CHAPTER

76

ENGINE CONTROLS

CHAPTER 76
ENGINE CONTROLS

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

76-EFFECTIVE PAGES

CHAPTER 76
ENGINE CONTROLS

Subject/Page	Date	COC
76-11-06 (cont)		
405	Oct 10/2003	
406	Oct 10/2003	
407	Oct 10/2003	
408	Oct 10/2003	
409	Oct 10/2003	
410	Feb 10/2007	
411	Oct 10/2003	
412	Feb 15/2009	
413	Feb 15/2009	
414	Feb 15/2009	
415	Feb 15/2009	
416	BLANK	
76-11-07		
401	Jun 10/2006	
402	Jun 15/2008	
403	Jun 10/2006	
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409	Jun 10/2006	
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412	Jun 15/2008	
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R 414	Jun 15/2009	
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417	Jun 15/2008	
R 418	Jun 15/2009	
76-11-07		
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502	Jun 15/2008	
503	Jun 10/2006	
504	Jun 10/2006	
505	Jun 10/2006	
506	Jun 10/2006	
507	Jun 10/2006	
76-11-07 (cont)		
508	Jun 15/2008	
509	Jun 10/2006	
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76-11-10		
401	Feb 10/2004	
402	Jun 10/2007	
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406	Oct 10/2003	
407	Oct 10/2003	
408	Oct 10/2003	
R 409	Jun 15/2009	
O 410	Jun 15/2009	
O 411	Jun 15/2009	
412	Feb 10/2007	
413	Jun 10/2004	
414	Jun 10/2007	
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416	BLANK	
76-11-11		
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402	Feb 10/2005	
403	Oct 10/2003	
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405	Oct 10/2003	
406	Oct 10/2003	
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408	Oct 10/2003	
409	Oct 10/2003	
410	BLANK	

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76-EFFECTIVE PAGES

CHAPTER 76
ENGINE CONTROLS

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CHAPTER 76
ENGINE CONTROLS

THRUST LEVERS - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) The removal of the thrust levers.

(2) The installation of the thrust levers.

TASK 76-11-01-010-801-F00

2. Thrust Levers Removal

A. General

(1) This task gives you instructions to remove the thrust levers from the aisle control stand.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's Seat Removal (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain Adjustment (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
76-11-03-000-801-F00	Lightplate Removal (P/B 401)
76-11-03-400-801-F00	Seals, Spacer and Retainer Removal (P/B 401)
76-11-03-400-803-F00	Covers and Stops Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems (Part #: F70207-109, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-2409	Dowel Set - Thrust Lever, Control Stand (Part #: F80195-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-2411	Tool Set - Control Stand Disassembly (Part #: C76002-26, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Removal of the Thrust Levers

SUBTASK 76-11-01-040-001-F00

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 76-11-01-040-002-F00

(2) Make sure the left and right engine start switches are off and install a DO-NOT-OPERATE tag.

SUBTASK 76-11-01-040-003-F00

(3) For Engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-01-040-004-F00

(4) For Engine 2, do this step:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-01-040-005-F00

(5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

Row	Col	Number	Name
HAP 001-013, 015-026, 028-030			
E	3	C01141	AUTOTHROTTLE DC 2

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
HAP ALL			
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 76-11-01-860-004-F00

WARNING: MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(6) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-01-040-006-F00

(7) Do these steps to deactivate the speed brakes and control lever:

(a) Move the speed brake lever to the DOWN position.

(b) Move to the forward bay below the flight compartment:

1) Install the rig pin S/B-1 from the rig pin kit, SPL-1585 into the forward drum of the speed brake mechanism.

SUBTASK 76-11-01-010-001-F00

(8) Do this task: Captain's and First Officer's Seat Removal, TASK 25-11-01-000-801.

SUBTASK 76-11-01-010-007-F00

(9) Put a mat on the aft electronics panel P8.

NOTE: This will prevent damage to the switches and glass surfaces of the indicators and displays.

SUBTASK 76-11-01-010-002-F00

(10) Remove these lightplates to get access to the thrust levers Lightplate Removal, TASK 76-11-03-000-801-F00:

(a) The first officers stabilizer trim lightplate.

(b) The flap indicator lever lightplate.

SUBTASK 76-11-01-010-003-F00

(11) Remove these retainers and seals to get access to the thrust levers Seals, Spacer and Retainer Removal, TASK 76-11-03-400-801-F00:

(a) The right seal retainer and the right seal.

(b) The center seal retainer and the center seal.

(c) The left seal retainer and the left seal.

SUBTASK 76-11-01-020-001-F00

(12) Remove these covers and stops to get access to the thrust levers Covers and Stops Removal, TASK 76-11-03-400-803-F00:

(a) The knob [6] for the stabilizer trim horn cutout switch.

(b) The forward thrust stop and the aft thrust stop.

(c) Move the right side cover assembly forward and carefully lay it on the front of the stand.

(d) The center cover assembly.

SUBTASK 76-11-01-010-005-F00

(13) Do these tasks to get access to the thrust levers in the control stand (Figure 401):

(a) Remove the bolt [8] and the right stabilizer trim wheel [7].

NOTE: Keep the left stabilizer trim wheel attached at this time, so you can turn the assembled levers during removal.

(b) Remove four screws [2] and the left upper side panel [1].

(c) Remove five screws [2] the left lower side panel [5].

(d) Remove four screws [2] the right upper side panel [3].

(e) Remove four screws [2] the right lower side panel [4].

(f) Do these steps to move the stabilizer trim switch panel [10] from the control stand:

1) Remove the four screws [9].

2) Apply masking tape to prevent damage to the surface of the stabilizer trim switch panel [10].

3) Move the stabilizer trim switch panel [10] on to the mat.

F. Thrust Lever Removal Procedure

SUBTASK 76-11-01-020-002-F00

(1) Disconnect the flap indicator assembly:

(a) Go to the right side of the control stand.

(b) Remove the nut [16], washer [14], washer [15] and bolt [17] from the lower end of the link assembly [13].

(c) Safety the link assembly to the control stand.

SUBTASK 76-11-01-020-003-F00

(2) Disconnect the flap lever position synchro assembly:

(a) Remove the nut [18] and bolt [19] from the link assembly [12].

(b) Safety the link assembly to the control stand.

SUBTASK 76-11-01-020-004-F00

(3) Disconnect the stabilizer trim controls:

(a) Turn the left trim wheel until you find the link in the trim chain (Figure 402).

NOTE: This will help if it becomes necessary to disconnect the chain during installation.

(b) Safety the chain [39] to the stabilizer trim sprocket [40].

NOTE: Do not remove the chain from the sprocket.

(c) Move to the forward bay below the flight compartment to do this step:

1) To release the tension from the stabilizer control chain, do this task: Stabilizer Control Cable and Chain Adjustment, TASK 27-41-00-820-801.

SUBTASK 76-11-01-020-005-F00

(4) Do these steps to remove the control shaft components (Figure 402):

(a) Remove the bolt [8] and left stabilizer trim wheel [11].

(b) Carefully move the stabilizer trim shaft [31] to the left side of the control stand and do these steps at the same time:

1) Remove the bearing [34].

2) Remove the clamp up bushing [33].

3) Be prepared to catch and remove the bushing [35] as the shaft is moved to the left.

NOTE: The bushing [35] is between the bearing [41] and the sprocket.

4) Be prepared to catch and move the sprocket and chain.

5) Move the shaft [31] to the left side until the sprocket [40] is clear of the shaft.

6) Move the sprocket and chain to the bottom of the control stand.

(c) Reach inside the short shaft [42] from the left side and remove the inside bearing [41].

(d) Remove the stabilizer trim shaft [31] from the control stand.

1) Remove the bearing [38].

2) Remove the long bushing [37].

3) Remove the clamp up bushing [36].

SUBTASK 76-11-01-020-006-F00

(5) Do these steps to remove the chain guard (Figure 403):

(a) Go to the opening where the switch panel [10] for the stabilizer trim cutout is found.

(b) Use the 90 degree screwdriver from tool set, SPL-2411 hold the screw [66].

(c) Remove the nut [65], washer [63] and screw [66].

(d) Remove the upper center screw [62] and washer [61].

(e) Remove the forward screw [64] and washer [63].

(f) Remove the chain guard [67].

SUBTASK 76-11-01-020-007-F00

(6) Disconnect the electrical harness for Engine 1 thrust lever (Figure 404):

(a) Disconnect the electrical connector D8313J [85].

(b) Disconnect the electrical connector D10171J [86].

(c) Remove the clamps [81] and [104].

(d) Disconnect the electrical connector D8315J.

(e) Remove the pins 1 and 2 with wires from the electrical connector D8315J.

(f) Move the wires and connectors through the wire guide.

SUBTASK 76-11-01-020-008-F00

(7) Disconnect the electrical harness for the Engine 2 thrust lever (Figure 405):

(a) Disconnect the electrical connector D8315J [105].

(b) Disconnect the electrical connector D10173J [106].

(c) Remove the eight clamps [104].

(d) Disconnect the electrical connector D8313J [85].

(e) Remove the pins 11 and 12 and attached wires from the electrical connector D8313J.

(f) Move the wires and connectors thru the wire guide.

SUBTASK 76-11-01-020-009-F00

(8) Disconnect the applicable connecting rod [125] for the thrust lever (Figure 406):

(a) Go into the lower forward access area under the flight compartment.

(b) Disconnect the applicable connecting rod [125] from the thrust lever resolver.

1) Remove and discard the cotter pin [124].

2) Remove the nut [121], washer [122] and bolt [123].

3) Move the connecting rod [125] from the resolver.

SUBTASK 76-11-01-020-010-F00

(9) Do these steps to disconnect the thrust lever assemblies (Figure 407):

(a) Find the bent tab on the lockwasher [143].

(b) Use the lockwasher removal tool from tool set, SPL-2411 to bend the tab.

(c) Bend the tab out of the notch in the nut [144].

(d) Put one control shaft wrench from tool set, SPL-2411 on the left side of the long control shaft [146] to hold it in position.

(e) Put one control shaft nut wrench from tool set, SPL-2411 in position and remove the nut [144] from the long control shaft [146].

(f) Remove and discard the lockwasher [143].

SUBTASK 76-11-01-020-011-F00

(10) Do the steps to remove the thrust lever [141] for engine 1:

CAUTION: BE CAREFUL WHEN YOU INSERT THE DOWEL. IF THE NINE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(a) Put the dowel set, SPL-2409 against the right side end of the long control shaft [146].

(b) Hit lightly (carefully tap) on the dowel.

NOTE: This is to move the long control shaft off the control levers.

1) Move the dowel until the thrust lever [141] is on the dowel.

(c) Do not move the long control shaft [146] from this position.

NOTE: More movement will let the start lever fall.

(d) Hold the thrust lever and move the dowel from the lever.

1) Stop the dowel movement when you can lift up the lever.

2) Make sure the washers [145] are still held by the dowel.

(e) Remove the thrust lever assembly [141] through the top of the control stand.

(f) Remove the 2 washers [145] between the thrust levers if you will remove thrust lever [142] for engine 2.

NOTE: Make sure that the washers do not fall into the control stand.

(g) Do not move the dowel from this position unless you want to remove thrust lever [142] for engine 2.

SUBTASK 76-11-01-020-012-F00

(11) Do these steps to remove the thrust lever for engine 2 (Figure 407):

CAUTION: BE CAREFUL WHEN YOU INSERT THE DOWEL. IF THE NINE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(a) Put the dowel set, SPL-2409 against the right side end of the long control shaft [146].

(b) Hit lightly (carefully tap) on the dowel.

NOTE: This is to move the long control shaft off the thrust lever.

1) Move the dowel until the thrust lever [142] is on the dowel.

(c) Do not move the long control shaft from this position.

NOTE: More movement will let the thrust lever for engine 1 fall.

(d) Hold the thrust lever [142] and move the dowel from the lever.

1) Stop the dowel movement when you can lift up the lever.

(e) Make sure the washers [145] are still held on the long control shaft [148].

(f) Remove the thrust lever [142] through the top of the control stand.

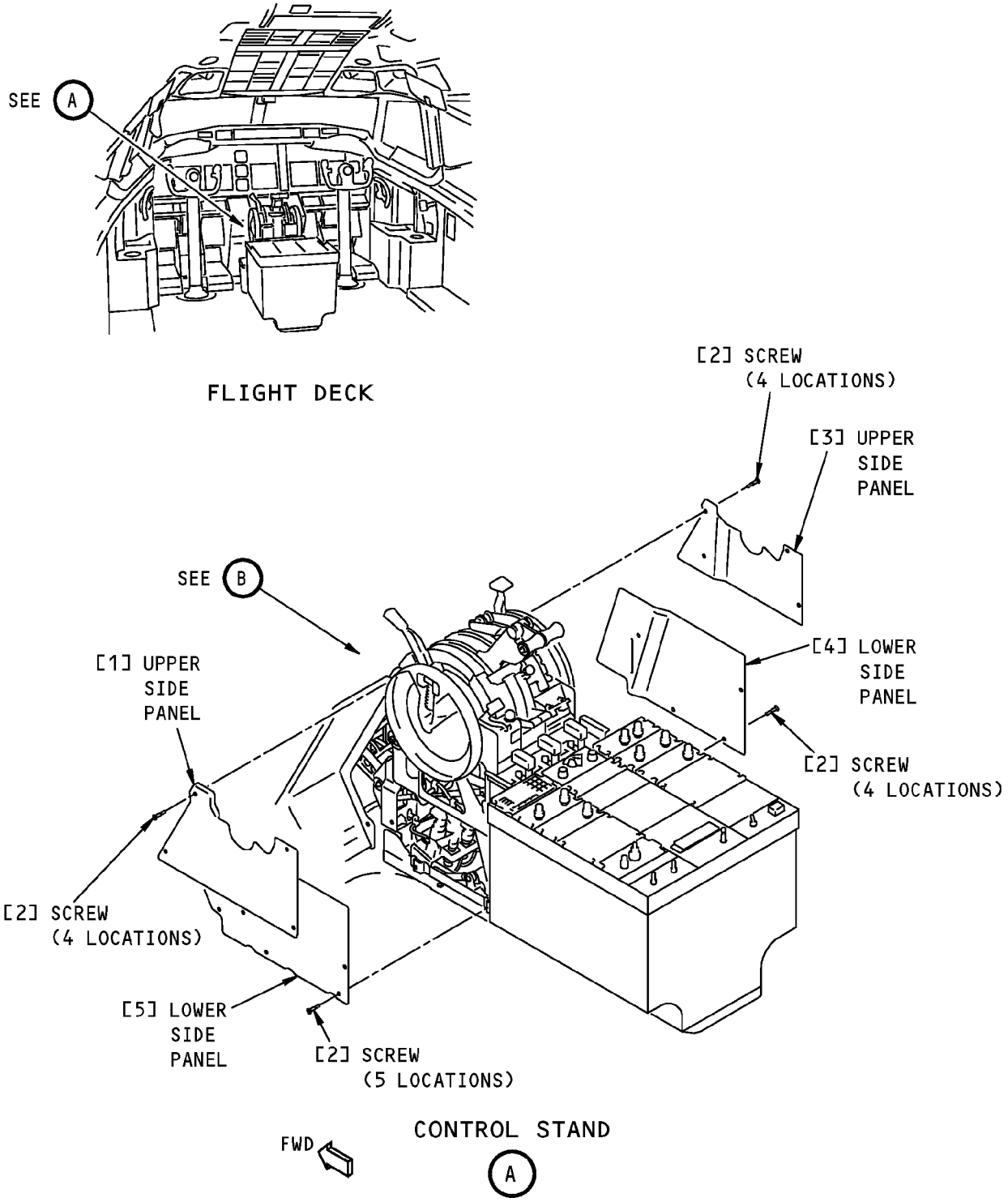
(g) Remove the two washers [145] between the thrust levers.

NOTE: Make sure that the washers do not fall into the control stand.

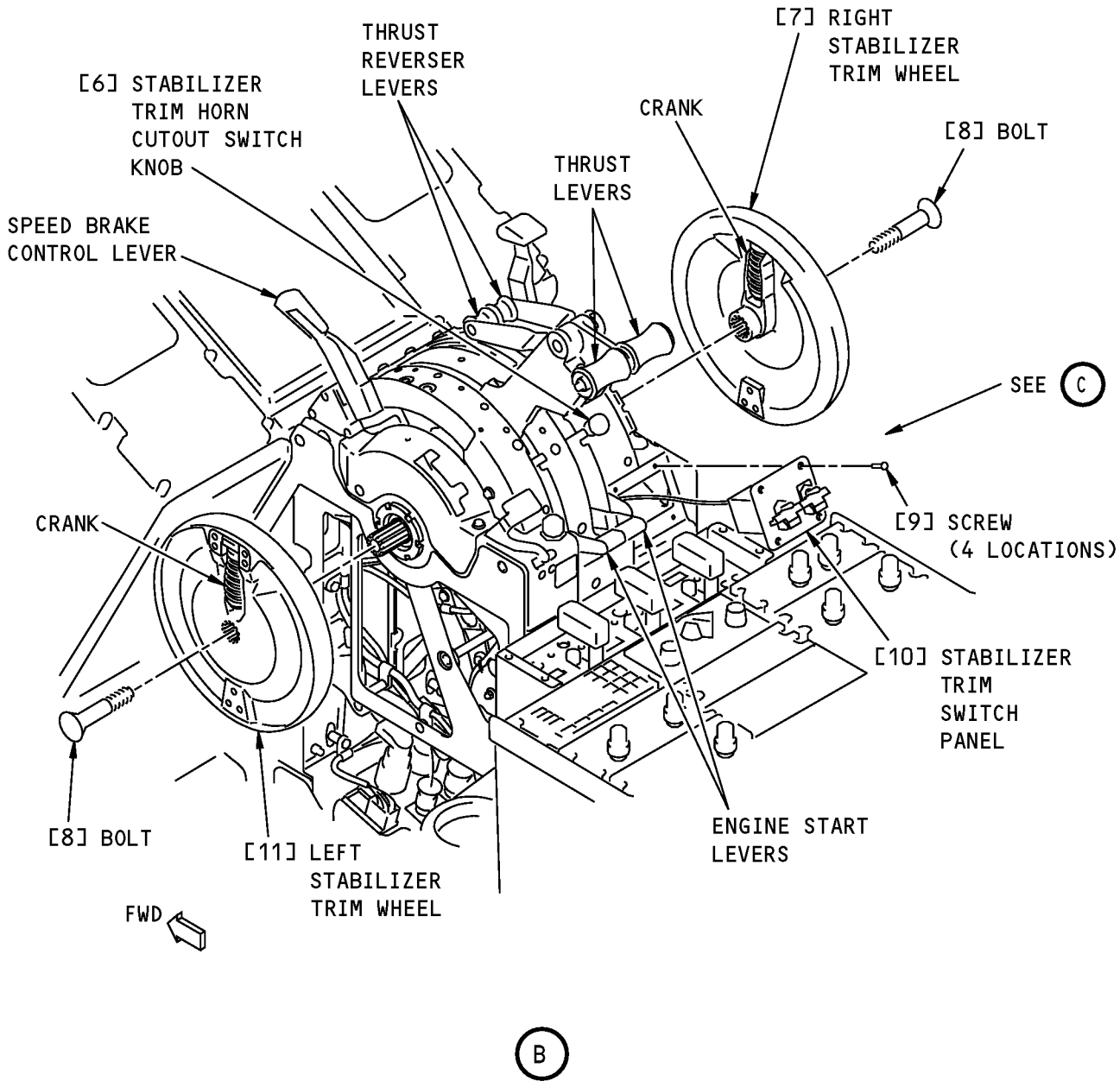
(h) Do not move the dowel from this position.

NOTE: More movement will let the start lever fall.

