TO: ALL HOLDERS OF TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NO. 1 AND 8 OVERHAUL MANUAL, 27-55-55

REVISION NO. 29, DATED MAR 1/05

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D & O	D / Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Added details to the lockout torque test to clarify requirements at minimum lockout and maximum lockout								X					

TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NOS. 1 AND 8

27-55-55

BOEING P/N 65-50301-2, -3, -4
65-50308-2, -3, -4
65-50321-1 thru -7
65-50328-1 thru -7

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 31291, -1	May 15/69
		PRR 31581	Nov 10/69
27-1015, Rev 2		PRR 31291	Mar 10/70
27-1048, Rev 2		PRR 32017	Jun 25/74
		PRR 32039	Mar 25/74
29-1069		PRR 32358	Dec 25/75
		PRR 33451	Dec 5/83
		PRR 34103-1	Sep 5/87

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE		PAGE	DATE		PAGE	DATE
	27-55-55			503	Jan 5/77			
	T-1	Sep 5/87		504	Sep 5/91			
	T-2	BLANK		505	Jul 1/03			
*	LEP-1	Mar 1/05		506	Jun 5/93			
	LEP-2	BLANK		507	Sep 1/96			
	T/C-1	Dec 10/70		508	Mar 10/70			
	T/C-2	BLANK		509	Dec 10/70			
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	104	BLANK		603	Mar 1/04			
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	202	BLANK		605	Jun 5/93			
	301	Jul 5/81		606	Jul 5/77			
	302	BLANK		701	Nov 1/98			
	401	Nov 1/00	*	702	Mar 1/05			
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	411	Jun 25/73		1104	Jun 5/93			
	412	Jun 25/73		1105	Sep 5/87			
	413	Mar 5/86		1106	Sep 5/88			
	414	BLANK		1107	Sep 5/87			
	414A	Sep 5/86		1108	Sep 5/87			
	414B	Jul 1/03		1109	Sep 5/87			
	415	Sep 5/87		1110	Jul 1/03			
	416	Sep 5/87		1111	Sep 5/87			
	417	Nov 1/00		1112	Jun 5/88			
	418	Nov 1/00						
	418A	Nov 1/00						
	418B	BLANK						
	419	Nov 1/00						
	420	Jul 1/03						
	501	Mar 10/70						
	502	Sep 1/96						

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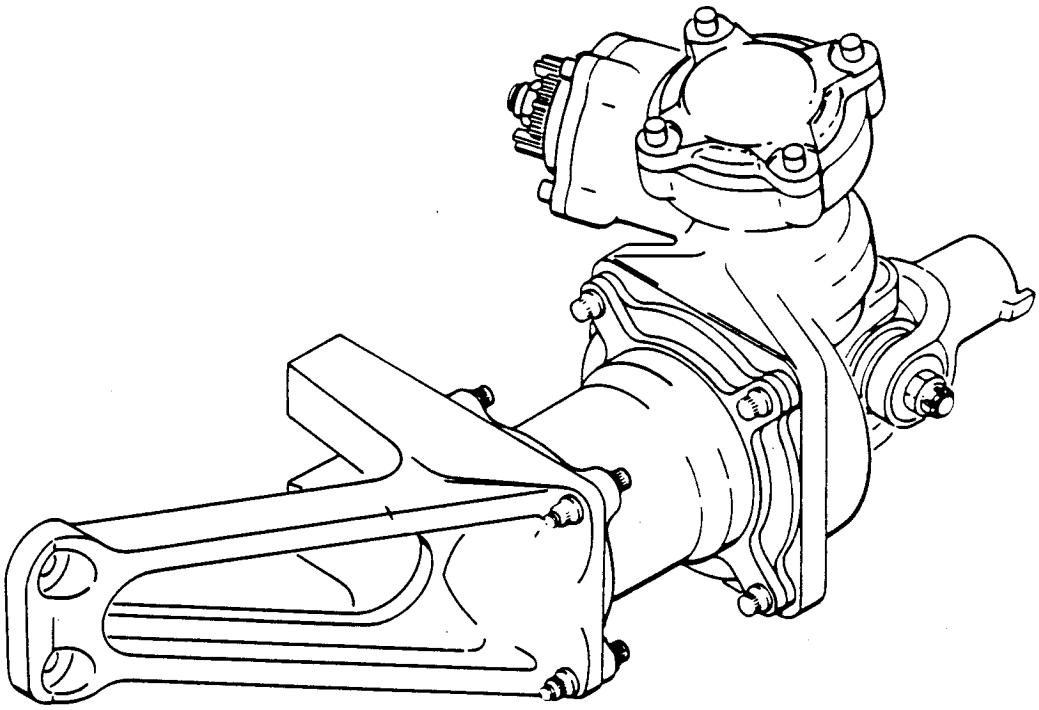
TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NO. 1 AND 8



Trailing Edge Flap Drive Transmission Assemblies No. 1 and 8
Figure 1

DESCRIPTION AND OPERATION

1. Description

   A. The trailing edge flap drive transmission assemblies No. 1 and 8 consist of four bevel gears and a torque brake assembly housed in a sealed, lubricant filled housing. The bevel gears are bearing mounted. The torque brake assembly is installed around the output shaft. A universal joint assembly is provided at the end of the output shaft. A splined coupling is provided to drive the input shaft.

2. Operation

A. The trailing edge flap drive transmission assemblies Nos. 1 and 8 provide a change in direction and an offset of the flap drive torque tubes rotary motion. Each assembly functions to transmit flap drive torque tube rotary motion to a ball screw and nut assembly. The torque brake assembly limits the amount of torque applied to the ball screw and nut assembly. The assemblies are located outboard on the outboard flaps.

3. Leading Particulars

Length -- 19.25 inches
Width -- 7.25 inches
Height -- 11.25 inches
Weight:
Transmission Assemblies P/N 65-50301-( ) and 65-50308-( ) -- 29.9 pounds (wet)
Transmission Assemblies P/N 65-50321-( ) and 65-50328-( ) -- 28.7 pounds (wet)

DISASSEMBLY

1. General (Fig. 1101)

   A. Remove all lockwire.

   B. Remove plugs (1) and O-rings (2). Drain hydraulic fluid from assembly.

2. Disassembly (Fig. 1101)

   A. (1) Remove nut (5), bolt (7) and spacer (8) from shaft (13).

   (2) Remove pin (9) and cross (10) from yoke (12).

   NOTE: Do not remove bushings (11) from shaft (13) or yoke (12), unless replacement is necessary.

   (3) If installed, remove placard (6) from yoke (12) and discard.

   B. Hold coupling (16) with Splined Coupling Wrench, F71228-500 or equivalent, and remove nut (14), washer (15) and coupling (16).

   C. Hold gear (75) fixed by wedging through drain hole of plug (1). Measure and record total backlash between gears (75, 17). Measure backlash at pitch diameter of spline on gear (17). Refer to figure 601 for backlash wear limit.

   D. Remove and disassemble torque brake assembly (57) as follows:

   (1) Remove nuts (41, 43), washers (41A), washers (44), bolts (42, 45) and housing (46) from assembly. Remove shim (48). Measure and note thickness of shim (48) to facilitate reassembly.

   (2) Straighten tangs of washer (49). Hold shaft (13, 13A) and, using Torque Wrench Adapter ST6105-1, remove nut (50), washer (49), retainer (51) and adapter (53) from shaft (13). Discard washer (49).

   (3) Remove bearing (52) from adapter (53).

   (4) Tap end of output shaft (13, 13A) and remove shaft from housing (90) and from torque brake assembly (57).

   (5) Remove support (58) from housing (60) and remove O-ring (70) from support (58). Remove O-ring (47) from housing (46).

(6) Remove nuts (54), washers (55), bolts (56) and torque brake assembly (57) from housing (90).

(7) Remove support (61) from housing (90). Remove O-rings (70 and 71) and shim (72) from support (61). Measure and note thickness of shim (72) to facilitate reassembly.

(8) Place torque brake assy (57) on arbor press and support housing (60) to provide clearance for internal parts. Disassemble torque brake by pressing on sleeve (66) until sleeve and spring pack assy are free of housing. Remove ring (64) from housing. Tap ring (69) with plastic mallet until free from spring pack (62). Remove shims (65).

NOTE: There may be up to two shims in each end, or no shims at all installed. Note number, thickness and location of shims to facilitate re-assembly.

(9) Install spring pack (62) in Spring Expansion Fixture, ST6107 (Fig. 502). If necessary tap spring pack assembly with a soft drift until spring turns are aligned with fixture spring stops, ST6107-14. Move stops inward to position them for spring engagement and lock them in this position. Rotate fixture drive shaft until stops contact spring set ends. Continue to wind springs until adapter (63) is free. Remove adapter (63) and sleeves (66, 67).

(10) Rotate fixture drive shaft in reverse to unwind spring until spring stops are free of spring ends.

(11) Loosen all four spring stops and move outward clear of spring set (68). Remove spring set from fixture by tapping lightly with plastic mallet.

NOTE: Spring set (68) is a matched assembly. Identify as matched parts.

E. Remove gear (75) as follows:

(1) Remove gear (75) and attached parts and coupling (59) from housing (90).

(2) Use needle-nosed pliers to bend up one end of retaining ring (74) and work ring around grooves in gear (75) and coupling (59) until ring is free. Pull coupling (59) from assembled parts.

NOTE: Coupling (59) is part of torque brake assembly (57).

(3) Remove bearings (73, 76) from gear (75).

(4) Hold gear (40) fixed by wedging between gear teeth and housing (90), pushing gear (40) towards gear (36). Measure and note backlash at pitch diameter of spline on gear (17). See Fig. 601 for backlash wear limit.

F. Remove gear (17):

(1) Remove bolts (18), washers (19) and retainer (20) from housing (90).

(2) Remove O-ring (21) and seal (22) from retainer (20).

(3) Remove shim (26). Measure and note thickness of shim (26) to facilitate assembly.

(4) Remove gear (17) and attached parts from housing (90).

(5) Remove bearings (27, 29) from gear (17).

G. Remove gear (40):

(1) Remove bolts (30), washers (31) and cover (32) from housing (90).

(2) Hold gear (40) fixed as in step E.(4). Measure and note backlash in splines at pitch diameter (2.7000) of gear (36), and at 0.8125 diameter of splines. See Fig. 601 for backlash wear limit.

(3) Remove O-ring (33) and shim (34) from cover (32). Measure and note thickness of shim (34) to facilitate assembly.

(4) Remove gear (40) and attached parts from housing (90).

(5) Remove bearing (35), gear (36), shim (37), spacer (38) and bearing (39) from gear (40). Measure and note thickness of shim (37) to facilitate assembly.

H. Remove parts 77 thru 80, parts 81, 82 or 81A, 82A, and O-ring 86 from housing (89).

I. Remove parts (83, 84, 85) from support (82), or parts (87, 83A) from support (82A) and seal (85) from retainer (81A), as applicable. Do not remove nameplate (88) or inserts (91) from housing (90).

CLEANING

1. General

A. Wash and rinse all metal parts except bearings in dry cleaning solvent, Specification P-D-680 or equivalent.

NOTE: Use stiff-bristle brush to remove dirt and grease. Clean all passages and bores.

B. Dry parts with clean, lint-free cloth or with moisture-free compressed air.

C. For further information, refer to "General Cleaning Procedures," Subject 20-30-03.

2. Bearings (See figure 1101.)

A. Clean bearings in accordance with "Cleaning and Relubricating Antifriction Bearings," Subject 20-30-01.

B. Lubricate all bearings except bearing (83) with hydraulic fluid, Specification MIL-H-5606. Lubricate bearing (83) according to manufacturer's instructions.

INSPECTION/CHECK

1. Check all parts for obvious defects in accordance with standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

2. Penetrant check per 20-20-02 -- retainers (20, 81, 81A), cover (32), housings (46, 90), supports (58, 61).

3. Magnetic particle check per 20-20-01 -- bolt (7), yoke (12), shafts (13, 13A), couplings (16, 59), gears (17, 36, 40, 75), adapters (53, 63), housing (60), rings (64, 69), sleeves (66, 67), spring set (68), supports (82, 82A).

REPAIR

1. Repair

A. Repair minor defects in accordance with standard industry practices. Refer to SOPM 20-10-01 for applicable instructions for rework and repair of high strength steel parts (180 ksi and above).

B. Cross (10) (Fig. 401) ID's for bolt (7), spacer (8) and pin (9).

(1) Machine as required to remove defects per SOPM 20-10-02, observing 1.1364 max rework diameter. Machined Finish to be at least 63 microinch. No step or mismatch allowed.

(2) Stress relieve per Fig. 406.

(3) Shot-peen using size and intensity specified.

(4) Nickel plate per SOPM 20-42-09, 0.004-0.006 single plate thickness.

(5) Chrome plate per SOPM 20-42-03.

(6) Machine to design diameter of 1.1055-1.1064 per 20-10-04. Total plating thickness (nickel and chrome) after machining to be 0.015 max. Machined finish to be at least 63 microinch.

(7) Magnetic particle examine per SOPM 20-20-01.

C. Repair bolt (7), spacer (8), pin (9) and cross (10) exterior dimensions - (Fig. 401)

(1) Machine, as required within rework limits shown, to remove corrosion or defects per SOPM 20-10-02. Observe surface finish requirements. Remove burrs and sharp edges. Smoothly blend all mismatch areas.

(2) Stress relieve per Fig. 406.

(3) Shot-peen using shot size and intensity indicated.

(4) Restore reworked surface, unless otherwise noted, by plating and machining to design dimensions and finish noted.

D. Torque Brake Rework (57) (Fig. 402)

CAUTION: REWORK PER FOLLOWING PROCEDURES MAY AFFECT INTERCHANGEABILITY IN ANY FUTURE OVERHAUL OR REPLACEMENT.

(1) To shift torque lockout level to a higher value, machine housing (60) surface as indicated on repair figure per SOPM 20-10-02. Maintain finish and dimensions shown.

(2) To shift torque lockout level to a lower value.

(a) Machine spring set (68) and stress relieve as indicated (note amount of material removed).

(b) Build up OD of sleeve with chrome plate as required to obtain finish diameter (after machining) equal to original OD plus amount that ID of spring set (68) was increased +0.0000/-0.0005. A shift of torque lockout level relatively affects maximum or minimum lockout levels a corresponding amount.

E. Gear (17) (Fig. 402A)

(1) Magnetic particle examine per SOPM 20-20-01.

(2) Machine gear OD as required per SOPM 20-10-02, within repair limit, to remove defects. Finish should be 8 microinches or better. No step or mismatch is allowed.

(3) Shot peen machined area (including fillet radius) using size and intensity specified.

(4) Build up OD with chrome plate per SOPM 20-42-03.

(5) Grind OD to design diameter and finish noted.

(6) Magnetic particle examine per SOPM 20-20-01.

F. Shaft (13, 13A) bearing and seal OD, lug holes (Fig. 404); Support (82) OD (Fig. 405)

(1) Magnetic particle examine per SOPM 20-20-01.

(2) Machine as required per SOPM 20-10-02, within repair limits, to remove defects.

(3) Magnetic particle examine per SOPM 20-20-01.

(4) Shot peen using size and intensity specified.

(5) Chrome plate per SOPM 20-42-03. Grind to design diameter and finish noted.

(6) Magnetic particle examine per SOPM 20-20-01.

G. Yoke (12)

(1) Attachment bolt hole cleanup.

(a) Machine attachment bolt holes to 0.3432-0.3442 per SOPM 20-10-02. Break sharp edges of reworked holes 0.003-0.020.

(b) Attach tag to reworked yoke, stating "Bolt holes are oversize. Use oversize bolts, NAS3005E23 or equivalent, to attach ballscrew. Bolt holes in ballscrew must be 0.3432-0.3442 in. dia to match."

(2) Yoke ID corrosion removal (Fig. 402B)

(a) Magnetic particle examine per SOPM 20-20-01.

(b) Machine yoke ID as required per SOPM 20-10-02, within repair limit, to remove defects. Finish should be 63 microinches or better. No step or mismatch is allowed.

(c) Shot peen machined area using size and intensity specified.

(d) Build up ID with chrome plate per SOPM 20-42-03.

(e) Grind ID to design diameter and finish noted.

(f) Magnetic particle examine per SOPM 20-20-01.

2. Refinish (Fig. 1101)

NOTE: Refer to SOPM 20-30-02 for stripping of protective coatings, to SOPM 20-41-01 for explanation of F and SRF finish codes and to Aeronautical Material Specifications for AMS references.

A. Bolt (7), spacer (8), pin (9), cross (10) -- Fig. 401.

B. Coupling (16), retainer (20), cover (32), support (58), housing (60), support (61), support (82A), retainer (81A) -- Fig. 403.

C. Shafts (13, 13A) -- Fig. 404.

D. Support (82) -- Fig. 405.

E. Washer (15), retainer (51) -- Cadmium-titanium plate (F-1.18) all over. Material: 4130 steel (120-150 ksi)

F. Deleted.

G. Spacers (38, 84) -- Anodize (AMS 2470). Material: Alum alloy.

H. Deleted.

I. Housing (46, 90) -- Anodize (AMS 2470) all over. Apply primer, BMS 10-11, Type 1 (SRF-12.205) on all external surfaces only, except no paint on machined surfaces. Material: Alum alloy.

J. Retainer (81) -- Anodize (MIL-A-8625, Type II). Apply primer, BMS 10-11, Type 1 (F-20.02) all over. Material: Alum alloy.

K. Spring set (68) -- Fig. 402.

L. Yoke (12) -- Fig. 402B.

M. Gear (17) -- Fig. 402A

3. Replacement (Fig. 1101)

A. Replace all O-rings, seals and ring (74).

B. Inserts (91) --

(1) Remove damaged insert.

(2) Clean and check threads in bore of housing.

(3) Apply primer, BMS 10-11, type 1, to bore of housing and to insert. Install insert 3/4 to 1-1/2 turns below surface of housing while primer is wet. Remove tang.

C. Nameplate (88)

(1) Using suitable knife or scraper, remove old nameplate (88).

(2) Remove old adhesive using Turco 4669, or equivalent. Wipe all traces of adhesive and paint remover from housing with a clean cloth soaked with water.

(3) Stamp new nameplate as required and bend to contour of housing.

(4) Clean faying surfaces of housing (90) and nameplate (88) with a clean cloth moistened with methyl ethyl ketone. Wipe dry with a clean, dry cloth.

(5) Cement nameplate to housing per 20-50-12, type 54, grade 1.

D. Bushings (11)

(1) If installed bushings meet inspection/check requirements, and the service wear limits are less than those shown in Fig. 601, mark position of bushings (11) in yoke (12) and shaft (13), rotate bushings 180 degrees, and reinstall per 20-50-03 using wet BMS 10-11, type 1, primer.

