and packing (13) from cylinder (2).**



3.33.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.33.5. Inspection

a. **Check threaded area on packing nut for wear.** None allowed.

b. **Check threaded area in cylinder for wear and stripped threads.** None allowed.

c. **Check interior walls of cylinder for wear.** None allowed.

d. **Check packing grooves in bearing sleeve for wear.** None allowed.

e. **Check piston stop for wear at spring contact area, and for flaring at piston contact area.** None allowed.

f. **Check piston stop for cracks.** None allowed.

g. **Check piston for wear at packing contact area and spring contact area.** None allowed.

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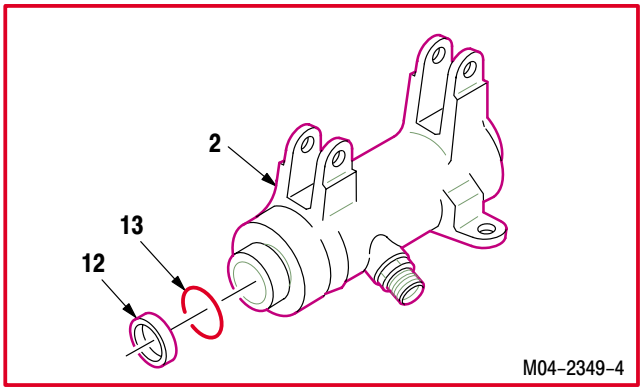
3.33. TAIL LANDING GEAR ACTUATING CYLINDER SPRING REPLACEMENT (AVIM) – continued

3.33.6. Assembly



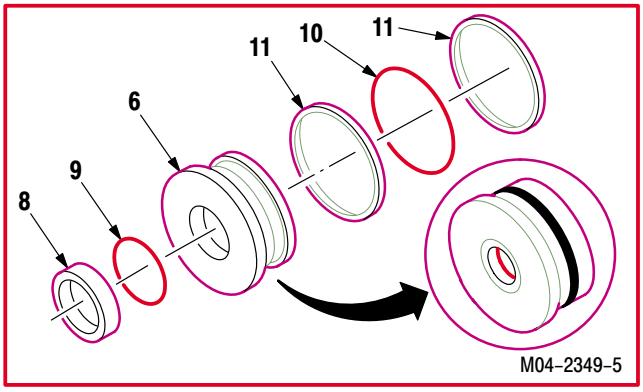
a. **Lubricate new ring (4), packings (9), (10), (13), seal (12), and retainers (11).** Use hydraulic fluid (item 93, App F).

b. **Install new packing (13) and seal (12) in cylinder (2).**



c. **Install new seal (8) and packing (9) in bearing (6).**

d. **Install two retainers (11) and new packing (10) on bearing (6).**





e. **Assemble cylinder (2).** Torque nut (3) to **80 INCH-POUNDS**.

(1) Install piston (5), spring (1), and piston stop (7) in cylinder (2).

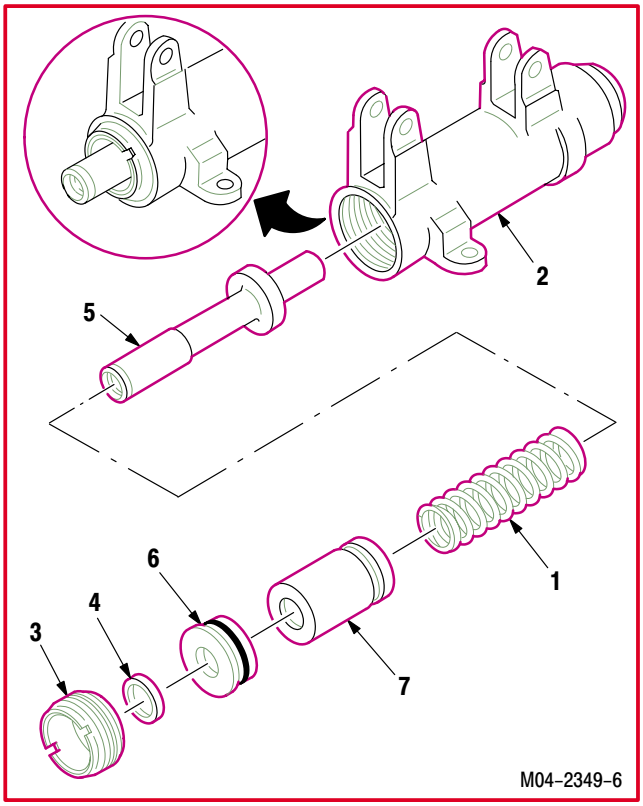
(2) Install new ring (4) in nut (3).

(3) Lubricate threads of nut (3). Use antiseize compound (item 27, App F).

(4) Install bearing (6) and nut (3) in cylinder (2). Use spanner wrench and strap wrench.

(5) Torque nut (3) to **80 INCH-POUNDS**. Use torque wrench.

f. **Inspect (QA).**



GO TO NEXT PAGE

3.33. TAIL LANDING GEAR ACTUATING CYLINDER SPRING REPLACEMENT (AVIM) – continued

3.33.7. Testing

WARNING

The hydraulic test stand operates under high fluid pressure. During operation of the hydraulic test stand, operating instructions must be strictly followed. Failure to follow operating instructions could result in injury to personnel. If injury occurs, seek medical aid.

a. **Install hydraulic test stand to cylinder.**

b. **Apply 4400 to 4600 psi for 3 MINUTES.**

c. **Check for leakage (QA).** None allowed.

d. **Inspect for cylinder deformation.** None allowed.

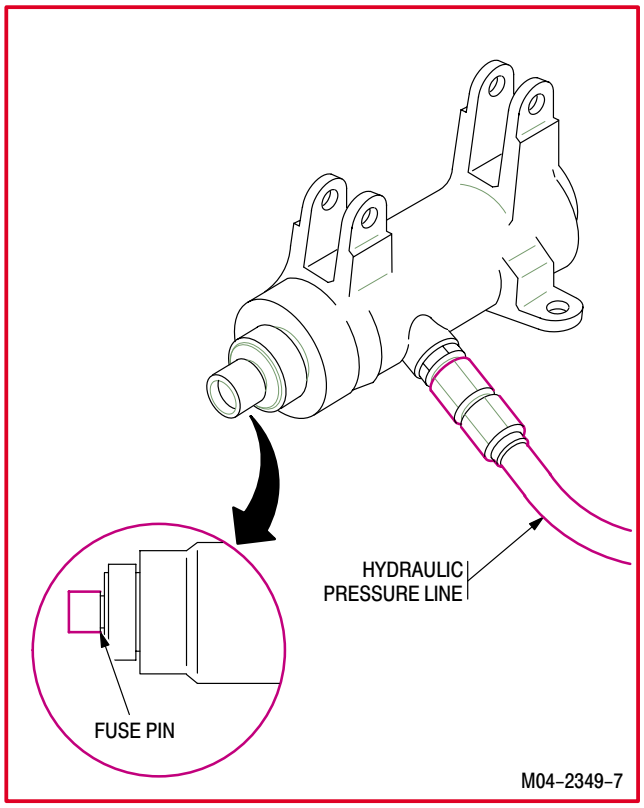
e. **Cycle pressure 25 times.**

(1) Increase pressure from 0 to between 2900 and 3100 psi during each cycle.

(2) Fuse pin should be fully exposed at zero psi.

f. **Check for leakage at both ends (QA).** One drop allowed at each end during 25 cycles.

g. **Remove hydraulic test stand from cylinder.**



END OF TASK

3.34. TAIL LANDING GEAR ACTUATING CYLINDER LOCK SWITCH ASSEMBLY REPLACEMENT

3.34.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.34.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

References:

TM 1-1520-238-T

Materials/Parts:

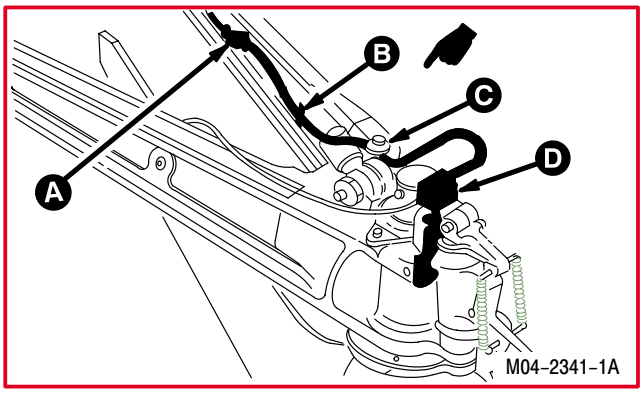
Switch
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed



3.34.3. Removal

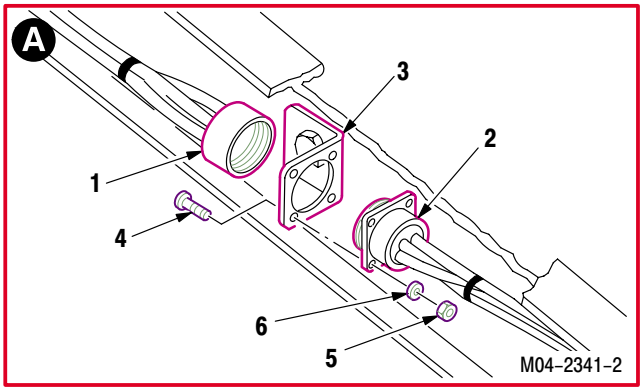
a. **Detach connector P760 (1) from receptacle J760 (2).**

b. **Remove receptacle J760 (2) from bracket (3).**

(1) Hold four screws (4). Remove four nuts (5) and washers (6).

(2) Remove four screws (4) from bracket (3).

(3) Detach connector (2) from bracket (3).



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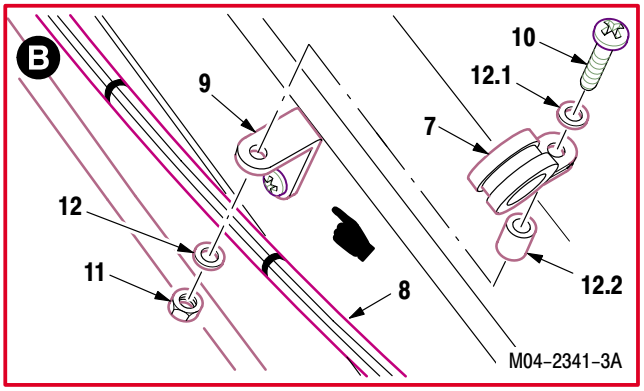
3.34. TAIL LANDING GEAR ACTUATING CYLINDER LOCK SWITCH ASSEMBLY REPLACEMENT – continued

c. **Remove clamp (7) from cable (8) and angle bracket (9).**

(1) Hold screw (10). Remove nut (11) and washer (12).

(2) Remove screw (10), washer (12.1), clamp (7), and spacer (12.2) from bracket (9).

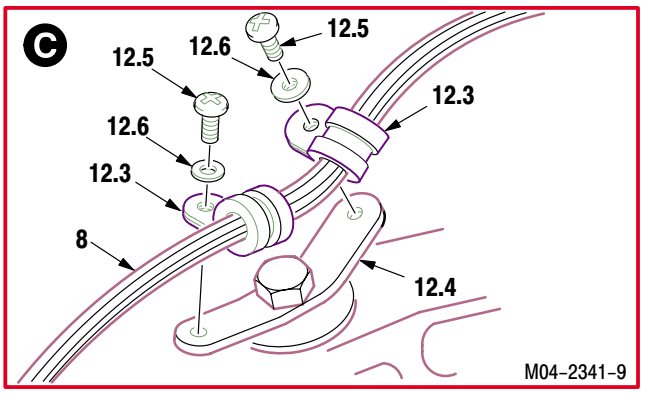
(3) Remove clamp (7) from cable (8).



d. **Remove two clamps (12.3) from cable (8) and bracket (12.4).**

(1) Remove two screws (12.5) and washers (12.6) from bracket (12.4).

(2) Remove two clamps (12.3) from cable (8).



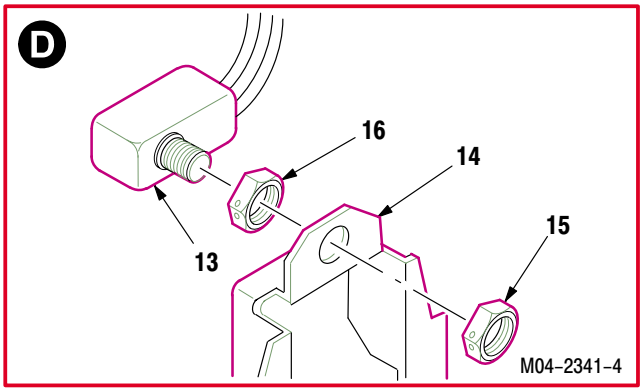
e. **Remove lock switch assembly (13) from switch tail bracket (14).**

(1) Remove lockwire from nuts (15) and (16).

(2) Hold switch (13). Remove nut (15).

(3) Remove switch (13) and nut (16) from bracket (14).

(4) Remove nut (16) from switch (13). Discard switch (13).



3.34.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.34.5. Inspection

a. **Check removed and attaching parts for damaged.** None allowed.

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3.34. TAIL LANDING GEAR ACTUATING CYLINDER LOCK SWITCH ASSEMBLY REPLACEMENT – continued

3.34.6. Installation

NOTE

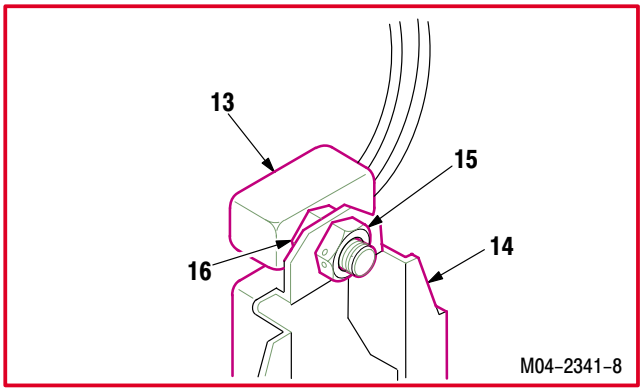
If replacement switched will not fit in bracket, ream the hole in the bracket to **0.474 to 0.482 INCH** to accommodate new switch.

a. **Install new switch (13) on bracket (14).**

(1) Install nut (16) on switch (13).

(2) Install switch (13) and nut (16) on bracket (14).

(3) Install nut (15) on switch (13). Do not tighten nuts.

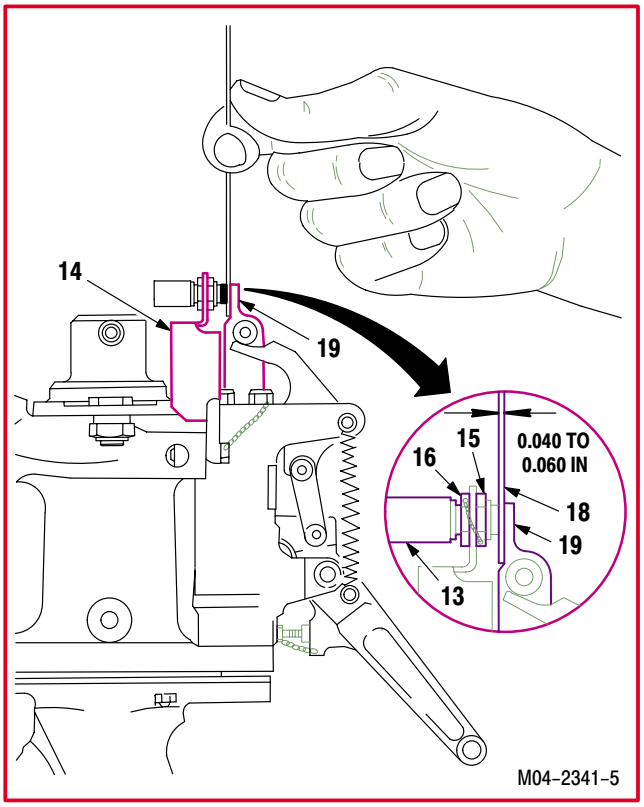


b. **Adjust switch (13).**

(1) Adjust nuts (15) and (16) to move switch (13) to obtain **0.040 to 0.060 INCH** gap between sensor (18) and target (19).

(2) Tighten nuts (15) and (16).

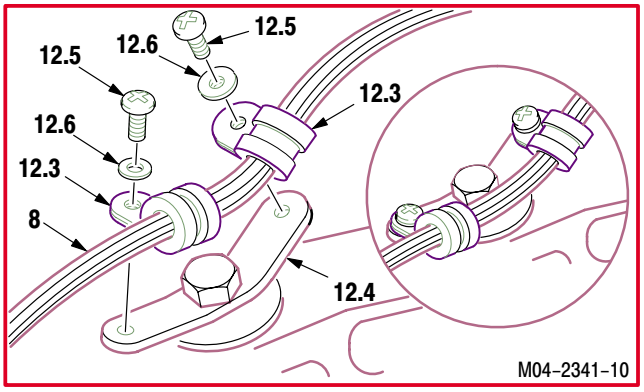
(3) Lockwire nut (15) to nut (16). Use wire (item 224, App F).



c. **Install two clamps (12.3) on cable (8) and bracket (12.4).**

(1) Install two clamps (12.3) on cable (8).

(2) Install two screws (12.5) through washers (12.6), clamps (12.3), and bracket (12.4).



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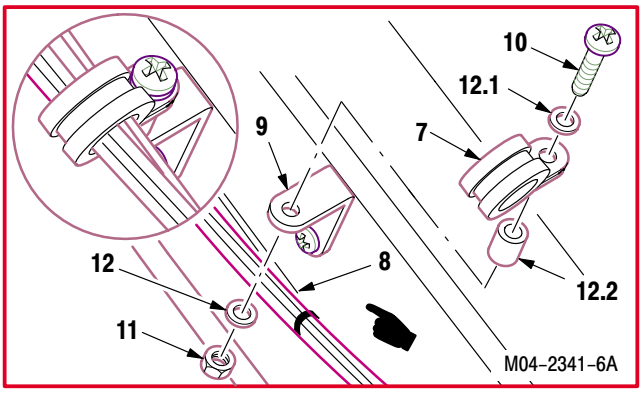
3.34. TAIL LANDING GEAR ACTUATING CYLINDER LOCK SWITCH ASSEMBLY REPLACEMENT – continued

d. **Install clamp (7) on bracket (9).**

(1) Install clamp (7) on cable (8).

(2) Install screw (10) through washer (12.1), clamp (7), spacer (12.2), and bracket (9).

(3) Hold screw (10). Install washer (12) and nut (11).

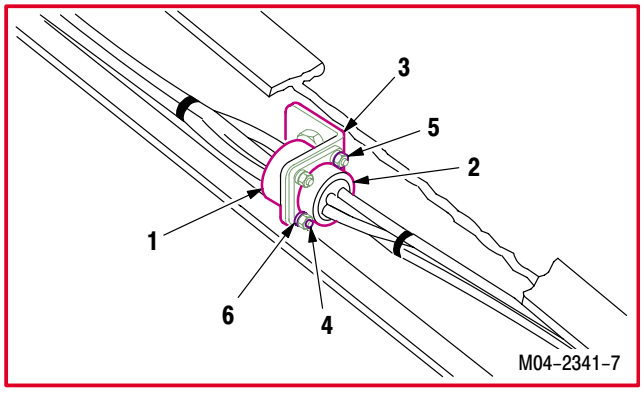


e. **Install receptacle J760 (2) on bracket (3).**

(1) Aline receptacle J760 (2) on bracket (3).

(2) Install four screws (4) through bracket (3).

(3) Hold four screws (4). Install nuts (5) and washers (6).



f. **Attach connector P760 (1) to receptacle J760 (2).**

g. **Inspect (QA).**

h. **Perform tail landing gear maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

3.35. TAIL LANDING GEAR ACTUATING CYLINDER LOCK RELEASE HANDLE REPLACEMENT

3.35.1. Description

This task covers: Removal. Cleaning. Inspection. Installation. Adjustment.

3.35.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Retaining ring pliers (item 227, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

Materials/Parts:

Wire (item 224, App F)

3.35.3. Removal

a. **Remove lock release handle (1) from lock actuating cylinder (2).**

(1) Remove two extension helical springs (3) from handle (1).

(2) Remove two retaining rings (4) and washers (5) from pin (6).

(3) Remove pin (6) from handle (1) and linkage attachment point (7).

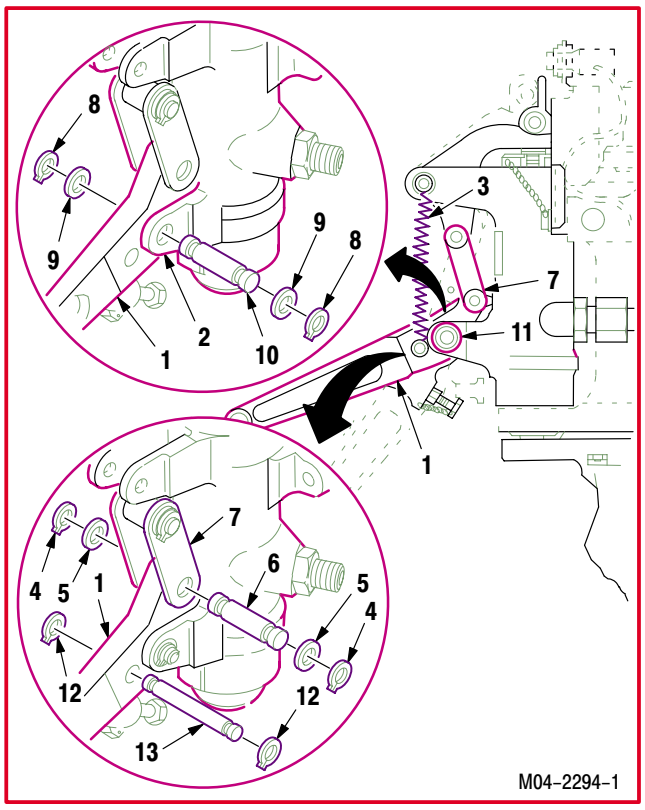
(4) Remove two retaining rings (8) and two washers (9) from pin (10).

(5) Remove pin (10) from handle pivot point (11).

(6) Remove handle (1).

(7) Remove two retaining rings (12) from pin (13).

(8) Remove pin (13) from handle (1).



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3.35. TAIL LANDING GEAR ACTUATING CYLINDER LOCK RELEASE HANDLE REPLACEMENT – continued

b. **Remove bolt (14) from handle (1).**

(1) Remove lockwire from bolt (14).

(2) Hold bolt (14). Loosen nut (15).

(3) Remove bolt (14), nut (15), and washer (16).

3.35.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.35.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check cylinder for cracks or leaks.** None allowed.

3.35.6. Installation

a. **Install bolt (15) in handle (1).**

(1) Install nut (15) and washer (16) on bolt (14).

(2) Install bolt (14) in handle (1). Do not tighten nut (15).

b. **Install handle (1) on cylinder (2).**

(1) Install pin (10) through two washers (9) and pivot point (11).

(2) Install two rings (8) on pin (10). Use retaining ring pliers.

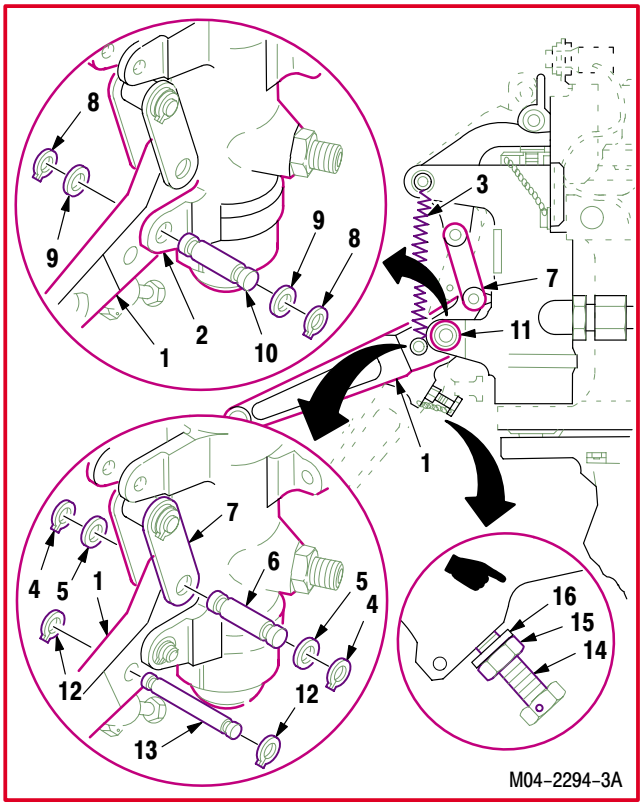
(3) Install pin (6) through two washers (5) and attachment point (7).

(4) Install two rings (4) on pin (6). Use retaining ring pliers.

(5) Install pin (13) through handle (1).

(6) Install two rings (12) on pin (13). Use retaining ring pliers.

(7) Install two springs (3) on pin (13).



GO TO NEXT PAGE

3.35. TAIL LANDING GEAR ACTUATING CYLINDER LOCK RELEASE HANDLE REPLACEMENT – continued

3.35.7. Adjustment

a. **Adjust handle (1).**

(1) Lower handle (1) until it does not automatically reverse.

(2) Back out bolt (14) until bolt head reaches cylinder (2).

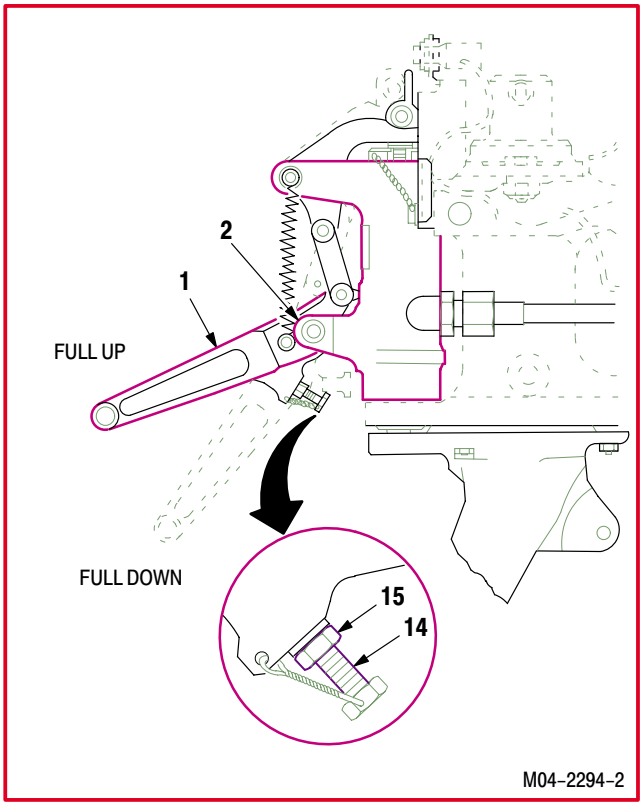
(3) Turn bolt (14) into handle (1) five turns.

(4) Hold bolt (14). Tighten nut (15).

(5) Raise and lower handle (1) to check for proper operation.

(6) Lockwire bolt (14) to handle (1). Use wire (item 224, App F).

b. **Inspect (QA).**



END OF TASK

3.36. TAIL LANDING GEAR ACTUATING CYLINDER WHEEL LOCK TARGET REPLACEMENT

3.36.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.36.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
3/4 x 3/8-inch drive open end socket wrench crowfoot attachment (item 97, App H)
Chemical protective gloves (item 154, App H)
14-quart utility pail (item 222, App H)
Adjustable air filtering respirator (item 262, App H)
12-inch strap pipe wrench (item 425, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)

Materials/Parts:

Lubricant (item 113, App F)
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.69	Tail landing gear jacked (tripod jack)
3.32	Tail landing gear actuating cylinder removed
3.35	Tail landing gear lock switch assembly removed

3.36.3. Removal

a. **Remove wheel lock target (1) from actuating cylinder (2).**

(1) Ensure handle (3) is up.

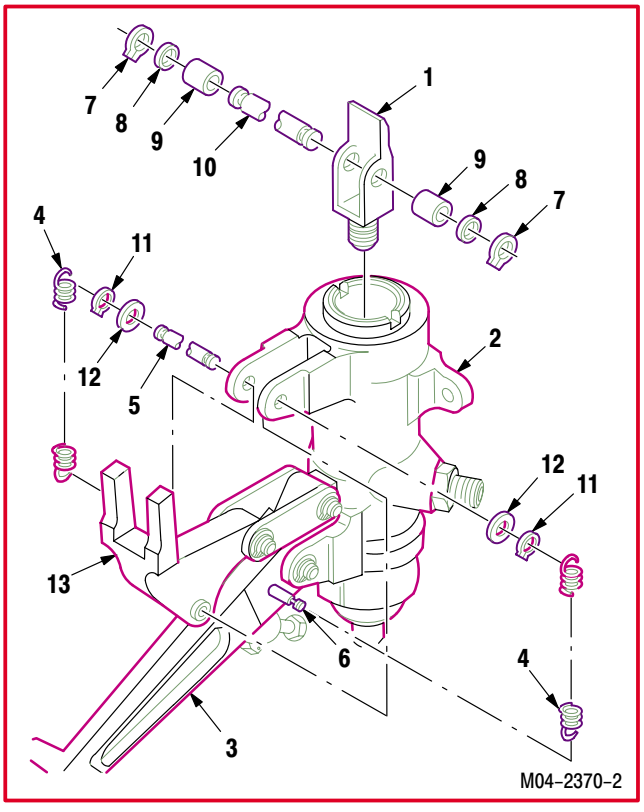
(2) Remove two extension helical springs (4) from pins (5) and (6).

(3) Remove two retaining rings (7), washers (8), lever roller assemblies (9), and pin (10) from target (1).

(4) Remove two retaining rings (11), washers (12), and pin (5) from cylinder (2).

(5) Position remote control lever (13) away from target (1).

(6) Remove target (1) from cylinder (2). Use strap wrench.



GO TO NEXT PAGE

3.36. TAIL LANDING GEAR ACTUATING CYLINDER WHEEL LOCK TARGET REPLACEMENT – continued

3.36.4. Cleaning

a. **Clean cylinder and removed and attaching parts** (para 1.47)**.**

3.36.5. Inspection

a. **Check removed and attaching parts** (para 3.28)**.**

3.36.6. Installation



a. **Install target (1) in cylinder (2).** Torque target (1) to **20 INCH-POUNDS**.

(1) Lubricate threads of target (1). Use lubricant (item 113, App F).

(2) Install target (1) in cylinder (2). Use strap wrench and crowfoot.

(3) Torque target (1) to **20 INCH-POUNDS**. Use torque wrench.

(4) Move lever (13) up to target (1).

(5) Slide pin (5) through cylinder (2) and lever (13).

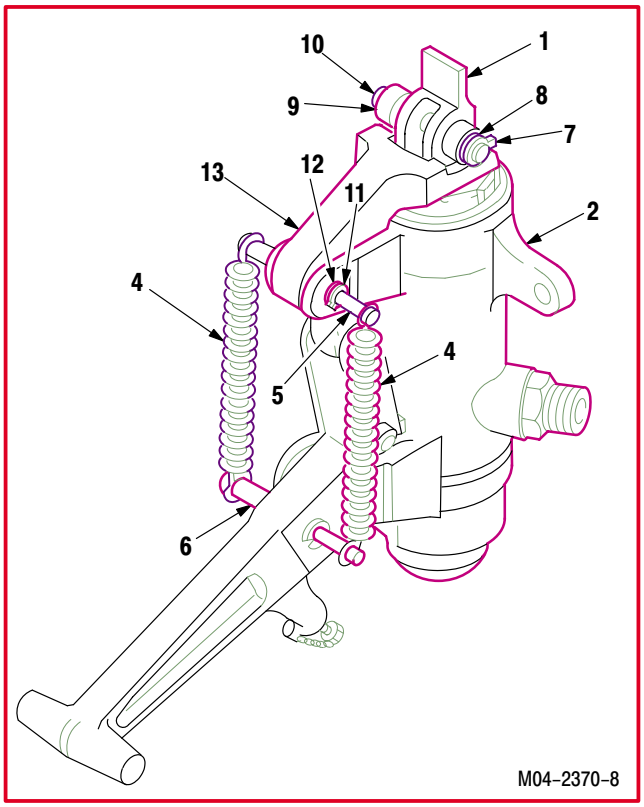
(6) Install two washers (12) and rings (11) on pin (5).

(7) Slide pin (10) in target (1).

(8) Install two rollers (9), washers (8), and retaining rings (7) on pin (10).

(9) Install two springs (4) on pins (5) and (6).

b. **Install and adjust tail landing gear lock switch assembly** (para 3.35)**.**



GO TO NEXT PAGE

3.36. TAIL LANDING GEAR ACTUATING CYLINDER WHEEL LOCK TARGET REPLACEMENT – continued

c. **Adjust gap between lock switch assembly (14) to target (1).** Torque two bolts (15) to **30 INCH-POUNDS**.

(1) Remove lockwire from two bolts (15).

(2) Loosen two bolts (15).

NOTE

To adjust gap on the -503 tail landing gear assembly go to step (3). To adjust gap on the -503 tail landing gear assembly go to step (4).

(3) On the -503 assembly, adjust switch tail bracket (16) up or down to obtain a gap of **0.130 to 0.150 INCH** between bottom of switch (14) and top of target (1).

(4) On the -505 assembly, adjust switch tail bracket (16) up or down to obtain a gap of **0.105 to 0.125 INCH** between bottom of switch (14) and top of target (1).

(5) Tighten two bolts (15).

(6) Recheck gap between switch (14) and target (1). If needed, loosen bolts (15) and readjust gap [steps c.(3) or c.(4)].

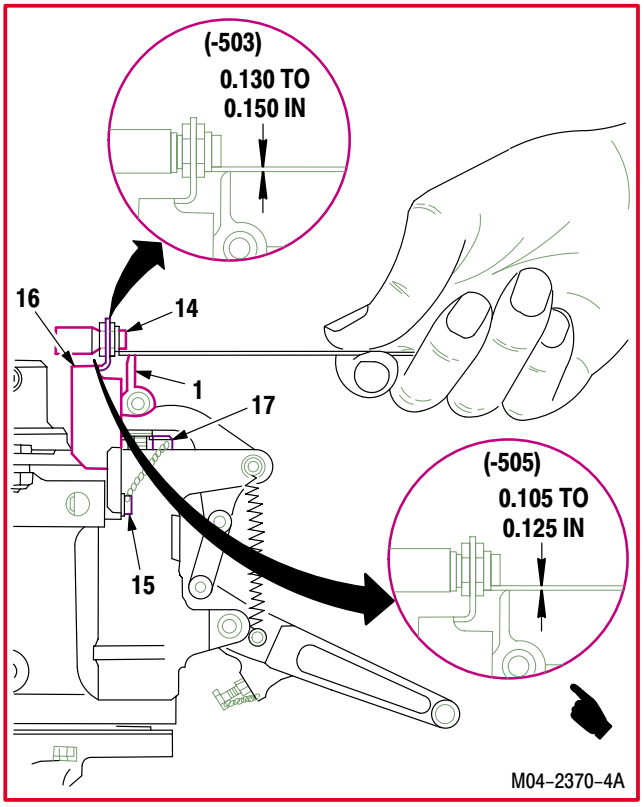
(7) Torque two bolts (15) to **30 INCH-POUNDS**. Use torque wrench.

(8) Lockwire two bolts (15) to packing nut (17). Use wire (item 224, App F).

d. **Install tail landing gear actuating cylinder** (para 3.32)**.**

e. **Inspect (QA).**

f. **Remove tripod jack** (para 1.69)**.**



END OF TASK

3.37. TAIL LANDING GEAR ACTUATING CYLINDER FUSE PIN REPLACEMENT

3.37.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.37.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 75 inch-pound 1/4-inch drive dial indicator torque wrench (item 446, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Bolt 1/4-28 x 3-inch (for removal)
Brush (item 34, App F)
Epoxy primer coating kit (item 78, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

3.37.3. Removal

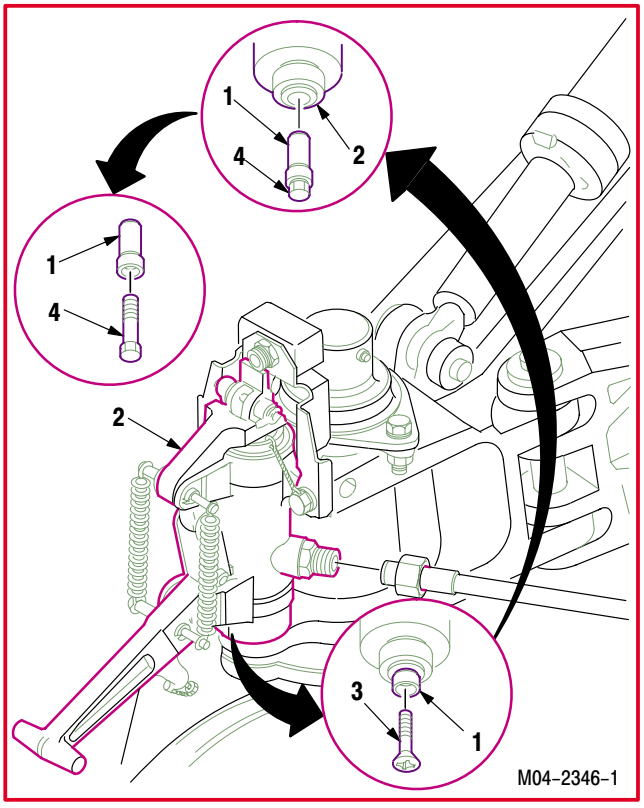
a. **Remove fuse pin (1) from actuating cylinder (2).**

(1) Remove self-locking screw (3) from pin (1).

(2) Install 1/4-28 x 3-inch bolt (4) into pin (1) temporarily.

(3) Remove pin (1) from cylinder (2) with bolt (4).

(4) Remove bolt (4) from pin (1).



3.37.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.37.5. Inspection

a. **Check removed and attaching parts** (para 3.28)**.**

GO TO NEXT PAGE

3.37. TAIL LANDING GEAR ACTUATING CYLINDER FUSE PIN REPLACEMENT – continued

3.37.6. Installation



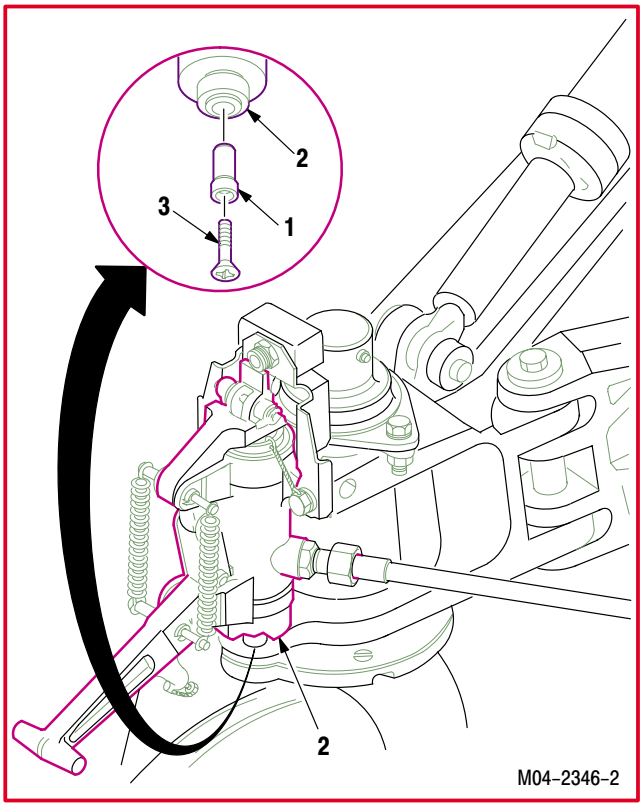
a. **Install pin (1) in cylinder (2).** Torque screw (3) to **30 INCH-POUNDS**.

(1) Coat pin (1). Use epoxy primer coating kit (item 78, App F) and brush (item 34, App F). Install wet.

(2) Install pin (1) in cylinder (2).

(3) Install screw (3) in pin (1). Torque screw (3) to **30 INCH-POUNDS**. Use torque wrench.

b. **Inspect (QA).**



END OF TASK

3.38. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION

3.38.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.38.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
1/2 x 4-inch long driftpin (item 112, App H)
Chemical protective gloves (item 154, App H)
Rawhide mallet (item 212, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)
15/16 & 1-inch box wrench (item 412, App H) (2)
150 - 750 inch-pound 3/8-inch drive click type torque wrench (item 442, App H)

Materials/Parts:

Cotter pin (2)
Sealing compound (item 174, App F)

Personnel Required:

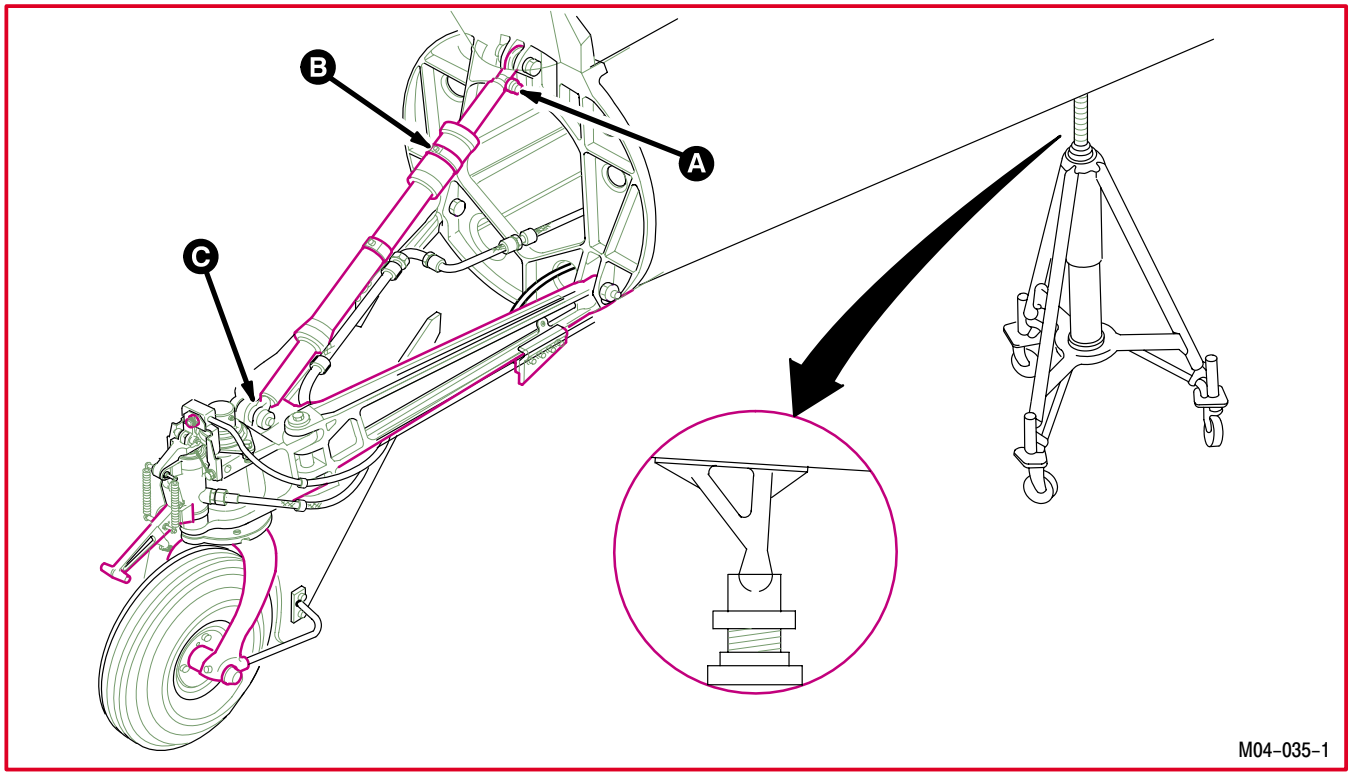
67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.69	Tail landing gear jacked (tripod jack)



GO TO NEXT PAGE

3.38. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

WARNING

The shock strut contains high pressure nitrogen. Care must be taken when performing maintenance on the shock strut. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.

3.38.3. Removal

a. **Deflate shock strut (1).**

(1) Remove valve cap (2). Slowly turn nut (3) one turn counterclockwise to open valve (4).

(2) After pressure has been released, turn nut (3) one turn clockwise to close valve (4) and install cap (2).

b. **Remove clamp (5) and bracket (6) from strut (1).**

(1) Remove nut (7) from clamp (5).

(2) Remove clamp (5) and bracket (6) from strut (1).

CAUTION

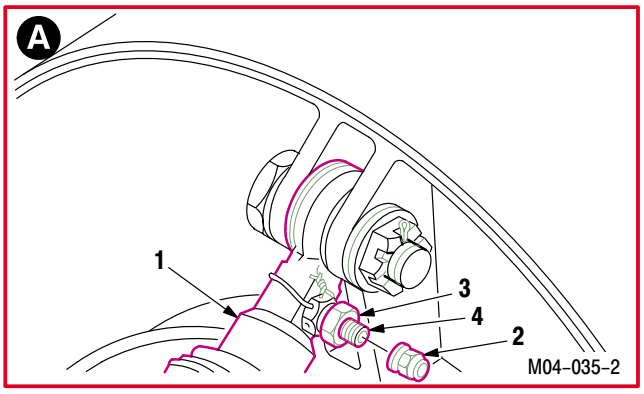
To prevent tail wheel from dropping when strut is removed, support tail wheel.

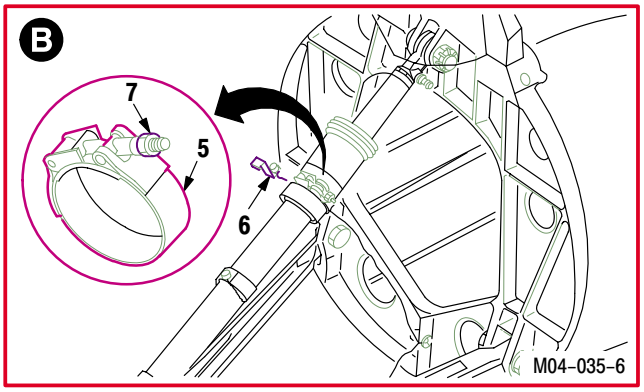
c. **Remove strut (1) from arm and socket lugs (8).**

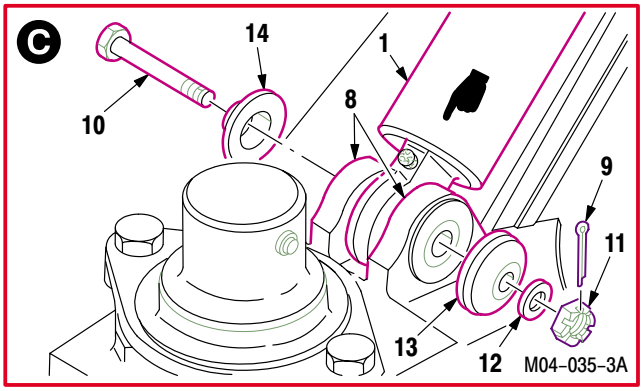
(1) Remove and discard cotter pin (9).

(2) Hold bolt (10). Remove nut (11), washer (12), and cap (13) from bolt (10).

(3) Remove bolt (10) and cap (14).







GO TO NEXT PAGE

3.38. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

(4) Remove pin (15) from strut (1) while helper supports shock strut (1). Use driftpin.

(5) Remove strut (1) from lugs (8).

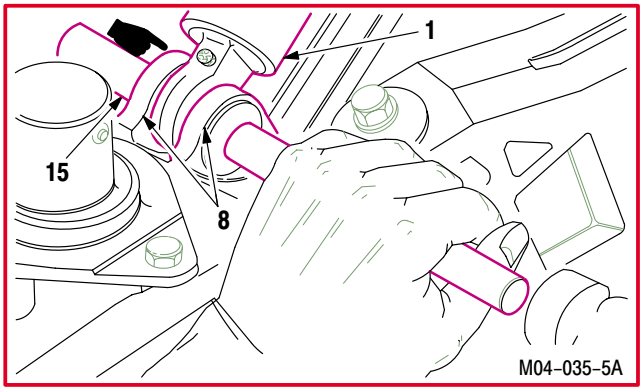
d. **Remove strut (1) from lugs (16).**

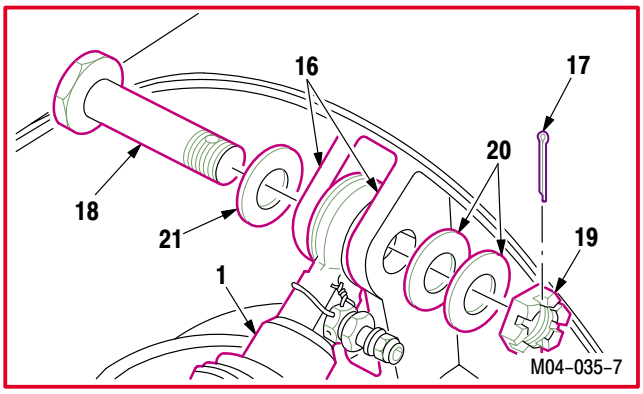
(1) Remove and discard cotter pin (17).

(2) Hold bolt (18). Remove nut (19) and washers (20). Use box wrench.

(3) Remove bolt (18) and washer (21).

(4) Remove strut (1) from lugs (16).





3.38.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

b. **Clean grounding bracket clamp bonding area** (para 1.47)**.**

3.38.5. Inspection

NOTE

Slight wetting of strut cylinder and seals insufficient to form a drop is normal.

a. **Check shock strut for leaks.** None allowed.

b. **Check bolt hole of shock strut for elongation.**

(1) Maximum elongation is **0.001 INCH**.

c. **Check rod end bearings at both ends of shock strut for play.**

(1) Maximum radial and axial play is **0.004 INCH**.

d. **Check shock strut for cracks.** None allowed.

GO TO NEXT PAGE

3.38. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued

e. **Check shock strut housing for dents, nicks, or scratches.**

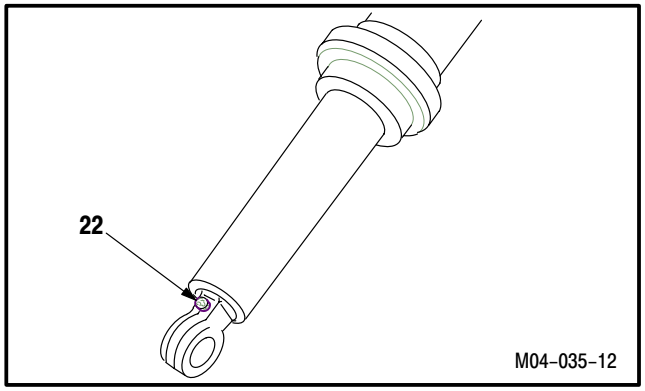
(1) Maximum allowable depth is **0.020 INCH**. Blend out any nicks, dents, and scratches.

f. **Check shock strut piston polished surfaces for nicks, dents, or scratches.** None allowed.

g. **Check shock strut for corrosion** (para 1.49)**.**

NOTE

Ensure strut is installed with orifice (22) AFT and upright.



3.38.6. Installation

a. **Install strut (1) on lugs (16).** Torque nut (19) **400 to 440 INCH-POUNDS**.

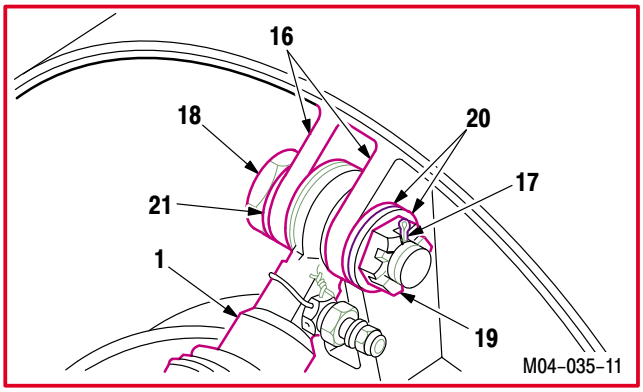
(1) Position strut (1) between lugs (16).

(2) Install bolt (18) with washer (21).

(3) Install two washers (20) and nut (19). Torque nut (19) to **400 INCH-POUNDS**. Use torque wrench.

(4) Increase torque to aline cotter pin holes, but do not exceed **440 INCH-POUNDS**.

(5) Install new cotter pin (17).



b. **Inspect (QA).**

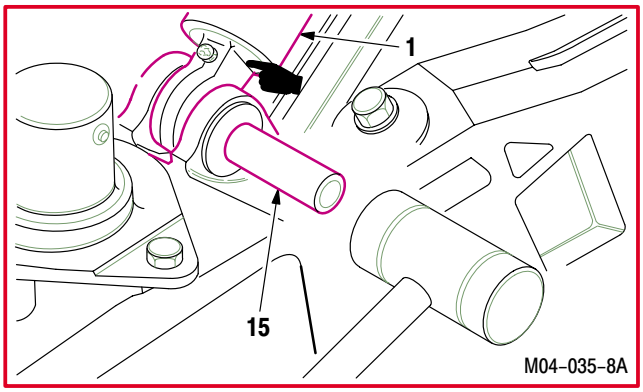
c. **Install strut (1) on arm and socket lugs (8).**

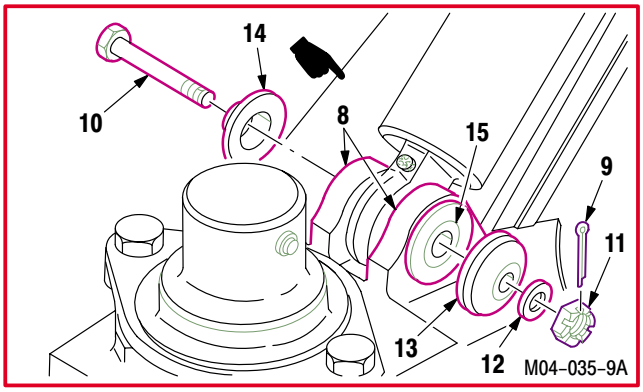
(1) Position strut (1) between lugs (8).

(2) Install pin (15) through strut (1) and lugs (8). Use mallet.

(3) Install bolt (10) with cap (14) through pin (15), cap (13), and washer (12).

(4) Install nut (11) and new cotter pin (9).





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3.38. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION – continued



d. **Install clamp (5) and bracket (6) on shock strut (1).**

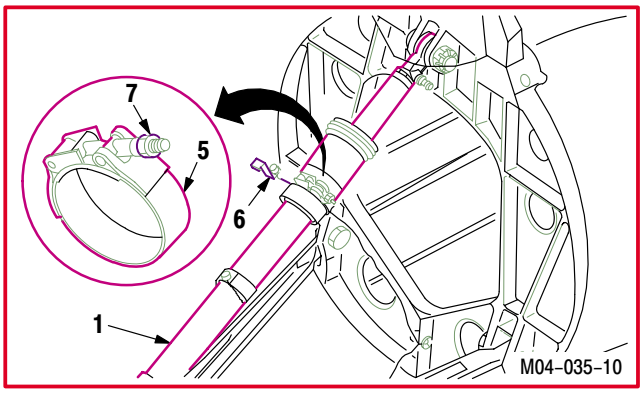
(1) Perform electrical bond check (TM 55-1500-323-24).

(a) Bond shall be **1.0 OHMS** or less. Use multimeter.

(2) Install clamp (5) and bracket (6) on strut (1).

(3) Install nut (7) on clamp (5).

(4) Seal bonding area. Use sealing compound (item 174, App F).



e. **Inspect (QA).**

f. **Inflate shock strut** (para 1.42)**.**

g. **Remove tripod jack** (para 1.69)**.**

END OF TASK

3.39. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM)

3.39.1. Description

This task covers: Removal. Cleaning. Inspection. Installation. Service. Leak Check.

3.39.2. Initial Setup

Tools:

Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
14-quart utility pail (item 222, App H)
Adjustable air filtering respirator (item 262, App H)
3/4 x 1/2-inch drive deep socket wrench socket (item 298, App H)
3/4 x 3/8-inch drive deep socket wrench socket (item 299, App H)
Portable hydraulic test stand (item 358, App H)
Nitrogen hand truck (item NO TAG, App H)
10-inch adjustable wrench (item 405, App H)
0 - 5-inch spanner wrench set (item 427, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)

Materials/Parts:

Packing (3)
Retainer packing (2)
Seal
Wiper ring
Brush (item 34, App F)
Epoxy primer coating kit (item 78, App F)
Hydraulic fluid (item 93, App F)
Leak test compound (item 109, App F)
Wire (item 226, App F)

Personnel Required:

68H Aircraft Pneudraulics Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

WARNING

The shock strut contains high pressure nitrogen. Care must be taken when performing maintenance on the shock strut. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.

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3.39. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) – continued

3.39.3. Removal

a. **Remove pneumatic valve (1) from upper shock strut piston assembly (2).**

(1) Remove valve cap (3).

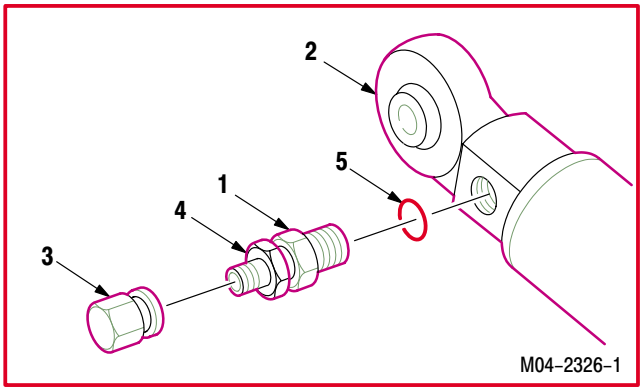
(2) Slowly turn nut (4) one turn counterclockwise to open valve (1).

(3) After pressure has been released, turn nut (4) clockwise to close valve (1).

(4) Remove lockwire from valve (1).

(5) Remove valve (1) from piston (2).

(6) Remove and discard packing (5) from valve (1).

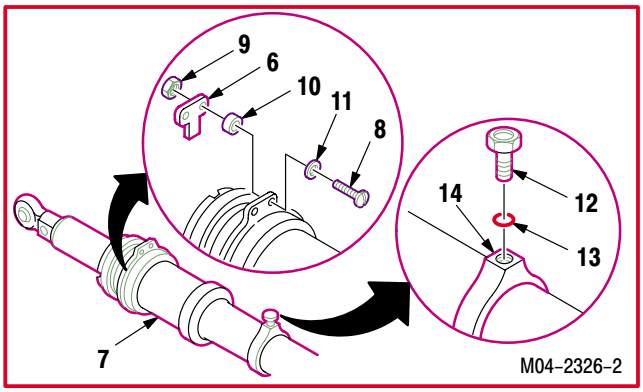


b. **Remove shock strut lock (6) from strut (7).**

(1) Remove lockwire from two screws (8).

(2) Hold two screws (8). Remove two nuts (9).

(3) Remove two screws (8), sleeve spacers (10), washers (11), and lock (6) from strut (7).



c. **Remove plug (12) from fill port (14).**

(1) Remove plug (12) from port (14).

(2) Remove and discard packing (13).

(3) Drain and discard fluid. Use pail to catch fluid spills.

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3.39. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) – continued

d. **Remove retainer (15) from strut (7).** Use strap wrench and spanner wrench set.

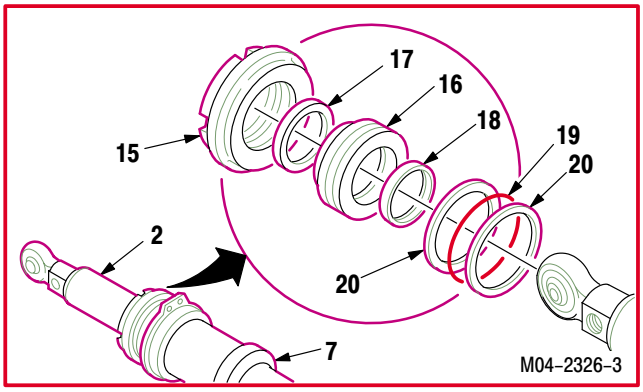
e. **Remove bearing (16) from strut (7).**

(1) Move piston (2) in and out until bearing (16) can be grasped.

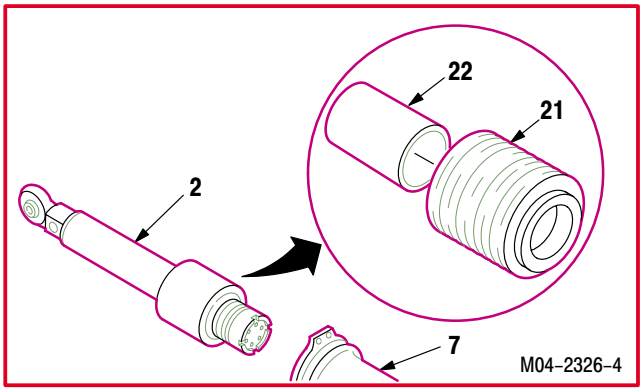
(2) Remove and discard wiper ring (17).

(3) Remove bearing (16), seal (18), packing (19), and two retainer packings (20) from strut (7).

(4) Discard seal (18), packing (19), and retainer (20).



f. **Remove piston (2), spring (21), and sleeve spacer (22) from strut (7).**



3.39.4. Cleaning

a. **Clean piston and removed and attaching parts** (para 1.47)**.**

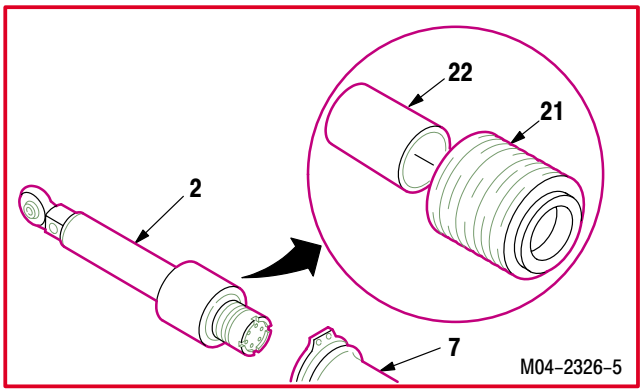
3.39.5. Inspection

a. **Check piston components for corrosion** (para 1.49)**.**

3.39.6. Installation

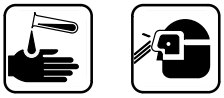
a. **Install spacer (22) and spring (21) on piston (2).**

b. **Install assembled piston (2) in strut (7).**

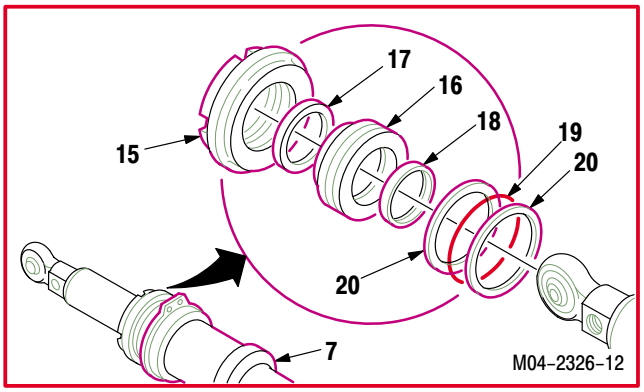


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3.39. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) – continued



c. **Lubricate new seal (18), packing (19), and two retainers (20).** Use hydraulic fluid (item 93, App F).



d. **Install new seal (18), packing (19), and two retainers (20) on bearing (16).**

e. **Install assembled bearing (16) on strut (7).**

f. **Install new ring (17) on strut (7).**

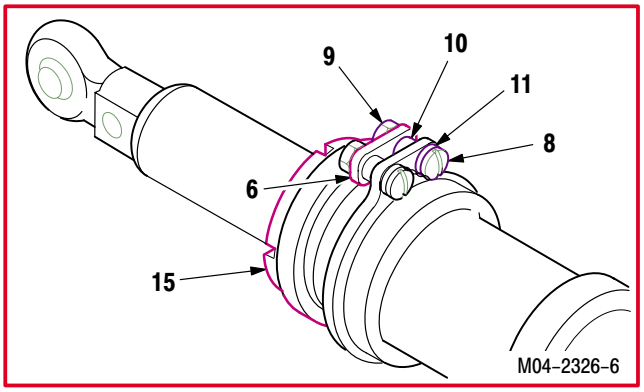
g. **Inspect (QA).**

h. **Install retainer (15) on strut (7).**

(1) Bottom retainer (15) on strut (7), then back off to nearest slot to engage lock. Lock in place. Use strap wrench and spanner wrench set.



i. **Install lock (6) around bearing retainer (15).** Torque two nuts to **25 INCH-POUNDS**.



(1) Coat surfaces of two screws (8), washers (11), and nuts (9). Use epoxy primer coating kit (item 78, App F) and brush (item 34, App F). Install wet.

(2) Install two screws (8), washers (11), two spacers (10), and nuts (9) with alined holes in lock (6) and strut (7).

(3) Hold screws (8). Torque two nuts (9) to **25 INCH-POUNDS**. Use torque wrench.