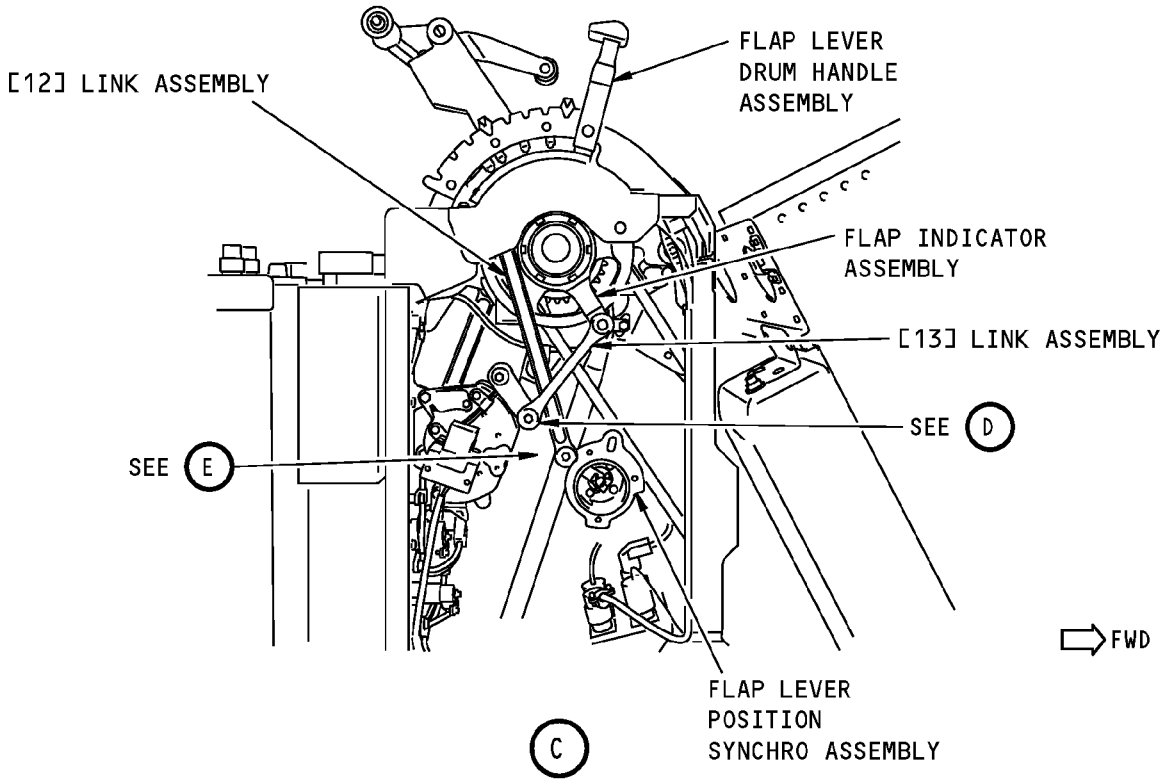
END OF TASK

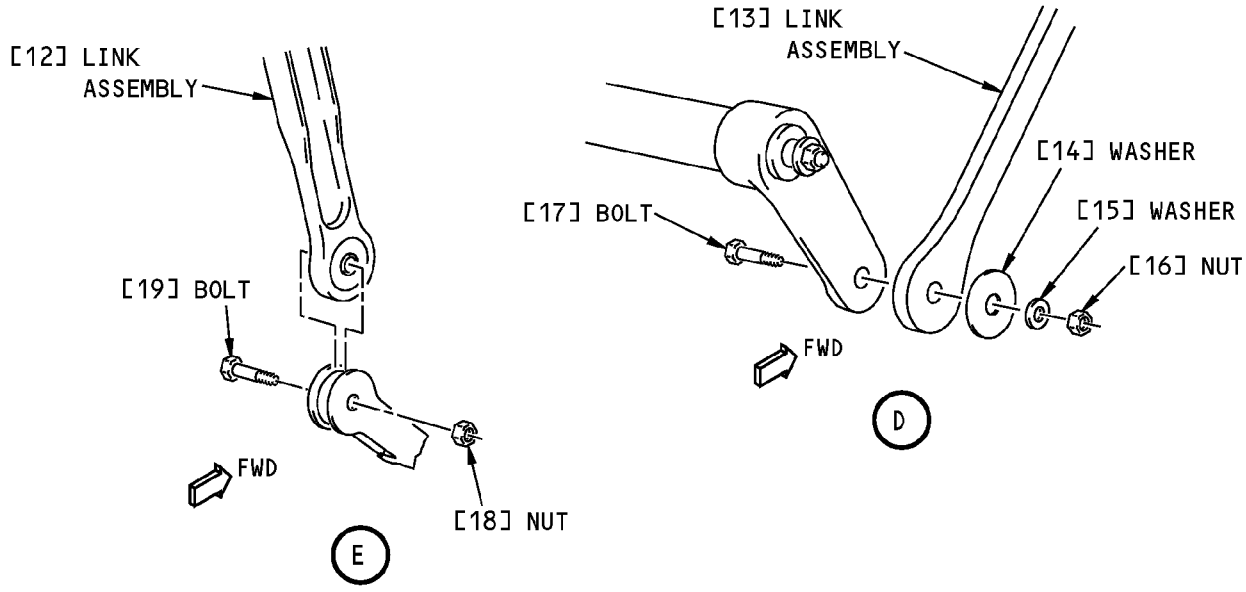


Control Stand Installation
Figure 401 (Sheet 1 of 3)/76-11-01-990-801-F00

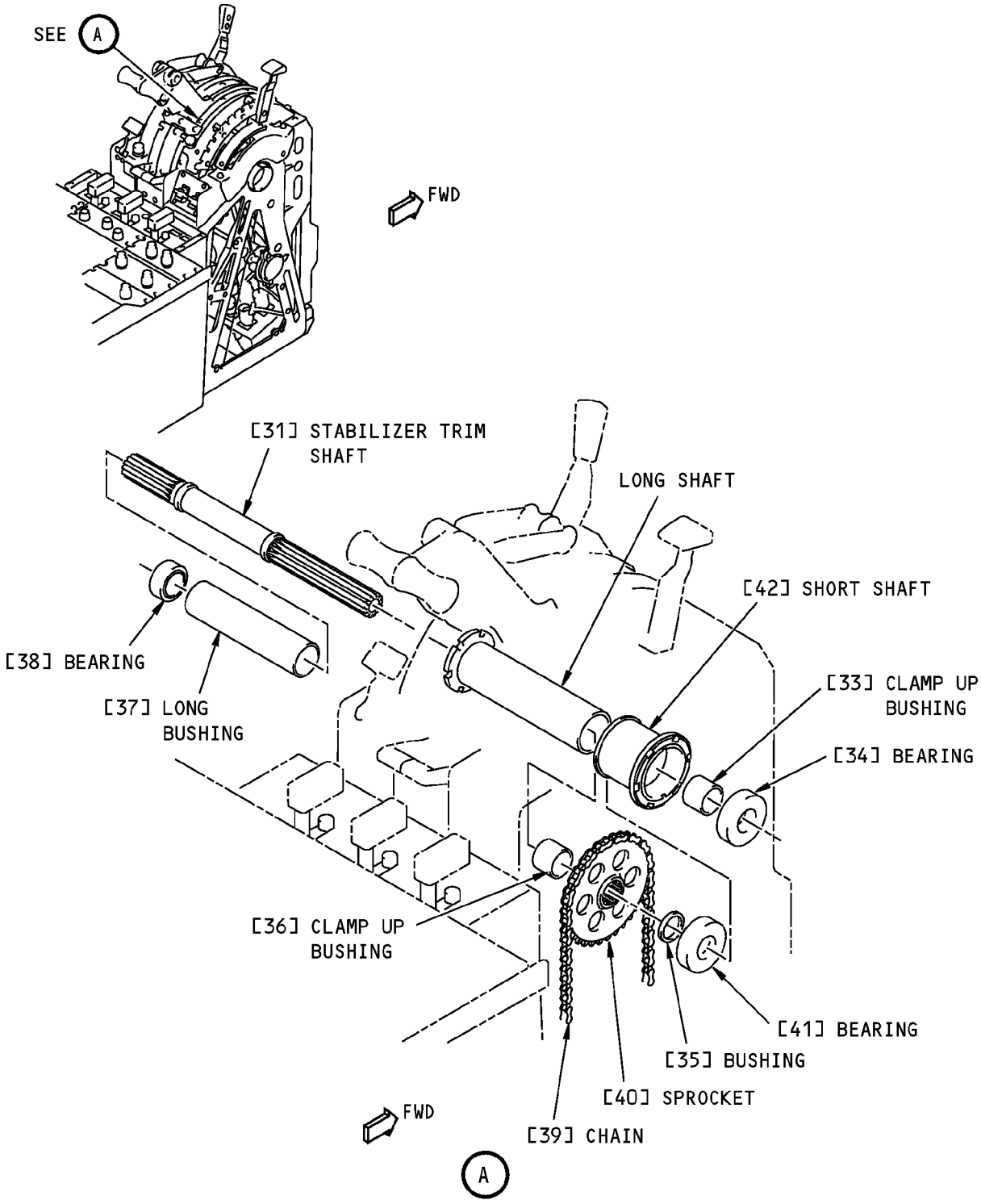


Control Stand Installation
Figure 401 (Sheet 2 of 3)/76-11-01-990-801-F00

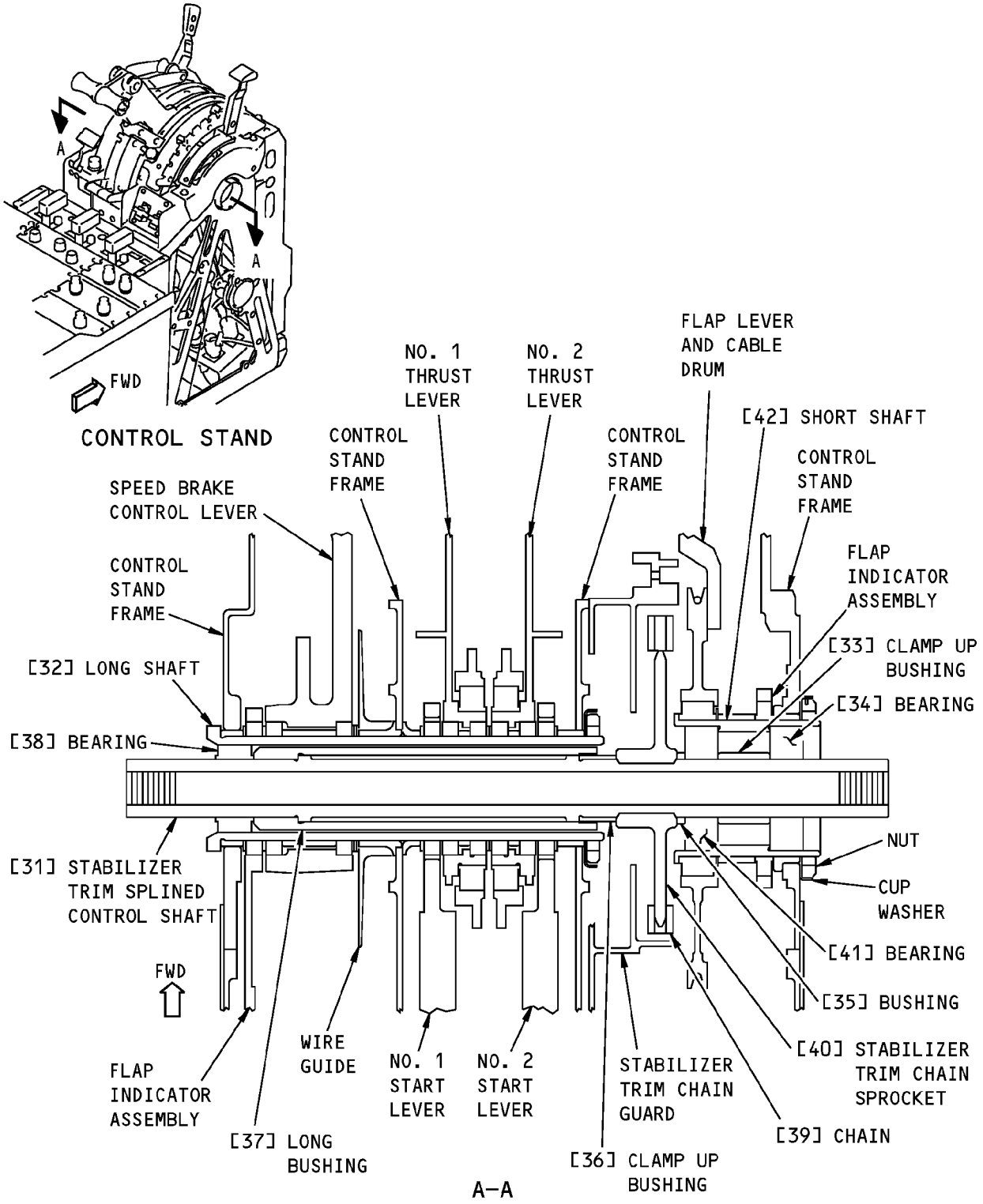




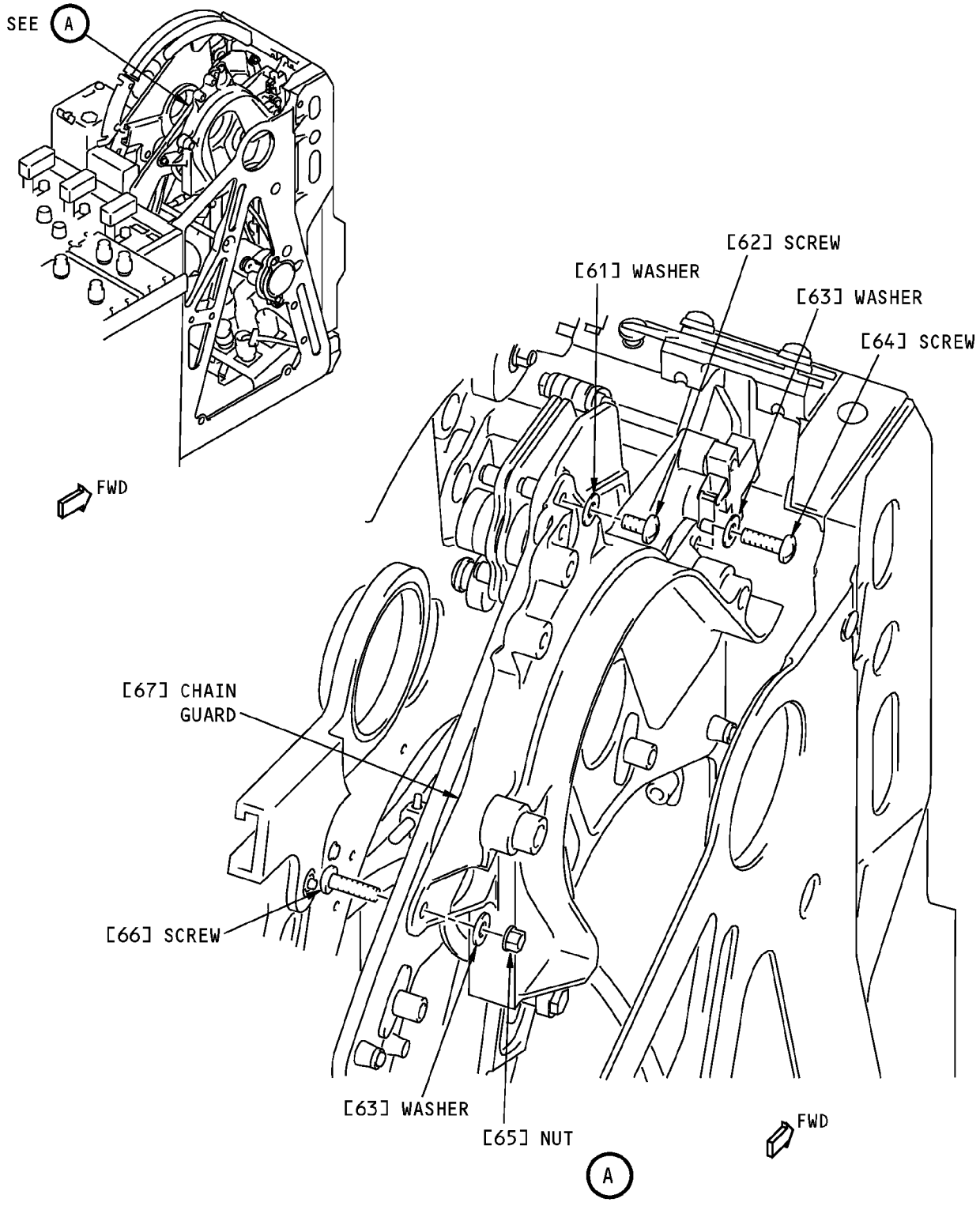
Control Stand Installation
Figure 401 (Sheet 3 of 3)/76-11-01-990-801-F00



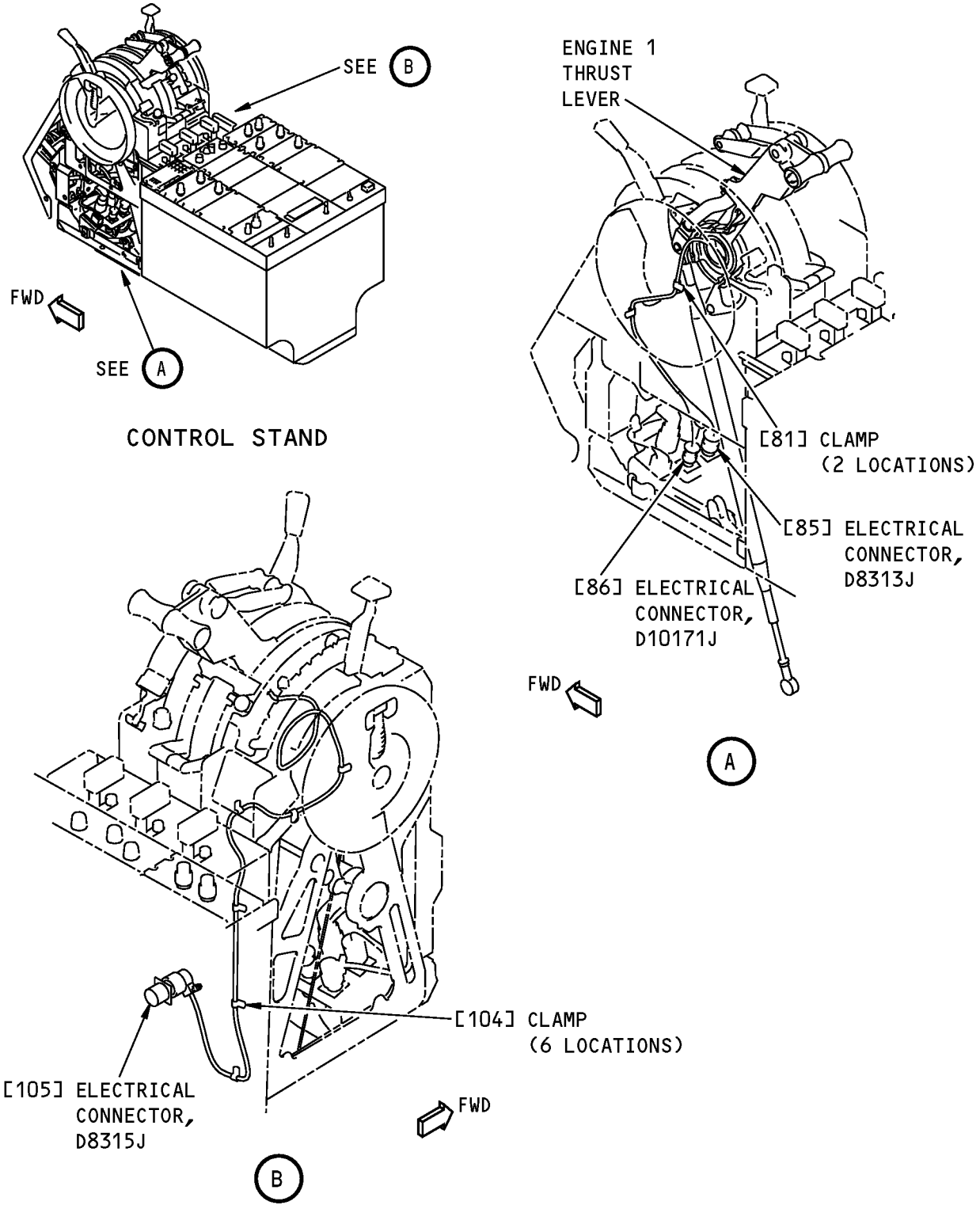
Control Shaft Components Installation
Figure 402 (Sheet 1 of 2)/76-11-01-990-802-F00



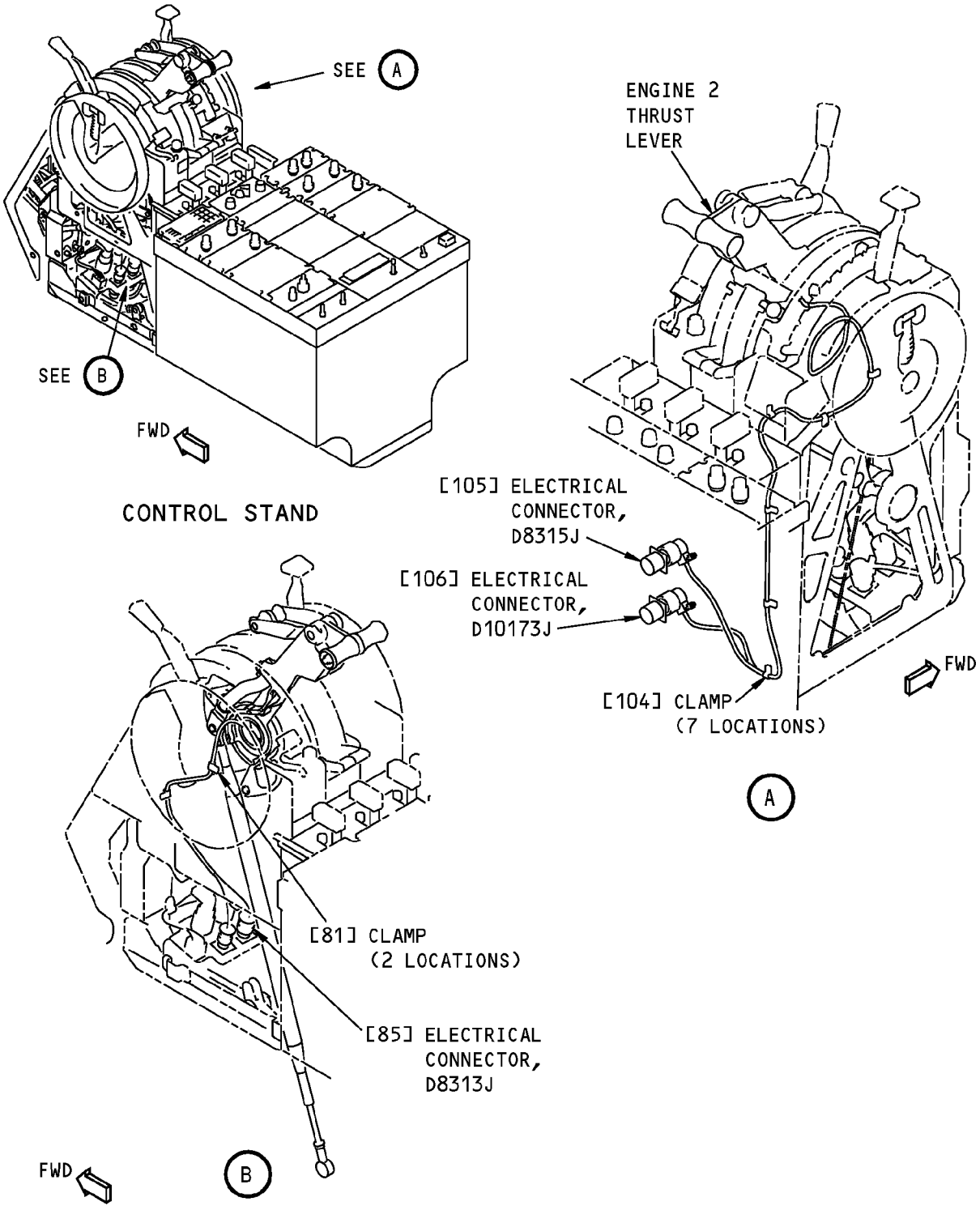
Control Shaft Components Installation
Figure 402 (Sheet 2 of 2)/76-11-01-990-802-F00