(2) If bushings are damaged or worn beyond limits shown in Fig. 601, install new bushings (11) in yoke (12) and/or shaft (13) using wet BMS 10-11, type 1, primer per 20-50-03.

4. Materials

A. Primer -- BMS 10-11, type 1 (Ref 20-60-02)

B. Paint Remover -- Turco 4669 (Ref 20-60-01)

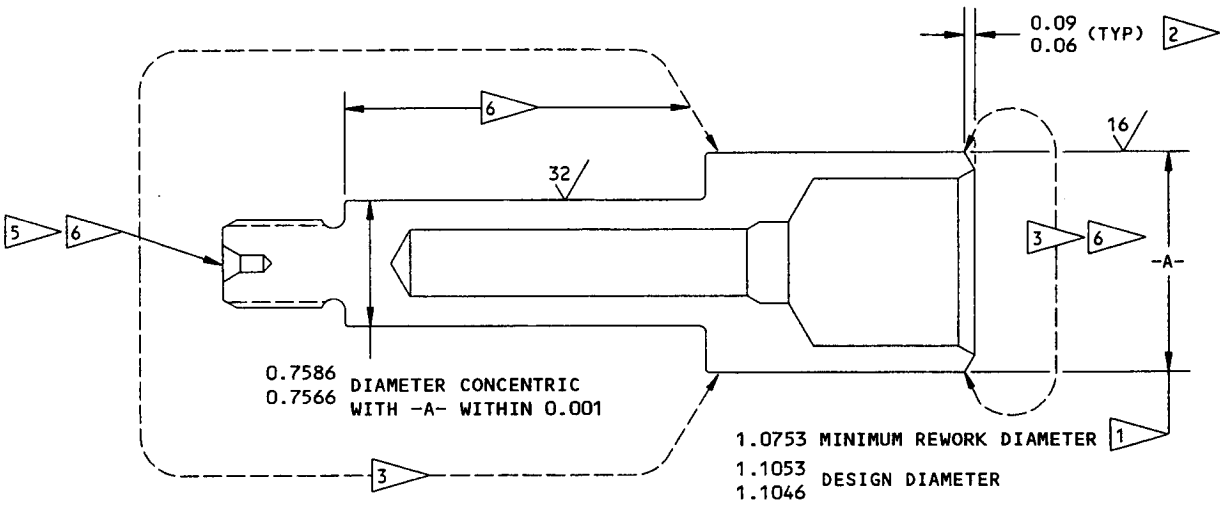
C. Adhesive -- BMS 5-25, grade 1 (Ref 20-50-12)

D. Solvent -- Methyl ethyl ketone, TT-M-261 (Ref 20-60-01)

E. Enamel -- BMS 10-60, BAC707 gray (Ref 20-60-02)

F. Enamel -- BMS 10-60, type 1, black (Ref 20-60-02)

G. Topcoating -- Clear Skydrol-resistant, type 41 (Ref 20-60-02)



REFINISH

CHROME PLATE (F-15.04) DIAMETER -A-. CADMIUM-TITANIUM PLATE ALL OTHER SURFACES PER 3. APPLY PRIMER AND PAINT PER 6.

REPAIR

AS NOTED BY 1 2

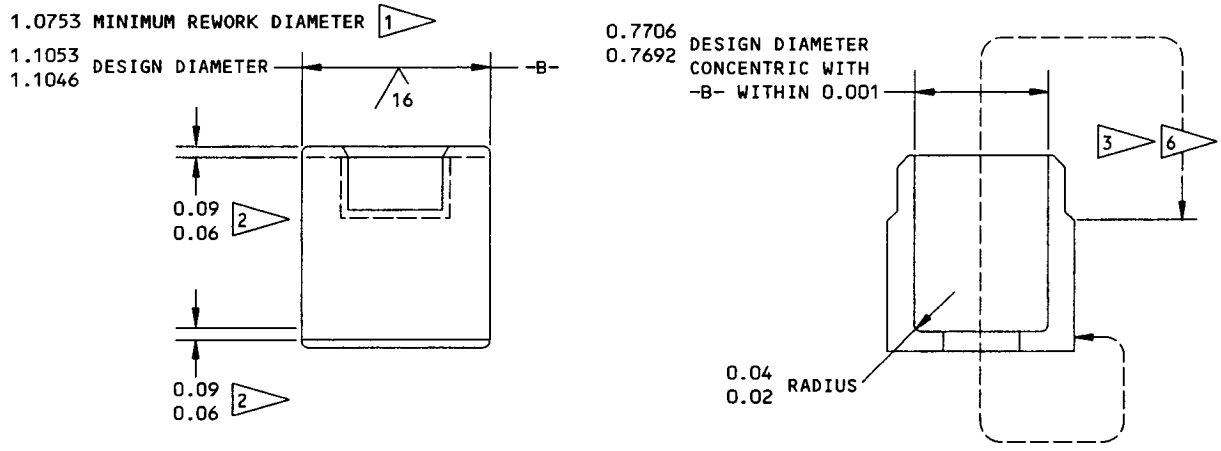
SHOT PEEN: (20-10-03)
0.017 - 0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: (65-76606-1) 4340M STEEL
(275-300 KSI)
(69-52419-2) MOD H-11 STEEL
(RC 54-56)

BOLT (7)

Bolt, Spacer, Pin and Cross - Repair and Refinish
Figure 401 (Sheet 1)

L40686



REFINISH

CHROME PLATE (F-15.04) DIAMETER -B-. CADMIUM-TITANIUM PLATE ALL OTHER SURFACES PER 3. APPLY PRIMER AND PAINT PER 6.

REPAIR

AS NOTED BY 1 2

SHOT PEEN: (20-10-03)
0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

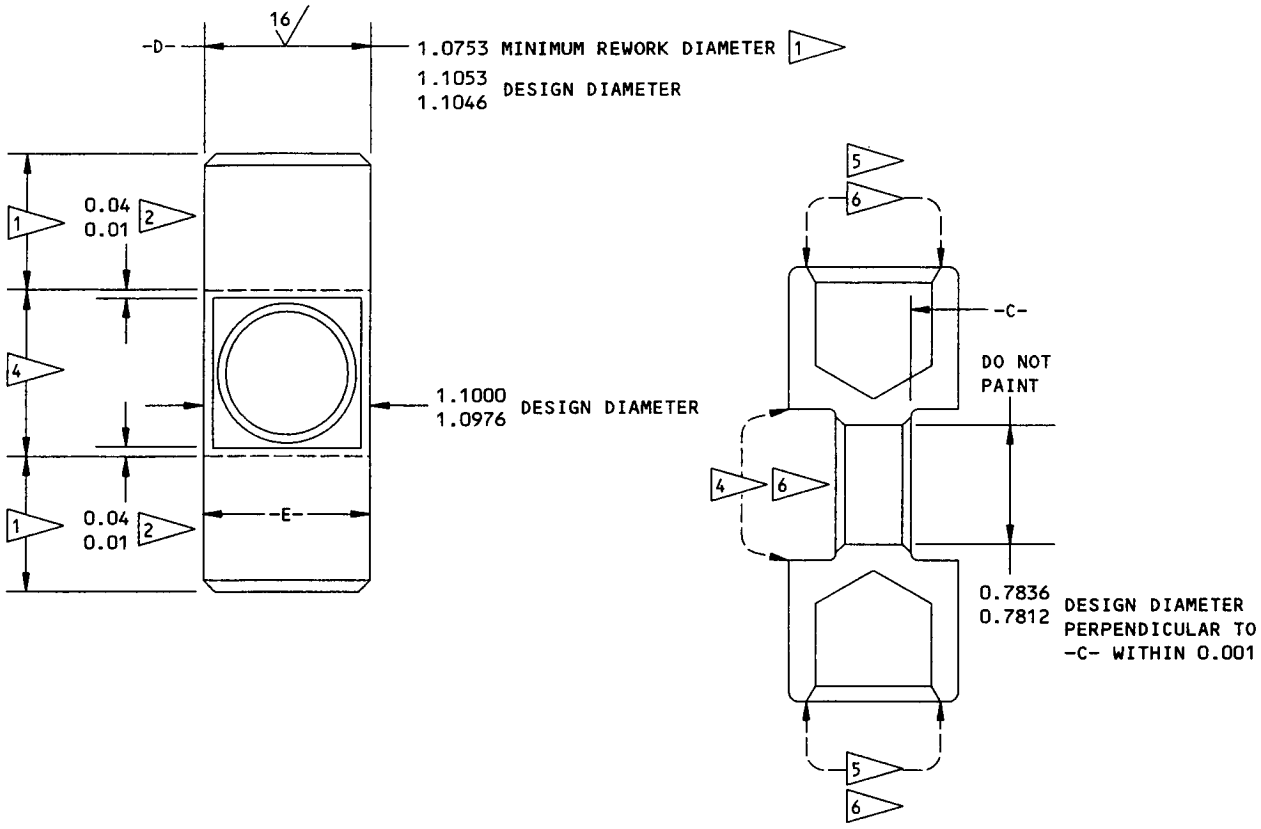
BREAK SHARP EDGES 0.005-0.015 RADIUS.

MATERIAL: (69-52418-1) MOD H-11 STEEL (RC 54-56)
OPTIONAL 4340M STEEL (270-300 KSI)
(69-60052-1) MOD H-11 STEEL (RC 54-56)
(69-60052-2) 4340M STEEL (270-300 KSI)

SPACER (8)

Bolt, Spacer, Pin and Cross - Repair and Refinish
Figure 401 (Sheet 2)

L40698



REFINISH

CHROME PLATE (F-15.04) DIAMETERS -D- AND -E-. CADMIUM-TITANIUM PLATE ALL OTHER SURFACES PER 4. APPLY PRIMER AND PAINT PER 6.

REPAIR

AS NOTED BY 1 2

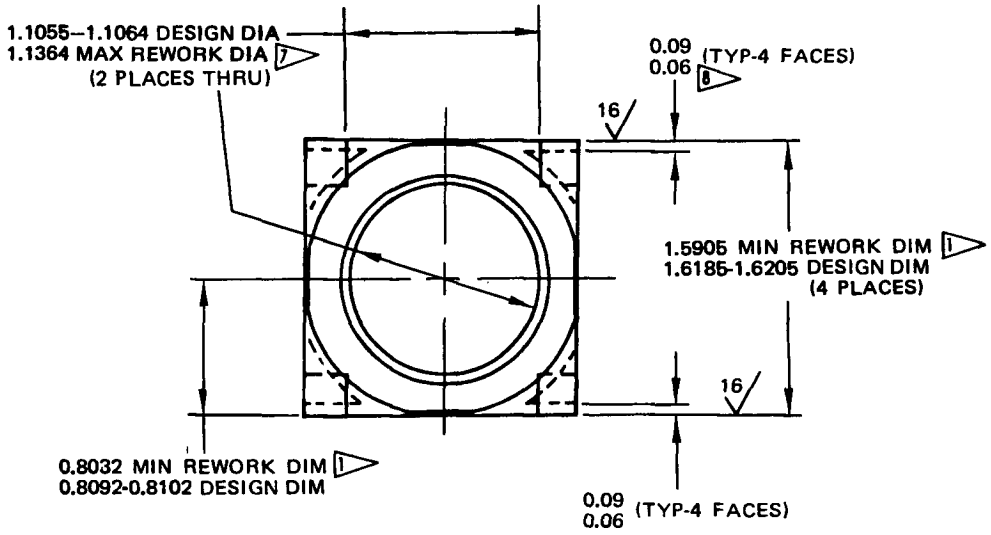
SHOT PEEN: (20-10-03)
0.017 - 0.033 SHOT SIZE
0.015 A2 INTENSITY

BREAK SHARP EDGES 0.005-0.015 RADIUS.

MATERIAL: (69-52423-1) MOD H-11 STEEL (RC 54-56)
OPTIONAL 4340M STEEL (270-300 KSI)
(69-60056-1) MOD H-11 STEEL (RC 54-56)
(69-60056-2) 4340M STEEL (270-300 KSI)

PIN (9)

Bolt, Spacer, Pin and Cross - Repair and Refinish
Figure 401 (Sheet 3)



REFINISH

CHROME PLATE (F-15.04) OUTER SURFACES
PER F-1.842 (0.003–0.005 PLATE THICKNESS)

REPAIR

AS NOTED BY 1

SHOT PEEN: (20-10-03)

0.017–0.033 SHOT SIZE
0.012 A2 INTENSITY

BREAK SHARP EDGES

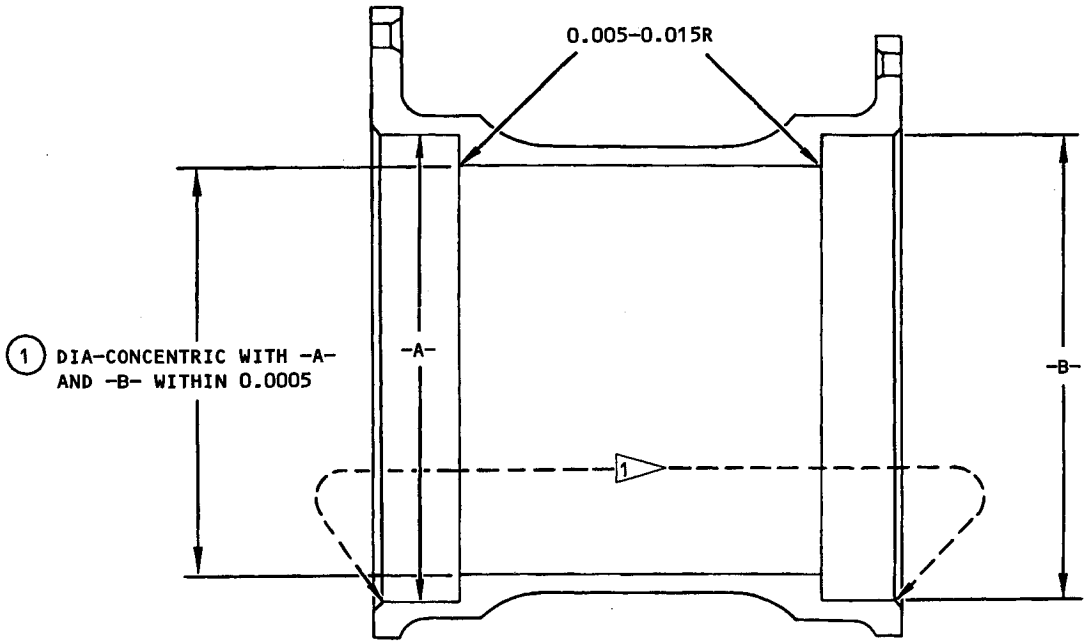
MATERIAL:

(69–52411–1) MOD H–11 STEEL (RC 54–56)
(69–60058–1) 15–5PH CRES (150–170 KSI)

CROSS (10)

1. BUILD UP WITH CHROME PLATE ((20–42–03) AND GRIND TO FINISH AND DIMENSIONS SHOWN. OBSERVE PLATING RUNOUT AS NOTED.
2. CHROME PLATE RUNOUT
3. CADMIUM-TITANIUM PLATE (F-1.18) 0.0003–0.0005 THICKNESS (20-42-02)
4. CADMIUM-TITANIUM PLATE (F-1.181) 0.0005–0.0007 THICKNESS (20-42-02)
5. CADMIUM-TITANIUM PLATE THROW IN PREFERRED IN THESE AREAS.
6. AFTER PLATING APPLY PRIMER (SRF-12.205) BMS 10-11, TYPE 1 AND PAINT (SRF-12.63) BMS 10-11, TYPE 2.
7. BUILD UP WITH NICKEL PLATE (20-42-09) (0.004–0.006 THICK) AND CHROME PLATE (20-42-03) AND MACHINE TO DESIGN DIMENSIONS SHOWN. TOTAL PLATE THICKNESS AFTER MACHINING TO BE 0.015 MAX.
8. CHROME PLATE STOP–OFF AREA

ALL DIMENSIONS ARE IN INCHES



		(1)
175824	DESIGN DIM	3.1175 3.1170
	REWORK LIMIT	3.1235
176628	DESIGN DIM	3.1144 3.1139
	REWORK LIMIT	3.1224

1 CARBURIZED, 0.025-0.035 DEEP

REWORK

MACHINE ID AS REQUIRED TO INCREASE TORQUE SETTING DESIRED AMOUNT (TORQUE SETTING INCREASES 6.4 POUND INCH FOR EACH 0.001 INCREASE OF ID).

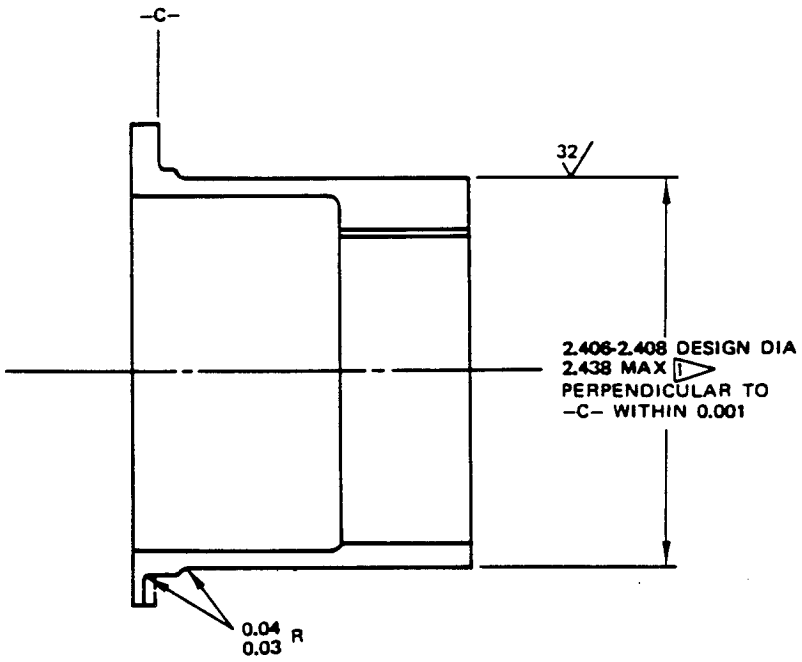
MATERIAL: 9310 STEEL PER AMS 6265 RC 32-43 CORE HARDNESS CARBURIZED, RC 60 MIN AS NOTED.