(4) Lockwire two screws (8). Use wire (item 226, App F).

j. **Inspect (QA).**

GO TO NEXT PAGE

3.39. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) – continued

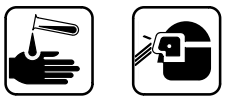
3.39.7. Servicing

a. **Hand stroke upper piston 2 INCHES minimum from fully extended back to fully extended.**

(1) Repeat stroke cycle six times, stopping with piston fully compressed.

b. **Install reducer (23) in fill port (14).** Use adjustable wrench.

c. **Install hydraulic test stand hose (24) on fill port (14).**



d. **Fill strut (7) with hydraulic fluid at 200 to 300 psi until piston (2) is fully extended.** Use hydraulic fluid (item 93, App F).

e. **Remove hydraulic pressure.**

f. **Install valve (1) in piston (2).** Torque valve (1) to **105 INCH-POUNDS**.

(1) Lubricate new packing (5). Use hydraulic fluid (item 93, App F).

(2) Install packing (5) on valve (1).

(3) Install valve (1) in piston (2).

(4) Torque valve (1) to **105 INCH-POUNDS**. Use socket and torque wrench.

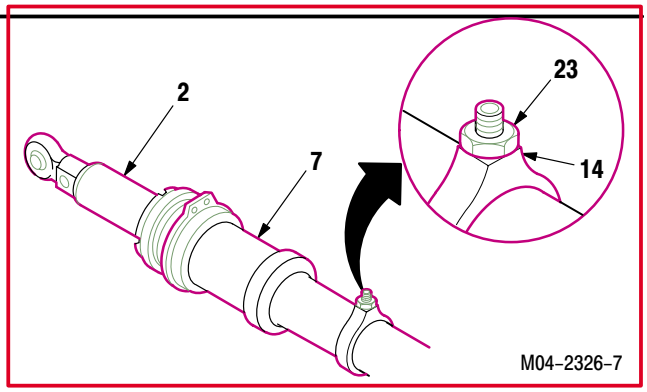
(5) Install lockwire on valve (1). Use wire (item 226, App F).

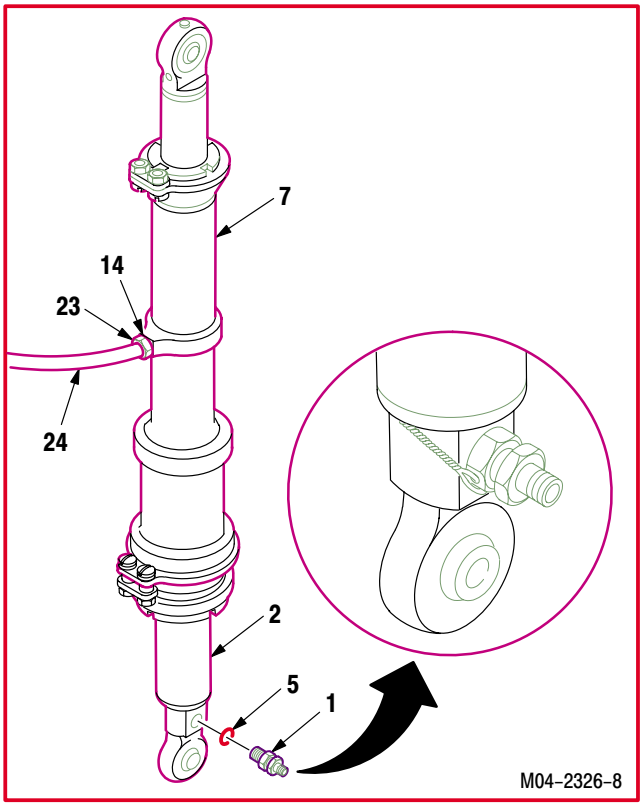
g. **Inspect (QA).**

h. **Install nitrogen truck to valve (1).**

(1) Charge strut (7) with nitrogen at 50 psi. Use nitrogen truck.

i. **Bleed fill port (14) to drive fluid out of strut (7).**





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3.39. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) – continued

j. **With strut (7) vertical and valve (1) down, apply 500 psi hydraulic pressure to fill port (14) for a minimum of 15 SECONDS and then release.**

(1) Repeat procedure 10 times. Do not release pressure on last cycle.

k. **Release nitrogen pressure to zero with strut (7) vertical.**

l. **Bleed hydraulic pressure from reducer (23).**

(1) Remove servicing hose (24) from supply.

m. **Remove reducer (23) from fill port (14).** Use adjustable wrench.

n. **Install plug (12) lightly (do not tighten) to allow air but not fluid to escape.**

(1) Slowly move strut (7) to horizontal with fill port (14) up.

o. **Slowly rock strut (7) back and forth end to end three or four times while gently tapping on cylinder barrel to allow all trapped air to escape through fill port (14).**

(1) Allow strut (7) to remain horizontal at least **5 MINUTES**.

p. **Manually compress piston (2) fully.**

q. **Check that strut (7) is full.** Repeat steps b. thru n. if strut is not full.

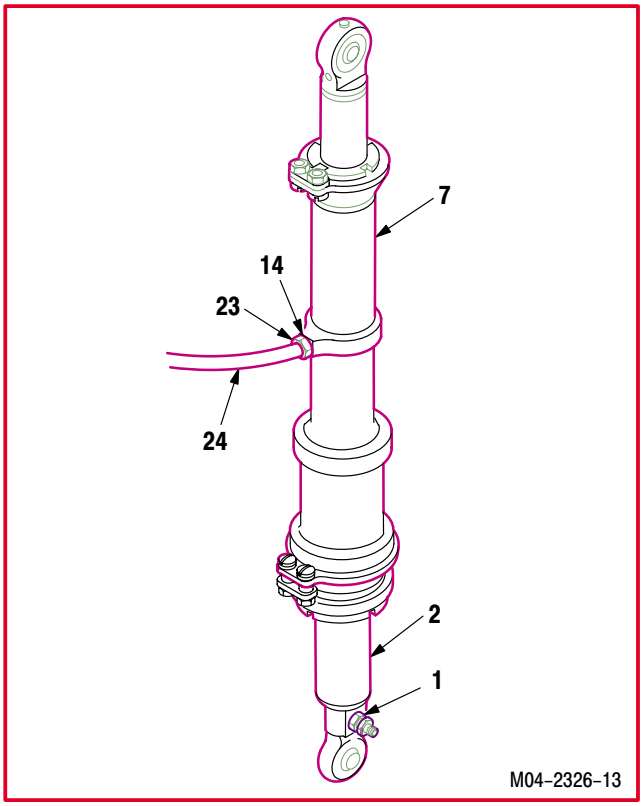
r. **Install plug (12) in strut (7).**

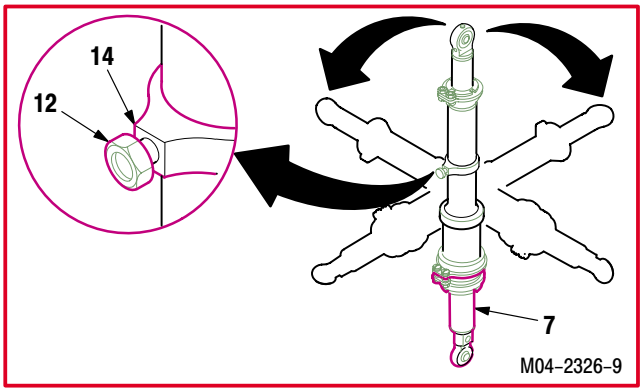
(1) Lubricate new packing (13). Use hydraulic fluid (item 93, App F).

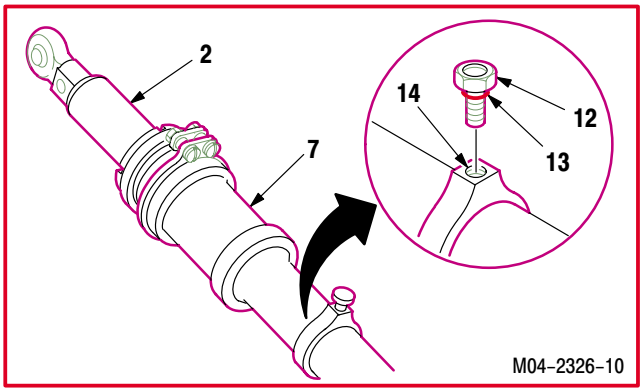
(2) Install packing (13) on plug (12).

(3) Install plug (12) into port (14).

(4) Lockwire plug (12) to strut (7). Use wire (item 226, App F).







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3.39. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) – continued

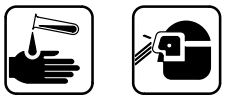
s. **Inspect (QA).**

t. **Clean strut** (para 1.47)**.**

3.39.8. Leak Check

a. **Apply 300 psi nitrogen pressure to strut (7).** Use nitrogen truck.

b. **Wait 1 HOUR.**



c. **Check for nitrogen leaks.** Use leak test compound (item 109, App F).

d. **Check for hydraulic leaks.** None allowed.

e. **Inspect (QA).**

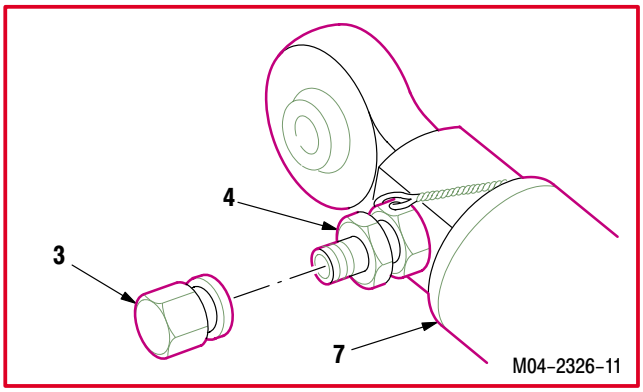
f. **Release nitrogen pressure.**

(1) Remove nitrogen truck from strut (7).

(2) Slowly turn nut (4) one turn counterclockwise.

(3) After pressure has been released, turn nut (4) clockwise to close valve.

g. **Install cap (3) on nut (4).**



END OF TASK

3.40. TAIL LANDING GEAR SHOCK STRUT PNEUMATIC VALVE REMOVAL/INSTALLATION

3.40.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.40.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Packing
Hydraulic fluid (item 92, App F)
Wire (item 226, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

WARNING

The shock strut contains high pressure nitrogen. Care must be taken when performing maintenance on the strut. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.

3.40.3. Removal

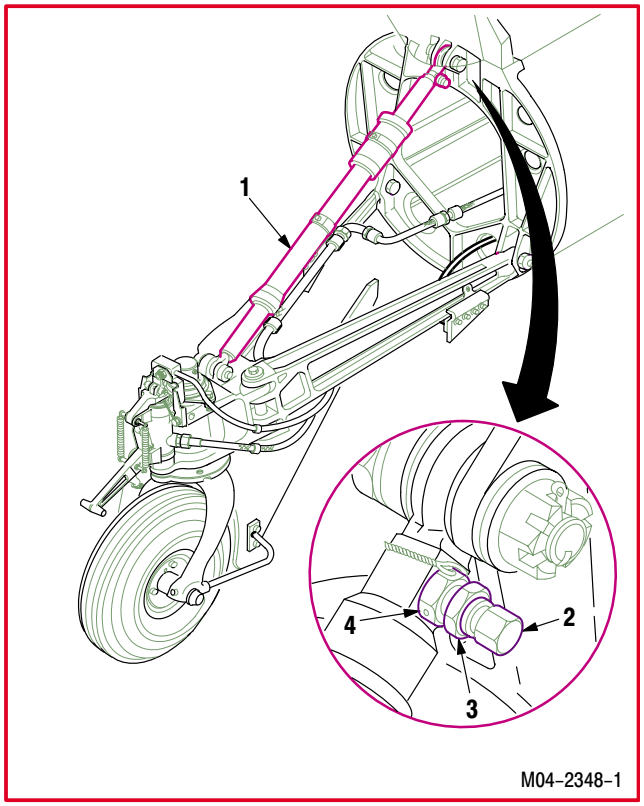
a. **Deflate shock strut (1).**

(1) Remove valve cap (2).

(2) Slowly turn nut (3) one turn counterclockwise to open pneumatic valve (4).

(3) Turn nut (3) one turn clockwise to close valve (4) after pressure has been released.

(4) Install cap (2).



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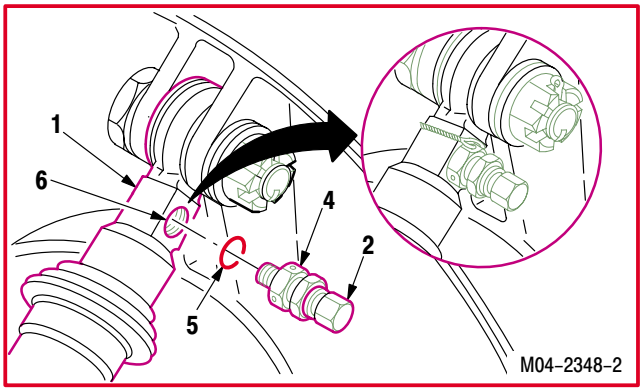
3.40. TAIL LANDING GEAR SHOCK STRUT PNEUMATIC VALVE REMOVAL/INSTALLATION – continued

b. **Remove valve (4) from strut (1).**

(1) Remove lockwire from valve (4).

(2) Remove valve (4) from strut (1).

(3) Remove and discard packing (5) from valve (4).



3.40.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.40.5. Inspection

a. **Check fill port and valve for stripped or damaged threads.** None allowed.

3.40.6. Installation



a. **Install valve (4) in strut (1).**

(1) Lubricate new packing (5). Use hydraulic fluid (item 92, App F).

(2) Install packing (5) on valve (4).

(3) Install valve (4) in fill port (6).

(4) Lockwire valve (4) to strut (1). Use wire (item 226, App F).

b. **Inspect (QA).**

c. **Inflate strut** (para 1.42)**.**

END OF TASK

3.41. TAIL LANDING GEAR SHOCK STRUT CORK STOPPER REPLACEMENT

3.41.1. Description

This task covers: Inspection. Cleaning. Installation.

3.41.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cork
Adhesive (item 14, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed

3.41.3. Inspection

a. **Check orifice (1) on shock strut (2) for extruded and/or shredded black elastomer like material.** None allowed. Replace shock strut (para 3.38).

3.41.4. Cleaning

a. **Clean adhesive from strut and orifice** (para 1.47)**.**

3.41.5. Installation

a. **Install cork (3) in orifice (1).**

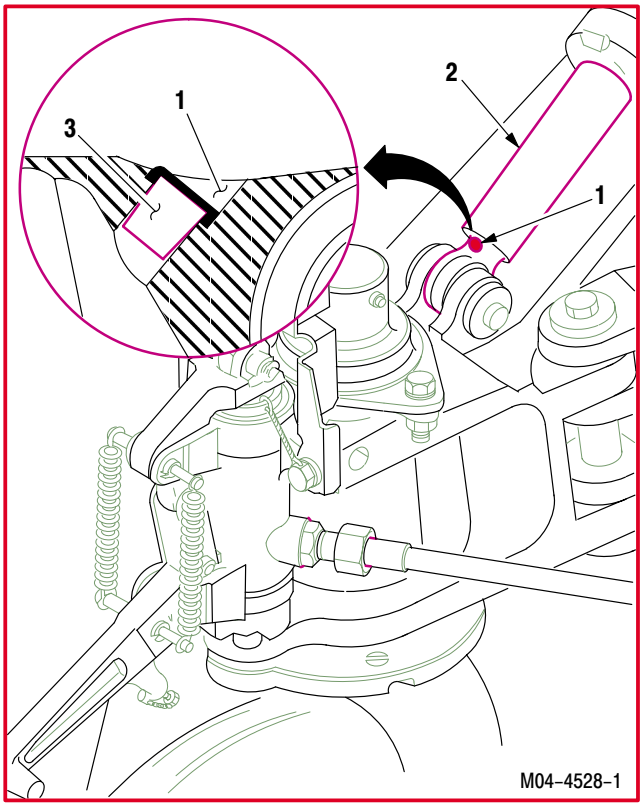
(1) Trim cork (3) until flush with strut (2).

b. **Force cork (3) in orifice (1) an additional 0.200 INCH.**



c. **Fill orifice (1) flush to strut (2).** Use adhesive (item 14, App F).

d. **Inspect (QA).**



END OF TASK

3.42. TAIL LANDING GEAR SHOCK STRUT BEARING REPLACEMENT (AVIM)

3.42.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.42.2. Initial Setup

Tools:

Aircraft maintenance tool kit (item 372, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
10-ton hydraulic hand operated arbor press (item 236, App H)
Universal puller kit (item 243, App H)
Adjustable air filtering respirator (item 262, App H)
Staking tool kit (item 392, App H)

References:

TM 55-1500-322-24

Materials/Parts:

Brush (item 34, App F)
Carbon dioxide (item 40, App F)
Sealing compound (item 179, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

WARNING

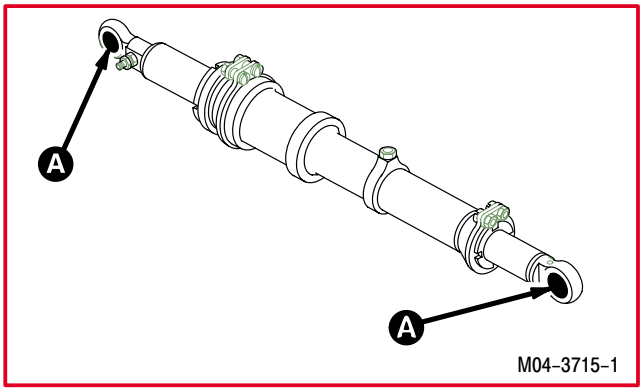
The tail landing gear shock strut contains high pressure nitrogen. Care must be taken when performing maintenance on the shock strut. Sudden release of high pressure nitrogen could cause injury to personnel or damage to equipment. If injury occurs, seek medical aid.

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3.42. TAIL LANDING GEAR SHOCK STRUT BEARING REPLACEMENT (AVIM)

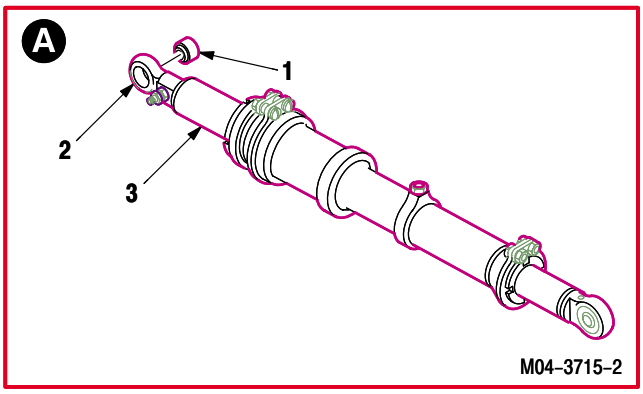
NOTE

- This task is typical for upper and/or lower tail landing gear shock strut bearing replacement.
- It is not necessary to remove swaged lip before removal of bearing.



3.42.3. Removal

a. **Remove and discard bearing (1) from bearing housing (2) on shock strut (3).** Use arbor press and puller kit (TM 55-1500-322-24).



3.42.4. Cleaning

a. **Clean housing** (para 1.47)**.**

3.42.5. Inspection

a. **Check housing for nicks, cracks, and dents.** None allowed.

b. **Check housing for corrosion** (para 3.28)**.**

c. **Check bearing housing inside diameter.**

(1) Dimension allowable **1.1873 to 1.1878 INCHES**.

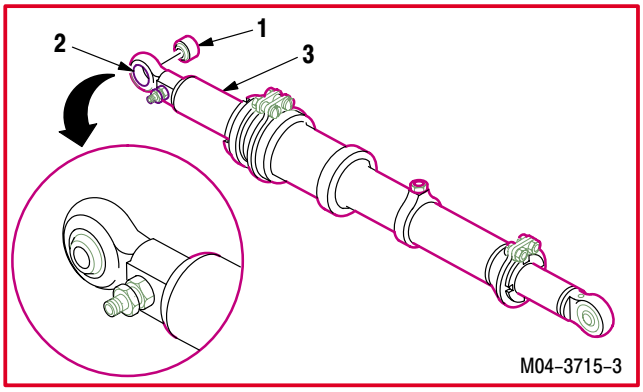
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3.42. TAIL LANDING GEAR SHOCK STRUT BEARING REPLACEMENT (AVIM)

3.42.6. Installation



a. **Install bearing (1) in housing (2) of strut (3).**



(1) Wipe bearing (1) clean. Remove all contaminants (para 1.47).

(2) Place bearing in carbon dioxide (item 40, App F) for **15 MINUTES**.

(3) Coat inside diameter of housing (2). Use sealing compound (item 179, App F) and brush (item 34, App F).

(4) Install strut (3) on arbor press.

(5) Press bearing (1) in housing (2). Use constant downward force (TM 55-1500-322-24).

(6) Wipe excess sealing compound (item 179, App F) and housing (2) (para 1.47).

(7) Stake bearing (1) in housing (2). Use staking tool kit and arbor press (TM 55-1500-322-24).

b. **Inspect (QA).**

END OF TASK

3.43. TAIL LANDING GEAR FORK REMOVAL/INSTALLATION

3.43.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.43.2. Initial Setup

Tools:

Aircraft maintenance tool kit (item 371, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Retaining ring pliers (item 227, App H)
Adjustable air filtering respirator (item 262, App H)

Personnel Required:

67R	Attack Helicopter Repairer
	One person to assist
67R3F	Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

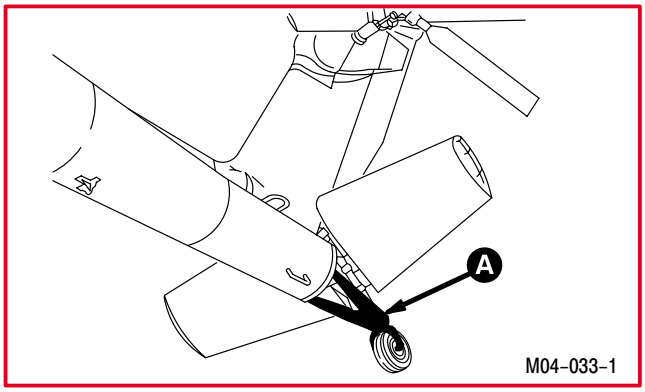
Packing
Seal
Cloth (item 52, App F)
Dry cleaning solvent (item 74, App F)
Grease (item 87, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.69	Tail landing jacked (tripod jacked)
3.46	Tail landing gear wheel and axle removed

NOTE

This task is typical for helicopters with or without grease fittings on tail landing gear wheels and axles.



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3.43. TAIL LANDING GEAR FORK REMOVAL/INSTALLATION – continued

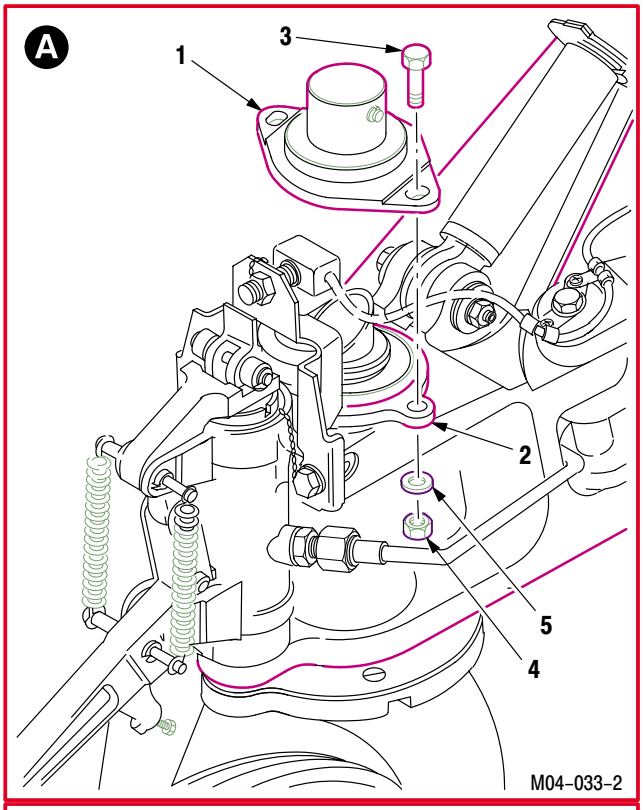
3.43.3. Removal

a. **Remove cam housing (1) from arm and socket (2).**

(1) Hold two bolts (3). Remove two nuts (4) and washers (5).

(2) Remove two bolts (3).

(3) Remove housing (1) from arm and socket (2).



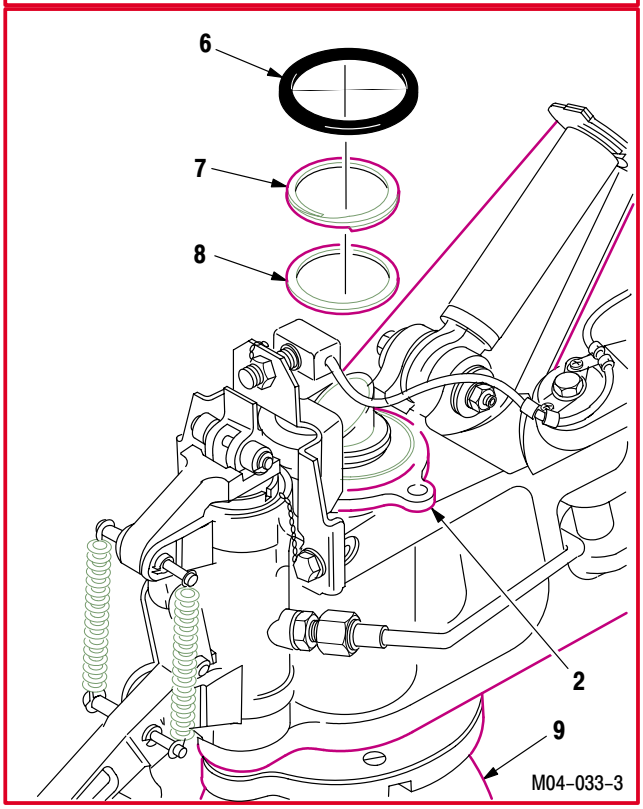
b. **Remove and discard packing (6) from arm and socket (2).**

NOTE

While removing retaining ring, support fork with hand.

c. **Remove retaining ring (7) and washer (8) from arm and socket (2).** Use retaining ring pliers.

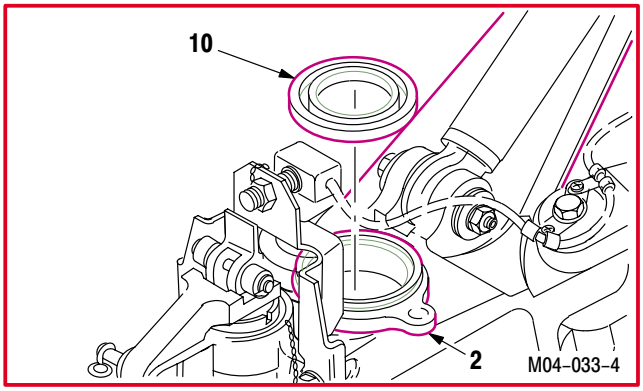
d. **Lower fork (9) from arm and socket (2).**



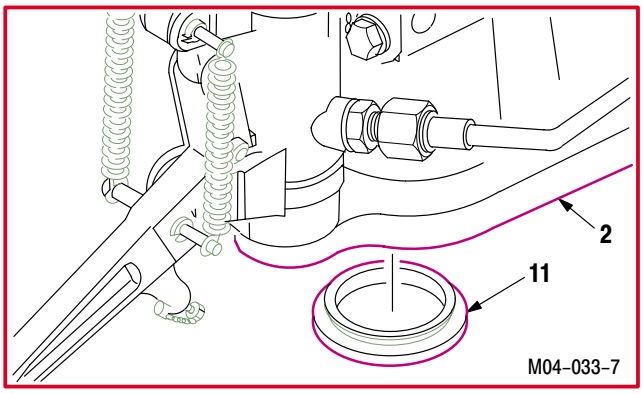
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3.43. TAIL LANDING GEAR FORK REMOVAL/INSTALLATION – continued

e. **Remove bearing (10) from arm and socket (2).**



f. **Remove and discard seal (11) from arm and socket (2).**



3.43.4. Cleaning



a. **Clean landing gear fork and attaching parts.** Use cloth (item 52, App F) moistened with dry cleaning solvent (item 74, App F).

3.43.5. Inspection

a. **Check landing gear fork for corrosion** (para 1.49)**.**

b. **Check landing gear housing for loose pin.** None allowed.

c. **Check landing gear housing for missing snap ring.** None allowed.

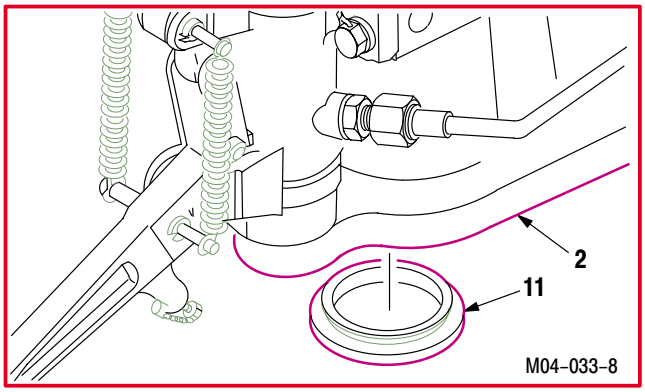
d. **Check landing gear housing for broken cam.** None allowed.

GO TO NEXT PAGE

3.43. TAIL LANDING GEAR FORK REMOVAL/INSTALLATION – continued

3.43.6. Installation

a. **Install new seal (11) on arm and socket (2).**



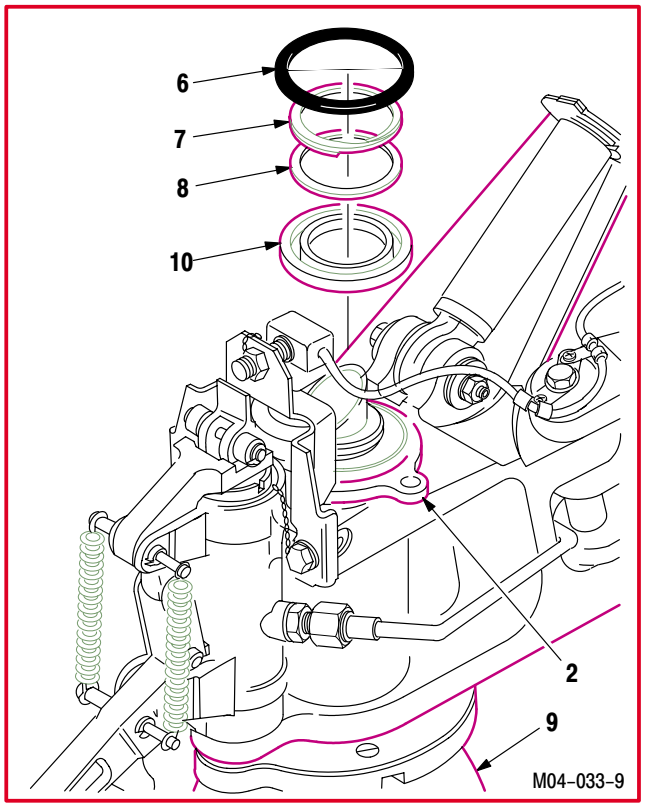
b. **Install fork (9) on arm and socket (2).**



c. **Install bearing (10) and washer (8) on arm and socket (2).**

(1) Lubricate bearing (10) and washer (8). Use grease (item 87, App F).

(2) Install bearing (10) and washer (8) on arm and socket (2).



d. **Inspect (QA).**

NOTE

Support fork with hand while installing retaining ring.

e. **Install retaining ring (7) on arm and socket (2).** Use retaining ring pliers.

(1) Lubricate retaining ring (7). Use grease (item 87, App F).

(2) Install retaining ring (7) on arm and socket (2).

f. **Install new packing (6) on arm and socket (2).**

(1) Lubricate new packing (6). Use grease (item 87, App F).

(2) Install packing (6) on arm and socket (2).

GO TO NEXT PAGE

3.43. TAIL LANDING GEAR FORK REMOVAL/INSTALLATION – continued

g. **Install cam housing (1) on arm and socket (2).**

(1) Lubricate inside of cam housing (1). Use grease (item 87, App F).

(2) Install cam housing (1) on arm and socket (2).

(3) Install two bolts (3).

(4) Hold bolts (3). Install two washers (5) and nuts (4). Do not torque.

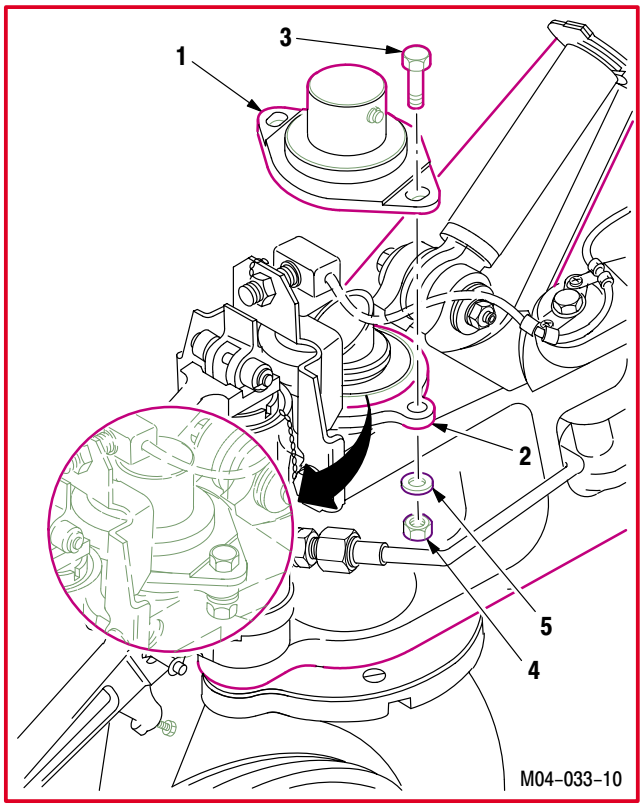
h. **Adjust cam housing (1) to center lock actuator lockpin in hole of fork.**

(1) Hold two bolts (3). Torque two nuts (4) to **140 INCH-POUNDS**.

i. **Inspect (QA).**

j. **Install tail landing gear wheel and axle** (para 3.46 or 3.49 and 3.47 or 3.50)**.**

k. **Remove tripod jack** (para 1.69)**.**



END OF TASK

3.44. TAIL LANDING GEAR FORK ASSEMBLY DISASSEMBLY/ASSEMBLY

3.44.1. Description

This task covers: Disassembly. Cleaning. Inspection. Repair. Assembly.

3.44.2. Initial Setup

Tools:

Aircraft maintenance tool kit (item 371, App H)
Light duty laboratory apron (item 27, App H)
0.300 - 24/0 - 24-inch inside/outside vernier caliper (item 54, App H)
Aircraft maintenance fixture (item 134, App H)
Chemical protective gloves (item 154, App H)
Industrial goggles (item 156, App H)
14-quart utility pail (item 222, App H)
2-ton hydraulic hand operated arbor press (item 235, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Bushing
Brush (item 34, App F)
Carbon dioxide (item 40, App F)
Cloth (item 52, App F)
Corrosion resistant coating (item 64A, App F)
Dry cleaning solvent (item 74, App F)
Epoxy primer coating kit (item NO TAG, App F)
Grease (item 87, App F)

Equipment Conditions:

Ref	Condition
3.43	Tail landing gear fork removed

WARNING

FLIGHT SAFETY PART

The tail landing gear and/or components of the tail landing gear are flight safety parts. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

GO TO NEXT PAGE

3.44. TAIL LANDING GEAR FORK ASSEMBLY DISASSEMBLY/ASSEMBLY – continued

3.44.3. Disassembly

WARNING

The control cam is spring loaded. During disassembly and assembly, the fork must be placed in an assembly tool and the tension released slowly. Failure to release spring tension could result in injury to personnel.

NOTE

Observe high point on the lower cam in relation to the fork assembly. This will ensure the fork and cam are assembled the way it was removed.

a. **Remove springs (1) and (2) from tail landing gear fork (3).**

(1) Place fork (3) in spring compressor. Use maintenance fixture.

(2) Compress springs (1) and (2) until no preload exists on pin (4).

(3) Remove one retaining ring (5) and washer (6).

(4) Remove pin (4) from fork (3).

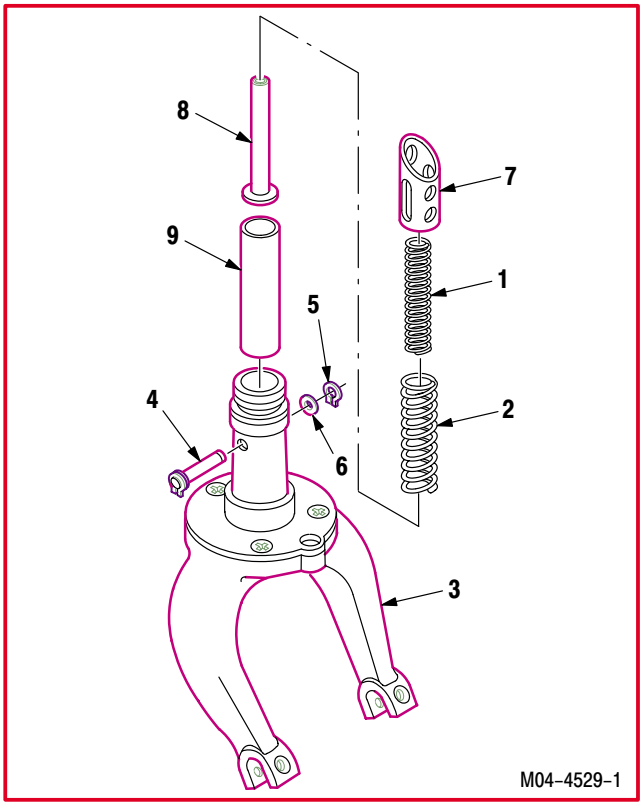
(5) Gradually release spring tension on control cam (7).

(6) Remove cam (7) from fork (3).

(7) Remove spring (1) and (2) from fork (3).

b. **Remove inner spring guide (8) from fork (3).**

c. **Remove centering liner (9) from fork (3).**



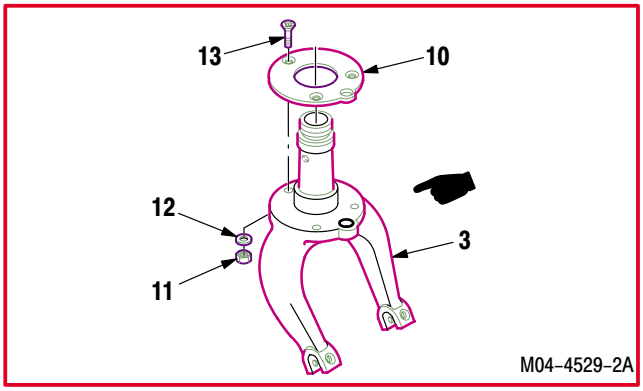
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3.44. TAIL LANDING GEAR FORK ASSEMBLY DISASSEMBLY/ASSEMBLY – continued

d. **Remove wearlock pin plate (10) from fork (3).**

(1) Remove three nuts (11), washers (12), and screws (13).

(2) Remove plate (10) from fork (3).



3.44.4. Cleaning

a. **Clean fork and removed and attaching parts** (para 1.47)**.**

3.44.5. Inspection

CAUTION

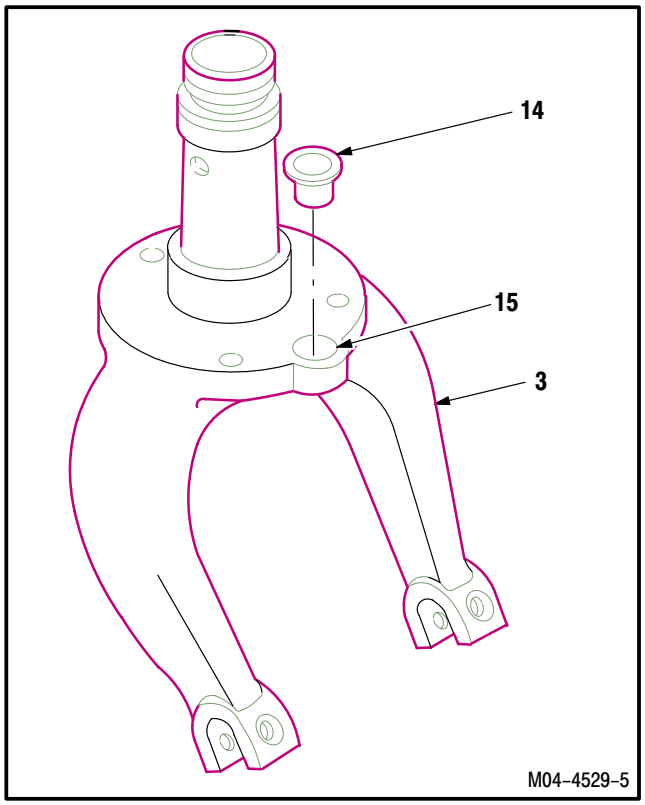
The strength of the fork assembly could be decreased by improper corrosion removal. When using abrasive material care must be taken not to remove shot peened surface. If shot peened surface is removed, the fork assembly must be removed and replaced.

a. **Check fork and removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check removed and attaching parts for cracks.** None allowed.

c. **Check inside diameter of bushing (14).**

(1) Bushing ID not to exceed **0.693 INCH**.



3.44.5A. Repair

a. **Remove bushing (14) from fork (3).** Use arbor press.

(1) Align bushing (14) and fork (3) in press.

(2) Press bushing (14) from fork mating bore (15).

b. **Clean fork** (para 1.47)**.**

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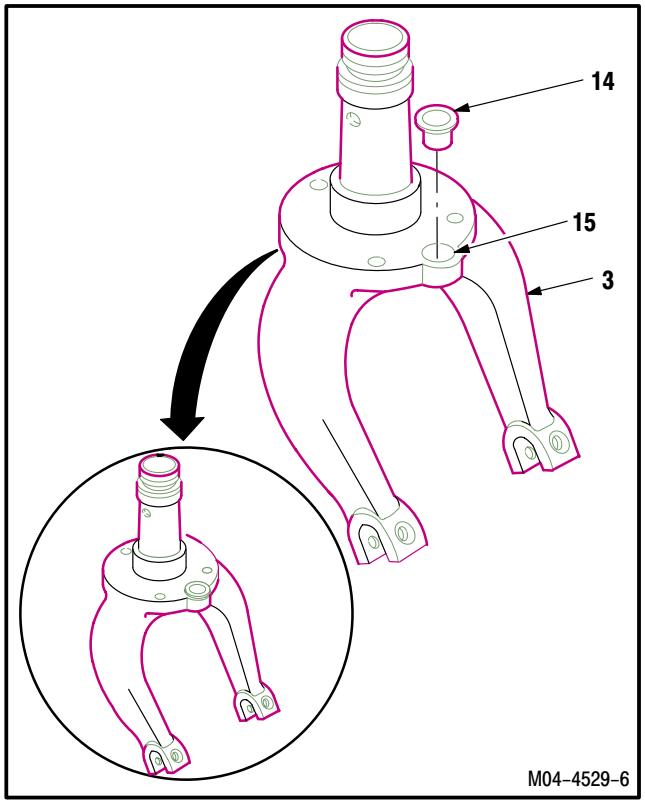
3.44. TAIL LANDING GEAR FORK ASSEMBLY DISASSEMBLY/ASSEMBLY – continued

c. **Check inside diameter of fork mating bore (15).** Use caliper.

(1) Mating bore ID not to exceed **0.8761 INCH**.



d. **Install bushing (14) in fork (3).**



(1) Freeze new bushing (14) in freezer at 0 °F (–18 °C) or below for 3 hours or use carbon dioxide. Use carbon dioxide (item 40, App F) and pail.

(2) Apply corrosion resistant coating to mating bore (15). Use corrosion resistant coating (item 64A, App F) and brush (item 34, App F).

(3) Apply epoxy primer to faying edge of bushing (14). Ensure no primer is present on flange. Use epoxy primer coating kit (item NO TAG, App F) and brush (item 34, App F).

(4) Align fork (3) in press.

(5) Align bushing (14) with mating bore (15).

(6) Install bushing (14) into mating bore (15). Ensure bushing is centered during installation and flange is fully seated against mating surface.

(7) Wipe excess epoxy primer from around flange. Use cloth (item 52, App F).

e. **Inspect (QA).**

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3.44. TAIL LANDING GEAR FORK ASSEMBLY DISASSEMBLY/ASSEMBLY – continued

3.44.6. Assembly

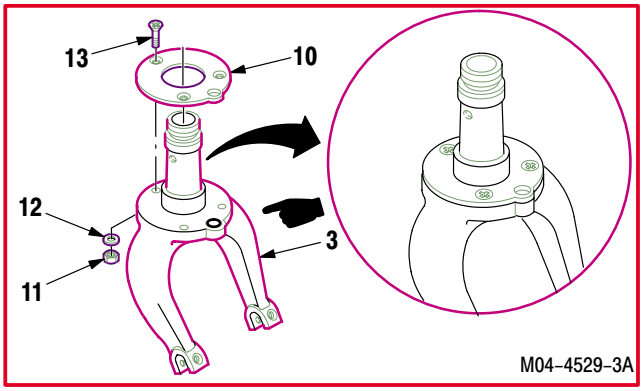


a. **Apply a heavy coat of grease to spring (1), spring (2), control cam (7), guide (8), and liner (9).** Use grease (item 87, App F).

b. **Install plate (10) on fork (3).** Torque three nuts (11) to **15 INCH-POUNDS**.

(1) Install three screws (13), washers (12), and nuts (11).

(2) Torque three nuts (11) to **15 INCH-POUNDS**. Use torque wrench.



c. **Install liner (9) in fork (3).**

d. **Install guide (8) in fork (3).**

WARNING

The control cam is spring loaded. During assembly, the fork must be placed in an assembly tool and the tension increased slowly. Failure to increase spring tension slowly could result in injury to personnel.

e. **Install spring (1) and (2) in fork (3).**

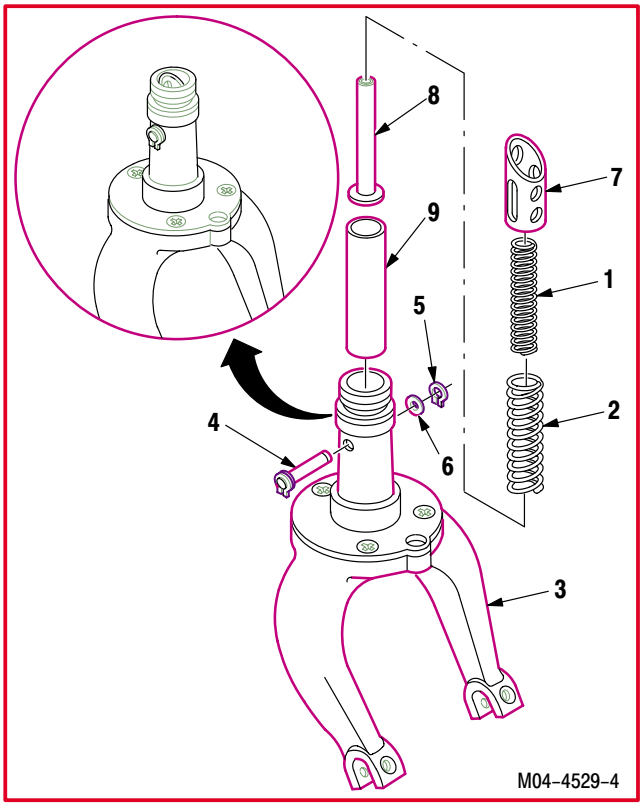
(1) Position control cam (7) on fork (3). Ensure it is positioned correctly.

(2) Install fork (3) in spring compressor. Use maintenance fixture.

(3) Compress springs until hole in shaft of fork (3) lines up with slotted grove in control cam (7).

(4) Install pin (4) in fork (3) and cam (7).

(5) Install ring (5) and washer (6) on pin (4).



f. **Remove spring compressor.**

g. **Inspect (QA).**

h. **Install tail landing gear fork** (para 3.43)**.**

END OF TASK

3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION

3.45.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.45.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
1/2 x 4-inch long driftpin (item 112, App H)
Industrial faceshield (item 129, App H)
0.0015 - 0.0250-inch thickness gage (item 152, App H)
Chemical protective gloves (item 154, App H)
Rawhide mallet (item 212, App H)
Ohmmeter (item 218, App H)
14-quart utility pail (item 222, App H)
Adjustable air filtering respirator (item 262, App H)
15/16 & 1-inch box wrench (item 412, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)
30 - 200 inch-pound 1/4-inch drive click type torque wrench (item 436, App H)

Materials/Parts:

Cotter pin (2)
Shim
Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 178, App F)

Personnel Required:

67R	Attack Helicopter Repairer
	One person to assist
68X	Armament/Electrical System Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-323-24

Equipment Conditions:

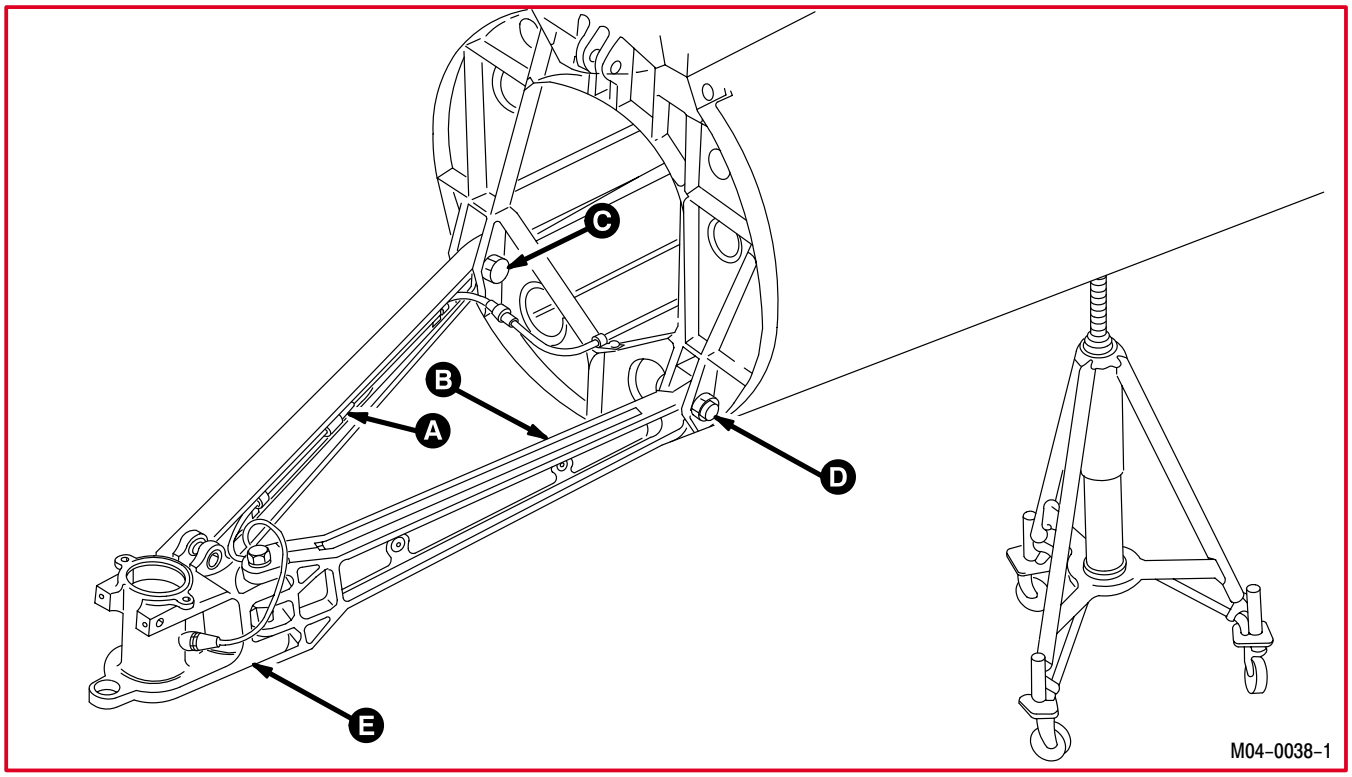
Ref	Condition
1.57	Helicopter safed
3.32	Tail landing gear actuating cylinder removed
3.43	Tail landing gear fork removed
3.38	Tail landing gear shock strut removed
1.69	Tail landing gear jacked (tripod jack)
3.46	Tail landing gear wheel and axle removed

NOTE

This task is typical for left and/or right trailing arm, except where noted.

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3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION – continued



3.45.3. Removal

a. **Remove tail wheel lock tube (1) from non-metalic hose assembly (2).**

(1) Hold tube union (3). Remove nut (4).

(2) Remove tube (1) from hose (2).

(3) Use pail to catch hydraulic fluid spills.

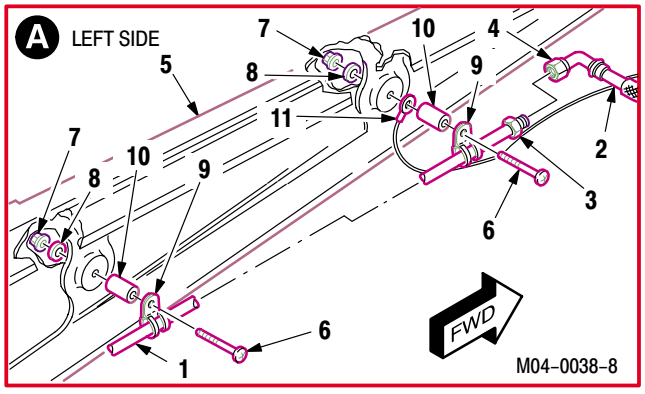
b. **Remove tube (1) from trailing arm (5).**

(1) Hold two screws (6). Remove nuts (7) and washers (8).

(2) Remove two screws (6), loop clamps (9), spacers (10), and bonding strap (11) from trailing arm (5).

(3) Remove two clamps (9) from tube (1).

(4) Remove tube (1) from trailing arm (5).



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3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION – continued

c. **Remove wire harness (12) from trailing arm (5).**

(1) Detach connector P760 (13) from receptacle J760 (14).

(2) Hold four screws (15). Remove nuts (16) and washers (17).

(3) Remove four screws (15).

(4) Remove receptacle J760 (14) from bracket (18).

(5) Clean sealant from screw (19) and nut (20) (para 1.47).

(6) Hold screw (19). Remove nut (20) and washer (21).

(7) Remove screw (19), bracket (18), and bonding strap (22).

(8) Hold screw (23). Remove nut (24) and washer (25).

(9) Remove screw (23) and clamp (26).

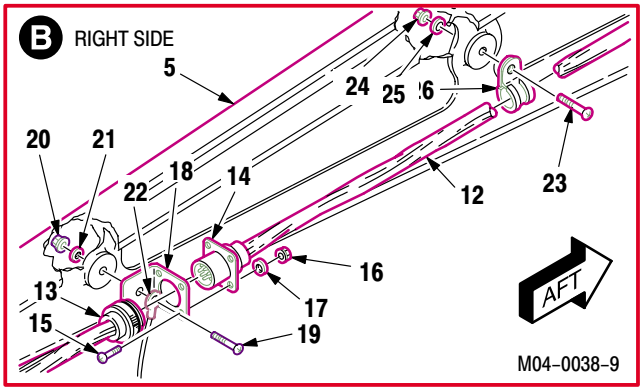
d. **Remove trailing arm (5) from pivot lugs (27).**

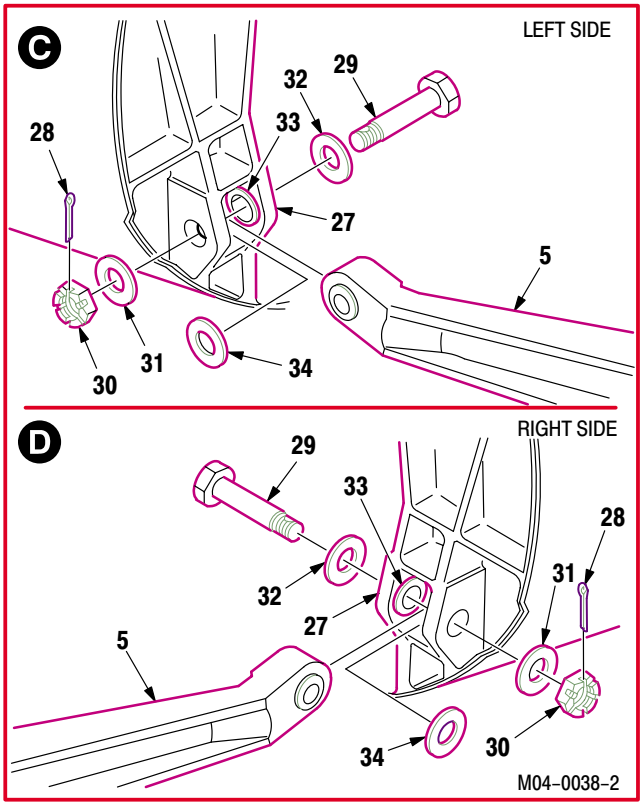
(1) Remove and discard cotter pins (28).

(2) Hold two bolts (29). Remove two nuts (30) and washers (31). Use box wrench.

(3) Support trailing arm (5). Remove two bolts (29) and washers (32). Use box wrench.

(4) Pull arm (5) away from pivot lug (27) and bearing (33). When trailing arms are removed, shims (34) will fall out.





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3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION – continued

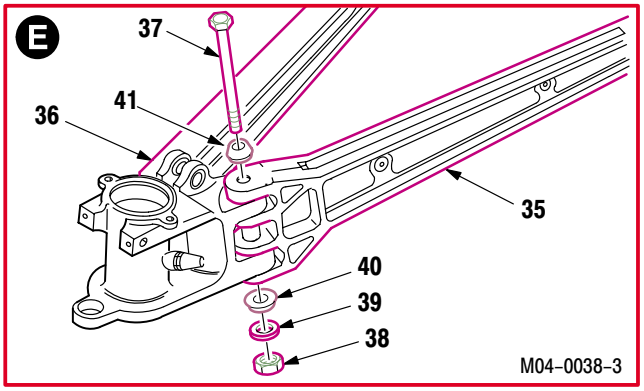
e. **Remove right side trailing arm (35) from left side trailing arm and socket (36).**

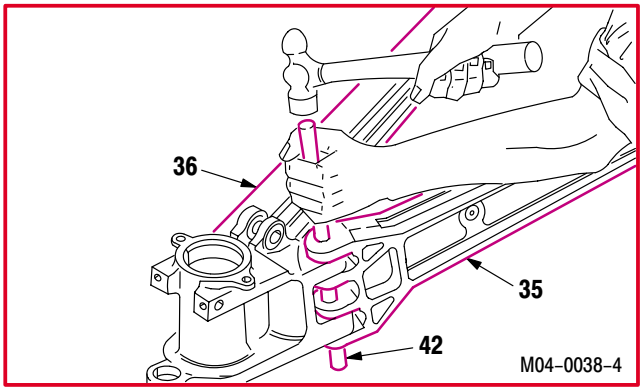
(1) Hold bolt (37). Remove nut (38), washer (39), and pin cap (40).

(2) Remove bolt (37) and pin cap (41).

(3) Remove pin (42) from arm (35) and arm and socket (36). Use driftpin.

(4) Remove arm (35) from arm and socket (36).





3.45.4. Cleaning

a. **Clean trailing arm and removed and attaching parts** (para 1.47)**.**

b. **Clean electrical connectors and receptacles** (para 1.47)**.**



c. **Clean jumper bonding areas.** Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

3.45.5. Inspection

a. **Check arms and socket for wear, elongation of pin, bends, or cracks.** None allowed.

b. **Check arms and socket for corrosion** (para 1.49)**.**

c. **Check arms for dents and nicks.**

(1) Maximum allowable depth **0.050 INCH**. Blend out any nicks and dents.

d. **Check tailboom attachment area for nicks and scratches.**

(1) Maximum allowable depth **0.012 INCH**. Blend out any nicks and scratches.

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3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION – continued

e. **Check electrical connectors and receptacles for distorted, burned, corroded, or bent contacts.** None allowed.

f. **Check electrical connectors and receptacles for cracks and damaged threads.**

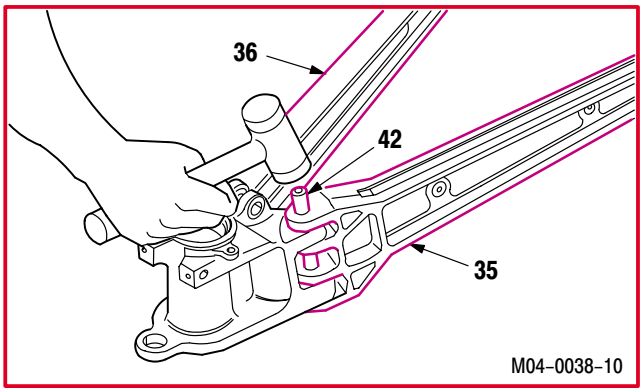
(1) No cracks allowed. Thread damage not to exceed 50 percent of one thread.

3.45.6. Installation

a. **Install right trailing arm (35) on left trailing arm and socket (36).** Torque nut (38) to **35 INCH-POUNDS**.

(1) Aline mating holes for pin (42) in arm (35) with arm and socket (36).

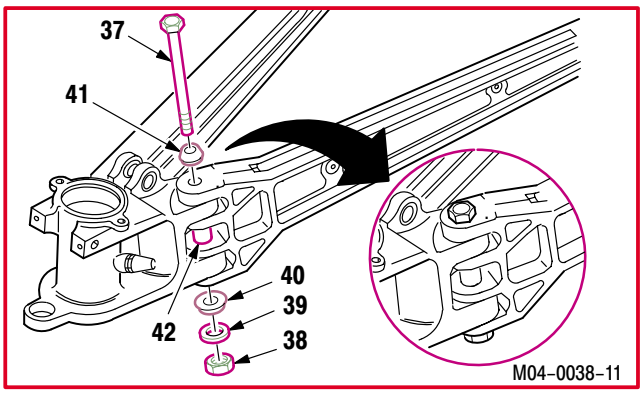
(2) Install pin (42) through mating holes of arm (35) and arm and socket (36). Use mallet.



(3) Install pin cap (41) on bolt (37).

(4) Install bolt (37) with pin cap (41) through pin (42), pin cap (40), and washer (39).

(5) Hold bolt (37). Install nut (38). Torque nut (38) to **35 INCH-POUNDS**. Use torque wrench.



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3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION – continued

NOTE

After proper installation the clearance gap between the trailing arms and bushings may allow the mounting bolts to be rotated by finger pressure. This is a normal condition.

b. **Install trailing arms (35) and (36) on pivot lugs (27).** Torque nuts (30) **135 to 150 INCH-POUNDS**.

(1) Aline trailing arms (35) and (36) with pivot lugs (27).

(2) Support trailing arms (35) and (36) until two bolts (29) are installed.

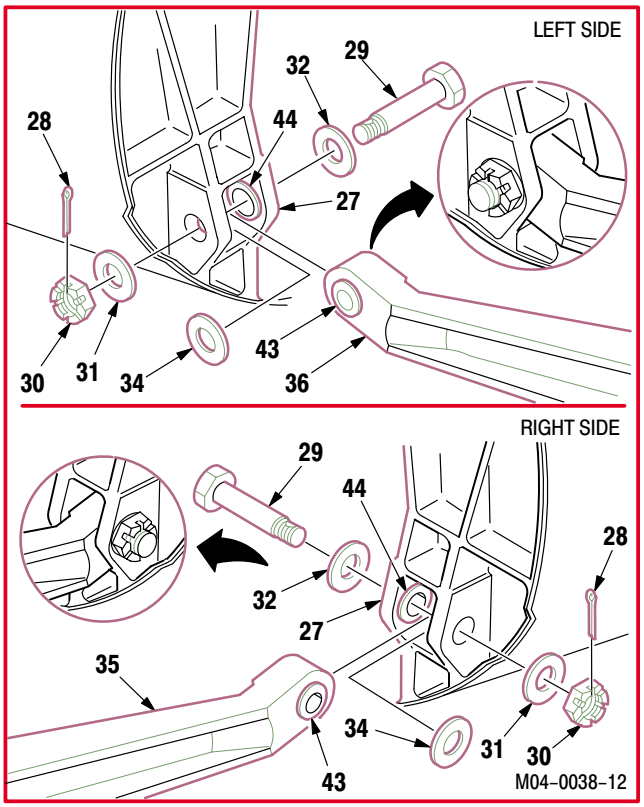
(3) Install two shims (34) between outboard sides of trailing arms (35) and (36) and pivot lugs (27). Remove laminates from shims (34) to maintain **0.001 to 0.004 INCH** gap between bushing (43) in trailing arms (35) and (36), and bushing (44) in pivot lugs (27).

(4) Install two bolts (29) through washers (32), pivot lug (27), trailing arms (35) and (36), shim (34), and pivot lug (27).

(5) Hold two bolts (29). Install washers (31) and nuts (30). Torque nuts (30) to **135 INCH-POUNDS**. Use torque wrench.

(6) Increase torque to aline cotter pin holes. Do not exceed **150 INCH-POUNDS**.

(7) Install two new cotter pins (28).



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3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION – continued

c. **Install tube (1) on hose (2).**

(1) Hold union (3) on tube (1).

(2) Tighten nut (4) on hose (2).



d. **Install tube (1) on trailing arm (5).**

(1) Install two clamps (9) on tube (1).