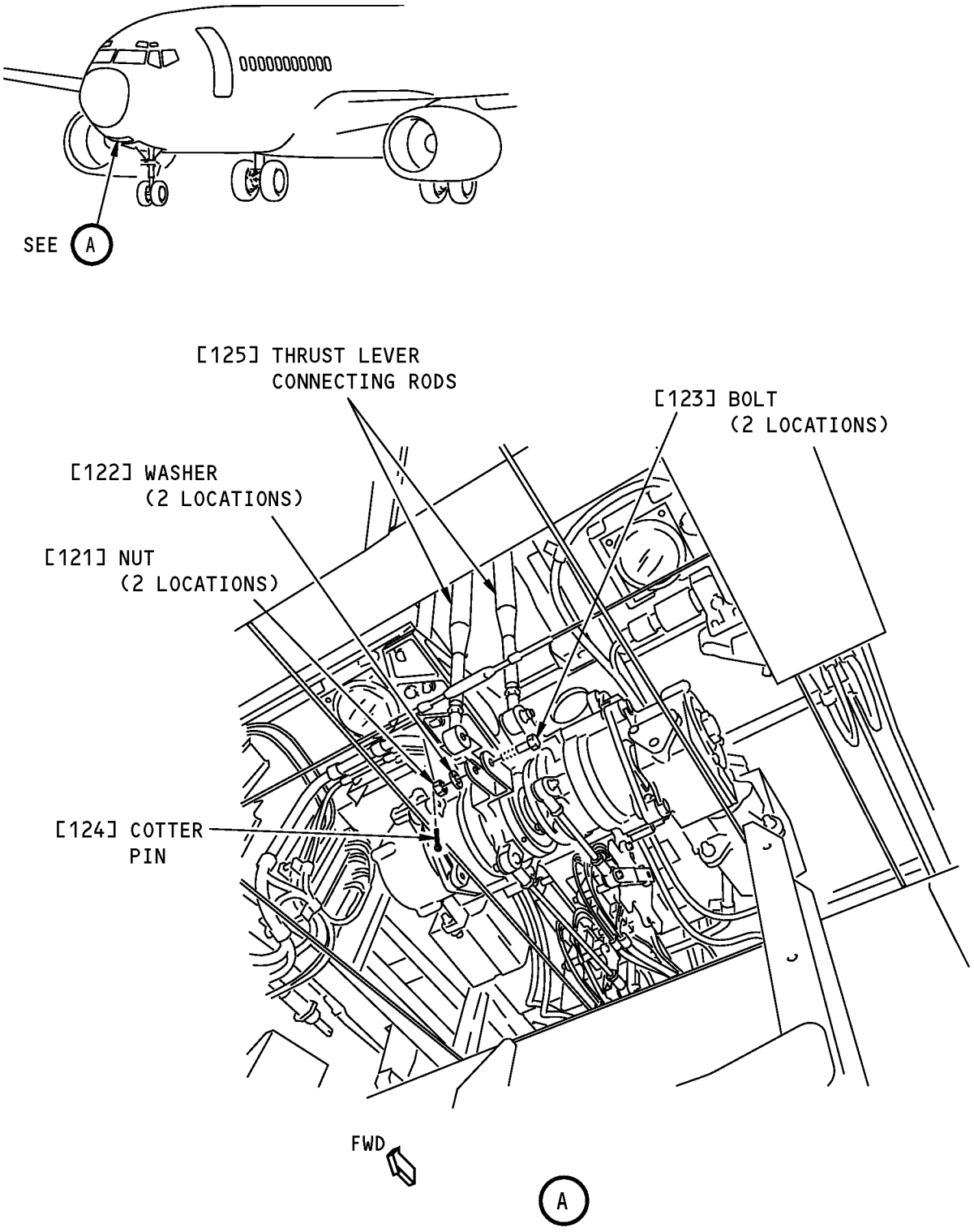
Chain Guard Assembly Installation
Figure 403/76-11-01-990-803-F00



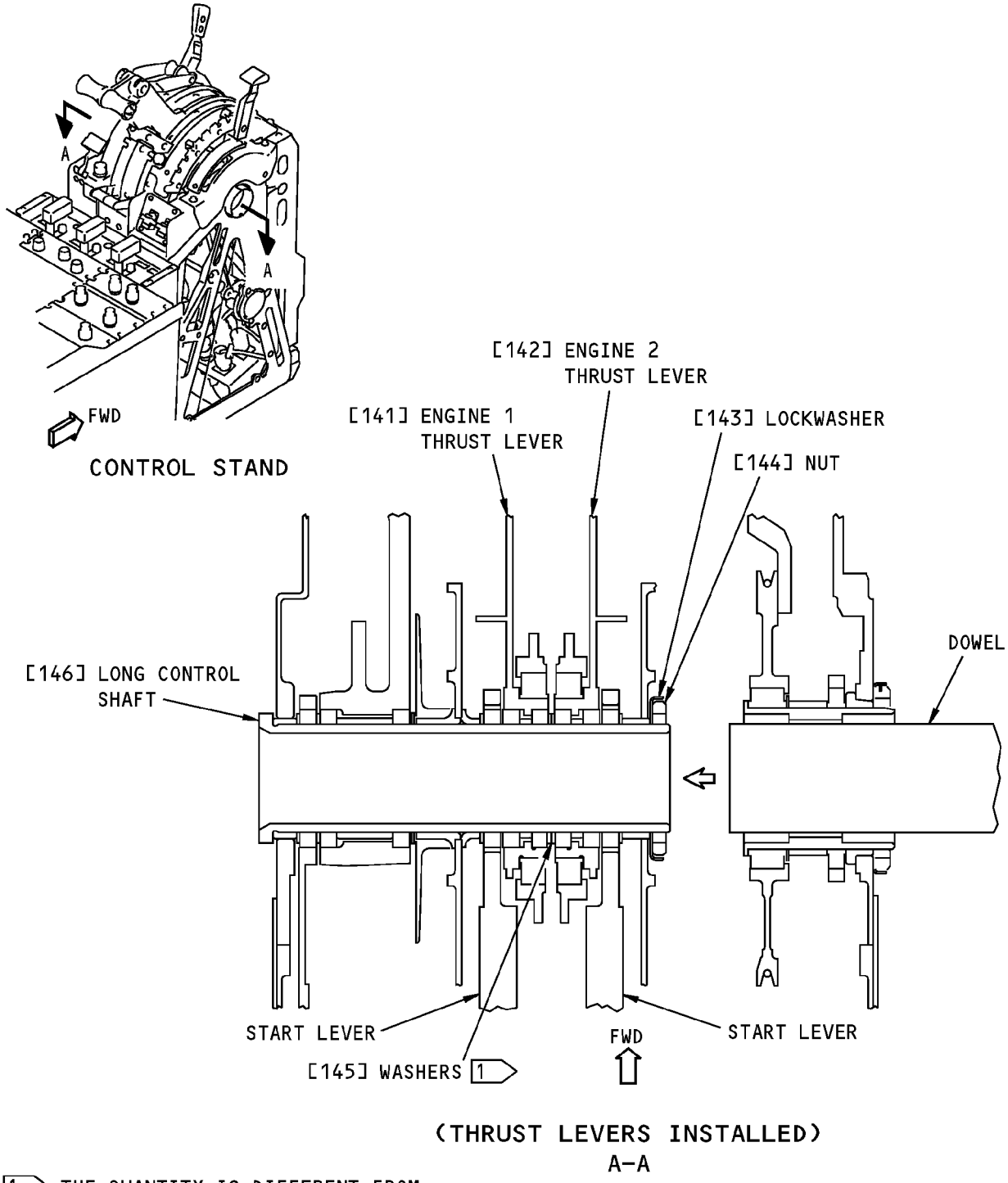
Engine 1 Thrust Lever Electrical Harness Installation
Figure 404/76-11-01-990-804-F00



Engine 2 Thrust Lever Electrical Harness Installation
Figure 405/76-11-01-990-805-F00

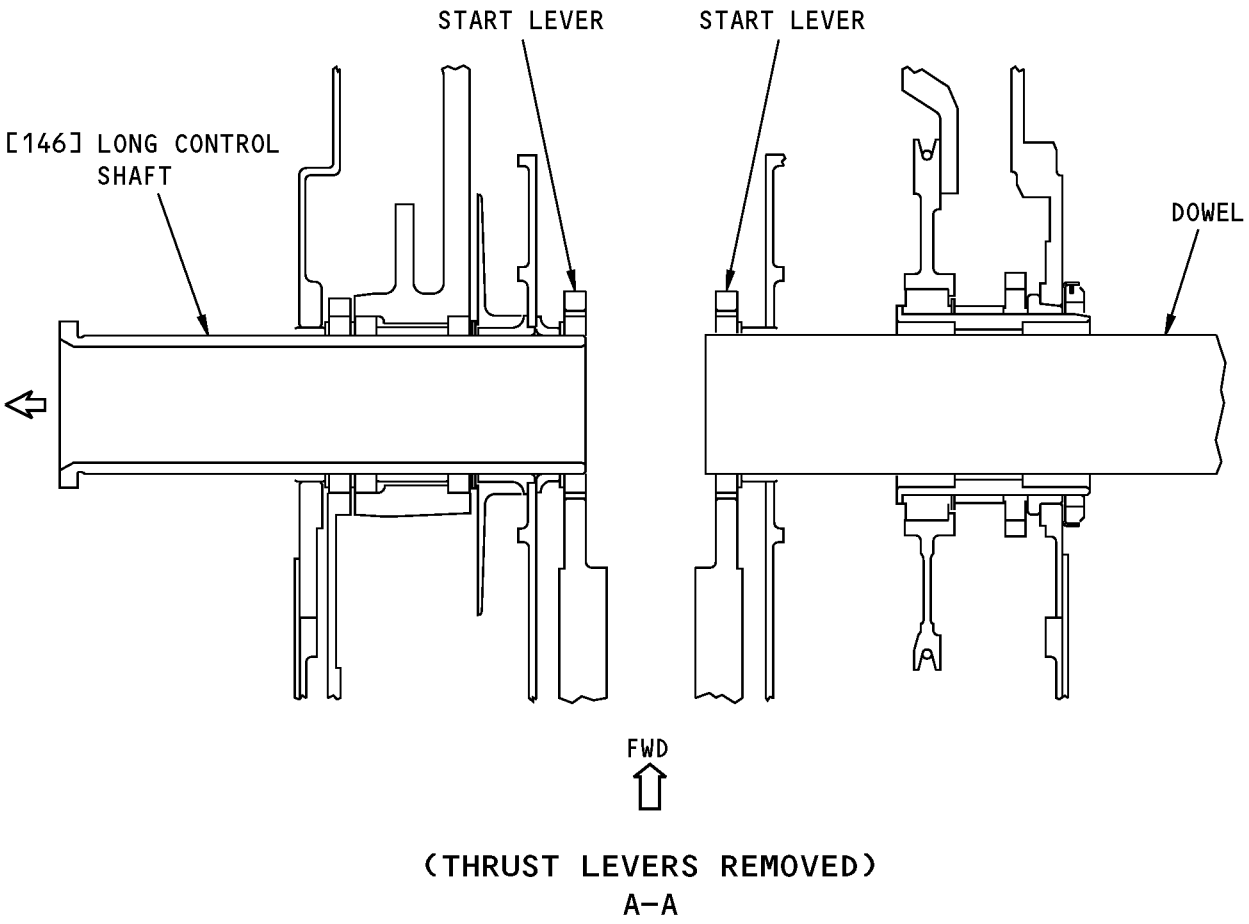


Thrust Lever Connecting Rod Installation
Figure 406/76-11-01-990-806-F00



1 THE QUANTITY IS DIFFERENT FROM AIRPLANE TO AIRPLANE

Thrust Lever Installation
Figure 407 (Sheet 1 of 2)/76-11-01-990-807-F00



Thrust Lever Installation
Figure 407 (Sheet 2 of 2)/76-11-01-990-807-F00

TASK 76-11-01-420-801-F00

3. Thrust levers Installation

A. References

Reference	Title
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain Adjustment (P/B 501)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-62-00-820-801	Speed Brake Control Lever Adjustment (P/B 501)
76-11-03-400-802-F00	Seals, Spacers and Retainer Installation (P/B 401)
76-11-03-400-804-F00	Covers and Stops Installation (P/B 401)
76-11-03-420-801-F00	Lightplate Installation (P/B 401)
76-11-05-820-801-F00	Thrust Lever Angle Resolver Adjustment (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems (Part #: F70207-109, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-2409	Dowel Set - Thrust Lever, Control Stand (Part #: F80195-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-2411	Tool Set - Control Stand Disassembly (Part #: C76002-26, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

C. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
142	Lever assembly	25-11-00-50-929	HAP 001-013, 015-026, 028-054
		76-11-01-01-005	HAP 001
		76-11-01-01-345	HAP 001
		76-11-01-01-350	HAP 001

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Installation Procedure

SUBTASK 76-11-01-420-001-F00

(1) Do these steps to install the thrust lever for engine 1:

(a) Apply grease, D00013 to the inside of the thrust lever.

(b) Do these steps to put the thrust lever [141] assembly into the control stand (Figure 407):

1) Apply a thin coat of grease, D00013 to each side of the washer you are to install.

NOTE: The application of grease, D00013 will help to hold the washers to the thrust lever.

2) Make sure the washers [145] are in their position on the dowel between the thrust levers.

3) Hold the thrust lever [141] in the correct position.

4) Move the long control shaft [146] through the thrust lever.

5) Move the long control shaft [146] through the washers [145].

6) Put the long control shaft [146] against the right side end of the dowel set, SPL-2409.

7) Move the thrust lever forward and aft.

NOTE: The levers and washers [145] must move freely when you move them from the dowel to the long control shaft.

CAUTION: BE CAREFUL WHEN YOU MOVE THE CONTROL SHAFT. IF THE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(c) Move the long control shaft [146] and dowel to the right until all of the lever assemblies and washers [145] are on the long control shaft [146].

(d) Remove the dowel.

SUBTASK 76-11-01-420-002-F00

(2) Install the thrust lever [142] for engine 2:

(a) Apply grease, D00013 to the inside of the thrust lever assembly [142].

1) Apply a thin coat of grease, D00013 to each side of the washer [145] you are to install.

NOTE: The application of grease, D00013 will help to hold the washers to the thrust lever.

(b) Do these steps to put the thrust lever [142] into the control stand (Figure 407):

NOTE: Make sure the connecting rod and the wire guide are in the correct install position.

1) Make sure the washers [145] are in their position on the long control shaft [146] between the two thrust levers.

NOTE: Two washers [145] should be between the two thrust levers.

2) Hold the thrust lever [142] in the correct position.

3) Move the long control shaft [146] through the thrust lever [142].

4) Put the long control shaft [146] against the right side end of the dowel set, SPL-2409.

5) Move the thrust lever forward and aft.

NOTE: The levers and washers [145] must move freely when you move them from the dowel to the long control shaft.

CAUTION: BE CAREFUL WHEN YOU MOVE THE CONTROL SHAFT. IF THE NINE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(c) Move the long control shaft and dowel to the right until all of the lever assemblies and washers [145] are on the control shaft [146].

(d) Remove the dowel.

SUBTASK 76-11-01-420-003-F00

(3) Do these steps to lock the thrust levers:

(a) Set the keyway on the long shaft [146] at the top.

(b) Install a new lockwasher [143], but do not bend the tab at this time.

NOTE: Align the key tab on the lockwasher with the keyway on the long shaft.

(c) Put one control shaft wrench from tool set, SPL-2411 on the left side of the long control shaft [146] to hold it in position.

(d) Install the nut [144].

1) Use one control shaft nut wrench from tool set, SPL-2411 to tighten the nut [144].

2) Tighten the nut [144] to 100 in-lb (11.3 N·m) – 150 in-lb (16.9 N·m).

SUBTASK 76-11-01-020-013-F00

(4) Measure the gap 3, 4, 5, and 6 after the assembly is installed (Figure 408):

(a) If the gaps are in the limits, no change to the assembly will be necessary:

(b) If the gaps are not in the limits, follow the instructions in table A and B to get the correct limits:

1) Use the applicable steps in the removal and installation tasks to adjust the washers [145] on the long control shaft [146].

SUBTASK 76-11-01-420-004-F00

(5) After the control levers assemblies are set correctly, lock the assemblies in their position (Figure 407):

(a) Make sure the nut is tighten to 100 in-lb (11.3 N·m) – 150 in-lb (16.9 N·m).

(b) Bend the rim of the lockwasher [143] into one of the notches of the nut [144]:

1) Use a chisel or lockwasher break tool from tool set, SPL-2411 to bend the rim of the lockwasher [143].

2) Make sure the bend in the lockwasher is not more than 0.15 inch (2.5 mm) into the notch on the nut [144].

(c) Move the thrust levers down against the idle stop.

SUBTASK 76-11-01-410-001-F00

(6) Connect the connecting rod [125] ends for the thrust levers:

(a) Go into the lower forward access area below the flight compartment (Figure 406):

(b) Put the rod for engine 1 in its position in the thrust lever resolver.

(c) Install the bolt [123] with its head on the inboard side of the rod clevis.

(d) Install the nut [121] and washer [122].

1) Install a new cotter pin [124].

(e) Set the thrust lever rod for engine 2 to the thrust lever resolver.

1) Install the bolt [123] with its head on the inboard side of the rod clevis.

2) Install the nut [121], washer [122].

3) Install a new cotter pin [124].

SUBTASK 76-11-01-420-005-F00

(7) Connect the electrical harness for the engine 2 thrust lever (Figure 405):

(a) Install pin and wire (W0049-0003-22) into location 11 in electrical connector D8313J.

(b) Install pin and wire (W0049-0004-22) into location 12 in electrical connector D8313J.

(c) Connect the electrical connector D8313J [85].

(d) Install the clamps [81] and [104].

(e) Connect the electrical connector, D8315J [105].

(f) Connect the electrical connector, D10173J [106].

SUBTASK 76-11-01-400-001-F00

(8) Connect the electrical harness for the engine 1 thrust lever (Figure 404).

(a) Install pin and wire (W0051-0001-22) into location 1 in electrical connector D8315J.

(b) Install pin and wire (W0051-0002-22) into location 2 in electrical connector D8315J.

(c) Connect the electrical connector D8315J [105].

(d) Install the clamps [81] and [104].

(e) Connect the electrical connector, D8313J [85].

(f) Connect the electrical connector, D10171J [86].

SUBTASK 76-11-01-020-014-F00

(9) Do these steps to install the chain guard (Figure 403):

(a) Put the chain guard [67] in its position.

(b) Install the upper screw [62] and washer [61].

(c) Install the forward screw [64] and washer [63].

(d) Install the aft screw [66] through the thrust lever opening.

(e) Use the 90 degree screwdriver from tool set, SPL-2411 hold the screw [66].

(f) Install the nut [65] and washer [63].

SUBTASK 76-11-01-020-015-F00

(10) Do these steps to install the control shaft components (Figure 402):

(a) Install the clamp up bushing [36] and the long bushing [37] on the stabilizer trim shaft [31].

NOTE: Put the clamp up bushing on the end with the longest splines.

(b) Put the bearing [41] into the inside end of the short shaft.

(c) Move the stabilizer trim shaft [31] into the control stand from the left side.

NOTE: Put the end of the shaft with the longest splines in first.

(d) Move the sprocket and chain up from the bottom of the control stand.

(e) Put the sprocket on the splined end of the shaft [31].

1) Move the control shaft thru the chain sprocket.

(f) Put the bushing [35] on the splined end of the shaft [31].

1) Move the shaft through the bushing [35].

(g) Move the shaft through the bearing [41] until the end is moved out through the short shaft [42].

(h) Install the bearing [38] on the left side of the shaft [31].

(i) Install the clamp up bushing [33] on the right side of the shaft [31].

(j) Install the bearing [34] on the right side of the shaft [31]

(k) Lightly tap the shaft [31] from the left side.

NOTE: Do this task to make sure that the assembled parts are tight and in the correct position.

SUBTASK 76-11-01-420-006-F00

(11) Do these steps to activate and adjust the stabilizer trim assembly:

(a) Remove the temporary wire tie from the chain [39] and sprocket [40].

(b) To adjust the stabilizer control chain, do this task: Stabilizer Control Cable and Chain Adjustment, TASK 27-41-00-820-801.

SUBTASK 76-11-01-410-002-F00

(12) Do these steps to connect the flap lever syncro assembly (Figure 401).

(a) Put the link assembly [12] in the clevis for the flap lever position syncro assembly.

(b) Install the nut [18] and bolt [19].

SUBTASK 76-11-01-420-007-F00

(13) Do these steps to connect the stabilizer trim indicator:

(a) Put the link assembly [13] to the arm.

(b) Install the nut [16], washer [15], washer [14] and bolt [17].

SUBTASK 76-11-01-040-007-F00

(14) Do these steps to activate the speed brake lever.

(a) Go into the access area under the forward flight compartment floor.