BREAK SHARP EDGES 0.003-0.020R

TORQUE BRAKE HOUSING (60)

Torque Brake - Rework
Figure 402 (Sheet 1)

W28840



REPAIR

AS NOTED BY 1

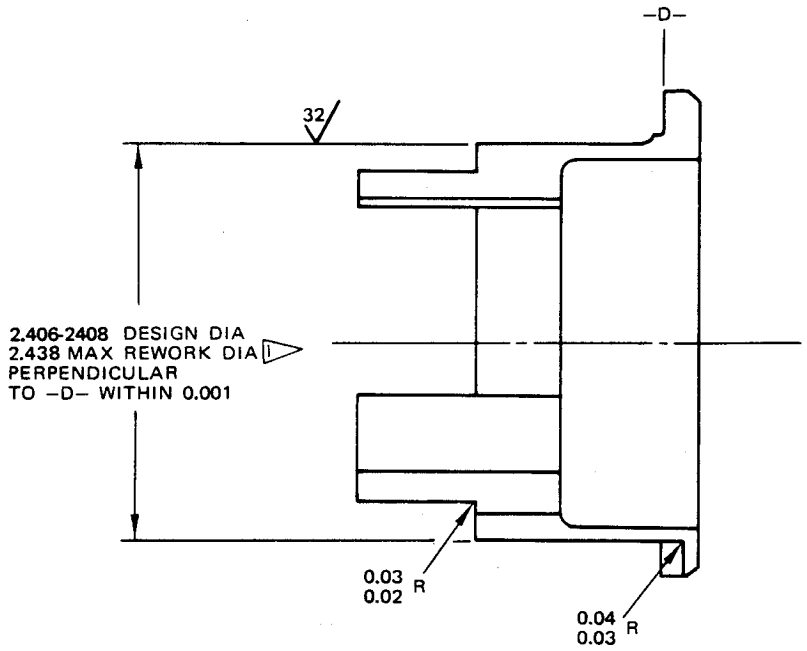
MATERIAL: STEEL (HT 290-300 KSI)

BREAK SHARP EDGES 0.005-0.015R

SHOT PEEN: (REFER TO 20-10-03)

0.010-0.019 SHOT SIZE
0.012-0.015 A2 INTENSITY

SLEEVE (66)



REPAIR

AS NOTED BY 1

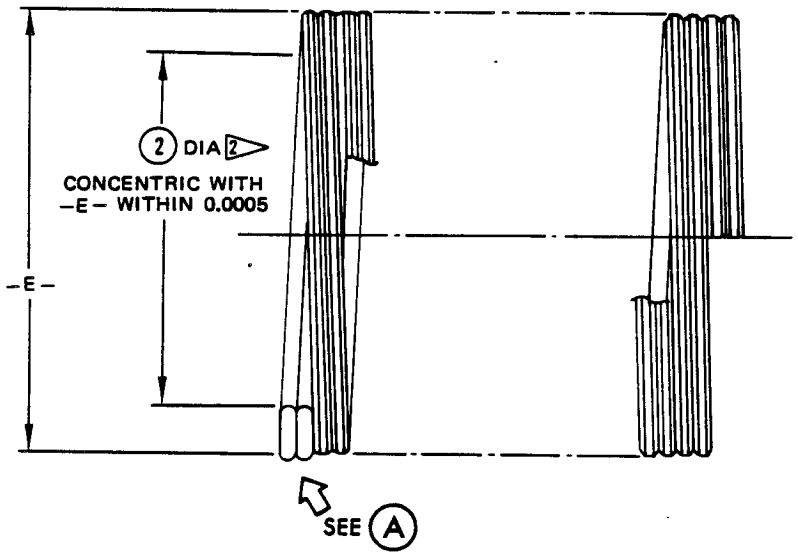
MATERIAL: STEEL (HT 290-300 KSI)

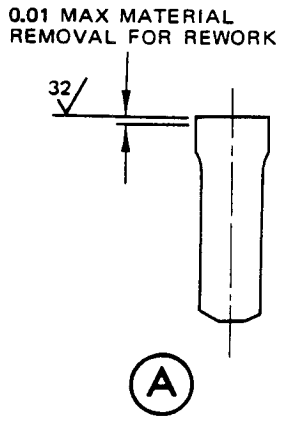
BREAK SHARP EDGES 0.005-0.015R

SHOT PEEN: (REFER TO 20-10-03)

0.010-0.019 SHOT SIZE
0.012-0.015 A2 INTENSITY

SLEEVE (67)





REFINISH

CADMIUM–TITANIUM PLATE ID AND SPRING FLANKS PER 20–42–02

		2
175822	DESIGN DIM.	2.338 2.337
	REWORK LIMIT	2.358
176636	DESIGN DIM.	2.3137 2.3127
	REWORK LIMIT	2.3337

REWORK

1. MACHINE ID AS REQUIRED TO DECREASE TORQUE LEVEL BY DESIRED INCREMENT (VALUE DECREASES 3.0 INCH POUNDS FOR P/N 175822 AND 3.9 INCH POUNDS FOR P/N 176636 FOR EACH 0.001 INCREASE OF ID).
2. STRESS RELIEVE IN FOLLOWING ORDER:
   A. 320°-330°F FOR 1 HOUR
   B. 625°-675°F FOR 1 HOUR
   C. 920°-930°F FOR 2 HOURS
   D. AIR COOL AT 65°-75°F

MATERIAL: STEEL (HT 290-300 KSI)

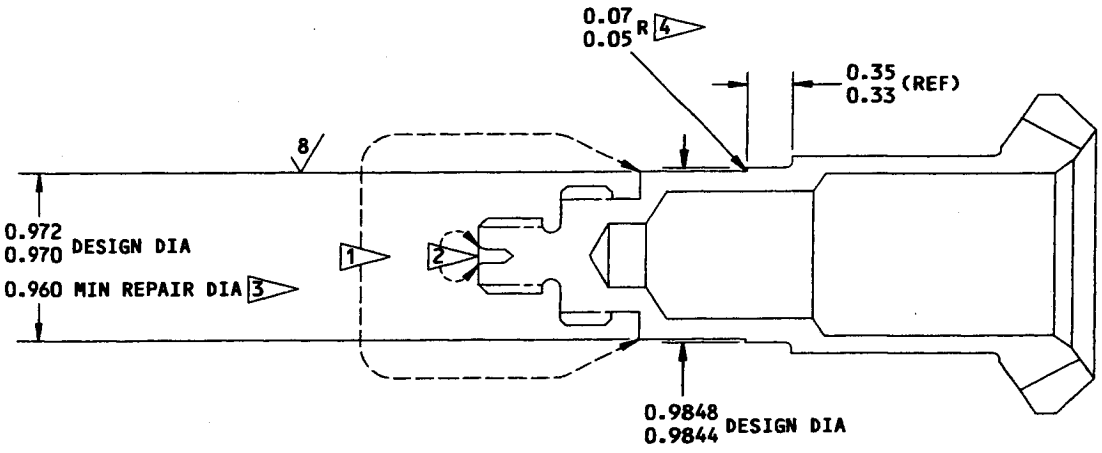
BREAK SHARP EDGES 0.005-0.015R

SPRING SET (68)

ALL DIMENSIONS ARE IN INCHES

1 BUILD UP WITH HARD CHROME PLATE (REFER TO 20–42–03) AS REQUIRED TO OBTAIN FINISH DIA (AFTER MACHINING) EQUAL TO MEASURED OD PLUS AMOUNT THAT ID OF SPRING SET (68) WAS INCREASED (+ 0.0000–0.0005)

2 NOTE AMOUNT ID IS INCREASED TO DETERMINE REWORK OF SLEEVES (66, 67)



REFINISH

CADMIUM-TITANIUM ALLOY PLATE AS NOTED. APPLY PRIMER TO DRILL CENTER AS NOTED

1 CADMIUM-TITANIUM ALLOY PLATE (F-1.181) 0.0005-0.0007 THICK THIS AREA

2 PLATING OPTIONAL THIS AREA. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205)

3 BUILD UP WITH HARD CHROME PLATE (REF 20-42-03) AND GRIND TO FINISH AND DIMENSIONS SHOWN. STOP CHROME PLATE 0.03 MINIMUM BEFORE FILLET RADIUS

4 MAINTAIN RADIUS IN TRANSITION BETWEEN DIAMETERS

REPAIR

REF 3 4

BREAK SHARP EDGES 0.003-0.020

SHOT PEEN (REF 20-10-03)
0.017-0.033 SIZE
0.014 A2 INTENSITY
2.0 COVERAGE

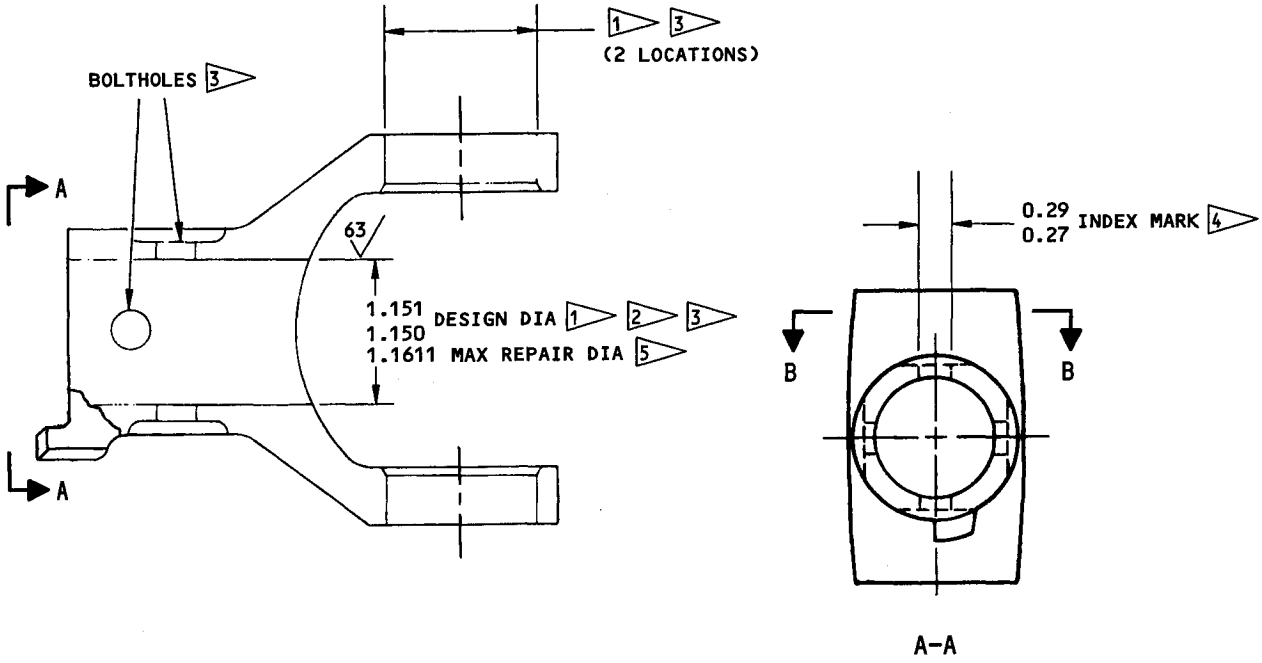
MATERIAL: (69-52404-1) MOD H-11 STEEL (RC 54-56)
(69-52404-2) 4340M STEEL (270-300 KSI)

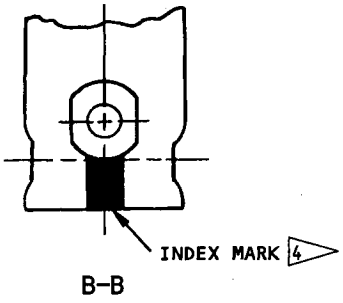
ALL DIMENSIONS ARE IN INCHES

69-52404-1,-2

Bevel Gear Repair
Figure 402A

229751





REFINISH

CADMIUM-TITANIUM ALLOY PLATE (F-15.01)
ALL OVER EXCEPT AS NOTED

(69-52414-1 ONLY) APPLY ONE COAT
PRIMER, BMS 10-11, TYPE 1 (F-20.02)
ALL OVER EXCEPT AS NOTED

(69-52414-3,-5,-7) APPLY TWO COATS
PRIMER, BMS 10-11, TYPE 1 (F-20.03)
ALL OVER EXCEPT AS NOTED

1 CADMIUM-TITANIUM PLATE 0.0003-0.0005 THICK

2 NO CADMIUM-TITANIUM PLATING ON INTERNAL SURFACE (69-52414-1)

3 NO PRIMER THESE SURFACES

4 APPLY ENAMEL, BMS 10-60, TYPE 1, BLACK, IN LOCATION SHOWN. TOP COAT PER 20-44-01, TYPE 41

5 BUILD UP WITH HARD CHROME PLATE (SOPM 20-42-03) AND GRIND TO FINISH AND DIMENSIONS SHOWN.

REPAIR

REF 5

SHOT PEEN (SOPM 20-10-03)

0.007-0.017 SIZE
0.008 A2 INTENSITY
2.0 COVERAGE

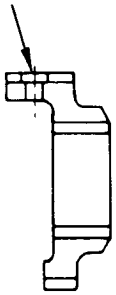
MATERIAL: (69-52414-1,-3) MOD H-11 STEEL RC 54-56
(69-52414-5,-7) 4340M STEEL 270-300 KSI

ALL DIMENSIONS ARE IN INCHES

YOKE (12)

Yoke Repair
Figure 402B

W28895

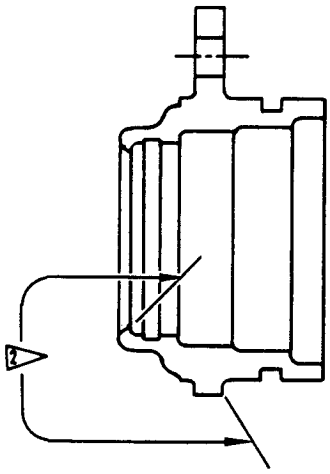


REFINISH

CADMIUM–TITANIUM PLATE (F-1.181) AS NOTED

MATERIAL: 4340 STEEL (150–180 KSI)

COUPLING (16)



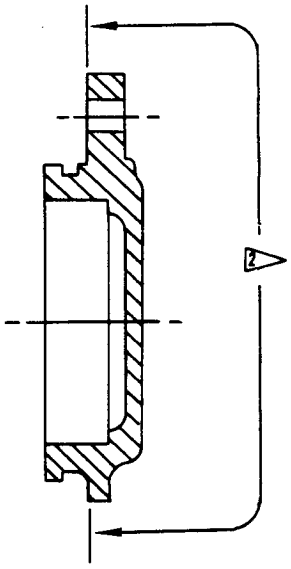
REFINISH

CHROMIC ACID OR SULFURIC ACID ANODIZE (F–17.05). APPLY ONE LAYER OF BMS 10–11, TYPE 1 PRIMER (F–20.02) TO THE AREA SHOWN

69–37696–3 ONLY: APPLY ONE LAYER OF BMS 10–11, TYPE 2 ENAMEL, BAC707 GRAY GLOSS (F–21.02) TO THE AREA SHOWN.

MATERIAL: AL ALLOY

RETAINER (20)



REFINISH

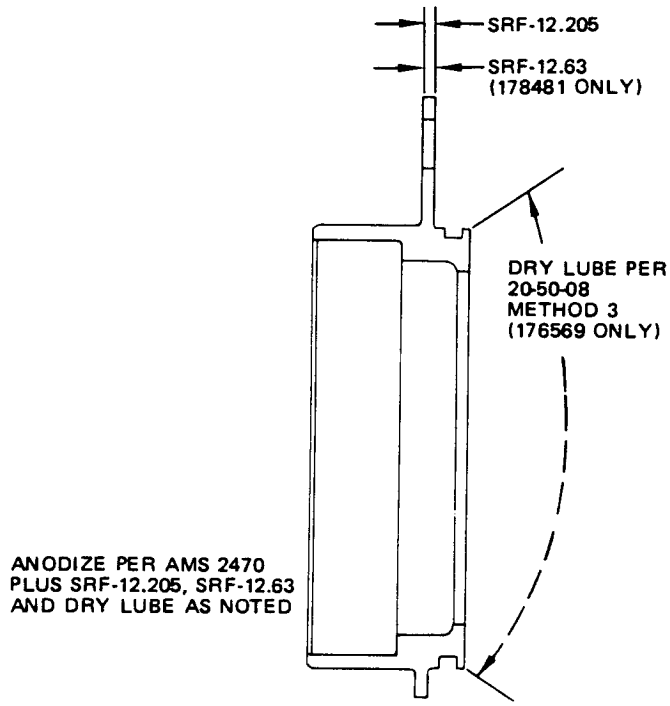
ANODIZE. APPLY ONE LAYER OF BMS 10–11, TYPE 1 PRIMER TO THE AREA SHOWN.

69–37633–5 ONLY: APPLY ONE LAYER OF BMS 10–60 (OPT: BMS 10–11, TYPE 2), BAC707 GRAY GLOSS ENAMEL (SRF–14.9813) TO THE AREA SHOWN.