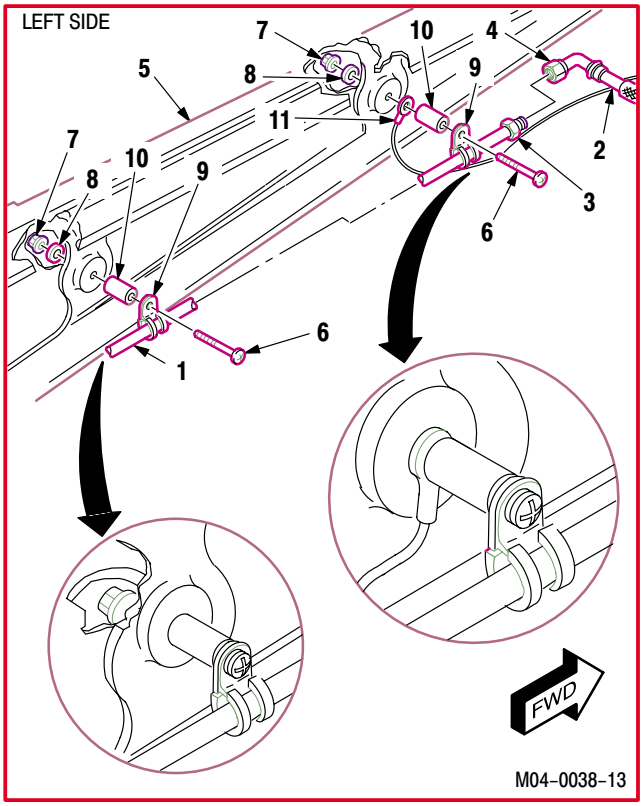
(2) Install two screws (6) through clamps (9), spacers (10), and bonding strap (11).

(3) Hold two screws (6). Install washers (8) and nuts (7).

(4) Perform electrical bond check (TM 55-1500-323-24).

(a) Bond shall be **0.0025 OHMS** or less. Use ohmmeter.

(5) Seal bonding area. Use sealing compound (item 178, App F).



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3.45. TAIL LANDING GEAR TRAILING ARMS REMOVAL/INSTALLATION – continued

e. **Install wire harness (12) on trailing arm (5).**

(1) Install screw (19) through washer (21), bonding strap (22), and bracket (18).

(2) Hold screw (19). Install washer (21) and nut (20).

(3) Perform electrical bond check (TM 55-1500-323-24).

(a) Bond shall be **0.0025 OHMS** or less. Use ohmmeter.

(4) Seal bonding area. Use sealing compound (item 178, App F).

(5) Aline receptacle J760 (14) with bracket (18).

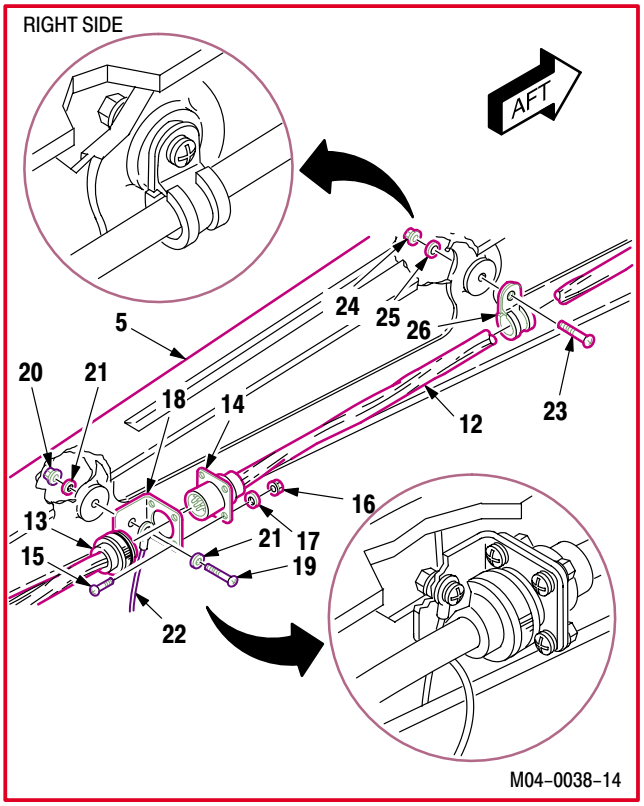
(6) Install four screws (15) through bracket (18).

(7) Hold four screws (15). Install washers (17) and nuts (16).

(8) Attach connector P760 (13) to receptacle J760 (14).

(9) Install clamp (26) and screw (23).

(10) Hold screw (23). Install washer (25) and nut (24).



f. **Inspect (QA).**

g. **Install shock strut** (para 3.38)**.**

h. **Install fork** (para 3.43)**.**

i. **Install actuating cylinder** (para 3.32)**.**

j. **Install wheel and axle** (para 3.46 or 3.49)**.**

k. **Remove tripod jack** (para 1.69)**.**

END OF TASK

3.46. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE REMOVAL/INSTALLATION

3.46.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.46.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
0 - 5-inch spanner wrench set (item 427, App H)

Materials/Parts:

Cotter pins (2)
Grease (item 87, App F)
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 55-1500-323-24
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.69	Tail landing gear jacked (tripod jack)

WARNING

Deflate tire before handling wheel. Failure to deflate the tire can result in the valve core and valve separating with extreme force. If injury occurs, seek medical aid.

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3.46. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

3.46.3. Removal

a. **Remove cable assembly (1) from angle bracket (2).**

(1) Hold nut (3). Remove nut (4).

(2) Remove nut (3) and cable (1) from bracket (2).

b. **Remove wheel (5) from tail landing gear fork (6).**

(1) Remove and discard two cotter pins (7).

(2) Hold two bolts (8). Remove nuts (9), four washers (10), and structural support (11).

(3) Support wheel (5). Remove bolt (8) and washer (12) from right-hand side of fork (6).

(4) Remove bolt (8) and bracket (2) from left-hand side of fork (6).

(5) Remove wheel (5) from fork (6).

c. **Remove sleeve spacer (13) from axle (14).**

d. **Remove axle (14) from wheel (5).**

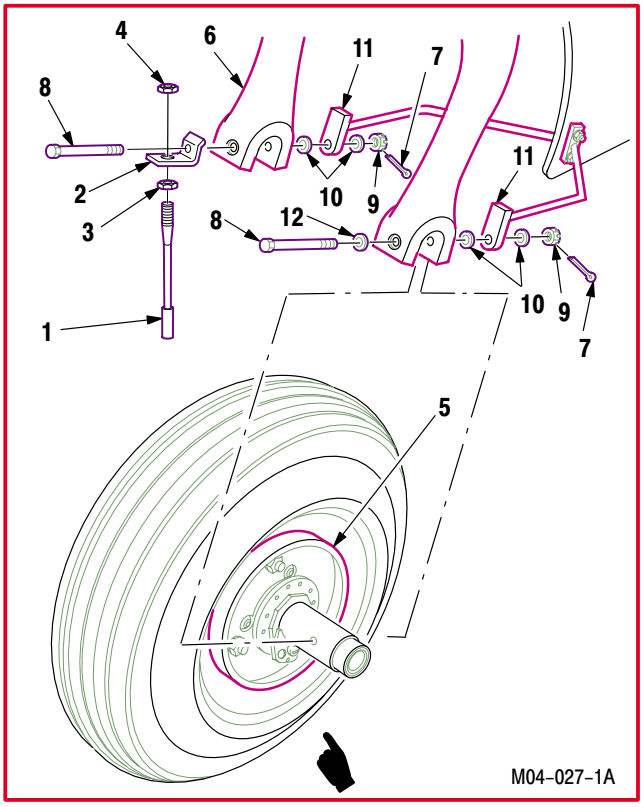
e. **Remove adjustable spacer (15) and landing gear axle lock (16) from axle (14).** Use spanner wrench set.

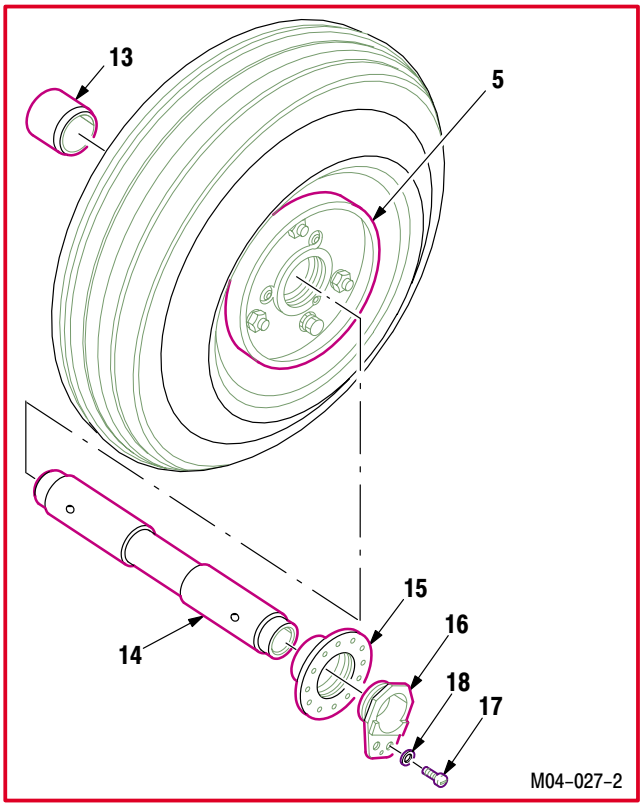
f. **Remove spacer (15) from lock (16).**

(1) Remove lockwire from screw (17).

(2) Remove screw (17) and washer (18) from lock (16) and spacer (15).

(3) Turn spacer (15) counterclockwise to loosen lock (16).





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3.46. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

3.46.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.46.5. Inspection

a. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination** (TM 55-2620-200-24)**.**

b. **Check wheel for cracks, galls, and discoloration caused by overheating.** None allowed.

c. **Check removed and attaching parts for corrosion** (para 1.49)**.**

WARNING

Proper installation of tail landing gear wheel is critical to the functional integrity of the tail landing gear assembly. Instructions in this task pertaining to installation of this part must be complied with exactly as specified.

3.46.6. Installation

a. **Inflate tire (19) to 50 psi.** Use inflator assembly and nitrogen truck.

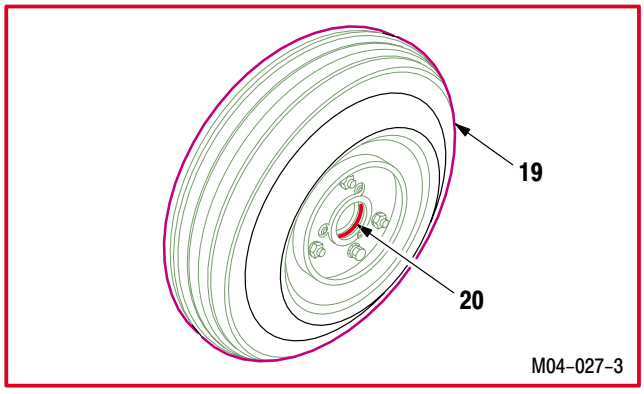
b. **Ensure tapered cone and rollers have been greased** (para 3.52)**.**

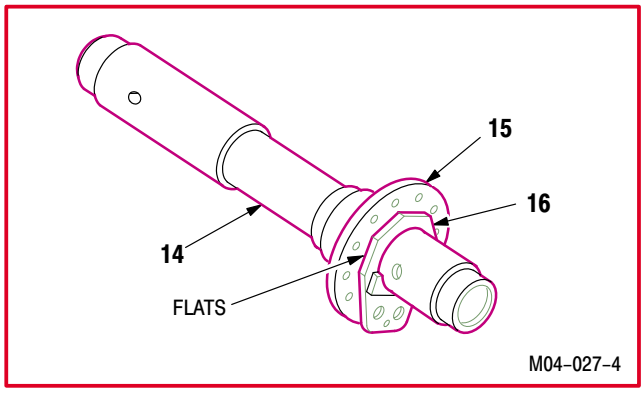


c. **Apply grease to lip of seal (20).** Use grease (item 87, App F).

d. **Install lock (16) on spacer (15).**

e. **Install assembled spacer (15) and lock (16) on axle (14).**





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3.46. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

f. **Install axle (14) through wheel (5).** Ensure that valve stem (21) is positioned on the opposite side of the tail wheel spacer (15) and lock (16).

g. **Install spacer (13) on axle (14).**

h. **Install cable (1) on bracket (2).**

(1) Install nut (3) on cable (1).

(2) Install cable (1) through bracket (2).

(3) Hold nut (3). Install nut (4).

i. **Install wheel (5) on fork (6).**

(1) Position wheel (5) on fork (6).

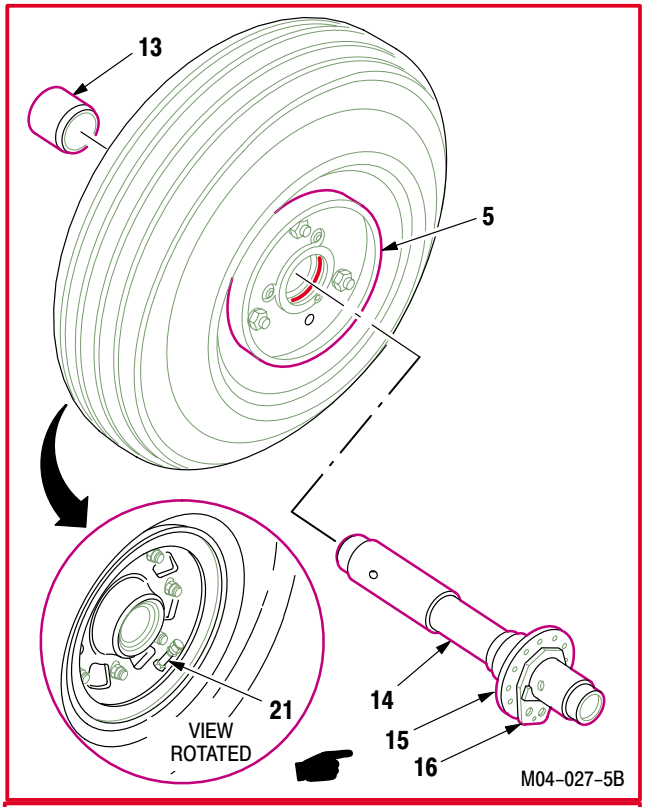
(2) Aline bolt holes in axle (14) with bolt holes in fork (6).

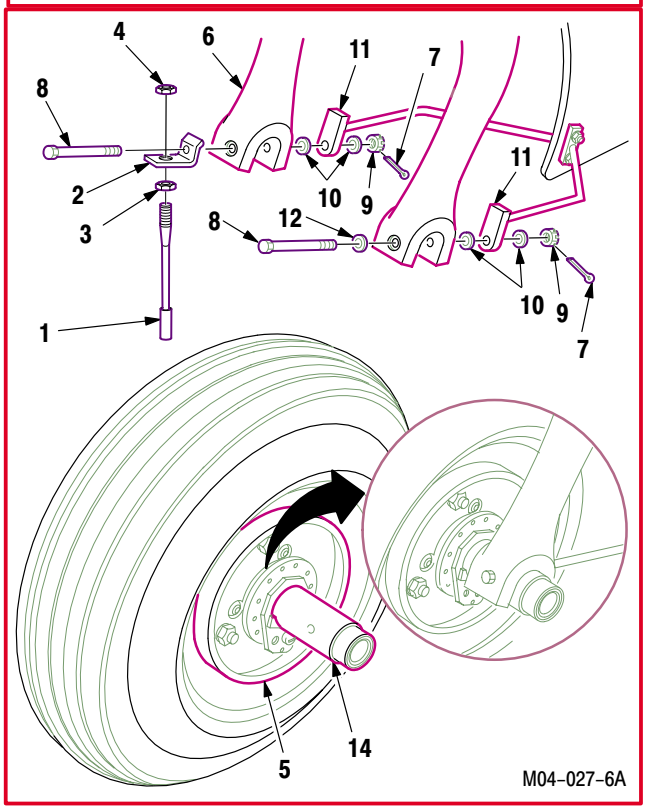
(3) Install bolt (8) through washer (12), fork (6), axle (14), and support (11) on right-hand side of fork (6).

(4) Install bolt (8) through bracket (2), fork (6), axle (14), and support (11) on left-hand side of fork (6).

(5) Hold two bolts (8). Install washers (10) and nuts (9).

(6) Install two new cotter pins (7).





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3.46. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

j. **Adjust spacer (15).**

(1) Rotate wheel (19) by hand.

CAUTION

Do not tighten spacer until a heavy drag is felt. Possible damage to wheel bearings may occur.

(2) Tighten spacer (15) until bearings are firmly seated and a slight drag in bearings can be felt. Use spanner wrench set.

(3) Back off spacer (15) one full turn.

(4) Repeat step j.(2).

k. **Install screw (17) in lock (16) and spacer (15).**

(1) Aline holes in lock (16) with closest holes in spacer (15).

(2) Install screw (17) and washer (18) in lock (16) and spacer (15).

(3) Lockwire screw (17) to lock (16). Use wire (item 224, App F).

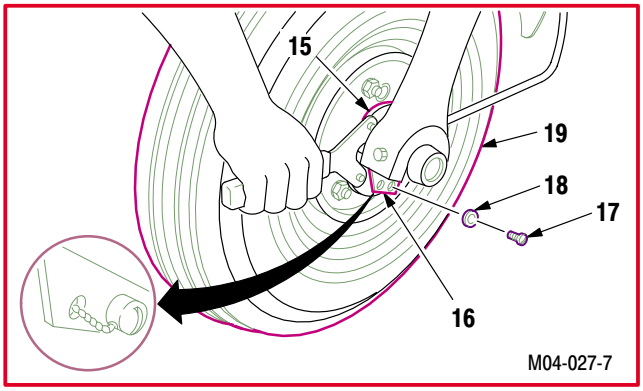
l. **Perform electrical bond check on cable** (TM 55-1500-323-24)**.**

(1) Bond shall be **1.00 OHM** or less. Use multimeter.

m. **Inspect (QA).**

n. **Service tail landing gear tire to 105 ±5 psi** (para 1.44)**.**

o. **Remove tripod jack** (para 1.69)**.**



END OF TASK

3.47. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION

3.47.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.47.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Tire inflation cage (item 49, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Pneumatic tire valve repair tool (item 260, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Antiseize compound (item 26, App F)
Leak test compound (item 109, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 1-1520-264-23
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.49	Tail landing wheel and axle removed

CAUTION

Tail landing gear wheel assembly parts (bolts, nuts, bearings, and valves) manufactured by one company cannot be used or intermixed with brake assembly manufactured by a different company.

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3.47. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

3.47.3. Removal

WARNING

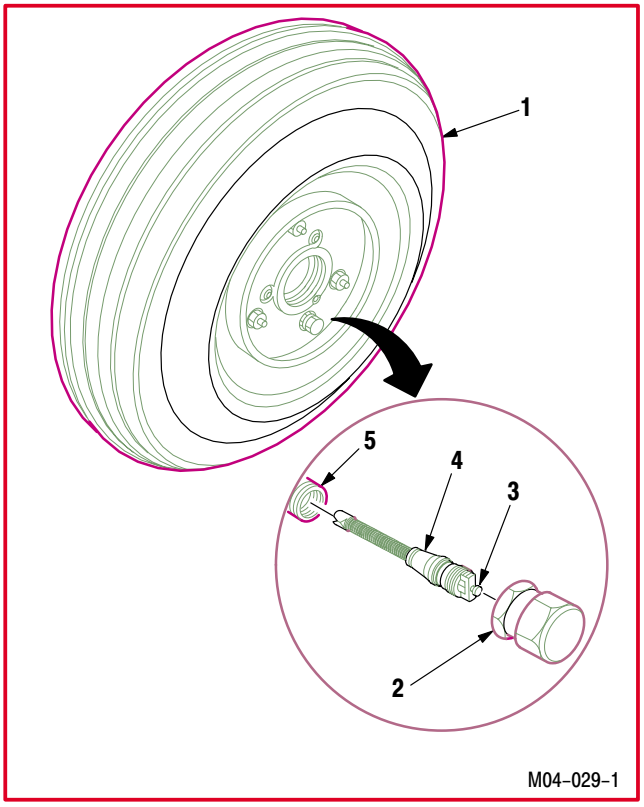
- **Do not take wheel apart before deflating tire. Pressure on loosened nuts could cause nuts to break loose and wheel subassemblies to separate and injure personnel. If injury occurs, seek medical aid.**
- **Do not remove valve core from stem boss until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.**

a. **Deflate tire (1).**

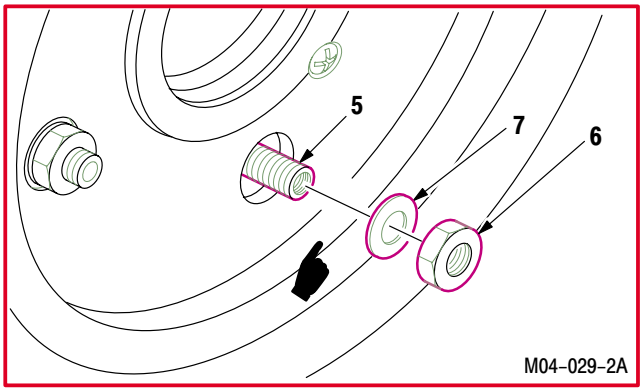
(1) Remove valve cap (2).

(2) Press valve core end (3) to deflate tire (1).

(3) Remove valve core (4) from stem boss (5). Use tire valve tool.



b. **Remove nut (6) and washer (7) from stem boss (5).**



GO TO NEXT PAGE

3.47. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

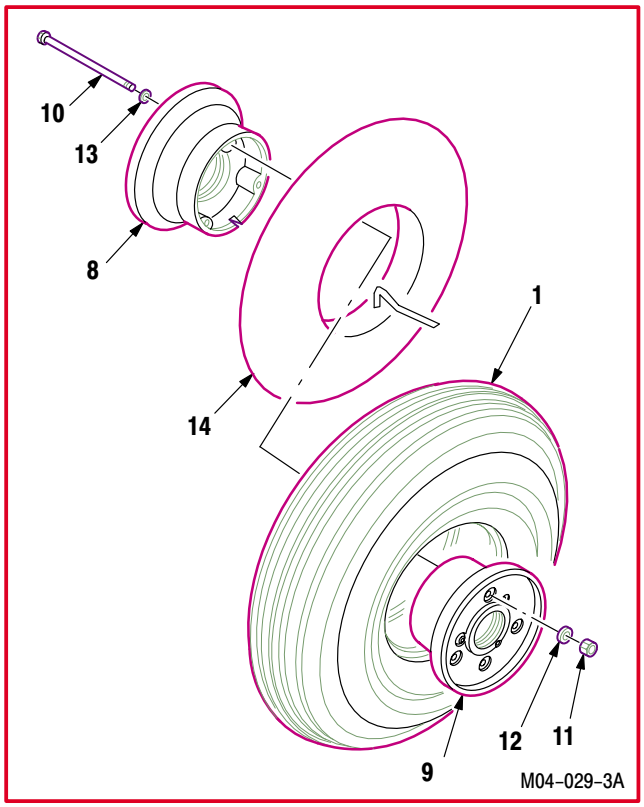
c. **Remove female wheel subassembly (8) and male wheel subassembly (9) from tire (1).**

(1) Hold three bolts (10). Remove nuts (11) and washers (12).

(2) Remove three bolts (10) and washers (13) from wheel subassemblies (8) and (9).

(3) Remove wheel subassemblies (8) and (9) from tire (1).

d. **Remove inner tube (14) from tire (1).**



3.47.4. Cleaning

a. **Clean wheel subassemblies** (para 1.47)**.**

3.47.5. Inspection

a. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination** (TM 55-2620-200-24)**.**

b. **Check wheels for galls, and discoloration caused by overheating** (TM 1-1500-204-23)**.**

c. **Check tube for creases, cuts, holes, and punctures** (TM 55-2620-200-24)**.**

d. **Check wheels for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

GO TO NEXT PAGE

3.47. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

3.47.6. Installation

a. **Install tube (14) in tire (1).**

(1) Install tube (14) in tire (1).

(2) Aline stem (5) with dot on sidewall of tire (1).

b. **Install tire (1) on wheel subassembly (8).**

(1) Install tire (1) on wheel subassembly (8).

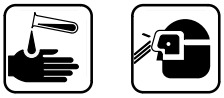
(2) Aline slot (15) with stem (5).

c. **Install wheel subassembly (9) on tire (1).**

(1) Install wheel subassembly (9) on tire (1).

(2) Aline stem boss hole (16) with stem (5).

(3) Push wheel (9) on tire (1) until wheels (8) and (9) touch.



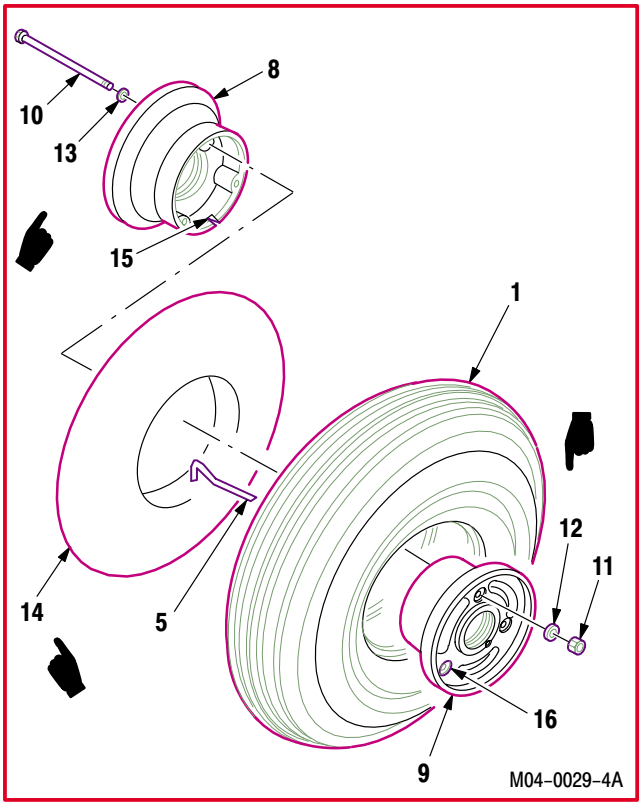
d. **Install three bolts (10), washers (13) and (12), and nuts (11) on wheel subassemblies (8) and (9).** Torque three nuts (11) to **65 INCH-POUNDS**.

(1) Coat threads of bolts (10). Use antiseize compound (item 26, App F).

(2) Install three bolts (10) through washers (13) and wheel subassembly (8) and (9).

(3) Hold three bolts (10). Install washers (12) and nuts (11). Torque nuts (11) to **65 INCH-POUNDS**. Use torque wrench.

e. **Inspect (QA).**



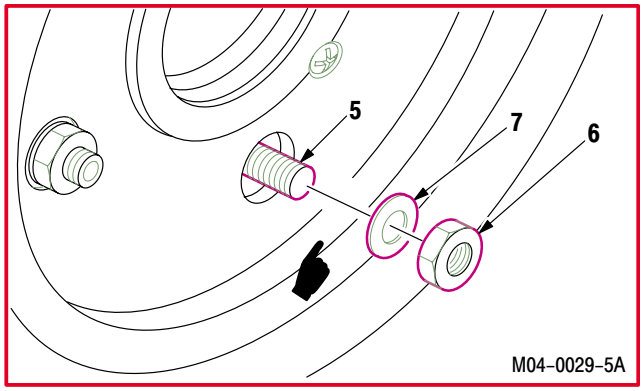
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3.47. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

f. **Install nut (6) and washer (7) on stem (5).** Torque nut (6) to **10 INCH-POUNDS**.

(1) Install washer (7) over stem (5).

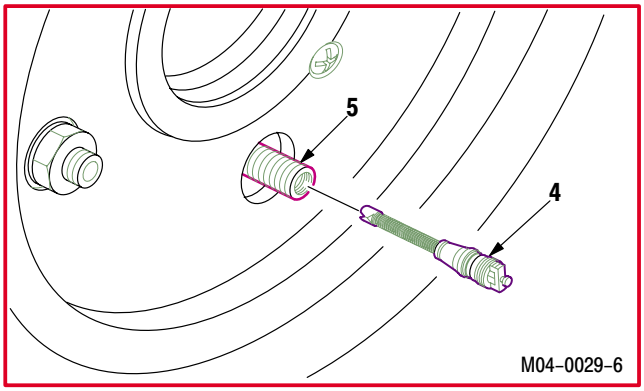
(2) Install nut (6) on stem (5). Torque nut (6) to **10 INCH-POUNDS**. Use torque wrench.



g. **Install core (4) in stem (5).** Use tire valve tool.

WARNING

Wheel and tire must be in safety cage when tire is being inflated. Tire could blow off wheel and personnel could be injured by flying parts. If injury occurs, seek medical aid.

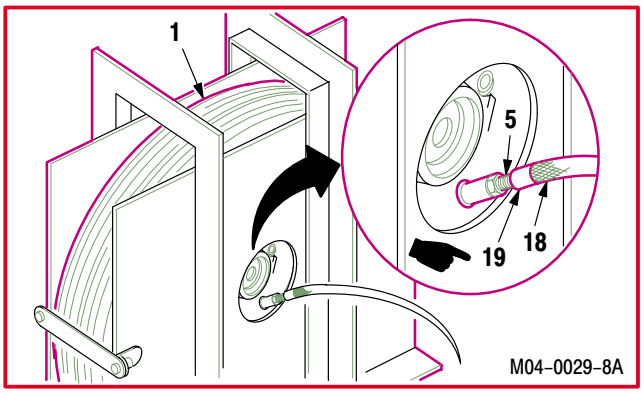


h. **Install tire (1) in cage** (TM 55-2620-200-24)**.** Use cage.

i. **Inflate tire (1) to 105 ±5 psi.** Use inflator assembly and nitrogen truck.

NOTE

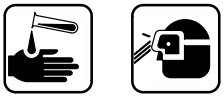
Allow **30 MINUTES** before removing inflated tire from safety cage.



j. **Remove tire (1) from cage** (TM 55-2620-200-24)**.**

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3.47. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

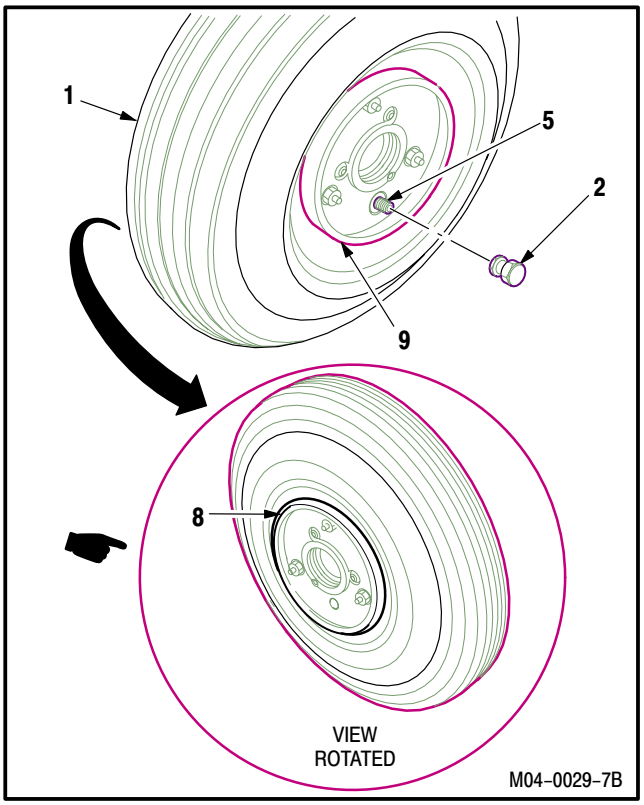


k. **Check stem (5) and wheel subassemblies (8) and (9) for leaks.** Use leak test compound (item 109, App F).

l. **Install cap (2) on stem (5).**

m. **Inspect (QA).**

n. **Install tail landing gear wheel and axle** (para 3.49)**.**



END OF TASK

3.48. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TAPERED CONES AND ROLLERS REMOVAL/INSTALLATION

3.48.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.48.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
1/2 x 4-inch long driftpin (item 112, App H)

Materials/Parts:

Seal

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23
TM 55-1500-322-24
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.46	Tail landing gear wheel and axle removed

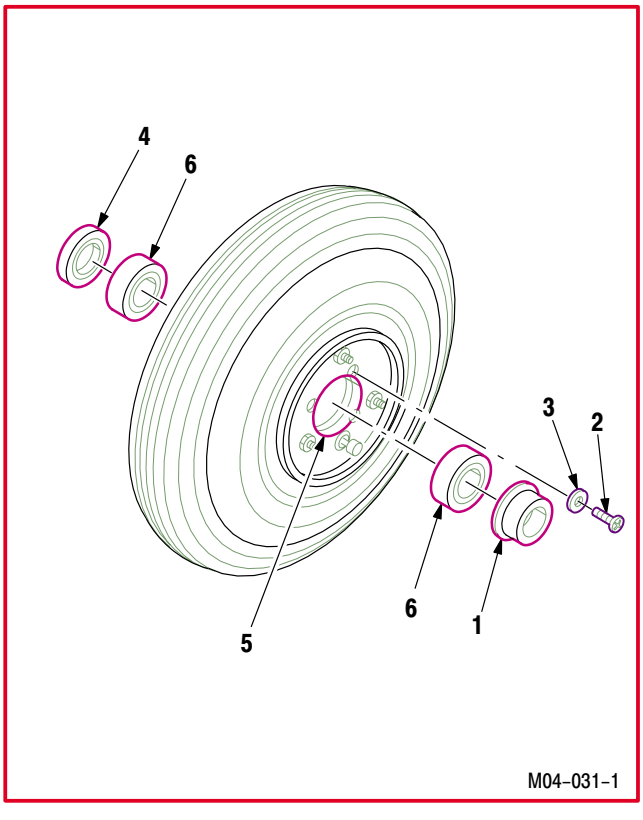
3.48.3. Removal

a. **Remove seal male retainer (1).**

(1) Remove three screws (2) and washers (3).

b. **Remove tail female wheel seal (4) from each side of wheel (5).**

c. **Remove cone and rollers (6) from each side of wheel (5).** Use driftpin.



3.48.4. Cleaning

a. **Clean wheel** (para 1.47)**.**

b. **Clean rollers** (TM 55-1500-322-24)**.**

GO TO NEXT PAGE

3.48. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) TAPERED CONES AND ROLLERS REMOVAL/INSTALLATION – continued

3.48.5. Inspection

a. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination** (TM 55-2620-200-24)**.**

b. **Check wheel for galling, and discoloration due to overheating.** None allowed.

c. **Check wheel for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

d. **Check retaining ring and seal for deterioration and damage.** None allowed.

e. **Check wheel bearings** (TM 55-1500-322-24)**.**

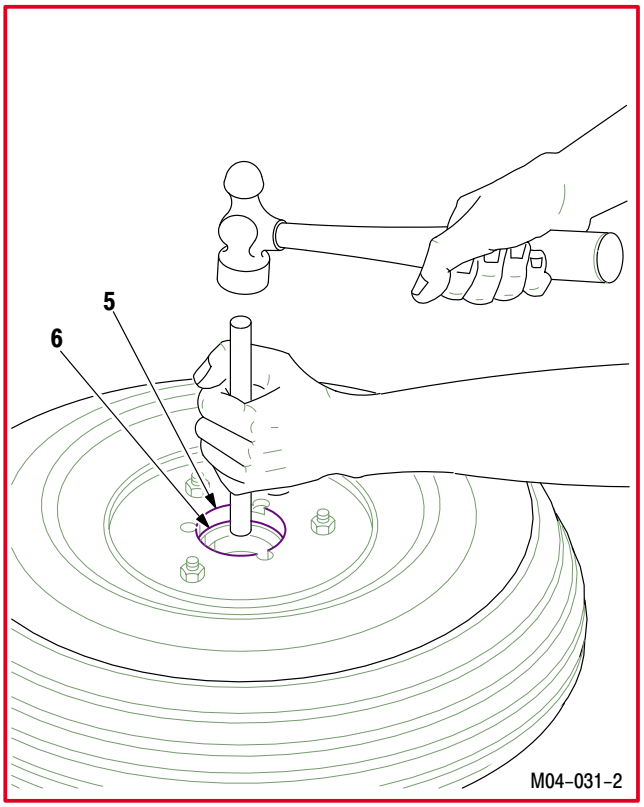
f. **Check tapered roller cups for looseness, scratches, pitting, and signs of overheating. Replace cups** (TM 55-1500-322-24)**.**

3.48.6. Installation

a. **Pack rollers (6)** (para 3.52)**.**

b. **Install roller (6) in each side of wheel (5).**

(1) Seat rollers (6) against inner lip of wheel (5).

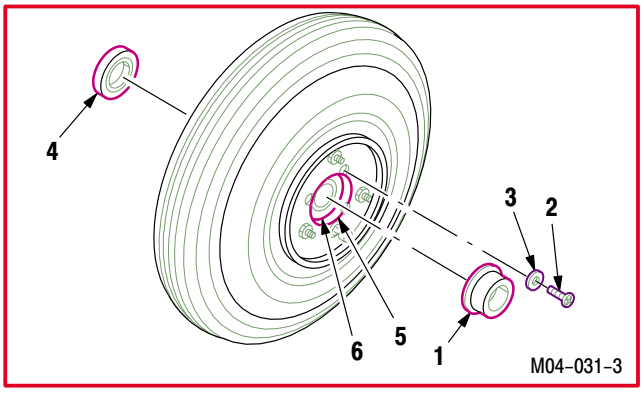


c. **Install seal (4) in one side of wheel (5).**

d. **Install retainer (1) in hub (6).**

(1) Install three washers (3) and screws (2) in retainer (1).

e. **Inspect (QA).**



END OF TASK

3.48A. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) REPAIR (AVIM)

3.48A.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.48A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
0.000 - 6.000-inch outside micrometer caliper set (item 52, App H)
0.6300 - 1.0000-inch cylinder gage (item 142, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Instruction Plate (2)
Adhesive (item 12, App F)
Antiseize compound (item 27, App F)
Brush (item 34, App F)
Cloth (item 48, App F)
Cloth (item 50, App F)
Cloth (item 52, App F)
Corrosion resistant coating (item 66, App F)
Epoxy primer coating kit (item 78, App F)
Polyurethane coating (item 141, App F)
Remover (item 149, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23
TM 55-1500-322-24
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
3.47	Tail landing gear wheel tire and tube removed
3.48	Tail landing gear wheel tapered cones and rollers removed

WARNING

Injury to personnel and damage to equipment may occur if wheel halves are not inspected whenever wheel is disassembled. Make sure wheel halves are inspected whenever wheel is disassembled.

CAUTION

Wheel assembly parts (wheel halves, bolts, and gaskets) manufactured by one company cannot be intermixed with parts manufactured by a different company.

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3.48A. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) REPAIR (AVIM) – continued

3.48A.3. Removal

NOTE

This step is typical for both inboard and outboard tail landing gear wheels.

a. **Remove instruction plate (1) from tail landing gear wheel (2).**

(1) Peel up corner of plate (1). Use putty knife.

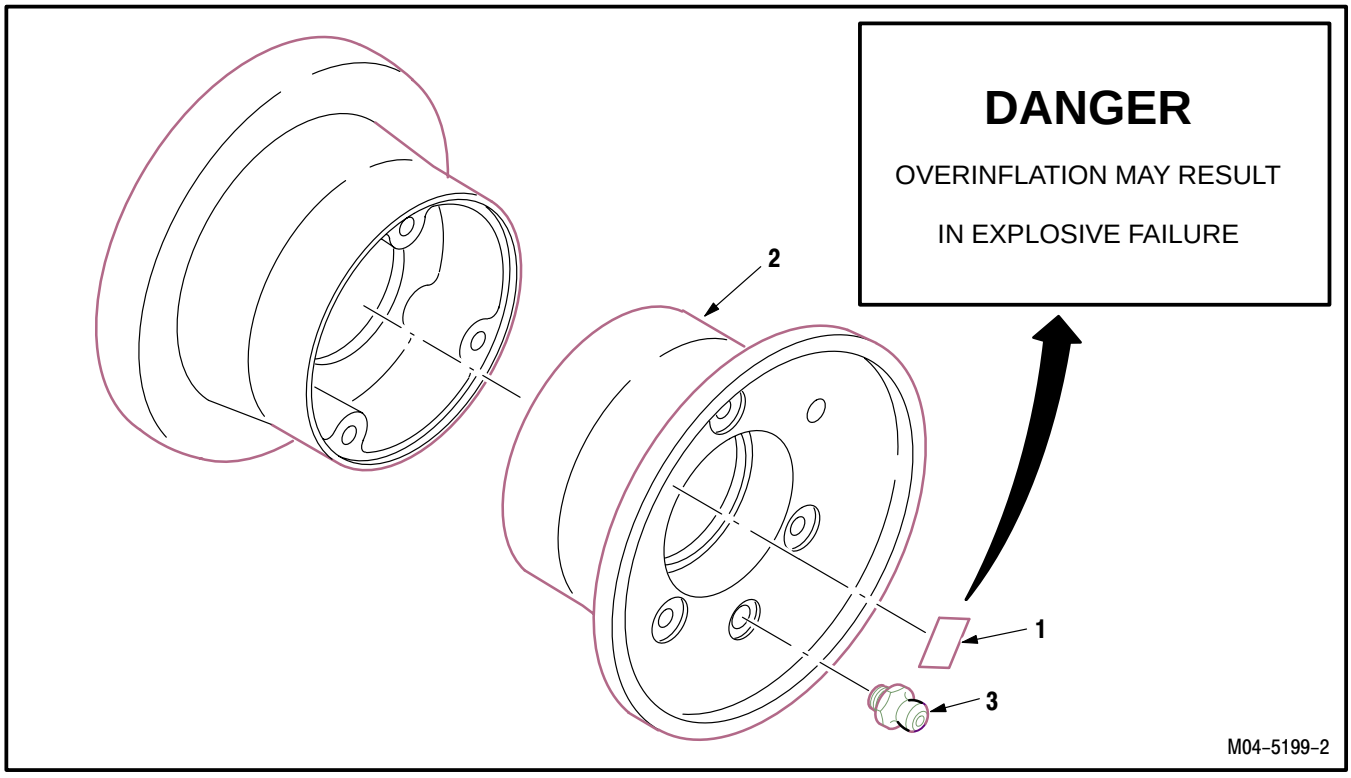
(2) Remove and discard plate (1) from tail landing gear wheel (2).

NOTE

This step is typical for both inboard and outboard tail landing gear wheels.

b. **Remove main landing gear wheel tire grease fitting (3) from tail landing gear wheel (2).**

(1) Remove grease fitting (4) from tail landing gear wheel (2).



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3.48A. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) REPAIR (AVIM) – continued



c. **Remove paint from wheel halves.** Use remover (item 149, App F).

d. **Remove paint residue from wheel halves.** Use cloth (item 52, App F).

e. **Remove tail landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**

3.48A.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.48A.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check wheels for cracks or structural damage by fluorescent penetrant inspection method** (TM 1-1520-264-23)**.**

c. **Check wheel halves for scratches, nicks, or pits.** Repair per step 3.7A.6.

d. **Inspect wheel bearing cup housing bore(s) for damage.**

(1) Diameter of inboard wheel mating bore shall not exceed **3.3407 INCHES** maximum. Use appropriate cylinder gage and caliper set.

(2) Diameter ofoutboard wheel mating bore shall not exceed **2.6831 INCHES** maximum. Use appropriate cylinder gage and caliper set.

3.48A.6. Repair

WARNING

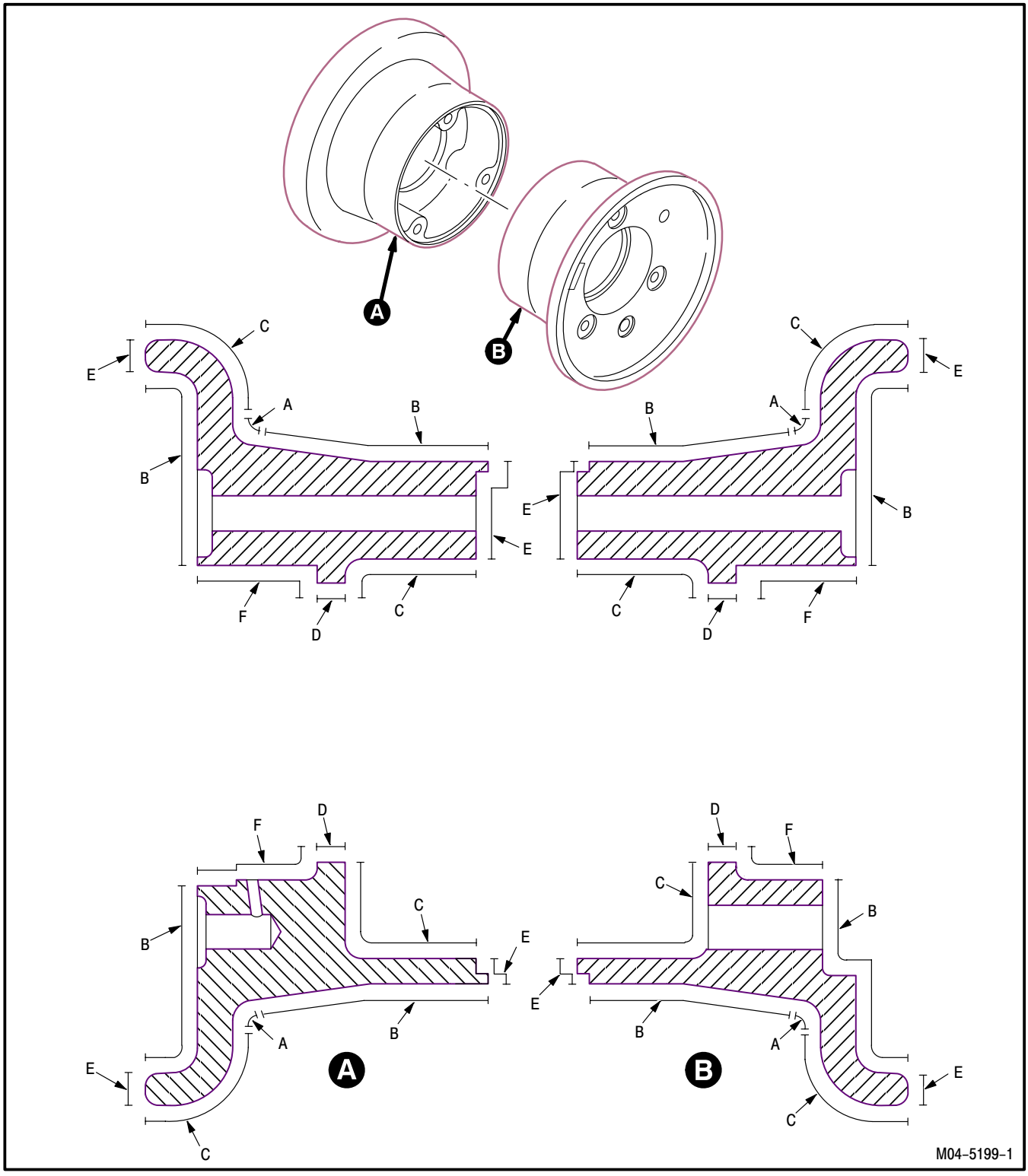
Injury to personnel and damage to equipment may occur if hardware is reused on wheel. Replace all bolts and nuts. If injury occurs, seek medical aid.

NOTE

Wheel halves are not a matched set and can be replaced individually provided correct part number and manufacturer is used.

GO TO NEXT PAGE

3.48A. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) REPAIR (AVIM) – continued



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3.48A. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) REPAIR (AVIM) – continued

a. **Blend or polish scratches, nicks, or pits per the following limits:**

(1) Repair area A as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(2) Repair area B as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep and **1.00 SQUARE INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(3) Repair area C as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.031 INCH** deep and **1.00 INCH** long. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(4) Repair area D as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.062 INCH** deep and **1.00 SQUARE INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(5) Repair area E as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.015 INCH** deep and **1.00 INCH** long. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

NOTE

Repair after blending and polishing shall not affect bearing cup retention.

(6) Repair area F as follows:

(a) Blend and polish scratches or corrosion. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs affect bearing cup retention.

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3.48A. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) REPAIR (AVIM) – continued

3.48A.7. Installation

a. **Install tail landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**



b. **Install grease fitting (3) on tail landing gear wheel (2).**

(1) Apply a coat of antiseize compound to grease fitting (4). Use brush (item 34, App F) and antiseize compound (item 27, App F).

(2) Install grease fitting (4) in tail landing gear wheel (2).



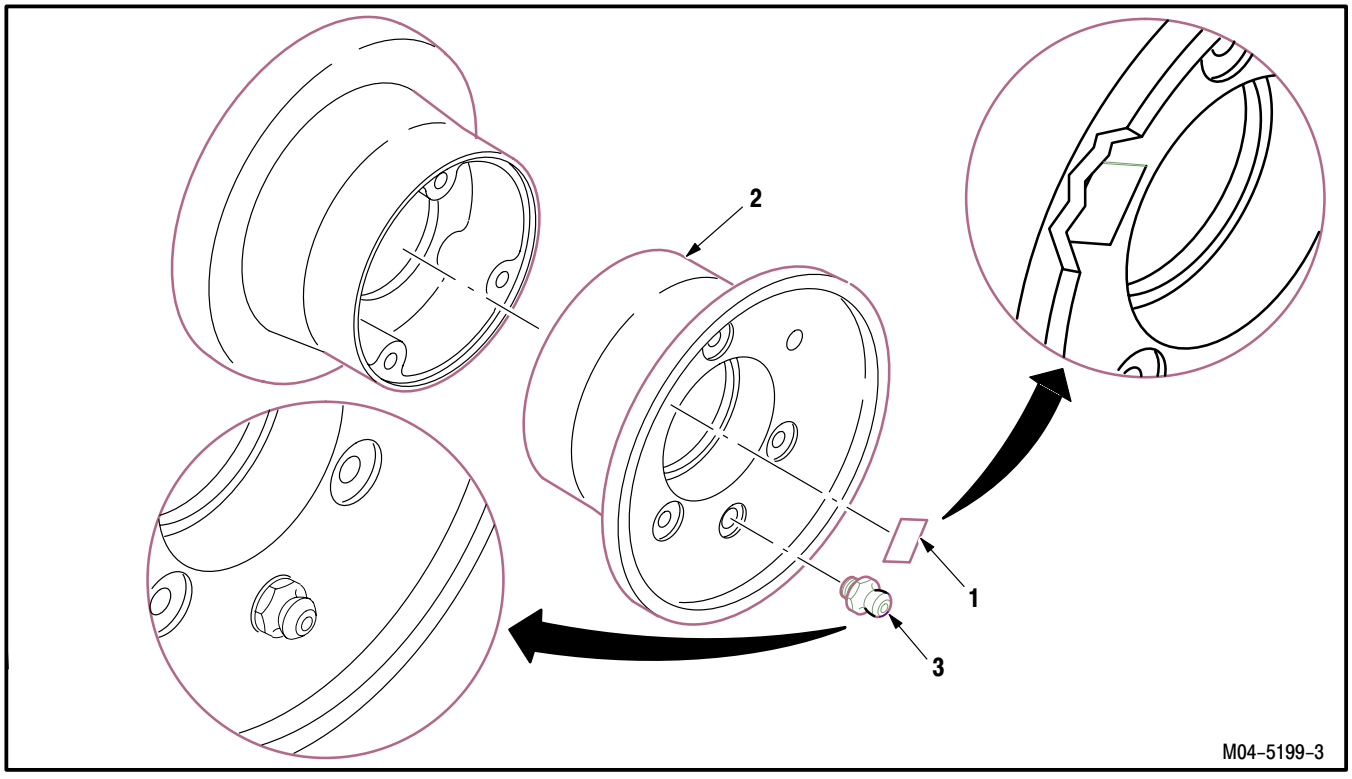
c. **Install new instruction plate (1) on tail landing gear wheels (2).**

(1) Lightly abrade wheels (2) in same location as old plate (1). Use cloth (item 48, App F).

(2) Remove lining from back side of plate (1).

(3) Install plate (1) on wheel (2) as close as possible to tire valve assembly location.

(4) Place a bead of adhesive around the edge of plate (1). Use adhesive (item 12, App F).



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3.48A. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) REPAIR (AVIM) – continued



d. **Paint tail landing gear wheels (2).**

(1) Apply corrosion resistant coating to wheel halves and allow to dry for minimum **ONE HOUR** at a minimum temperature of 65° F (18° C). Use corrosion resistant coating (item 66, App F).

NOTE

Apply primer to male/female mating surfaces and bolt bosses only.

(2) Apply primer to wheels (2). Use epoxy primer coating kit (item 78, App F) (TM 55-1500-345-23.

(3) Apply paint to wheels (2). Use polyurethane coating (item 141, App F) (TM 55-1500-345-23).

NOTE

If wheel is not installed on helicopter, rollers shall be protected (TM 55-1500-322-24).

e. **Install tail landing gear wheel tire and tube** (para 3.47)**.**

f. **Install tail landing gear wheel tapered cones and rollers** (para 3.48)**.**

g. **Install tail landing gear wheel and axle** (para 3.46)**.**

h. **Inspect (QA).**

END OF TASK

3.49. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE REMOVAL/INSTALLATION

3.49.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.49.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Electrical tool kit (item 378, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Multimeter (item 215, App H)
Adjustable air filtering respirator (item 262, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
0 - 5-inch spanner wrench set (item 427, App H)

Materials/Parts:

Cotter pin (2)
Grease (item 87, App F)
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
68X Armament/Electrical System Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23
TM 55-1500-323-24
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.69	Tail landing gear jacked (tripod jack)

WARNING

Deflate tire before handling wheel. Failure to deflate the tire can result in the valve core and valve separating with extreme force. If injury occurs, seek medical aid.

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3.49. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

3.49.3. Removal

a. **Remove cable assembly (1) from double angle bracket (2).**

(1) Hold nut (3). Remove nut (4).

(2) Remove nut (3) and cable (1) from bracket (2).

b. **Remove wheel (5) from tail landing gear fork (6).**

(1) Remove and discard two cotter pins (7).

(2) Hold two bolts (8). Remove nuts (9), four washers (10), and structural support (11).

(3) Support wheel (5). Remove bolt (8) and washer (12) from right-hand side of fork (6).

(4) Remove bolt (8) and bracket (2) from left-hand side of fork (6).

(5) Remove wheel (5) from fork (6).

c. **Remove sleeve spacer (13) from axle (14).**

d. **Remove axle (14) from wheel (5).**

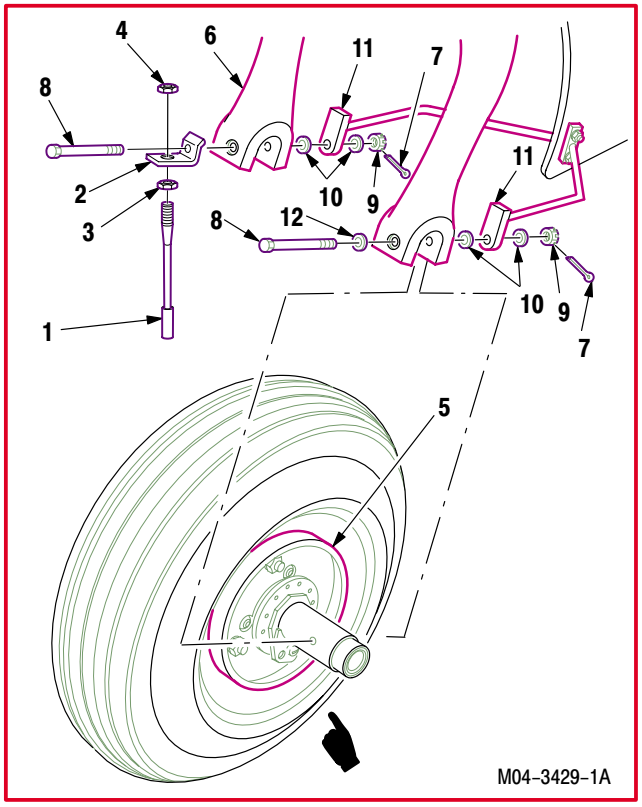
e. **Remove adjustable spacer (15) and landing gear axle lock (16) from axle (14).** Use spanner wrench set.

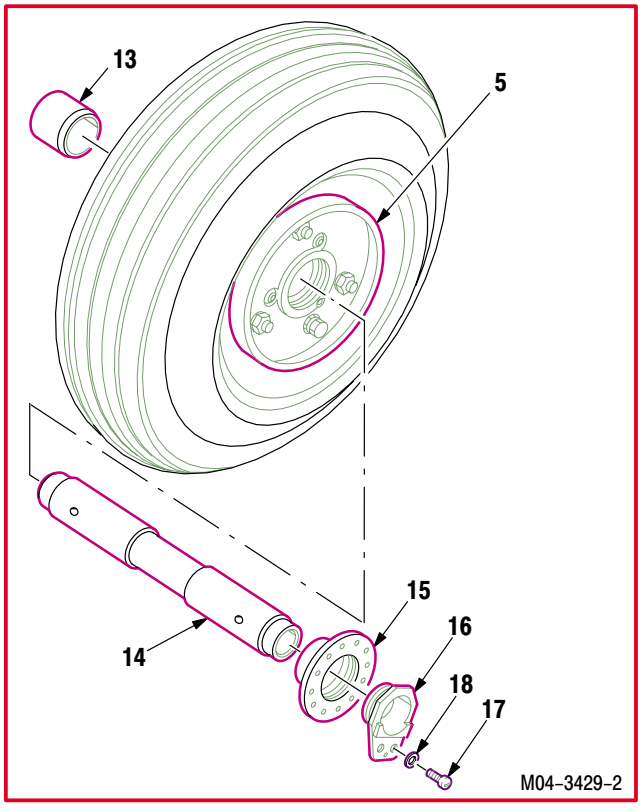
f. **Remove spacer (15) from lock (16).**

(1) Remove lockwire from screw (17).

(2) Remove screw (17) and washer (18) from lock (16) and spacer (15).

(3) Turn spacer (15) counterclockwise to loosen lock (16).





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3.49. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

3.49.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

3.49.5. Inspection

a. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination** (TM 55-2620-200-24)**.**

b. **Check wheel for galls, and discoloration caused by overheating.**

c. **Check wheel for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

d. **Check removed and attaching parts for corrosion** (para 1.49)**.**

3.49.6. Installation

WARNING

Proper installation of tail landing gear wheel is critical to the functional integrity of the tail landing gear assembly. Instructions in this task pertaining to installation of this part must be complied with exactly as specified.

a. **Inflate tire (19) to 50 psi.** Use inflator assembly and nitrogen truck.

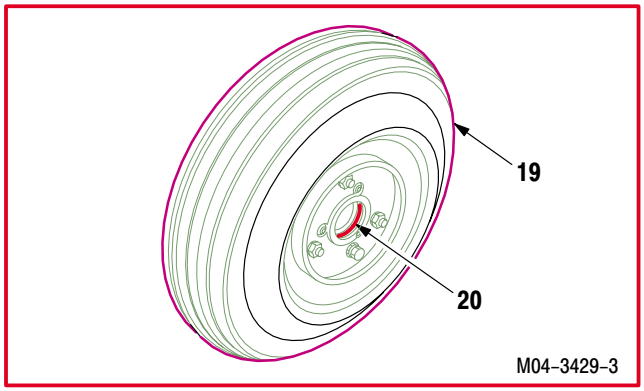
b. **Check that bearings have been greased** (para 3.52)**.**

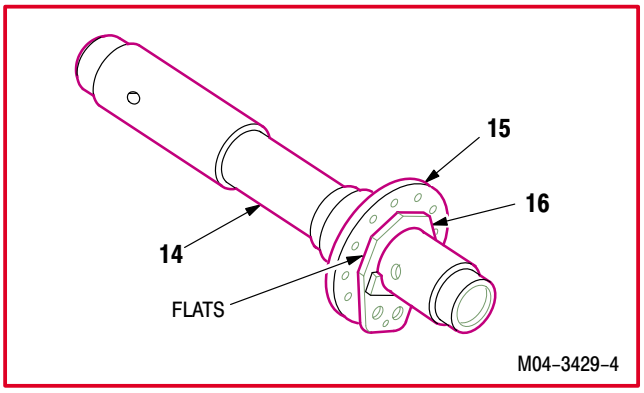


c. **Apply grease to lip of seal (20).** Use grease (item 87, App F).

d. **Install lock (16) on spacer (15).**

e. **Install assembled spacer (15) and lock (16) on axle (14).**



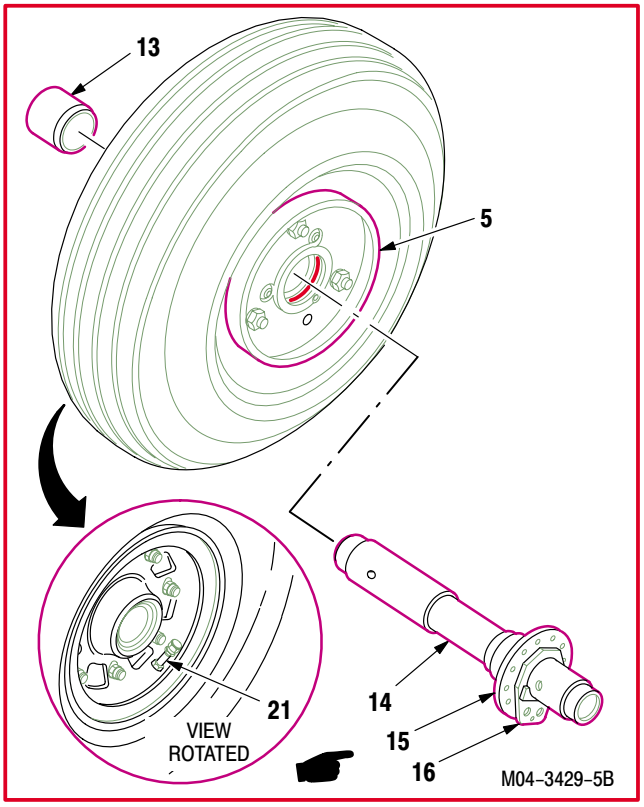


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3.49. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

f. **Install axle (14) through wheel (5).** Ensure that valve stem (21) is positioned on the opposite side of the tail wheel spacer (15) and lock (16).

g. **Install spacer (13) on axle (14).**



h. **Install cable (1) on bracket (2).**

(1) Install nut (3) on cable (1).

(2) Install discharger (1) through bracket (2).

(3) Hold nut (3). Install nut (4).

i. **Install wheel (5) on fork (6).**

(1) Position wheel (5) on fork (6).

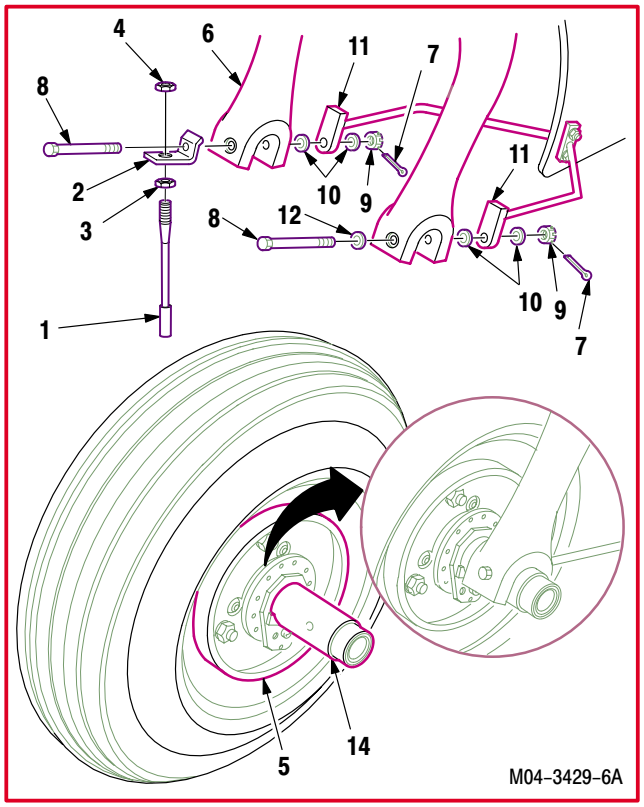
(2) Aline bolt holes in axle (14) with bolt holes in fork (6).

(3) Install bolt (8) through washer (12), fork (6), axle (14), and support (11) on right-hand side of fork (6).

(4) Install bolt (8) through bracket (2), fork (6), axle (14), and support (11) on left-hand side of fork (6).

(5) Hold two bolts (8). Install washers (10) and nuts (9).

(6) Install two new cotter pins (7).



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3.49. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE REMOVAL/INSTALLATION – continued

j. **Adjust spacer (15).**

(1) Rotate tire (19) by hand.

CAUTION

Do not tighten spacer until a heavy drag is felt. Possible damage to wheel bearings may occur.

(2) Tighten spacer (15) until bearings are firmly seated and a slight drag in bearings can be felt. Use spanner wrench set.

(3) Back off spacer (15) one full turn.

(4) Repeat step j.(2).

k. **Install screw (17) in lock (16) and spacer (15).**

(1) Aline holes in lock (16) with closest holes in spacer (15).

(2) Install screw (17) and washer (18) in lock (16) and spacer (15).

(3) Lockwire screw (17) to lock (16). Use wire (item 224, App F).