1) Remove the rig pin from the rig pin kit, SPL-1585 from the forward drum of the speed break assembly.

2) Do this task: Speed Brake Control Lever Adjustment, TASK 27-62-00-820-801.

SUBTASK 76-11-01-010-006-F00

(15) Install the access covers on to the control stand.

(a) The left upper side panel [1].

1) Attach with four screws [2].

(b) The left lower side panel [5].

1) Attach with five screws [2].

(c) The right upper side panel [3].

1) Attach with four screws [2].

(d) Install the right lower side panel [4].

1) Attach with four screws [2].

SUBTASK 76-11-01-420-008-F00

(16) Install the wheel assemblies for the stabilizer trim as follows:

(a) Install the right wheel assembly [7]

1) Install the right bolt [8].

2) Tighten the bolt to 150 in-lb (16.9 N·m) – 170 in-lb (19.2 N·m).

(b) Do these steps to install the left wheel assembly [11]:

1) Set the crank of the left trim wheel 75 to 105 degrees away from the setting of the crank on the right trim wheel.

NOTE: Can be set in either direction.

2) Install the left bolt [8].

3) Tighten the bolt to 150 in-lb (16.9 N·m) – 170 in-lb (19.2 N·m).

SUBTASK 76-11-01-200-001-F00

(17) Do the steps that follow for a visual check of the assembly:

(a) Move each control through its usual range.

(b) Make sure that the electrical bundles do not touch parts.

SUBTASK 76-11-01-410-003-F00

(18) Do these steps to install the switch panel [10] for the trim stabilizer.

(a) Put the panel [10] on the control stand.

(b) Install the four screws [9].

SUBTASK 76-11-01-700-001-F00

(19) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-F00.

SUBTASK 76-11-01-410-004-F00

(20) Install these covers and stops Covers and Stops Installation, TASK 76-11-03-400-804-F00:

(a) The right cover and the right side cover assembly.

(b) The center cover.

(c) The forward thrust stop and the aft thrust stop.

(d) The knob [6] for the stabilizer trim horn cutout switch.

SUBTASK 76-11-01-410-005-F00

(21) Install these seals and retainers Seals, Spacers and Retainer Installation, TASK 76-11-03-400-802-F00:

(a) The right seal retainer and the right seal.

(b) The center seal retainer and the center seal.

(c) The left seal retainer and the left seal.

SUBTASK 76-11-01-410-006-F00

(22) Install these lightplates Lightplate Installation, TASK 76-11-03-420-801-F00:

(a) The first officers stabilizer trim lightplate.

(b) The flap lever lightplate.

SUBTASK 76-11-01-410-007-F00

(23) Do this task: Captain's and First Officer's Seat Installation, TASK 25-11-01-400-801.

G. Put the Airplane Back to its Usual Condition:

SUBTASK 76-11-01-860-005-F00

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-01-860-001-F00

(2) For Engine 1, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1
HAP 001-013, 015-026, 028-030			
E	3	C01141	AUTOTHROTTLE DC 2

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
HAP ALL			
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-01-860-002-F00

(3) For Engine 2, do this step:

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

Row	Col	Number	Name
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

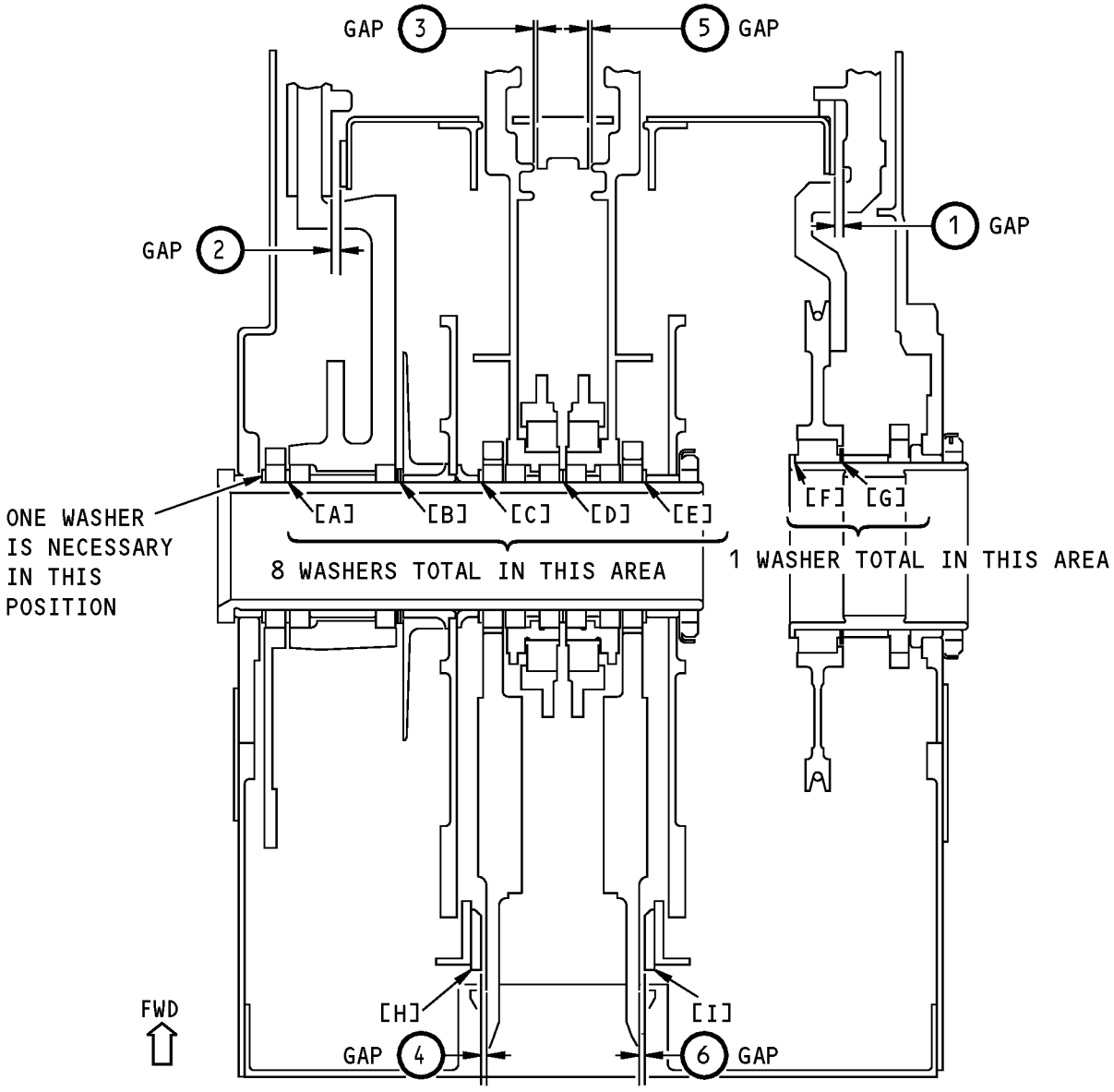
SUBTASK 76-11-01-040-008-F00

(4) For the Flap Control System, do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 76-11-01-860-003-F00

(5) Remove the DO-NOT-OPERATE tag from the engine start panel.

——————— END OF TASK ———————



Control Shaft Washer (Shim) Limits
Figure 408 (Sheet 1 of 3)/76-11-01-990-808-F00

GAP LOCATION	GAP LIMIT	ACTUAL MEASUREMENT	ADJUSTMENT NECESSARY TO GET GAP LIMIT (REFER TO TABLE B FOR SHIM QUANTITY)
(1) FLAP LEVER	0.060 MIN	< 0.060	MOVE ONE WASHER FROM [G] TO [F]
(2) SPEEDBRAKE LEVER	0.030–0.060	> 0.100	MOVE THREE WASHERS FROM [B] TO [A]
		0.080–0.100	MOVE TWO WASHERS FROM [B] TO [A]
		0.060–0.080	MOVE ONE WASHER FROM [B] TO [A]
		< 0.030	MOVE ONE WASHER FROM [A] TO [B]
(3) THRUST LEVER ENGINE 1	0.025–0.054	> 0.054	MOVE ONE WASHER FROM [D] TO [C]
		< 0.025	MOVE ONE WASHER FROM [C] TO [D]
(4) ENGINE START DETENT ENGINE 1	0.036–0.090	> 0.090	ADD TWO SHIMS MAX (AS NECESSARY) AT [H]
		< 0.036	REMOVE ONE SHIM AT [H]
(5) THRUST LEVER ENGINE 2	0.0325–0.0540	> 0.0540	MOVE ONE WASHER FROM [D] TO [E]
		< 0.0325	MOVE ONE WASHER FROM [E] TO [D]
(6) ENGINE START DETENT ENGINE 2	0.022–0.086	> 0.086	ADD THREE SHIMS MAX (AS NECESSARY) AT [I]
		< 0.022	REMOVE ONE SHIM AT [I]

CONTROL SHAFT ADJUSTMENT GAP LIMITS
TABLE A

Control Shaft Washer (Shim) Limits
Figure 408 (Sheet 2 of 3)/76-11-01-990-808-F00

LOCATION	QUANTITY OF WASHERS/SHIMS	
	MAX	MIN
[A]	4	0
[B]	4	0
[C]	2	0
[D]	4	1
[E]	2	0
[F]	1	0
[G]	1	0
[H]	3	0
[I]	4	0

CONTROL SHAFT ADJUSTMENT WASHER/SHIM QUANTITY LIMITS
TABLE B

Control Shaft Washer (Shim) Limits
Figure 408 (Sheet 3 of 3)/76-11-01-990-808-F00

START LEVERS - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) The removal of the start levers.

(2) The installation of the start levers.

TASK 76-11-02-010-801-F00

2. Start Lever Removal

A. General

(1) This task gives you instructions to remove the start levers from the aisle control stand.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's Seat Removal (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain Adjustment (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
76-11-03-000-801-F00	Lightplate Removal (P/B 401)
76-11-03-400-801-F00	Seals, Spacer and Retainer Removal (P/B 401)
76-11-03-400-803-F00	Covers and Stops Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems (Part #: F70207-109, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-2409	Dowel Set - Thrust Lever, Control Stand (Part #: F80195-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-2411	Tool Set - Control Stand Disassembly (Part #: C76002-26, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Consumable Materials

Reference	Description	Specification
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Prepare for the Removal of the Start Levers

SUBTASK 76-11-02-040-001-F00

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 76-11-02-040-002-F00

(2) Make sure the left and right engine start switches are off and install a DO-NOT-OPERATE tag.

SUBTASK 76-11-02-040-003-F00

(3) For Engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-02-040-004-F00

(4) For Engine 2, do this step:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT

Row	Col	Number	Name
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-02-860-005-F00

WARNING: MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(5) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-02-040-005-F00

(6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1
HAP 001-013, 015-026, 028-030			
E	3	C01141	AUTOTHROTTLE DC 2

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
HAP ALL			
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 76-11-02-040-006-F00

(7) Do these steps to deactivate the speed brakes and control lever:

(a) Move the speed brake lever to the DOWN position.

(b) Go to the forward bay below the flight compartment and do the following task:

1) Install a rig pin S/B-1 from the rig pin kit, SPL-1585 into the forward drum of the speed brake mechanism.

SUBTASK 76-11-02-010-001-F00

(8) Do this task: Captain's and First Officer's Seat Removal, TASK 25-11-01-000-801.

SUBTASK 76-11-02-010-002-F00

(9) Put a mat on the aft electronics panel P8.

NOTE: This will prevent damage to the switches and glass surfaces of the indicators and displays.

G. Start Lever Removal Procedure

SUBTASK 76-11-02-010-004-F00

(1) Do this task: Covers and Stops Removal, TASK 76-11-03-400-803-F00.

SUBTASK 76-11-02-010-008-F00

(2) Remove these lightplates to get access to the start levers Lightplate Removal, TASK 76-11-03-000-801-F00:

(a) The first officers stabilizer trim lightplate.

(b) The flap indicator lever lightplate.

SUBTASK 76-11-02-010-009-F00

(3) Remove these retainers and seals to get access to the start levers Seals, Spacer and Retainer Removal, TASK 76-11-03-400-801-F00:

(a) The right seal retainer and the right seal.

(b) The center seal retainer and the center seal.

(c) The left seal retainer and the left seal.

SUBTASK 76-11-02-020-014-F00

(4) Remove these covers and stops to get access to the start levers Covers and Stops Removal, TASK 76-11-03-400-803-F00:

(a) The knob [6] for the stabilizer trim horn cutout switch.

(b) The forward thrust stop and the aft thrust stop.

(c) Move the right side cover assembly forward and carefully lay it on the front of the stand.

(d) The center cover assembly.

SUBTASK 76-11-02-010-005-F00

(5) Do these tasks to get access to the start levers in the control stand (Figure 401):

(a) Remove the bolt [8] and the right stabilizer trim wheel [7].

NOTE: Keep the left stabilizer trim wheel attached so you can turn the assembled levers during removal.

(b) Remove the four screws [2] and the left upper side cover [1].

(c) Remove the five screws [2] and the left lower side cover [5].

(d) Remove the four screws [2] and the right upper side cover [3].

(e) Remove the four screws [2] and the right lower side cover [4].

(f) Do these steps to move the stabilizer trim switch panel [10] from the control stand:

1) Remove the four screws [9].

2) Apply Scotch Flatback Masking Tape 250, G00270 to prevent damage to the surface of the stabilizer trim switch panel.

3) Move the stabilizer trim switch panel on to the mat.

SUBTASK 76-11-02-020-001-F00

(6) Do these steps to disconnect the flap indicator assembly on the right side of the control stand:

(a) Remove the nut [16], washer [14], washer [15] and bolt [17] from the lower end of the link assembly [13].

(b) Use a temporary wire tie to safety the link assembly to the control stand.

SUBTASK 76-11-02-020-002-F00

(7) Do these steps to disconnect the flap lever position synchro assembly on the right side of the control stand:

(a) Remove the nut [18] and bolt [19] from the lower end of the link assembly [12].

(b) Use a wire tie to temporarily safety the link assembly to the control stand.

SUBTASK 76-11-02-020-003-F00

(8) Do these steps to disconnect the stabilizer trim controls:

(a) Turn the left trim wheel until you find the link in the trim chain (Figure 402).

NOTE: This will help if it becomes necessary to disconnect the chain during installation.

(b) Temporarily safety the chain [39] to the stabilizer trim sprocket [40].

NOTE: Do not remove the chain from the sprocket.

(c) Go to the forward bay below the flight compartment to do this step:

1) To release the tension from the stabilizer control chain, do this task: Stabilizer Control Cable and Chain Adjustment, TASK 27-41-00-820-801.

SUBTASK 76-11-02-020-004-F00

(9) Do these steps to remove the control shaft components (Figure 402):

(a) Remove the bolt [8] and the left stabilizer trim wheel [11].

(b) Carefully move the stabilizer trim shaft [31] to the left of the control stand and do these steps at the same time on the right side:

1) Remove the bearing [34].

2) Remove the clamp up bushing [33].

3) Be prepared to catch and remove the bushing [35] as the shaft is moved to the left.

NOTE: The bushing [35] is between the bearing [41] and the sprocket [40].

4) Be prepared to catch and move the sprocket and chain.

5) Move the shaft [31] to the left until the sprocket [40] is clear of the shaft.

6) Move the sprocket and chain to the bottom of the control stand.

(c) Reach inside the short shaft [42] from the left side and remove the inside bearing [41].

(d) Remove the stabilizer trim shaft [31] from the control stand.

1) Remove the bearing [38].

2) Remove the long bushing [37].

3) Remove the clamp up bushing [36].

SUBTASK 76-11-02-020-005-F00

(10) Do these steps to remove the chain guard (Figure 403):

(a) Go to the opening for the stabilizer trim switch panel [10].

(b) Use the 90 degree screwdriver from tool set, SPL-2411 to hold the screw [66].

(c) Remove the nut [65], washer [63] and screw [66].

(d) Remove the upper center screw [62] and washer [61].

(e) Remove the forward screw [64] and washer [63].

(f) Remove the chain guard [67].

SUBTASK 76-11-02-020-006-F00

(11) Do these steps to remove the applicable start lever assembly from the engine start brake assembly (Figure 404).

(a) Move the start lever to where you can access the end of the control link.

(b) Remove the nut [100], washer [101], washer [102], washer [103], and bolt [104].

SUBTASK 76-11-02-020-007-F00

(12) Do these steps to release the start lever assemblies (Figure 404):

(a) Find the bent tab on the lockwasher [143].

(b) Use the lockwasher removal tool from tool set, SPL-2411 to bend the tab out of the notch in the nut [144].

(c) Put one control shaft wrench from tool set, SPL-2411 on the left side of the long control shaft [146] to hold it in position.

(d) Put the control shaft nut wrench from tool set, SPL-2411 to remove the nut [144] from the long control shaft [146].

(e) Remove the nut [144] from the long control shaft [146].

(f) Remove and discard the lockwasher [143].

SUBTASK 76-11-02-020-008-F00

(13) Do these steps to remove the start lever [141] for Engine 1 (Figure 404):

CAUTION: BE CAREFUL WHEN YOU INSERT THE DOWEL. IF THE NINE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(a) Put the dowel set, SPL-2409 against the right side of the long control shaft [146].

(b) Hit lightly (carefully tap) on the dowel.

NOTE: This is to move the long control shaft off the control levers.

1) Move the dowel until the start lever [141] is on the dowel.

(c) Do not move the long control shaft [146] from this position.

NOTE: More movement will let the washer [145] fall.

(d) Hold the start lever [141] and remove the dowel from the start lever.

1) Stop the dowel movement when you can lift the start lever.

(e) Remove the start lever assembly [141] through the top of the control stand.

(f) Remove the washer [145] from between the start lever and the control stand frame.

NOTE: Make sure that the washer does not fall into the control stand.

(g) Install the start lever [141] before you do the removal of the start lever [142] for engine 2.

SUBTASK 76-11-02-020-009-F00

(14) Do these steps to remove the start lever [142] for Engine 2 (Figure 404):

CAUTION: BE CAREFUL WHEN YOU INSERT THE DOWEL. IF THE NINE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(a) Put the dowel set, SPL-2409 against the right end of the long control shaft [146].

(b) Hit lightly (carefully tap) on the dowel.

NOTE: This is to move the long control shaft off the start lever.

1) Move the dowel until the start lever [142] is on the dowel.

(c) Do not move the long control shaft from this position.

NOTE: More movement will let the engine thrust levers or the engine 1 start lever fall.

(d) Hold the start lever [142] and remove the dowel from the start lever.

1) Stop the dowel movement when you can lift the start lever.

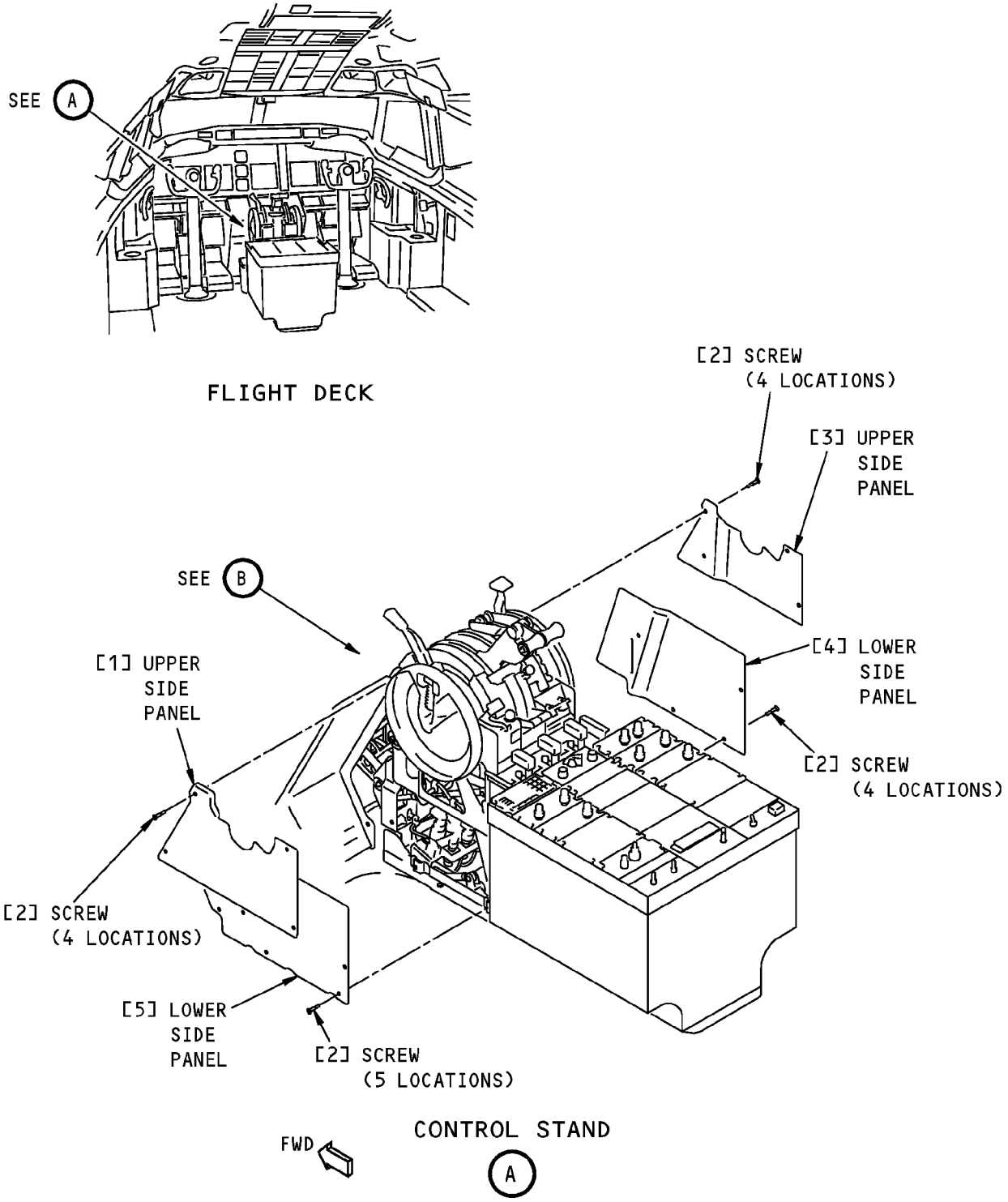
(e) Remove the start lever assembly [142] through the top of the control stand.