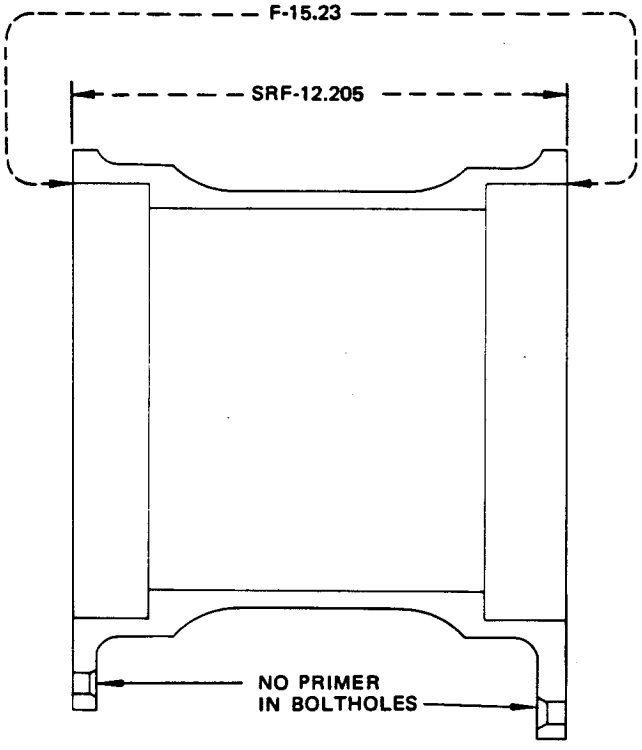
MATERIAL: AL ALLOY

COVER (32)

Refinish Diagram
Figure 403 (Sheet 1)

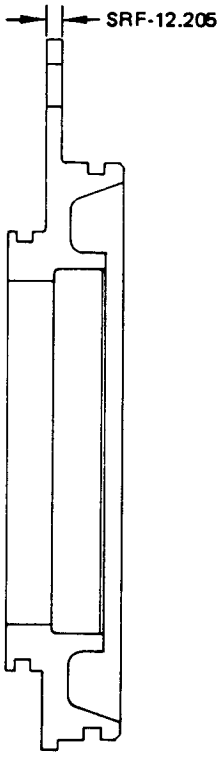


SUPPORT (58)



F15.23, SRF-12.205
AS NOTED

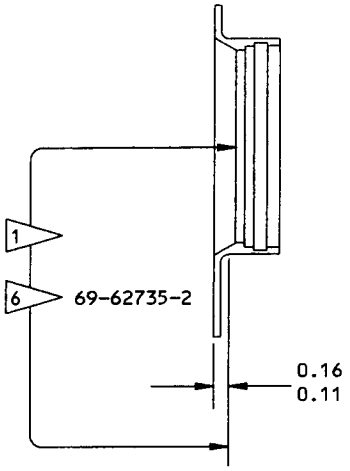
HOUSING (60)



ANODIZE PER AMS 2470 PLUS
SRF-12.205 AS NOTED

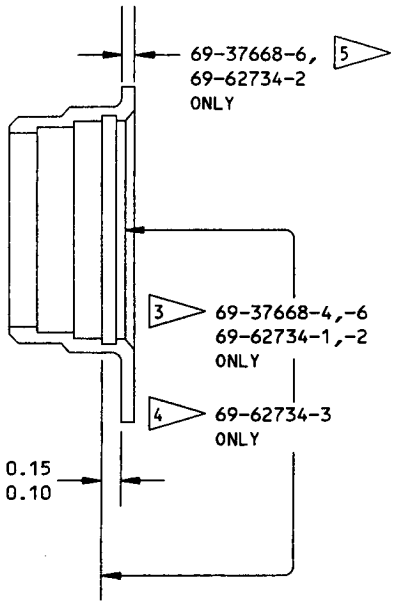
SUPPORT (61)

Refinish Diagram
Figure 403 (Sheet 2)



MATERIAL: AL ALLOY

RETAINER (81A)



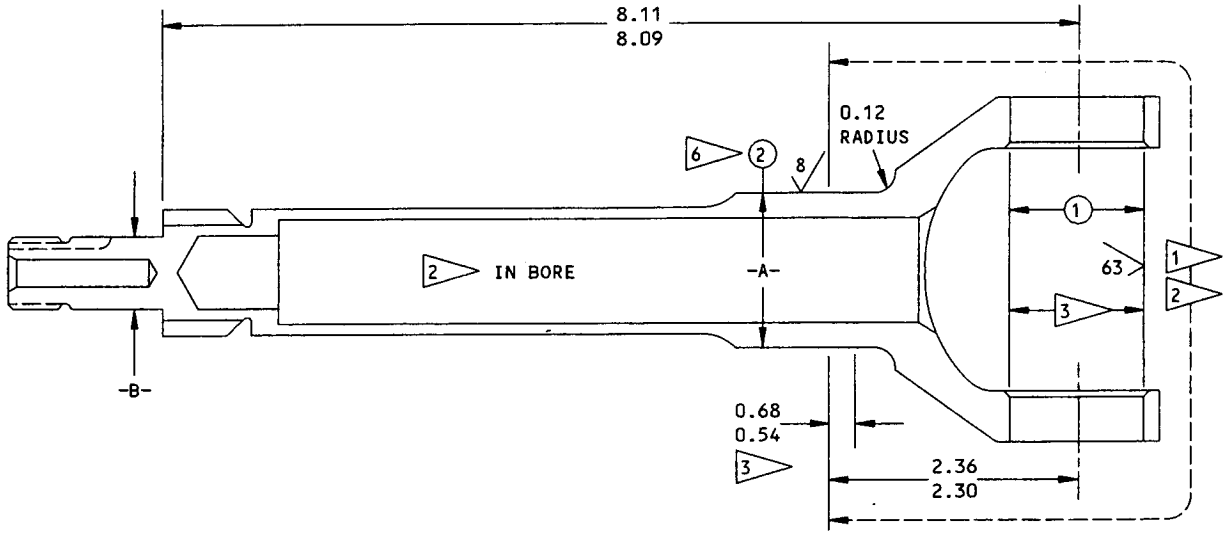
MATERIAL: (69-62734-1,-2 ONLY) AL ALLOY
(69-37668-4,-6 ONLY)
MOD H-11 STEEL (RC 54-56)
(69-62734-3 ONLY)
4340M STEEL (270-300 KSI)

SUPPORT (82A)

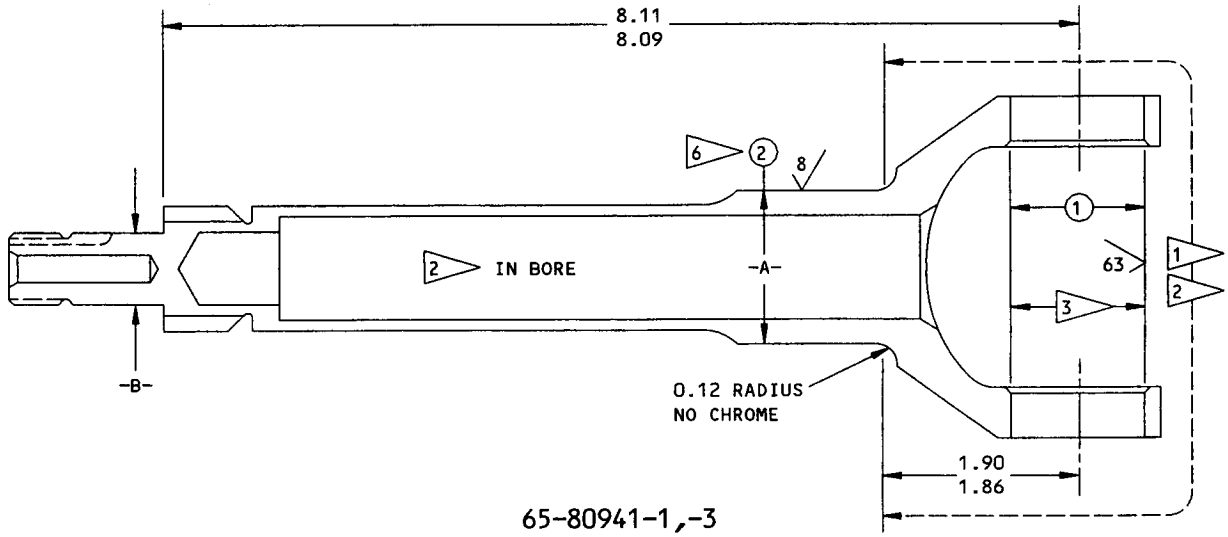
1. ANODIZE (F-17.05) ALL OVER. APPLY PRIMER (F-20.02) TO INDICATED AREA.
2. PAINT THIS AREA ONLY.
3. CHEMICALLY TREAT (F-17.01) ALL OVER. APPLY ONE LAYER OF BMS 10-11, TYPE 1 PRIMER (F-20.02) TO AREA SHOWN.
4. CADMIUM-TITANIUM PLATE (F-15.01) ALL OVER. APPLY ONE LAYER OF BMS 10-11, TYPE 1 PRIMER (F-20.02) TO AREA SHOWN.
5. APPLY ONE LAYER OF BMS 10-60, BAC 707 GRAY GLOSS ENAMEL (SRF-14.9813) TO AREA SHOWN.
6. APPLY ENAMEL (F-21.02).

ALL DIMENSIONS ARE IN INCHES.

Refinish Diagram
Figure 403 (Sheet 3)



65-80941-2
69-52400-1



65-80941-1,-3
69-52400-2
69-62744-2

SHAFT (13, 13A)

Shaft Repair and Refinish
Figure 404 (Sheet 1)

		① ▷5	②
65-80941-2 69-52400-1	DESIGN DIAMETER	1.3279 1.3271 ▷8	1.3762 1.3757 ▷7
	REPAIR LIMIT ▷4	1.3501	1.3465
69-62744-2	DESIGN DIAMETER	1.3279 1.3271	1.3774 1.3765 ▷9
	REPAIR LIMIT ▷4	1.3501	1.3465
69-52400-2	DESIGN DIAMETER	1.3279 1.3271 ▷8	1.3774 1.3765 ▷7
	REPAIR LIMIT ▷4	1.3501	1.3465
65-80941-1,-3	DESIGN DIAMETER	1.3279 1.3271 ▷8	1.3774 1.3765
	REPAIR LIMIT ▷4	1.3501	1.3465

REFINISH

CADMIUM-TITANIUM PLATE SURFACES AS NOTED ▷1
(OPT IN BORES)

APPLY PRIMER PER ▷2 EXCEPT AS NOTED ▷3

▷1 CADMIUM-TITANIUM PLATE (F-15.01)

▷2 APPLY PRIMER BMS 10-11, TYPE 1 (F-20.02)

▷3 DO NOT APPLY PRIMER.

▷4 BUILDUP WITH CHROME PLATE (REF 20-42-03) AND GRIND TO DESIGN DIMENSIONS.

▷5 THRU IN-LINE PERPENDICULAR TO DIAMETER -A- WITHIN 0.001

▷6 CONCENTRIC TO -B- WITHIN 0.002 TIR

▷7 DIMENSIONS SHOWN ARE BEFORE PLATING. PLATE PER F-15.01, 0.0005-0.0007 THICK.

▷8 DIMENSIONS SHOWN ARE BEFORE PLATING. PLATE PER F-15.01, 0.0003-0.0005 THICK.

▷9 IF DIMENSIONS CANNOT BE MET, CHROME PLATE 0.005 TO 0.015 THICK (REF 20-42-03).

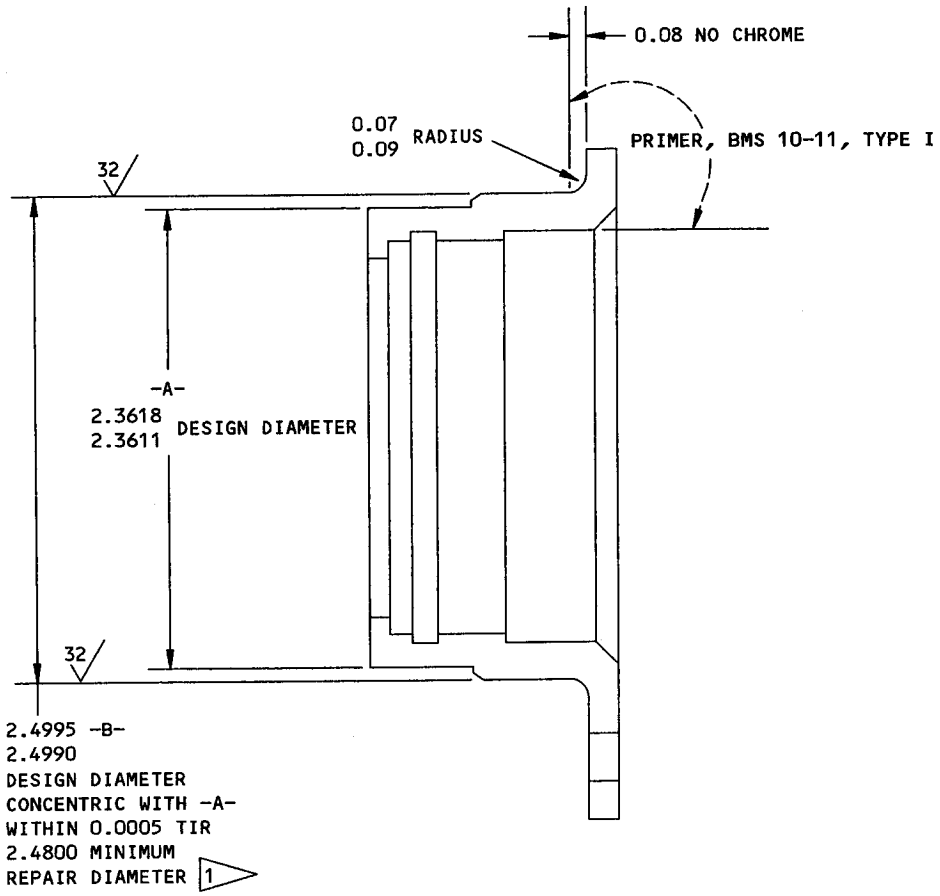
REPAIR

REF ▷4

SHOT PEEN (REF 20-10-03):
0.017-0.046 SHOT SIZE
0.012-0.015A INTENSITY
2.0 COVERAGE

MATERIAL: (65-80941) 4340M STEEL
(275-300 KSI)
(69-52400-1, -2, 69-62744-2)
MOD H-11 STEEL (RC 54-56)

Shaft Repair and Refinish
Figure 404 (Sheet 2)



SUPPORT (82)

REFINISH

NO FINISH EXCEPT PRIMER AS SHOWN (F-20.02)

REPAIR

AS NOTED 1

SHOT PEEN (REF 20-10-03)
0.017-0.039 SHOT SIZE
0.010 A2 INTENSITY

BREAK SHARP EDGES 0.003-0.020 RADIUS

MATERIAL: MOD H-11 STEEL (RC 54-56)

1 BUILDUP WITH CHROME PLATE (REF 20-42-03) AND GRIND TO DESIGN DIM. OBSERVE MINIMUM PLATING RUNOUT AT FILLET RADIUS.

Refinish and Repair
Figure 405

Index No. Fig. 1101	Part Number	Part Name	Material	Tensile Strength (ksi)	Stress Relief After Base Material Rework*	
					Temperature (°F)	Time (Hours)
7	69-52419-2	Bolt	MOD H-11	RC 54-56	850 to 900	4
	65-76606-1		4340M	275 to 300	500 to 550	4
8	69-52418-1	Spacer	MOD H-11 optional 4340M	RC 54-56	500 to 550	8
				270 to 300		
	69-60052-1		MOD H-11	RC 54-56	850 to 900	4
	69-60052-2		4340M	270 to 300	500 to 550	4
9	69-52423-1	Pin	MOD H-11 optional 4340M	RC 54-56	500 to 550	8
				270 to 300		
	69-60056-1		MOD H-11	RC 54-56	850 to 900	4
	69-60056-2		4340M	270 to 300	500 to 550	4
10	69-52411-1	Cross	MOD H-11	RC 54-56	800 to 900	4
	69-60058-1		15-5PH	150 to 170	---	---
13	69-52400-1	Shaft	MOD H-11	RC 54-56	850 to 900	4
	69-52400-2					
	69-62744-2					
13A	65-80941-1	Shaft	4340M	275 to 300	500 to 550	4
	65-80941-2					
	65-80941-3					
82	69-37668-3	Support	MOD H-11	RC 54-56	850 to 900	4

* After stress relieving, air cool part at 65°F-75°F and magnetic particle examine per SOPM 20-20-01.

Stress Relief Data
Figure 406

ASSEMBLY

1. General

   A. Immerse all O-rings and internally installed parts in hydraulic fluid, Specification MIL-H-5606. These parts are installed while wet.

   B. Apply primer, Specification BMS 10-11, type 1, on faying surfaces, from O-ring groove and outer edge, where required by reassembly procedures. Mate and assemble while primer is wet. Do not allow primer in O-ring groove, on O-ring, or on sealing surface.

   C. Apply primer, Specification BMS 10-11, type 1, to shank and threads of bolts, where required by reassembly procedures. Install while primer is wet.

   D. Lockwire bolts and plugs, where required by reassembly procedures, using double wire twist method.

2. Assembly (See figure 1101.)

   A. Install and adjust gears (17, 36 and 40) as follows:

      (1) See figure 501, diagram numbers 1, 2 and 3, and determine thickness of shims (26, 34 and 37).

      NOTE: Deleted.

      (2) Install bearing (39), spacer (38) and shim (37) on gear (40).

      (3) Position gear (40) in housing (90).

      (4) Install bearing (35) on gear (36) and position gear (36) on gear (40).

      (5) Position shim (34) on cover (32), mate cover to housing (90), and install bolts (30) and washers (31). Tighten bolts (30) to a torque range of 45 to 65 pound-inches.

      (6) Install bearing (29) and bearing (27) on gear (17).

      (7) Position gear (17) in housing (90).

      (8) Mate shim (26) to retainer (20) and mate retainer (20) to housing (90). Install bolts (18) and washers (19) and tighten bolts to a torque range of 45 to 65 pound-inches.

(9) Hold gear (40) fixed by wedging between top of gear teeth and housing (90), pushing gear (40) towards gear (36). Measure and record backlash at pitch diameter of spline in gear (17). See Fig. 601 for backlash limits. If necessary, adjust thickness of shims (26, 34, 37) to obtain backlash within design limits.

(10) Remove bolts (18, 30), washers (19, 31), retainer (20) and cover (32). Apply sealant BMS 5-95 to fill groove in retainer (20, and install seal (22) in retainer (20).

(11) Install O-ring (21) on retainer (20). Apply primer to faying surfaces and mate retainer (20) to shim (26).

(12) Apply primer to bolts (18) and install bolts and washers (19). Tighten bolts (18) to 80-100 lb-in.

(13) Install O-ring (33) on cover (32). Apply primer to faying surfaces, mate cover (32) to housing (90), apply primer to bolts (30), and install bolts and washers (31). Tighten bolts (30) to 80-100 lb-in.

B. Apply sealant BMS 5-95 to fill groove in support (82), or retainer (81A), install seal (85) in support (82), or in retainer (81A), and remove excess sealant. Install spacer (84) and bearing (83) in support (82), or bearing (83A) and O-ring (87) in support (82A). Install retainer (81A), with seal (85), in support (82A).

NOTE: Bearing (83) and (83A) should be installed with a light coating of grease, MIL-G-23827 on faying surfaces.

C. Install O-rings (80 , 86) on housing (90).

D. Apply primer to faying surfaces and mate support (82 or 82A) and retainer (81 or 81A) to housing (90). Apply primer to screws and install screws (79), washers (78) and nuts (77). Tighten nuts (77) to 50-70 lb-in.

E Install and adjust gear (75) as follows:

(1) See Fig. 501, diag. No. 4, and determine thickness of shim (72).

(2) Install bearings (73 , 76) on gear (75).

(3) Install preassembled gear (75), shim (72), support (61), bolts (56), washers (55) and nuts (54) in housing (90). Tighten nuts (54) to a torque range of 180-250 lb-in. Use temporary spacers, approximately same thickness as lugs of housing (60), or use temporary bolts.

(4) Hold gear (75) fixed. Measure and record total backlash between gears (75) and (17). Measure backlash at pitch diameter of spline on gear (17). See Fig. 601 for backlash limits.

NOTE: If backlash is not within design limits, adjust thickness of shim (72) accordingly.

(5) Install coupling (16) on gear (17).

(6) Install washer (15) and nut (14). Hold coupling (16) with splined coupling wrench F71228-500, or equivalent and tighten nut (14) to a torque range of 160-190 lb-in.