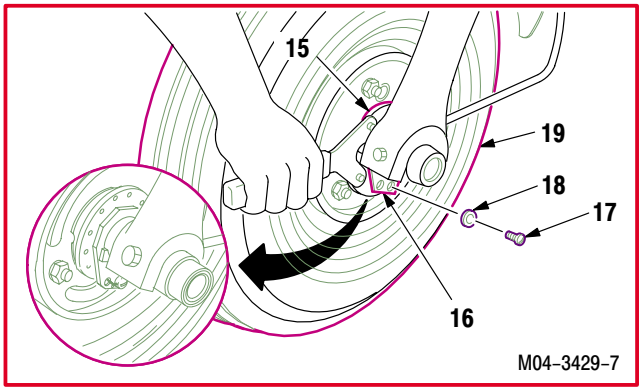
l. **Perform electrical bond check on cable** (TM 55-1500-323-24)**.**

(1) Bond shall be **1.00 OHM** or less. Use multimeter.

m. **Inspect (QA).**

n. **Service tail landing gear tire to 105 ±5 psi** (para 1.44)**.**

o. **Remove tripod jack** (para 1.69)**.**



END OF TASK

3.50. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION

3.50.1. Description

This task covers: Removal. Inspection. Installation.

3.50.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Tire inflation cage (item 49, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Pneumatic tire valve repair tool (item 260, App H)
Tire inflator assembly (item 364, App H)
Nitrogen hand truck (item NO TAG, App H)
30 - 150 inch-pound 1/4-inch drive click type torque wrench (item 435, App H)

Materials/Parts:

Antiseize compound (item 26, App F)
Leak test compound (item 109, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1500-204-23
TM 1-1520-264-23
TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.49	Tail landing wheel and axle removed

GO TO NEXT PAGE

3.50. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

3.50.3. Removal

WARNING

- **Do not take wheel apart before deflating tire. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate. Persons nearby could be injured by flying parts. If injury occurs, seek medical aid.**
- **Do not remove valve core from stem boss until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.**

a. **Deflate tire (1).**

(1) Remove valve cap (2).

(2) Press valve core end (3) to deflate tire (1).

(3) Remove valve core (4) from stem boss (5). Use tire valve tool.

b. **Remove inner wheel assembly (6) and outer wheel assembly (7) from tire (1).**

(1) Hold three bolts (8). Remove self-locking nuts (9) and washers (10).

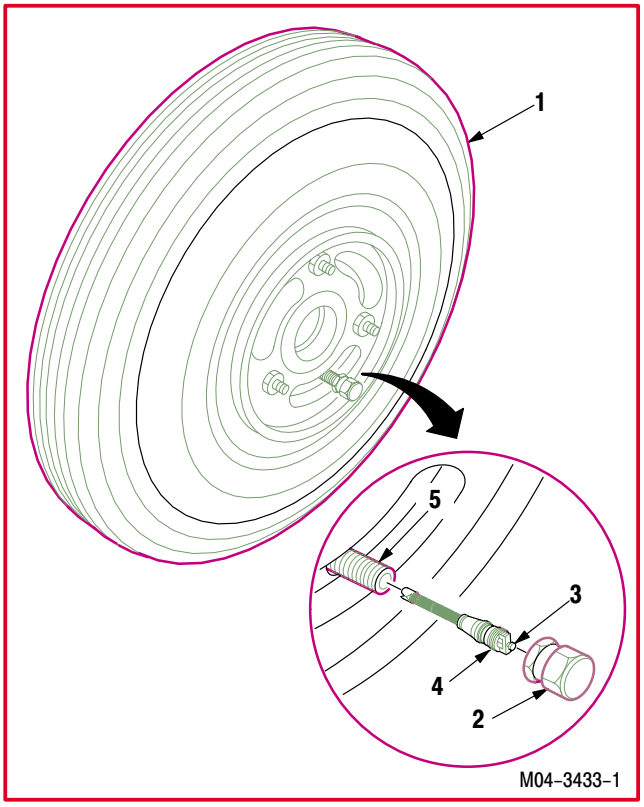
(2) Remove three bolts (8) and washers (11) from wheels (6) and (7).

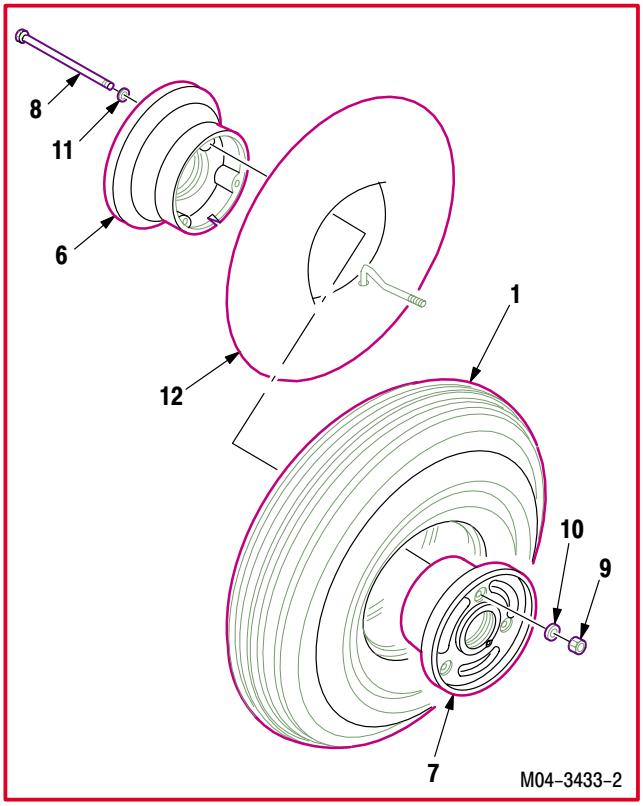
(3) Remove wheels (6) and (7) from tire (1).

c. **Remove inner tube (12) from tire (1).**

3.50.4. Cleaning

a. **Clean wheel** (para 1.47)**.**





GO TO NEXT PAGE

3.50. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

3.50.5. Inspection

a. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination** (TM 55-2620-200-24)**.**

b. **Check wheels for galls, and discoloration caused by overheating.**

c. **Check wheels for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

d. **Check tube for creases, cuts, holes, and punctures** (TM 55-2620-200-24)**.**

3.50.6. Installation

a. **Install tube (12) in tire (1).**

(1) Install tube (12) in tire (1).

(2) Aline stem (5) with dot on tire (1).

b. **Install tire (1) on wheel (6).**

(1) Install tire (1) on wheel (6).

(2) Aline slot (13) with stem (5).

c. **Install wheel (7) on tire (1).**

(1) Install wheel (7) on tire (1).

(2) Aline stem boss hole (14) with stem (5).

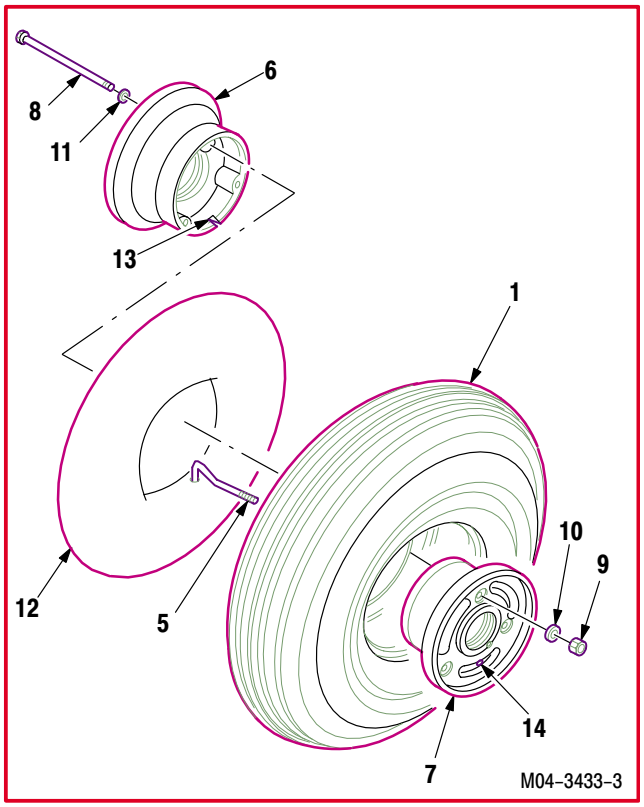
(3) Push wheel (7) on tire (1) until wheels (6) and (7) touch.



d. **Install three bolts (8), washers (11) and (10), and nuts (9) in wheels (6) and (7).** Torque three nuts (9) to **120 INCH-POUNDS**.

(1) Coat threads of bolt (8). Use antiseize compound (item 26, App F).

(2) Install three bolts (8) and washers (11) through wheels (6) and (7).



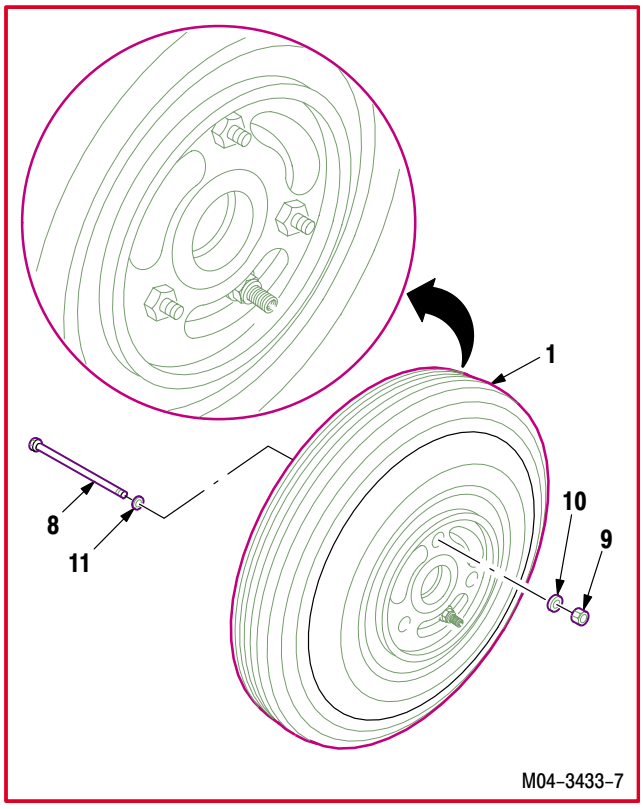
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3.50. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

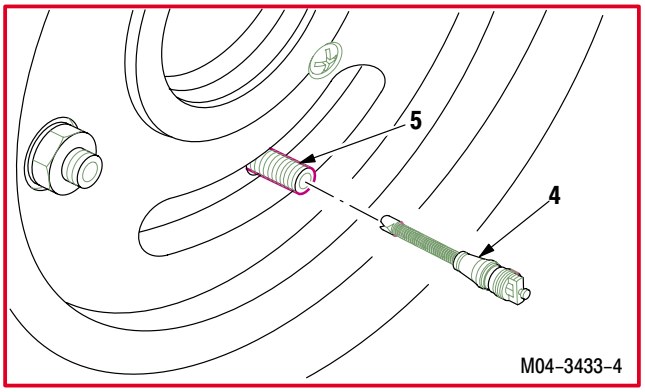
(3) Hold three bolts (8). Install washers (10) and nuts (9) on bolts (8).

(4) Torque nuts (9) to **120 INCH-POUNDS**. Use torque wrench.

e. **Inspect (QA).**



f. **Install core (4) in stem (5).** Use tire valve tool.



GO TO NEXT PAGE

3.50. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued

WARNING

Wheel and tire must be in safety cage when tire is being inflated. Tire could blow off wheel, or personnel could be injured by flying parts. If injury occurs, seek medical aid.

g. **Place tire (1) in cage (15)** (TM 55-2620-200-24)**.**

(1) Allow **30 MINUTES** before removing inflated tire from safety cage.

h. **Inflate tire (1) to 105 ±5 psi.**

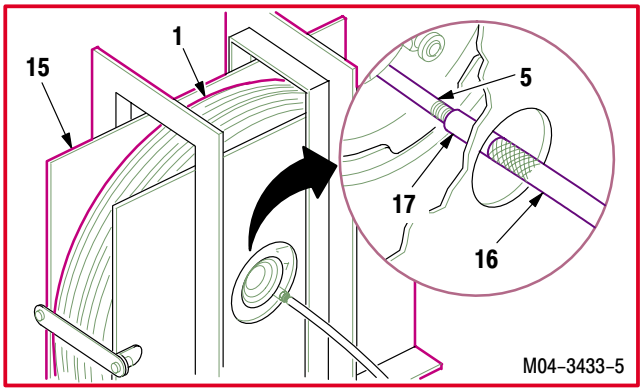
(1) Install hose (16) and chuck (17) on valve stem (5).

(2) Inflate tire (1) to **105 ±5 psi**. Use inflator assembly and nitrogen truck.

(3) Shut off inflator assembly.

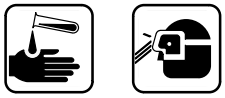
(4) Remove chuck (17) from stem (5).

i. **Remove tire (1) from cage (15).**



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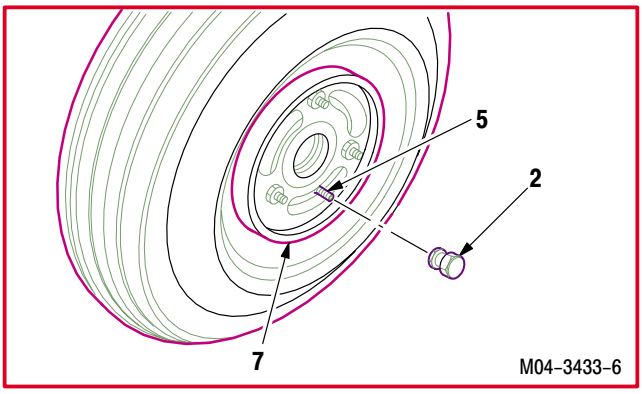
3.50. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL/INSTALLATION – continued



j. **Check stem (5) and wheel (7) rim for leaks.** Use leak test compound (item 109, App F).

NOTE

This task is typical for eight-bolt or nine-bolt wheels. If wheel is to be transported or stored prior to installation, reduce air pressure to 20 psi and tag assembly stating pressure.



k. **Install cap (2) on stem (5).**

l. **Inspect (QA).**

m. **Install tail landing wheel and axle** (para 3.49)**.**

END OF TASK

3.51. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TAPERED CONES AND ROLLERS REMOVAL/INSTALLATION

3.51.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.51.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
1/2 x 4-inch long driftpin (item 112, App H)

Materials/Parts:

Seal (2)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23
TM 55-1500-322-24
TM 55-2620-200-24

Equipment Conditions:

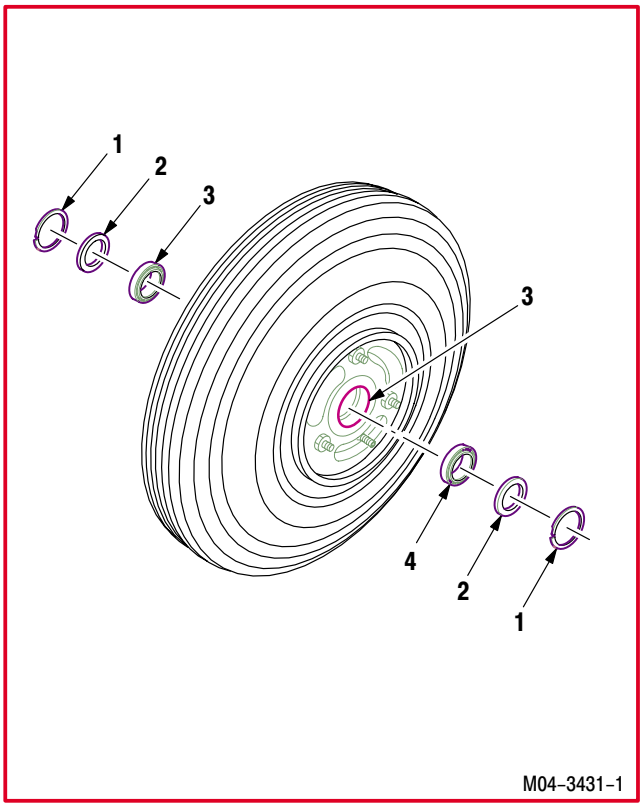
Ref	Condition
1.57	Helicopter safed
3.49	Tail landing gear wheel and axle removed

3.51.3. Removal

a. **Remove retaining rings (1).**

b. **Remove and discard seals (2) from each side of wheel (3).**

c. **Remove two tapered cone and rollers (4) from each side of wheel (3).** Use driftpin.



3.51.4. Cleaning

a. **Clean wheel** (para 1.47)**.**

b. **Clean rollers** (TM 55-1500-322-24)**.**

GO TO NEXT PAGE

3.51. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TAPERED CONES AND ROLLERS REMOVAL/INSTALLATION – continued

3.51.5. Inspection

a. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination** (TM 55-2620-200-24)**.**

b. **Check wheel for galls, and discoloration caused by over heating.**

c. **Check wheel for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

d. **Check retaining ring and seal for deterioration and damage.** None allowed.

e. **Check rollers** (TM 55-1500-322-24)**.**

f. **Check tapered roller cups for looseness, scratches, pitting, and signs of overheating. Replace cups** (TM 55-1500-322-24)**.**

3.51.6. Installation

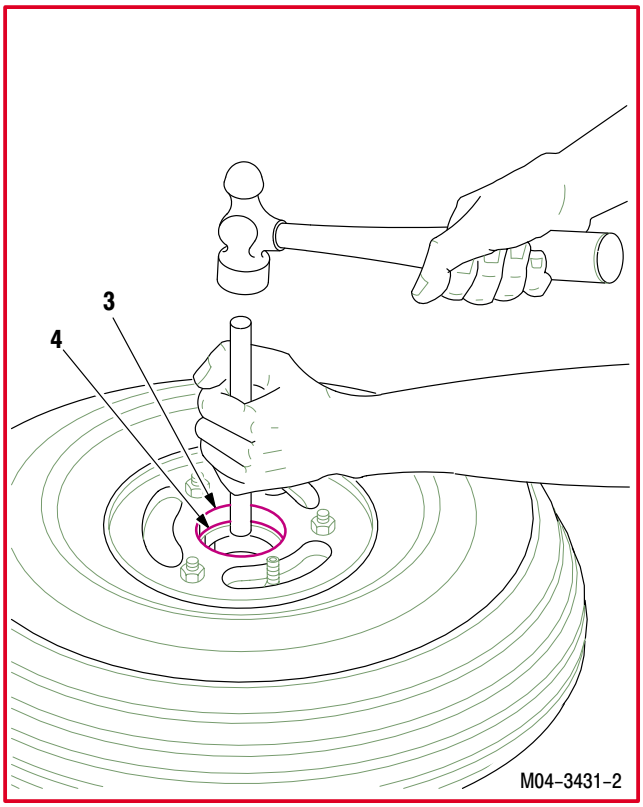
NOTE

If wheel is not installed on helicopter, rollers shall be protected (TM 55-1500-322-24).

a. **Pack rollers (4)** (para 3.52)**.**

b. **Install rollers (4) in each side of wheel (3).**

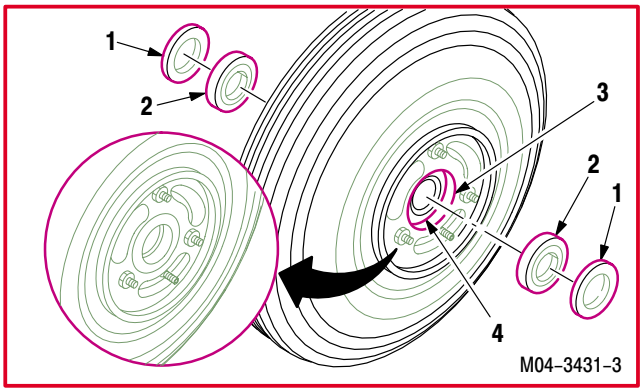
(1) Seat rollers (4) against inner lip of wheel (3).



c. **Install new seals (2) in each side of wheel (3).**

d. **Install rings (1) in each side of wheel (3).**

e. **Inspect (QA).**



END OF TASK

3.51A. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) REPAIR (AVIM)

3.51A.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.51A.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
0.000 - 6.000-inch outside micrometer caliper set (item 52, App H)
0.6300 - 1.0000-inch cylinder gage (item 142, App H)
Chemical protective gloves (item 154, App H)
1 1/4-inch blade putty knife (item 199, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cloth (item 48, App F)
Cloth (item 50, App F)
Cloth (item 52, App F)
Corrosion resistant coating (item 66, App F)
Epoxy primer coating kit (item 78, App F)
Polyurethane coating (item 141, App F)
Remover (item 149, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-264-23
TM 55-1500-322-24
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
3.50	Tail landing gear wheel tire and tube removed
3.51	Tail landing gear wheel tapered cones and rollers removed

WARNING

Injury to personnel and damage to equipment may occur if wheel halves are not inspected whenever wheel is disassembled. Make sure wheel halves are inspected whenever wheel is disassembled.

CAUTION

Wheel assembly parts (wheel halves, bolts, and gaskets) manufactured by one company cannot be intermixed with parts manufactured by a different company.

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3.51A. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) REPAIR (AVIM) – continued

3.51A.3. Removal



a. **Remove paint from wheel halves.** Use remover (item 149, App F).

b. **Remove paint residue from wheel halves.** Use cloth (item 52, App F).

c. **Remove tail landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**

3.51A.4. Cleaning

b. **Clean removed and attaching parts** (para 1.47)**.**

3.51A.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check wheels for cracks or structural damage by fluorescent penetrant inspection method** (TM 1-1520-264-23)**.**

b. **Check wheel halves for scratches, nicks, or pits.** Repair per step 3.7A.6.

e. **Inspect wheel bearing cup housing bore(s) for damage.**

(1) Diameter of inboard wheel mating bore shall not exceed **3.3407 INCHES** maximum. Use appropriate cylinder gage and caliper set.

(2) Diameter ofoutboard wheel mating bore shall not exceed **2.6831 INCHES** maximum. Use appropriate cylinder gage and caliper set.

3.51A.6. Repair

WARNING

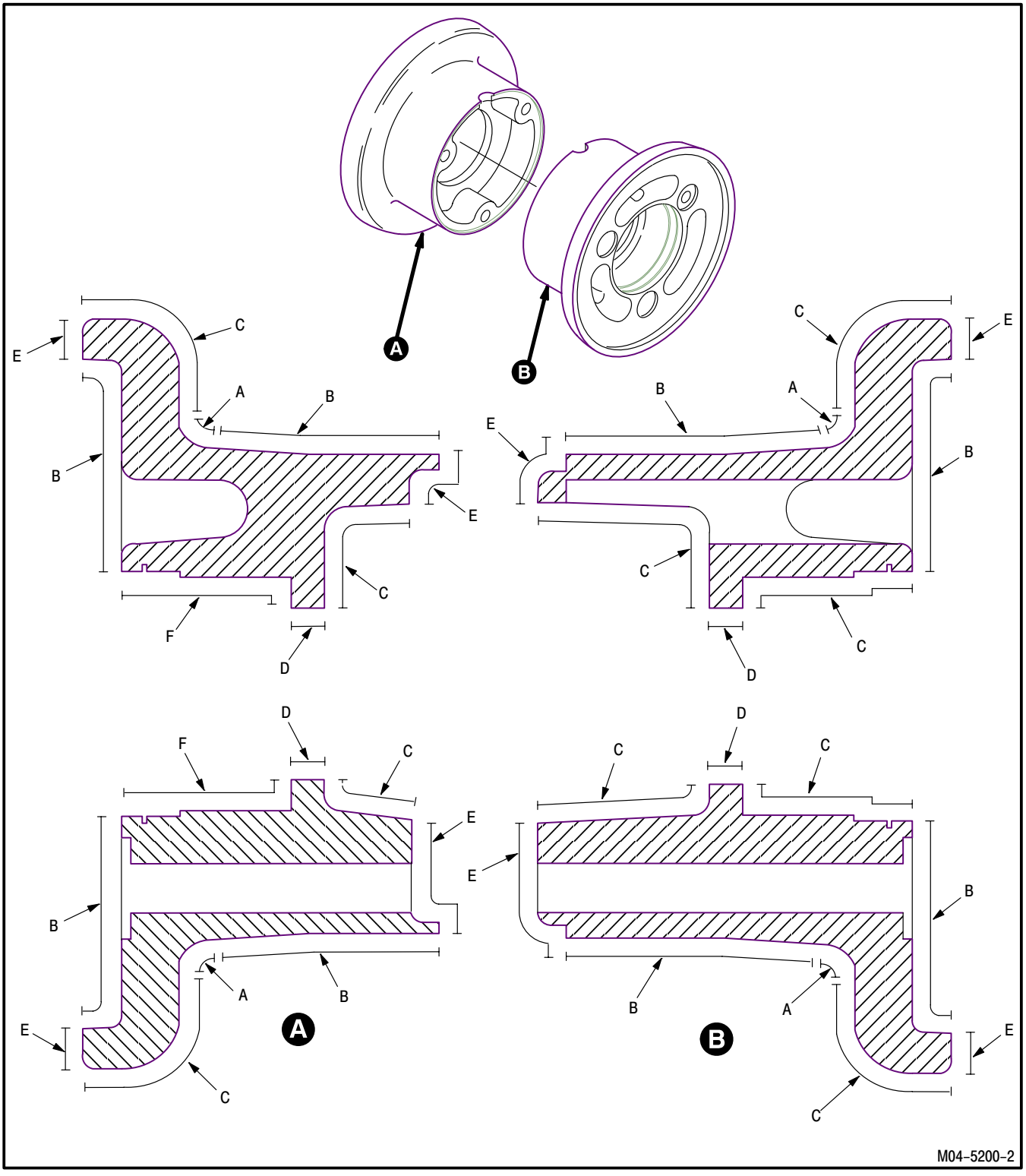
Injury to personnel and damage to equipment may occur if hardware is reused on wheel. Replace all bolts and nuts. If injury occurs, seek medical aid.

NOTE

Wheel halves are not a matched set and can be replaced individually provided correct part number and manufacturer is used.

GO TO NEXT PAGE

3.51A. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) REPAIR (AVIM) – continued



GO TO NEXT PAGE

3.51A. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) REPAIR (AVIM) – continued

a. **Blend or polish scratches, nicks, or pits per the following limits:**

(1) Repair area A as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(2) Repair area B as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.010 INCH** deep and **1.00 SQUARE INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(3) Repair area C as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.031 INCH** deep and **1.00 INCH** long. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(4) Repair area D as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.062 INCH** deep and **1.00 SQUARE INCH** in area. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

(5) Repair area E as follows:

(a) Blend and polish scratches, nicks, or pits up to **0.015 INCH** deep and **1.00 INCH** long. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs are more than limits.

NOTE

Repair after blending and polishing shall not affect bearing cup retention.

(6) Repair area F as follows:

(a) Blend and polish scratches or corrosion. Use cloth (item 48, App F) and cloth (item 50, App F).

(b) Replace wheel half if damage or repairs affect bearing cup retention.

GO TO NEXT PAGE

3.51A. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) REPAIR (AVIM) – continued

3.51A.8. Installation

b. **Install tail landing gear wheel tapered roller cups** (TM 55-1500-322-24)**.**



b. **Paint tail landing gear wheels (2).**

(1) Apply corrosion resistant coating to wheel halves and allow to dry for minimum **ONE HOUR** at a minimum temperature of 65 °F (18 °C). Use corrosion resistant coating (item 66, App F).

NOTE

Apply primer to male/female mating surfaces and bolt bosses only.

(2) Apply primer to wheels (2)). Use epoxy primer coating kit (item 78, App F) (TM 55-1500-345-23).

(3) Apply paint to wheels (2). Use polyurethane coating (item 141, App F) (TM 55-1500-345-23).

NOTE

If wheel is not installed on helicopter, rollers shall be protected (TM 55-1500-322-24).

f. **Install tail landing gear wheel tire and tube** (para 3.50)**.**

g. **Install tail landing gear wheel tapered cones and rollers** (para 3.51)**.**

h. **Install tail landing gear wheel and axle** (para 3.49)**.**

i. **Inspect (QA).**

END OF TASK

3.52. TAIL LANDING GEAR TAPERED CONE AND ROLLERS PACKING

3.52.1. Description

This task covers: Tapered Cone and Rollers Packing.

3.52.2. Initial Setup

Tools:

Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

Materials/Parts:

Cloth (item 52, App F)
Grease (item 87, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.48	Tail landing gear wheel tapered cones and rollers removed
	or
3.51	Tail landing gear wheel tapered cones and rollers removed

3.52.3. Tapered Cone and Rollers Packing



a. **Pack tapered cone and rollers (1).**

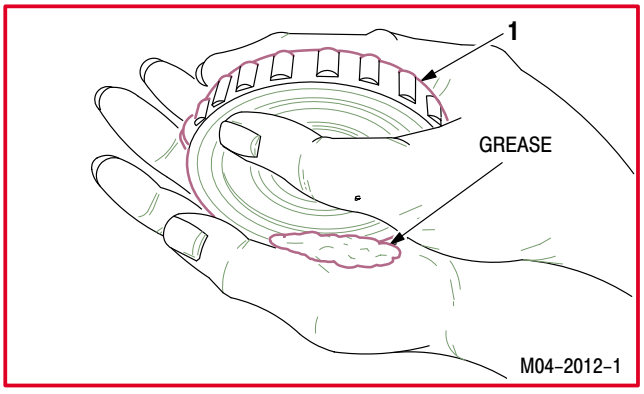
(1) Place grease in palm of glove. Use grease (item 87, App F).

(2) Using a cupping motion, force grease into large diameter side of roller (1).

(3) Turn roller (1) and repeat step a.(2) until grease protrudes from other side of roller (1).

(4) Continue turning and packing roller (1) until it is completely packed.

(5) Wipe excess grease from bearing. Use cloth (item 52, App F).



b. **Inspect (QA).**

END OF TASK

SECTION IV. BRAKE SYSTEM MAINTENANCE

3.53. BRAKE SYSTEM INSPECTION

3.53.1. Description

This task covers: Brake System.

3.53.2. Brake System

NOTE

Refer to para 19.1 for additional limits and corrective action.

a. **Check components for damage and loose mounting.**

b. **Check for loose, missing, or damaged mounting hardware.**

c. **Check hydraulic lines for fluid leakage.** None allowed.

d. **Check wheel brakes** (TM 1-1500-204-23)**.**

e. **Check brake disk drive slots on wheel brake with one piece lining.** Replace if battered or worn more than **0.940 INCH**.

f. **Check brake disk drive slots on wheel brake with three piece lining.** Replace if battered or worn more than **0.970 INCH**.

g. **Check master cylinder rod end bearing for radial/axial play (0.002 INCH maximum play).**

h. **Check master cylinders, parking brake, and brake control valves for leakage.** None allowed. Slight wetting of cylinder and seals insufficient to form a drop is normal.

i. **Check master cylinder for cracks, nicks, or dents.** None allowed.

j. **Check brake pedal linkage for looseness or misalinement.**

k. **Check brake disks for cracks.** Replace disks that have cracks extending through disk.

l. **Check brake lining recession piston, center carrier, and anvil for indications of wear which could cause loss of linings.**

END OF TASK

3.54. PILOT PARKING BRAKE HOSE ASSEMBLY REMOVAL/INSTALLATION

3.54.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.54.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

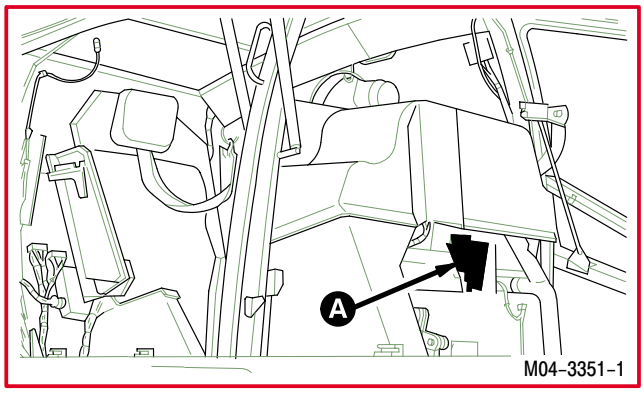
Ref	Condition
1.57	Helicopter safed
2.161	CPG seat tilted forward

NOTE

This task is typical for left and right brake hoses.

3.54.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



GO TO NEXT PAGE

3.54. PILOT PARKING BRAKE HOSE ASSEMBLY REMOVAL/INSTALLATION – continued

b. **Remove two loop clamps (1) from nonmetallic hose assemblies (2) and angle brackets (3).**

(1) Hold two screws (4). Remove nuts (5).

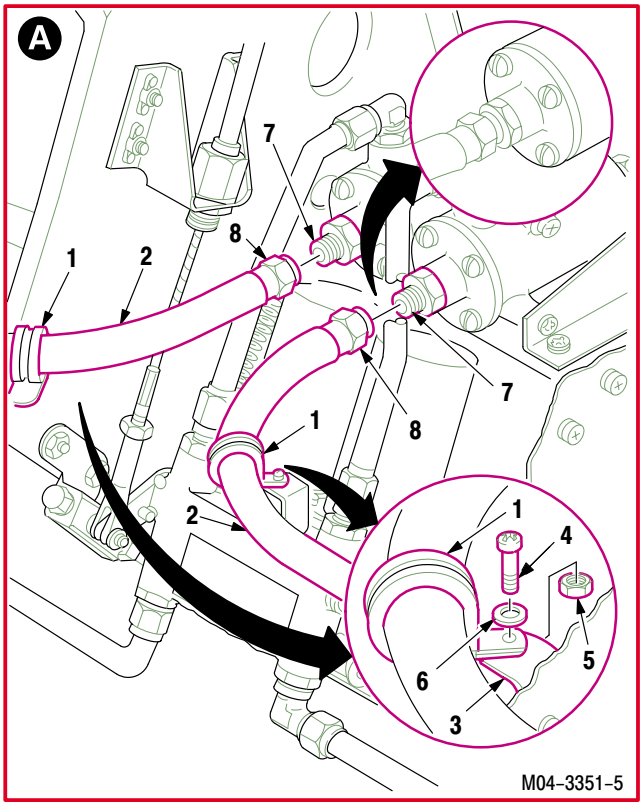
(2) Remove two screws (4) and washers (6).

(3) Remove clamps (1) from hoses (2) and brackets (3).

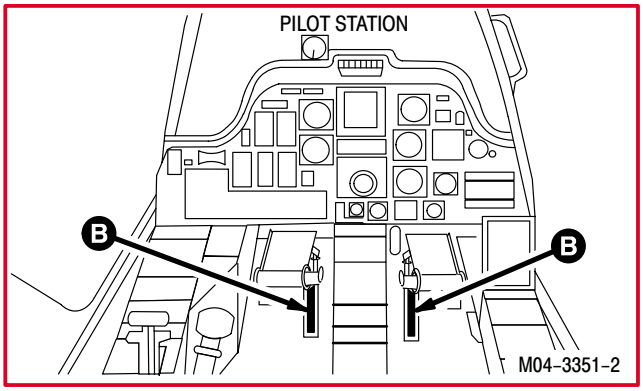
c. **Remove two hoses (2) from tube nipples (7).**

(1) Hold two tube nipples (7). Remove tube coupling nuts (8).

(2) Remove two hoses (2) from nipples (7).



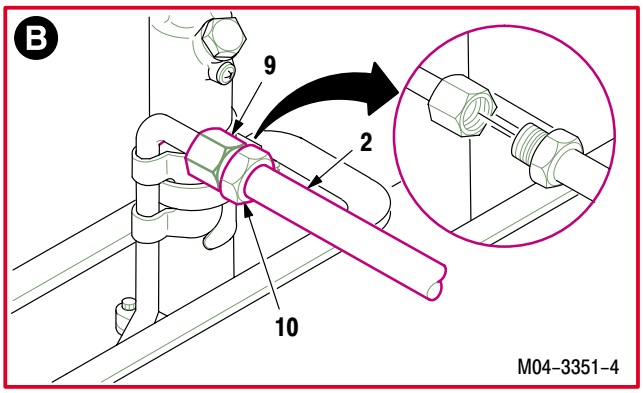
d. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



e. **Remove hose (2) from tube coupling nut (9).**

(1) Hold tube nipple (10). Remove nut (9).

(2) Remove hose (2) from nut (9).



GO TO NEXT PAGE

3.54. PILOT PARKING BRAKE HOSE ASSEMBLY REMOVAL/INSTALLATION – continued

3.54.4. Cleaning

a. **Wipe hose fittings and attaching parts with a clean rag.**

3.54.5. Inspection

a. **Check hose fittings for stripped threads.** None allowed.

3.54.6. Installation

a. **Install hose (2) on nut (9).**

(1) Install nipple (10) in nut (9).

(2) Hold nipple (10). Tighten nut (9).

b. **Install hose (2) on nipple (7).**

(1) Install nut (8) on nipple (7).

(2) Hold nipple (7). Tighten nut (8).

c. **Install clamps (1) on hoses (2) and brackets (3).**

(1) Install clamps (1) on hoses (2).

(2) Aline clamps (1) with brackets (3).

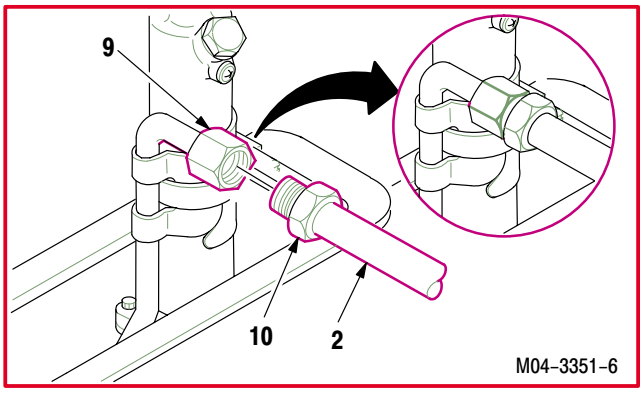
(3) Install screws (4) through washers (6), clamps (1), and brackets (3).

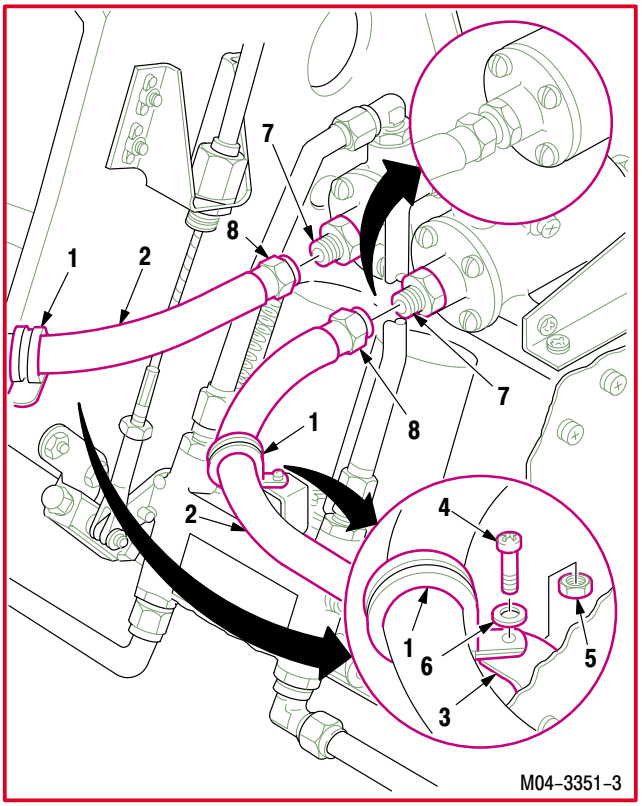
(4) Install nuts (5).

d. **Inspect (QA).**

e. **Bleed brake system** (para 1.45)**.**

f. **Secure CPG seat** (para 2.161)**.**





END OF TASK

3.55. CPG BRAKE HOSE ASSEMBLY REMOVAL/INSTALLATION

3.55.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.55.2. Initial Setup

Tools:

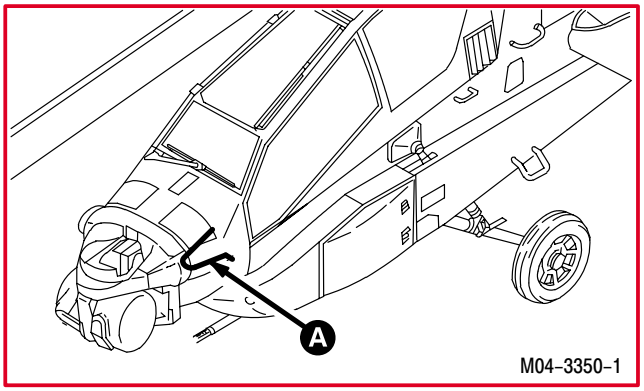
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
2.2	Access doors B41R and B60 opened
3.57	CPG left brake cylinder lower bolt removed



NOTE

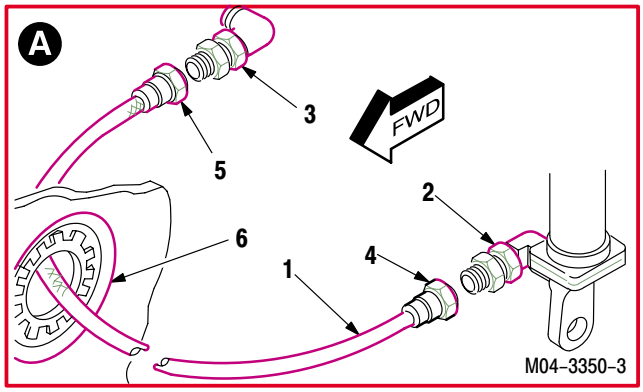
This task is typical for left and right CPG brake hoses.

3.55.3. Removal

a. **Remove hose (1) from tube elbows (2) and (3).**

(1) Hold elbows (2) and (3). Remove hose nuts (4) and (5).

(2) Remove hose (1) from hole (6).



3.55.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.55.5. Inspection

a. **Check hose fittings for stripped threads.** None allowed.

GO TO NEXT PAGE

3.55. CPG BRAKE HOSE ASSEMBLY REMOVAL/INSTALLATION – continued

3.55.6. Installation

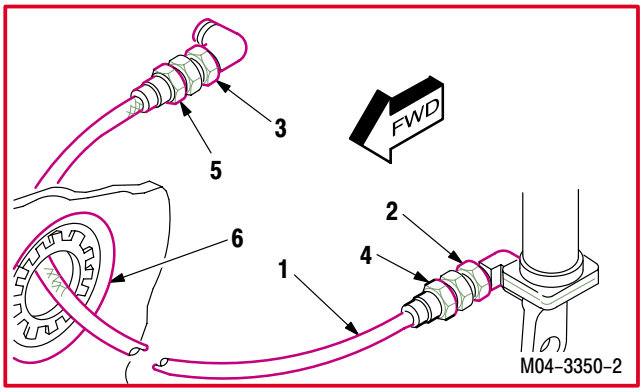
a. **Install hose (1) on elbows (2) and (3).**

(1) Install nut (4) on elbow (2).

(2) Route hose (1) through hole (6).

(3) Install nut (5) on elbow (3).

(4) Hold elbows (2) and (3). Tighten nuts (4) and (5).



b. **Bleed brake system** (para 1.45)**.**

c. **CPG left brake cylinder lower bolt installed** (para 3.57)**.**

d. **Secure access doors B41R and B60** (para 2.2)**.**

e. **Inspect (QA).**

END OF TASK

3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION

3.56.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.56.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
14-quart utility pail (item 222, App H)
Flight control rigging kit (item 267, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Cotter pin (4)
Packing (2)
Retainer (2)
Hydraulic fluid (item 93, App F)
Sealing compound (item 176, App F)
Wire (item 224, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T
TM 9-1090-208-23

Equipment Conditions:

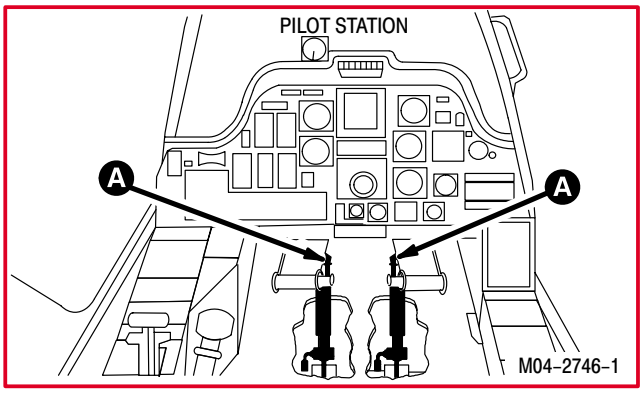
Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes released
2.161	CPG seat tilted forward
TM 9-1090-208-23	Gun turret removed

NOTE

This task is typical for left and/or right master cylinders.

3.56.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**



GO TO NEXT PAGE

3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

NOTE

Directional control pedals are shown with protective covers removed.

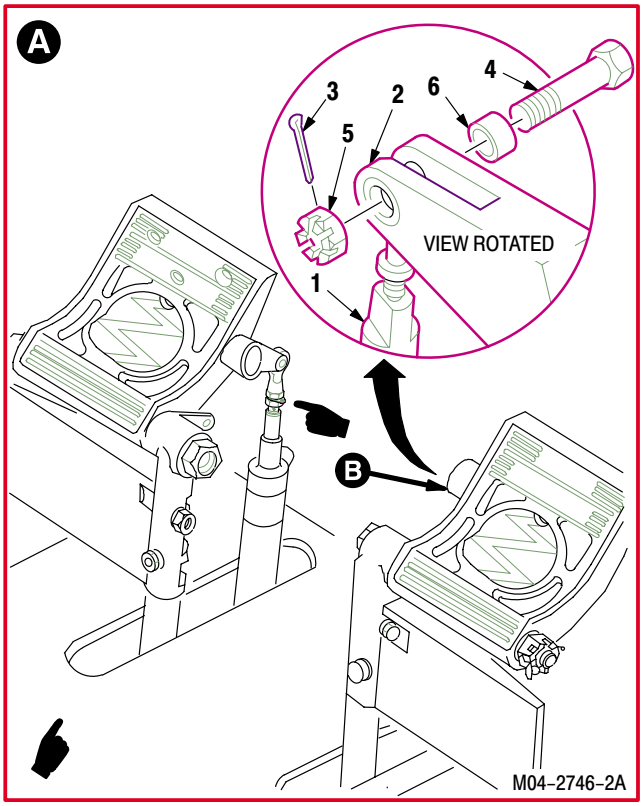
b. **Remove master cylinder assembly (1) from directional control pedal (2).**

(1) Remove and discard cotter pin (3).

(2) Hold bolt (4). Remove self-locking nut (5).

(3) Remove bolt (4) and sleeve bushing (6).

(4) Remove cylinder (1) from pedal (2).



c. **Remove nonmetal hose assembly (7) from brake tube (8).**

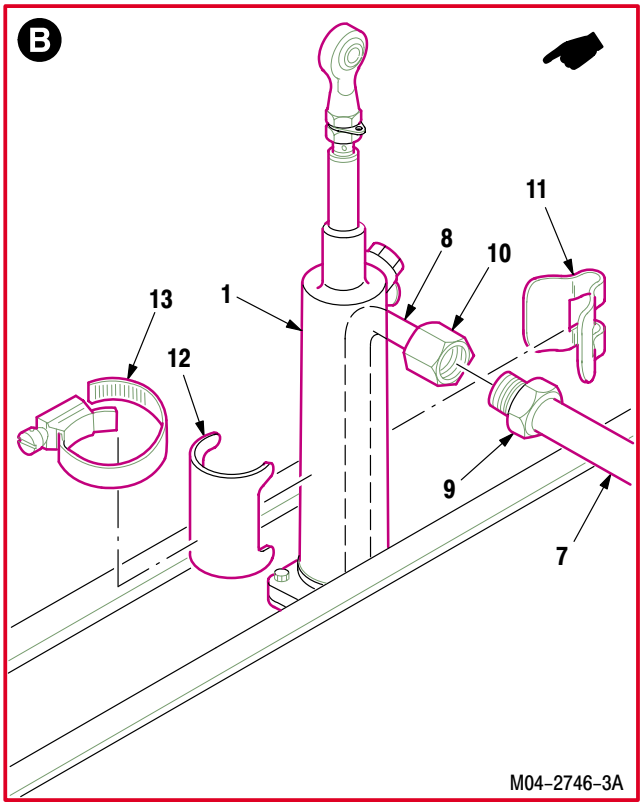
(1) Hold tube fitting (9). Remove tube coupling nut (10). Use pail to catch hydraulic fluid spills.

(2) Remove hose (7) from tube (8).

d. **Remove tube supports (11) and (12) from cylinder (1).**

(1) Remove hose clamp (13) from supports (11) and (12).

(2) Remove supports (11) and (12) from cylinder (1) and tube (8).



GO TO NEXT PAGE

3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

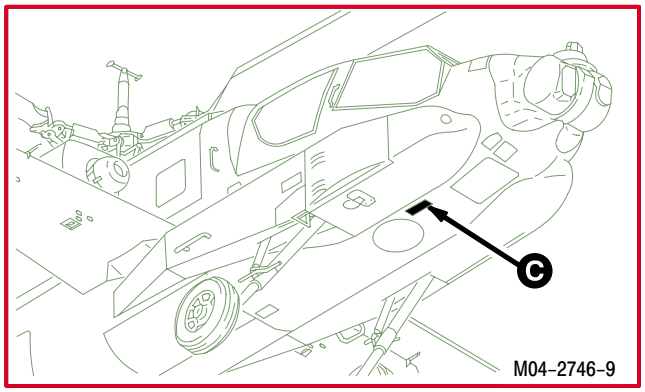
NOTE

Perform steps g., f., and h. from gun turret compartment.

e. **Remove debris covers (14) and (15).**

(1) Remove 23 screws (16), bolt (17), and 24 washers (18).

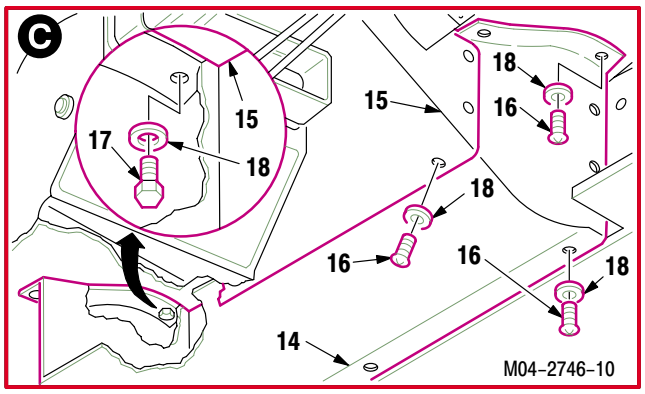
(2) Remove debris covers (14) and (15).



f. **Remove tube (8) from tube elbow (25).**

(1) Remove tube nut (26) from elbow (25).

(2) Remove tube (8) from elbow (25).



g. **Remove cylinder brake cap (19) from mounting bracket (20).**

(1) Remove and discard cotter pin (21).

(2) Hold bolt (22). Remove self-locking nut (23).

(3) Remove bolt (22) and sleeve bushing (24).

(4) Remove cap (19) from bracket (20).

(5) Remove cylinder (1).

NOTE

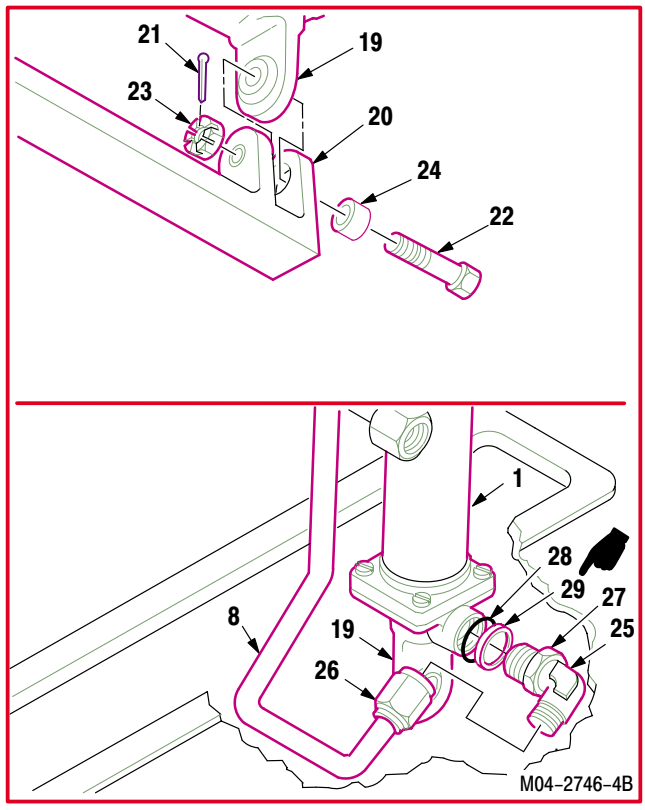
Go to step h. if master cylinder is to be replaced.

h. **Remove elbow (25) from cylinder brake cap (19).**

(1) Remove lockwire from nut (27).

(2) Loosen nut (27) on elbow (25). Remove elbow (25) from cap (19).

(3) Remove and discard packing (28) and retainer (29).



GO TO NEXT PAGE

3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

3.56.4. Cleaning

a. **Clean master cylinder and removed and attaching parts** (para 1.47)**.**

3.56.5. Inspection

a. **Check removed and attaching parts for cracks.** None allowed.

b. **Check master cylinder bearings for play** (para 3.53)**.**

c. **Check master cylinder for cracks, nicks, and dents.** None allowed.

NOTE

Slight wetting of cylinder and seals insufficient to form a drop is normal.

d. **Check master cylinder for leaks.** None allowed.

3.56.6. Installation



NOTE

If master cylinder is being replaced, go to steps a. and b. If master cylinder is not being replaced, go to step c.

a. **Install elbow (25) in cap (19).**

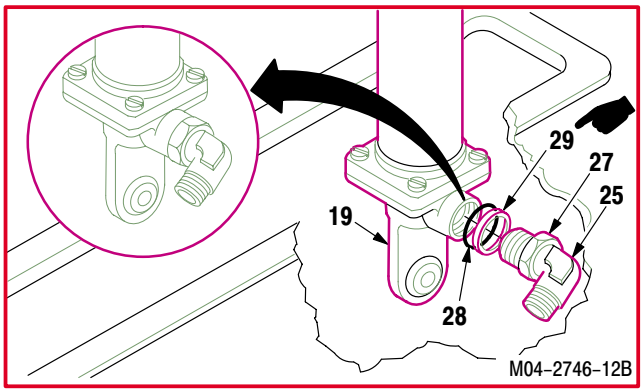
(1) Ensure nut (27) is installed on elbow (25).

(2) Lubricate new packing (28), new retainer (29), and elbow (25). Use hydraulic fluid (item 93, App F).

(3) Install retainer (29) and packing (28) on elbow (25).

(4) Install elbow (25) in cap (19). Position elbow (25) so outlet points forward when cap (19) is installed.

(5) Tighten nut (27) loosely.



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3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

b. **Check that distance between center of bolts (4) and (22) is 11 1/16 to 11 7/16 INCHES, with piston cylinder rod (31) fully extended.**

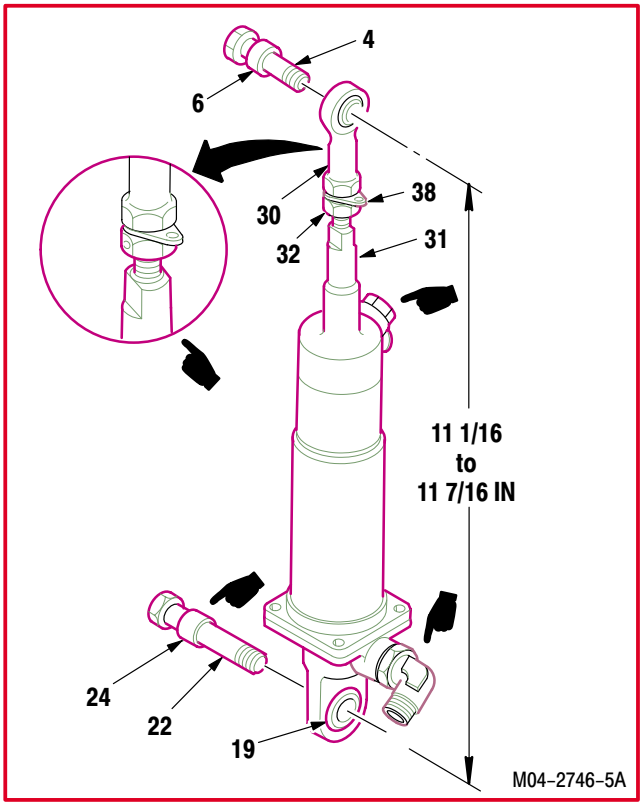
(1) Insert bolts (4) and (22) and sleeve bushings (6) and (24) through rod end (30) and cap (19).

(2) Remove lockwire from nut (32) and key washer (38).

(3) Hold rod end (30). Loosen nut (32).

(4) Adjust rod end (30) to obtain **11 1/16 to 11 7/16 INCHES** between centers of bolts (4) and (22).

(5) Hold rod end (30). Loosely install nut (32).



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3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

NOTE

Perform steps c. thru e. from gun turret compartment.

c. **Install cap (19) with elbow (25) facing outboard for left cylinder (1); inboard for right cylinder (1).**

(1) Insert rod end (30) of cylinder (1) through opening in pilot station floor.

(2) Position cap (19) in bracket (20).

NOTE

Install bolt with head facing inboard.

(3) Install bolt (22) through bracket (20), bushing (24), and cap (19).

(4) Hold bolt (22). Install nut (23).

(5) Install new cotter pin (21) in bolt (22).

d. **Install tube (8) on cylinder (1).**

(1) Position tube (8) against cylinder (1) through opening in pilot station floor.

(2) Install nut (26) on elbow (25).

(3) Hold elbow (25) with tube (8) against cylinder (1). Tighten nut (26).

(4) Tighten nut (27).

(5) Lockwire nut (27) to screw (33) in cap (19). Use wire (item 224, App F).



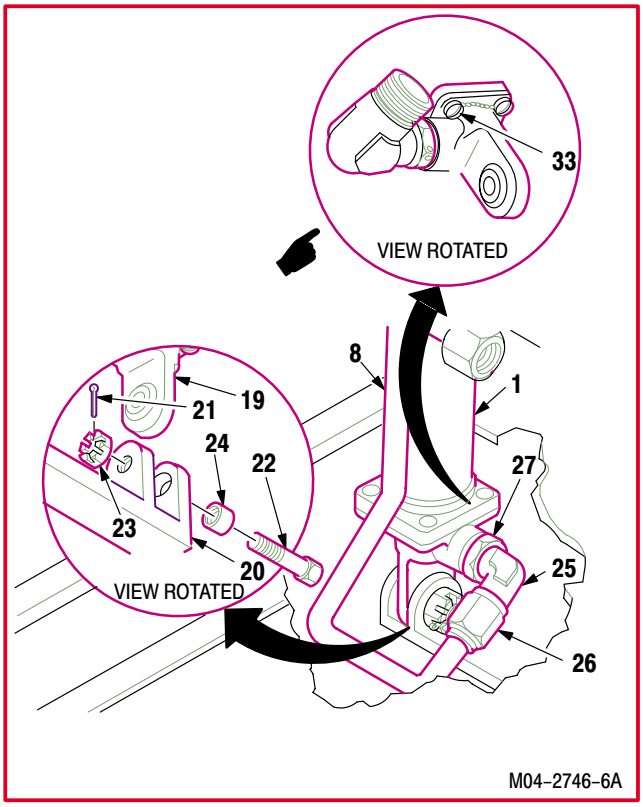
e. **Install debris covers (14) and (15).**

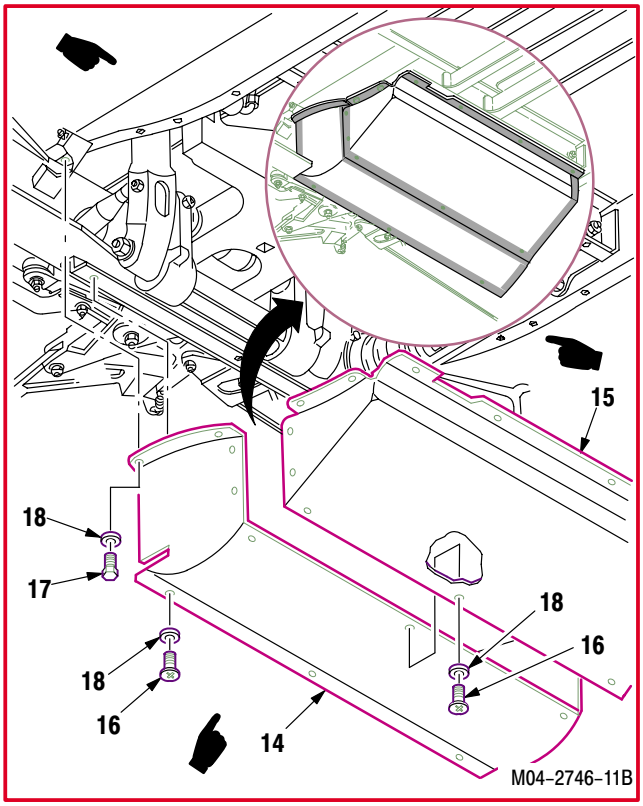
(1) Aline forward cover (15) holes.

(2) Aline aft cover (14) holes.

(3) Install 23 screws (16) and bolt (17) through 24 washers (18) and covers (14) and (15).

(4) Apply sealing compound to faying surface of covers (14) and (15). Use sealing compound (item 176, App F).





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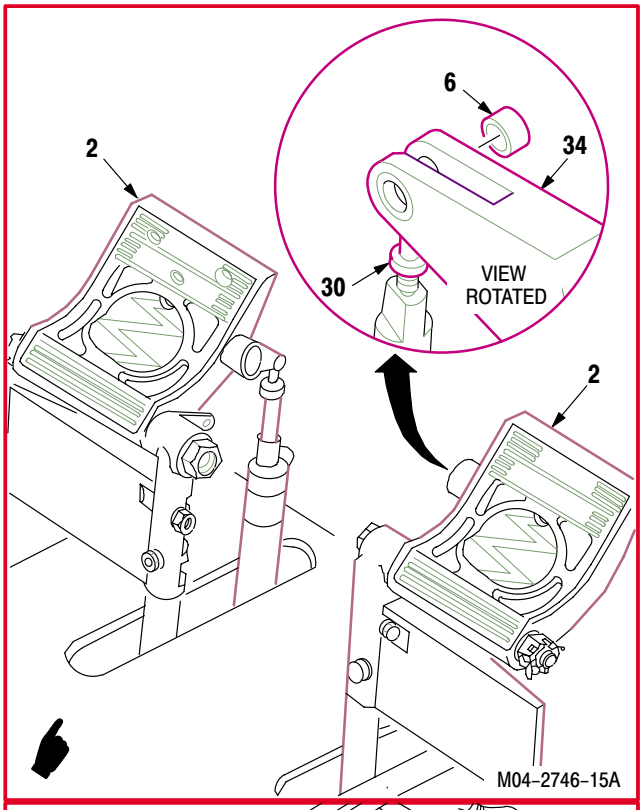
3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

f. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

g. **Install rod end (30) in clevis (34) of pedal (2).**

(1) Position rod end (30) in clevis (34) of pedal (2).

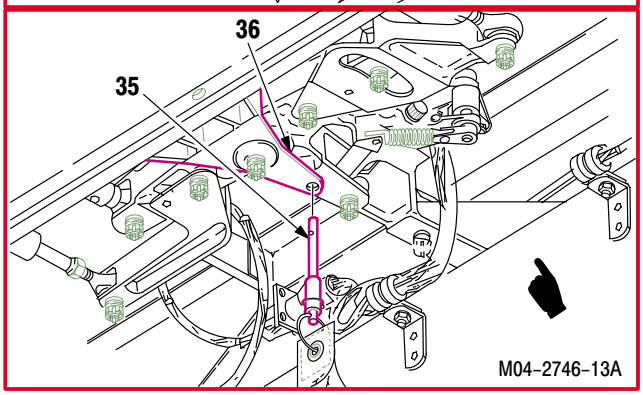
(2) Install bushing (6) in clevis (34).



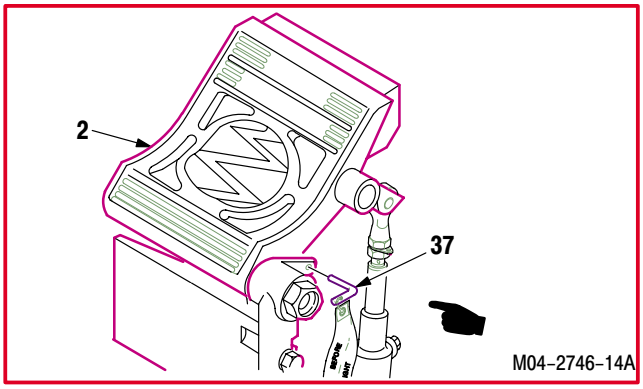
NOTE

Ensure rig pin has a loose fit.

(3) Install (–9) rig pin (35) in spad (36). Use flight control rigging kit.



(4) Install (–9) rig pin (37) in pedal (2).



GO TO NEXT PAGE

3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

(5) Adjust rod end (30) to aline on clevis (34) of pedal (2).

(6) Hold rod end (30). Tighten nut (32).

(7) Lockwire nut (32) to key washer (38). Use wire (item 224, App F).