(f) Remove the washer [145] that is between the start lever and the control stand frame.

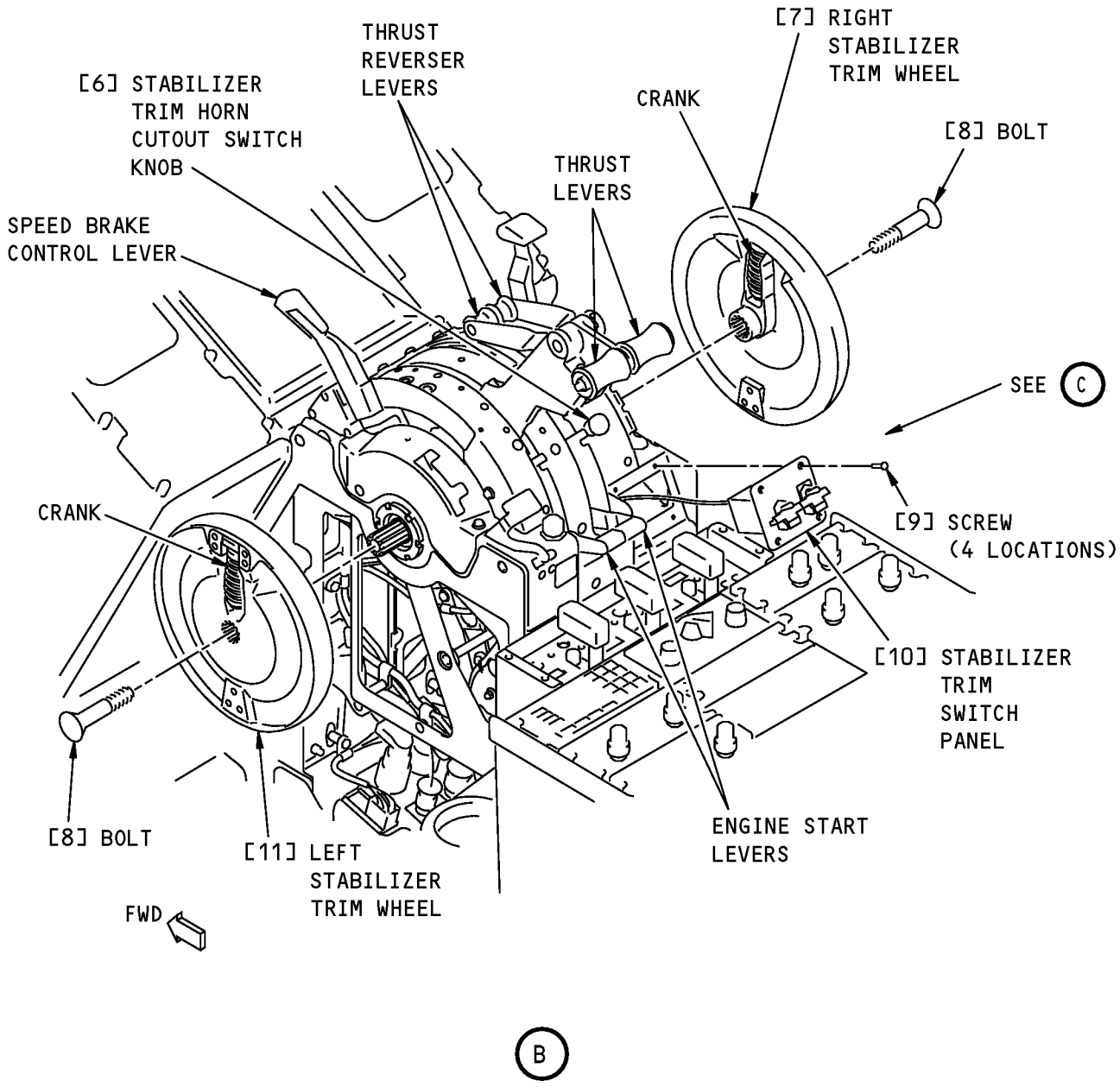
NOTE: Make sure that the washer does not fall into the control stand.

(g) Install the engine 2 start lever [142] before you do the removal of the engine 1 start lever.

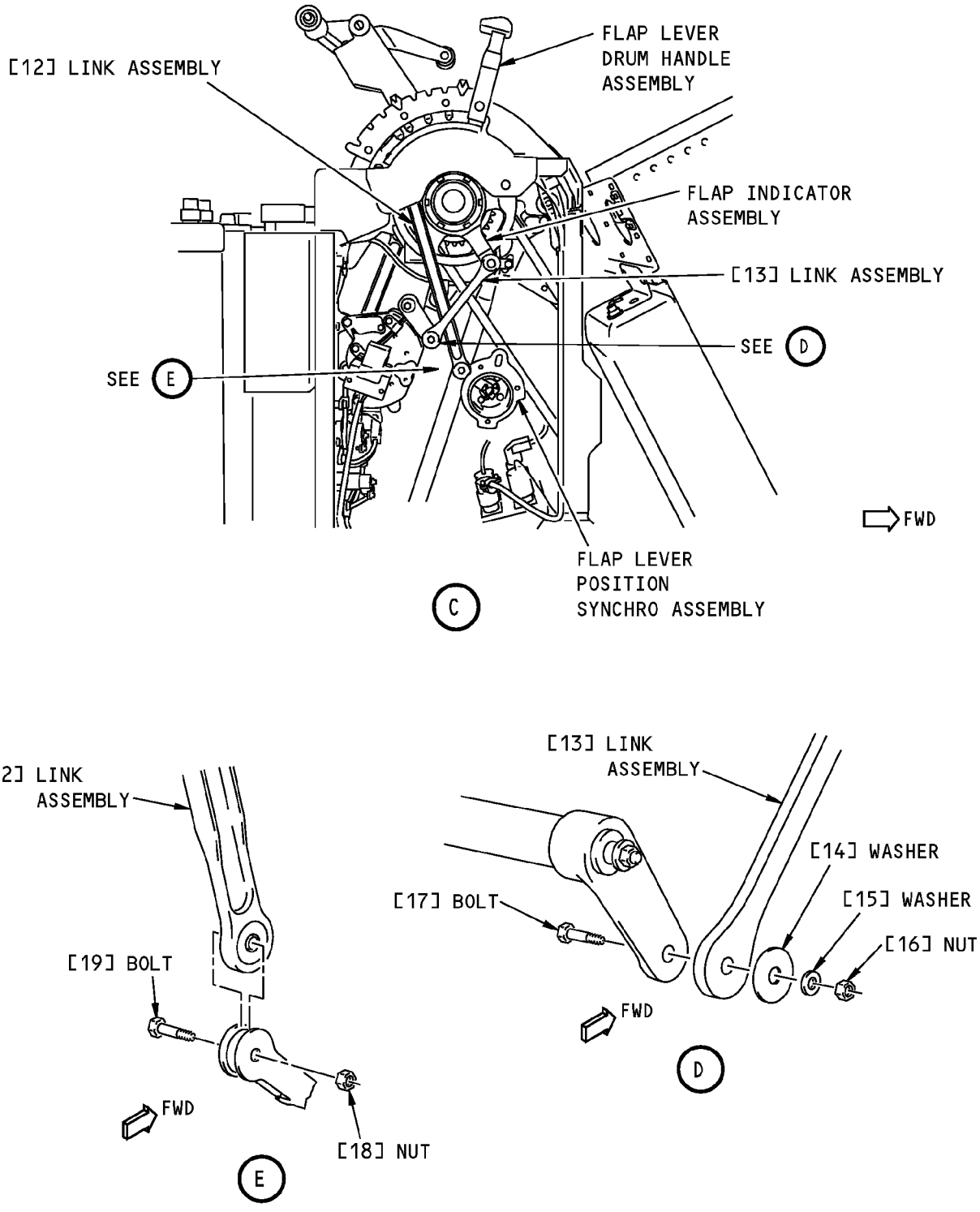
—————— END OF TASK ——————



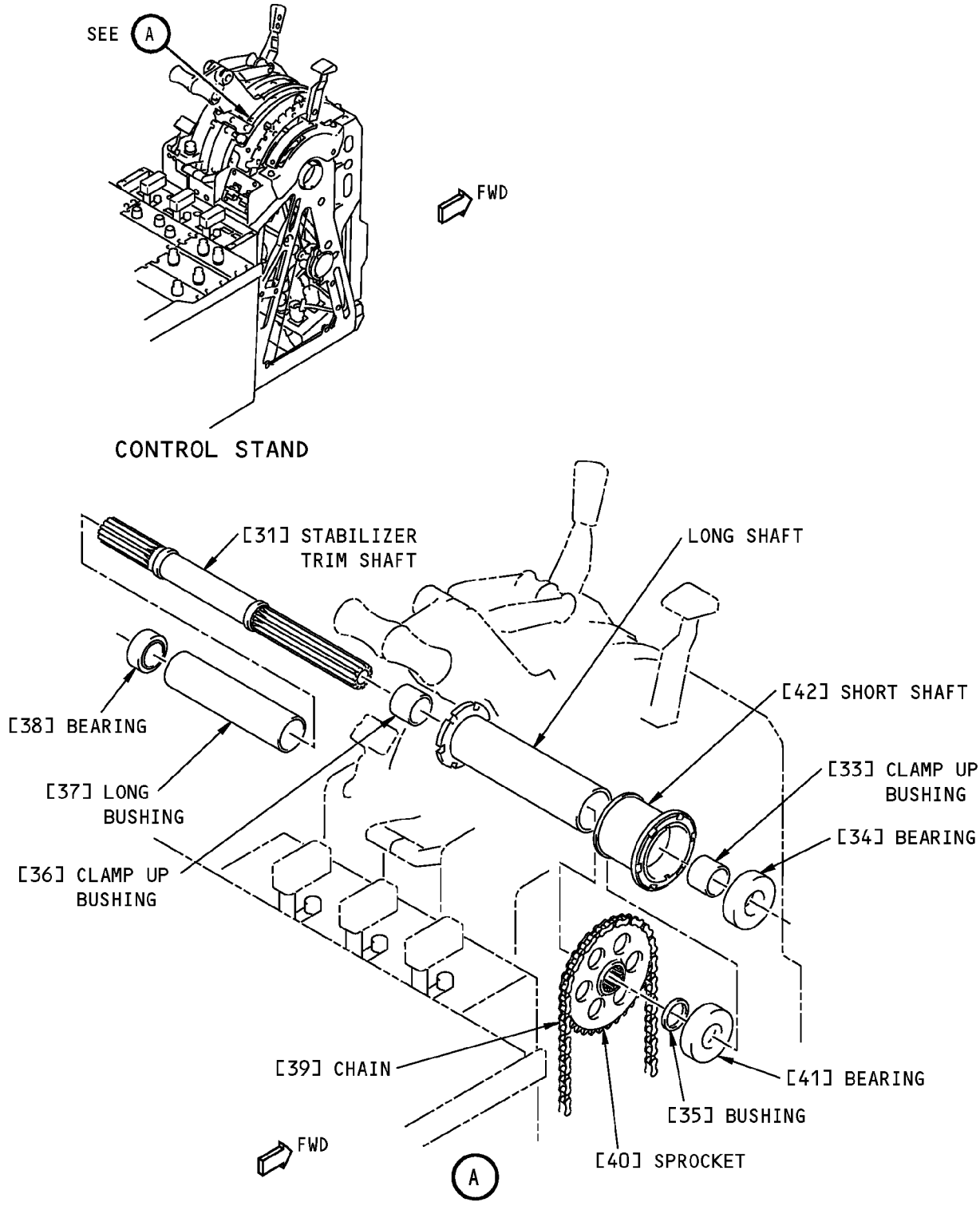
Control Stand Installation
Figure 401 (Sheet 1 of 3)/76-11-02-990-801-F00



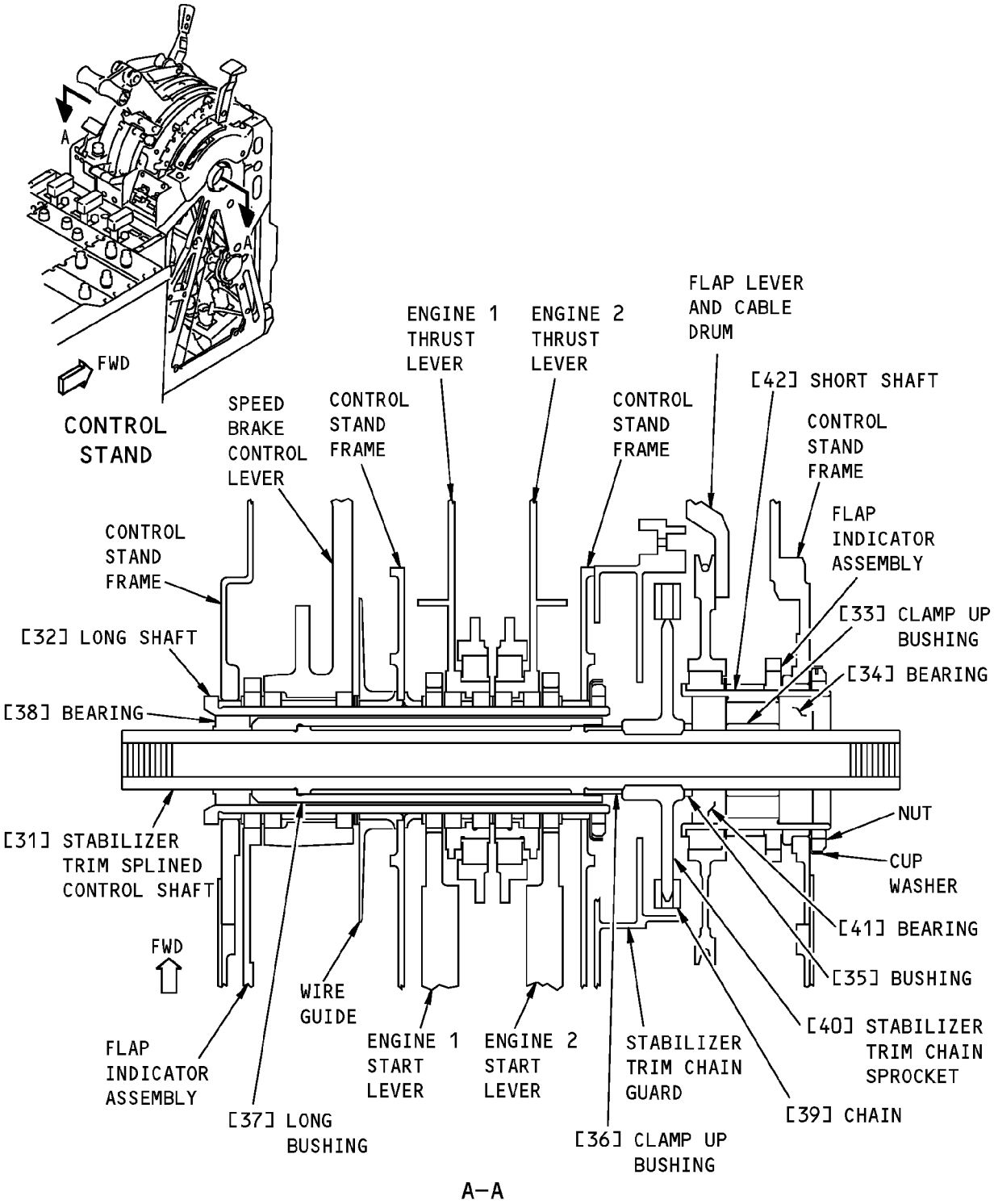
Control Stand Installation
Figure 401 (Sheet 2 of 3)/76-11-02-990-801-F00



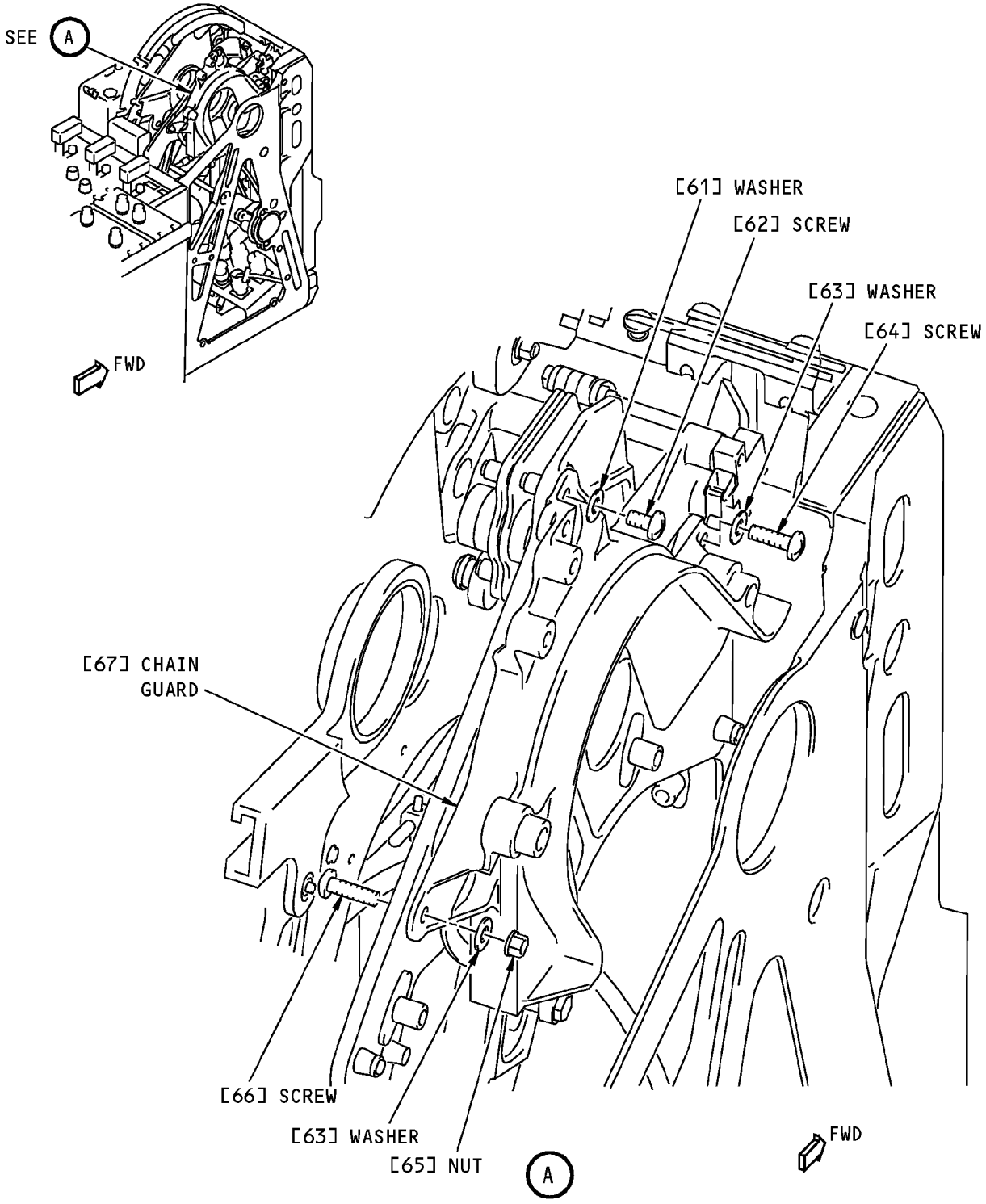
Control Stand Installation
Figure 401 (Sheet 3 of 3)/76-11-02-990-801-F00