(7) Remove nuts (54), washers (55), bolts (56), support (61) and gear (75) from housing (90).

(8) Insert short splined end of coupling (59) into internally splined end of gear (75). Do not allow coupling (59) to cover ring groove on gear (75).

(9) Install ring (74) into groove of gear (75) and simultaneously push coupling (59) into position so that ring (74) engages groove of coupling (59).

(10) Position preassembled gear (75), coupling (59) and ring (74) in housing (90).

F. Assemble and install torque brake assembly (57) as follows.

(1) Position ends of springs in spring set (68) approx. 180 degrees apart.

NOTE: Spring set (68) consists of two matched springs coiled together.

(2) Coat spring set (68) with hydraulic oil, MIL-H-5606, and place in Spring Expansion Fixture, ST6107 (Fig. 502).

(3) Move fixture spring stops, ST6107-14, inward so that stops contact spring ends when springs are wound. Tighten all four stops sufficiently to hold yet permit movement by tapping with an aluminum drift.

(4) Wind up spring by rotating fixture drive shaft with socket wrench until outer diameter of spring set (68) is snug against fixture sleeve, ST6107-11. Lock drive shaft in this position with lock screws.

(5) Using an aluminum drift tap all four spring ends axially to snug spring coils together.

(6) Using an aluminum drift tap fixture spring stops outward on left side of fixture, just far enough to clear flange of sleeve (66). Insert sleeve into spring set until flange is properly seated.

(7) Using an aluminum drift tap fixture spring stops outwards on right side of fixture, just far enough to clear flanges of sleeve (67). Insert sleeve into spring set (68) until flange is properly seated. Ensure that both sleeves (66, 67) are properly seated.

(8) Insert adapter (63) into sleeve (67), partially engaging lugs leaving adapter splined end protruding outboard on right side, approximately 1 inch from sleeve flange. While supporting adapter (63), unlock fixture drive shaft with allen wrench and unwind spring set (68) until adapter (63) is held firmly.

(9) Loosen spring stops on both sides of Spring Support Fixture, ST6107 (Fig. 502), and move stops outward to clear spring pack assembly.

(10) Remove spring pack assembly from fixture by tapping with aluminum drift. Do not drop spring pack as reassembly may be required.

(11) Deleted

(12) Deleted

(13) Deleted

(14) Place assembled parts in arbor press. Protect flanged faces of sleeves (66, 67) and apply end loads below to stack springs tight.

For assemblies 175821 -- 75-100 pounds
For assemblies 176658 -- 300-500 pounds

(15) Install rings (64, 69) over spring set and press down to remove clearance and end play.

(16) Measure stacked height of assembled parts. Select shims (65) to provide dimension of 3.622-3.634 inches for 175821 and 3.394 to 3.406 inches for 176658 after installation. Remove end rings (64, 69) and install shims as shown in Fig. 504. Shims used on same end of assembly are to be identical at two places 180 degrees opposite. Use the least quantity of shims required by selecting the larger sizes of shims. The dimension may be met without requiring shims, or with shims at one end only. When more than one shim is required, use same thickness at each end within 0.01 inch. Two shims may be stacked together to increase range. Maximum permissible shimming is 0.09 inch at each end (one 0.04-inch shim and one 0.05-inch shim). Trim ends of stacked shims as required so they do not protrude beyond spring O.D.

(17) Install one end ring (64) over spring on sleeve (66) end. Slide other end of pack into housing (60), and press the remaining end ring (69) over spring set (68) and into housing.

(18) Install shim (72) and O-rings (70, 71) in support (61).

(19) Apply primer to faying surfaces and mate support (61) to housing (90) and housing (60) to support (61).

(20) Apply primer to bolts and install bolts (56), washers (55), and nuts (54). Tighten nuts (54) to 180-250 lb-in.

G. Assemble and install shaft (13, 13A) and housing (46) as follows:

(1) Insert shaft (13, 13A) through housing (90) and torque brake (57).

(2) Install O-ring (47) on support (58) or housing (46), and O-ring (70) on support (58).

CAUTION: DO NOT RE-USE OLD WASHER (49), OR FAILURE OF TANGS AND LOSS OF NUT RETENTION MAY OCCUR.

(3) Install bearing (52) on adapter (53) and install adapter (53), retainer (51), new washer (49) and nut (50) on shaft (13, 13A). Tighten nut (50) to 200-240 lb-in., using Wrench Adapter ST6105-1. Bend tangs of washer (49) to secure nut (50).

(4) Refer to Fig. 501, diagram No. 5, and determine thickness of shim (48).

(5) Install shim (48) in housing (46). Apply primer to faying surfaces, and mate support (58) to housing (60) and housing (46) to support (58).

(6) Apply primer to bolts and install bolts (42, 45), washers (41A, 44) and nuts (41, 43). Tighten nuts (41, 43) to a torque range of 300-500 lb-in. (BACN10HR6) or 180-250 lb-in. (BACN10HR5).

H. Assemble universal joint assembly (3) as follows:

(1) Position cross (10) in yoke (12) and install pin (9) through yoke (12) and cross (10).

(2) Coat shank of bolt (7) and threads of nut (5) with MIL-C-11796, corrosion preventive compound. Position shaft (13) on cross (10) and install bolt (7), spacer (8) and nut (5). Tighten nut (5) as follows:

(a) The self-locking mechanism of the nut must develop a torque between 25 and 100 lb-in., at room temperature with no axial load on the nut and the thread fully engaged. The full chamfer of the bolt thread must protrude beyond the locking mechanism of the nut.

(b) Tighten nut to 170-200 lb-in.

(c) Deleted.

I. Install O-rings (2) and plugs (1) on drain and filler ports. Lockwire plug (1) on drain port to housing (90).

J. Service transmission assembly as follows:

(1) Position assembly with yoke end of shaft (13) 3 degrees below horizontal plane. Remove plug (1) on upper (filler) port.

(2) Fill assembly, through filler port, with hydraulic fluid, MIL-H-5606, until fluid is at filler port level. Transmission assembly nominal capacity is 20 ounces.

(3) Install plug (1) and lockwire to a pair of bolts (30) on cover (32). Lockwire other pair of bolts (30) together. Lockwire bolts (18) in pairs.

(4) Apply Glyptal across exposed bolt threads and nuts, and to lockwire end, fasteners and plugs, as applicable.

(5) Repair or touch up any damaged or omitted finished surface.

3. Materials

A. Hydraulic Fluid -- MIL-H-5606 (Ref 20-60-03)

B. Primer -- BMS 10-11, Type 1 (Ref 20-60-02)

C. Grease -- MIL-G-23827 (Ref 20-60-03)

D. Sealant -- BMS 5-95 (Ref 20-60-04), replaces Permatex No. 2

E. Paint -- Glyptal (General Electric Co., Insulating Materials Department, Downey, California)

F. Corrosion Preventive Compound -- MIL-C-11796, Class 3 (Ref 20-60-03)

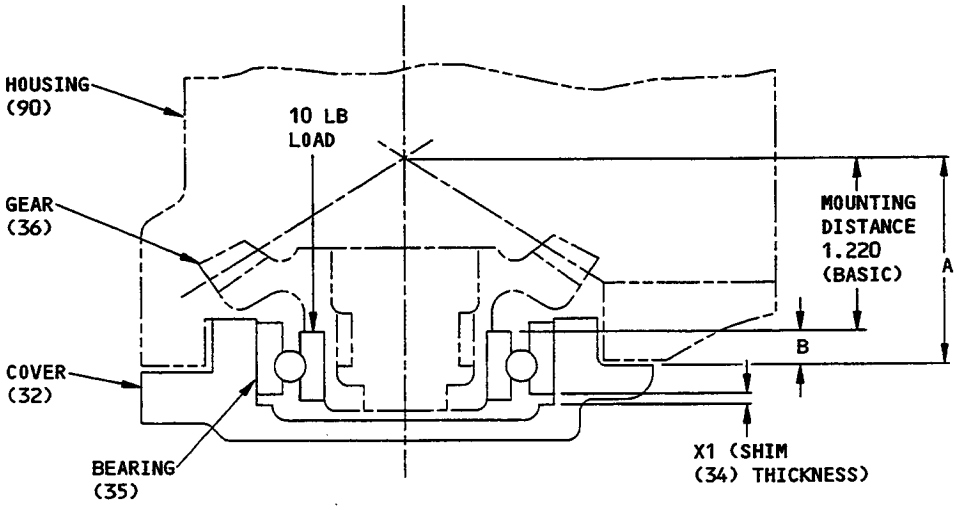


DIAGRAM NUMBER 1

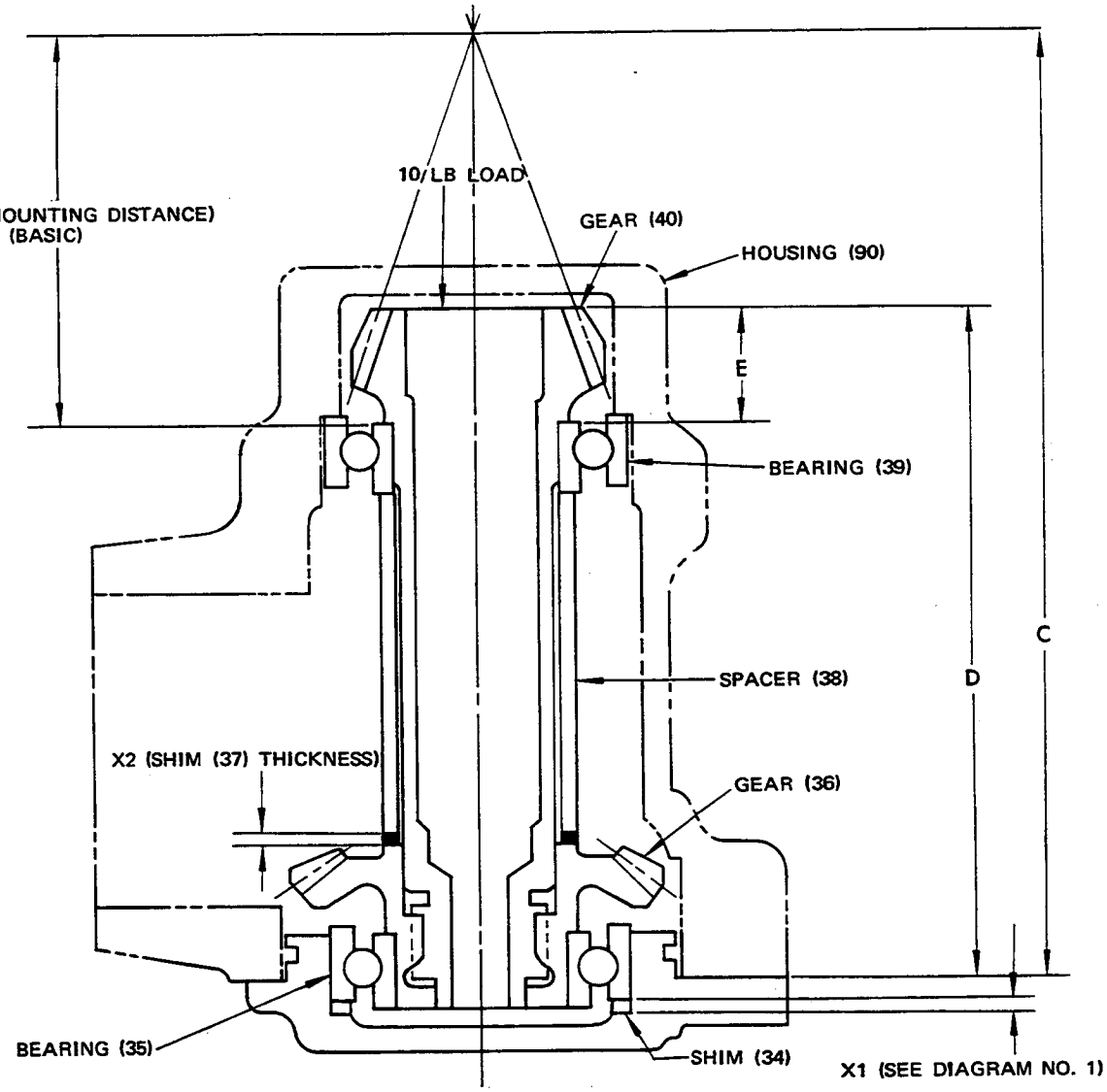
SHIMMING CALCULATION

$X1 = A - B - MD \begin{matrix}(+0.000)\\(-0.003)\end{matrix}$

WHERE: A = MARKED ON HOUSING (90)
B = MEASURED WITHOUT SHIM (34), ON LOADED RACE OF BEARING (35)
MD = MOUNTING DISTANCE

ALL DIMENSIONS ARE IN INCHES

Shimming Diagrams
Figure 501 (Sheet 1)



SHIMMING CALCULATION

X2 = C - MD +E - D (+0.000) (-0.003)

WHERE:

C = MARKED ON HOUSING (90)

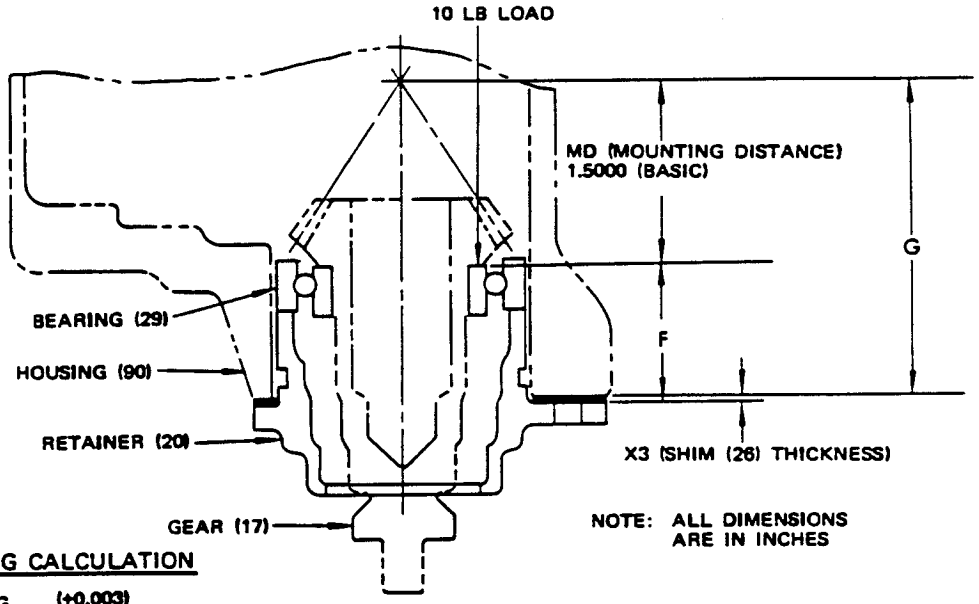
D = MEASURED

E = MEASURED

MD = MOUNTING DISTANCE

NOTE: ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 2



SHIMMING CALCULATION

X3 = F + MD - G (+0.003) (- 0.000)

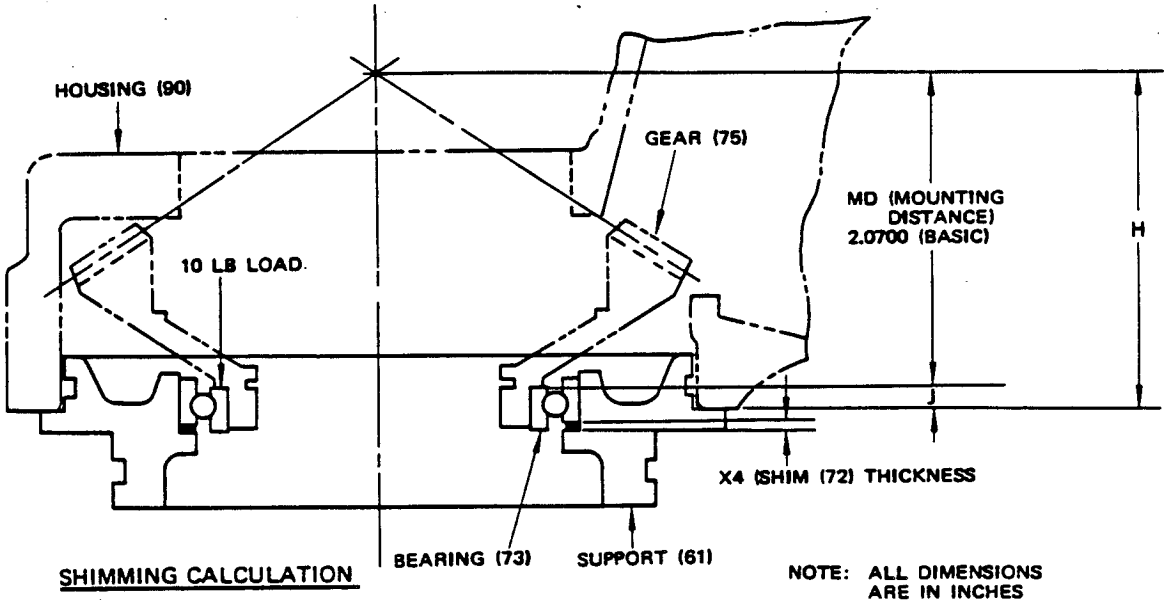
WHERE:

F = MEASURED

G = MARKED ON HOUSING (90)

MD = MOUNTING DISTANCE

DIAGRAM NUMBER 3



SHIMMING CALCULATION

X4 = H - MD - J (+0.000) (- 0.003)

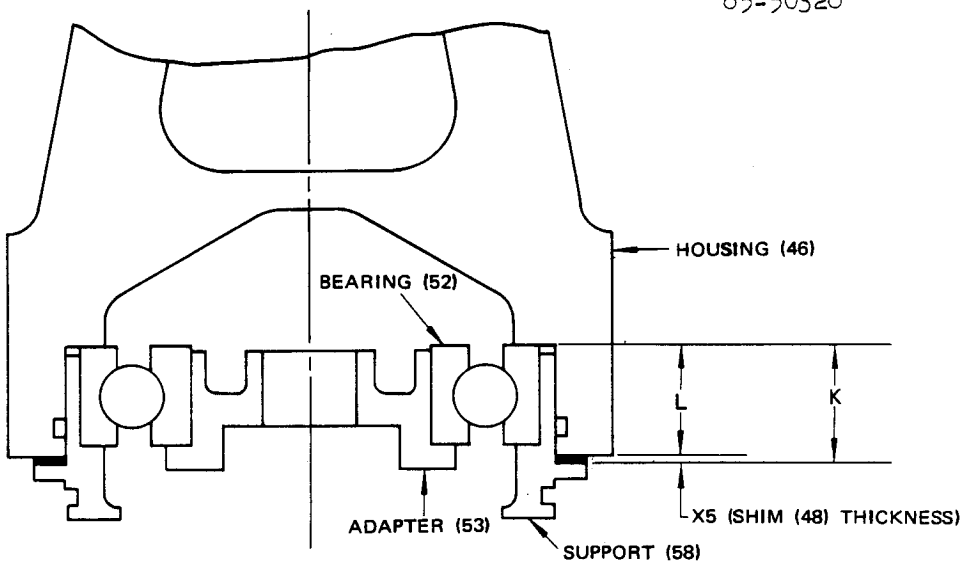
WHERE:

H - MARKED ON HOUSING (90)

J = MEASURED WITHOUT SHIM (72)

MD = MOUNTING DISTANCE

DIAGRAM NUMBER 4



SHIMMING CALCULATION

X5 = K - L (+0.000) (-0.003)

NOTE:
ALL DIMENSIONS IN INCHES

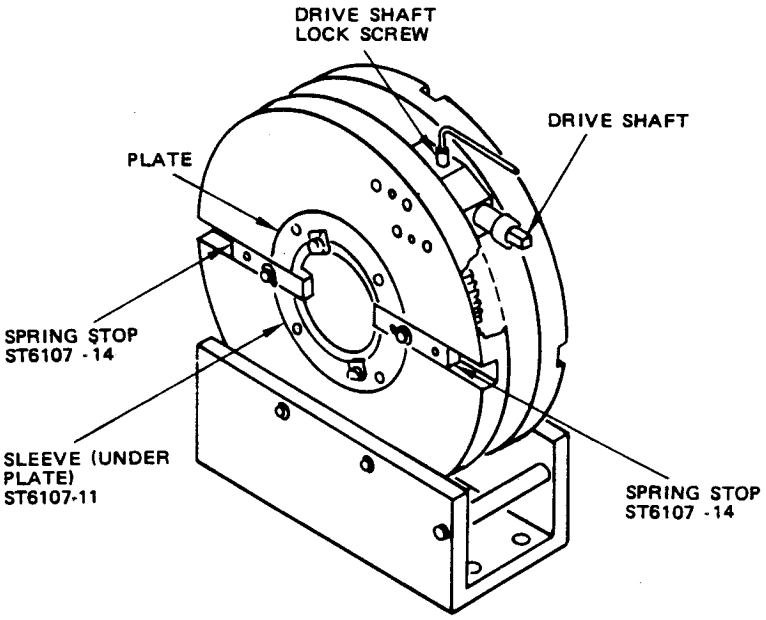
WHERE:

K = MEASURED BY STACKING BEARING (52) ON SUPPORT (58)

L = MEASURED ON HOUSING (46)

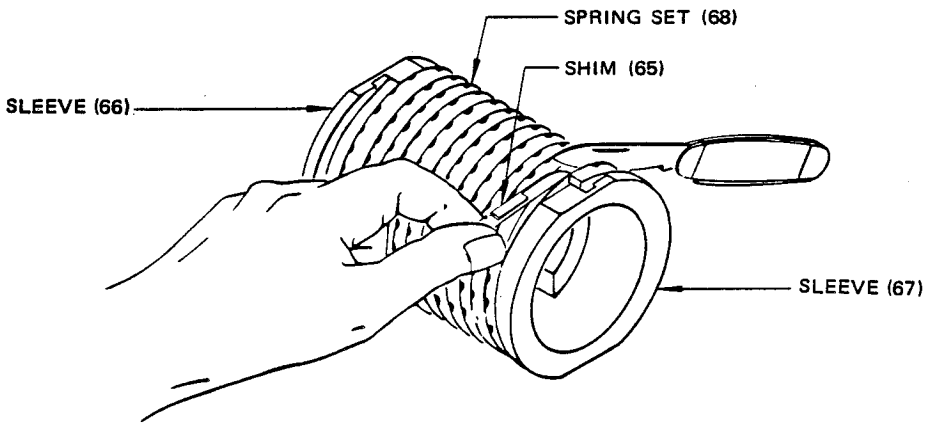
DIAGRAM NUMBER 5

Shimming Diagrams
Figure 501 (Sheet 4)



Spring Expansion Fixture, ST6107
Figure 502

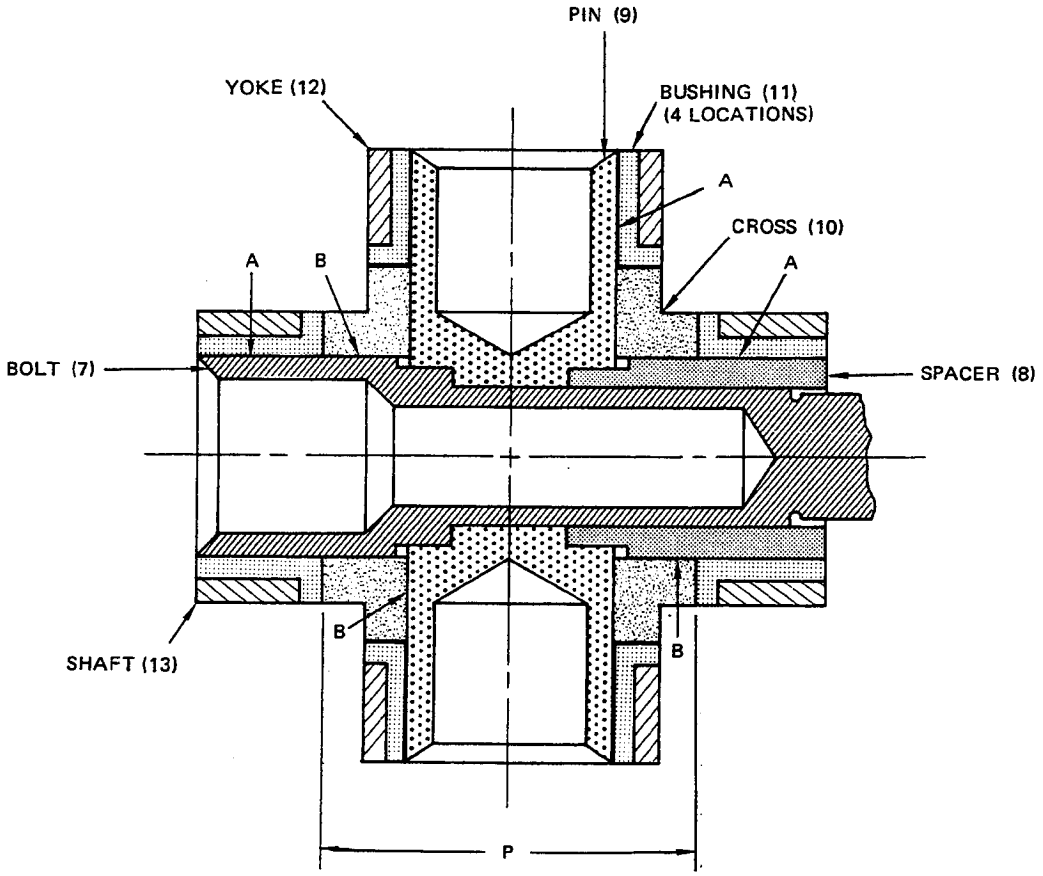
Figure 503 Deleted



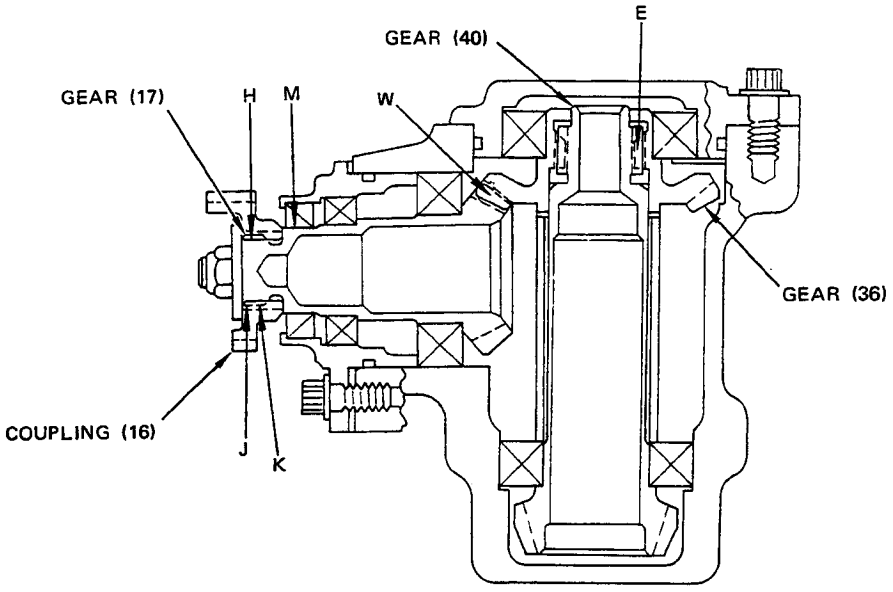
Spring Pack Shim Installation
Figure 504

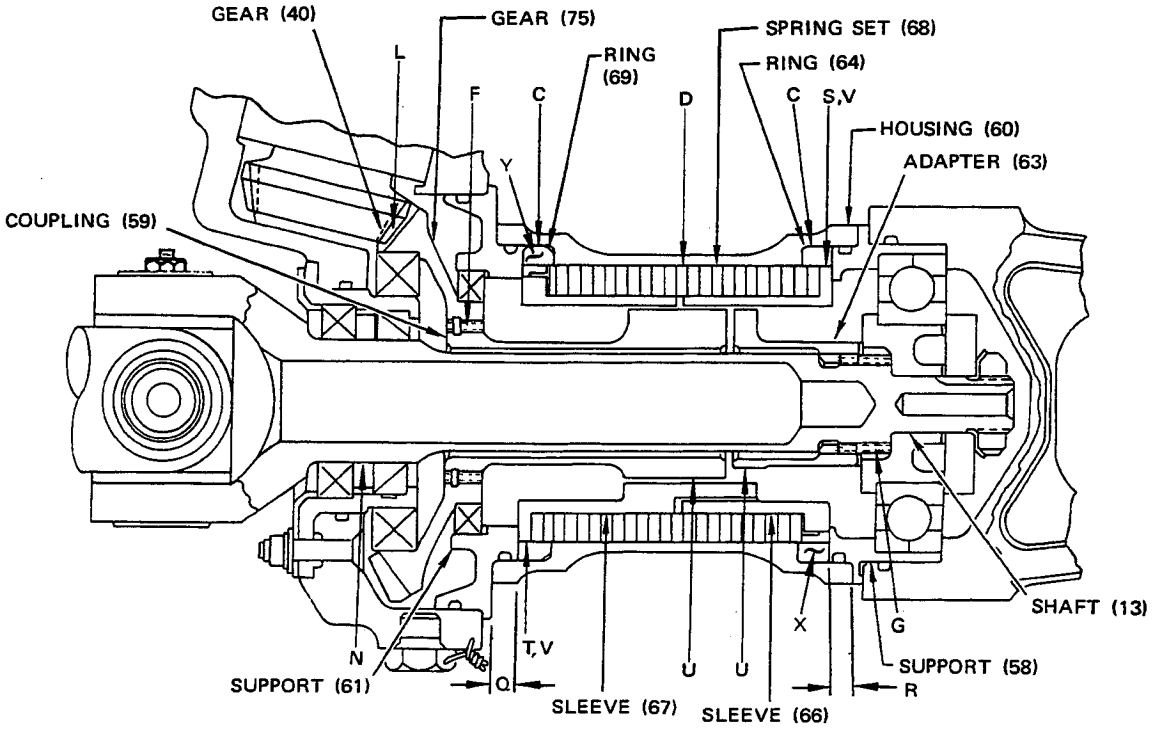
FITS AND CLEARANCES

1. and 2. Deleted.



UNIVERSAL JOINT ASSEMBLY (3)





(TYPICAL ALL CONFIGURATIONS)

Fits and Clearances
Figure 601 (Sheet 2)

Ref Letter Fig. 601	Mating Item No. Fig. 1101	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inch)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 11*[23] *[20] OD 7,8,9	1.1083 1.1046	1.1093 1.1053	0.0007	0.0045	 1.1036	1.1156	0.0120
B *[11]	ID 10 OD 7,8,9	1.1055 1.1046	1.1064 1.1053	0.0002	0.0018	 1.1036	1.1079	0.0043
C	ID 60 *[22] OD 69,64	3.524 3.514	3.525 3.516	0.008	0.011	 3.513	3.526	0.013
C	ID 60 *[21] OD 64,69	3.524 3.517	3.525 3.518	0.006	0.008	 3.516	3.526	0.010
D	ID 60 *[14] OD 68	3.1139 2.9932	3.1144 2.9942	0.1197	0.1212	 2.9927	3.1149	0.1222
D	ID 60 *[15] OD 68	3.1170 3.0180	3.1175 3.0190	0.0980	0.0995	 3.0175	3.1180	0.0985
E	36 *[1] 40			0.0000	0.0167			0.0278
F	59 *[2] 75			0.0015	0.0073			0.0090
G	63 *[3] 13			0.0015	0.0069			0.0090
H	16 *[4] 17			0.0000	0.0052			0.0090

Fits and Clearances
Figure 601 (Sheet 3)

Ref Letter Fig.601	Mating Item No. Fig.1101	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
J	*[5] 17 36,40 75			0.0019	0.0150			0.0234
K	*[6] 17 36 40			0.0008	0.0105			0.0169
L	*[7] 40 75			0.0013	0.0054			0.0081
M	OD 17	0.970	0.972			0.966		
N	OD 13	1.3757	1.3762			1.3720		
	OD 13A	1.3765	1.3774			1.3765		
P	*[8] 10	1.6185	1.6205			1.6160		
Q	*[8] 61*[16]	0.290	0.292			0.285		
Q	*[8] 61*[17]	0.158	0.160			0.152		
R	*[8] 58*[26]	0.290	0.292			0.285		
R	*[8] 58*[27]	0.153	0.155			0.148		
S	*[9] 66	0.598	0.602			0.590		
T	*[9] 67	0.883	0.887			0.875		
U	*[10] 59,63	0.645	0.649			0.637		
V	*[12] 66,67 *[18]	0.241	0.246			0.239		
V	*[12] 66,67 *[19]	0.148	0.150			0.146		

Ref Letter Fig.601	Mating Item No. Fig.1101	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
W	36 *[13] 17			0.0009	0.0036			0.0054
X	*[8] *[24] 64, 69	0.374	0.375			0.372		
Y	*[8] *[25] 64, 69	0.089	0.091			0.087		

*[1] Spline backlash, measured at 2.7000-inch pitch diameter of gear (36) while gear (40) is fixed.

*[2] Spline backlash, measured at 1.6875-inch pitch diameter of spline in gear (75) while coupling (59) is fixed.

*[3] Spline backlash, measured at 1.000-inch pitch diameter of spline in shaft (13) while adapter (63) is fixed.

*[4] Spline backlash, measured at 1.6875-inch pitch diameter of spline in coupling (16) while gear (17) is fixed.

*[5] Total backlash of gears (17, 36, 40, 75). Prior to disassembly, hold gear (75) by wedging through drain hole and measure backlash at 0.8125-inch pitch diameter of spline in gear (17).

*[6] Compound backlash of gears (17, 36, 40). Prior to disassembly from housing (90) fix gear (40) and measure backlash at pitch diameter of spline in gear (17) (see above). If service limit is exceeded, check splines on gears (36, 40) and teeth of gears (17, 36) for wear and replace.

Fits and Clearances
Figure 601 (Sheet 5)

*[7] Gear backlash. Subtract value of compound backlash (reference letter K) from value of total backlash (reference letter J). If service limit is exceeded check teeth on gears (40, 75) for wear and replace.

*[8] Width

*[9] Circular tooth thickness measured at pitch diameter of 1.9375 inches. Discard part if there is visible evidence of wear.

*[10] Chordal tooth thickness measured at pitch diameter of 1.9375 inches.

*[11] Used on universal joint assembly 69-52403-4 only.

*[12] Thickness of flanges on sleeves (66, 67).

*[13] Gear backlash. Subtract value of spline backlash between gears (36,40) measured at 0.8125 diameter from value of compound backlash (reference letter K). If service limit is exceeded, replace both gears.

*[14] Housing 176628 and spring set 176636

*[15] Housing 175824 and spring set 175822

*[16] Support 176570

*[17] Support 176828

*[18] Sleeves 176634 and 176635

*[19] Sleeves 175830 and 175829

*[20] Measured with bushing (11) installed in yoke (12) or shaft (13).

*[21] Housing 176628 and ring 176643-1

*[22] Housing 175824 and ring 175826

*[23] Bushing DBAF-18-031, 90717

*[24] 176643-1

*[25] 175826

*[26] 176569

*[27] 178481, 178481-1, 178481-2

TESTING

1. Test Equipment

NOTE: Equivalent substitutes may be used.

A. Compressed air source, controlled at 0 to 15 psi

B. Air valve adapter

C. ST 6396 -- Transmission Tester (Curtiss Wright Corp., Caldwell Facility, 300 Fairfield Road, Caldwell, New Jersey 07006)

D. Deleted

E. X-Y Recorder:

(1) Model HP7090A (X-Y Recorder, Hewlett Packard Co., 3000 Hanover St., Palo Alto, California 94304 (Replaces HP7004B)

(2) Model 6423 DIN A3 (X-Y Recorder, Soltec Corp., Sol Vista Park, 12977 Arroyo St., San Fernando, California, 91340-1597). Replaces XY530T Esterline Corporation, Esterline - Angus Division, P.O. Box 24000, 1201 Main St., Indianapolis, Indiana 46224

F. Model 870 Signal Conditioners (Daytronic Corp., 2589 Corporate Drive Place, Miamisburg, Ohio 45342) (2 required). No longer available, See H. below.

G. Model 801 Adapter (Daytronic Corp., 2589 Corporate Drive Place, Miamisburg, Ohio 45342). No longer available, See H. below.

H. Model 3170 or 3270 Strain Gage Conditioner (Daytronic Corp., 2589 Corporate Drive Place, Miamisburg, Ohio 45342). Replaces conditioner and adapter listed in F and G.

2. Preparation for Test

A. Ensure that unit has been serviced with hydraulic fluid, MIL-H-5606.

B. Install air valve adapter in upper filler port.

C. Turn over coupling, by hand, in both directions. Gears and bearings must be free running without evidence of binding in any position.

D. With the output and universal shafts free, torque required to rotate input shaft in both directions shall not exceed 12 lb-in.

3. Functional Test (Fig. 1101)

A. Connect air hose to air valve adapter in upper filler port, and pressurize with filtered air at 14.5-15.5 psi for minimum of 3 minutes. There shall be no leakage. Remove adapter and install plug (1) and O-ring (2) in upper filler port. Lockwire plug (1). Apply Glyptal to lockwire ends.