NOTE

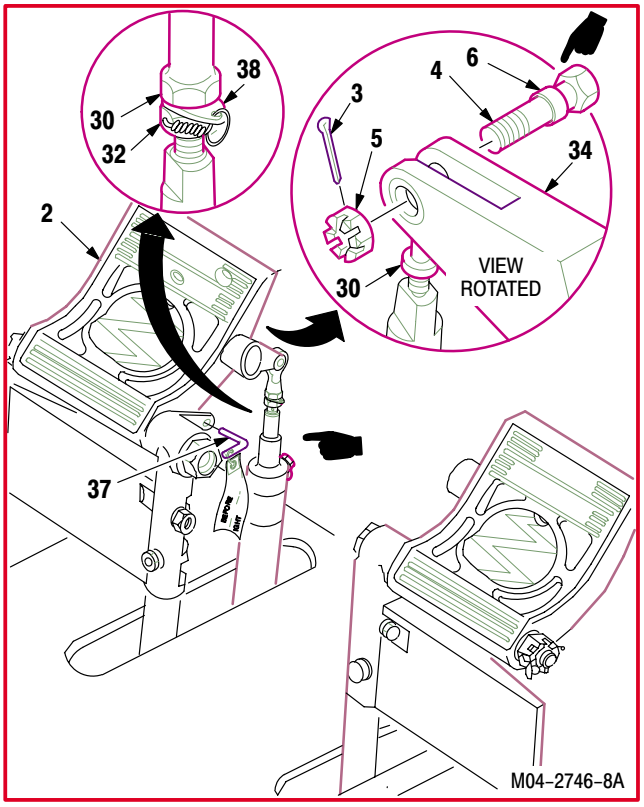
Install bolt with head facing inboard.

(8) Install bolt (4) through clevis (34), bushing (6) and rod end (30).

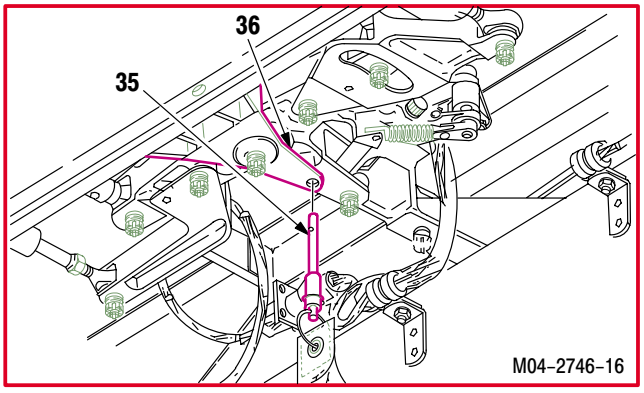
(9) Hold bolt (4). Install nut (5).

(10) Install new cotter pin (3) in bolt (4).

(11) Remove rig pin (37) from pedal (2).



(12) Remove rig pin (35) from spad (36).



GO TO NEXT PAGE

3.56. PILOT BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

h. **Install supports (11) and (12).** Torque clamp (13) to **7 INCH-POUNDS**.

(1) Position supports (11) and (12) on cylinder (1) and tube (8).

NOTE

Position clamp screw as required to prevent chaffing.

(2) Install clamp (13). Torque screw to **7 INCH-POUNDS**. Use torque wrench.

i. **Install hose (7) on tube (8).**

(1) Install hose (7) on tube (8).

(2) Hold tube fitting (9). Tighten nut (10).

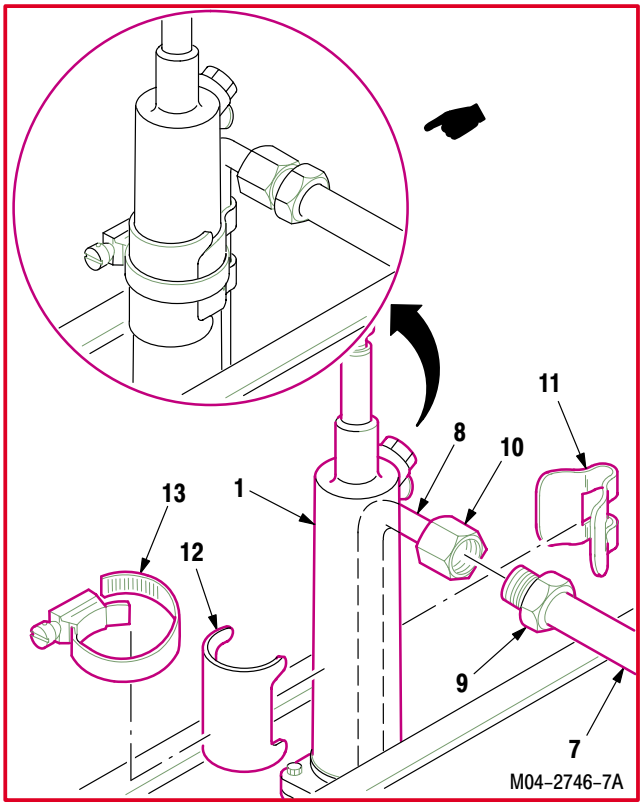
j. **Inspect (QA).**

k. **Bleed brake system** (para 1.45)**.**

l. **Set parking brakes** (para 1.61)**.**

m. **Install gun turret** (TM 9-1090-208-23)**.**

n. **Perform main landing gear maintenance operational check** (TM 1-1520-238-T)**.**



END OF TASK

3.57. CPG BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION

3.57.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.57.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
14-quart utility pail (item 222, App H)
Flight control rigging kit (item 267, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1270-476-20
TM 1-1520-238-T

Equipment Conditions:

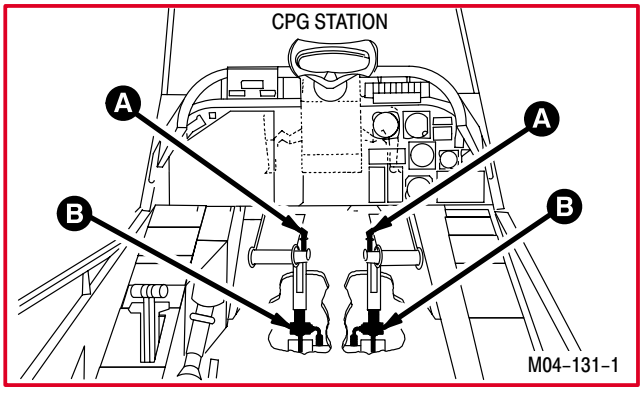
Ref	Condition
1.57	Helicopter safed
2.2	Access doors B41R and B60 opened
1.61	Parking brakes released
TM 1-1270-476-20	Indirect view display (IVD) removed

Materials/Parts:

Cotter pin (2)
Packing (2)
Retainer (2)
Hydraulic fluid (item 93, App F)
Wire (item 224, App F)

NOTE

This task is typical for left and/or right master cylinders.



3.57.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

GO TO NEXT PAGE

3.57. CPG BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

NOTE

Directional control pedals are shown with protective covers removed.

b. **Remove master cylinder assembly (1) from directional control pedal (2).**

(1) Remove and discard cotter pin (3).

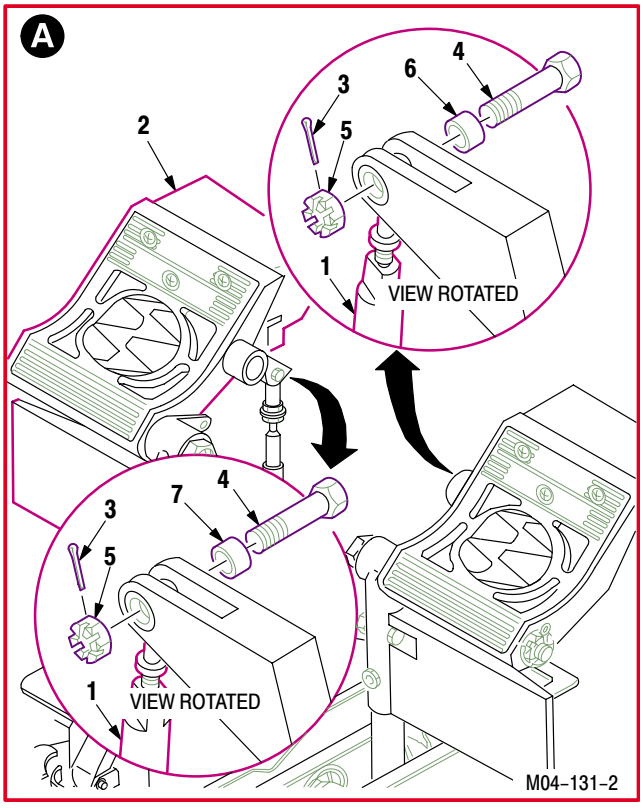
(2) Hold bolt (4). Remove self-locking nut (5).

NOTE

7-211521053 bushing used on left brake only.

(3) Remove bolt (4) and sleeve bushing (6) (sleeve bushing (7) left brake only).

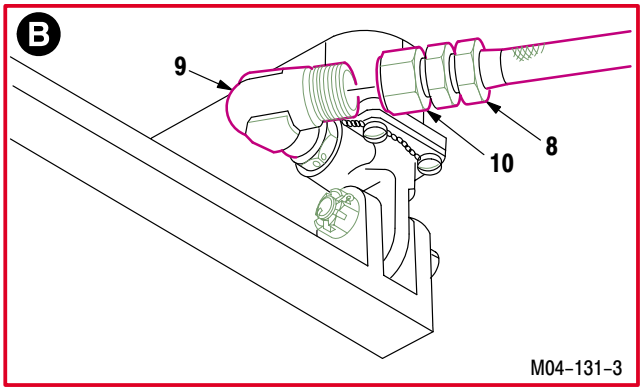
(4) Remove cylinder (1) from pedal (2).



c. **Remove brake hose (8) from tube elbow (9).**

(1) Remove nut (10) from elbow (9). Use pail to catch hydraulic fluid spills.

(2) Remove brake hose (8) from elbow (9).

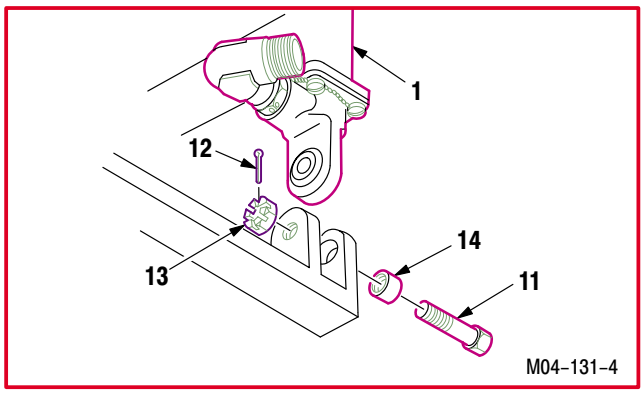


d. **Remove bolt (11) and cylinder (1).**

(1) Remove and discard cotter pin (12).

(2) Hold bolt (11). Remove self-locking nut (13).

(3) Remove bolt (11), sleeve bushing (14), and cylinder (1) through access door B60.



GO TO NEXT PAGE

3.57. CPG BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

NOTE

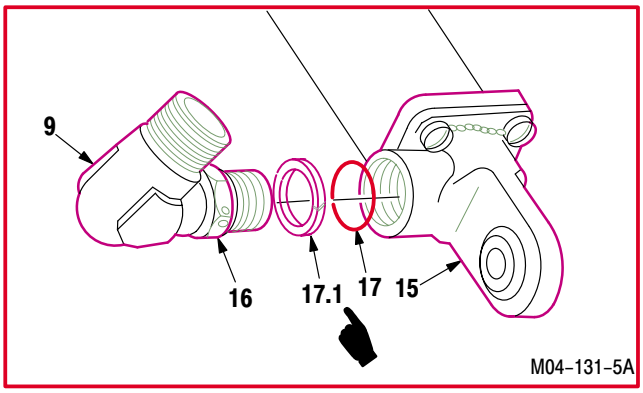
Go to step e. if master cylinder is to be replaced.

e. **Remove elbow (9) from cylinder brake cap (15).**

(1) Remove lockwire from nut (16).

(2) Loosen nut (16) on elbow (9). Remove elbow (9) from cap (15).

(3) Remove and discard packing (17) and retainer (17.1).



3.57.4. Cleaning

a. **Clean master cylinder and removed and attaching parts** (para 1.47)**.**

3.57.5. Inspection

a. **Check removed and attaching parts for cracks.** None allowed.

b. **Check master cylinder bearings for play** (para 3.53)**.**

c. **Check master cylinder for cracks, nicks, and dents.** None allowed.

NOTE

Slight wetting of cylinder and seals insufficient to form a drop is normal.

d. **Check master cylinder for leaks.** None allowed.

GO TO NEXT PAGE

3.57. CPG BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

3.57.6. Installation

NOTE

If master cylinder is being replaced, go to steps a. and b. If master cylinder is not being replaced, go to step c.

a. **Install elbow (9) in cap (15).**

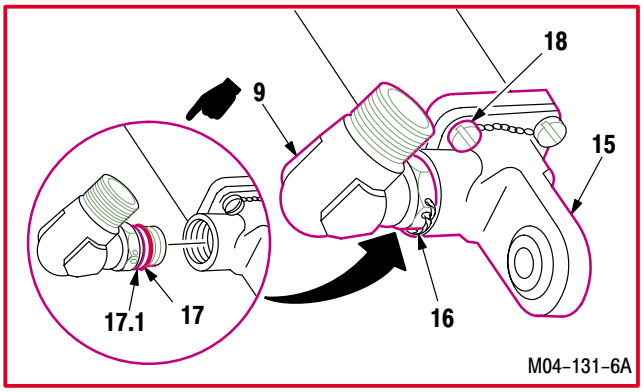
(1) Ensure nut (16) is installed on elbow (9).

(2) Lubricate new packing (17), new retainer (17.1), and elbow (9). Use hydraulic fluid (item 93, App F).

(3) Install retainer (17.1) and packing (17) on elbow (9).

(4) Install elbow (9) in cap (15). Position elbow (9) so outlet points forward when cap (15) is installed.

(5) Tighten nut (16) loosely.



b. **Check that distance between center of bolts (4) and (11) is 11 1/16 to 11 7/16 INCHES, with piston cylinder rod (20) fully extended.**

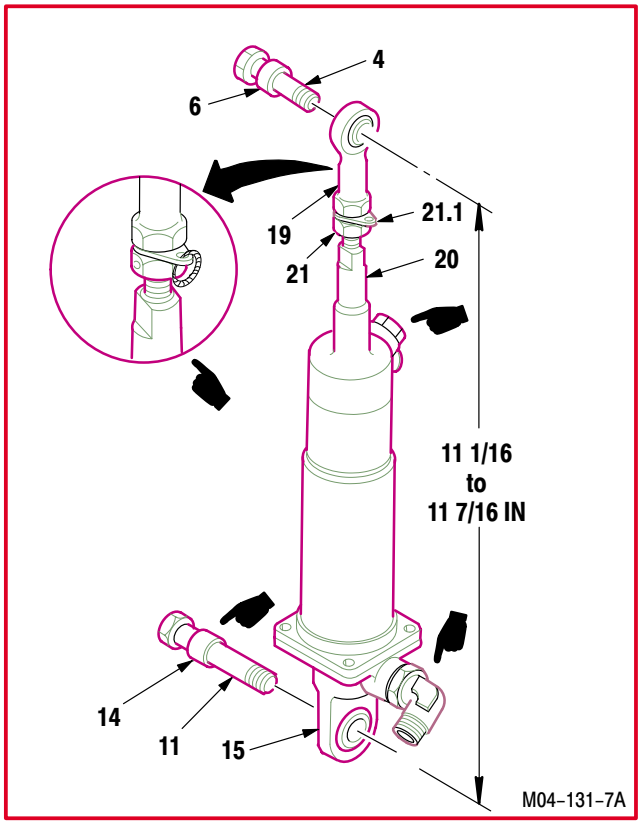
(1) Insert bolts (4) and (11) and sleeve bushings (6) and (14) through rod end (19) and cap (15).

(2) Remove lockwire from nut (21) and key washer (21.1).

(3) Hold rod end (19). Loosen nut (21).

(4) Adjust rod end (19) to obtain **11 1/16 to 11 7/16 INCHES** between centers of bolts (4) and (11).

(5) Hold rod end (19). Loosely install nut (21).



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3.57. CPG BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

c. **Install cap (15) in lugs of mounting bracket (22) so elbow (9) is facing inboard and forward.**

(1) Insert rod end (19) of cylinder (1) through opening in CPG station floor.

(2) Position cap (15) between lugs of bracket (22) with elbow (9) facing inboard and forward.

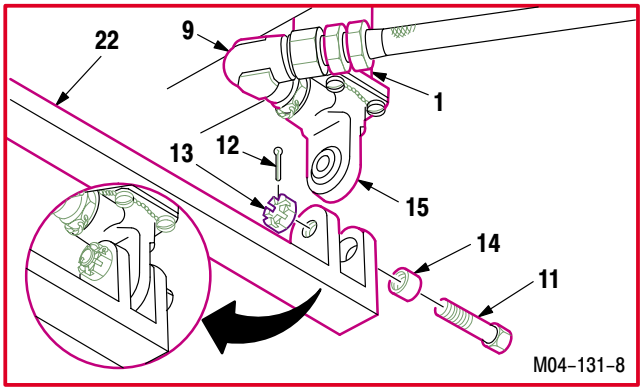
NOTE

Install bolt with head facing inboard.

(3) Install bolt (11) through bracket (22), bushing (14), and bearing of cap (15).

(4) Hold bolt (11). Install nut (13).

(5) Install new cotter pin (12) in bolt (13).

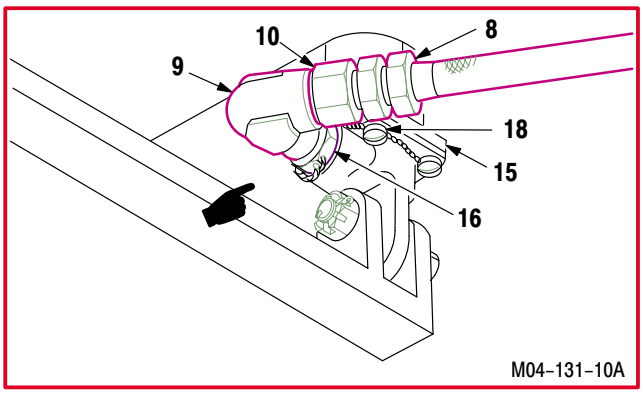


d. **Install brake hose (8) on elbow (9).**

(1) Hold elbow (9). Tighten nut (10).

(2) Hold elbow (9). Tighten nut (16).

(3) Lockwire nut (16) to screw (18) in cap (15). Use wire (item 224, App F).

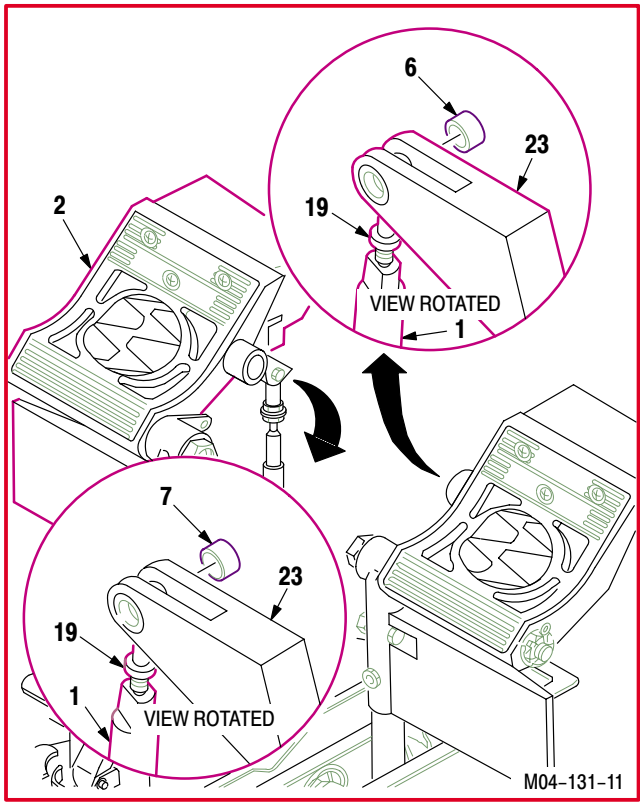


e. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**

f. **Install rod end (19) in clevis (23) of pedal (2).**

(1) Position rod end (19) in clevis (23) of pedal (2).

(2) Install bushing (6) (bushing (7) left pedal) in clevis (23).



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3.57. CPG BRAKE MASTER CYLINDERS REMOVAL/INSTALLATION – continued

(3) Install rig pin (24) in spad (25). Use flight control rigging kit.

NOTE

Ensure rig pin has a loose fit.

(4) Install rig pin (26) in pedal (2).

(5) Adjust rod end (19) by lengthening or shortening to install cylinder (1) to clevis (23) of pedal (2).

(6) Hold rod end (19). Tighten nut (21).

(7) Lockwire nut (21) to key washer (27). Use wire (item 224, App F).

NOTE

Install bolt with head facing inboard.

(8) Install bolt (4) through clevis (23) and rod end (19).

(9) Hold bolt (4). Install nut (5).

(10) Install new cotter pin (3) in bolt (4).

(11) Remove rig pin (24) from spad (25).

(12) Remove rig pin (26) from pedal (2).

g. **Inspect (QA).**

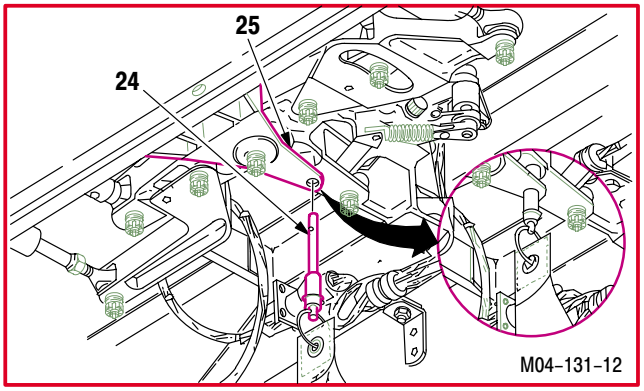
h. **Bleed brake system** (para 1.45)**.**

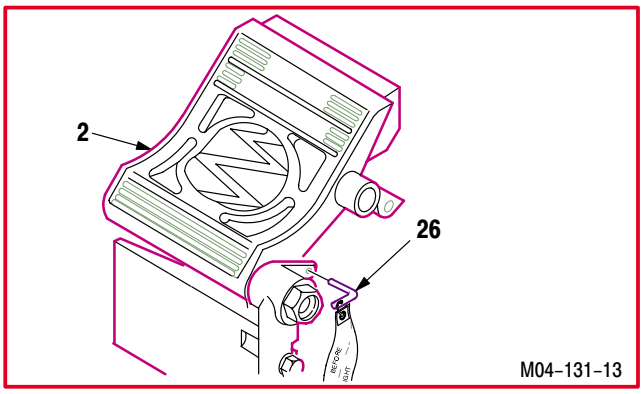
i. **Set parking brakes** (para 1.61)**.**

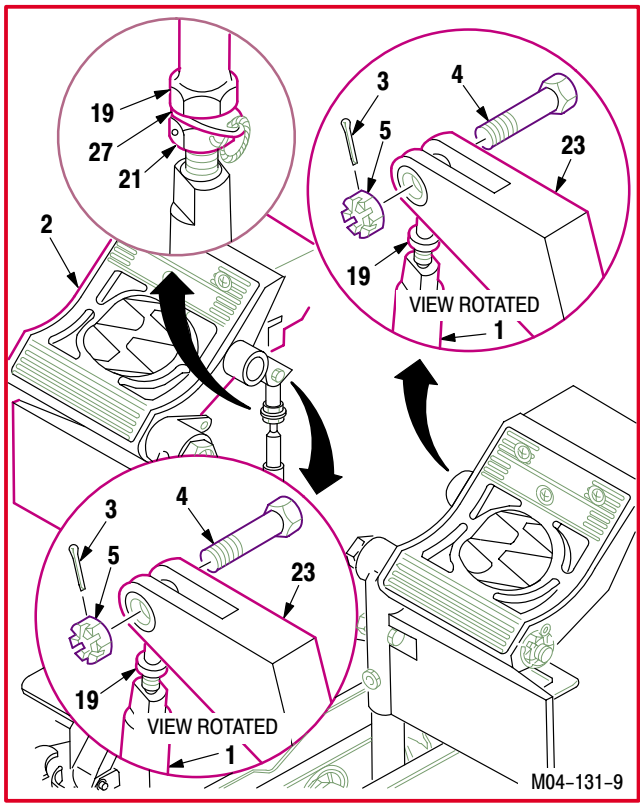
j. **Install indirect view display (IVD)** (TM 1-1270-476-20)**.**

k. **Secure access doors B41R and B60** (para 2.2)**.**

l. **Perform main landing gear maintenance operational check** (TM 1-1520-238-T)**.**







END OF TASK

3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM)

3.58.1. Description

This task covers: Disassembly. Cleaning. Inspection. Assembly. Test.

3.58.2. Initial Setup

Tools:

Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
Reciprocating compressor unit (item 67, App H)
Chemical protective gloves (item 154, App H)
14-quart utility pail (item 222, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 25 pound spring resiliency tester (item 353, App H)
Hydraulic test fixture (item 354A, App H)
Hydraulic test stand (item 357, App H)
Mounting bushing (Figure D-442.1, App D) (2)

Personnel Required:

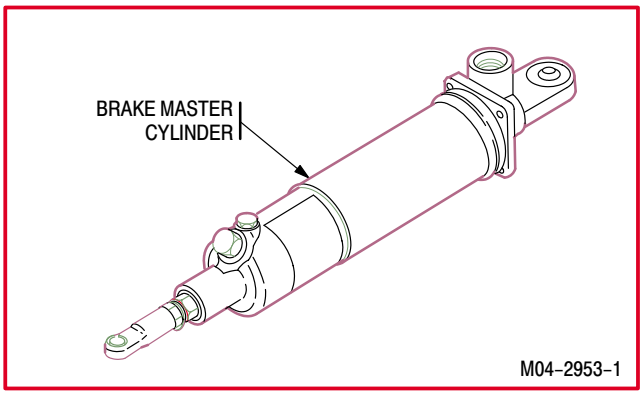
68H Aircraft Pneudraulics Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Materials/Parts:

Clip
Packing (6)
Seal
Shim
Cloth (item 52, App F)
Dry cleaning solvent (item 74, App F)
Hydraulic fluid (item 93, App F)
Wire (item 224, App F)

References:

TM 55-1500-335-23



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3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

3.58.3. Disassembly

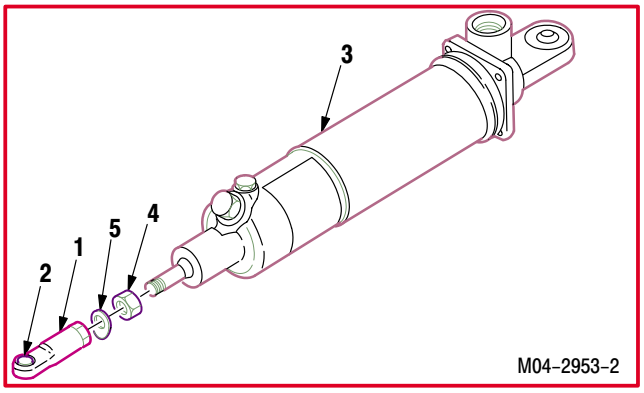
a. **Remove rod end (1) with bearing (2) from master cylinder assembly (3).**

(1) Remove and discard lockwire from nut (4) and key washer (5).

(2) Hold rod end (1). Loosen nut (4).

(3) Remove rod end (1).

(4) Remove washer (5) and nut (4) from cylinder (3).



WARNING

Master cylinder is spring loaded. Remove cylinder brake cap with extreme care. If cap is not restrained, serious injury can result. If injury occurs, seek medical aid.

b. **Disassemble cylinder (3).**

(1) Remove lockwire from four screws (6) and cylinder brake cap assembly (7).

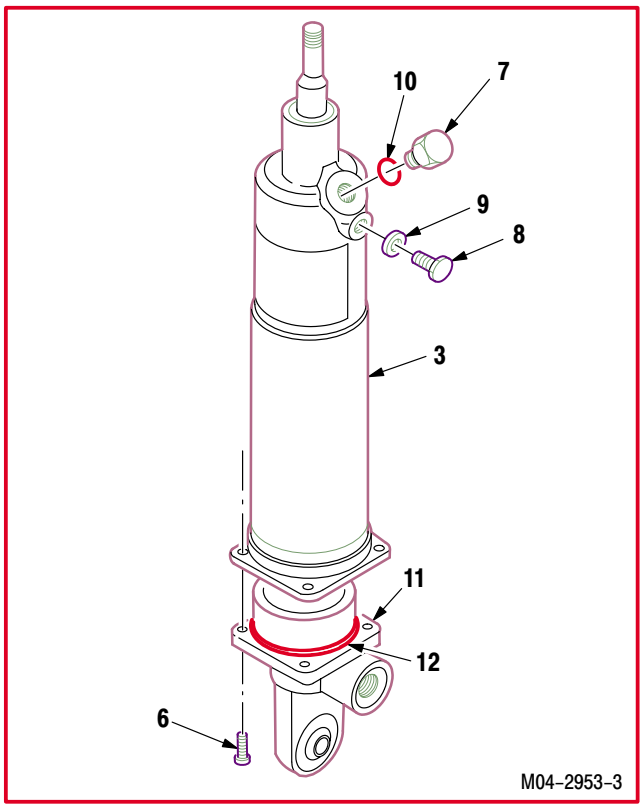
(2) Remove bleed screw (8) and cylinder brake seal (9). Discard seal (9).

(3) Remove cap (7) and packing (10). Discard packing (10).

(4) Remove four screws (6) from cylinder brake cap (11).

(5) Remove cap (11) with packing (12) from cylinder (3).

(6) Remove and discard packing (12).



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3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM)

(7) Slowly push piston cylinder rod (13) from upper body (14) of cylinder (3) and pull internal components free.

(8) Remove rod (13) with packing (15) from cylinder (3). Discard packing (15).

(9) Remove relief cap (16).

(10) Remove shim (17) if used.

(11) Remove cylinder brake spring (18) and cylinder brake poppet (19).

(12) Remove cylinder brake piston (20) with packing (21) from piston assembly (22). Discard packing (21).

(13) With helper, compress piston assembly (22) until cylinder brake pin (23) is accessible.

(14) Remove pin (23).

(15) Slowly release piston assembly (22) and separate cylinder brake piston (24), rod assembly piston seat (25), cylinder retainer (26), cylinder brake spring (27), brake valve guide (28), and head cylinder piston (29).

(16) Remove and discard packings (30) and (31).

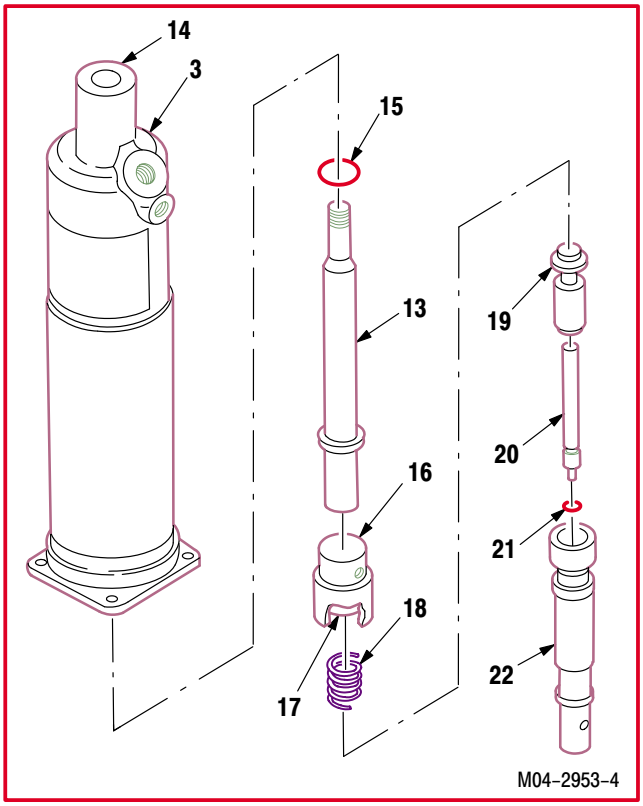
(17) Remove cylinder brake clip (32).

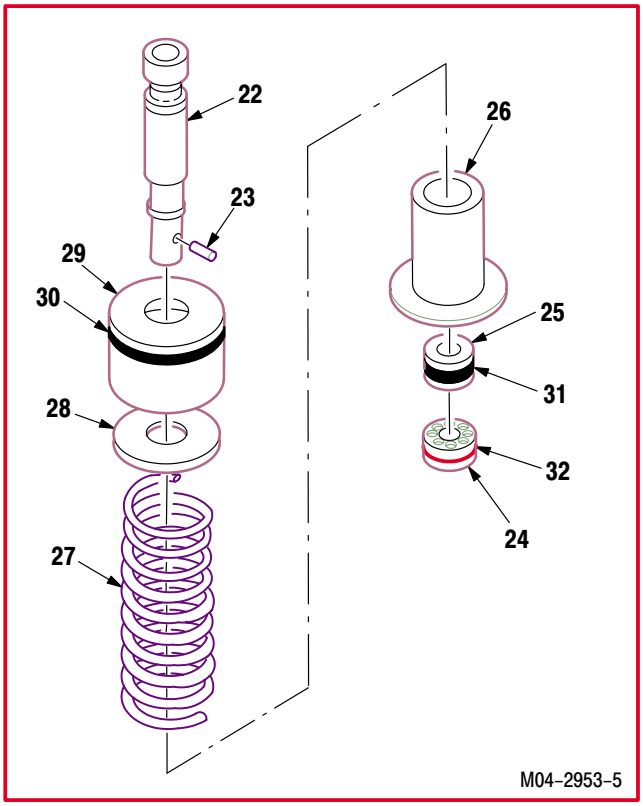
3.58.4. Cleaning



a. **Clean cylinder and its components except bearings.** Use cloth (item 52, App F) and dry cleaning solvent (item 74, App F).

b. **Blow dry cylinder and its components.** Use compressor unit.





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3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

3.58.5. Inspection

a. **Check master cylinder and its components for cracks, nicks, or dents** (para 3.53)**.**

b. **Magnetically examine pistons for cracks** (TM 55-1500-335-23)**.**

c. **Check master cylinder and its components for excessive wear.** None allowed.

d. **Check rod, cap, pistons, and cylinder for damaged threads.** None allowed.

e. **Check cylinder and its components for corrosion** (para 1.49)**.**

f. **Check seating surfaces of pistons and seat for sharp edges or burrs.** None allowed.

g. **Check rod end and cylinder brake cap bearings for free movement and smooth operation** (para 3.53)**.**

h. **Check springs for discoloration, misalinement, permanent set, and distortion.**

(1) Roll springs on smooth flat surface. No wobble allowed.

(2) Measure free length. Poppet spring free length shall be **0.666 to 0.688 INCH**. Cylinder brake spring free length shall be **4.17 to 4.23 INCHES**. Use spring tester.

(3) Measure compressed length. Poppet spring compressed length shall be **0.578 INCH** under a **3.3 to 3.6 POUND** test load. Piston spring compressed length shall be **3.2 INCHES** under an **11.6 to 12.0 POUND** test load. Use spring tester.

i. **Check piston screen for damage, contamination, or clogging.**

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3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

j. **Check components for dimensional tolerance.** Use steel rule, inside, and outside micrometers.

(1) Cylinder ID at rod end shall be **0.3750 to 0.3774 INCH**.

(2) Cylinder ID at piston end shall be **1.2500 to 1.2524 INCHES**.

(3) Head piston OD shall be **1.2473 to 1.2485 INCHES**.

(4) Piston rod OD at rod end shall be **0.3728 to 0.3740 INCH**.

(5) Piston rod ID at poppet end shall be **0.4995 to 0.5007 INCH**.

(6) Piston OD shall be **0.1557 to 0.1562 INCH**.

(7) Piston assembly OD at poppet end shall be **0.4974 to 0.4985 INCH**.

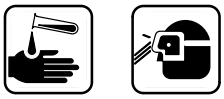
(8) Piston assembly ID mating with poppet shall be **0.3425 to 0.3437 INCH**.

(9) Piston assembly ID mating with piston shall be **0.1570 to 0.1592 INCH**.

(10) Cylinder brake cap ID shall be **0.6865 to 0.6877 INCH**.

(11) Cylinder brake piston OD and seat shall be **0.6843 to 0.6855 INCH**.

3.58.6. Assembly



a. **Lubricate all parts in hydraulic fluid before assembly.** Use hydraulic fluid (item 93, App F).

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3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

b. **Assemble cylinder (3).**

(1) Place poppet (19) in piston assembly (22).

(2) Place spring (18) in cap (16).

(3) Install cap (16) with spring (18) on piston assembly (22).

(4) Measure piston assembly (22) length. Piston must be exactly **3.53 INCHES** long.

(5) Measure poppet (19) staging pressure. Staging pressure must be **65 to 71 POUNDS**. Use spring tester.

(6) Adjust length and pressure as required. One turn of cap (16) equals **0.055 INCH** which equals approximately **22 POUNDS**. Use shims (17) under cap (16) to adjust length.

(7) Install new packing (21) on piston (20).

(8) Install piston (20) with packing (21) into piston assembly (22) with rounded end facing poppet (19).

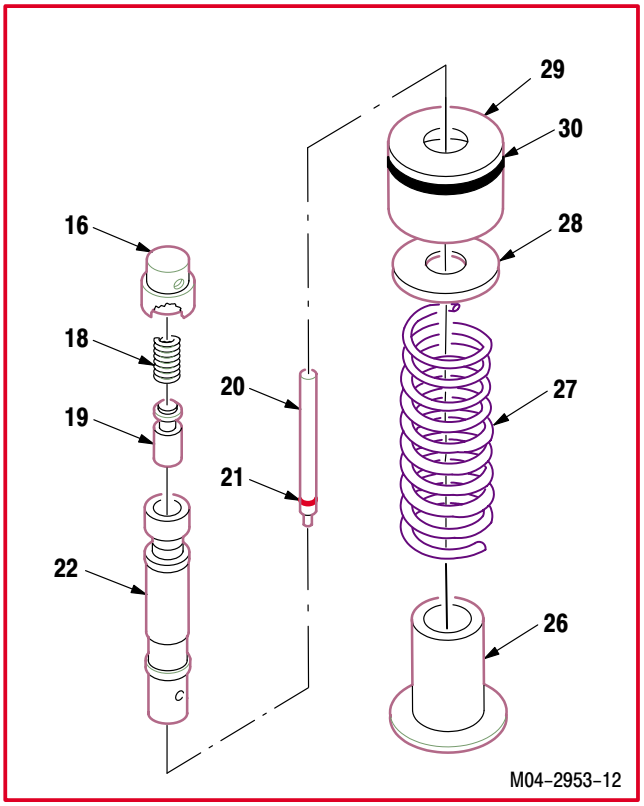
(9) Install new packing (30) on head piston (29).

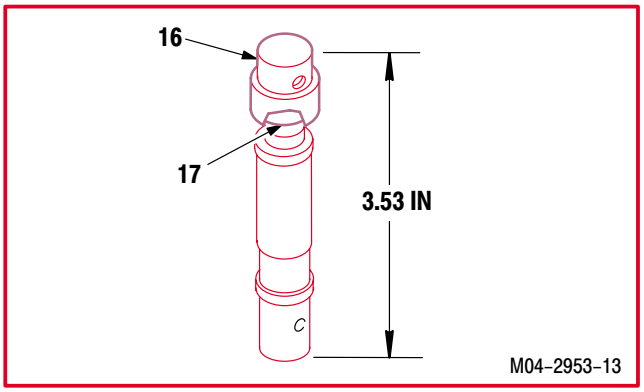
(10) Install head piston (29) and guide (28) on spring (27).

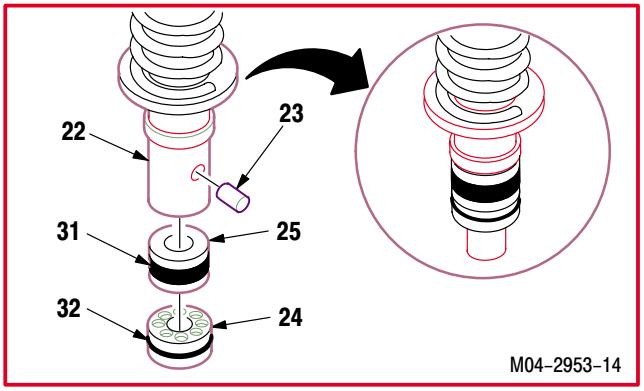
(11) Install retainer (26) into spring (27) over piston assembly (22).

(12) Install new packing (31) on seat (25).

(13) Install clip (32) on piston (24).







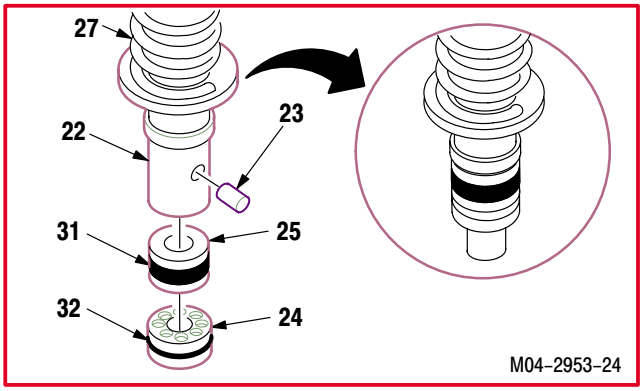
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3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

(14) With helper compressing spring (27), install seat (25) and piston (24) on piston assembly (22).

(15) With helper alining piston (24) with hole in piston assembly (22), install pin (23). Ensure pin (23) is flush on both sides.

(16) Allow spring (27) to release slowly.



(17) Install new packing (12) on cap (11).

(18) Install cap (11) into retainer (26) until it bottoms.

(19) Install new packing (15) in cylinder (3) neck.

(20) Install piston rod (13) into neck of cylinder (3) threaded end first.

(21) Position head piston (29) and cap (11) into body (14) of cylinder (3).

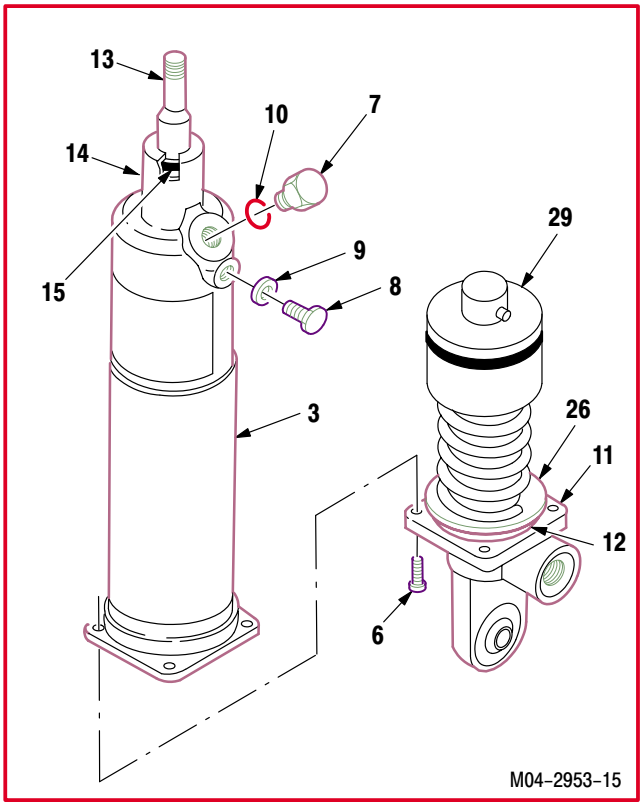
(22) Install cap (11) on cylinder (3).

(a) Push in and install four screws (6).

(23) Install cap (7) with new packing (10).

(24) Install screw (8) with new seal (9).

(25) Install washer (5) and nut (4) on piston rod (13).

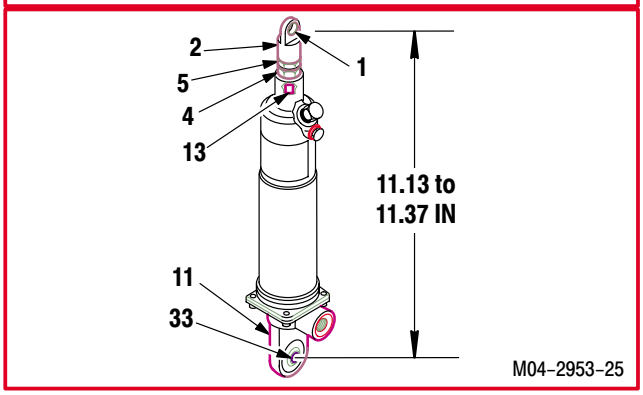


c. **Install rod end (1) on piston rod (13).**

(1) Install rod end (1) on piston rod (13).

(2) Adjust rod end until center of bearing (2) is **11.13 to 11.37 INCHES** from center of bearing (33) in cap (11) with bearings alined.

(3) Hold rod end (1) at flats. Tighten nut (4).



d. **Inspect (QA).**

3.58.7. Test

GO TO NEXT PAGE

3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

a. **Install plug (34) in port (35).**

b. **Fill cylinder (3).** Use hydraulic fluid (item 93, App F).

(1) Install cylinder (3) in test fixture. Use hydraulic test fixture and two bushings.

(2) Remove bleed screw (8) and seal (9).

(3) Remove cap (7) and packing (10).

(4) Connect hydraulic test stand to cylinder (3).

(5) Slowly fill cylinder (3) until fluid comes out bleed screw (8) port.

(6) Actuate cylinder (3) several times to make sure no air remains.

(7) Top off cylinder with fluid. Use hydraulic fluid (item 93, App F).

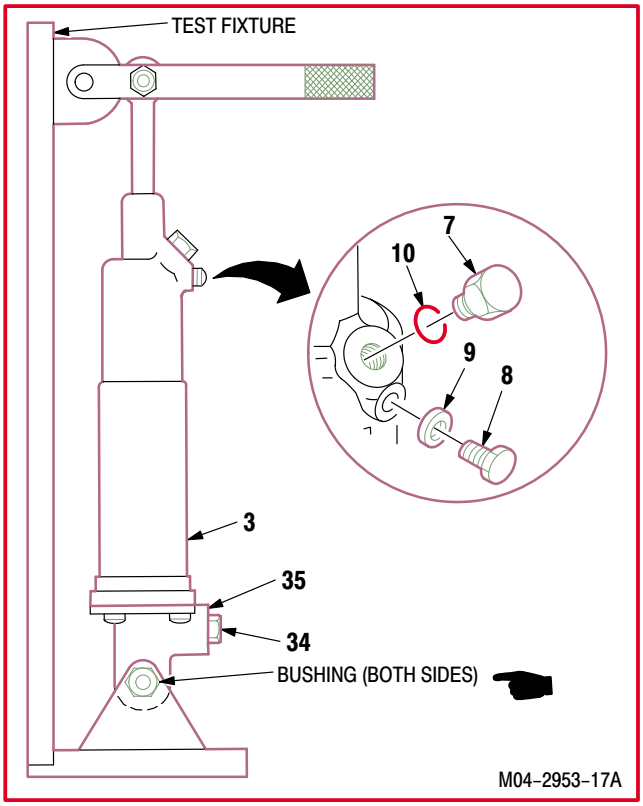
(8) Install seal (9) and bleed screw (8).

(9) Install packing (10) and cap (7).

(10) Wipe up spills. Use cloth (item 52, App F).

c. **Test cylinder (3).**

(1) Remove plug (34) from port (35).



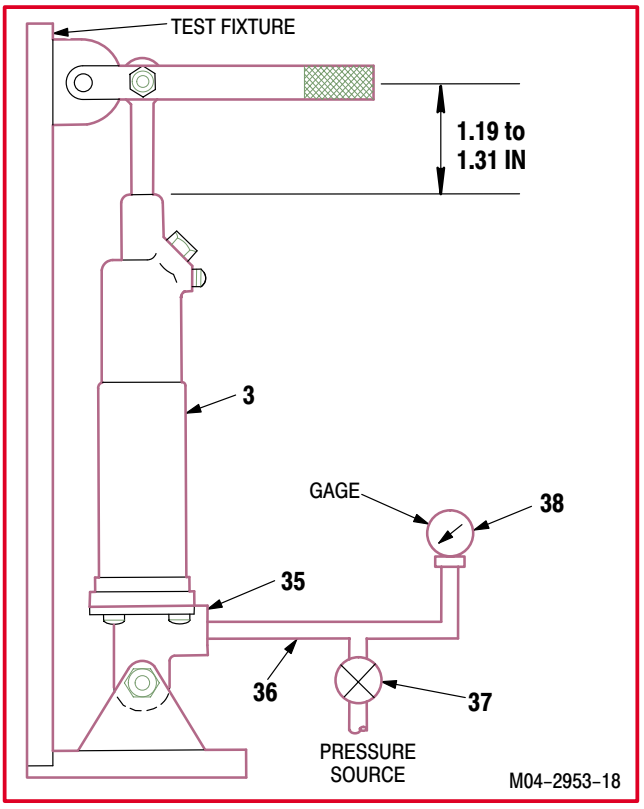
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3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

(2) Using high pressure fittings and adapters, connect test stand pressure line (36) with in–line shutoff valve (37). Connect 2500 psi gage (38) to port (35).

(3) Repeat step b to ensure cylinder (3) is serviced and bled with no leaks.

(4) Measure stroke at zero pressure. Stroke must be **1.19 to 1.31 INCHES** in one direction.



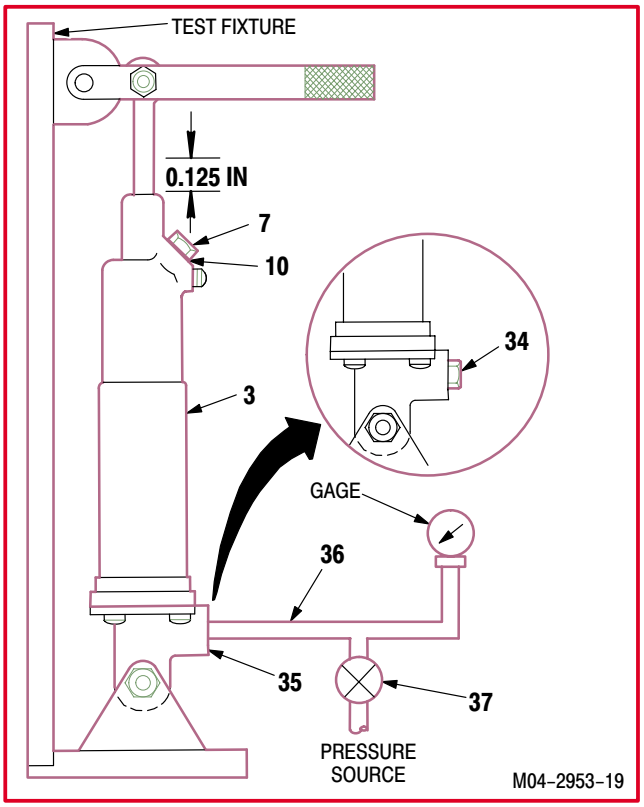
d. **Perform proof pressure test.**

(1) Compress cylinder (3) to **0.125 INCH**.

(2) Apply 1500 psi to port (35) **5 MINUTES**. There must be no external leakage.

(3) Reduce pressure to zero. Remove pressure line (36). Install plug (34).

(4) Remove cap (7) with packing (10). Install pressure line (36).



GO TO NEXT PAGE

3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

(5) Apply 1500 psi to filler port (39). There must be no external leakage.

(6) Remove pressure line (36). Install packing (10) with cap (7).

e. **Perform external leakage test.**

(1) Remove plug (34) from port (35). Install pressure line (36).

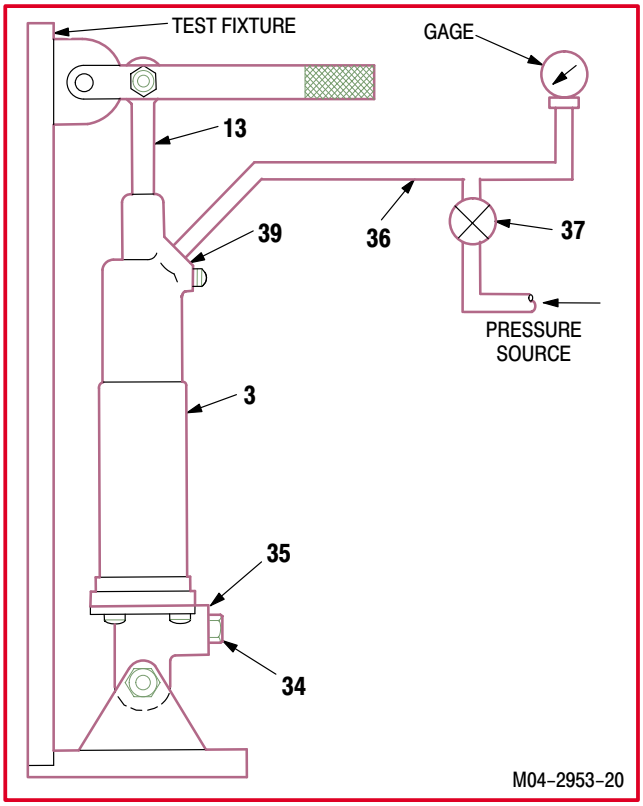
(2) Close shutoff valve (37). Apply load that will generate 10 psi at brake port (35). Movement of piston rod (13) indicates internal leakage. Hold pressure **2 MINUTES**.

(3) Increase and hold pressure at 75 psi. Movement of piston rod (13) indicates internal leakage. Hold pressure **2 MINUTES**.

(4) Increase and hold pressure to 750 psi. Movement of piston rod (13) indicates internal leakage. Hold pressure **2 MINUTES**.

(5) Reduce pressure to zero. Fully compress cylinder (3). Piston rod (13) must extend smoothly and rapidly while pressure drops to zero at full extension.

(6) Remove pressure line (36).



GO TO NEXT PAGE

3.58. PARKING BRAKE MASTER CYLINDER DISASSEMBLY/ASSEMBLY (AVIM) – continued

f. **Remove hydraulic test stand.**

g. **Remove bleed screw (8) and seal (9).**

(1) Drain cylinder (3).

h. **Install seal (9) and bleed screw (8).**

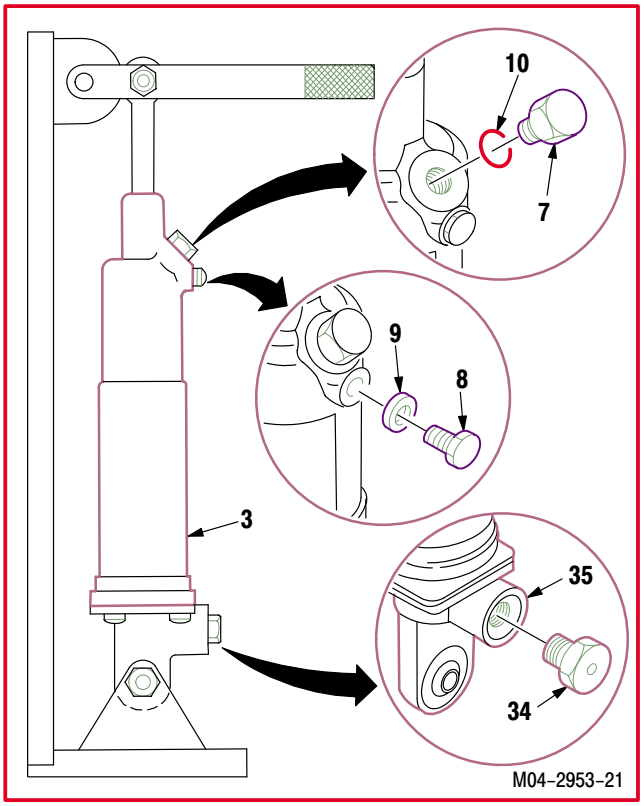
i. **Install packing (10) and cap (7).**

j. **Install plug (34) in brake port (35).**

k. **Remove cylinder (3) from test fixture.**

l. **Clean cylinder (3).** Use cloth (item 52, App F).

m. **Check cylinder (3) for test related damage.**

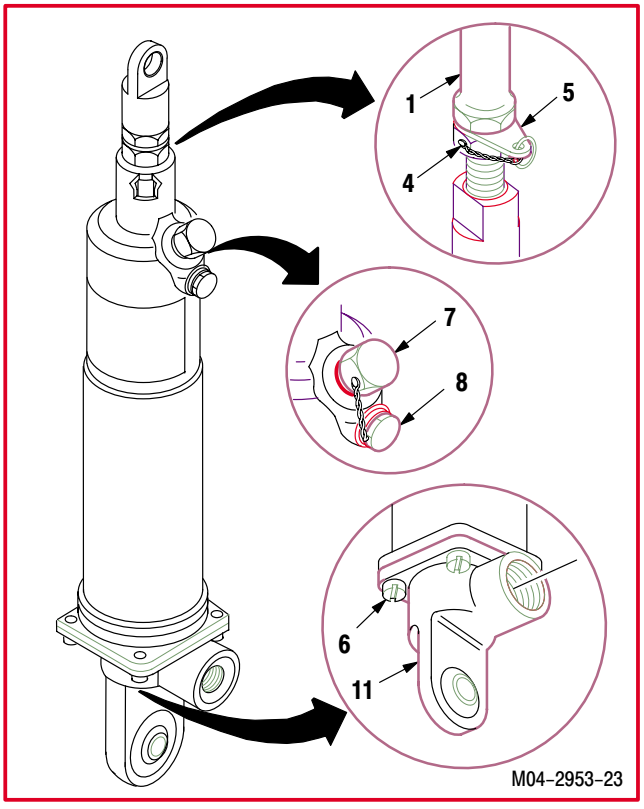


n. **Lockwire four screws (6) on cap (11) together in pairs.** Use wire (item 224, App F).

o. **Lockwire cap (7) to bleed screw (8).** Use wire (item 224, App F).

p. **Lockwire nut (4) to washer (5).** Use wire (item 224, App F).

q. **Inspect (QA).**



END OF TASK

3.59. PARKING BRAKE PULL CONTROL ASSEMBLY AND BRACKET ASSEMBLY REMOVAL/INSTALLATION

3.59.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.59.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Airframe repairman's tool kit (item 377, App H)

References:

TM 1-1500-204-23

Materials/Parts:

Cotter pin

Personnel Required:

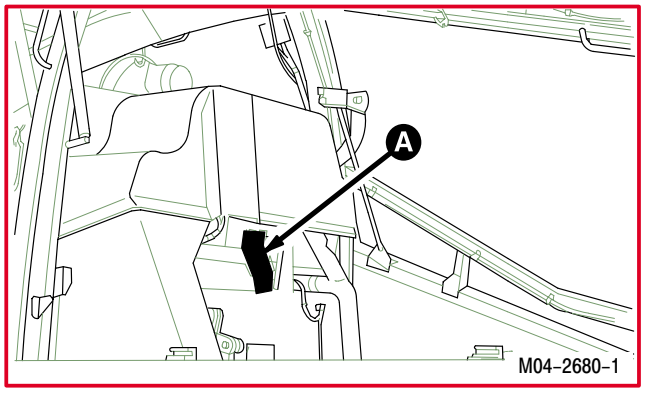
67R	Attack Helicopter Repairer
68G	Aircraft Structural Repairer
67R3F	Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes released
2.161	CPG seat tilted forward

3.59.3. Removal

a. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



GO TO NEXT PAGE

3.59. PARKING BRAKE PULL CONTROL ASSEMBLY AND BRACKET ASSEMBLY REMOVAL/INSTALLATION – continued

b. **Remove pull control assembly (1) from rotary direct valve (2).**

(1) Loosen nut (3).

(2) Remove and discard cotter pin (4).

(3) Remove straight head pin (5) and two washers (6).

(4) Remove clevis (7) and nut (3) from cable (8).

(5) Remove control assembly (1) from valve (2).

c. **Remove bracket assembly (9) from center console panel (10).**

(1) Hold cable (8) at hex swage (11). Remove nut (12).

(2) Slide cable (8) from bracket (9).

(3) Remove four screws (13) and washers (14) from bracket (9).

(4) Remove bracket (9) from console (10).

d. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

e. **Remove handle (15) from control assembly (1).**

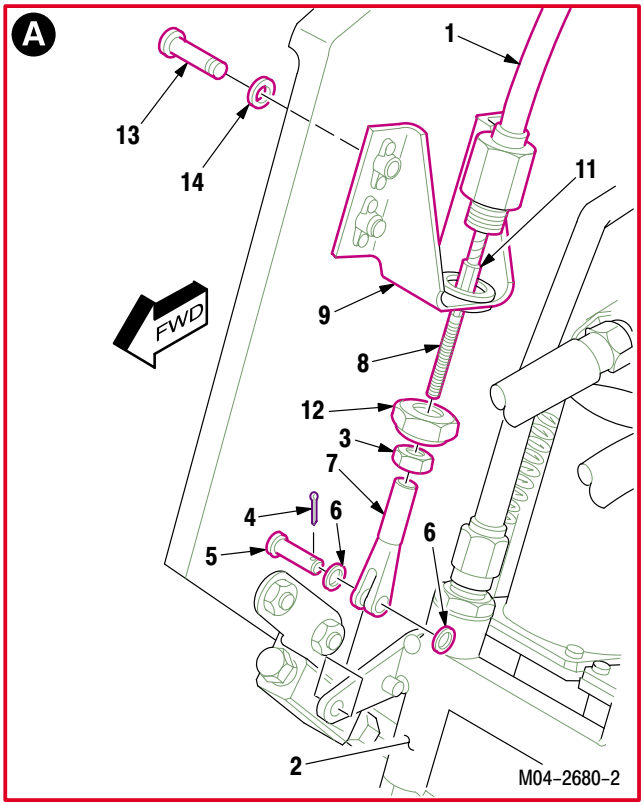
(1) Remove handle (15) from control assembly (1).

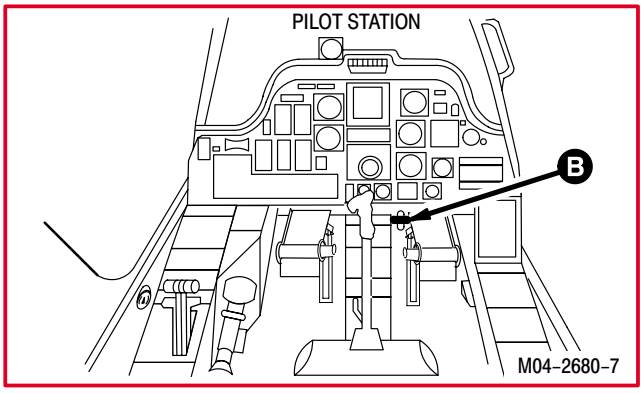
(2) Remove seal nut (16).

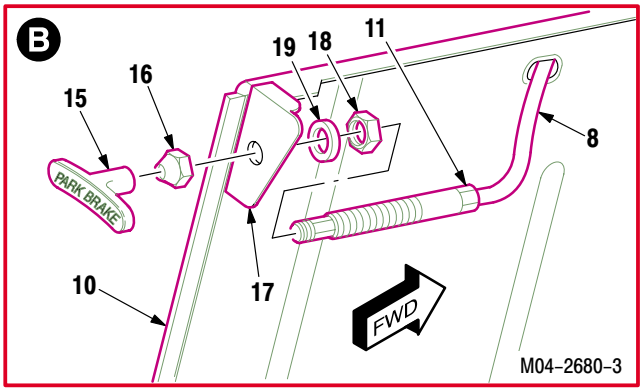
(3) Remove cable (8) from angle (17).

(4) Hold cable (8) at hex swage (11). Remove nut (18) and washer (19).

f. **Remove cable (8) from console (10).**







GO TO NEXT PAGE

3.59. PARKING BRAKE PULL CONTROL ASSEMBLY AND BRACKET ASSEMBLY REMOVAL/INSTALLATION – continued

3.59.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.59.5. Inspection

a. **Check removed and attaching parts for cracks.** None allowed.

b. **Check cable for rough operation, binding, and broken cable strands.** None allowed.

3.59.6. Repair

a. **Repair bracket assembly by replacing nut plates** (TM 1-1500-204-23)**.**

3.59.7. Installation

a. **Install cable (8) clevis end through right side of console (10).**

b. **Install handle (15) on control assembly (1).**

(1) Install nut (18) and washer (19) on cable (8). Do not tighten nut (18).

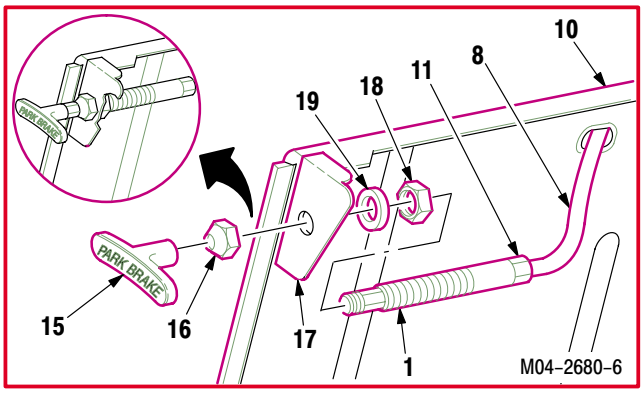
(2) Insert cable (8) with nut (18) and washer (19) through angle (17).

(3) Install seal nut (16) on cable (8).

(4) Hold cable (8) at hex swage (11). Tighten nut (16).