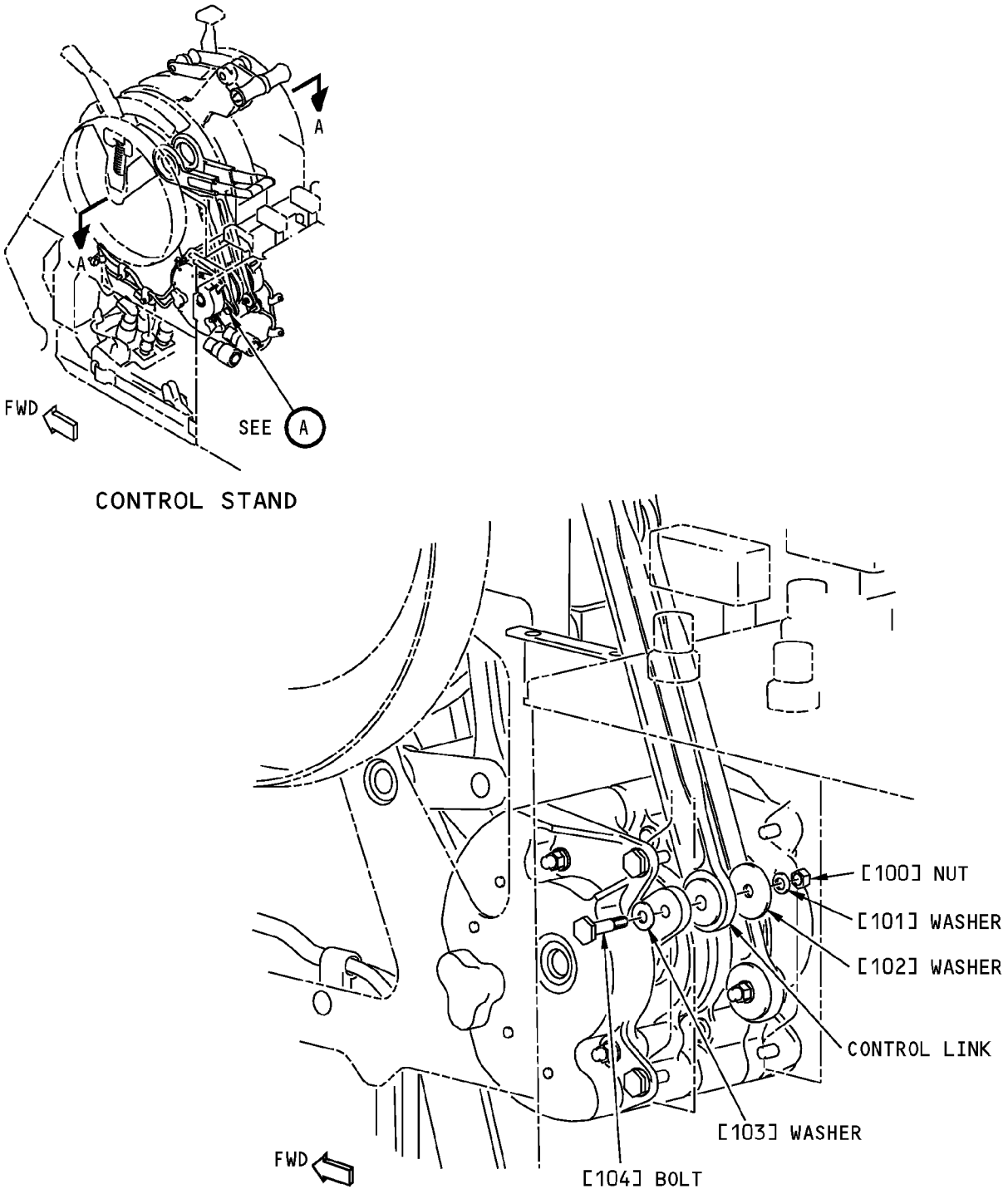
Control Shaft Components Installation
Figure 402 (Sheet 1 of 2)/76-11-02-990-802-F00



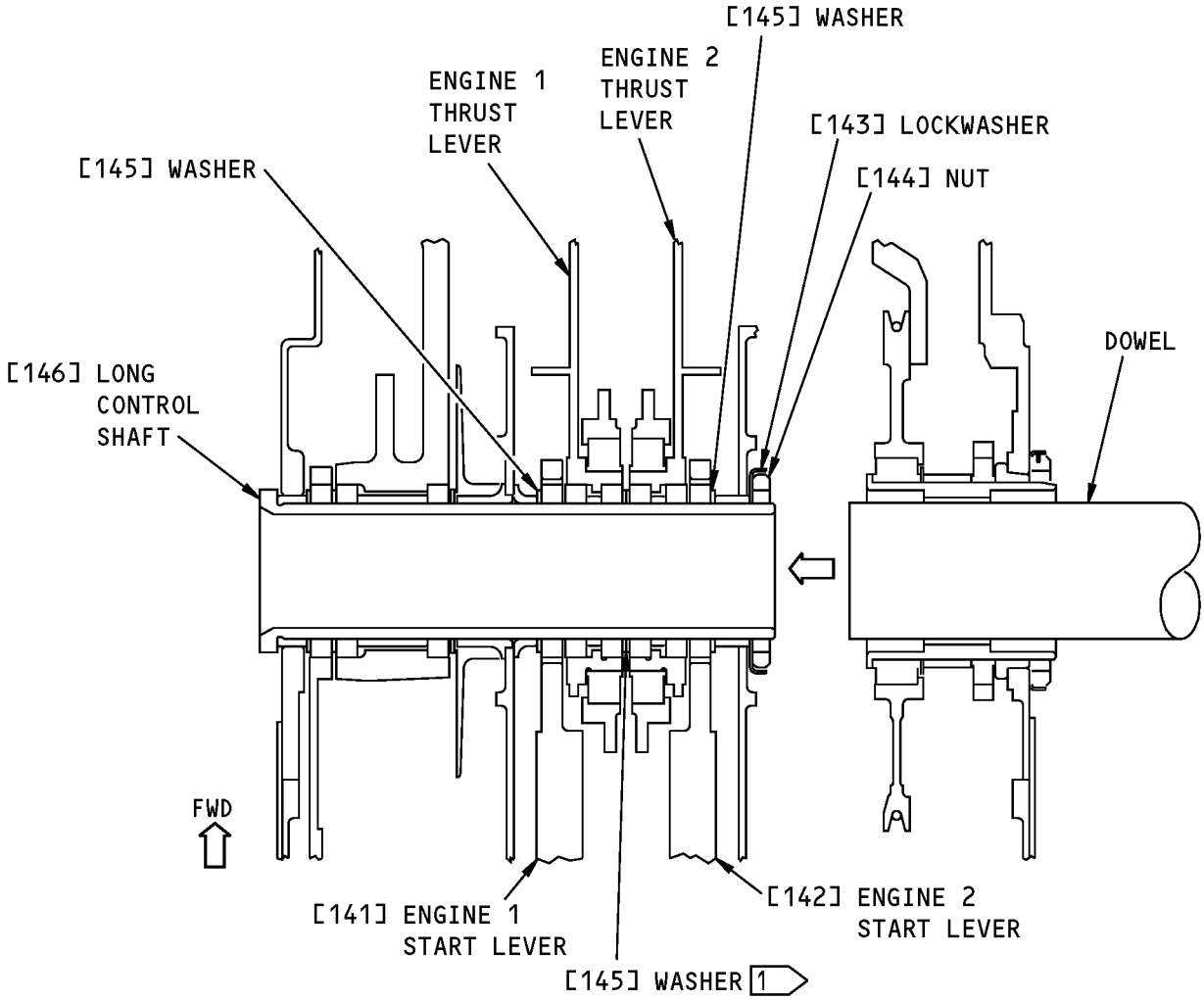
Control Shaft Components Installation
Figure 402 (Sheet 2 of 2)/76-11-02-990-802-F00



Chain Guard Assembly Installation
Figure 403/76-11-02-990-803-F00



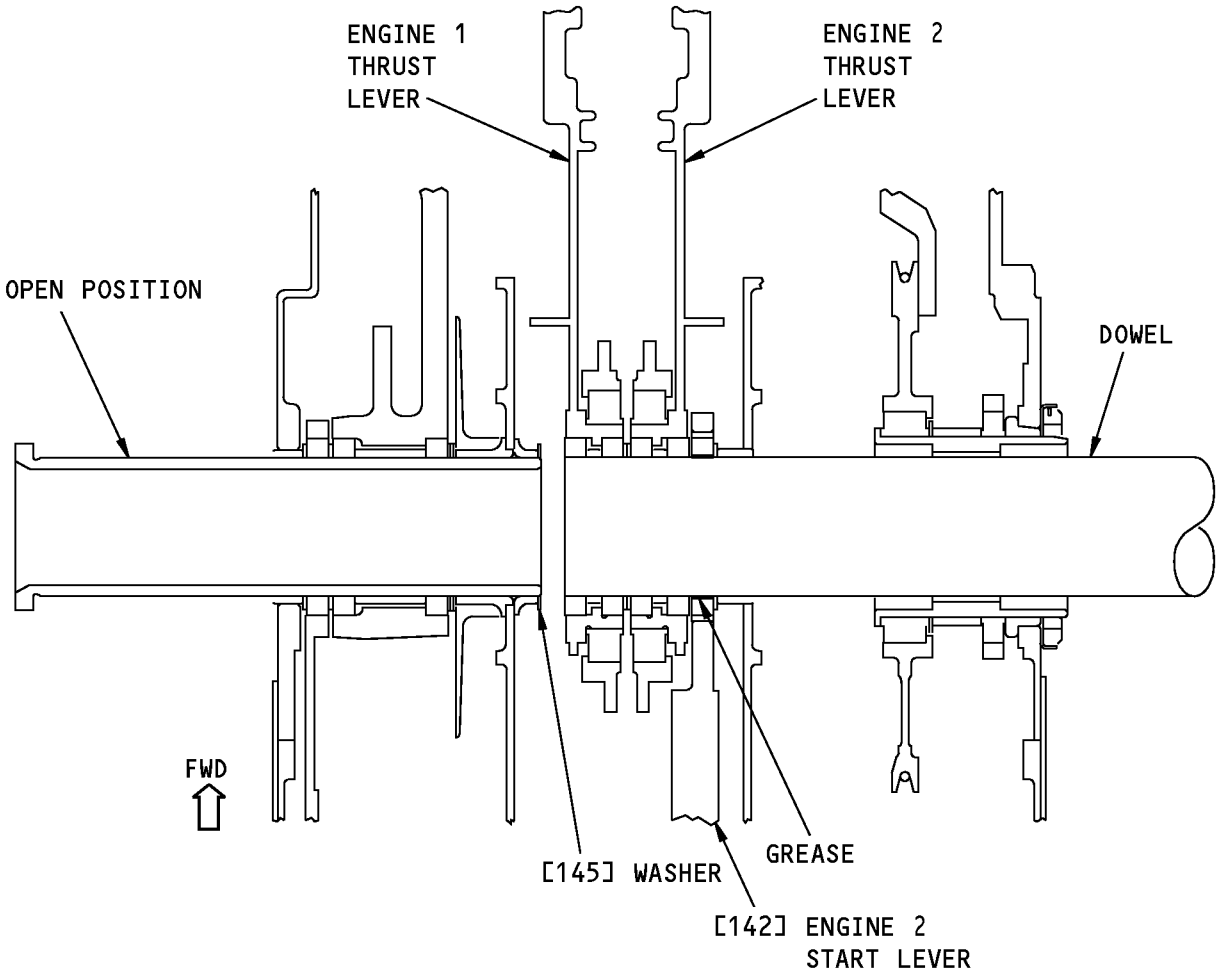
Start Lever Installation
Figure 404 (Sheet 1 of 4)/76-11-02-990-804-F00



START LEVERS INSTALLED
A–A

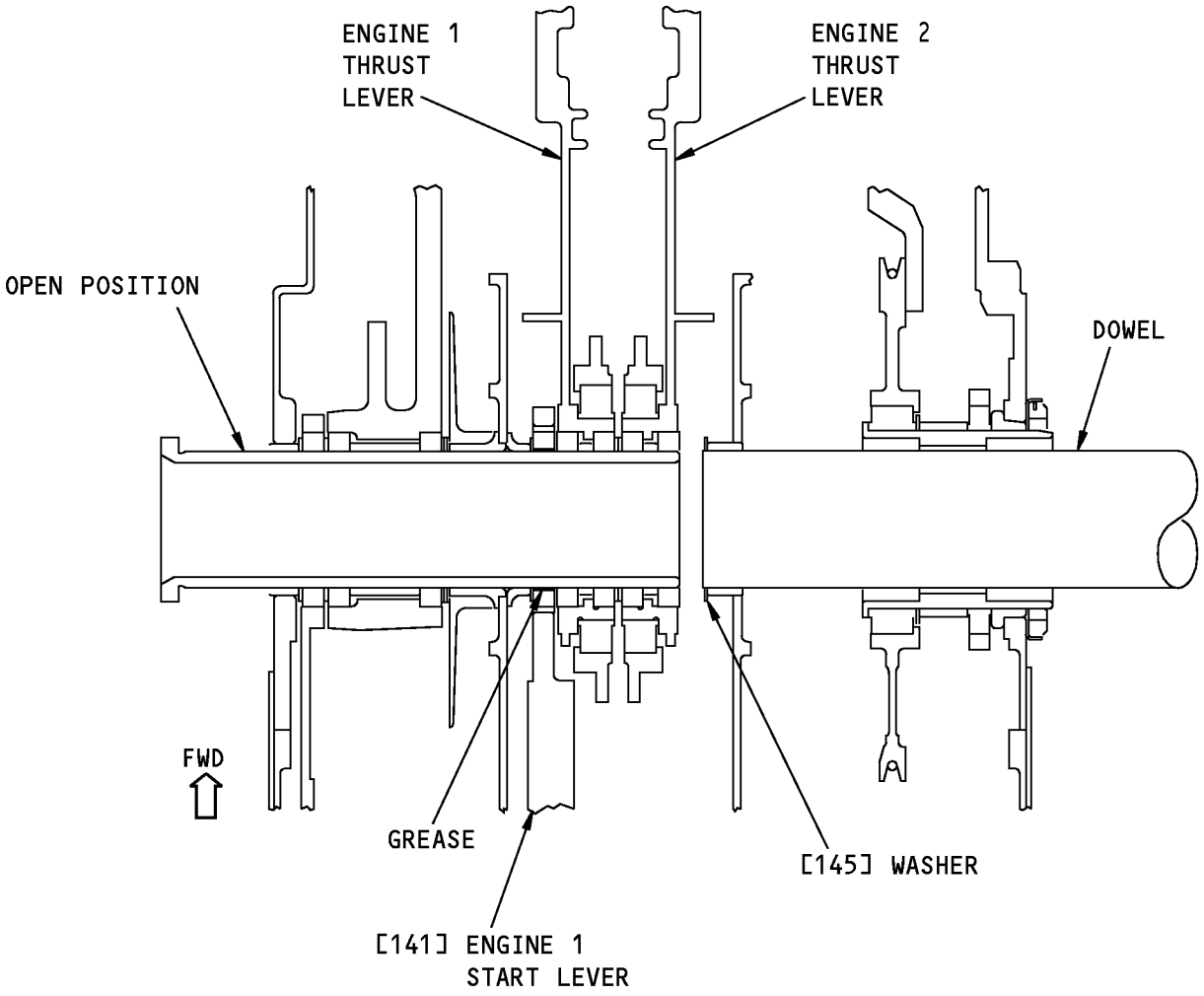
1 THE QUANTITY IS DIFFERENT FROM AIRPLANE TO AIRPLANE

Start Lever Installation
Figure 404 (Sheet 2 of 4)/76-11-02-990-804-F00



ENGINE 1 START LEVER REMOVED
A–A

Start Lever Installation
Figure 404 (Sheet 3 of 4)/76-11-02-990-804-F00



ENGINE 2 START LEVER REMOVED
A-A

Start Lever Installation
Figure 404 (Sheet 4 of 4)/76-11-02-990-804-F00

TASK 76-11-02-420-801-F00

3. Start levers Installation

A. References

Reference	Title
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain Adjustment (P/B 501)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-62-00-820-801	Speed Brake Control Lever Adjustment (P/B 501)
76-11-03-400-802-F00	Seals, Spacers and Retainer Installation (P/B 401)
76-11-03-400-804-F00	Covers and Stops Installation (P/B 401)
76-11-03-420-801-F00	Lightplate Installation (P/B 401)
76-11-10-420-801-F00	Engine Start Brake Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems (Part #: F70207-109, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-2411	Tool Set - Control Stand Disassembly (Part #: C76002-26, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

C. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
141	Lever assembly	25-11-00-50-926	HAP 001-013, 015-026, 028-054
		76-11-02-01-035	HAP ALL
142	Lever assembly	25-11-00-50-929	HAP 001-013, 015-026, 028-054
		76-11-02-01-030	HAP ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Installation Procedure

SUBTASK 76-11-02-420-001-F00

(1) Do these steps to install the start lever [141] for engine 1:

(a) Apply grease, D00013 to the inner side of the start lever.

(b) Do these steps to put the start lever [141] into the control stand (Figure 404):

1) Apply a thin coat of grease, D00013 to each side of the washer [145].

NOTE: The application of the grease will help hold the washer [145] to the start lever [141].

2) Put the washer [145] in its position on the start lever [141].

3) Put the start lever assembly [141] in its correct position.

4) Move the long control shaft [146] through the washer [145] and the start lever [141].

5) Put the long control shaft [146] against the dowel.

CAUTION: BE CAREFUL WHEN YOU MOVE THE LONG CONTROL SHAFT. IF THE NINE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(c) Move the long control shaft and dowel to the right until all of the lever assemblies and washers [145] are on the long control shaft [146].

(d) Remove the dowel.

(e) Move the start lever [141] forward and aft.

NOTE: The start lever and washer [145] must move freely.

SUBTASK 76-11-02-420-002-F00

(2) Install the start lever [142] for engine 2:

(a) Apply grease, D00013 to the inside of the start lever [142].

(b) Do these steps to put the start lever [142] into the control stand (Figure 404):

1) Apply a thin coat of grease, D00013 to each side of the washer [145].

NOTE: The application of the grease will help hold the washer [145] to the lever.

2) Put the washer [145] in its position on the dowel.

3) Put the start lever assembly [142] in its correct position.

4) Move the long control shaft [146] through the start lever [142].

5) Put the long control shaft [146] against the dowel.

6) Move the long control shaft [146] through the washer [145].

CAUTION: BE CAREFUL WHEN YOU MOVE THE LONG CONTROL SHAFT. IF THE NINE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

(c) Move the long control shaft and dowel to the right, until all of the lever assemblies and washers [145] are on the control shaft.

(d) Remove the dowel.

(e) Move the start lever [142] forward and aft.

NOTE: The start lever and washer [145] must move freely.

SUBTASK 76-11-02-420-003-F00

(3) Do these steps to lock the start levers:

(a) Set the keyway on the long shaft [146] at the top.

(b) Install a new lockwasher [143], but do not bend the tab at this time.

NOTE: Align the key tab on the lockwasher [143] with the keyway on the long shaft.

(c) Put one control shaft wrench from tool set, SPL-2411 on the left side of the long control shaft [146] to hold it in position.

(d) Install the nut [144].

1) Use one control shaft nut wrench from tool set, SPL-2411 to tighten the nut [144].

2) Tighten the nut [144] to 100 in-lb (11.3 N·m) – 150 in-lb (16.9 N·m).

SUBTASK 76-11-02-020-010-F00

(4) Measure the gaps 3, 4, 5, and 6 after the assembly is installed (Figure 405):

(a) If the gaps are in the limits, no change to the assembly is necessary.

(b) If the gaps are not in the limits, follow the instructions in Table A and B to get the correct limits:

1) Use the applicable steps in the removal and installation task to adjust the washers [145] on the long control shaft [146].

(c) If the gaps 8 and 9 are not in the limits, follow the instructions in the table A and B to get the correct limits:

1) Use the applicable steps in the removal and installation task to adjust the washers [145] on the long control shaft [146].

SUBTASK 76-11-02-420-004-F00

(5) After the control levers assemblies are set correctly, lock the assemblies in their position (Figure 404):

(a) Make sure the nut is tighten to 100 in-lb (11.3 N·m) – 150 in-lb (16.9 N·m).

(b) Bend the rim of the lockwasher [143] into one of the notches of the nut [144]:

1) Use a chisel or lockwasher break tool from tool set, SPL-2411 to bend the rim of the lockwasher [143].

2) Make sure the bend in the lockwasher is not more than 0.15 inch (3.0 mm) into the notch on the nut [144].

(c) Move the start levers down against the idle stop.

SUBTASK 76-11-02-020-011-F00

(6) Do these steps to install the chain guard (Figure 403):

(a) Put the chain guard [67] in its position.

(b) Install the upper screw [62] and washer [61].

(c) Install the forward screw [64] and washer [63].

(d) Install the aft screw [66] thru the thrust lever opening.

1) Use the 90 degree screwdriver from tool set, SPL-2411 to hold the screw [66].

(e) Install the nut [65] and washer [63].

SUBTASK 76-11-02-020-012-F00

(7) Do these steps to install the control shaft components (Figure 402):

(a) Install the clamp up bushing [36] and the long bushing [37] on the stabilizer trim shaft [31].

NOTE: Put the clamp up bushing [36] on the end with the longest splines and the long bushing on the end with the short splines.

(b) Put bearing [41] into the inside end of the short shaft [42].

(c) Move the stabilizer trim shaft [31] into the control stand from the left side.

NOTE: Put the end of the shaft with the longest splines in first.

(d) Move the sprocket and chain into its position from the bottom of the control stand.

(e) Put the sprocket on the splined end of the shaft [31].

1) Move the control shaft through the chain sprocket.

(f) Put the bushing [35] on the splined end of the shaft [31].

1) Move the shaft through the bushing [35].

(g) Move the shaft through the bearing [41] until it protrudes through the short shaft [42].

(h) Install the bearing [38] on the left end of the shaft [31].

(i) Put the clamp up bushing [33] on the inside of the short shaft.

(j) Install the clamp up bushing [33] on the right side of the shaft [31].

(k) Install the bearing [34] on the right end of the shaft [31].

(l) Lightly tap the shaft [31] from the left side.

NOTE: This step is necessary to make sure that the assembled parts are tight and in the correct position.

SUBTASK 76-11-02-020-013-F00

(8) Do these steps to connect the applicable start lever assembly to the engine start brake assembly (Figure 404):

(a) Move the engine start brake assembly lever to the up position.

(b) Move the control link to align with the end of the start lever on the start brake assembly.

(c) Install the nut [100], washer [101], washer [102], washer [103], and bolt [104].

NOTE: The bolt head is installed on the outboard side of the control link.

SUBTASK 76-11-02-420-005-F00

(9) Do these steps to activate and adjust the stabilizer trim assembly:

(a) Remove the temporary wire tie from the chain [39] and sprocket [40].

(b) To adjust the stabilizer control chain, do this task: Stabilizer Control Cable and Chain Adjustment, TASK 27-41-00-820-801.

SUBTASK 76-11-02-410-001-F00

(10) Do these steps to connect the flap lever synchro assembly (Figure 401):

(a) Put the link assembly [12] in the clevis for the flap lever synchro assembly.

(b) Install the nut [18] and bolt [19].

SUBTASK 76-11-02-420-006-F00

(11) Do these steps to connect the stabilizer trim indicator:

(a) Put the link assembly [13] on the arm.