B. Rotate input shaft 10 revolutions in each direction. Allow unit to stand for 8 hours. There shall be no leakage at the end of this period.

C. With universal shaft locked, apply 45-55 lb-in. torque to input shaft in clockwise direction. Mark position of input shaft. Apply same torque in counterclockwise direction. Input rotational backlash shall not exceed 20 degrees.

D. Mount assembly in test fixture (Fig. 702). Connect torque transducers to X-Y recorder.

E. Connect transmission input shaft to calibrated input torque transducer, and transmission output shaft to calibrated output transducer.

F. Check that X-Y recorder is zeroed before any torque is applied to transmission.

G. Draw vertical lines on X-Y recorder paper at minimum lockout input torque (215 lb-in. 65-50321, 65-50328)(250 lb-in. 65-50301, 65-50308) and at maximum input torques (2180, 3000 lb-in.).

H. Install manual input torque arm.

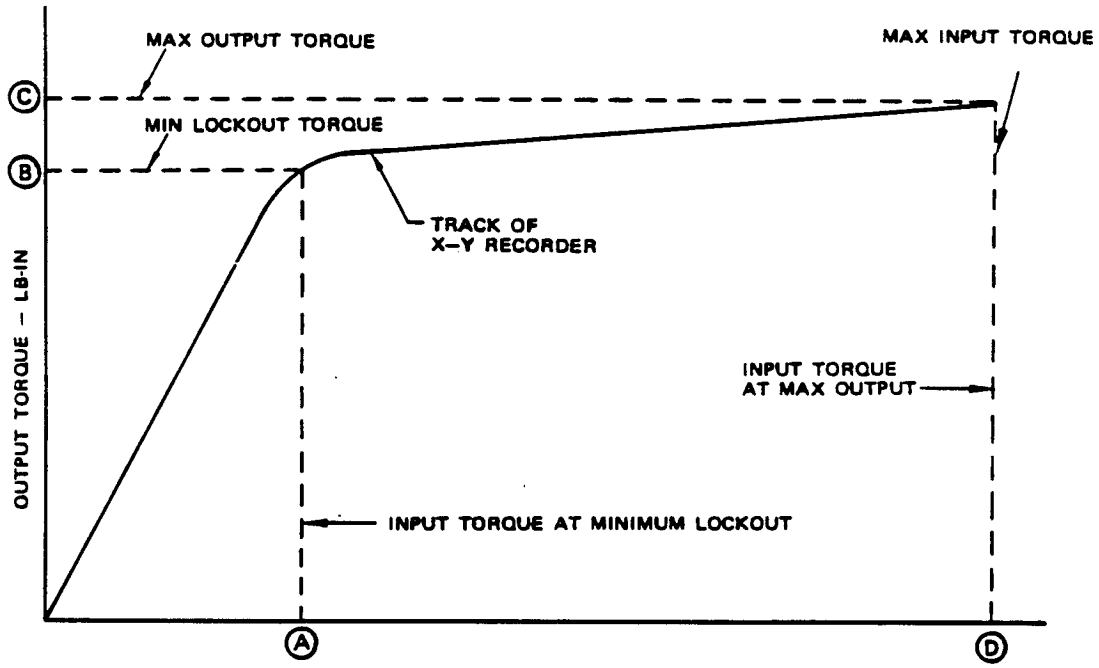
CAUTION: DO NOT EXCEED INPUT TORQUE OF 2180 OR 3000 LB-IN. (FIG. 701) OR DAMAGE TO UNIT MAY OCCUR.

I. Slowly turn the manual input torque arm in the clockwise direction until the input torque is at the maximum limit (Fig. 701).

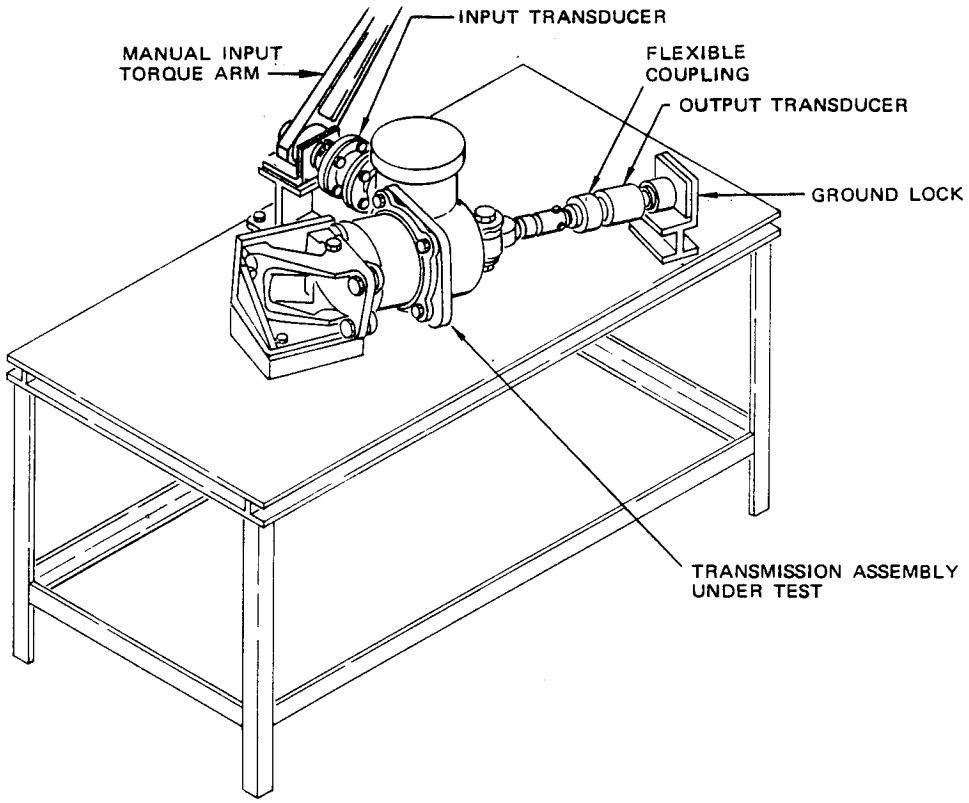
J. Make sure that the output torque at minimum lockout is not less than 590 lb-in. (65-50321, 65-50328) or 693 lb-in. (65-50301, 65-50308) with a minimum input torque of 215 or 250 lb-in., respectively.

K. Make sure that the output torque is not more than 700 lb-in. (65-50321, 65-50328) or 807 lb-in. (65-50301, 65-50308) with a maximum input torque of 2180 or 3000 lb-in., respectively.

L. Repeat steps I thru K with counterclockwise input torque.



	65-50301 65-50308	65-50321 65-50328
INPUT (A)	250	215
LOCKOUT (B)	693	590
OUTPUT (C)	807	700
MAX INPUT (D)	3000	2180



Test Fixture
Figure 702

Figure 703
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TROUBLE SHOOTING

1. Trouble shooting is keyed to individual steps of the test procedure. Referenced paragraphs show test procedure in which the noted trouble would appear.

	Trouble	Possible Cause	Correction
A.	External leakage, par. raph 3.A., B.	Defective O-rings or seals	Replace O-rings or seals
B.	Binding or rough movement, par. 2.C.	Improperly installed or defective components	Correct condition
C.	Excessive backlash, par. 3.C.	Inadequate shims or excessively worn components	Replace shims or other component
D.	Lockout occurs outside of minimum or maximum limits, par. 3.J., K.	Defective torque brake assembly	Replace or repair torque brake assembly

STORAGE INSTRUCTIONS

1. Fill unit with MIL-H-5606 hydraulic fluid or suitable hydraulic preservative oil.

2. Wrap assembly in vapor-barrier paper and tape securely.

3. Tag assembly with test date and cure date of rubber parts.

4. For further information, refer to Temporary Protective Coatings, Subject 20-44-02, and to Subject 20-70-01, Protection, Storage, and Handling of Airplane Components.

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

NOTE: Equivalent substitutes may be used for listed items. Refer to Testing for special tools and equipment required for component test.

1. F71228-500 -- Splined Coupling Wrench (Boeing)
2. ST6107 -- Spring Expansion Fixture *[1]
3. ST6107-11 -- Fixture Sleeve *[1]
4. ST6107-14 -- Spring Stop *[1]
5. ST6105-1 -- Torque Wrench Adapter *[1]

*[1] Curtiss-Wright Corp., Caldwell Facility, 300 Fairfield Road, Caldwell, New Jersey 07006

ILLUSTRATED PARTS LIST

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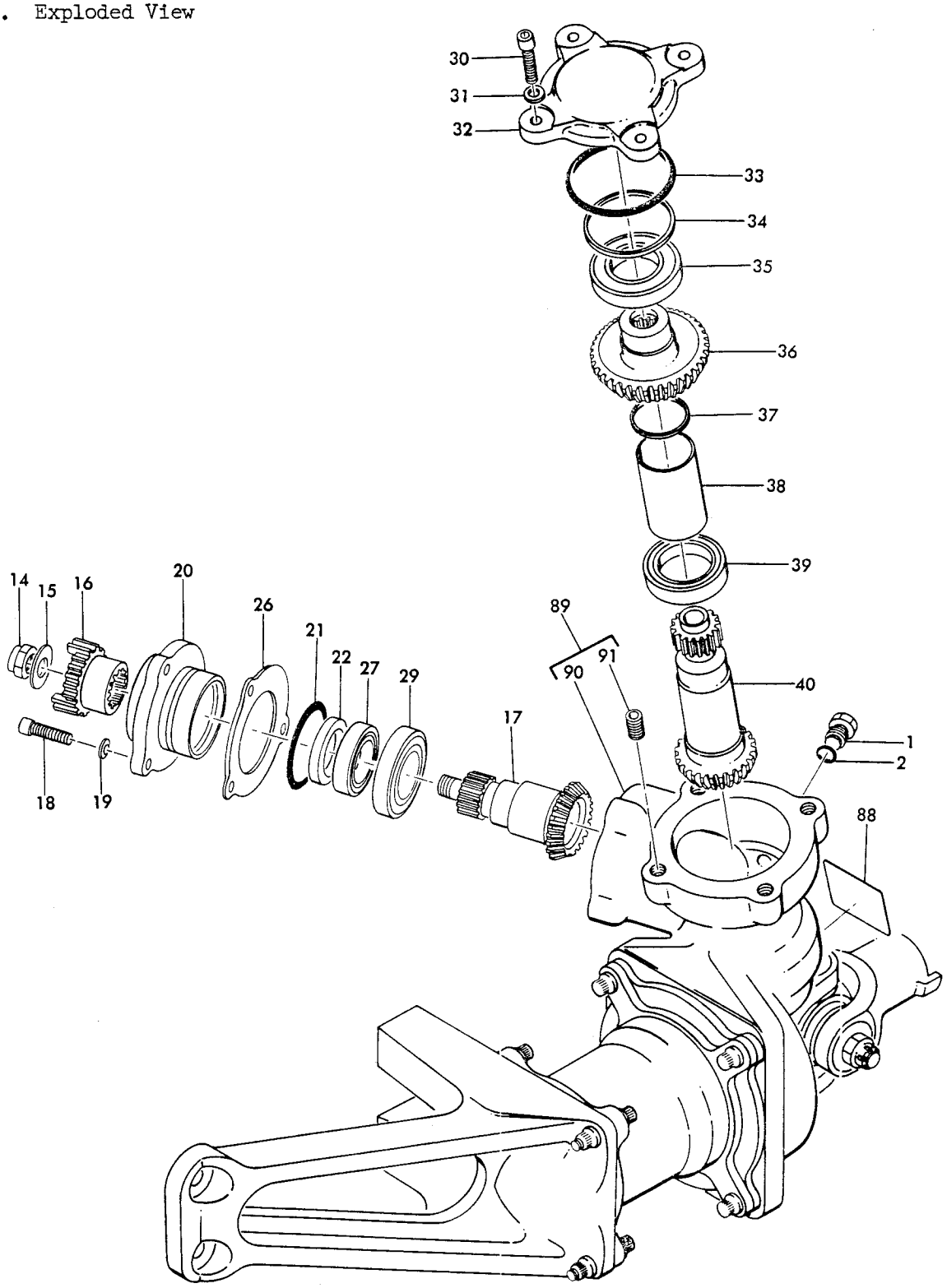
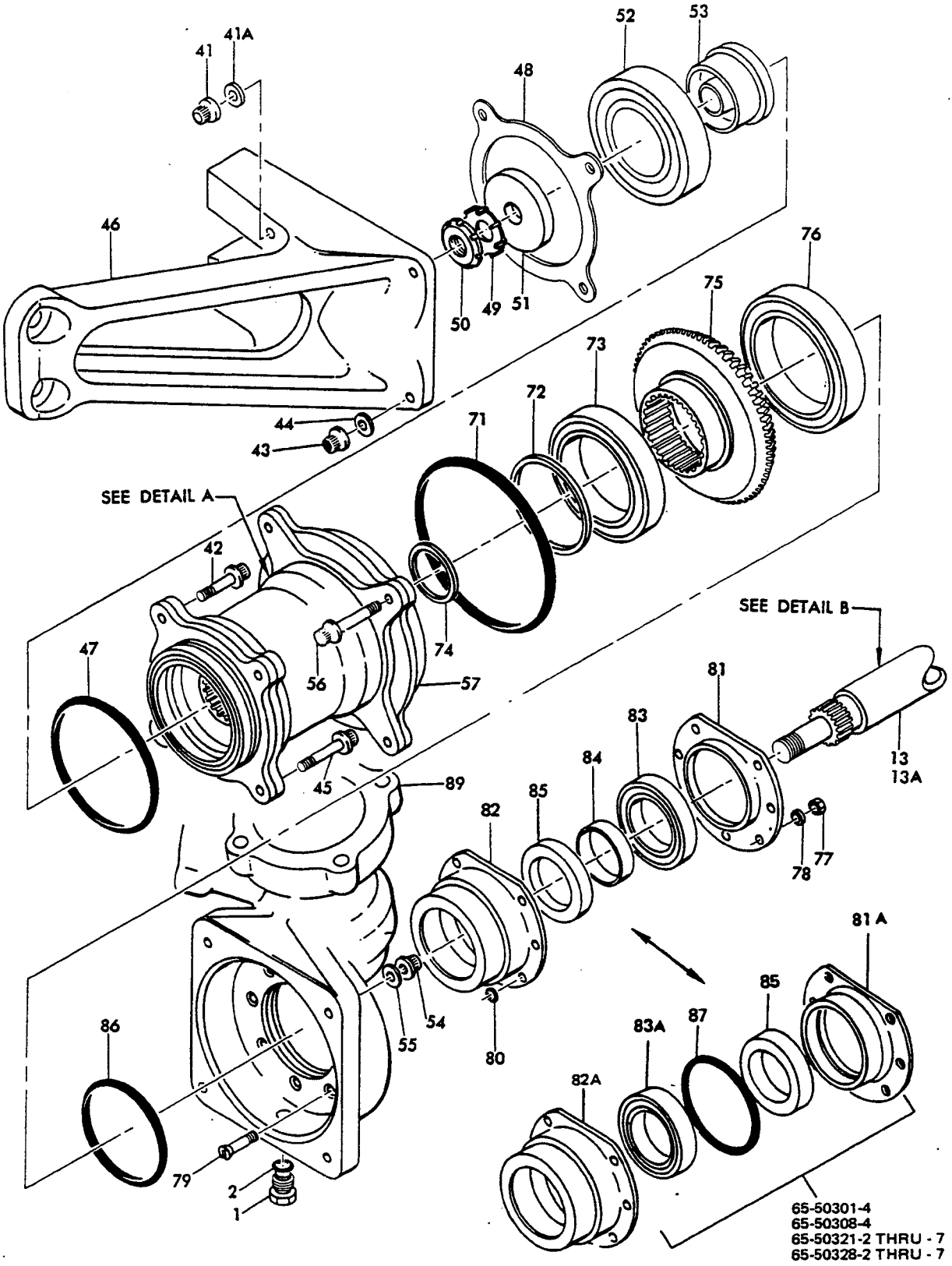
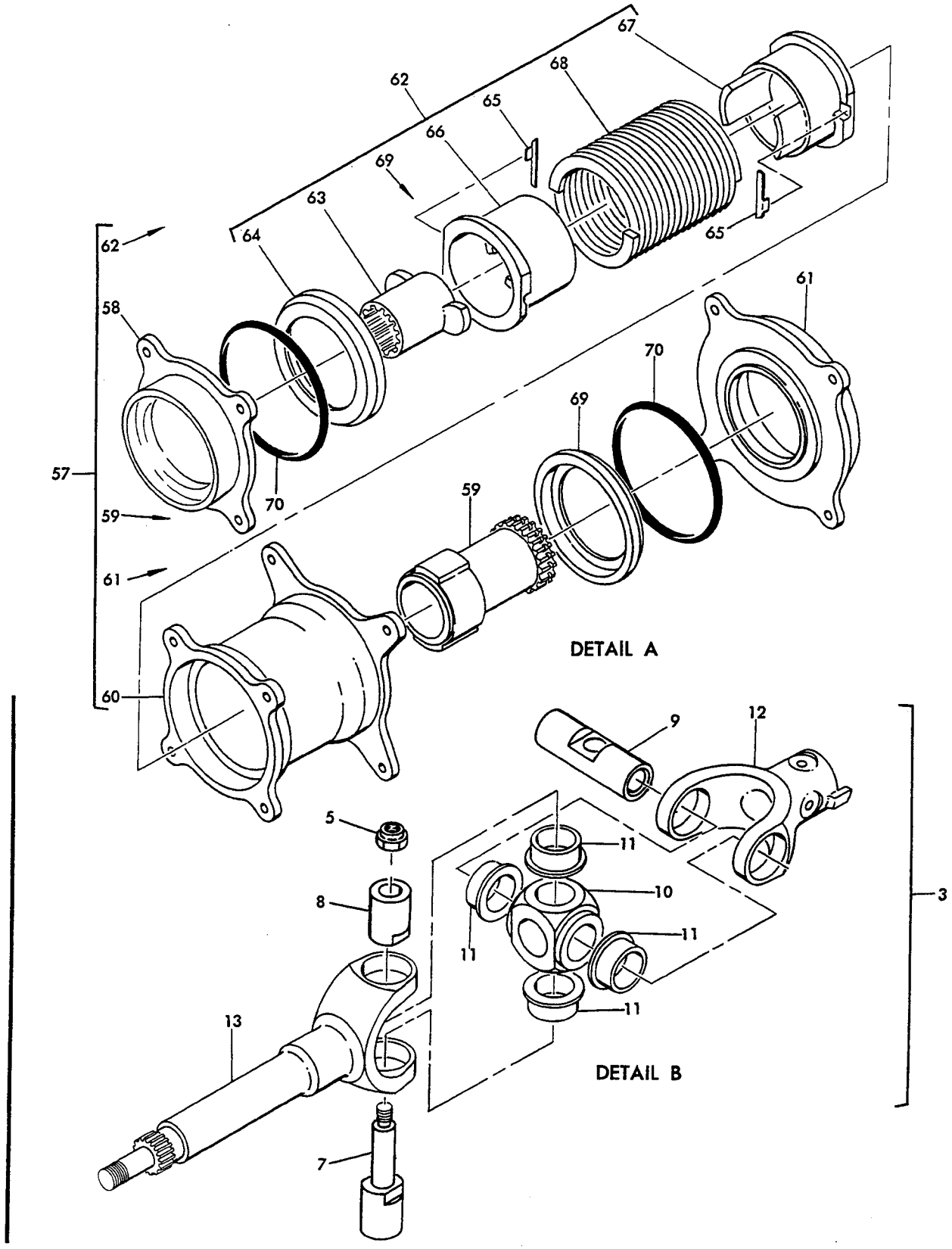
1. Exploded View