(5) Install handle (15) on cable (8).

c. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



GO TO NEXT PAGE

3.59. PARKING BRAKE PULL CONTROL ASSEMBLY AND BRACKET ASSEMBLY REMOVAL/INSTALLATION – continued

d. **Install bracket (9) on cable (8).**

(1) Insert cable (8) clevis end through hole in bracket (9). Install nut (12).

(2) Hold cable (8) at hex swage (11). Tighten nut (12).

(3) Install four screws (13) through washers (14) and console (10) into bracket (9).

e. **Install control assembly (1) on valve (2).**

(1) Install nut (3) and clevis (7) on cable (8).

(2) Adjust clevis (7) and nut (3).

NOTE

Valve lever must be in full down position.

(3) Remove slack from cable (8).

(4) Aline clevis (7) holes with lever (20) hole. Tighten nut (3).

(5) Insert pin (5) through washer (6), clevis (7), lever (20), and washer (6).

(6) Install new cotter pin (4) in pin (5).

f. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

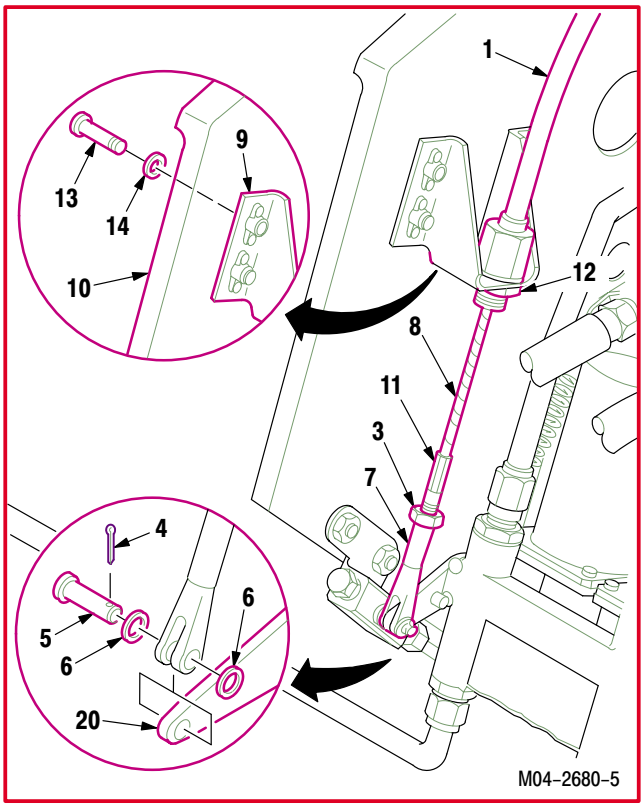
g. **Tighten nut (18).**

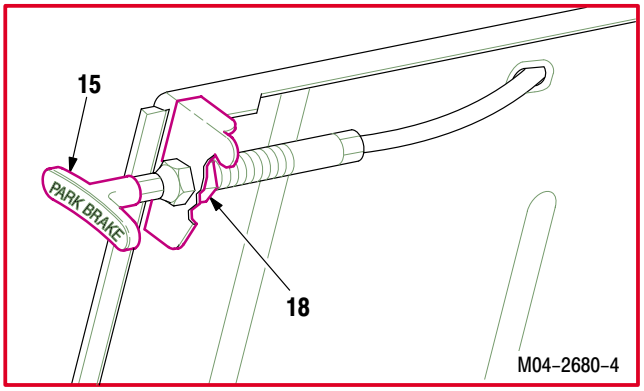
(1) Hold handle (15). Tighten nut (18).

h. **Inspect (QA).**

i. **Secure CPG seat** (para 2.161)**.**

j. **Set parking brakes** (para 1.61)**.**





END OF TASK

3.60. PARKING BRAKE ROTARY DIRECT VALVE REMOVAL/INSTALLATION

3.60.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.60.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)

References:

TM 1-1500-204-23
TM 1-1520-264-23

Materials/Parts:

Cotter pin
Packing (4)
Hydraulic fluid (item 93, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

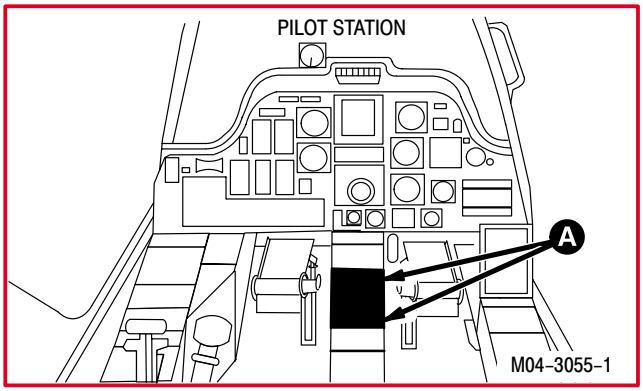
Equipment Conditions:

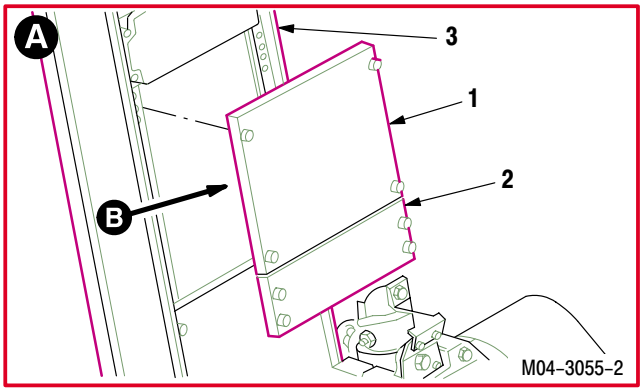
Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes released
2.161	CPG seat tilted forward

3.60.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove panels (1) and (2) from center console panel (3).**





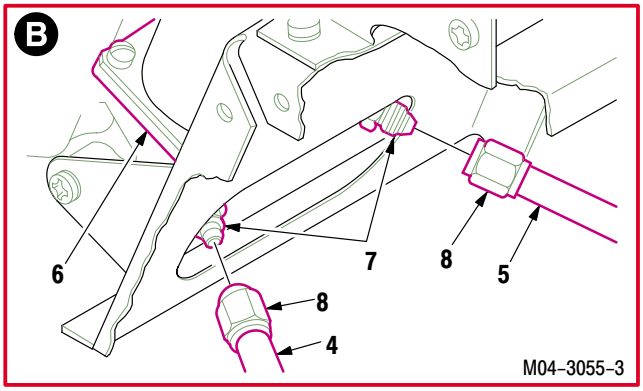
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3.60. PARKING BRAKE ROTARY DIRECT VALVE REMOVAL/INSTALLATION – continued

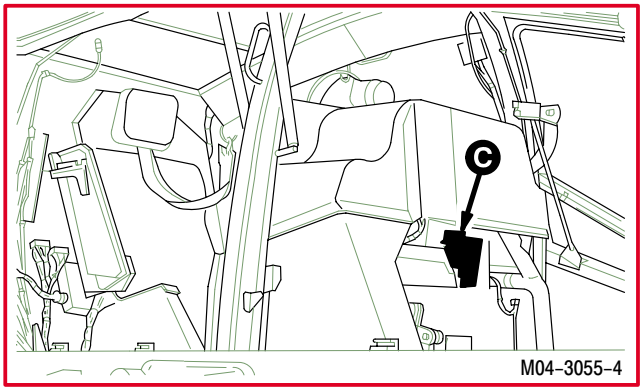
c. **Remove rotary valve tubes (4) and (5) from rotary direct valve (6).**

(1) Hold piston assembly fittings (7). Remove tube coupling nuts (8).

(2) Remove tubes (4) and (5) from valve (6).



d. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



e. **Remove clevis (9) from lever (10).**

(1) Remove and discard cotter pin (11).

(2) Remove straight head pin (12) and two washers (13).

(3) Remove clevis (9) from lever (10).

f. **Remove bracket assembly (14) from console (3).**

(1) Remove four screws (15) and washers (16) from bracket (14).

(2) Remove bracket (14) from console (3).

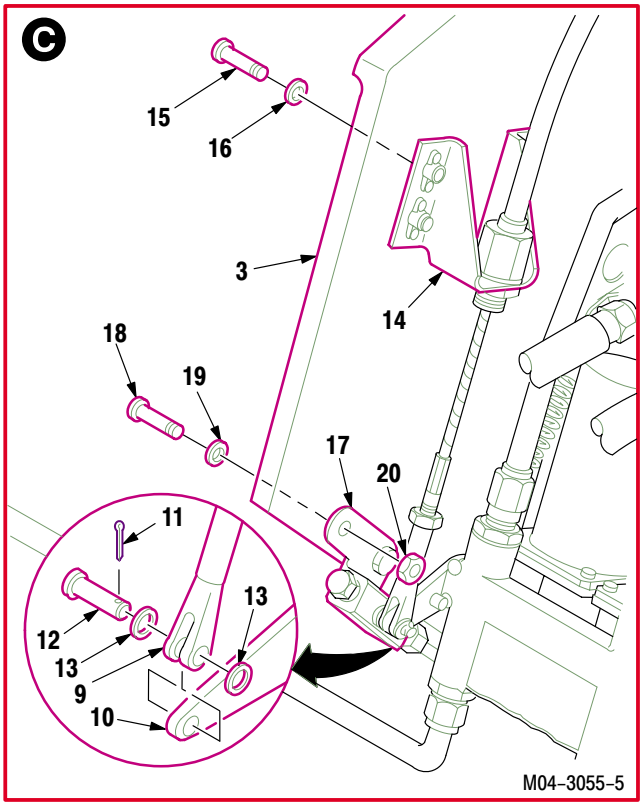
NOTE

Bleeder fittings are typical for both sides of valve.

g. **Remove bleeder fittings (17) from valve (6).**

(1) Remove four bolts (18), washers (19), and self-locking nuts (20) from fittings (17).

(2) Remove fittings (17) from valve (6).



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3.60. PARKING BRAKE ROTARY DIRECT VALVE REMOVAL/INSTALLATION – continued

h. **Remove tube (21) from tube elbow (22).**

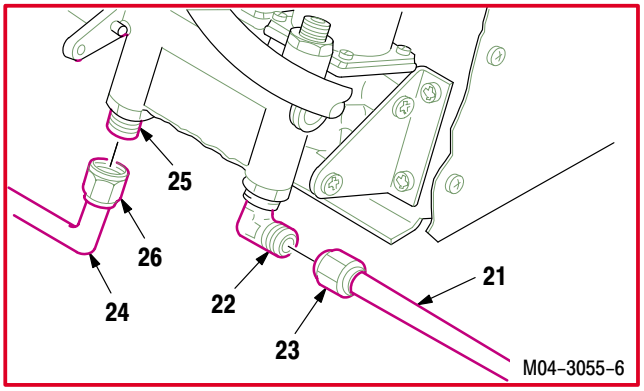
(1) Remove tube coupling nut (23) from elbow (22).

(2) Remove tube (21) from elbow (22).

i. **Remove tube (24) from tube nipple (25).**

(1) Hold nipple (25). Remove coupling nut (26).

(2) Remove tube (24) from nipple (25).



j. **Remove tubes (27) and (28) from tube nipples (29) in valve (6).**

(1) Hold two nipples (29). Remove two tube coupling nuts (30).

(2) Remove tubes (27) and (28) from nipples (29) in valve (6).

k. **Remove tubes (27) and (28) from tube elbows (31) in brake control valves (32).**

(1) Remove two tube coupling nuts (33) from elbows (31).

(2) Remove tubes (27) and (28) from elbows (31).

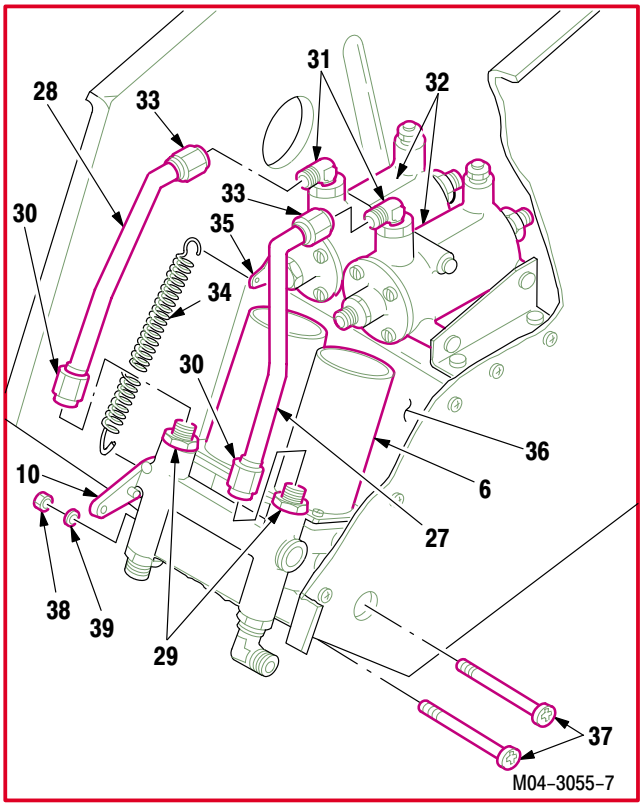
l. **Remove helical extension spring (34) from lever (10) and bracket (35).**

m. **Remove valve (6) from bracket assembly (36).**

(1) Hold two screws (37). Remove two nuts (38).

(2) Remove two screws (37) and washers (39).

(3) Remove valve (6) from bracket (36).

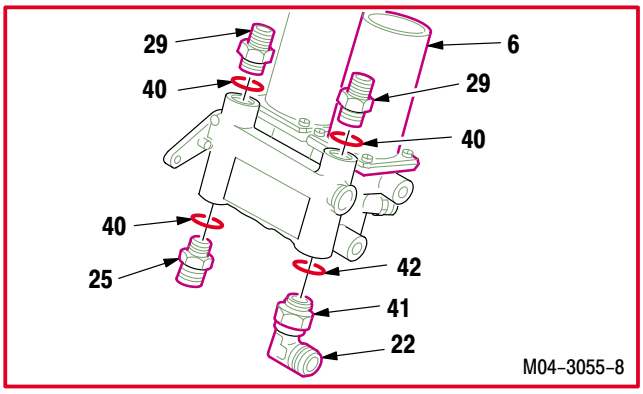


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3.60. PARKING BRAKE ROTARY DIRECT VALVE REMOVAL/INSTALLATION – continued

NOTE

If replacing valve, perform step n.



n. **Remove nipples (25) and (29) and elbow (22) from valve (6).**

(1) Remove nipples (25) and (29).

(2) Remove and discard three packings (40).

(3) Loosen nut (41). Remove elbow (22).

(4) Remove and discard packing (42).

3.60.4. Cleaning

a. **Clean valve and removed and attaching parts** (para 1.47)**.**

3.60.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check removed and attaching parts for scratches** (para 3.53)**.**

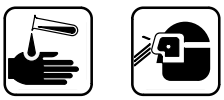
c. **Check valve for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

3.60.6. Repair

a. **Repair bracket assembly by replacing nut plates** (TM 1-1500-204-23)**.**

3.60.7. Installation



a. **Lubricate all fittings, tubes, hose nuts, and packings before installation.** Use hydraulic fluid (item 93, App F).

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3.60. PARKING BRAKE ROTARY DIRECT VALVE REMOVAL/INSTALLATION – continued

NOTE

If fittings are not installed on valve, start with step b. If fittings are installed, start with step c.

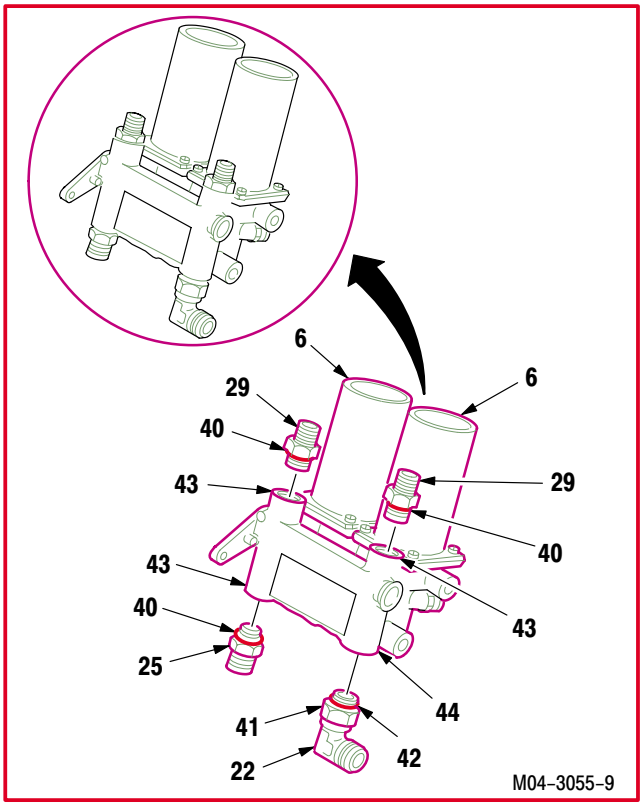
b. **Install nipples (25) and (29) and elbow (22) in valve (6).**

(1) Install three new packings (40) on nipples (25) and (29).

(2) Install new packing (42) on elbow (22).

(3) Install three nipples (25) and (29) in ports (43).

(4) Install elbow (22) in port (44). Do not tighten nut (41).



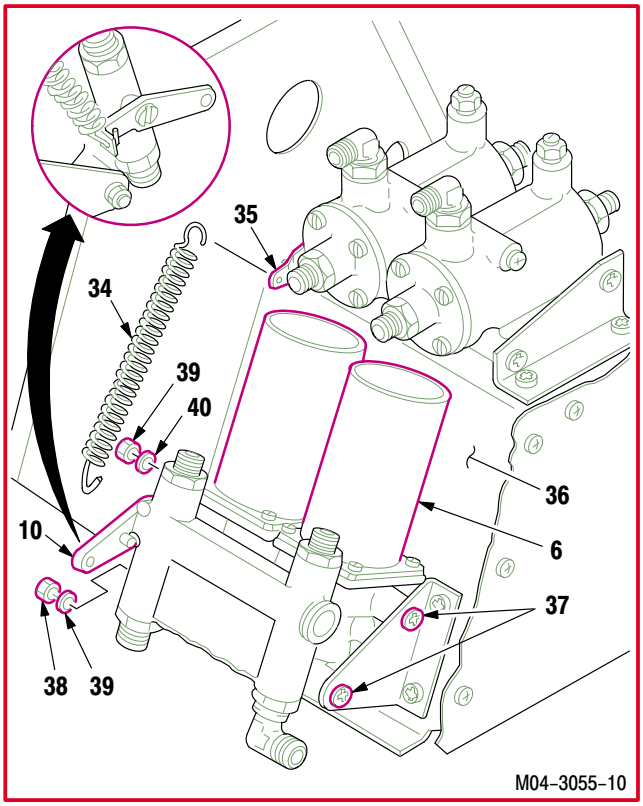
c. **Install valve (6) on bracket assembly (36).**

(1) Aline valve (6) with bracket assembly (36).

(2) Install two screws (37) through valve (6).

(3) Hold two screws (37). Install washers (39) and nuts (38).

d. **Install spring (34) to lever (10) and bracket (35).**



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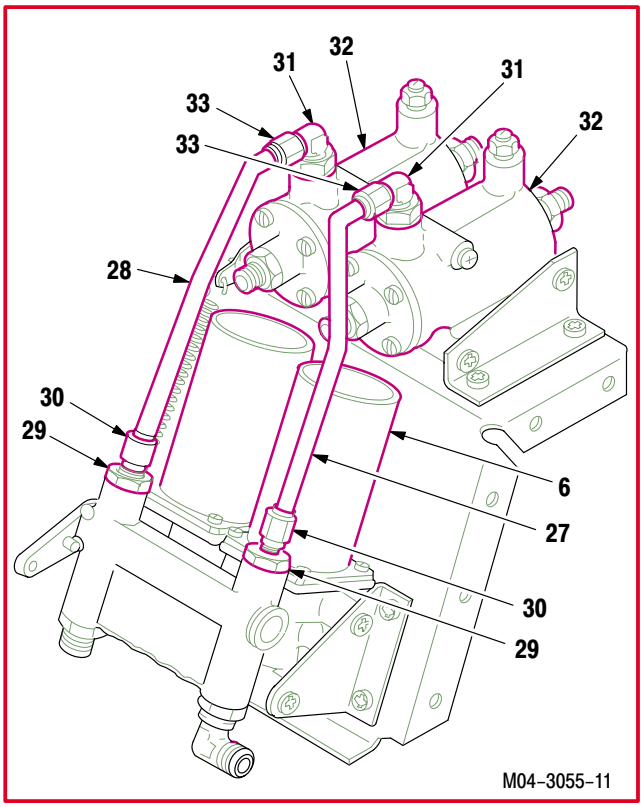
3.60. PARKING BRAKE ROTARY DIRECT VALVE REMOVAL/INSTALLATION – continued

e. **Install tubes (27) and (28) on valves (6) and (32).**

(1) Install tubes (27) and (28) on elbows (31) and nipples (29).

(2) Hold two elbows (31). Tighten nuts (33).

(3) Hold two nipples (29). Tighten nuts (30).



NOTE

Bleeder fittings are typical for both sides of valve.

f. **Install fittings (17) on console (3).**

(1) Insert four bolts (18) through washers (19), console (3), and fittings (17).

(2) Hold four bolts (18). Install nuts (20).

g. **Install bracket (14) on console (3).**

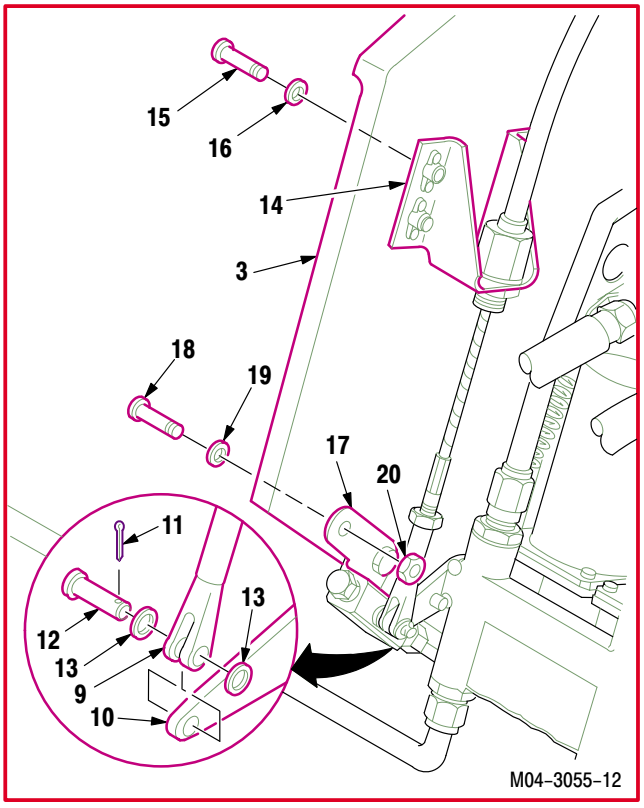
(1) Install four washers (16) and screws (15).

h. **Install clevis (9) on lever (10).**

(1) Position clevis (9) on lever (10).

(2) Install pin (12) through washer (13), clevis (9), lever (10), and washer (13).

(3) Install cotter pin (11) in pin (12).



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3.60. PARKING BRAKE ROTARY DIRECT VALVE REMOVAL/INSTALLATION – continued

i. **Install tube (21) on elbow (22).**

(1) Hold elbow (22). Install tube nut (23).

(2) Hold elbow (22). Tighten nut (41).

j. **Install tube (24) on nipple (25).**

(1) Install tube (24) on nipple (25).

(2) Hold nipple (25). Tighten tube nut (26).

k. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

l. **Install tubes (4) and (5) on valve (6).**

(1) Install nuts (8) on fittings (7).

(2) Hold two fittings (7). Tighten nuts (8).

m. **Bleed brake system** (para 1.45)**.**

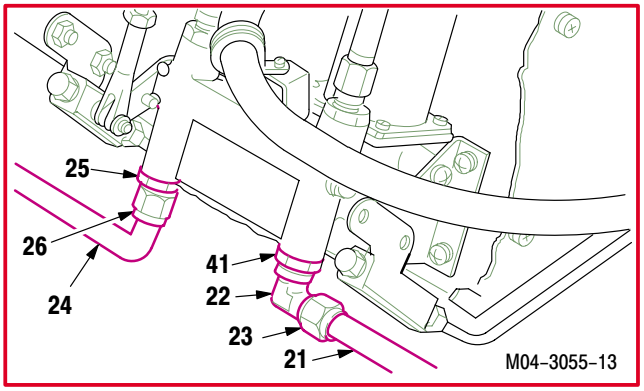
n. **Set parking brakes** (para 1.61)**.**

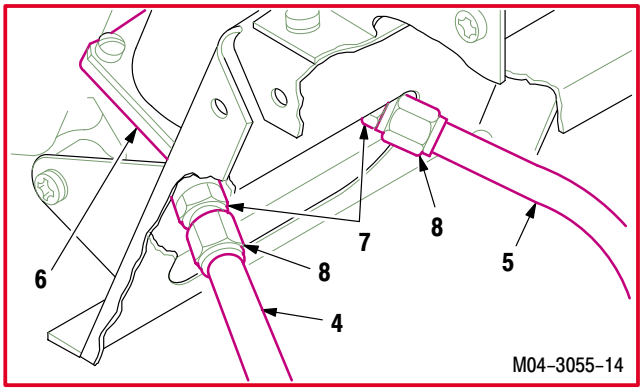
o. **Inspect (QA).**

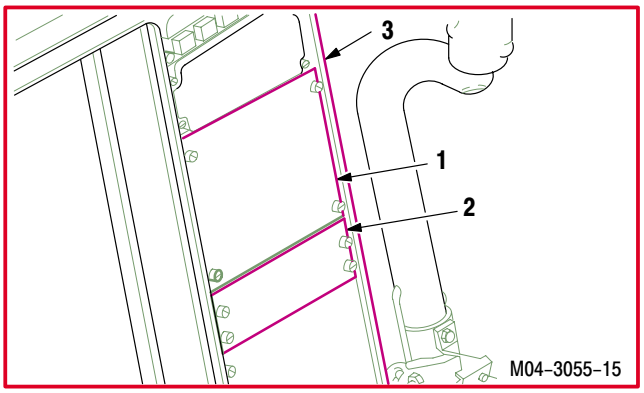
p. **Install panels (1) and (2) on console (3).**

q. **Secure CPG seat** (para 2.161)**.**

r. **Perform main landing gear maintenance operational check** (TM 1-1520-238-T)**.**







END OF TASK

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM)

This task covers: Disassembly. Cleaning. Inspection. Assembly. Test.

3.61.1. Initial Setup

Tools:

Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
6.000 - 7.000-inch outside micrometer caliper (item 53, App H)
8-inch inside caliper (item 55, App H)
Reciprocating compressor unit (item 67, App H)
Chemical protective gloves (item 154, App H)
0.0 - 10.0-pound weighing scale (item 272, App H)
0 - 25 pound spring resiliency tester (item 353, App H)

References:

TM 1-1520-264-23

Materials/Parts:

Packing (20)
Cloth (item 52, App F)
Dry cleaning solvent (item 74, App F)
Hydraulic fluid (item 93, App F)
Hydraulic fluid (item 94, App F)
Wire (item 226, App F)

Personnel Required:

68H Aircraft Pneudraulics Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

WARNING

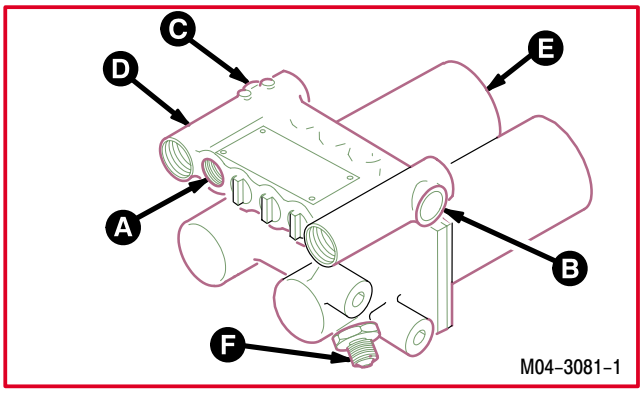
Parking brake rotary direct valve is spring loaded. Remove brake valve cap and hydraulic valve cap carefully to prevent injury to personnel. If injury occurs, seek medical aid.

CAUTION

Unit preserved with MIL-L-6083 hydraulic fluid. Flush with MIL-H-5606 hydraulic fluid before use.

NOTE

If parking brake rotary direct valve is not to be returned to immediate service, flush valve with hydraulic fluid. Use hydraulic fluid (item 94, App F). Plug ports and tag.



GO TO NEXT PAGE

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

3.61.2. Disassembly

a. **Remove four brake valve seats (1) from rotary direct valve (2).**

(1) Place rags under valve to catch hydraulic fluid spills.

(2) Remove lockwire from brake valve cap (3).

(3) Remove cap (3) from valve (2).

(4) Remove and discard packing (4) from cap (3).

(5) Remove brake valve spring (5) and bearing ball (6).

(6) Remove seats (1).

(7) Remove and discard packing (7) from seat (1).

(8) Remove hydraulic valve lifter (8) from seat (1).

(9) Repeat steps a.(2) through a.(9) for all four seats (1).

b. **Remove brake valve cam (9) from valve (2).**

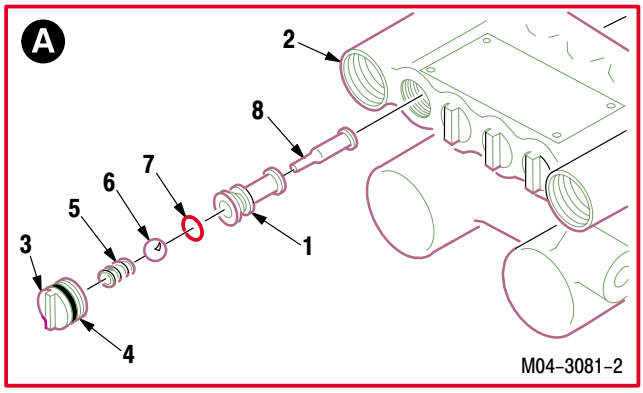
(1) Remove lockwire from valve brake screw (10).

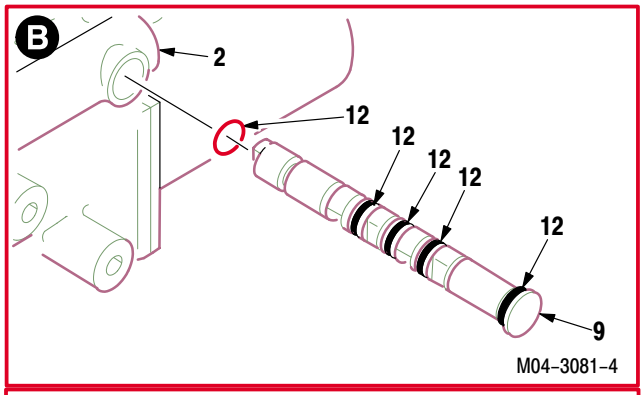
(2) Remove screw (10) from valve brake lever (11).

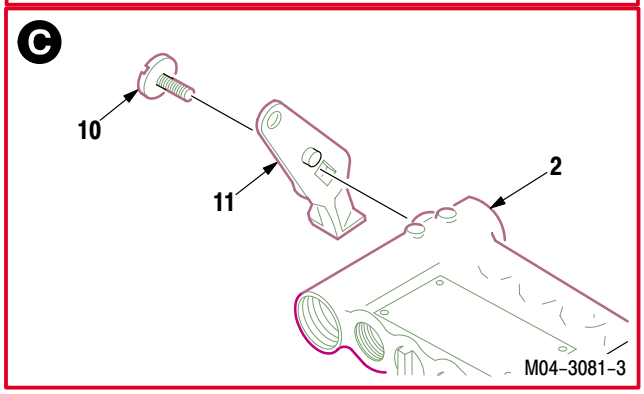
(3) Remove lever (11) from valve (2).

(4) Push cam (9) out of valve (2).

(5) Remove and discard five packings (12) from cam (9).







GO TO NEXT PAGE

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

c. **Remove brake valve piston (13) from valve (2).**

(1) Remove hydraulic valve cap (14) from valve (2).

(2) Remove and discard packings (15) and (16).

(3) Remove piston (13) and brake valve spring (17).

(4) Remove and discard packing (18) from piston (13).

CAUTION

Do not damage brake valve piston and piston bore when removing screws.

d. **Remove two brake valve pistons (19) from valve (2).**

(1) Remove lockwire from four screws (20).

(2) Remove four screws (20) while pushing hydraulic valve cap (21) into valve (2).

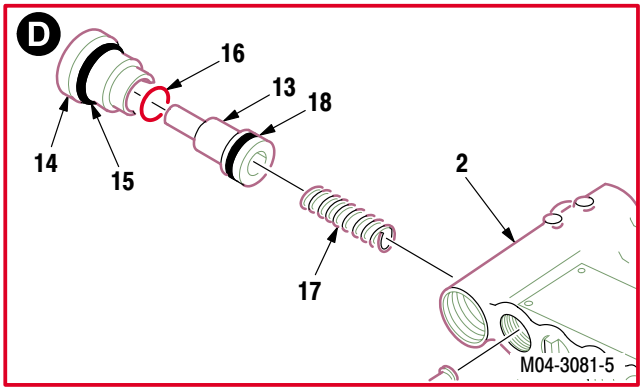
(3) Release pressure of brake valve spring (22) carefully. Remove cap (21), brake valve plate (23), and brake valve plate (24).

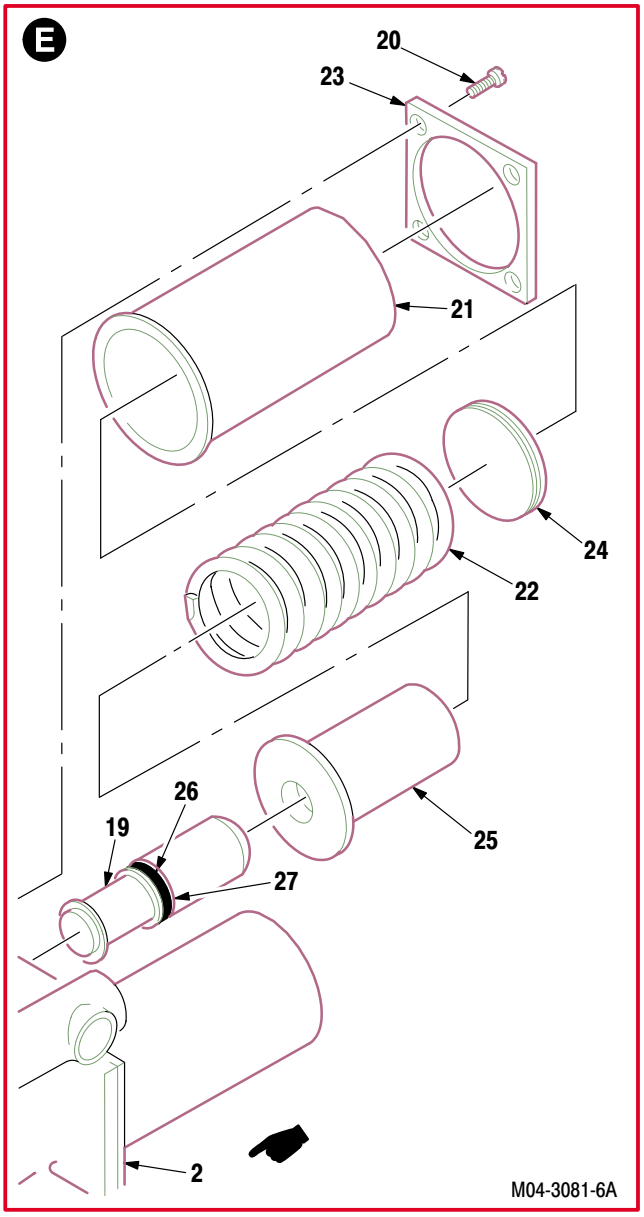
(4) Remove spring (22) and brake valve guide (25).

(5) Remove piston (19) from valve (2).

(6) Remove and discard packing (26) and packing retainer (27) from piston (19).

(7) Repeat steps d.(1) thru d.(5) to remove other piston (19).





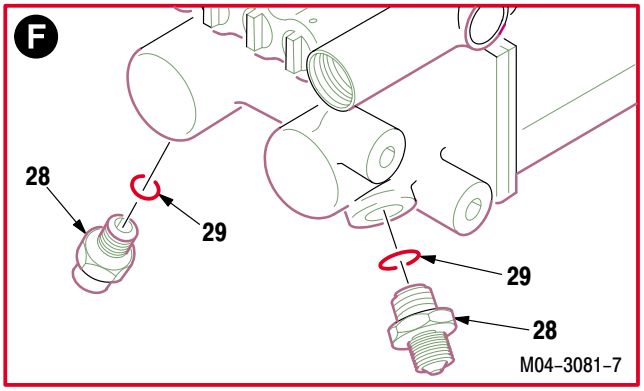
GO TO NEXT PAGE

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

e. **Remove two piston assembly fittings (28) from valve (2).**

(1) Remove two fittings (28) from valve (2).

(2) Remove and discard two packings (29).



3.61.3. Cleaning



a. **Clean valve and its components.** Use dry cleaning solvent (item 74, App F) and cloth (item 52, App F).

b. **Blow dry valve and its components.** Use compressor unit.

3.61.4. Inspection

a. **Check parts and mounting areas for nicks, cracks, scoring, scratches, excessive wear, and stripped or damaged threads.** None allowed.

b. **Check valve body for distortion.** None allowed.

c. **Check valve body for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

d. **Check ports and passage for foreign matter and cracks.** None allowed.

e. **Check springs for:**

(1) Permanent set and misalinement. None allowed.

(2) Roll springs across a smooth flat surface. No wobble allowed.

f. **Check seats and ball seating surfaces for roughness and burrs.** None allowed.

g. **Check ball bearings for pits and wear.** None allowed.

GO TO NEXT PAGE

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

g. **Check parts for conformance to dimensions listed in Table I.**

(1) Minimum and maximum dimensions are ideal limits. Continue to use part if replacement dimension is not exceeded. Use caliper and caliper.

TABLE I. TABLE OF TOLERANCES

Part Name and Index No.	Measure	Dimensions (INCHES)		Replacement Dimensions (INCHES)
		Min	Max	
Piston (19)	OD mating with valve (2)	**0.685**	**0.686**	**0.6845**
Seat (1)	ID mating with lifter (8)	**0.1250**	**0.1255**	**0.1257**
Lifter (8)	OD mating with seat (1)	**0.1239**	**0.1245**	**0.1238**
Cam (9)	OD mating with valve (2)	**0.371**	**0.372**	**0.3708**
Piston (13)	OD mating with cap (14) OD mating with valve (2)	**0.200** **0.434**	**0.201** **0.435**	**0.1995** **0.4335**
Valve (2)	Bore mating with piston (19) Bore mating with cam (9) Bore mating with piston (13)	**0.6865** **0.374** **0.4365**	**0.6885** **0.376** **0.4385**	**0.6890** **0.3765** **0.4390**

h. **Check springs for conformance to Table II.** Use spring tester.

TABLE II. SPRING TEST CHART

Index No.	Test Length (INCHES)	Test Load	Free Length
(22)	**2.696**	**162.0 to 182.0 POUND**	Not controlled
(5)	**0.218**	**3.2 to 4.0 OUNCE**	Not controlled
(17)	**0.770**	**3.6 to 5.6 POUND**	**0.955 to 0.985 INCHES**

GO TO NEXT PAGE

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

3.61.5. Assembly



a. **Install two pistons (19) in valve (2).**

(1) Lubricate new packing (26) and new retainer (27). Use hydraulic fluid (item 93, App F).

(2) Install packing (26) and retainer (27) on piston (19).

(3) Install piston (19) in valve (2).

(4) Install spring (22) over guide (25).

(5) Install plate (24) on spring (22).

(6) Slide cap (21) over plate (24), spring (22), and guide (25).

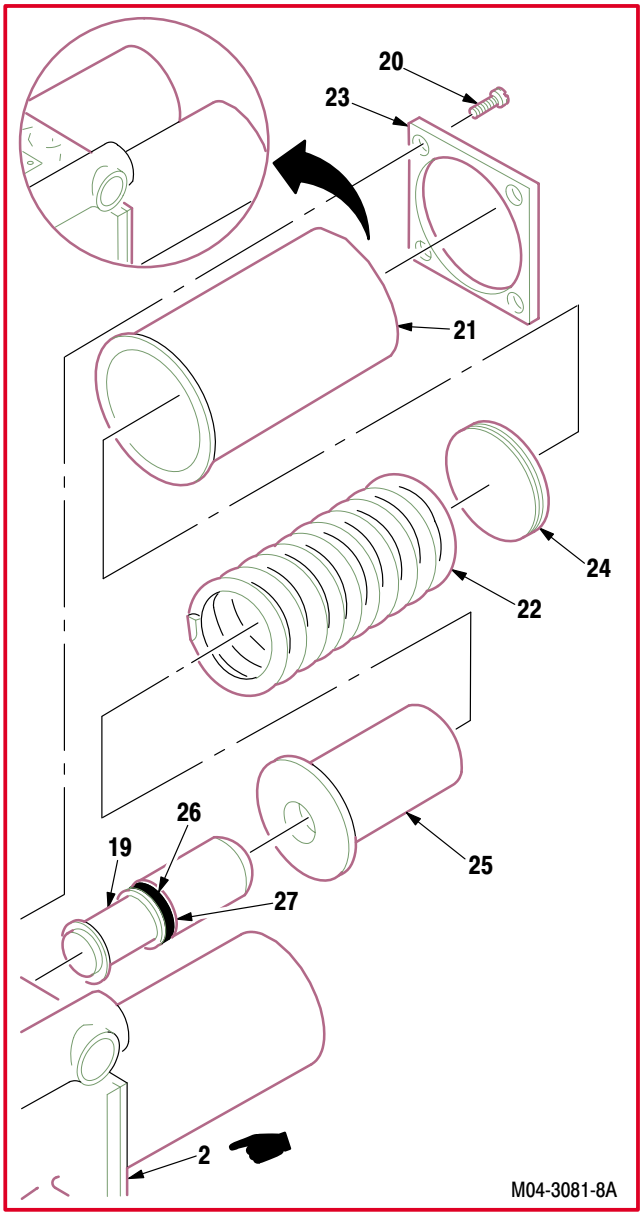
(7) Install cap (21) on valve (2).

(8) Aline plate (23) with valve (2) holes.

(9) Install four screws (20) through plate (23) into valve (2).

(10) Lockwire screws (20). Use wire (item 226, App F).

(11) Repeat steps a.(1) thru a.(10) to install other piston (19).

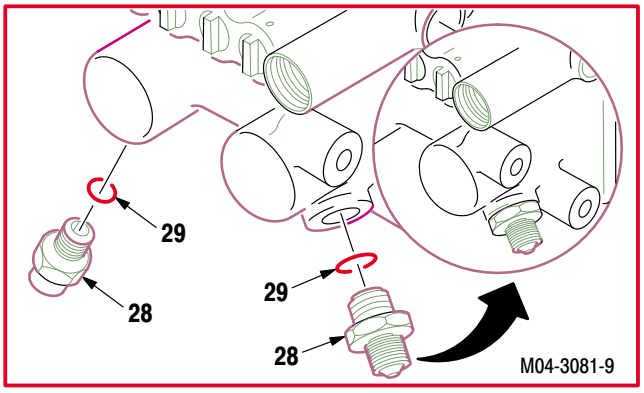


b. **Install two fittings (28) in valve (2).**

(1) Lubricate two new packings (29). Use hydraulic fluid (item 93, App F).

(2) Install packings (29) on fittings (28).

(3) Install two fittings (28) in valve (2).



GO TO NEXT PAGE

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

c. **Install piston (13) in valve (2).**

(1) Lubricate new packing (18). Use hydraulic fluid (item 93, App F).

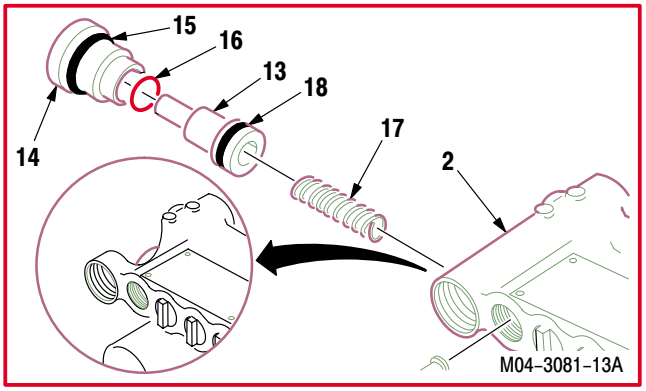
(2) Install packing (18) on piston (13).

(3) Install spring (17) and piston (13) in valve (2).

(4) Lubricate new packings (15) and (16). Use hydraulic fluid (item 93, App F).

(5) Install packings (15) and (16) on cap (14).

(6) Install cap (14) in valve (2).



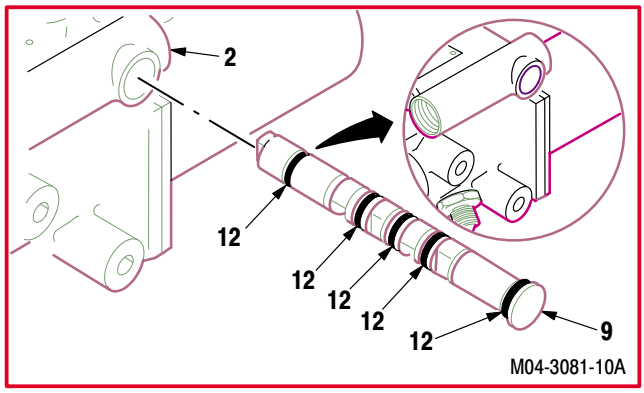
d. **Lubricate cam (9) and five new packings (12).** Use hydraulic fluid (item 93, App F).

e. **Install cam (9) in valve (2).**

(1) Install five packings (12) on cam (9).

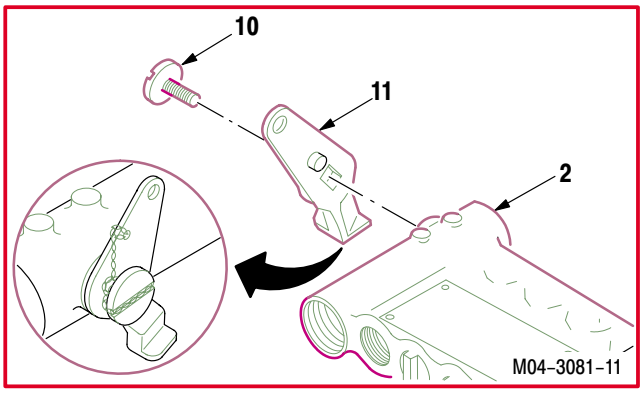
(2) Install cam (9) in valve (2).

(3) Aline lever (11) with valve (2).



(4) Install screw (10) through lever (11) into valve (2).

(5) Lockwire screw (10) to lever (11). Use wire (item 226, App F).



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3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

f. **Lubricate four seats (1), two new packings (7) and (4), lifter (8), ball bearing (6), spring (5), and cap (3).** Use hydraulic fluid (item 93, App F).

g. **Install four seats (1) in valve (2).**

(1) Install packing (7) on seat (1).

(2) Install lifter (8) in seat (1).

(3) Install seat (1) in valve (2).

(4) Install ball bearing (6) and spring (5) in valve (2).

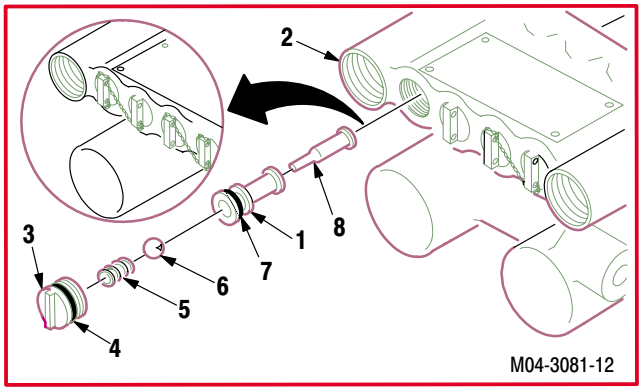
(5) Install packing (4) on cap (3).

(6) Install cap (3) in valve (2).

(7) Repeat steps g.(1) thru g.(7) for all four seats (1).

(8) Lockwire caps (3) together. Use wire (item 226, App F).

h. **Inspect (QA).**



GO TO NEXT PAGE

3.61. PARKING BRAKE ROTARY DIRECT VALVE REPAIR AND TEST (AVIM) – continued

3.61.6. Testing

NOTE

Slight wetting at seals or signs of hydraulic fluid insufficient to form a drop in **5 MINUTES** is normal.

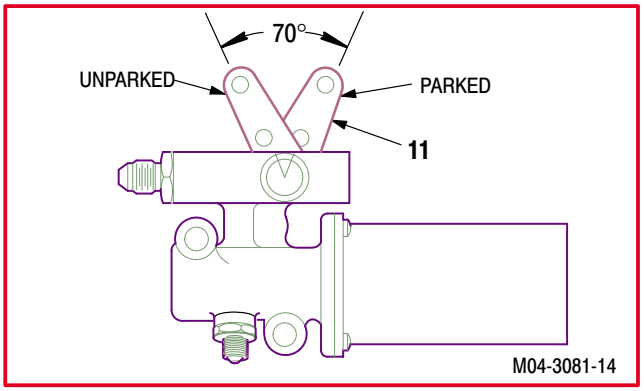
a. **Test for leaks.**

(1) Cap outlet ports and bleeder ports. Set lever (11) to unparked position. Apply 840 psi to both inlet ports for **5 MINUTES**.

(2) Check for leaks. None allowed. Reduce pressure to zero.

(3) Close inlet port and set lever (11) in parked position. Apply 400 psi to both outlet ports for **5 MINUTES**.

(4) Check for leaks. None allowed. Reduce pressure to zero.



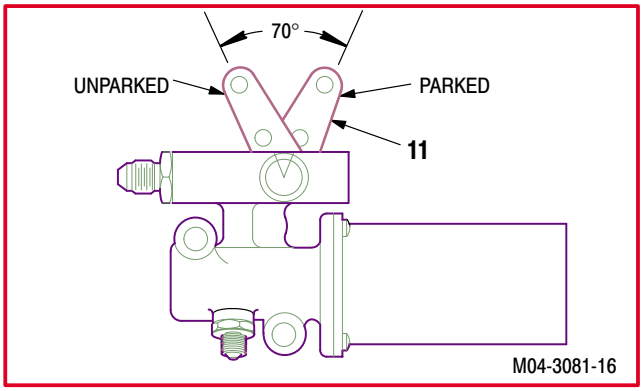
b. **Perform handle load test.**

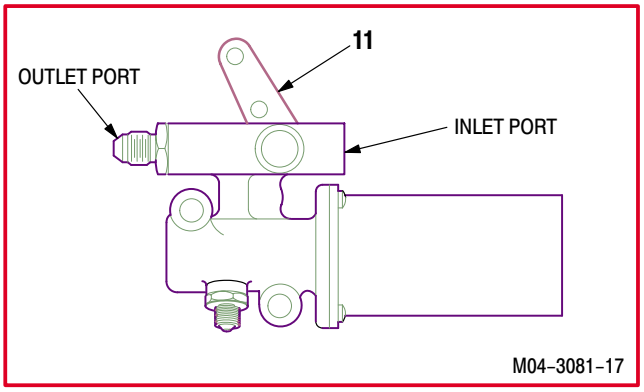
(1) Set lever (11) in parked position. Apply 840 psi to both outlet ports.

(2) Apply **15 INCH-POUNDS** to lever (11). Use scale.

(3) Apply 130 psi to inlet port nearest to lever (11). Leave other inlet port unpressurized.

(4) Apply 130 psi to unpressurized inlet port. Lever (11) must move to unparked position when pressure is applied.





END OF TASK

3.62. BRAKE CONTROL VALVES REMOVAL/INSTALLATION

3.62.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.62.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)

References:

TM 1-1520-238-T
TM 1-1520-264-23

Materials/Parts:

Packing (6)
Hydraulic fluid (item 93, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

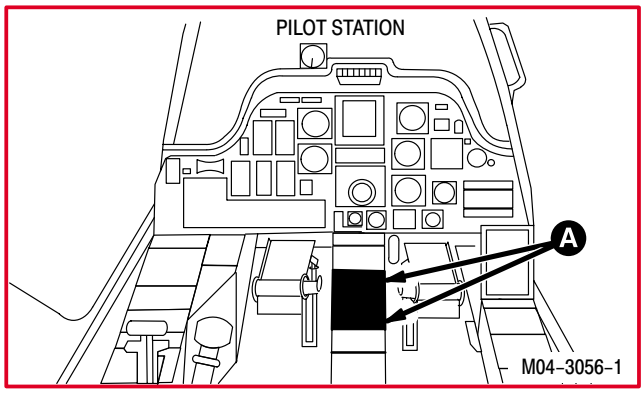
Equipment Conditions:

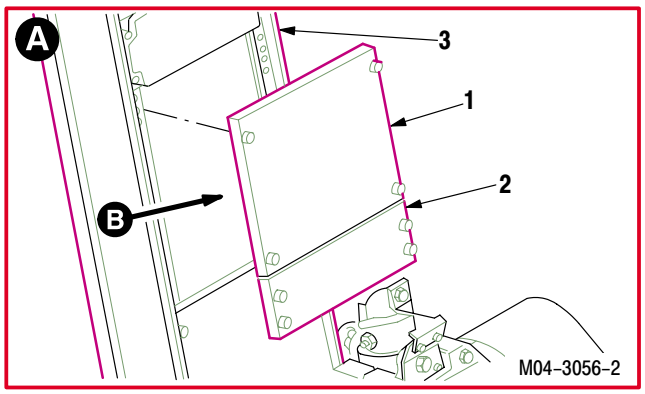
Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes released
2.161	CPG seat tilted forward

3.62.3. Removal

a. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

b. **Remove panels (1) and (2) from center console panel (3).**





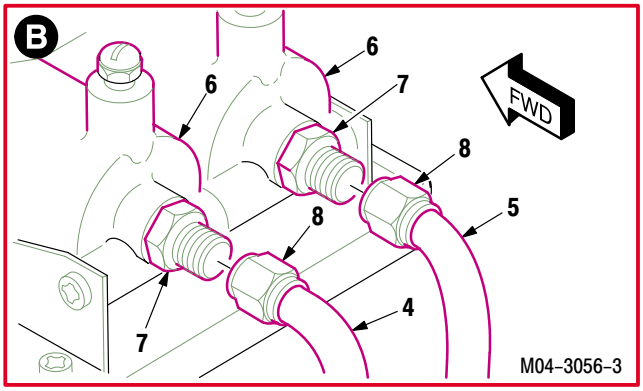
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3.62. BRAKE CONTROL VALVES REMOVAL/INSTALLATION – continued

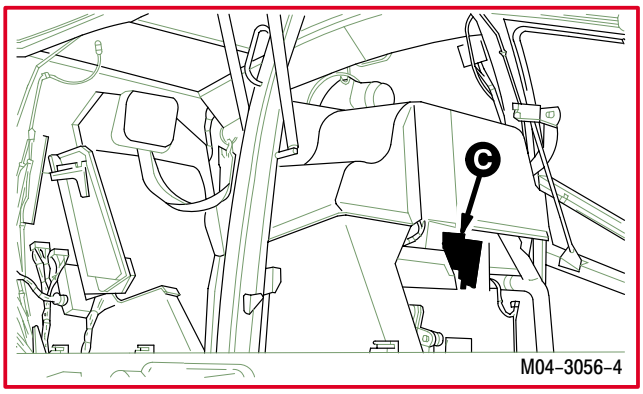
c. **Remove tubes (4) and (5) from brake control valves (6).**

(1) Hold boss nipples (7). Remove tube coupling nuts (8).

(2) Remove tubes (4) and (5) from valves (6).



d. **Enter CPG station** (para 1.56)**. Observe all safety precautions.**



e. **Remove two loop clamps (9) from nonmetalic hose assemblies (10) and angle bracket (11).**

(1) Hold two screws (12). Remove nuts (13).

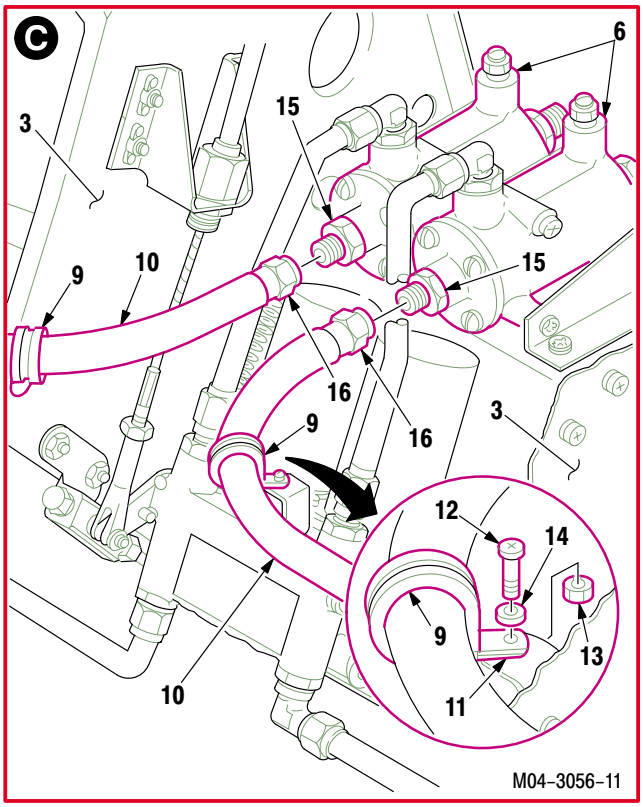
(2) Remove two screws (12) and washers (14).

(3) Remove clamps (9) from hoses (10) and bracket (11).

f. **Remove two nonmetalic hose assemblies (10) from boss nipples (15).**

(1) Hold two nipples (15). Remove hose nuts (16).

(2) Remove hoses (10) from nipples (15).



GO TO NEXT PAGE

3.62. BRAKE CONTROL VALVES REMOVAL/INSTALLATION – continued

g. **Remove tubes (17) and (18) from tube rotary direct valve (19) and valves (6).**

(1) Hold two tube nipples (20). Remove tube coupling nuts (21).

(2) Remove two tube coupling nuts (22) from two tube elbows (23).

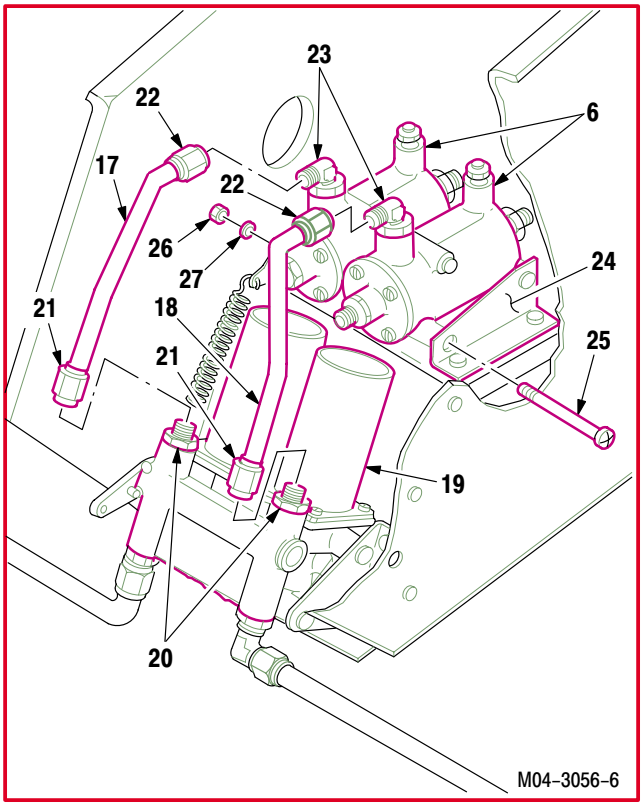
(3) Remove tubes (17) and (18) from valves (19) and (6).

h. **Remove two valves (6) from bracket (24).**

(1) Hold two screws (25). Remove two self-locking nuts (26) and washers (27).

(2) Remove two screws (25).

(3) Remove two valves (6) from bracket (24).



NOTE

Perform step i if replacing valve.

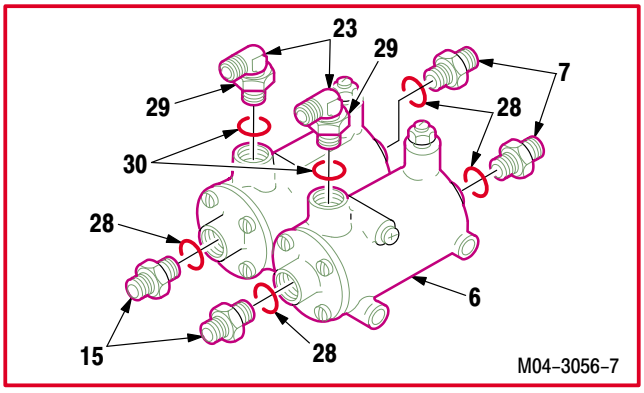
i. **Remove nipples (7) and (15) and elbows (23) from valves (6).**

(1) Remove two nipples (7) and (15).

(2) Remove and discard four packings (28).

(3) Loosen two nuts (29). Remove two elbows (23).

(4) Remove and discard two packings (30).



3.62.4. Cleaning

a. **Clean removed and attaching parts** (para 1.47)**.**

GO TO NEXT PAGE

3.62. BRAKE CONTROL VALVES REMOVAL/INSTALLATION – continued

3.62.5. Inspection

a. **Check removed and attaching parts for corrosion** (para 1.49)**.**

b. **Check removed and attaching parts for scratches** (para 3.53)**.**

c. **Check valves for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

3.62.6. Installation



a. **Lubricate all fittings, tubes, hose nuts, and packings before installation.** Use hydraulic fluid (item 93, App F).

NOTE

If fittings are not installed on valve, start with step b. If fittings are installed, start with step c.

b. **Install nipples (7) and (15) and elbow (23) on valve (6).**

(1) Install four new packings (28) on two nipples (7) and (15).

(2) Install two new packings (30) on elbows (23).

(3) Install nipples (7) and (15) in ports (31) of valves (6).

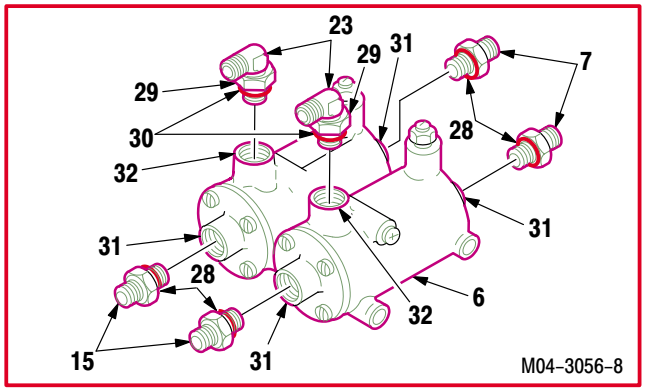
(4) Install two elbows (23) in ports (32). Do not tighten nuts (29) of valves (6).

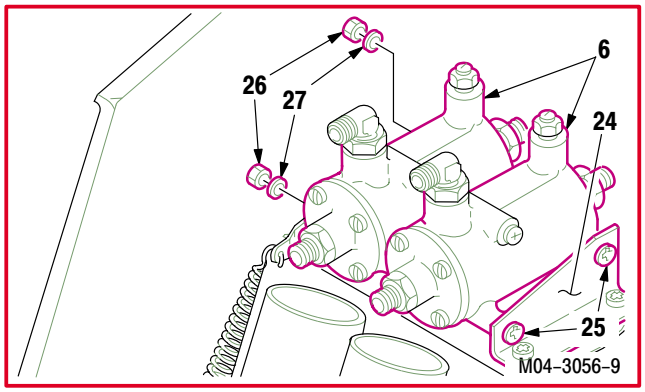
c. **Install two valves (6) on bracket (24).**

(1) Aline two valves (6) with bracket (24).

(2) Install two screws (25) through bracket (24) and two valves (6).

(3) Hold two screws (25). Install washers (27) and nuts (26).





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3.62. BRAKE CONTROL VALVES REMOVAL/INSTALLATION – continued

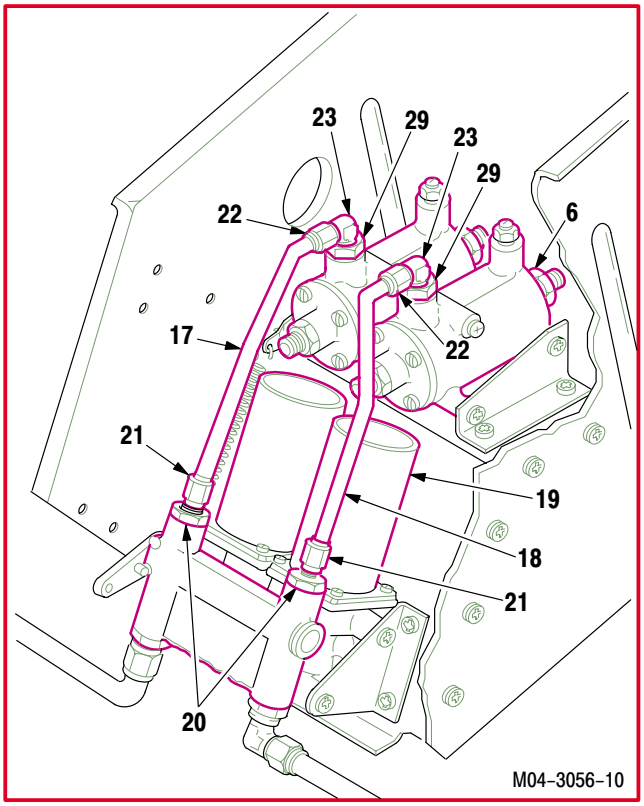
d. **Install tubes (17) and (18) on valves (6) and (19).**

(1) Install two nuts (22) on elbows (23).