(b) Install the nut [16], washer [15], washer [14] and bolt [17].

SUBTASK 76-11-02-040-007-F00

(12) Do these steps to activate the speed brake lever.

(a) Go into the access area below the forward flight compartment floor.

1) Remove the rig pin, part of rig pin kit, SPL-1585, from the forward drum of the speed brake mechanism.

2) Do this task: Speed Brake Control Lever Adjustment, TASK 27-62-00-820-801.

SUBTASK 76-11-02-420-007-F00

(13) Install the wheel assemblies for the stabilizer trim as follows:

(a) Install the right wheel assembly [7].

1) Install the right bolt [8].

2) Tighten the bolt to 150 in-lb (16.9 N·m) – 170 in-lb (19.2 N·m).

(b) Do these steps to install the left wheel assembly [11]:

1) Set the crank of the left trim wheel 75 to 105 degrees from the setting of the crank on the right trim wheel.

NOTE: This can be set in either direction.

2) Install the left bolt [8].

3) Tighten the bolt to 150 in-lb (16.9 N·m) – 170 in-lb (19.2 N·m).

SUBTASK 76-11-02-200-001-F00

(14) Do the steps that follow for a visual check of the assembly:

(a) Move each control through its usual range.

(b) Make sure that the electrical bundles do not touch parts.

SUBTASK 76-11-02-410-002-F00

(15) Do these steps to install the stabilizer trim panel [10] for the trim stabilizer:

(a) Put the stabilizer trim panel [10] on the control stand.

(b) Install the four screws [9].

SUBTASK 76-11-02-410-007-F00

(16) Install these seals and retainers Seals, Spacers and Retainer Installation, TASK 76-11-03-400-802-F00:

(a) The right seal retainer and the right seal.

(b) The center seal retainer and the center seal.

(c) The left seal retainer and the left seal.

SUBTASK 76-11-02-410-008-F00

(17) Install these covers and stops Covers and Stops Installation, TASK 76-11-03-400-804-F00:

(a) The right cover and the right side cover assembly.

(b) The center cover.

(c) The forward thrust stop and the aft thrust stop.

(d) The knob [6] for the stabilizer trim horn cutout switch.

SUBTASK 76-11-02-410-009-F00

(18) Install these lightplates Lightplate Installation, TASK 76-11-03-420-801-F00:

(a) The first officers stabilizer trim lightplate.

(b) The flap lever lightplate.

SUBTASK 76-11-02-010-006-F00

(19) Install the access covers on the control stand.

(a) Install the left upper side cover [1].

1) Attach with four screws [2].

(b) Install the left lower side cover [5].

1) Attach with five screws [2].

(c) Install the right upper side cover [3].

1) Attach with four screws [2].

(d) Install the right lower side cover [4].

1) Attach with four screws [2].

SUBTASK 76-11-02-410-005-F00

(20) Do this task: Captain's and First Officer's Seat Installation, TASK 25-11-01-400-801.

SUBTASK 76-11-02-860-001-F00

(21) For Engine 1, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-02-860-002-F00

(22) For Engine 2, do this step:

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT

Row	Col	Number	Name
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-02-860-006-F00

(23) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-02-860-003-F00

(24) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1
HAP 001-013, 015-026, 028-030			
E	3	C01141	AUTOTHROTTLE DC 2

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
HAP ALL			
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

G. Put the Airplane Back to its Usual Condition

SUBTASK 76-11-02-040-008-F00

(1) For the Flap Control System, do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

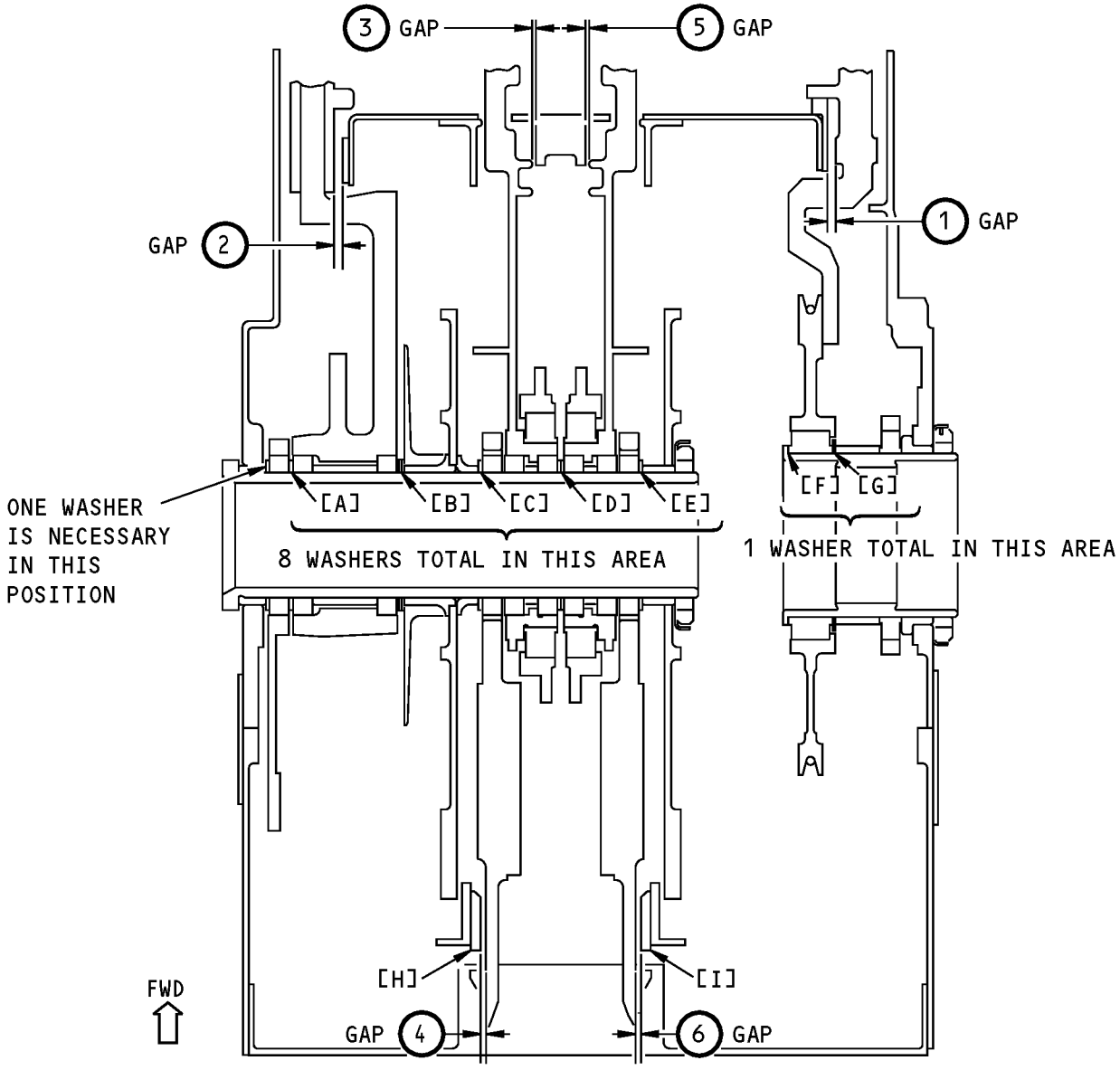
SUBTASK 76-11-02-860-004-F00

(2) Remove the DO-NOT-OPERATE tag from the engine start panel.

SUBTASK 76-11-02-710-001-F00

(3) For the applicable start lever, do this task: Engine Start Brake Installation, TASK 76-11-10-420-801-F00.

——————— END OF TASK ———————



NOTE: REFER TO TABLE A FOR CONTROL SHAFT ADJUSTMENT GAP LIMITS.

Control Shaft Washer (Shim) Limits
Figure 405 (Sheet 1 of 3)/76-11-02-990-805-F00

GAP LOCATION	GAP LIMIT	ACTUAL MEASUREMENT	ADJUSTMENT NECESSARY TO GET GAP LIMIT (REFER TO TABLE B FOR SHIM QUANTITY)
(1) FLAP LEVER	0.060 MIN	< 0.060	MOVE ONE WASHER FROM [G] TO [F]
(2) SPEEDBRAKE LEVER	0.030–0.060	> 0.100	MOVE THREE WASHERS FROM [B] TO [A]
		0.080–0.100	MOVE TWO WASHERS FROM [B] TO [A]
		0.060–0.080	MOVE ONE WASHER FROM [B] TO [A]
		< 0.030	MOVE ONE WASHER FROM [A] TO [B]
(3) THRUST LEVER ENGINE 1	0.025–0.054	> 0.054	MOVE ONE WASHER FROM [D] TO [C]
		< 0.025	MOVE ONE WASHER FROM [C] TO [D]
(4) ENGINE START DETENT ENGINE 1	0.036–0.090	> 0.090	ADD TWO SHIMS MAX (AS NECESSARY) AT [H]
		< 0.036	REMOVE ONE SHIM AT [H]
(5) THRUST LEVER ENGINE 2	0.0325–0.0540	> 0.0540	MOVE ONE WASHER FROM [D] TO [E]
		< 0.0325	MOVE ONE WASHER FROM [E] TO [D]
(6) ENGINE START DETENT ENGINE 2	0.022–0.086	> 0.086	ADD THREE SHIMS MAX (AS NECESSARY) AT [I]
		< 0.022	REMOVE ONE SHIM AT [I]

CONTROL SHAFT ADJUSTMENT GAP LIMITS
TABLE A

Control Shaft Washer (Shim) Limits
Figure 405 (Sheet 2 of 3)/76-11-02-990-805-F00

LOCATION	QUANTITY OF WASHER/SHIMS	
	MAX	MIN
[A]	4	0
[B]	4	0
[C]	2	0
[D]	4	1
[E]	2	0
[F]	1	0
[G]	1	0
[H]	3	0
[I]	4	0

CONTROL SHAFT ADJUSTMENT WASHER/SHIM QUANTITY LIMITS
TABLE B

Control Shaft Washer (Shim) Limits
Figure 405 (Sheet 3 of 3)/76-11-02-990-805-F00

CONTROL STAND LIGHTPLATES, SEALS AND RETAINERS, COVERS AND STOPS - REMOVAL/ INSTALLATION

1. General

A. This procedure has six tasks:

(1) The removal of the lightplates.

(2) The installation of the lightplates.

(3) The removal of the seals, spacers and retainers.

(4) The installation of the seals, spacers and retainers.

(5) The removal of the covers and stops.

(6) The installation of the covers and stops.

TASK 76-11-03-000-801-F00

2. Lightplate Removal

(Figure 401)

A. General

(1) The lightplates are on the control stand in the flight compartment.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal of the Lightplates

SUBTASK 76-11-03-860-001-F00

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE TRAILING EDGE FLAP BEFORE YOU DO WORK ON THE FLAP SYSTEM. THE FLAPS MOVE QUICKLY. THEY CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 76-11-03-860-002-F00

(2) Make sure the left and right engine start switches are off and install a DO-NOT-OPERATE tag.

SUBTASK 76-11-03-040-001-F00

(3) For Engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B

Row	Col	Number	Name
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-03-040-002-F00

(4) For Engine 2, do this step:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-03-860-011-F00

WARNING: MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(5) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

E. Remove the Lightplates

SUBTASK 76-11-03-020-001-F00

CAUTION: BE VERY CAREFUL WHEN YOU REMOVE AND MOVE THE LIGHTPLATES AND THE CONTROL STAND COMPONENTS. DAMAGE TO THE LIGHTPLATES, SWITCHES, NUTPLATES, WIRE BUNDLES AND THE FINISH ON THE PARTS CAN OCCUR.

(1) Do these steps to remove the applicable lightplate:

(a) Do these steps to disengage the flap lever indicator lightplate [4]:

1) Remove the two screws [5].

2) Lift the lightplate up to access the wire terminals.

(b) Do these steps to disengage the stabilizer trim lightplate [6] for the first officer:

1) Remove the two screws [7].

2) Lift the lightplate up to access the wire terminals.

(c) Do these steps to disengage the speed brake lightplate [9]:

1) Remove the two screws [8].

2) Lift the lightplate up to access the wire terminals.

(d) Do these steps to disengage the stabilizer trim lightplate [1] for the captain:

1) Remove the two screws [10].

2) Lift the lightplate up to access the wire terminals.

SUBTASK 76-11-03-020-002-F00

(2) Do these steps to disconnect the wires from the applicable lightplates [4], [6], [9] or [1]:

(a) Remove the two nuts [24] and two lockwashers [23].

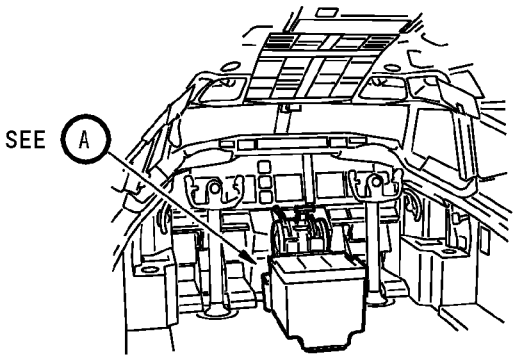
(b) Remove the terminal lugs from the studs on the lightplates.

(c) Remove the two washers [22].

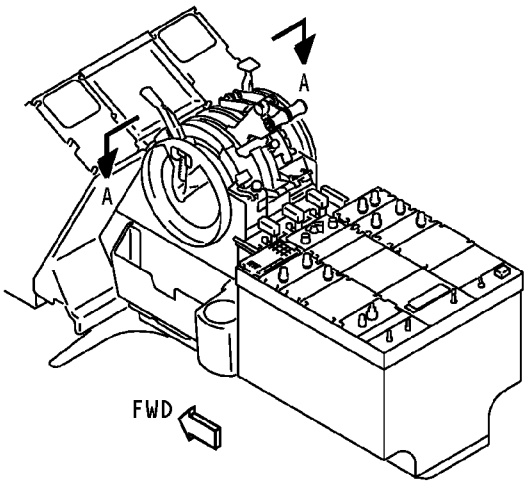
NOTE: Make sure that you do not remove the nut and washer that attach the two studs to the lightplate.

(d) Remove the applicable lightplate [1], lightplate [4], lightplate [6], or lightplate [9].

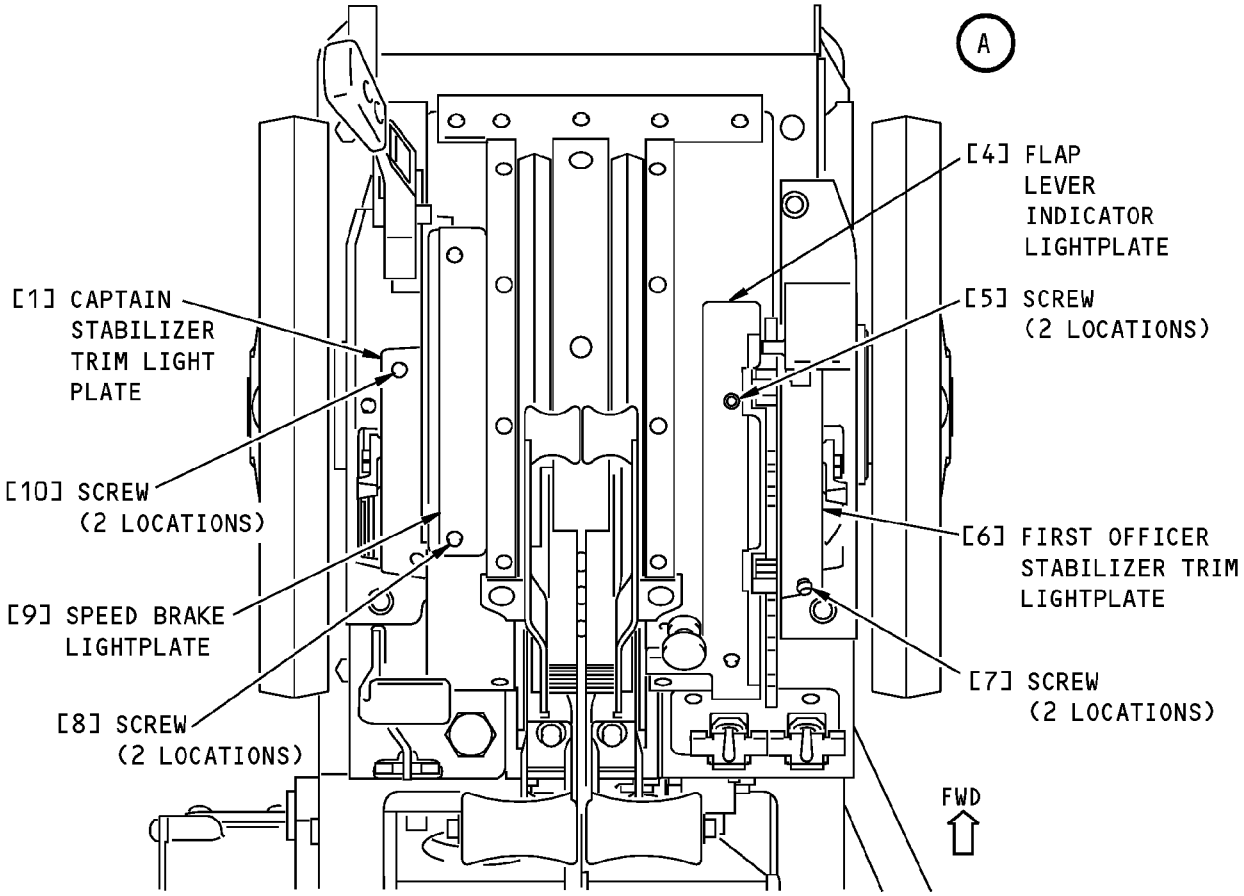
END OF TASK



FLIGHT COMPARTMENT

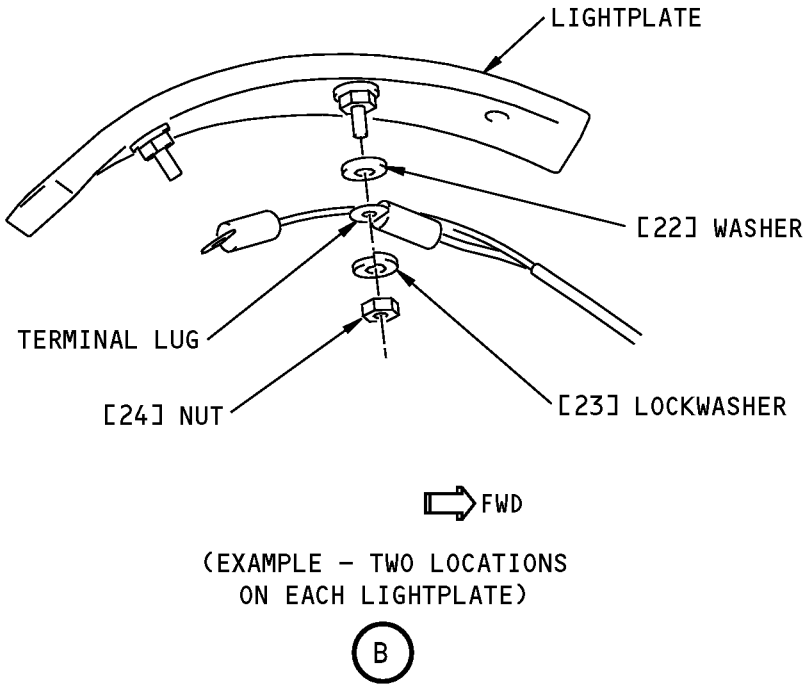


CONTROL STAND



(VIEW IN THE DOWN DIRECTION)
A-A

Control Stand Lightplate Installation
Figure 401 (Sheet 1 of 2)/76-11-03-990-801-F00



Control Stand Lightplate Installation
Figure 401 (Sheet 2 of 2)/76-11-03-990-801-F00

TASK 76-11-03-420-801-F00

3. Lightplate Installation

(Figure 401)

A. References

Reference	Title
27-41-00-700-801	Stabilizer Manual Trim and Trim Indicator Test (P/B 501)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Install the lightplates

SUBTASK 76-11-03-420-001-F00

CAUTION: BE VERY CAREFUL WHEN YOU INSTALL THE LIGHTPLATES AND THE CONTROL STAND COMPONENTS. DAMAGE TO THE LIGHTPLATES, SWITCHES, NUTPLATES, WIRE BUNDLES AND THE FINISH ON THE PARTS CAN OCCUR.

(1) Do these steps to install the wires to the lightplate [1], [4], [6] or [9]:

(a) Install two washers [22].

(b) Put the two terminal lugs on the lightplate studs.

(c) Install the two lockwashers [23] and two nuts [24].

SUBTASK 76-11-03-420-002-F00

CAUTION: USE CARE WHEN YOU TIGHTEN THE SCREWS ON THE LIGHTPLATES. DAMAGE TO THE LIGHTPLATES CAN OCCUR IF YOU OVER TIGHTEN THE SCREWS.

(2) Do these steps to install applicable lightplate [1], [4], [6] or [9] on the cover assemblies:

(a) Install the stabilizer trim lightplate [1] for the captain.

1) Install the two screws [10].

2) To adjust the position of the lightplate, do this task: Stabilizer Manual Trim and Trim Indicator Test, TASK 27-41-00-700-801.

(b) Install the flap lever indicator lightplate [4].

1) Install the two screws [5].

2) To adjust the position of the lightplate, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

(c) Install the stabilizer trim lightplate [6] for the first officer.

1) Install the two screws [7].

2) To adjust the position of the lightplate, do this task: Stabilizer Manual Trim and Trim Indicator Test, TASK 27-41-00-700-801.

(d) Install the speed brake lightplate [9].

1) Adjust the position of the lightplate:

a) Move the speed brake lever to the aft stop.

b) Put the lightplate in its position .

c) Align the arrow on the aft face with the center of the "DOWN" bar.