Trailing Edge Flap Drive Transmission Assemblies Nos. 1 and 8
Figure 1101 (Sheet 1)



Trailing Edge Flap Drive Transmission Assemblies Nos. 1 and 8
Figure 1101 (Sheet 2)



Trailing Edge Flap Drive Transmission Assemblies Nos. 1 and 8
Figure 1101 (Sheet 3)

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-50301-2		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE (SB 27-1015)	A	RF
	65-50308-2		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE (SB 27-1015)	B	RF RF
	65-50301-3		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE	C	RF RF
	65-50308-3		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE	D	RF
	65-50321-1		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE	E	RF
	65-50328-1		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE	F	RF
	65-50301-4		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE (SB 27-1048)	G	RF
	65-50308-4		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE (SB 27-1048)	H	RF
	65-50321-2		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE (SB 27-1048)	I	RF
	65-50328-2		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE (SB 27-1048)	J	RF
	65-50321-3		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE	K	RF
	65-50328-3		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE	L	RF
	65-50321-4		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE	M	RF
	65-50328-4		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE	N	RF
	65-50321-5		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE (SB 27-1069)	O	RF
	65-50328-5		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE (SB 27-1069)	P	RF
	65-50321-6		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE	Q	RF
	65-50328-6		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE	R	RF
	65-50321-7		TRANSMISSION ASSY NO. 1, TE FLAP DRIVE	S	RF
	65-50328-7		TRANSMISSION ASSY NO. 8, TE FLAP DRIVE	T	RF
1	AN814-4DL		. PLUG		2
2	MS28778-4		. PACKING, O-RING		2
3	65-76602-1		. UNIVERSAL JOINT ASSY	AB	1
3	69-52403-4		. UNIVERSAL JOINT ASSY (OPT)	AB	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
3	65-76602-1		. UNIVERSAL JOINT ASSY	C-F	1
3	65-76602-4		. UNIVERSAL JOINT ASSY	G-J	1
3	65-76602-7		. UNIVERSAL JOINT ASSY	K-N	1
3	65-76602-9		. UNIVERSAL JOINT ASSY	O-T	1
5	BACN10JC7		. . NUT		1
6	BAC27DCT48		DELETED		
7	69-52419-2		. . BOLT (USED ON 65-52403-4) (OPT TO 65-76606-1)	AB	1
7	65-76606-1		. . BOLT	AB	1
7	65-76606-1		. . BOLT	C-T	1
8	69-52418-1		. . SPACER	AB	1
8	69-60052-1		. . SPACER (USED ON 65-76602-1)(OPT TO 69-60052-2)		1
8	69-60052-2		. . SPACER		1
9	69-52423-1		. . PIN, CROSS	AB	1
9	69-60056-1		. . PIN, CROSS (USED ON 65-76602-1) (OPT TO 69-60056-2)		1
9	69-60056-2		. . PIN, CROSS		1
10	69-52411-1		. . CROSS, TRUNNION	AB	1
10	69-60058-1		. . CROSS, TRUNNION	C-T	1
11	AJF18A101		. . BUSHING, V50294 *[1] (PRE SB 27-1069)	A-N	4
11	DBAF18-031		. . BUSHING, V81376 *[1] (PRE SB 27-1069)	A-N	4
11	FBR18A15BA		. . BUSHING, V73134 *[1] (PRE SB 27-1069)	A-N	4
11	NHLF18-203A		. . BUSHING, V15860 *[1] (PRE SB 27-1069)	A-N	4
11	90717		. . BUSHING, V09455 *[1] (PRE SB 27-1069)	A-N	4
11	AFDU17-3-14		. . BUSHING, V15860 *[2] (POST SB 27-1069)	A-N	4
11	AJF18A106DU		. . BUSHING, V50294 *[2] (POST SB 27-1069)	A-N	4
11	HJF18DU103		. . BUSHING, V02758 *[2] (POST SB 27-1069)	A-N	4
11	AFDU17-3-14		. . BUSHING, V15860 *[2] (REPLS 10-60516-263)	O-T	4
11	AJF18A106DU		. . BUSHING, V50294 *[2] (REPLS 10-60516-263)	O-T	4
11	HJF18DU103		. . BUSHING, V02758 *[2] (REPLS 10-60516-263)	O-T	4
12	69-52414-1		. . YOKE (USED ON 69-52403-4) (OPT TO 69-52414-5)	AB	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
12	69-52414-1		. . YOKE (USED ON 69-76602-1) (OPT TO 69-52414-3)	AB	1
12	69-52414-3		. . YOKE (USED ON 69-76602-1) (OPT TO 69-52414-5)	AB	1
12	69-52414-1		. . YOKE (OPT TO 69-52414-3)	C-J	1
12	69-52414-3		. . YOKE (OPT TO 69-52414-5)	C-T	1
12	69-52414-5		. . YOKE	A-N	1
12	69-52414-5		. . YOKE (OPT TO 69-52414-7)	O-T	1
12	69-52414-7		. . YOKE	O-T	1
13	69-52400-1		. . SHAFT (REPLD BY 69-62744-2)	A-F	1
13	69-62744-2		. . SHAFT (REPLS 69-52400-1) (POST SB 27-1048) (OPT TO 65-80941-2)	A-F	1
13	65-80941-2		. . SHAFT	A-F	1
13A	69-52400-2		. . SHAFT (OPT TO 65-80941-1)	G-T	1
13A	65-80941-1		. . SHAFT (OPT TO 65-80941-3)	G-T	1
13A	65-80941-3		. . SHAFT	G-T	1
14	BACN10JC6		. NUT (REPLS NAS679A6)		1
15	66-24715-1		. WASHER		1
16	69-52427-1		. COUPLING		1
17	69-52404-2		. GEAR		1
17	69-52404-1		. GEAR (OPT)		1
18	NAS1351-4H12P		. BOLT		3
19	AN960-416		. WASHER		3
20	69-37696-1		. RETAINER	A-J	1
20	69-37696-3		. RETAINER	KL	1
20	69-37696-4		. RETAINER	M-T	1
21	MS28775-135		. PACKING, O-RING		1
22	21959-0269		. SEAL, V73680 (OPT TO 69-73393-2)	A-P	1
22	69-73393-2		. SEAL		1
26	69-52425-1		. SHIM		1
27	BACB10BD25		DELETED		
27	BACB10BB25		. BEARING (REPLS BACB10A345, BACB10A407)		1
29	BACB10BA30		. BEARING (REPLS BACB10A17)		4
30	NAS1351-4H12P		. BOLT		4
31	AN960-416		. WASHER		4
32	69-37633-3		. COVER	A-J	1
32	69-37633-3		. COVER (PREF)	Q-T	1
32	69-37633-5		. COVER	K-P	1
32	69-37633-5		. COVER (OPT)	Q-T	1
33	MS28775-146		. PACKING, O-RING		1
34	66-25105-2		. SHIM		1
35	BACB10A17		. BEARING		1
36	69-37612-3		. GEAR		1
36	69-37612-2		. GEAR (OPT)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
37	66-24700-1		. SHIM		1
38	66-23917-2		. SPACER		1
39	BACB10BA30		. BEARING (REPLS BACB10A17)		1
40	69-37613-2		. GEAR		1
40	69-37613-1		. GEAR (OPT)		1
41	BACN10HR6		. NUT	A-D G-J	2
41	BACN10HR5		. NUT	EFK-T	2
41A	BACW10BN6P		. WASHER	A-D G-J	2
41A	BACW10BN5P		. WASHER	EFK-T	2
42	BACB30MT6T32		. BOLT	A-D	2
42	BACB30MT5T30		. BOLT	EFK-R	2
42	BACB30LE5-30		. BOLT	ST	2
43	BACN10HR6		. NUT	A-D G-J	2
43	BACN10HR5		. NUT	EFK-T	2
44	BACW10BN6P		. WASHER	A-D G-J	2
44	BACW10BN5P		. WASHER	EFK-T	2
45	BACB30MT6T14		. BOLT	A-D G-J	2
45	BACB30MT5T12		. BOLT	EFK-R	2
45	BACB30LE5-12		. BOLT	ST	2
46	65-50265-1		. HOUSING	ACG	1
46	65-50265-2		. HOUSING	BDH	1
46	65-50265-3		. HOUSING	EI	1
46	65-50265-4		. HOUSING	FJ	1
46	65-50265-5		. HOUSING	K	1
46	65-50265-6		. HOUSING	L	1
46	65-50265-7		. HOUSING	MOQS	1
46	65-50265-8		. HOUSING	NPRT	1
47	2-153N304-75		. O-RING, V83259		1
47	2-153N304-7		. O-RING, V83259 (OPT)		1
48	69-52451-1		. SHIM	A-D G-J	1
48	69-52451-2		. SHIM	EFK-T	1
49	MS172273		. WASHER		1
50	69-37683-1		. NUT		1
51	69-52428-1		. RETAINER	A-DGH	1
51	69-52428-1		. RETAINER	EFI-L	1
51	66-23919-1		. RETAINER (OPT TO 69-52428-1)	EFI-L	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
51	69-52428-2		. RETAINER	M-T	1
51	69-52428-1		. RETAINER (OPT TO 69-52428-2)	M-T	1
51	66-23919-1		. RETAINER (OPT TO 69-52428-1)	M-T	1
52	9209H		. BEARING, V38443	A-DGH	1
52	9209H		. BEARING, V38443	EFI-T	1
52	209W		. BEARING, V21335 (OPT TO 9209H)	EFI-T	1
52	209M		. BEARING, V38443 (OPT TO 209W)	EFI-T	1
53	69-37639-1		. ADAPTER	A-L	1
53	69-37639-2		. ADAPTER	M-T	1
53	69-37639-1		. ADAPTER (OPT TO 69-37639-2)	M-T	1
54	BACN10HR5		. NUT		4
55	AN960-516		. WASHER		4
56	BACB30MT5T12		. BOLT	A-DGH	4
56	BACB30MT5T13		. BOLT	EFI-R	4
56	BACB30LE5-13		. BOLT	ST	4
57	176665		. TORQUE BRAKE ASSY, V71791	A-DGH	1
57	178486-1		. TORQUE BRAKE ASSY, V71791	EFIJ	1
57	178486-2		. TORQUE BRAKE ASSY, V71791	KL	1
57	178486-3		. TORQUE BRAKE ASSY, V71791	M-T	1
58	176569		. . SUPPORT, V71791	A-DGH	1
58	178481-1		. . SUPPORT, V71791	KL	1
58	178481-2		. . SUPPORT, V71791	M-T	
58	178481		. . SUPPORT, V71791	EFIJ	
59	175843		. . COUPLING, V71791		1
60	176628		. . HOUSING, V71791	A-DGH	1
60	175824		. . HOUSING, V71791	EFIJ	1
60	175824-1		. . HOUSING, V71791	K-T	1
61	176570		. . SUPPORT, V71791	A-DGH	1
61	176828		. . SUPPORT, V71791	EFIJ	1
61	176828-1		. . SUPPORT, V71791	KL	1
61	176828-2		. . SUPPORT, V71791	M-T	1
62	176658		. . SPRING PACK ASSY, V71791	A-DGH	1
62	175821		. . SPRING PACK ASSY, V71791	EFI-T	1
63	175841		. . . ADAPTER, V71791		1
64	176643-1		. . . RING, V71791	A-DGH	1
64	175826		. . . RING, V71791	EFI-T	1
65	176278X		. . . SHIM, V71791		AR
66	176634		. . . SLEEVE, V71791	A-DGH	1
66	175830		. . . SLEEVE, V71791	EFI-T	1
67	176635		. . . SLEEVE, V71791	A-DGH	1
67	175829		. . . SLEEVE, V71791	EFI-T	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
68	176636		. . . SPRING SET, V71791	A-DGH	1
68	175822		. . . SPRING SET, V71791	EFI-T	1
69	176643-1		. . . RING, V71791	A-DGH	1
69	175826		. . . RING, V71791	EFI-T	1
70	2-152N304-75		. O-RING, V83259	A-DGH	2
70	2-152N304-7		. O-RING, V83259 (OPT)	A-DGH	2
70	2-043N304-75		. O-RING, V83259	EFI-T	2
70	2-043N304-7		. O-RING, V83259 (OPT)	EFI-T	2
71	2-156N304-75		. O-RING, V83259		1
71	2-156-N304-7		. O-RING, V83259 (OPT)		1
72	69-52450-1		. SHIM		1
73	111GE		. BEARING, V21335		1
74	RR168		. RING, V80756		1
75	69-52421-2		. GEAR	A-N	1
75	69-52421-1		. GEAR (OPT TO 69-52421-2)	A-N	1
75	69-52421-3		. GEAR	O-T	1
75	69-52421-2		. GEAR (OPT TO 69-52421-3)	O-T	1
75	69-52421-1		. GEAR (OPT TO 69-52421-2)	O-T	1
76	BACB10BB60		. BEARING (REPLS BACB10A352)		1
77	BACN10JC4		. NUT (REPLS NAS679A4W)		7
78	AN960-416		. WASHER		7
79	NAS584-11		. SCREW	A-F	7
79	BACB30JC8-12		. BOLT (REPLS NAS584-11)(POST SB 27-1048)	G-T	7
80	MS28775-010		. PACKING, O-RING		7
81	69-37686-1		. RETAINER	A-F	1
81A	69-62735-1		. RETAINER (REPLS 69-37686-1)(POST SB 27-1048)	G-J	1
81A	69-62735-2		. RETAINER	K-T	1
82	69-37668-3		. SUPPORT	A-F	1
82A	69-37668-4		. SUPPORT (OPT TO 69-62734-1)(POST SB 27-1048)	G-J	1
82A	69-37668-6		. SUPPORT (OPT TO 69-62734-2)	K-T	1
82A	69-62734-1		. SUPPORT	G-J	1
82A	69-62734-2		. SUPPORT (OPT TO 69-62734-3)	K-T	1
82A	69-62734-3		. SUPPORT	K-T	1
82A	69-62734-1		. SUPPORT (PREF)	Q-T	1
83	HDFZZ007-9		. BEARING, V40920 (PRE SB 27-1048)	A-F	1
83A	HDFZZ007-9		. BEARING, V40920 (OPT) (POST SB 27-1048)	G-T	1
83A	HDF007P3		. BEARING, V40920	G-T	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
84	66-24743-1		. SPACER (PRE SB 27-1048)	A-F	1
85	21959-0535		. SEAL, V73680 (OPT TO 69-73393-4)	A-P	1
85	69-73393-4		. SEAL	G-T	1
86	MS28775-144		. PACKING, O-RING		1
87	MS28775-139		. PACKING, O-RING (POST SB 27-1048)	G-T	1
88	69-52461-1		. NAMEPLATE		1
89	65-50273-1		. HOUSING ASSY	ACEGI	1
89	65-50273-2		. HOUSING ASSY	BDFHJ	1
89	65-50273-3		. HOUSING ASSY	KMOQS	1
89	65-50273-4		. HOUSING ASSY	LNPRT	1
90	65-50261-1		. . HOUSING	ACEGI	1
90	65-50261-2		. . HOUSING	BDFHJ	1
90	65-50261-1		. . HOUSING (PREF)	KMOQS	1
90	65-50261-2		. . HOUSING (PREF)	LNPRT	1
90	65-50261-3		. . HOUSING (OPT)	KMOQS	1
90	65-50261-4		. . HOUSING (OPT)	LNPRT	1
91	MS124696		. . INSERT		7
91	MS21208F4-15		. . INSERT (OPT)		7

*[1] BOEING 10-60516-263
*[2] BOEING 10-61899-14

VENDORS

V02758 NETWORKS ELECTRONIC CORP., U.S. BEARING DIV., 9750 DESOTO AVE., CHATSWORTH, CALIFORNIA 91311

V09455 LEAR SIEGLER, INC., TRANSPORT DYNAMICS DIVISION, P.O. BOX 1953, 3131 W. SEGERSTROM AVE., SANTA ANA, CALIFORNIA 92702

V15860 NEW HAMPSHIRE BALL BEARINGS, INC., ASTRO DIVISION, 155 LEXINGTON AVE., LACONIA, NEW HAMPSHIRE 03246

V21335 FAFNIR BEARING CO., DIVISION OF TEXTRON, INC., 37 BOOTH STREET, NEW BRITAIN, CONNECTICUT 06050

V38443 TRW, INC., TRW BEARINGS DIV., 402 CHANDLER STREET, JAMESTOWN, NEW YORK 14701

V40920 MINIATURE BEARING DIVISION, MPB CORP., OPTICAL AVE., PRECISION PARK, KEENE, NEW HAMPSHIRE 03431

V50294 NMB AMERICA, INC., 9730 INDEPENDENCE AVE., CHATSWORTH, CALIFORNIA 91311

V71791 CURTISS-WRIGHT CORP., CALDWELL FACILITY, 300 FAIRFIELD RD, CALDWELL, NEW JERSEY 07006

V73134 HEIM UNIVERSAL CORP., INTERNATIONAL INC., 60 ROUND HILL RD., FAIRFIELD, CONNECTICUT 06430

V73680 GARLOCK, INC., DIVISION ST., PALMYRA, NEW YORK 14522

V80756 TRW INC., RAMSEY CORP., P.O. BOX 513, MANCHESTER BLVD., ST. LOUIS, MISSOURI 63166

V81376 SOUTHWEST PRODUCTS COMPANY, P.O. BOX 1026, MONROVIA, CALIFORNIA 91016

V83259 PARKER-HANNIFIN CORP., SEAL GROUP, O-RING DIV., 2360 PALUMBO DR., LEXINGTON, KENTUCKY 40509