(2) Hold two elbows (23). Tighten nuts (22) and (29).

(3) Install two nuts (21) on nipples (20).

(4) Hold two nipples (20). Tighten nuts (21).



e. **Install two hoses (10) on valves (6).**

(1) Install two nuts (16) on nipples (15).

(2) Hold two nipples (15). Tighten nuts (16).

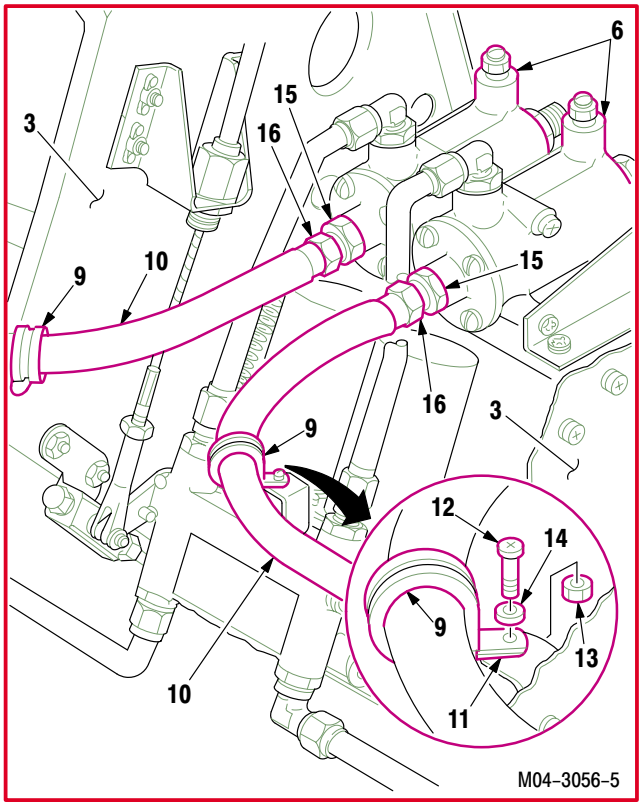
f. **Install two clamps (9) on hoses (10) and brackets (11).**

(1) Install two clamps (9) on hoses (10).

(2) Aline two clamps (9) on bracket (11) holes.

(3) Install two screws (12) through washers (14), clamps (9), and brackets (11).

(4) Install two nuts (13) on screws (12).



GO TO NEXT PAGE

3.62. BRAKE CONTROL VALVES REMOVAL/INSTALLATION – continued

g. **Enter pilot station** (para 1.56)**. Observe all safety precautions.**

h. **Install tubes (4) and (5) on valves (6).**

(1) Install tubes (4) and (5) on nipples (7).

(2) Hold nipples (7). Tighten nuts (8).

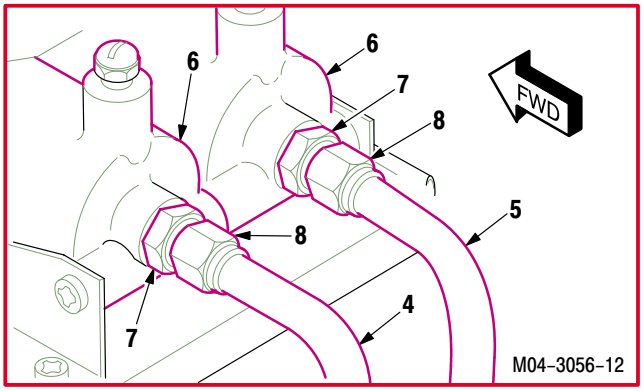
i. **Bleed brake system** (para 1.45)**.**

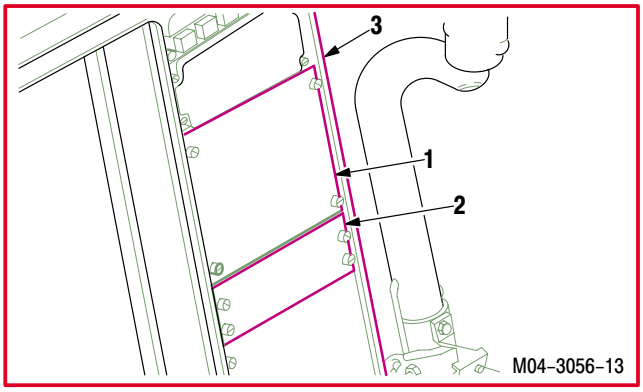
j. **Inspect (QA).**

k. **Install panels (1) and (2) on console (3).**

l. **Secure CPG seat** (para 2.161)**.**

m. **Perform main landing gear maintenance operational check** (TM 1-1520-238-T)**.**





END OF TASK

3.63. BRAKE CONTROL VALVES INTERNAL LEAKAGE REPAIR AND TEST (AVIM)

3.63.1. Description

This task covers: Disassembly. Cleaning. Inspection. Repair. Assembly. Test.

3.63.2. Initial Setup

Tools:

Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
0.000 - 6.000-inch outside micrometer caliper set (item 52, App H)
Industrial faceshield (item 129, App H)
0.400 - 0.500-inch small hole gage (item 151, App H)
Chemical protective gloves (item 154, App H)
0 - 25 pound spring resiliency tester (item 353, App H)
Portable hydraulic test stand (item 358, App H)
0 - 30 inch-pound 1/4-inch drive dial indicator torque wrench (item 445, App H)

Materials/Parts:

Cap disk
Packing (2)
Cloth (item 50, App F)
Hydraulic fluid (item 93, App F)
Lapping and grinding compound (item 107, App F)
Lapping and grinding compound (item 108, App F)
Wire (item 226, App F)

Personnel Required:

68H Aircraft Pneudraulics Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

3.63.3. Disassembly

WARNING

Brake control valve is spring loaded. Remove valve cap carefully to prevent injury. If injury to personnel occurs, seek medical aid.

a. **Remove valve cap (1) from brake control valve (2).**

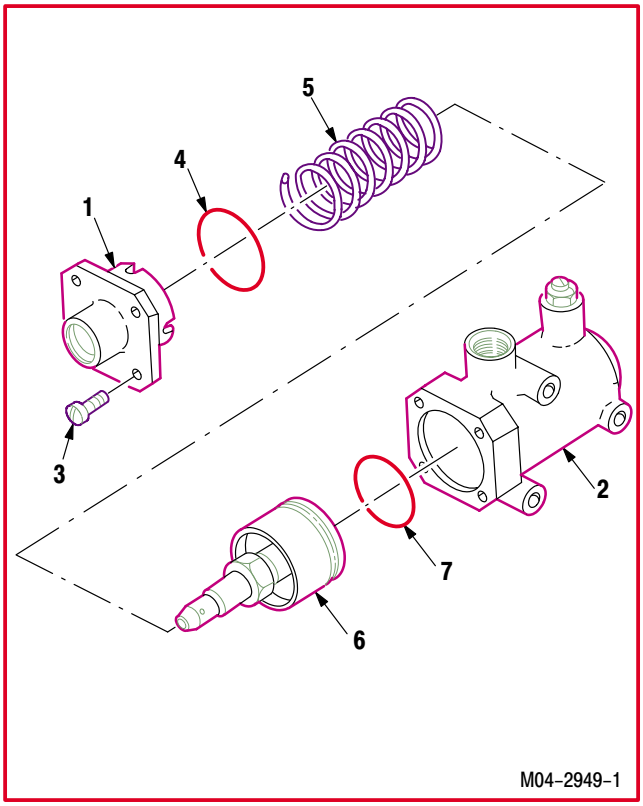
(1) Remove lockwire from four screws (3).

(2) Remove four screws (3) from cap (1).

(3) Remove cap (1) and packing (4) from valve (2). Discard packing (4).

(4) Remove compressed helical spring (5) from hydraulic brake piston (6).

(5) Remove piston (6) and packing (7) from valve (2). Discard packing (7).



GO TO NEXT PAGE

3.63. BRAKE CONTROL VALVES INTERNAL LEAKAGE REPAIR AND TEST (AVIM) – continued

WARNING

Piston is spring loaded. Remove cap carefully to prevent injury to personnel. If injury occurs, seek medical aid.

b. **Disassemble piston (6).**

(1) Hold piston (6). Remove hydraulic valve cap (8).

(2) Remove disk (10), valve poppet (9), and compressed helical spring (11) from piston (6).

(3) Discard disk (10).

c. **Remove hydraulic bleeder valve (12) from valve (2).**

(1) Hold valve (12). Remove screw (13) and lock washer (14).

(2) Remove bleeder valve (12) from valve (2).

3.63.4. Cleaning

a. **Clean valve and valve components** (para 1.47)**.**

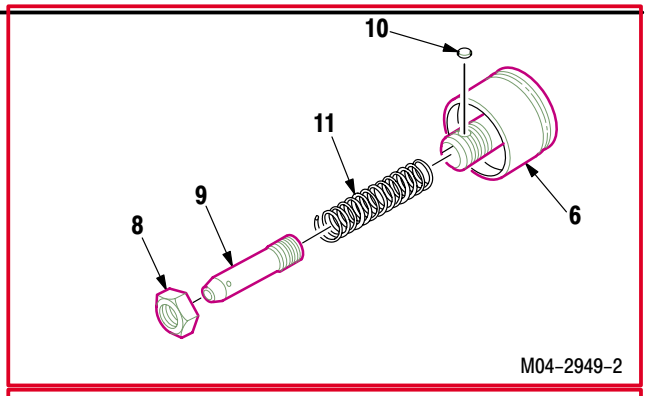
3.63.5. Inspection

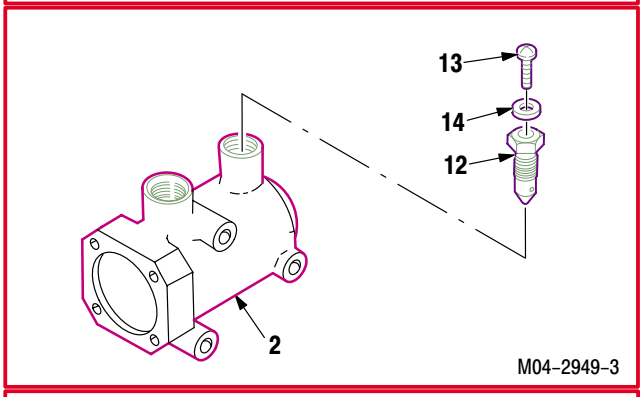
a. **Check poppet seating surface on cap for nicks and scratches.** None allowed.

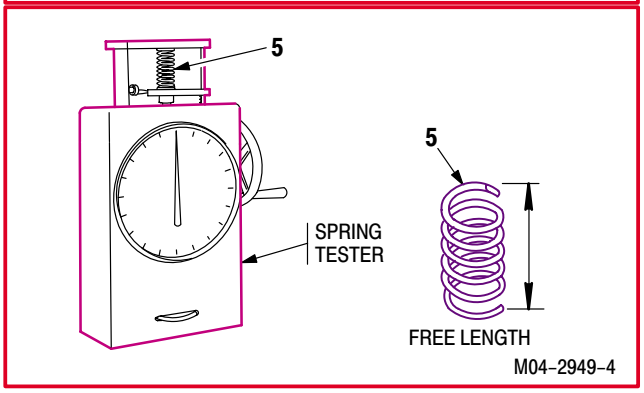
b. **Check that diameter of piston is not less than 1.497 INCHES and piston bore is not more than 0.406 INCHES.** Use caliper set and small hole gage.

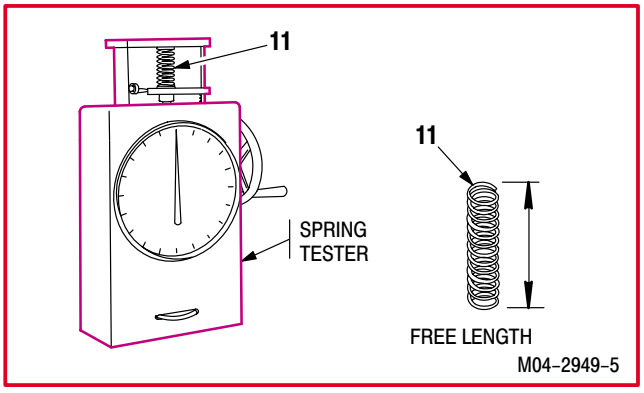
c. **Check spring (5) and spring (11) for free length, compressed length, and load with spring tester (Table I).** Use spring tester.

d. **Check piston and valve for corrosion** (para 1.49)**.**









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3.63. BRAKE CONTROL VALVES INTERNAL LEAKAGE REPAIR AND TEST (AVIM)

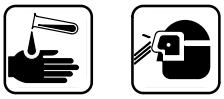
Table I. Spring Test Data

Part No.	Free Length (INCHES)	Compressed Length (INCHES)	Load (POUND)
5	--	**2.000**	**9 to 11**
11	**2.19 to 2.25**	**0.500**	**1.14 to 1.34**

Table II. Surface Finish Requirements

Part No.	Nomenclature	Surface	Max. Surface Roughness (MICRO INCHES, RMS)
1	Cap	Valve seat	**16**
		Packing groove	**32**
9	Poppet	Major OD	**16**
		ID	**8**
6	Piston	Major OD	**16**
		Packing grove	**32**
2	Valve body	ID	**8**

3.63.6. Repair



a. **Repair transfer valve by polishing poppet.** Use cloth (item 50, App F).

b. **Repair transfer valve by lapping poppet to seating surface of cap.** Use lapping and grinding compound (item 107, App F) and lapping and grinding compound (item 108, App F). Clean cap and poppet after lapping (para 1.47).

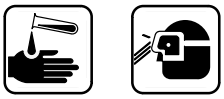
c. **Replace poppet and seat which do not meet finish requirements after polishing or lapping (Table II).**

d. **Replace cap disk and packings each time brake control valve is disassembled.**

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3.63. BRAKE CONTROL VALVES INTERNAL LEAKAGE REPAIR AND TEST (AVIM) – continued

3.63.7. Assembly



a. **Assemble piston (6).**

(1) Install spring (11) into piston (6) bore with head of piston (6) down.

(2) Install poppet (9) over spring (11).

(3) Install cap (8) over poppet (9).

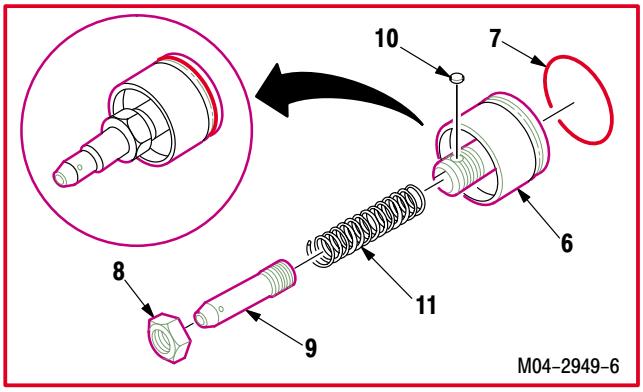
(4) Push down on poppet (9) and spring (11) to install disk (10) into piston (6).

(5) Install new disk (10) into piston (6).

(6) Hold piston (6). Install cap (8) on piston (6) until it bottoms.

(7) Lubricate new packing (7). Use hydraulic fluid (item 93, App F).

(8) Install packing (7) on piston (6).



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3.63. BRAKE CONTROL VALVES INTERNAL LEAKAGE REPAIR AND TEST (AVIM) – continued

b. **Install piston (6) in valve (2).**

(1) Lubricate valve (2) bore. Use hydraulic fluid (item 93, App F).

(2) Install piston (6) in valve (2).

c. **Install spring (5) over piston (6).**

d. **Install new packing (4) on cap (1).**

(1) Lubricate new packing (4). Use hydraulic fluid (item 93, App F).

(2) Install packing (4) on cap (1).

e. **Install cap (1) on valve (2).** Torque screws (3) to **21 INCH-POUNDS**.

(1) Push in on cap (1) and aline with valve (2) holes.

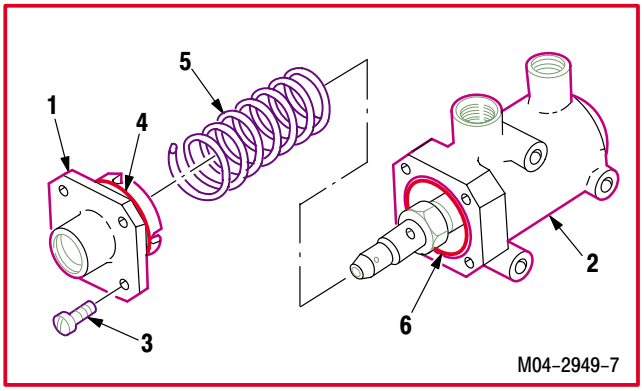
(2) Install four screws (3) in valve (2). Torque screws (3) to **21 INCH-POUNDS**. Use torque wrench.

f. **Install bleeder valve (12) in valve (2).**

(1) Install bleeder valve (12) in valve (2).

(2) Install washer (14) and screw (13) in bleeder valve (12).

g. **Inspect (QA).**

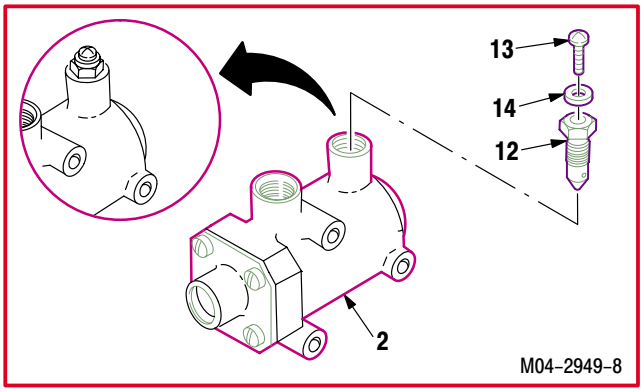


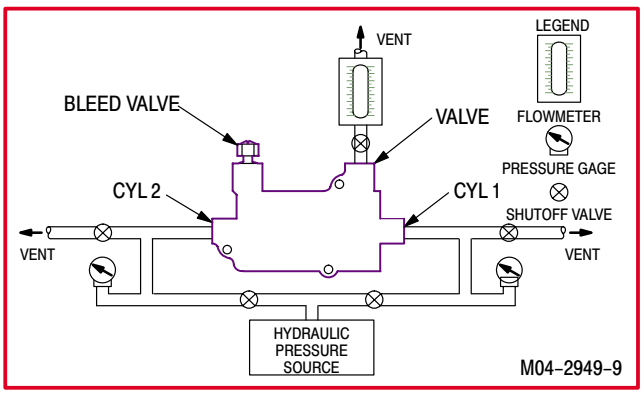
3.63.8. Test

NOTE

Hydraulic fluid shall be from 70 to 110 °F (21 to 43 °C).

a. **Install brake control valve to hydraulic test stand and perform test (Table III).** Use hydraulic fluid (item 93, App F).





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3.63. BRAKE CONTROL VALVES INTERNAL LEAKAGE REPAIR AND TEST (AVIM) – continued

Table III. Test

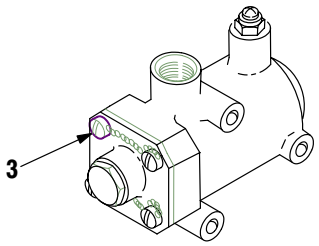
Test For	Pressure Applied to Port	Pressure (psig)	Plug Port	Requirements
Proof	CYL 1	2250	Brake	Bleed air from valve by first permitting flow through VALVE port. Cap VALVE port. Hold pressure **3 MINUTES**. Internal leakage from CYL 2 port is not allowed.
	CYL 2	2250	-	Purge air from valve by applying low pressure to CYL 2 port. Bleed fluid through bleeder valve. Close bleeder valve. Increase and hold pressure **3 MINUTES**. External leakage from CYL 1 port is not allowed.
Poppet relieving pressure	CYL 2	100	-	With pressure applied to CYL 2 port and other ports vented, apply pressure to CYL 1 port. Gradually increase pressure flow of **20 CC/MINUTE** until poppet pressure is relieved. Pressure required at CYL 1 port to unseat poppet shall not be more than 30 psig.
Internal leakage	CYL 2	5 500 1200	-	Hold each pressure **3 MINUTES**. Leakage from the CYL 1 or VALVE ports is not allowed.
		10 500 1200	Valve	Fill VALVE port with fluid. Cap VALVE port. Apply each pressure **3 MINUTES**. Leakage from CYL 1 port shall not be more than 1 drop per minute at any pressure.
Maximum actuation pressure	CYL 2	See requirements	-	Slowly apply pressure with CYL 1 and VALVE ports vented. Observe pressure required to start piston movement. Pressure required shall not be more than 12 psig. (Movement can be observed by placing a nylon rod against end of poppet through CYL 1 port.)

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3.63. BRAKE CONTROL VALVES INTERNAL LEAKAGE REPAIR AND TEST (AVIM) – continued

b. **Lockwire four screws (3) together in pairs.** Use wire (item 226, App F).

c. **Inspect (QA).**



M04–2949–10

END OF TASK

3.64. BRAKE CONTROL VALVES BRACKET ASSEMBLY REMOVAL/INSTALLATION

3.64.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.64.2. Initial Setup

Tools:

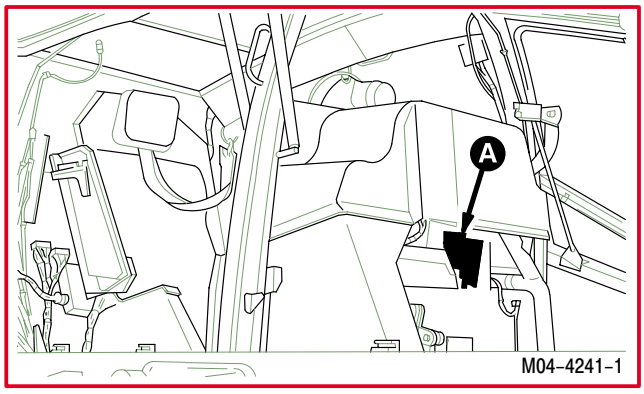
Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.60	Parking brake rotary direct valve removed
3.62	Brake control valves removed



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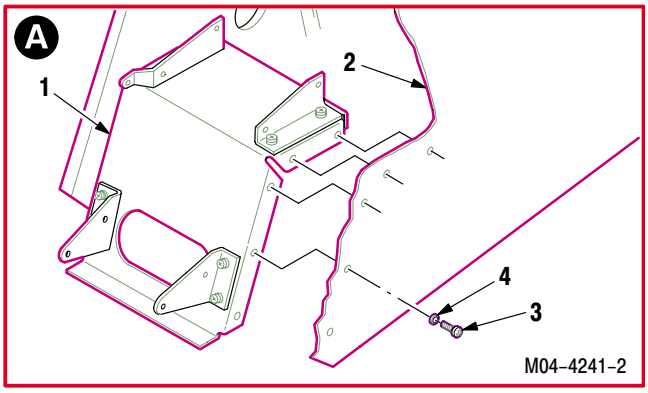
3.64. BRAKE CONTROL VALVES BRACKET ASSEMBLY REMOVAL/INSTALLATION – continued

3.64.3. Removal

a. **Remove bracket assembly (1) from center console panel (2).**

(1) Remove nine screws (3) and washers (4).

(2) Remove bracket (1) from console (2).



3.64.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.64.5. Inspection

a. **Check for loose, missing, or damaged mounting hardware** (para 3.53)**.**

3.64.6. Installation

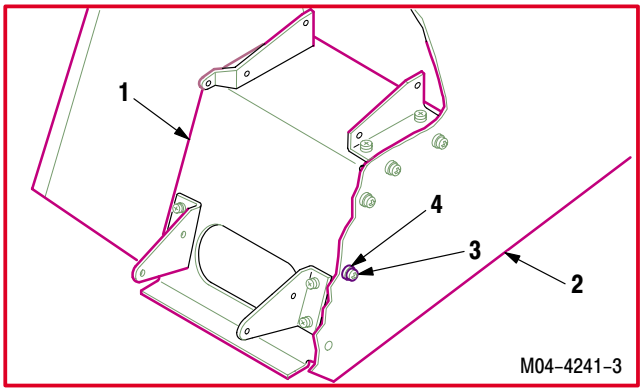
a. **Install bracket (1) on console (2).**

(1) Install nine screws (3) and washers (4).

b. **Inspect (QA).**

c. **Install brake control valves** (para 3.62)**.**

d. **Install parking brake rotary direct valve** (para 3.60)**.**



END OF TASK

3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN)

3.65.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.65.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
0.000 - 6.000-inch outside micrometer caliper set (item 52, App H)
Industrial faceshield (item 129, App H)
0 - 18-inch height gage (item 149, App H)
Chemical protective gloves (item 154, App H)
14-quart utility pail (item 222, App H)
10 x 12-inch surface plate (item 226, App H)
Adjustable air filtering respirator (item 262, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)
0 - 600 inch-pound 3/8-inch drive dial indicator torque wrench (item 447, App H)

Personnel Required:

67R Attack Helicopter Repairer
68H Aircraft Pneudraulics Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T
TM 1-1520-264-23

Materials/Parts:

Packing (6)
Packing retainer (3)
Antiseize compound (item 27, App F)
Cloth (item 52, App F)
Corrosion preventive compound (item 62A, App F)
Hydraulic fluid (item 93, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.6	Main landing gear wheel and tire removed
1.61	Parking brakes released

WARNING

FLIGHT SAFETY PART

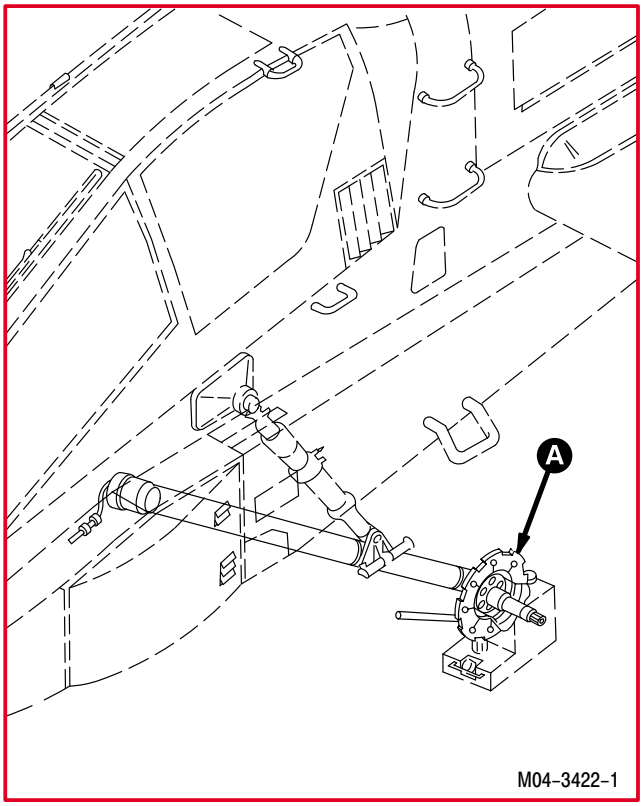
The landing gear and/or components of the landing gear are flight safety parts. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

CAUTION

Main wheel brake assembly parts (bolts, nuts, friction linings, and disks) manufactured by one company cannot be used or intermixed with brake assembly manufactured by a different company.

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3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued



NOTE

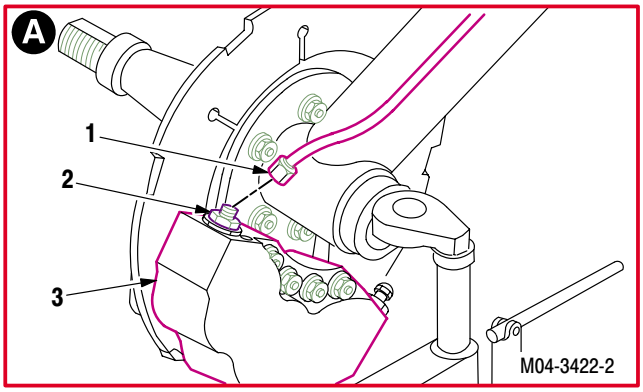
This task typical for left and/or right main wheel brakes.

3.65.3. Removal

a. **Remove hose nut (1) from boss nipple (2) installed in cylinder assembly (3).**

(1) Hold nipple (2). Remove hose nut (1).

(2) Use pail to catch hydraulic fluid spills.



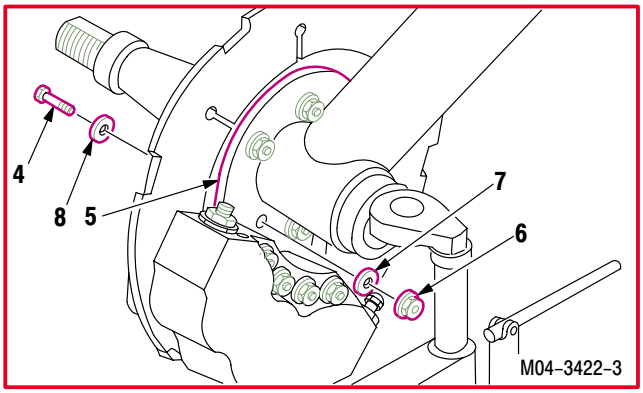
NOTE

- If brake disk is to be replaced, perform steps b. thru d. If friction lining is to be replaced, perform steps b., c., e., and g.
- When recessed washers are used, eight washers shall be removed with bolt. When flat washers are used (Goodyear only), 16 flat washers shall be removed with bolt and nut.

b. **Remove eight shear bolts (4) from trailing arm flange (5).**

(1) Hold eight bolts (4). Remove eight self-locking nuts (6) and washers (7).

(2) Remove eight bolts (4) and recessed washers (8).



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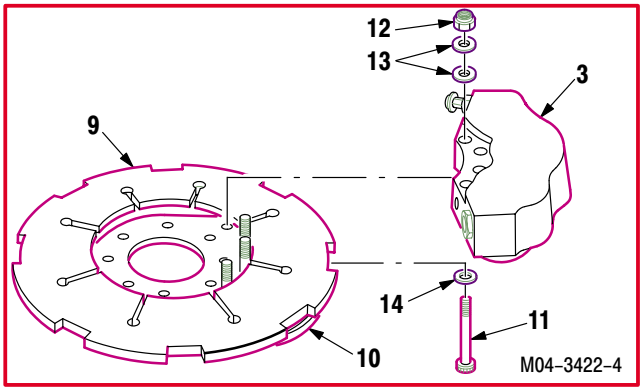
3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

c. **Remove brake disk (9) from brake backing plate (10).**

(1) Hold four shear bolts (11). Remove self-locking nuts (12) and eight washers (13).

(2) Remove four bolts (11) and recessed washers (14).

(3) Separate disk (9) from plate (10).



d. **Remove boss nipple (2) from fluid flow restrictor (15) in cylinder assembly (3).**

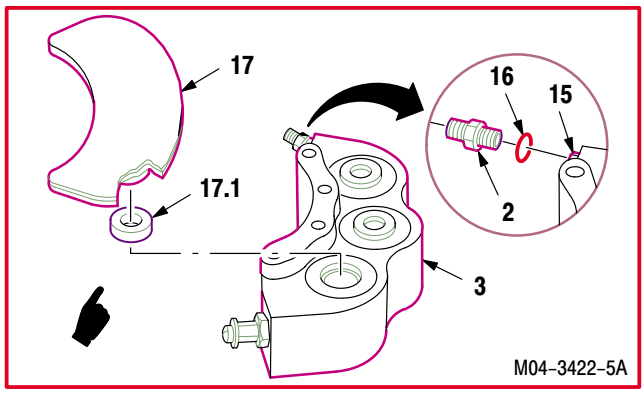
(1) Hold restrictor (15). Remove nipple (2).

(2) Remove and discard packing (16).

e. **Remove friction lining (17) from cylinder assembly (3).**

(1) Insert screwdriver between lining (17) and cylinder assembly (3).

(2) Remove lining (17) from cylinder assembly (3).

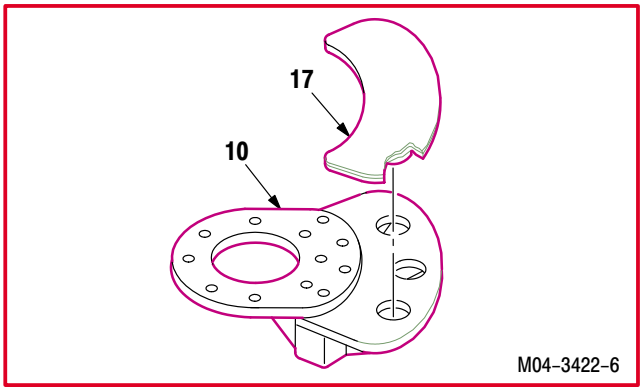


f. **Remove three piston insulators (17.1) from cylinder assembly (3).**

g. **Remove friction lining (17) from brake backing plate (10).**

(1) Insert screwdriver between lining (17) and plate (10).

(2) Remove lining (17) from plate (10).



3.65.4. Cleaning

a. **Clean cylinder assembly, nipple, and trailing arm attachment area** (para 1.47)**.**

b. **Wipe remaining parts with a clean rag.**

GO TO NEXT PAGE

3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

3.65.5. Inspection

NOTE

Disk discoloration caused by heat is acceptable.

a. **Check flange, disk, plate, linings, piston insulators and cylinder assembly for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

b. **Check flange, disk, plate, linings, and cylinder assembly for corrosion** (para 1.49)**.**

c. **Check disk for dishing.** Use surface plate and height gage.

(1) If disk is dished in excess of **0.060 INCH**, replace disk.

d. **Check disk for wear.** Use caliper set.

(1) If disk is less than **0.120 INCH** thick, replace disk.

e. **Check piston insulators for wear.** Use caliper set.

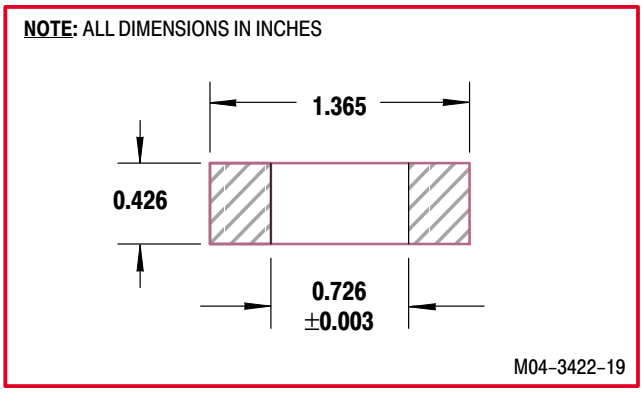
(1) If ID is less than **0.723 INCH**, or greater than **0.729 INCH**, replace insulator.

(2) If OD is less than **1.365 INCH**, replace insulator.

(3) If height is less than **0.426 INCH**, replace insulator.

f. **Check linings.** Use caliper set.

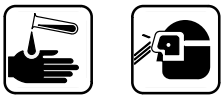
(1) If linings are less than **0.160 INCH** thick or overheating is evident, replace linings.



GO TO NEXT PAGE

3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

3.65.6. Repair



a. **Repair cylinder assembly (3) by replacing packings (18) and packing retainers (19) installed on hydraulic brake pistons (20).**

(1) Remove three pistons (20) from cylinder assembly (3).

(2) Remove and discard three packings (18) and packing retainers (19) from pistons (20).

(3) Clean pistons (20) and cylinder assembly (3) mounting area. Use cloth (item 52, App F) and hydraulic fluid (item 93, App F).

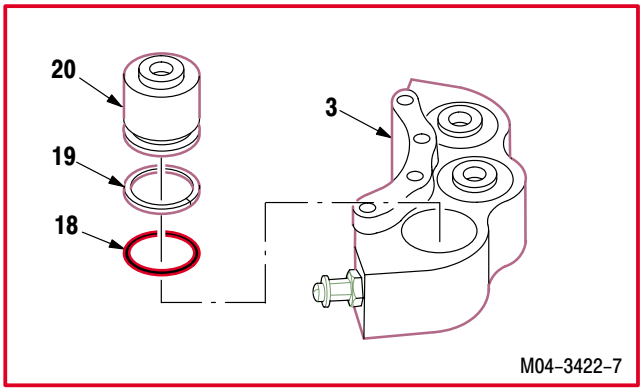
(4) Check pistons (20) for cracks and separation. None allowed.

(5) Check pistons (20) for corrosion (para 1.49).

(6) Lubricate new packings (18) and retainers (19). Use hydraulic fluid (item 93, App F).

(7) Install three new packings (18) and retainers (19) on pistons (20).

(8) Install pistons (20) in cylinder assembly (3). Fully seat pistons (20).



b. **Inspect (QA).**

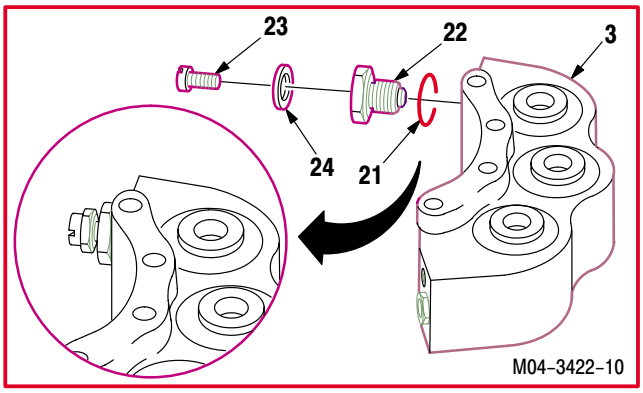
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3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

NOTE

Bleeder valve and restrictor are interchangeable to provide for left and right brake installation.

c. **Repair cylinder assembly (3) by replacing packing (21) installed on hydraulic bleeder valve (22).**



(1) Hold valve (22). Remove screw (23) and washer (24).

(2) Remove valve (22) and packing (21) from cylinder assembly (3). Discard packing (21).

(3) Check valve (22) for cracks or stripped threads. None allowed.

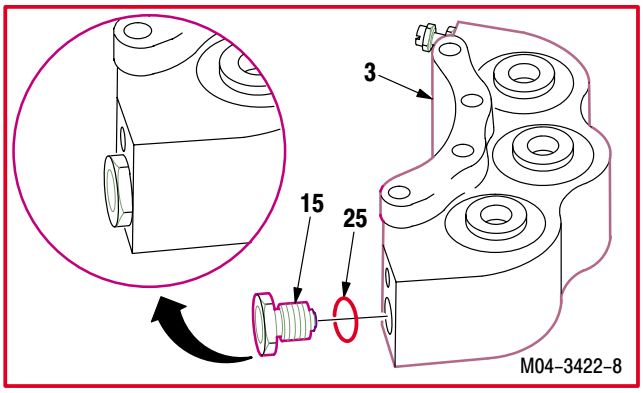
(4) Lubricate new packing (21) and valve (22). Use hydraulic fluid (item 93, App F).

(5) Install new packing (21) on valve (22).

(6) Install valve (22) in cylinder assembly (3).

(7) Hold valve (22). Install screw (23) and washer (24).

d. **Repair cylinder assembly (3) by replacing packing (25) installed on restrictor (15).**



(1) Remove restrictor (15) and packing (25) from cylinder assembly (3). Discard packing (25).

(2) Check restrictor (15) for cracks and stripped threads. None allowed.

(3) Lubricate new packing (25) and restrictor (15). Use hydraulic fluid (item 93, App F).

(4) Install packing (25) on restrictor (15).

(5) Install restrictor (15) in cylinder assembly (3).

GO TO NEXT PAGE

3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

3.65.7. Installation

WARNING

FLIGHT SAFETY PART

Specified torque for nipple is critical. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

NOTE

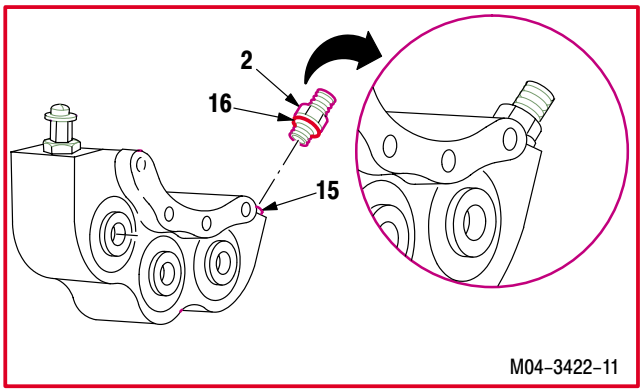
If replacement wheel brake is to be installed, perform steps a. thru s. If friction linings are to be installed, perform steps b. thru s.

a. **Install nipple (2) in restrictor (15).** Torque nipple (2) to **135 INCH-POUNDS**.

(1) Lubricate new packing (16) and nipple (2). Use hydraulic fluid (item 93, App F).

(2) Hold restrictor (15). Install nipple (2) in restrictor (15).

(3) Torque nipple (2) to **135 INCH-POUNDS**. Use torque wrench.



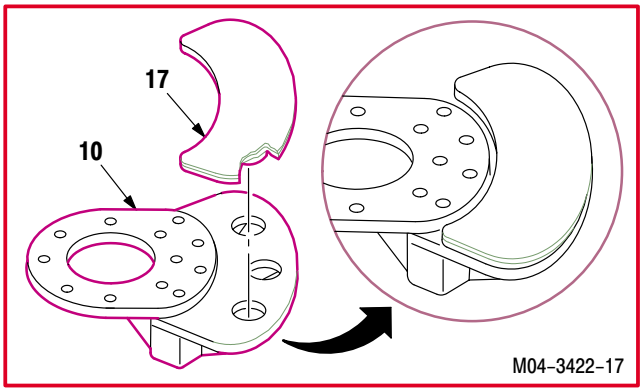
NOTE

Ensure linings are fully seated.

b. **Install new lining (17) on plate (10).**

(1) Aline three lining (17) locating pins with three holes in plate (10).

(2) Install new lining (17) on plate (10).



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3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

c. **Install three piston insulators (17.1) on cylinder assembly (3).**

d. **Install new lining (17) on cylinder assembly (3).**

(1) Aline three lining (17) locating pins with holes in three pistons (20).

(2) Install new lining (17) on cylinder assembly (3).

e. **Inspect (QA).**

f. **Position and support disk (9) on lining (17) of plate (10).**



g. **Lubricate eight washers (13), four washers (14), and four nuts (12).** Use antiseize compound (item 27, App F).

h. **Install four bolts (11) and washers (14) through plate (10).**

NOTE

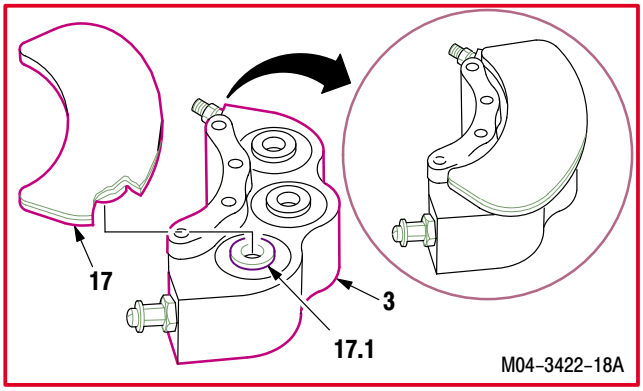
Minimum of 1.5 exposed threads to be maintained between bolt chamfer and top of nut. Removal of one washer is permitted to maintain 1.5 threads provided that bolt shank out does not occur.

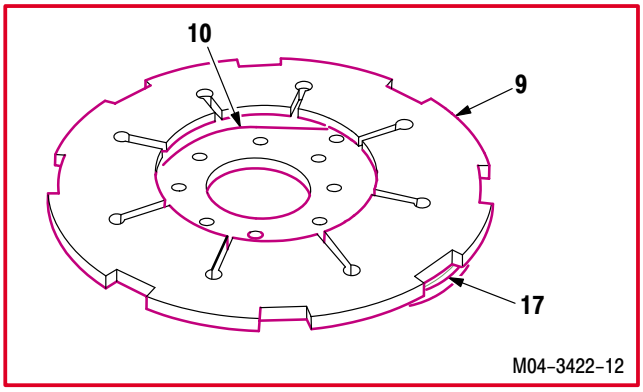
i. **Install cylinder assembly (3) on four bolts (11).** Torque nuts (12) to **300 INCH-POUNDS**.

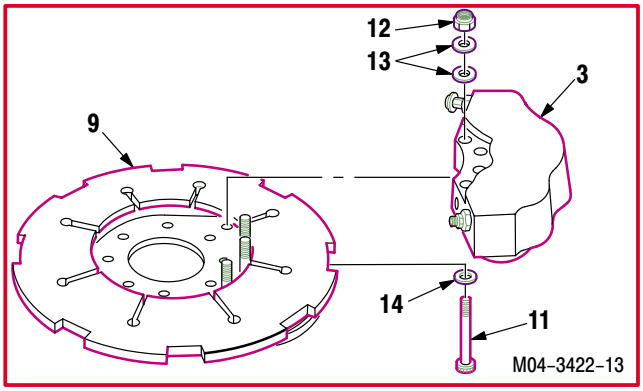
(1) Aline and install cylinder assembly (3) on four bolts (11).

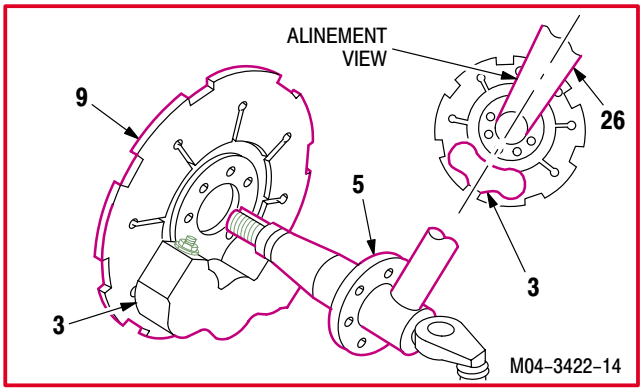
(2) Hold four bolts (11). Install eight washers (13) and four nuts (12). Torque nuts (12) to **300 INCH-POUNDS**. Use torque wrench.

j. **Position disk (9) on flange (5) with center of outer trailing arm (26) alined with center of cylinder assembly (3).**









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3.65. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (PARKER-HANNIFIN) – continued

k. **Aline bolt holes in plate (10) with bolt holes in flange (5).**

l. **Install eight bolts (4).** Torque bolts (4) to **360 INCH-POUNDS**.

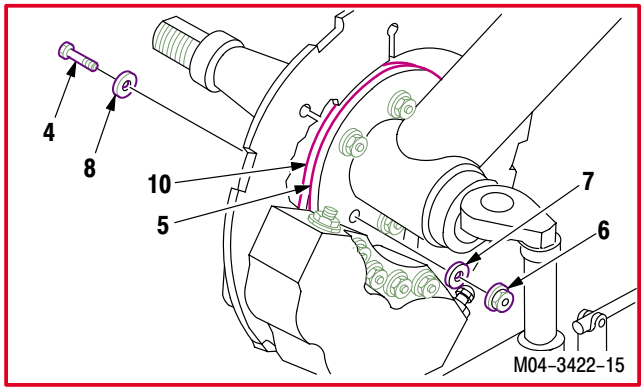
NOTE

Ensure recessed side of washers are installed against bolt heads.

(1) Install eight bolts (4) and washers (8) through plate (10) and flange (5).

(2) Hold eight bolts (4). Install washers (7) and nuts (6).

(3) Hold eight nuts (6). Torque bolts (4) to **360 INCH-POUNDS**. Use torque wrench.





m. **Apply corrosion preventive compound on bolts (4), nuts (6), washers (7), and washers (8).** Use corrosion preventive compound (item 62A, App F).

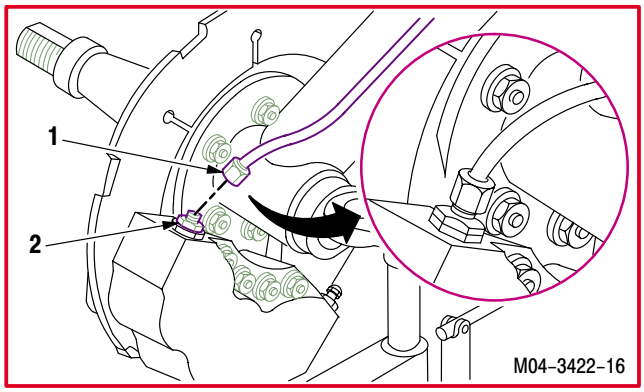
NOTE

If solid brake system tube is installed, replace with flexible tube (para 3.69).

n. **Install hose nut (1) on nipple (2).** Torque nut (1) to **120 INCH-POUNDS**.

(1) Hold nipple (2). Install nut (1).

(2) Hold nipple (2). Torque nut (1) to **120 INCH-POUNDS**. Use torque wrench.



o. **Inspect (QA).**

p. **Install main landing gear wheel and tire** (para 3.6)**.**

q. **Bleed brake system** (para 1.45)**.**

r. **Set parking brakes** (para 1.61)**.**

s. **Perform main landing gear maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC)

3.66.1. Description

This task covers: Removal. Cleaning. Inspection. Repair. Installation.

3.66.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
0.000 - 6.000-inch outside micrometer caliper set (item 52, App H)
Industrial faceshield (item 129, App H)
0 - 18-inch height gage (item 149, App H)
Chemical protective gloves (item 154, App H)
10 x 12-inch surface plate (item 226, App H)
14-quart utility pail (item 222, App H)
0 - 5-inch spanner wrench set (item 427, App H)
0 - 300 inch-pound 3/8-inch drive click type torque wrench (item 439, App H)
0 - 600 inch-pound 3/8-inch drive dial indicator torque wrench (item 447, App H)

Personnel Required:

67R Attack Helicopter Repairer
68H Aircraft Pneudraulics Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

References:

TM 1-1520-238-T
TM 1-1520-264-23

Materials/Parts:

Packing (7)
Retainer (3)
Cloth (item 52, App F)
Corrosion preventive compound (item 62A, App F)
Hydraulic fluid (item 93, App F)
Wire (item 224, App F)

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
3.6	Main landing gear wheel and tire removed
1.61	Parking brakes released

WARNING

FLIGHT SAFETY PART

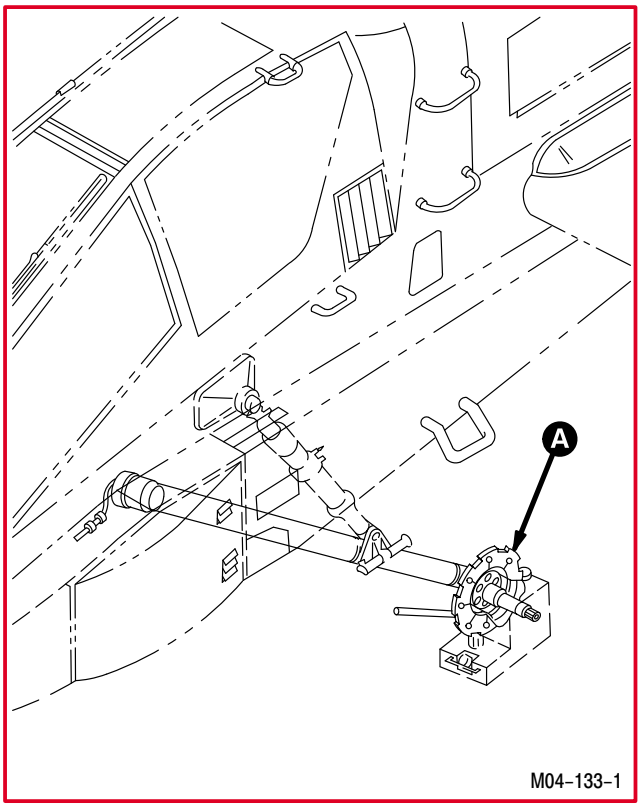
The landing gear and/or components of the landing gear are flight safety parts. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

CAUTION

Main wheel brake assembly parts (bolts, nuts, friction linings, and disks) manufactured by one company cannot be used or intermixed with brake assembly manufactured by a different company.

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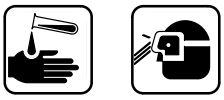
3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued



NOTE

This task is typical for left and/or right main wheel brakes.

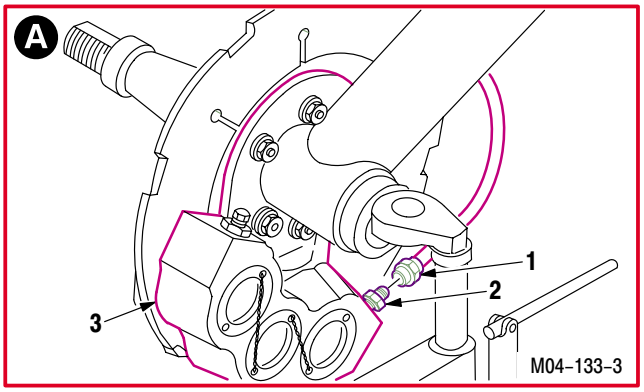
3.66.3. Removal



a. **Remove hose nut (1) from boss nipple (2) on subassembly housing (3).**

(1) Hold nipple (2). Remove nut (1).

(2) Use pail to catch hydraulic fluid spills.



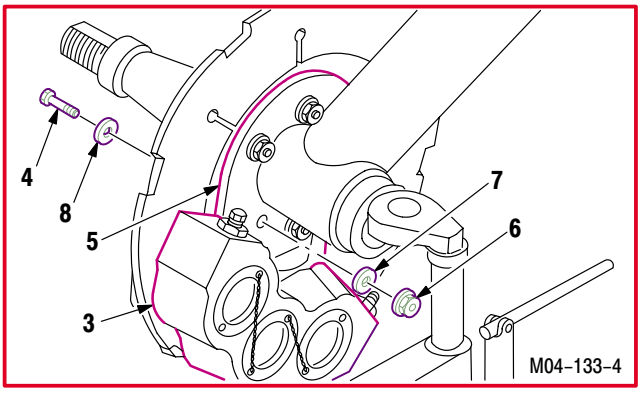
NOTE

If brake disk is being replaced, perform steps b. and c. If friction lining is to be replaced, perform steps b., c., and e.

b. **Remove eight shear bolts (4) from trailing arm flange (5).**

(1) Hold eight self-locking nuts (6). Remove eight bolts (4) and washers (7).

(2) Remove eight nuts (6) and recessed washers (8).



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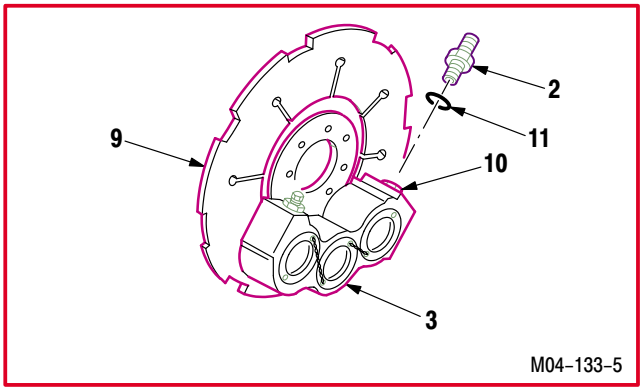
3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

c. **Remove disk (9) from housing (3).**

d. **Remove nipple (2) from screw thread insert (10) in housing (3).**

(1) Hold insert (10). Remove nipple (2).

(2) Remove and discard packing (11) from nipple (2).

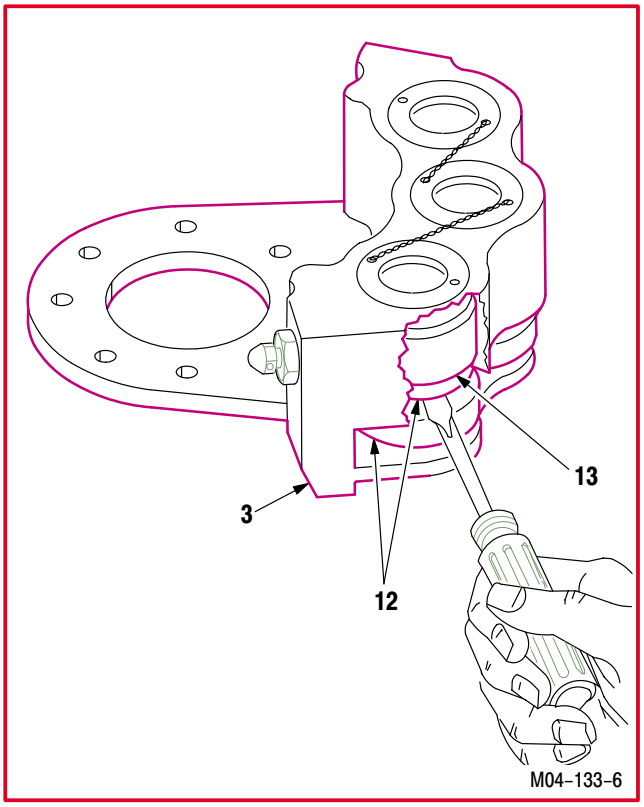


e. **Remove friction linings (12) from housing (3).**

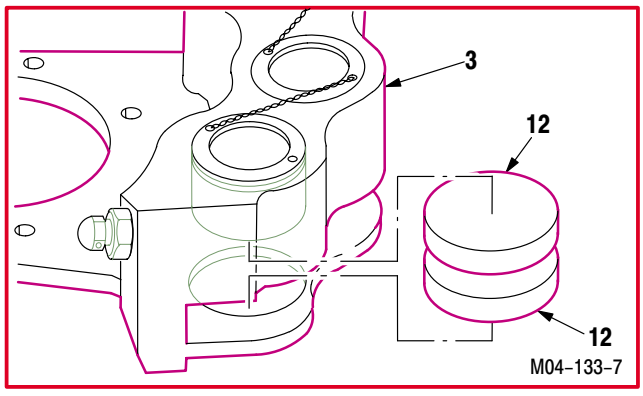
(1) Insert screwdriver between linings (12).

(2) Press lining (12) with screwdriver until brake assembly pistons (13) seat.

(3) Remove screwdriver.



(4) Remove linings (12) from housing (3).



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3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

3.66.4. Cleaning

a. **Clean cylinder assembly, nipple, and trailing arm attachment area** (para 1.47)**.**

b. **Wipe remaining parts with a clean rag.**

3.66.5. Inspection

NOTE

Disk discoloration caused by heat is acceptable.

a. **Check trailing arm attachment area, disk, linings, and housing for cracks.**

(1) If cracks are suspected, perform nondestructive inspection (TM 1-1520-264-23).

b. **Check trailing arm attachment area, disk, plate, linings, and cylinder assembly for corrosion** (para 1.49)**.**

c. **Check disk for dishing.** Use surface plate and height gage.

(1) If disk is dished in excess of **0.025 INCH**, replace disk.

d. **Check disk for wear.** Use micrometer caliper.

(1) If disk is less than **0.144 INCH** thick, replace disk.

e. **Check linings.** Use caliper set.

(1) If lining is less than **0.192 INCH** thick or overheating is evident, replace linings.

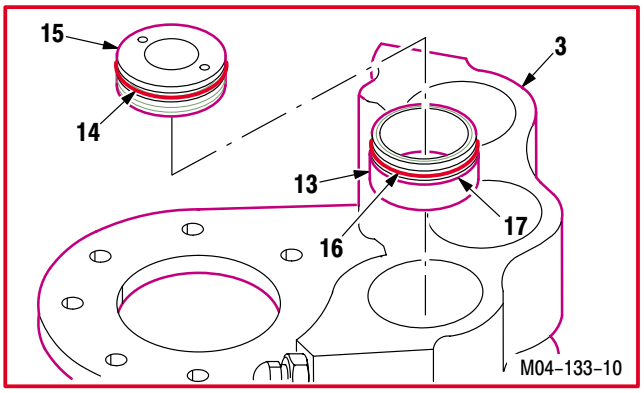
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3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

3.66.6. Repair



a. **Repair housing (3) by replacing packings (14) installed on brake cylinder heads (15); packings (16) and packing retainers (17) installed on pistons (13).**



(1) Remove lockwire from three heads (15).

(2) Remove three heads (15) from pistons (13). Use spanner wrench set.

(3) Remove and discard three packings (14) from heads (15).

(4) Remove three pistons (13) from housing (3).

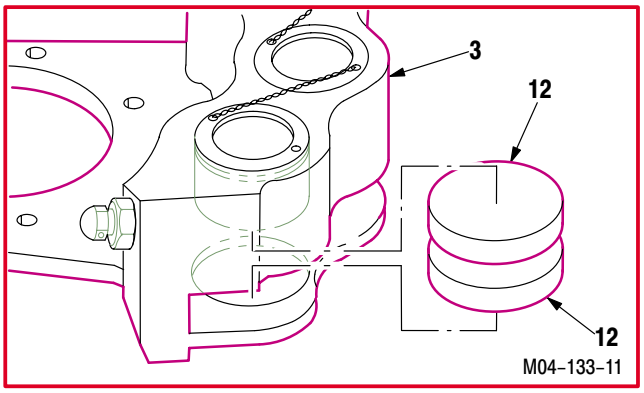
(5) Remove and discard three packings (16) and retainers (17) from pistons (13).

(6) Clean pistons (13) and housing (3) mounting area. Use cloth (item 52, App F) and hydraulic fluid (item 93, App F).

(7) Check heads (15) and pistons (13) for cracks and separation. None allowed.

(8) Check heads (15) and pistons (13) for corrosion (para 1.49).

(9) Lubricate new packings (14) and (16) and retainers (17). Use hydraulic fluid (item 93, App F).



(10) Install three new packings (16) and retainers (17) on pistons (13). If linings (12) were not removed, seat pistons (13) on installed linings (12).

(11) Install three new packings (14) on heads (15). Use spanner wrench set.

(12) Tighten heads (15) flush with housing (3).

(13) Lockwire heads (15) together. Use wire (item 224, App F).

GO TO NEXT PAGE

3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

b. **Inspect (QA).**

NOTE

Adapter bleeder valve and insert are interchangeable to provide for left and right brake installation.

c. **Repair housing (3) by replacing packing (18) installed on adapter bleeder valve (19).**

(1) Hold hydraulic bleeder valve (20). Remove screw (21) and washer (22).

(2) Hold adapter (19). Remove valve (20).

(3) Remove adapter (19) and packing (18) from housing (3). Discard packing (18).

(4) Check adapter (19) and valve (20) for cracks or stripped threads. None allowed.

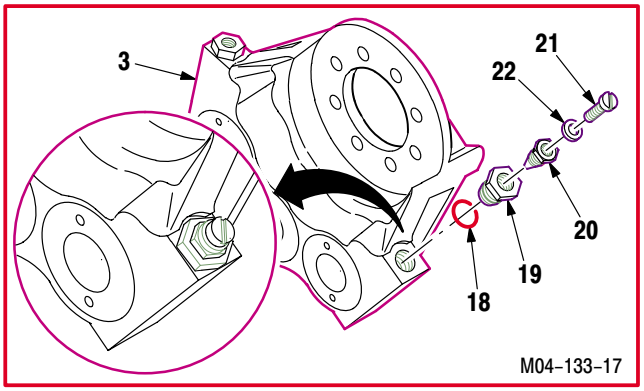
(5) Lubricate new packing (18) and adapter (19). Use hydraulic fluid (item 93, App F).

(6) Install new packing (18) on adapter (19).

(7) Install adapter (19) in housing (3).

(8) Hold adapter (19). Install valve (20).

(9) Hold valve (20). Install screw (21) and washer (22).



GO TO NEXT PAGE

3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

d. **Repair housing (3) by replacing packing (23) installed on insert (10).**

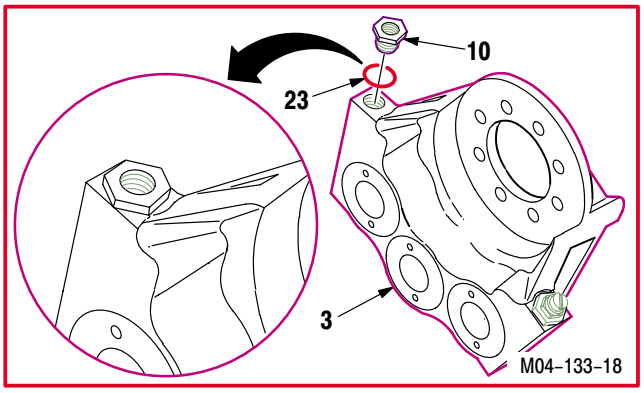
(1) Remove insert (10) and packing (23) from housing (3). Discard packing (23).

(2) Check insert (10) for cracks and stripped threads. None allowed.

(3) Lubricate new packing (23) and insert (10). Use hydraulic fluid (item 93, App F).

(4) Install packing (23) on insert (10).

(5) Install insert (10) in housing (3).



GO TO NEXT PAGE

3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

3.66.7. Installation

WARNING

FLIGHT SAFETY PART

Specified torque for nipple is critical. Failure to follow maintenance instructions may result in serious injury or death of crewmembers and/or serious damage to the helicopter.

NOTE

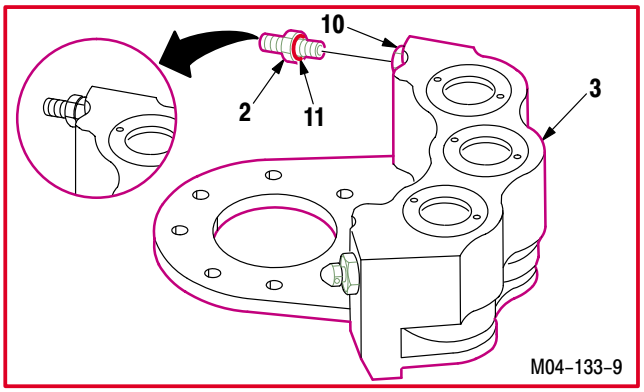
If replacement wheel brake is to be installed, perform steps a. thru j. If friction linings are to be installed, perform steps b. thru n.

a. **Install nipple (2) in insert (10).** Torque nipple (2) to **135 INCH-POUNDS**.

(1) Lubricate new packing (11) and nipple (2). Use hydraulic fluid (item 93, App F).

(2) Install packing (11) nipple (2).

(3) Hold insert (10). Install nipple (2). Torque nipple (2) to **135 INCH-POUNDS**. Use torque wrench.



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3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

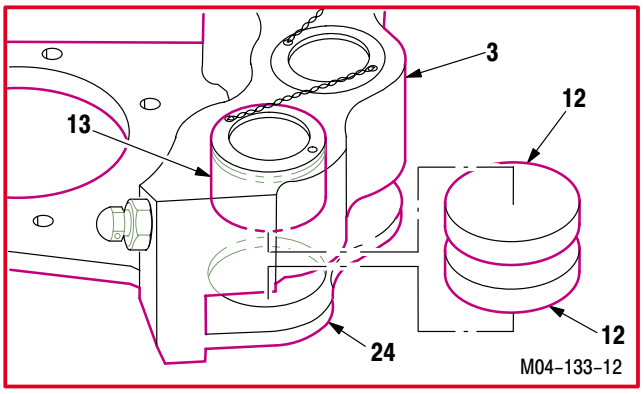
NOTE

Ensure linings are fully seated.

b. **Install new linings (12) in housing (3).**

(1) Install three new linings (12) on pistons (13).

(2) Install three new linings (12) on recesses in anvil (24) of housing (3).

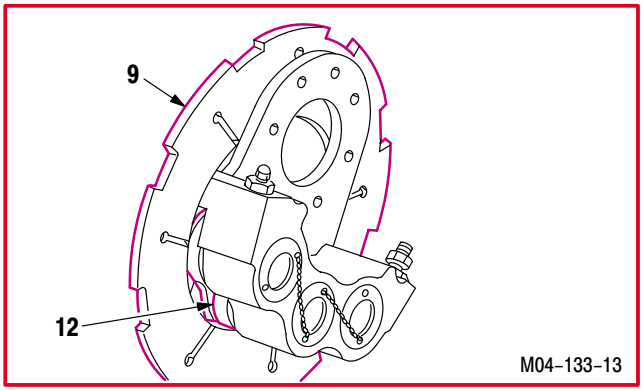


c. **Inspect (QA).**

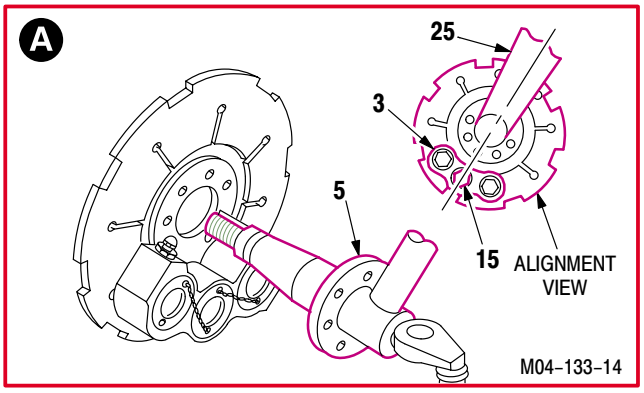
CAUTION

Disk will be a snug fit between linings. Force may be required for installation. Do not damage linings during installation.

d. **Slide disk (9) between linings (12).**



e. **Position housing (3) on trailing arm flange (5) so center of heads (15) are alined with center of trailing arm assembly (25).**



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3.66. SINGLE DISK BRAKE, FRICTION LINING, AND BRAKE DISK REMOVAL/INSTALLATION (GOODYEAR/ABSC) – continued

f. **Aline bolt holes in housing (3) with bolt holes in flange (5).**

g. **Install eight bolts (4).** Torque bolts (4) to **360 INCH-POUNDS**.

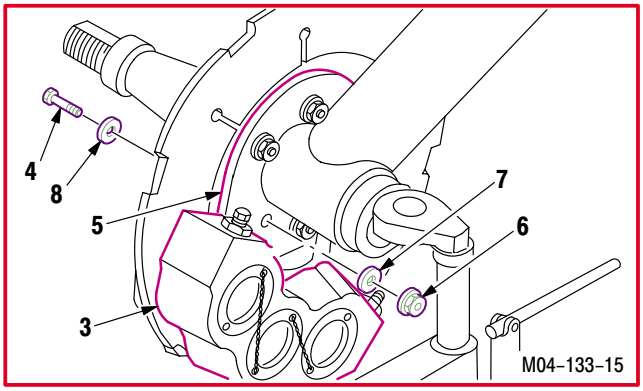
NOTE

Ensure recessed side of washers are installed against bolt heads.

(1) Install eight bolts (4) and washers (8) through housing (3) and flange (5).

(2) Hold eight bolts (4). Install washers (7) and nuts (6).

(3) Hold eight nuts (6). Torque bolts (4) to **360 INCH-POUNDS**. Use torque wrench.



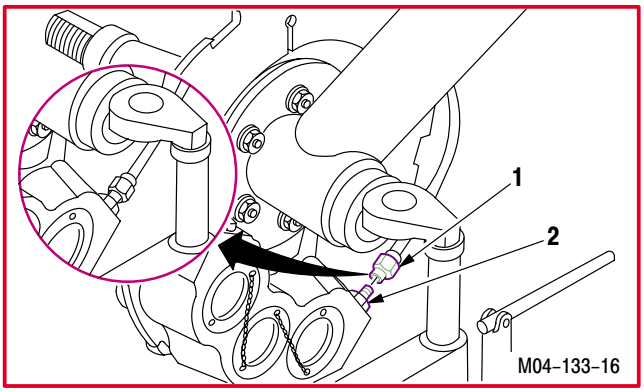


h. **Apply corrosion preventive compound on bolts (4), nuts (6), washers (7), and washers (8).** Use corrosion preventive compound (item 62A, App F).

i. **Install nut (1) on nipple (2).** Torque nut (1) to **120 INCH-POUNDS**.

(1) Hold nipple (2). Install nut (1).

(2) Hold nipple (2). Torque nut (1) to **120 INCH-POUNDS**. Use torque wrench.



j. **Inspect (QA).**

k. **Install main landing gear wheel and tire** (para 3.6)**.**

l. **Bleed brake system** (para 1.45)**.**

m. **Set parking brakes** (para 1.61)**.**

n. **Perform main landing gear maintenance operational check** (TM 1-1520-238-T)**.**

END OF TASK

3.67. MAIN LANDING GEAR WHEEL BRAKE LEAKAGE AND OPERATIONAL TEST (AVIM)

3.67.1. Description

This task covers: Brake Leakage and Operational Test.

3.67.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Hydraulic hose assembly tester (item 349, App H)

Materials/Parts:

Hydraulic fluid (item 93, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
3.66	Disk brake removed (Goodyear)
	or
3.65	Disk brake removed (Parker-Hannifin)

NOTE

- This task is typical for brakes with both single and three-piece linings.
- A standard hydraulic test stand equipped with pressure gage, a hydraulic reservoir, and a means of providing controlled pressure from 0 to 450 psi are required to test brake assemblies.

3.67.3. Brake Leakage and Operational Test

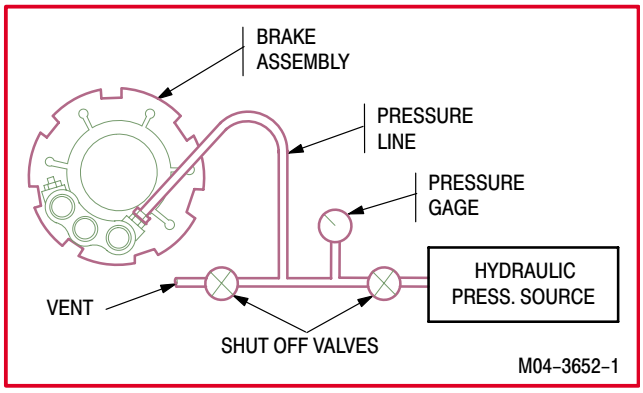


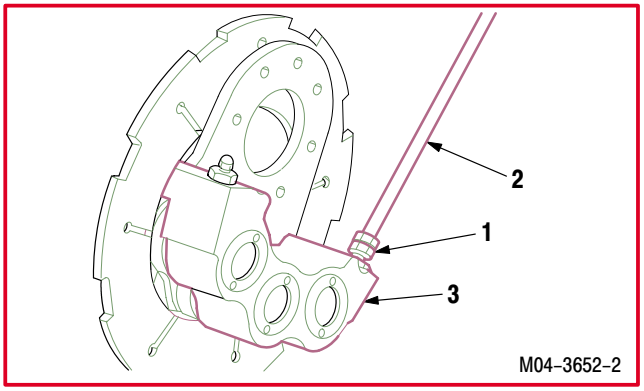
a. **Ensure brake assembly fitting (1) is tight.**

b. **Install pressure line (2) from hydraulic tester on fitting (1).**

c. **Bleed air from brake assembly (3).** Use hose assembly tester.

(1) Apply 7 psi hydraulic fluid to brake assembly (3). Use hydraulic fluid (item 93, App F).





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3.67. MAIN LANDING GEAR WHEEL BRAKE LEAKAGE AND OPERATIONAL TEST (AVIM) – continued

(2) Loosen bleeder screw (4) to allow trapped air to escape.

(3) Ensure a steady stream of hydraulic fluid is noted before tightening bleeder screw (4).

(4) Tighten bleeder screw (4).

d. **Apply 450 psi to brake assembly (3) for a minimum of 5 MINUTES.** Use hose assembly tester.

(1) Check for leaks. None allowed.

(2) Check pistons (5) for binding. None allowed.

e. **Inspect (QA).**

f. **Reduce pressure to 5 psi for a minimum of 5 MINUTES.**

(1) Check for leaks. None allowed.

(2) Check pistons (5) for binding after reducing pressure.

g. **Inspect (QA).**

h. **Release all pressure.**

(1) Check disk (6) for free movement. No binding allowed.

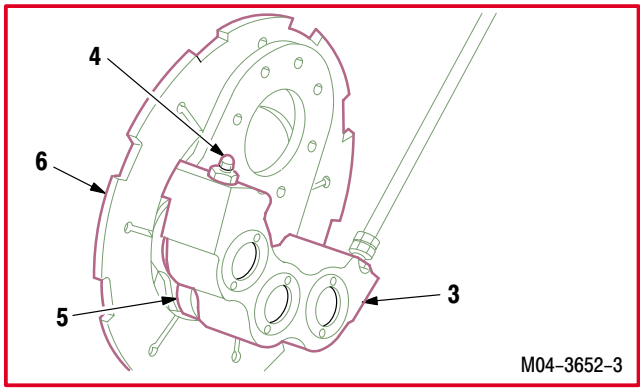
i. **Inspect (QA).**

j. **Apply 450 psi to brake assembly (3) and operate 25 cycles by applying and releasing pressure.** Check for leaks and binding. Use hose assembly tester.

(1) Check for leakage at moving seals on three pistons (5). Leakage not to exceed two drops.

(2) Check for binding of three pistons (5). None allowed.

k. **Inspect (QA).**



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3.67. MAIN LANDING GEAR WHEEL BRAKE LEAKAGE AND OPERATIONAL TEST (AVIM) – continued

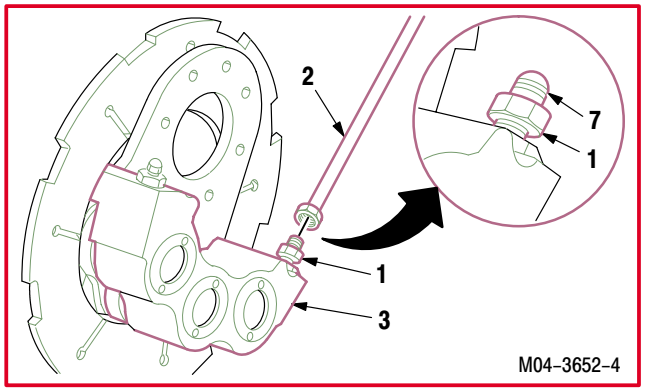
l. **Release all hydraulic pressure to brake assembly (3) and remove pressure hose (2) from fitting (1).**

m. **Wipe excess hydraulic fluid with a clean rag.**

n. **Install fitting cap (7) to fitting (1).**

o. **Inspect (QA).**

p. **Install disk brake** (para 3.65 or 3.66)**.**



END OF TASK

3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION

3.68.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.68.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Chemical protective gloves (item 154, App H)
Adjustable air filtering respirator (item 262, App H)

References:

TM 1-1520-238-T

Materials/Parts:

Cloth (item 52, App F)
Methyl ethyl ketone (item 124, App F)
Sealing compound (item 175, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes released
2.2	Access fairings L140 and R140 removed

NOTE

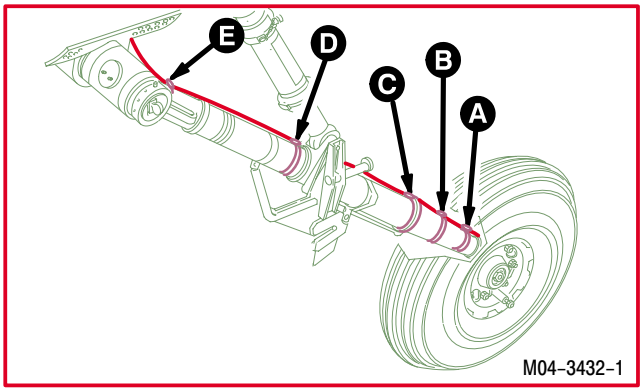
- This task is typical for left and/or right main landing gear brake systems.
- A solid hydraulic brake tube may be installed on some aircraft. Remove tube (para 3.69) before main landing gear brake system maintenance.

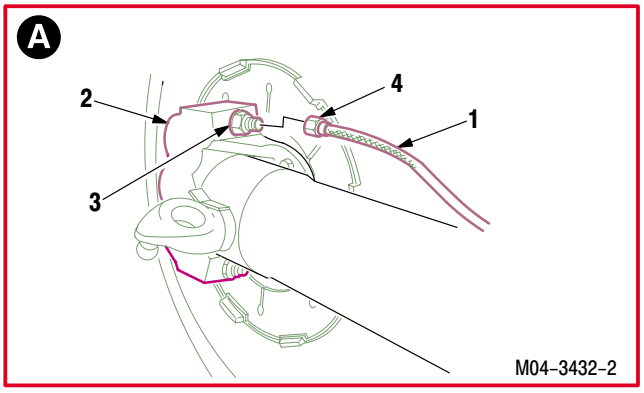
3.68.3. Removal

a. **Remove hose (1) from cylinder assembly (2).**

(1) Hold tube nipple (3). Remove nut (4).

(2) Remove hose (1) from brake (2).





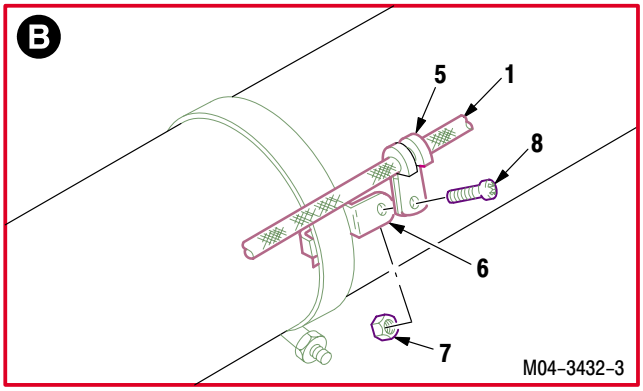
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3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION – continued

b. **Remove loop clamp (5) from bracket (6) and hose (1).**

(1) Hold nut (7). Remove screw (8).

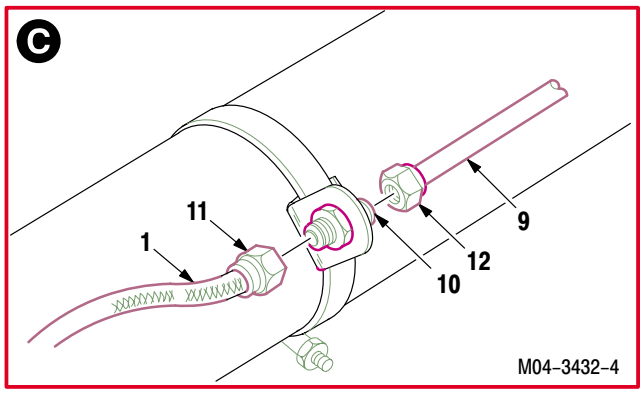
(2) Remove clamp (5) from bracket (6) and hose (1).



c. **Remove hose (1) and tube (9) from tube nipple (10).**

(1) Hold nipple (10). Remove nut (11) and (12).

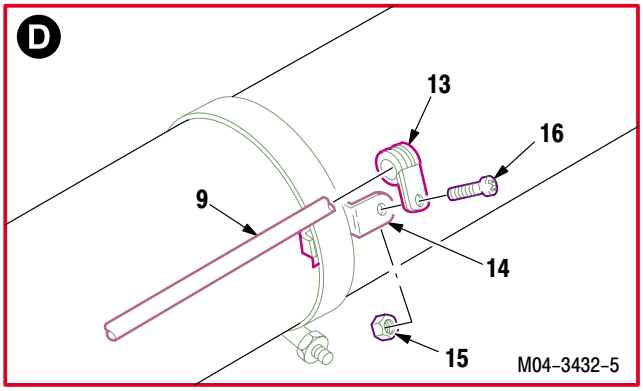
(2) Remove hose (1) and tube (9) from nipple (10).



d. **Remove loop clamp (13) from bracket (14) and tube (9).**

(1) Hold nut (15). Remove screw (16).

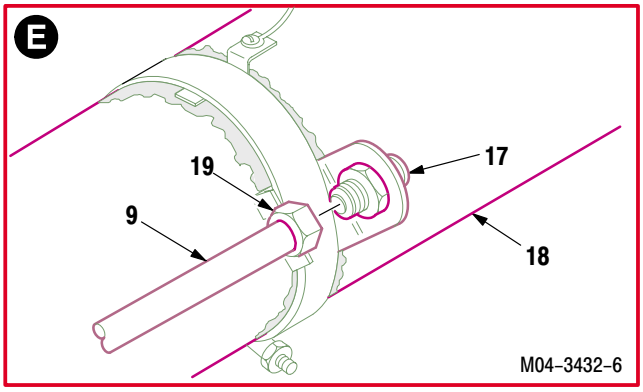
(2) Remove clamp (13) from bracket (14) and tube (9).



e. **Remove tube (9) from tube nipple (17) and trailing arm (18).**

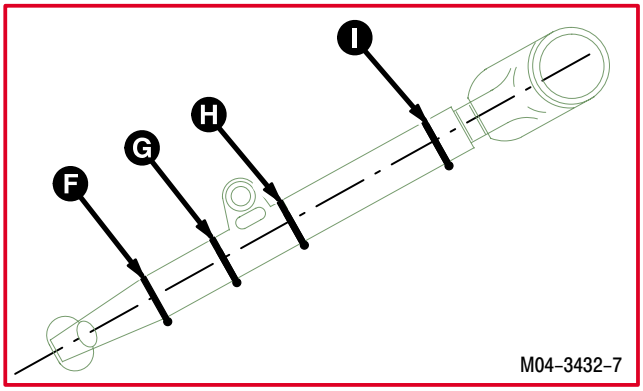
(1) Hold nipple (17). Remove nut (19).

(2) Remove tube (9) from nipple (17) and trailing arm (18).



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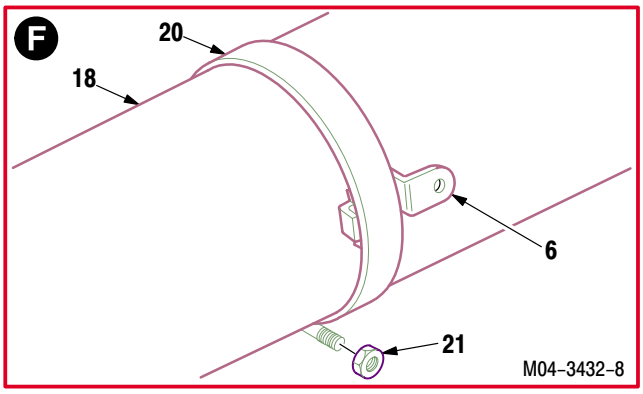
3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION – continued



f. **Remove hose clamp (20) and bracket (6) from trailing arm (18).**

(1) Remove nut (21) from clamp (20).

(2) Remove clamp (20) and bracket (6) from trailing arm (18).

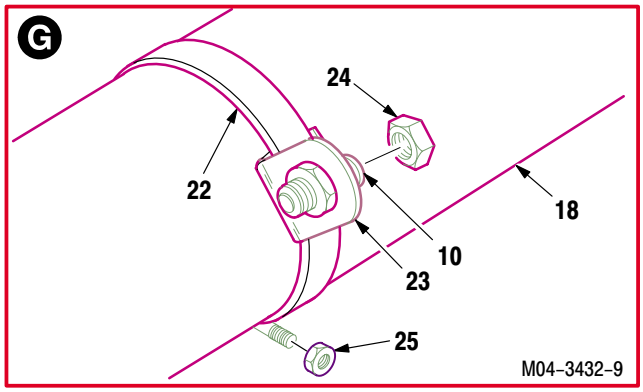


g. **Remove clamp (22), bracket (23), and nipple (10) from trailing arm (18).**

(1) Hold nipple (10). Remove nut (24).

(2) Remove nut (25) from clamp (22).

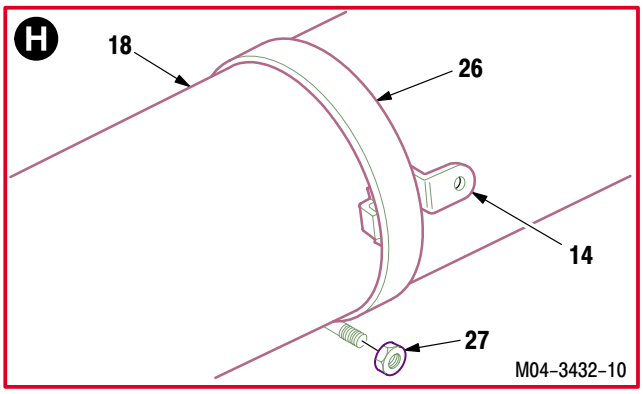
(3) Remove clamp (22), bracket (23), and nipple (10) from trailing arm (18).



h. **Remove clamp (26) and bracket (14) from trailing arm (18).**

(1) Remove nut (27) from clamp (26).

(2) Remove clamp (26) and bracket (14) from trailing arm (18).



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3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION – continued



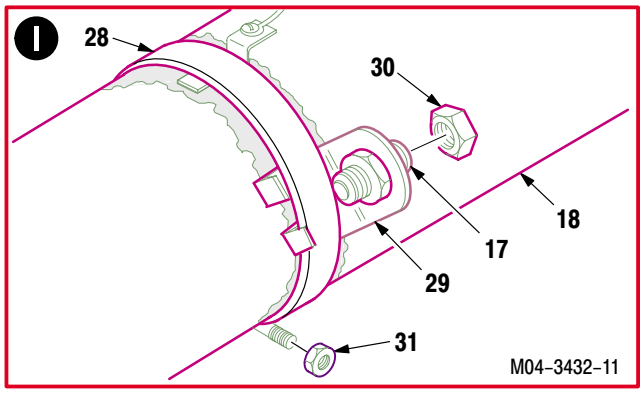
i. **Remove clamp (28), bracket (29), and nipple (17) from trailing arm (18).**

(1) Hold nipple (17). Remove nut (30).

(2) Remove nut (31) from clamp (28).

(3) Remove sealant from clamp (28) and trailing arm (18). Wipe surface clean. Use methyl ethyl ketone (item 124, App F) and cloth (item 52, App F).

(4) Remove clamp (28), bracket (29), and nipple (17) from trailing arm (18).



3.68.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.68.5. Inspection

a. **Check tube nipples for stripped threads.** None allowed.

b. **Check hoses for nicks, scratches, chafing, or stripped threads.** None allowed.

GO TO NEXT PAGE

3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION – continued

3.68.6. Installation

CAUTION

To prevent damage to tube during kneeling/erecting, ensure clamps, brackets, tube, and hoses do not protrude into area between fuselage and trailing arm.

NOTE

Ensure to attach bonding jumper under clamp.

a. **Install clamp (28), bracket (29), and nipple (17) on trailing arm (18).**

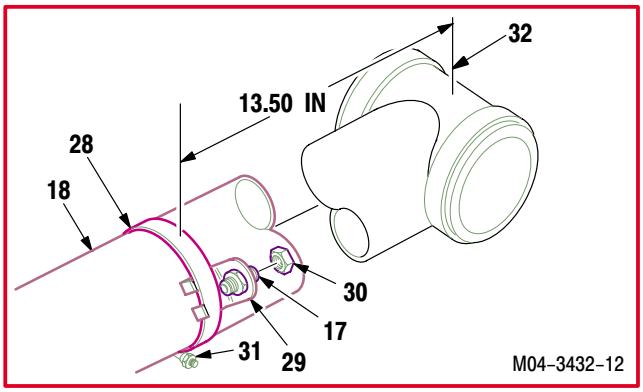
(1) Install clamp (28) on trailing arm (18) **13.50 INCHES** from center of arm pivot point (32).

(2) Install bracket (29) under clamp (28).

(3) Install nut (31) on clamp (28). Do not tighten nut (31).

(4) Install nipple (17) on bracket (29).

(5) Hold nipple (17). Install nut (30).

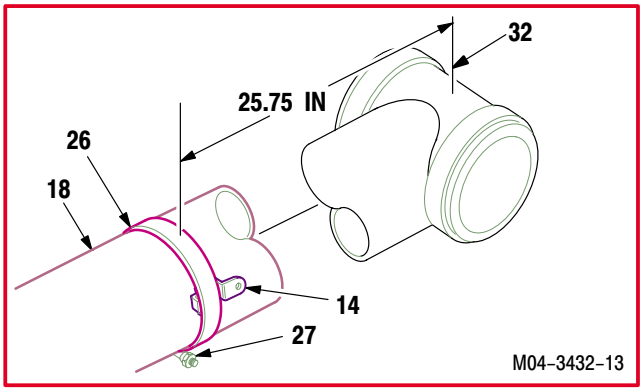


b. **Install clamp (26) and bracket (14) on trailing arm (18).**

(1) Install clamp (26) on trailing arm (18) **25.75 INCHES** from center of trailing arm pivot point (32).

(2) Install bracket (14) under clamp (26).

(3) Install nut (27) on clamp (26). Do not tighten nut (27).



GO TO NEXT PAGE

3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION – continued

c. **Install clamp (22), bracket (23), and nipple (10) on trailing arm (18).**

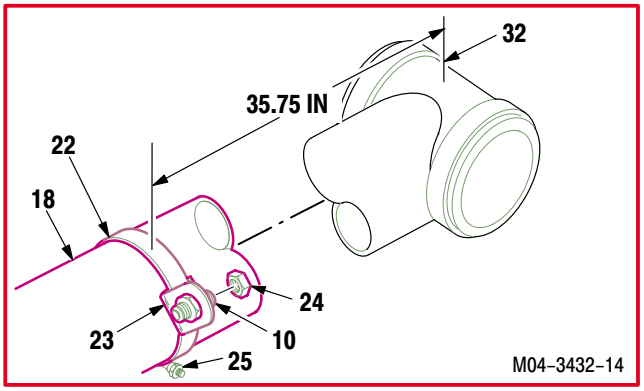
(1) Install clamp (22) on trailing arm (18) **35.75 INCHES** from center of pivot point (32).

(2) Install bracket (23) under clamp (22).

(3) Install nut (25) on clamp (22). Do not tighten nut (25).

(4) Install nipple (10) on bracket (23).

(5) Hold nipple (10). Install nut (24).

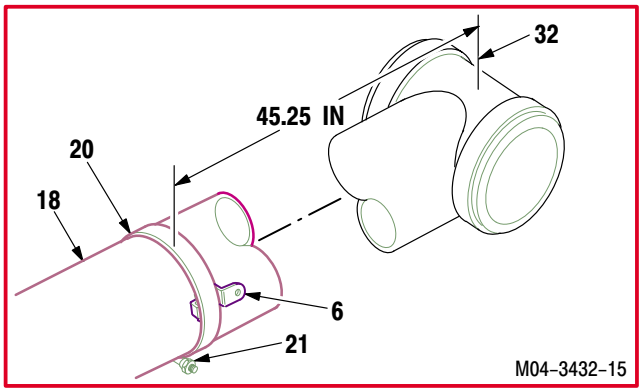


d. **Install clamp (20) and bracket (6) on trailing arm (18).**

(1) Install clamp (20) on trailing arm (18) **45.25 INCHES** from center of pivot point (32).

(2) Install bracket (6) under clamp (20).

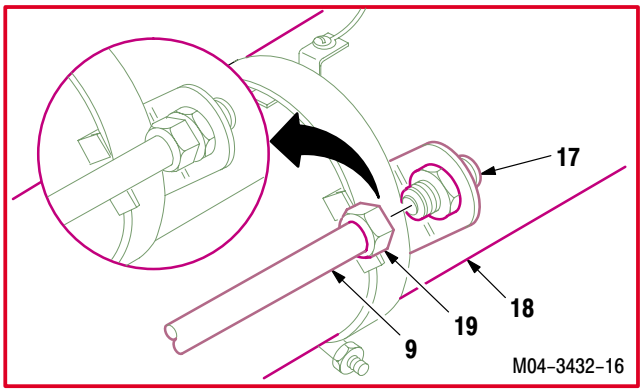
(3) Install nut (21) on clamp (20). Do not tighten nut (21).



e. **Install tube (9) on nipple (17) and trailing arm (18).**

(1) Install tube (9) on nipple (17).

(2) Hold nipple (17). Install nut (19).

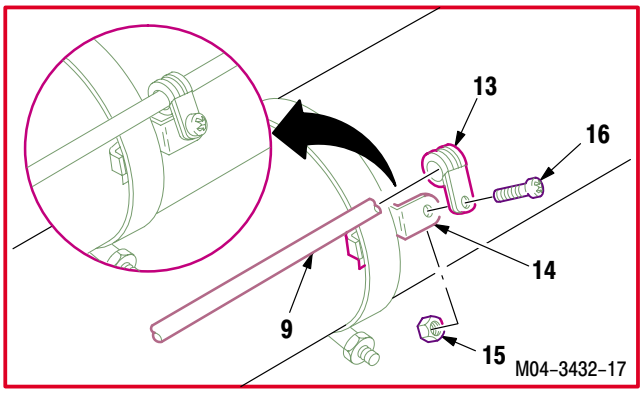


f. **Install clamp (13) on bracket (14) and tube (9).**

(1) Install clamp (13) on tube (9).

(2) Install screw (16) through clamp (13) and bracket (14).

(3) Install nut (15).



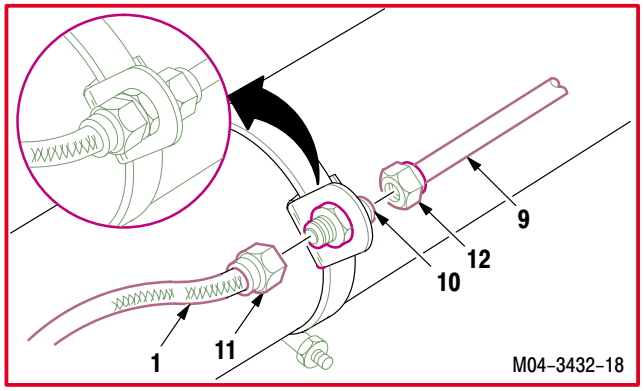
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3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION – continued

g. **Install hose (1) and tube (9) on nipple (10).**

(1) Install hose (1) and tube (9) on nipple (10).

(2) Hold nipple (10). Install nuts (11) and (12).

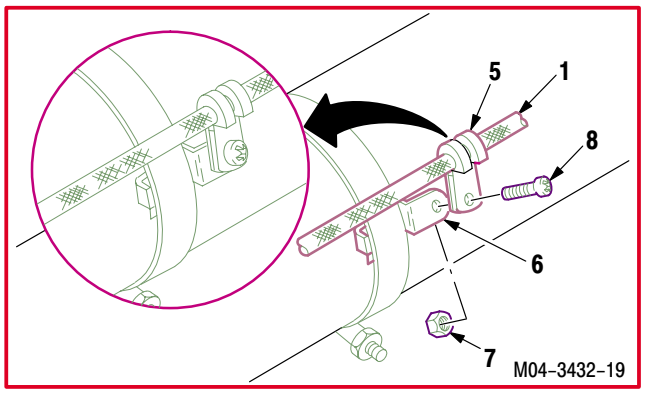


h. **Install clamp (5) on hose (1) and bracket (6).**

(1) Install clamp (5) on hose (1).

(2) Install screw (8) through clamp (5) and bracket (6).

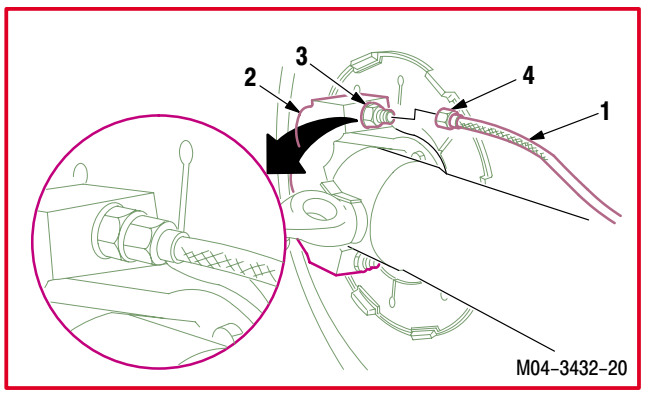
(3) Install nut (7).



i. **Install hose (1) on cylinder assembly (2).**

(1) Install nut (4) on nipple (3).

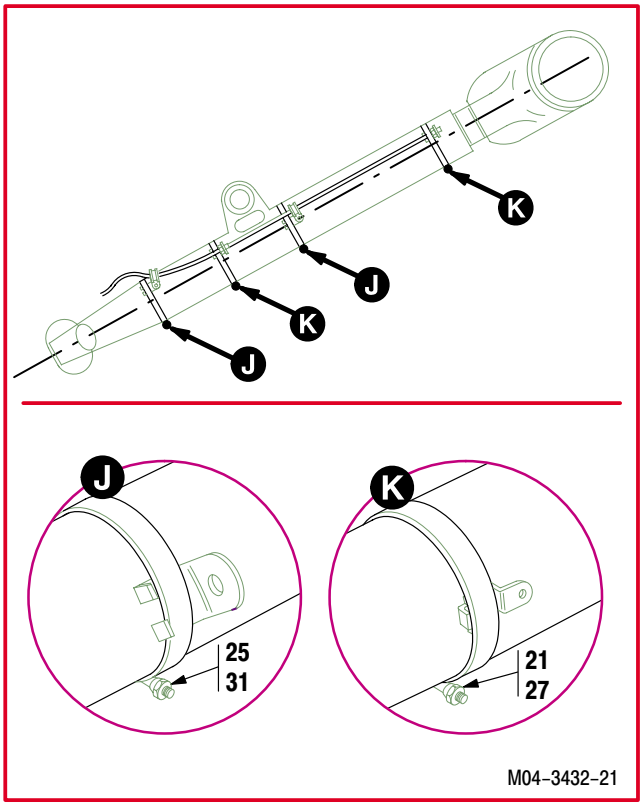
(2) Hold nipple (3). Install nut (4).



GO TO NEXT PAGE

3.68. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION – continued

j. **Tighten hose clamp nuts (21), (25), (27), and (31).**





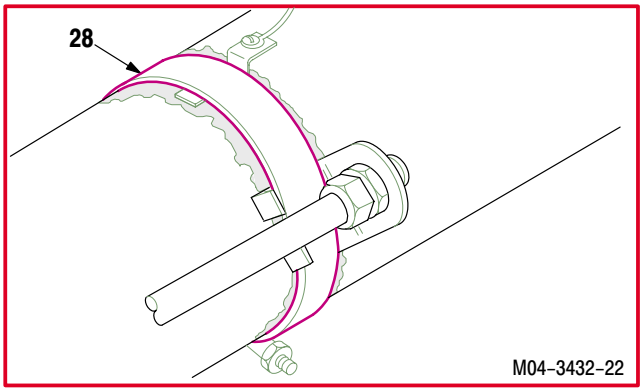
k. **Seal edges of clamp (28).** Use sealing compound (item 175, App F).

l. **Bleed brake system** (para 1.45)**.**

m. **Inspect (QA).**

n. **Perform main landing gear maintenance operational check** (TM 1-1520-238-T)**.**

o. **Install access fairings L140 and R140** (para 2.2)**.**



END OF TASK

3.69. MAIN LANDING GEAR WHEEL BRAKE TUBE AND HOSE CLAMP REMOVAL/INSTALLATION

3.69.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.69.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)

Personnel Required:

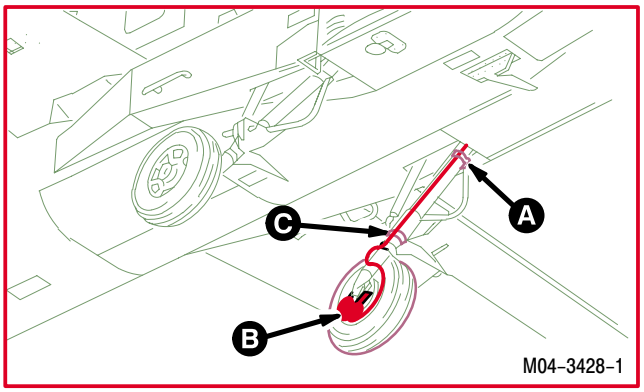
67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes released

NOTE

This task is typical for left and/or right main landing gear brake systems.

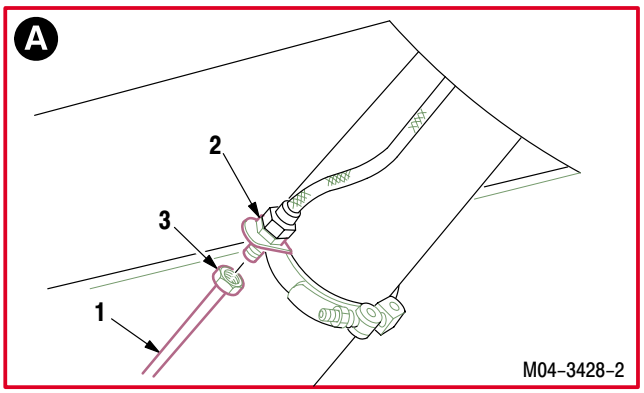


3.69.3. Removal

a. **Remove tube (1) from tube nipple (2).**

(1) Hold nipple (2). Remove nut (3).

(2) Remove tube (1) from nipple (2).



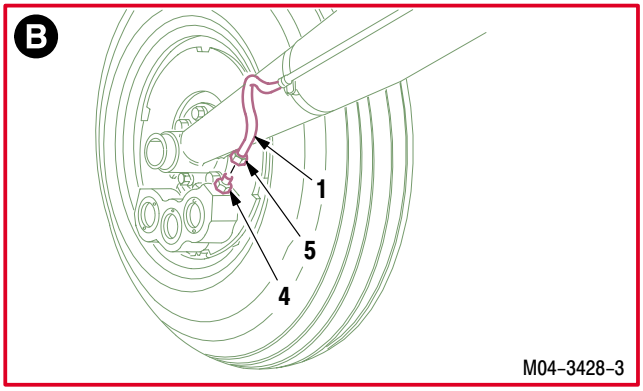
GO TO NEXT PAGE

3.69. MAIN LANDING GEAR WHEEL BRAKE TUBE AND HOSE CLAMP REMOVAL/INSTALLATION – continued

b. **Remove tube (1) from boss nipple (4).**

(1) Hold nipple (4). Remove nut (5).

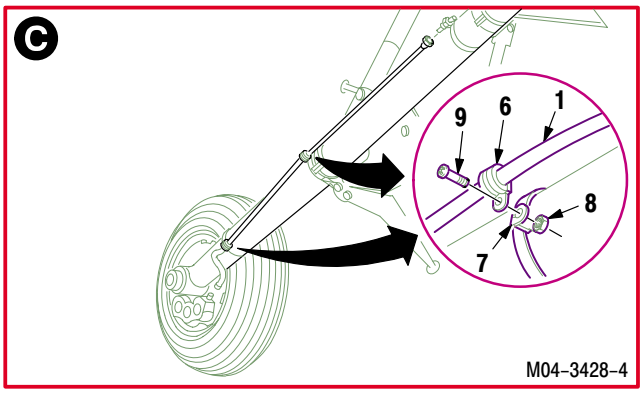
(2) Remove tube (1) from nipple (4).



c. **Remove two loop clamps (6) from brackets (7) and tube (1).**

(1) Hold nut (8). Remove screw (9).

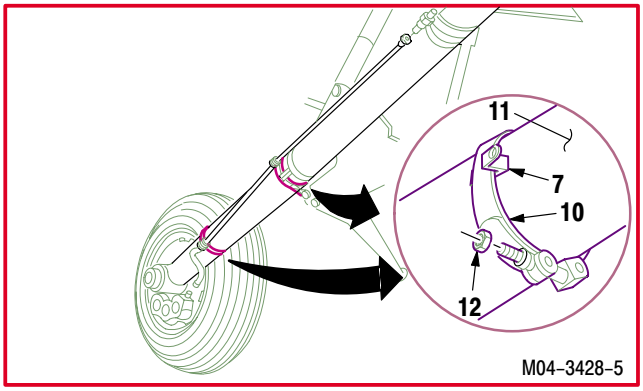
(2) Remove two clamps (6) from bracket (7) and tube (1).



d. **Remove two hose clamps (10) and brackets (7) from trailing arm (11).**

(1) Remove two nuts (12) from clamps (10).

(2) Remove two clamps (10) and brackets (7) from trailing arm (11).



3.69.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.69.5. Inspection

a. **Check tube nipples for stripped threads.** None allowed.

b. **Check tubes for nicks, scratches, chafing, or stripped threads.** None allowed.

GO TO NEXT PAGE

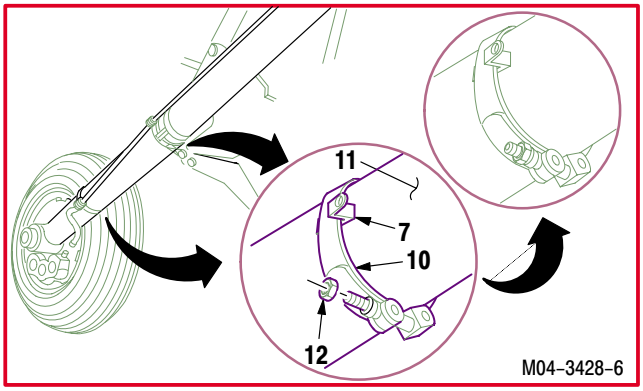
3.69. MAIN LANDING GEAR WHEEL BRAKE TUBE AND HOSE CLAMP REMOVAL/INSTALLATION – continued

3.69.6. Installation

a. **Install two clamps (10) and brackets (7) on trailing arm (11).**

(1) Install two clamps (10) and brackets (7) on trailing arm (12).

(2) Install two nuts (12) on clamps (10).

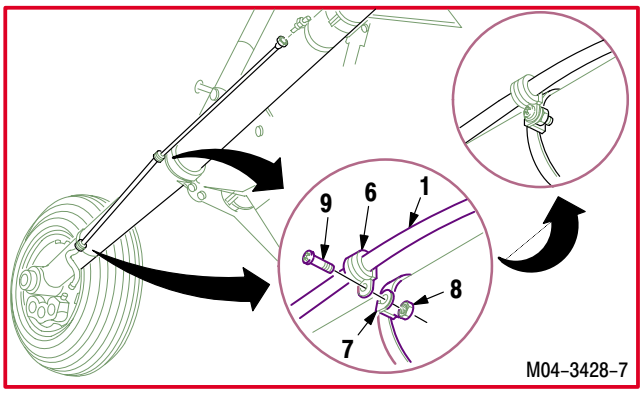


b. **Install tube (1) and two clamps (6) on brackets (7).**

(1) Install two clamps (6) on tube (1) and brackets (7).

(2) Install screw (9) through clamp (6) and bracket (7).

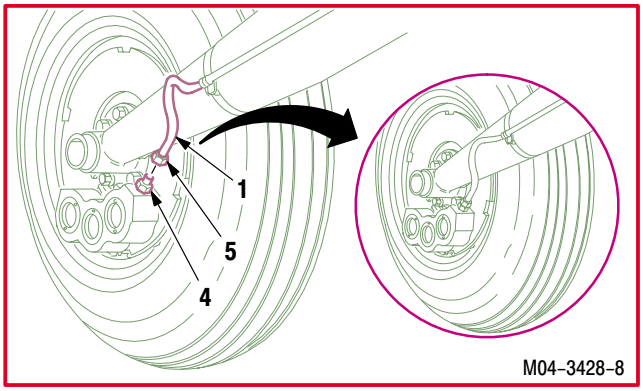
(3) Hold screw (9). Install nut (8).



c. **Install tube (1) on nipple (4).**

(1) Install tube (1) on nipple (4).

(2) Hold nipple (4). Tighten nut (5).



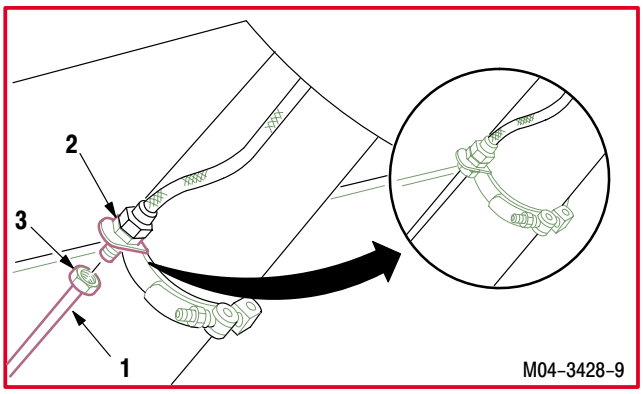
d. **Install tube (1) in nipple (2).**

(1) Install tube (1) on nipple (2).

(2) Hold nipple (2). Tighten nut (3).

e. **Inspect (QA).**

f. **Bleed brake system** (para 1.45)**.**



END OF TASK

3.70. MAIN LANDING GEAR WHEEL BRAKE HOSE REMOVAL/INSTALLATION

3.70.1. Description

This task covers: Removal. Cleaning. Inspection. Installation.

3.70.2. Initial Setup

Tools:

Aircraft mechanic's tool kit (item 376, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)

Materials/Parts:

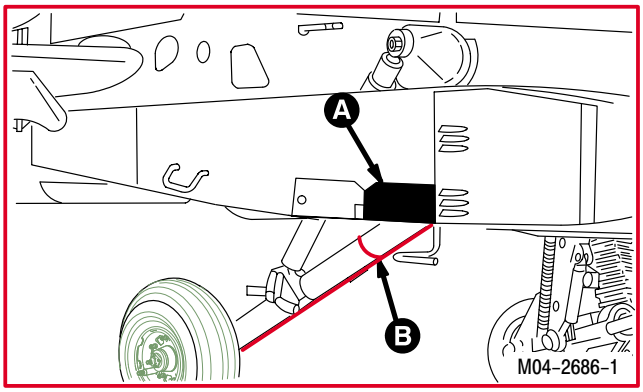
Hydraulic fluid (item 93, App F)

Personnel Required:

67R Attack Helicopter Repairer
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

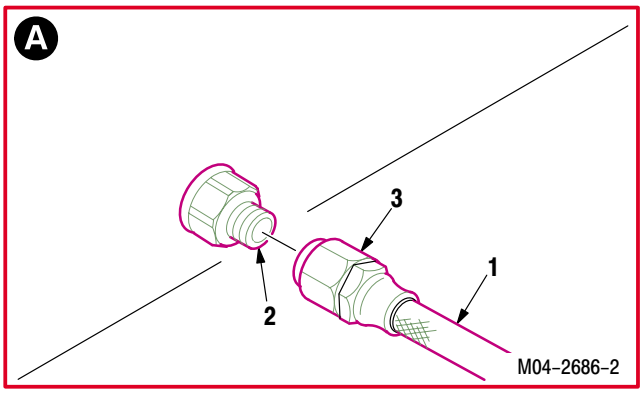
Ref	Condition
1.57	Helicopter safed
2.2	Access doors L115 and R115 opened
1.61	Parking brakes released



3.70.3. Removal

a. **Remove hose (1) from bulkhead tube nipple (2).**

(1) Hold nipple (2). Remove hose nut (3).



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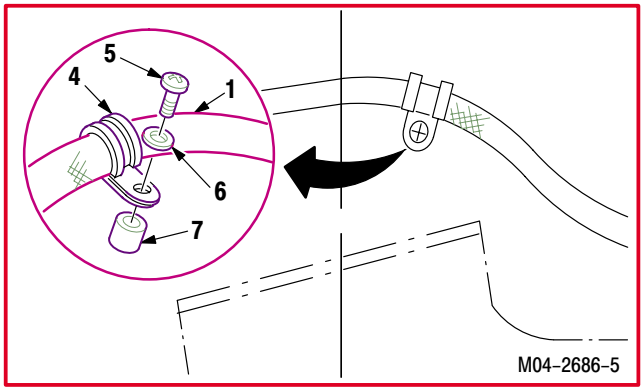
3.70. MAIN LANDING GEAR WHEEL BRAKE HOSE REMOVAL/INSTALLATION – continued

b. **Remove loop clamp (4) from hose (1).**

(1) Remove screw (5) and washer (6).

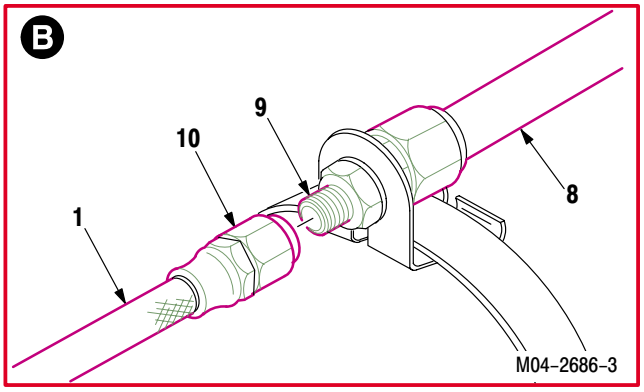
(2) Remove sleeve spacer (7).

(3) Remove clamp (4) from hose (1).



c. **Remove hose (1) from tube (8).**

(1) Hold nipple (9). Remove nut (10).



3.70.4. Cleaning

a. **Wipe removed and attaching parts with a clean rag.**

3.70.5. Inspection

a. **Check nipples for looseness and thread damage** (para 3.53)**.**

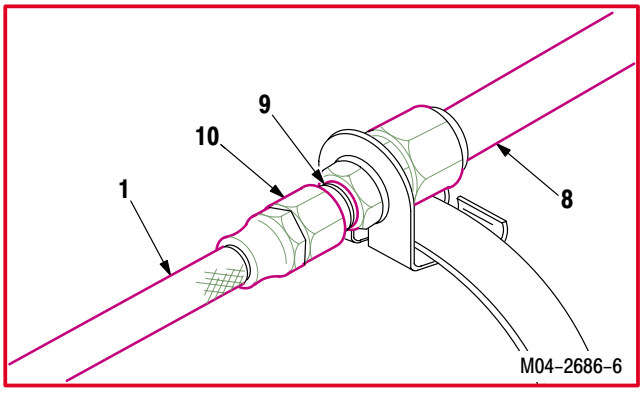
3.70.6. Installation



a. **Install hose (1) on tube (8).**

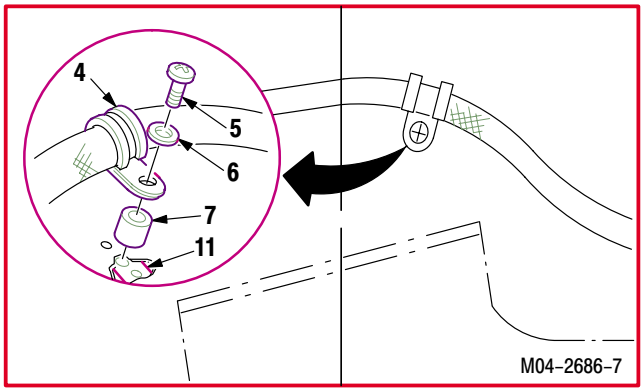
(1) Lubricate threads of nipple (9). Use hydraulic fluid (item 93, App F).

(2) Hold nipple (9). Install nut (10).



b. **Install clamp (4) on hose (1).**

(1) Install screw (5) through washer (6), clamp (4), and spacer (7) into nutplate (11).



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3.70. MAIN LANDING GEAR WHEEL BRAKE HOSE REMOVAL/INSTALLATION – continued

c. **Install hose (1) on nipple (2).**

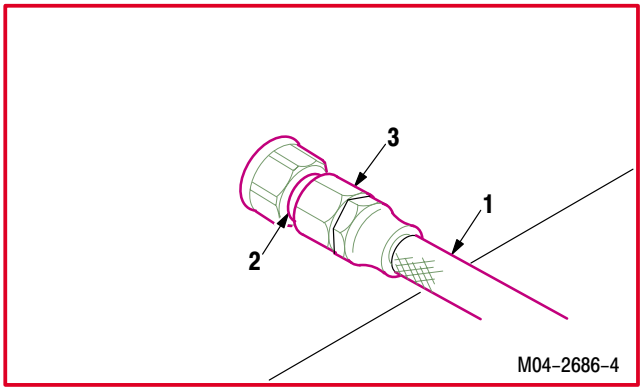
(1) Hold nipple (2). Install nut (3).

d. **Bleed brake system** (para 1.45)**.**

e. **Inspect (QA).**

f. **Secure access doors L115 and R115** (para 2.2)**.**

g. **Set parking brakes** (para 1.61)**.**



END OF TASK

3.71. PARKING BRAKE FUNCTIONAL TEST

3.71.1. Description

This task covers: Functional test.

3.71.2. Initial Setup

Tools:

Hydraulic tool kit (item 384, App H)
Light duty laboratory apron (item 27, App H)
Industrial faceshield (item 129, App H)
Chemical protective gloves (item 154, App H)
Hydraulic hose assembly tester (item 349, App H)
10 - 50 inch-pound 1/4-inch drive click type torque wrench (item 434, App H)

Materials/Parts:

Packing (2)
Hydraulic fluid (item 92, App F)
Wire (item 226, App F)

Personnel Required:

68H Aircraft Pneudraulics Repairer
One person to assist
67R3F Attack Helicopter Repairer/Technical Inspector

Equipment Conditions:

Ref	Condition
1.57	Helicopter safed
1.61	Parking brakes released

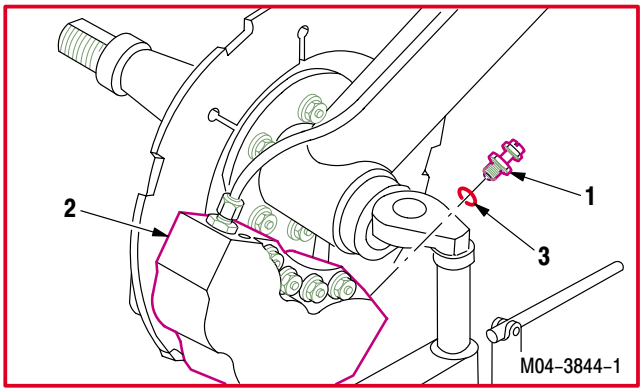
NOTE

- This task is typical for pilot and/or CPG parking brake assemblies.
- Check all brake lines for evidence of leakage. Repair before performing test (para 3.68 and 3.70).

3.71.3. Functional Test

a. **Remove bleed screw assembly (1) from left main landing gear brake unit (2).**

b. **Remove and discard packing (3) from screw assembly (1).**

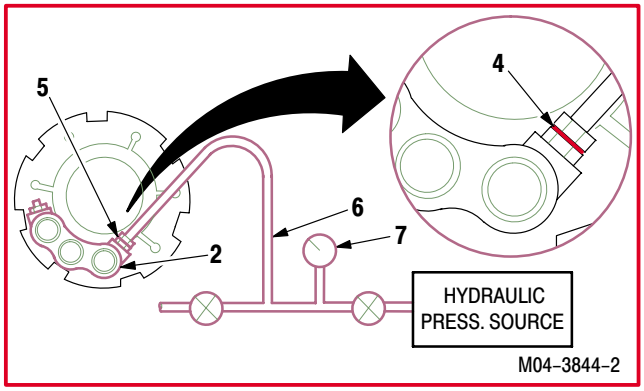


GO TO NEXT PAGE

3.71. PARKING BRAKE FUNCTIONAL TEST – continued

c. **Install hydraulic tester.**

(1) Install packing (4), adapter (5), pressure line (6), and hydraulic gage (7) on brake unit (2).



d. **Depress pilot left brake and maintain pressure.**

(1) Gage on hydraulic tester should read 400 to 600 psi.

e. **Set parking brakes** (para 1.61)**.**

NOTE

There may be a slight drop in wheel gauge pressure (25 psi maximum).

f. **Apply parking brake pressure for a minimum of 5 MINUTES.**

(1) If pressure drop is noted, check all brake lines and wheel cylinders for leakage. None allowed.

g. **Release parking brakes** (para 1.61)**.**

NOTE

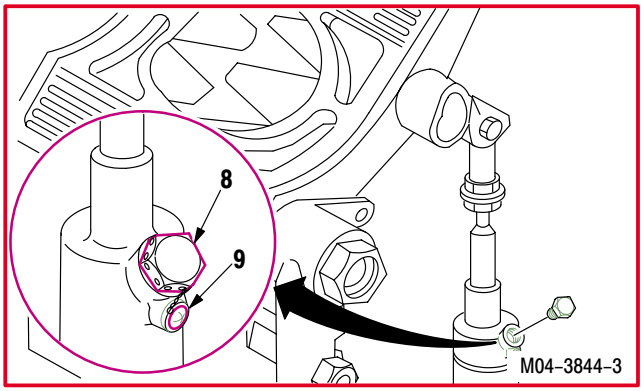
- Hydraulic tester gage may experience momentary pressure spike. Condition is acceptable.
- If pressure does not drop to zero after parking brake is released, proceed with next operation.

h. **Perform functional test.**

(1) Tap gage with finger to ensure gage operation.

(2) Remove lockwire and cylinder cap assembly (8) to ensure brake system is not over serviced.

(3) Lockwire cap (8) to screw (9). Use wire (item 226, App F).



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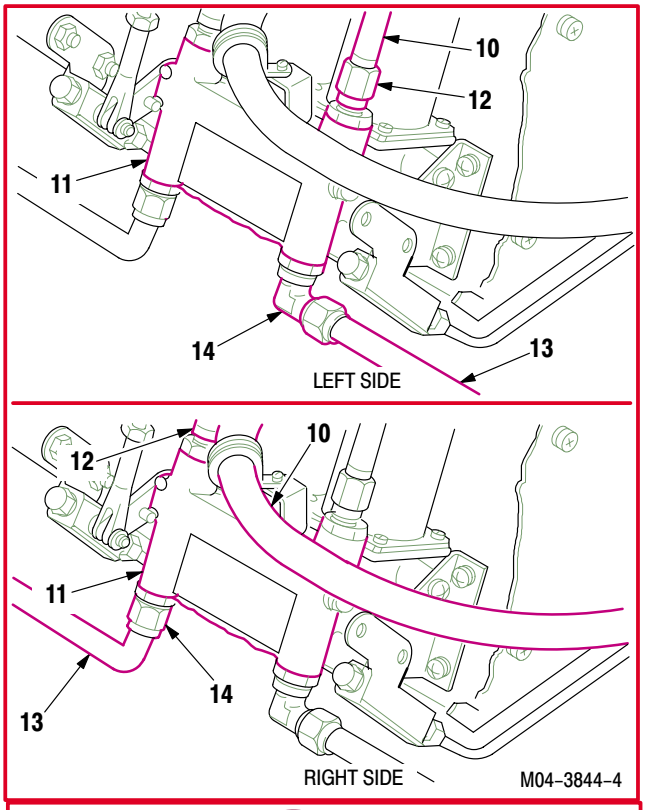
3.71. PARKING BRAKE FUNCTIONAL TEST – continued

(4) Loosen inlet line (10) on parking brake valve (11). If pressure drops to zero, replace transfer valve (para 3.62). If pressure does not drop, tighten tube nut (12).

(5) Loosen outlet line (13) to parking brake valve (11). If pressure drops, replace parking brake valve (11) (para 3.60). If pressure does not drop, tighten tube nut (14).

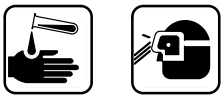
i. **If pressure goes to zero but brake does not release, inspect wheel brake assembly** (para 3.66 or 3.65)**.** If required, remove and replace wheel brake assembly.

j. **Perform functional test on pilot right brake.**



k. **Remove hydraulic tester.**

(1) Remove packing (4), adapter (5), pressure line (6), and hydraulic gage (7) from brake unit (2).

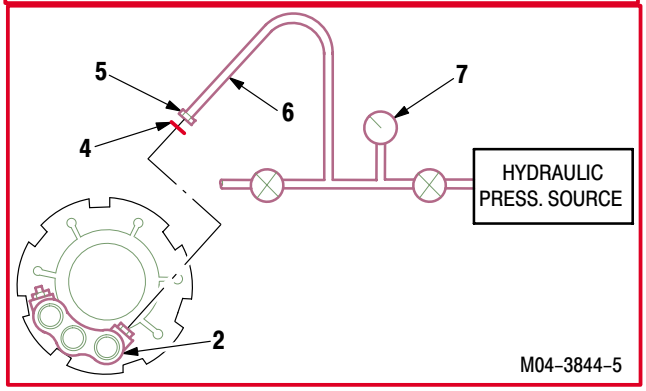


l. **Install bleed screw assembly (1) in main landing gear brake unit (2).** Torque to **20 INCH-POUNDS**.

(1) Coat packing (3) with hydraulic fluid. Use hydraulic fluid (item 92, App F).

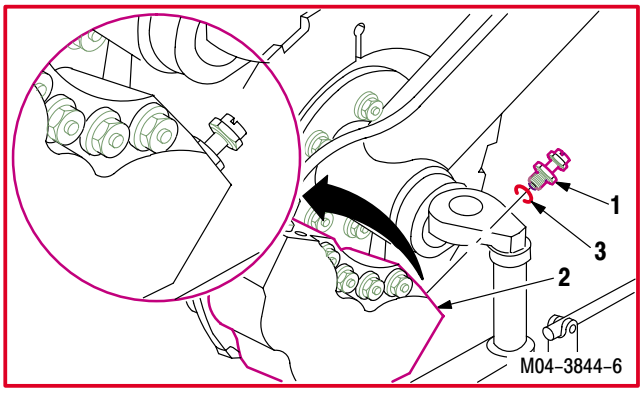
(2) Install bleed screw (1) and packing (3) in brake unit (2).

(3) Torque screw (1) to **20 INCH-POUNDS**. Use torque wrench.



m. **Bleed brake system** (para 1.45)**.**

n. **Inspect (QA).**



END OF TASK

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the Secretary of the Army

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To: 2028@redstone.army.mil

Subject: DA Form 2028

1. **From:** Joe Smith
2. Unit: Home
3. **Address:** 4300 Park
4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-Oct-93
8. **Pub no:** 55-2840-229-23
9. **Pub Title:** TM
10. **Publication Date:** 04-Jul-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter Fname:** Joe
14. Submitter Mname: T
15. **Submitter Lname:** Smith
16. **Submitter Phone:** (123) 123-1234
17. **Problem:** 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text:**

This is the text for the problem below line 27.

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THEN . . . JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.

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SSG John Doe
F Troop 5th Cav. 1st Training Bldg.
Fort Knox, Kentucky 12345-6789

DATE SENT

20 October 1990

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 55-1520-238-S	30 September 1990	Preparation for Shipment FOR Army Model AH-64A Helicopters

BE EXACT . . . PIN–POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2–60	2–26, 151			T.M. references should be TM 55-1520-238 S, not TM 55-1500-238-S
2–68		2–30		Support AFT FUS STA 430 should read Support AFT FUS STA 450.

SAMPLE

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John Doe

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounces
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce–inches	newton–meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.452	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound–feet	newton–meters	1.356	metric tons	short tons	1.102
pound–inches	newton–meters	.11296			

Temperature (Exact)

° F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	° C

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