NOTE: Set to plus or minus of one quarter of the "DOWN" bar width.

2) Install the two screws [8].

D. Put the Airplane Back to Its Usual Condition:

SUBTASK 76-11-03-860-008-F00

(1) For Engine 1, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-03-860-009-F00

(2) For Engine 2, do this step:

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-03-860-012-F00

(3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-03-860-010-F00

(4) Remove the DO-NOT-OPERATE tag from the engine start panel.

—————— END OF TASK ——————

TASK 76-11-03-400-801-F00

4. Seals, Spacer and Retainer Removal

(Figure 402)

A. General

(1) The seals, spacers and retainers are below the lightplates on the control stand.

(2) The retainers hold the seals and spacers in their position on the control stand.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Remove the Seals, Spacers and Retainers

SUBTASK 76-11-03-010-001-F00

(1) To remove the applicable lightplate, do this task: Lightplate Removal, TASK 76-11-03-000-801-F00.

SUBTASK 76-11-03-020-003-F00

(2) Do these steps to remove the left seal [33], spacer [25] and seal retainer [31]:

(a) Remove the four screws [32].

(b) Remove the seal retainer [31].

(c) Remove the left seal [33].

(d) Remove the spacer [25].

SUBTASK 76-11-03-020-004-F00

(3) Do these steps to remove the upper center seal [36], spacer [26] and seal retainer [34]:

(a) Remove the three screws [35].

(b) Lift the seal retainer [34].

(c) Remove the seal retainer from between the thrust levers.

(d) Remove the upper center seal [36].

(e) Remove the spacer [26].

SUBTASK 76-11-03-020-008-F00

(4) Do these steps to remove the lower center seal [30] and seal retainer [28].

(a) Remove the two screws [53].

(b) Remove the seal retainer [28].

(c) Remove the lower center seal [30].

SUBTASK 76-11-03-020-005-F00

(5) Do these steps to remove the right seal [39], spacer [27] and seal retainer [37]:

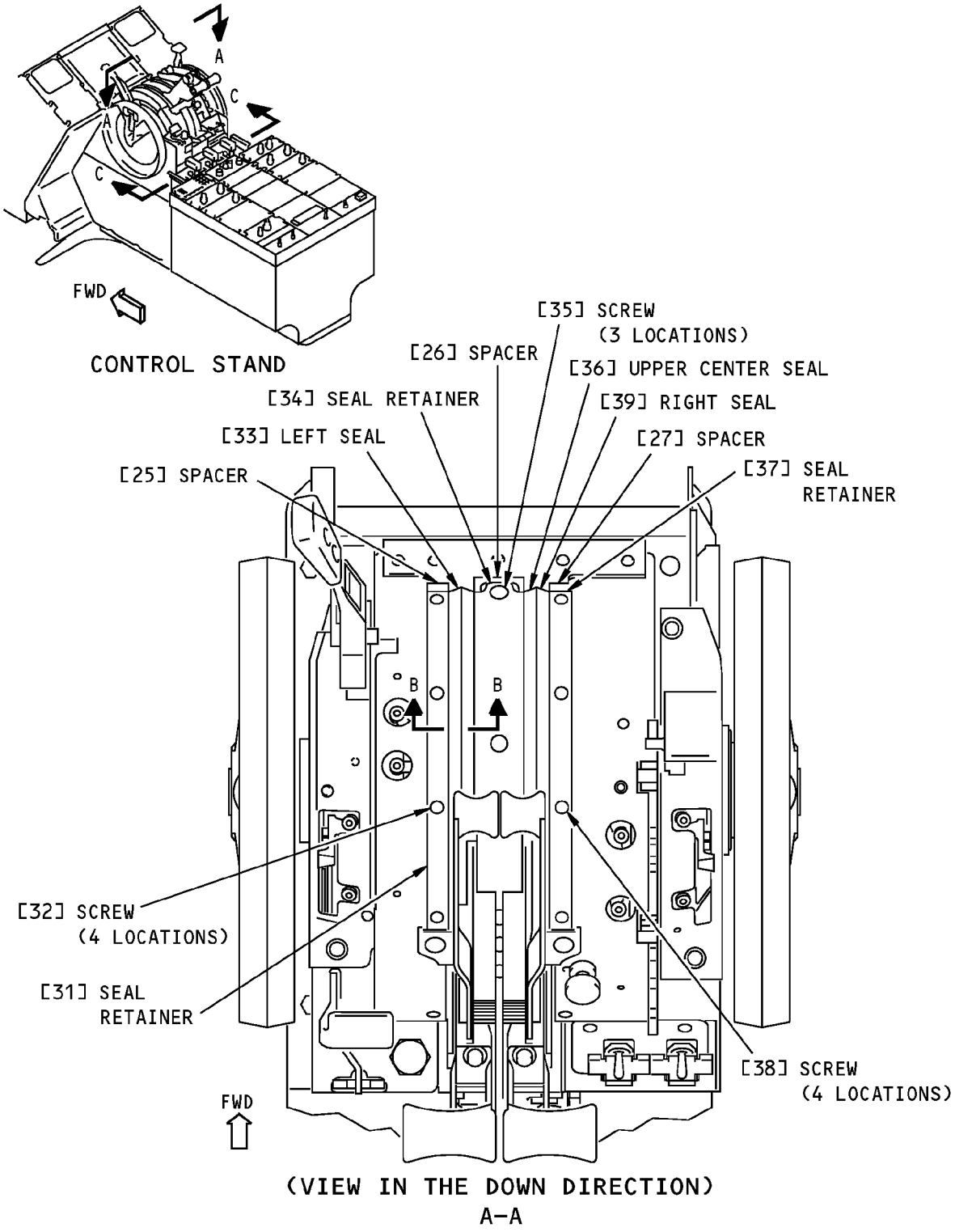
(a) Remove the four screws [38].

(b) Remove the seal retainer [37].

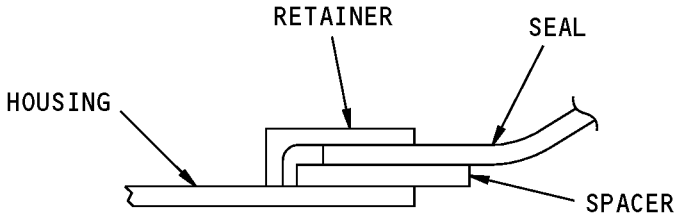
(c) Remove the right seal [39].

(d) Remove the spacer [27].

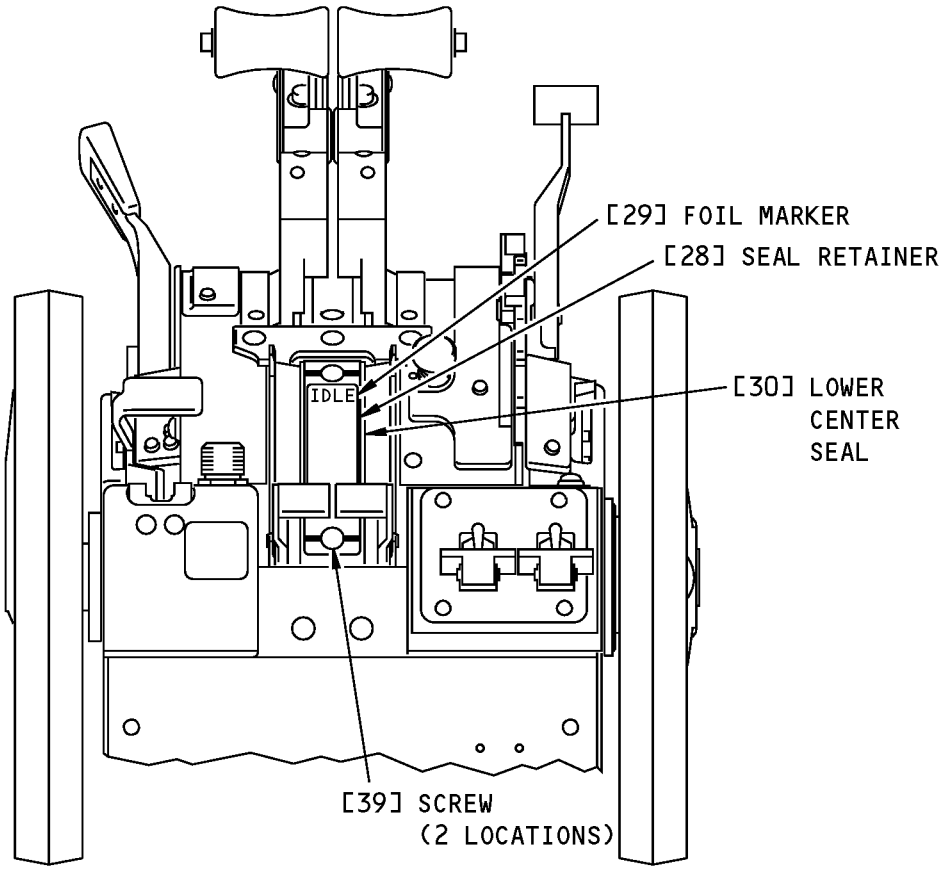
END OF TASK



Control Stand Seal and Retainer Installation
Figure 402 (Sheet 1 of 2)/76-11-03-990-802-F00



(EXAMPLE)
B-B



(VIEW IN THE FORWARD DIRECTION)
C-C

Control Stand Seal and Retainer Installation
Figure 402 (Sheet 2 of 2)/76-11-03-990-802-F00

TASK 76-11-03-400-802-F00

5. Seals, Spacers and Retainer Installation

(Figure 402)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Install the Seals, Spacers and Retainers

SUBTASK 76-11-03-420-003-F00

(1) Do these steps to install the right seal [39], spacer [27] and seal retainer [37]:

(a) Put the spacer [27] in its position.

(b) Install the right seal [39].

(c) Install the seal retainer [37] on the right seal [39].

(d) Install the four screws [38].

SUBTASK 76-11-03-420-004-F00

(2) Do these steps to install the upper center seal [36], spacer [26] and seal retainer [34]:

(a) Do these steps to install the upper center seal [36] between the thrust levers:

1) Put the spacer [26] in its position.

2) Put the upper center seal [36] in its position.

(b) Do these steps to install the seal retainer [34]:

1) Put the seal retainer [34] between the thrust levers.

2) Install the seal retainer [34] on the seal.

(c) Install the three screws [35].

SUBTASK 76-11-03-420-008-F00

(3) Do these steps to install the lower center seal [30] and seal retainer [28]:

(a) Install the lower center seal [30].

(b) Install the seal retainer [28] on the seal.

(c) Install the two screws [53].

SUBTASK 76-11-03-420-005-F00

(4) Do these steps to install the left seal [33], spacer [25], and seal retainer [31]:

(a) Put the spacer [25] in its position.

(b) Install the left seal [33].

(c) Install the seal retainer [31] on the seal.

(d) Install the four screws [32].

SUBTASK 76-11-03-410-001-F00

(5) Do this task: Lightplate Installation, TASK 76-11-03-420-801-F00.

——————— END OF TASK ———————

TASK 76-11-03-400-803-F00

6. Covers and Stops Removal

(Figure 403)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal of the Stops and Covers

SUBTASK 76-11-03-010-002-F00

(1) To remove the applicable lightplate, do this task: Lightplate Removal, TASK 76-11-03-000-801-F00.

SUBTASK 76-11-03-010-003-F00

(2) To remove the applicable seal and retainer, do this task: Seals, Spacer and Retainer Removal, TASK 76-11-03-400-801-F00.

C. Remove the Stops and Covers

SUBTASK 76-11-03-020-006-F00

(1) Do these steps to remove the stops:

(a) Do these steps to remove the forward thrust stop [43]:

1) Remove the five screws [40].

2) Remove the forward thrust stop [43].

(b) Do these steps to remove the aft thrust stop [44]:

1) Remove the three screws [45].

2) Remove the aft thrust stop [44].

SUBTASK 76-11-03-020-007-F00

(2) Do these steps to remove the applicable cover [48] or [51]:

(a) Remove the cutout switch knob [42] for the stabilizer trim horn.

1) Remove the nut [41].

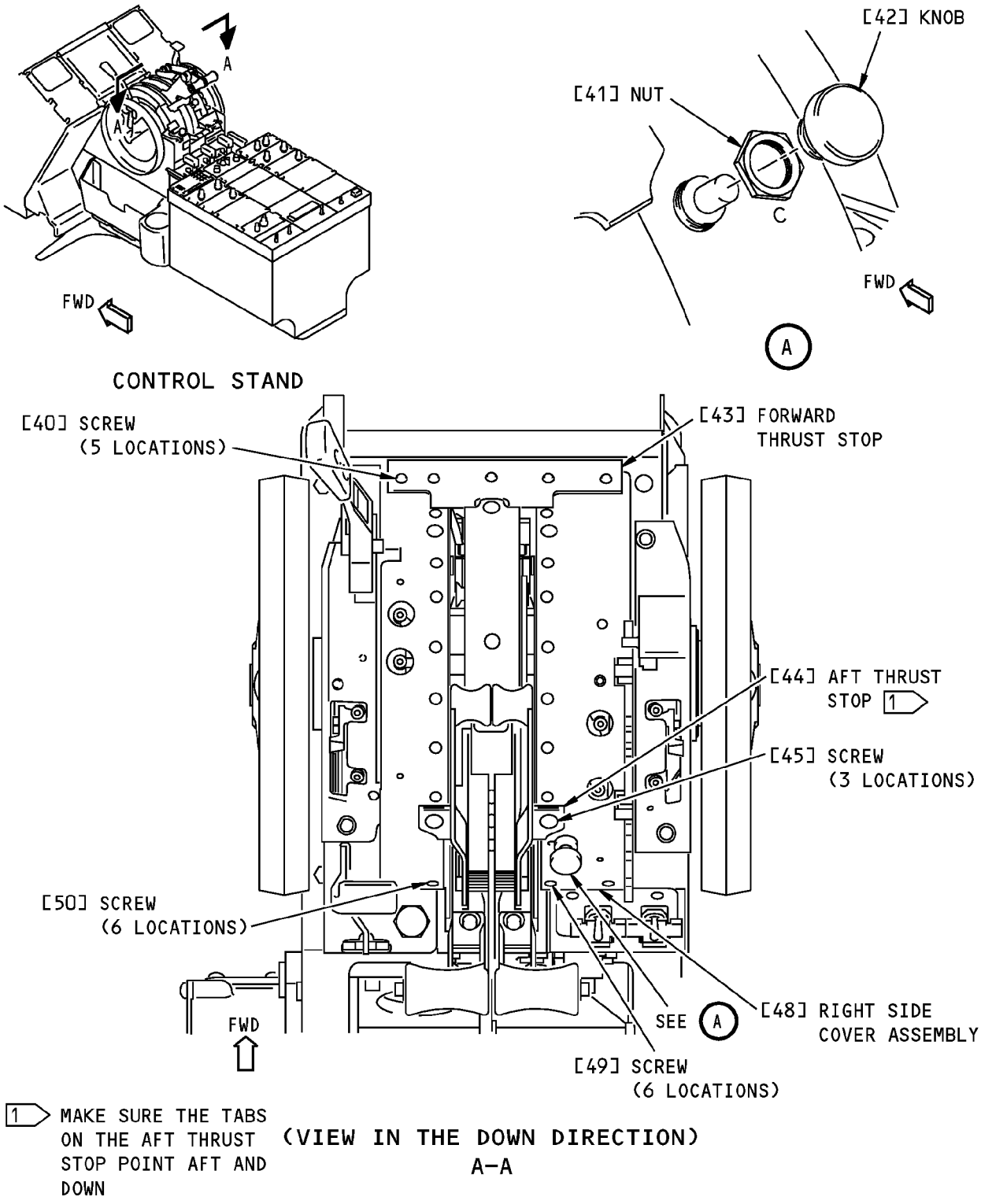
(b) Remove the right side cover assembly [48].

1) Remove the six screws [49].

(c) Remove the left side cover assembly [51].

1) Remove the six screws [50].

END OF TASK



Control Stand Stops and Covers Installation
Figure 403/76-11-03-990-803-F00

TASK 76-11-03-400-804-F00

7. Covers and Stops Installation

(Figure 403)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Install the Stops and Covers

SUBTASK 76-11-03-420-006-F00

(1) Do these steps to install the applicable cover [48] or [51]:

(a) Install the right side cover assembly [48].

1) Install the six screws [49].

2) Do these steps to install the cutout switch knob [42] for the stabilizer trim horn:

a) Put the switch into the right side cover assembly [48].

b) Install the nut [41].

c) Install the knob [42].

(b) Install the left side cover assembly [51].

1) Install the six screws [50].

SUBTASK 76-11-03-420-007-F00

(2) Do these steps to install the stops:

(a) Do these steps to install the forward thrust stop [43]:

1) Install the forward thrust stop [43].

2) Install the five screws [40].

(b) Do these steps to install the aft thrust stop [44]:

CAUTION: MAKE SURE THAT THE AFT THRUST STOP IS IN THE CORRECT POSITION. IF THE AFT THRUST STOP IS TURNED 180 DEGREES, THE THRUST REVERSER WILL NOT OPERATE.

1) Install the aft thrust stop [44].

a) Make sure that the tabs on the aft thrust stop point aft and down.

2) Install the three screws [45].

SUBTASK 76-11-03-410-002-F00

(3) Do this task: Seals, Spacers and Retainer Installation, TASK 76-11-03-400-802-F00.

SUBTASK 76-11-03-410-003-F00

(4) Do this task: Lightplate Installation, TASK 76-11-03-420-801-F00.

END OF TASK

THRUST LEVER ANGLE RESOLVER AND AUTOTHROTTLE BRAKE ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) The removal of the thrust lever angle resolver and autothrottle brake assembly.

(2) The installation of the thrust lever angle resolver and autothrottle brake assembly.

TASK 76-11-05-000-801-F00

2. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal

A. General

(1) The resolvers and brake assemblies can be found forward of the nose wheel well, below the flight compartment floor.

(2) There is one resolver installed on each of the engine 1 and engine 2 autothrottle assemblies.

(3) For this procedure the thrust lever angle resolver will be referred to as the resolver.

(4) There is one brake assembly installed on each of the engine 1 and engine 2 autothrottle assemblies.

(5) For this procedure the autothrottle brake assembly will be referred to as the brake assembly.

B. References

Reference	Title
22-31-91-020-801	Autothrottle Servo Motor and Gearbox Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2414	Tool Set - Auto Throttle Servo Assembly (Part #: J22001-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: J22001-8, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Prepare for the Removal

SUBTASK 76-11-05-860-005-F00

WARNING: MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-05-040-001-F00

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

HAP 001-013, 015-026, 028-030

E	3	C01141	AUTOTHROTTLE DC 2

HAP ALL

SUBTASK 76-11-05-010-001-F00

(3) To gain access to the resolver and brake assembly, do this step:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 76-11-05-860-001-F00

(4) Attach the DO-NOT-OPERATE tags to the thrust levers.

G. Thrust Lever Angle Resolver and Brake Assembly Removal

SUBTASK 76-11-05-010-002-F00

(1) For the access to the applicable resolver and brake assembly, do this task: Autothrottle Servo Motor and Gearbox Removal, TASK 22-31-91-020-801

(Figure 401).

SUBTASK 76-11-05-020-001-F00

(2) Disconnect the applicable wire harness connectors [11]:

(a) For engine 1 resolver,

1) Electrical connector, D11158.

2) Electrical connector, D11160.

(b) For engine 2 resolver,

1) Electrical connector, D11162.

2) Electrical connector, D11164.

SUBTASK 76-11-05-020-006-F00

(3) Do these steps to disconnect the applicable thrust lever connecting rod [5] (Figure 402):

(a) Remove the cotter pin [1] and discard.

(b) Remove the bolt [4], washer [3], and nut [2].

SUBTASK 76-11-05-020-007-F00

(4) Do this step to disconnect the applicable control rod [6]:

(a) Remove the bolt [9], washer [8], and nut [7].

SUBTASK 76-11-05-020-008-F00

(5) Do this step to disconnect the cable guard [51]:

(a) Remove the bolt [49] and washer [50] from the support bracket [31].

SUBTASK 76-11-05-020-002-F00

(6) Do these steps to disconnect the applicable resolver and brake assembly (Figure 402):

(a) Make sure that you support the autothrottle shaft end [49] of the assembly in its normal position.

(b) Remove the two bolts [26] and the two washers [27].

(c) Remove the bolt [29] and the washer [30].

SUBTASK 76-11-05-020-003-F00

(7) Do these steps to remove the support bracket [31] from the autothrottle frame housing:

(a) Remove the two bolts [22] and the two washers [21].

(b) Remove the nut [25], the two washers [24], and the bolt [23].

(c) Remove the support bracket [31].

SUBTASK 76-11-05-020-009-F00

(8) Do these steps to move the resolver and brake assembly from the airplane:

(a) Carefully remove the resolver and brake assembly from the autothrottle frame housing.

NOTE: Handle the assembly with care, the resolver is a sensitive instrument.

(b) Move the resolver and brake assembly to a clean table to do the subsequent steps.

SUBTASK 76-11-05-020-004-F00

(9) Do these steps to remove the resolver (Figure 403):

(a) Put the J22001-2 BRG nut wrench on the nut [44]. The nut wrench is part of auto throttle servo assembly tool set, SPL-2414.

(b) Use the J22001-4 shaft wrench to hold the slotted autothrottle shaft [49] when you remove the nut [44]. The shaft wrench is part of the auto throttle servo assembly tool set, SPL-2414.

(c) Remove the nut [44] and the spacer [45].

(d) Remove the resolver [32] from the autothrottle shaft [49].

(e) Remove the three screws [43] and the three washers [48].

(f) Remove the plate [46].

(g) Remove the bearing [47].

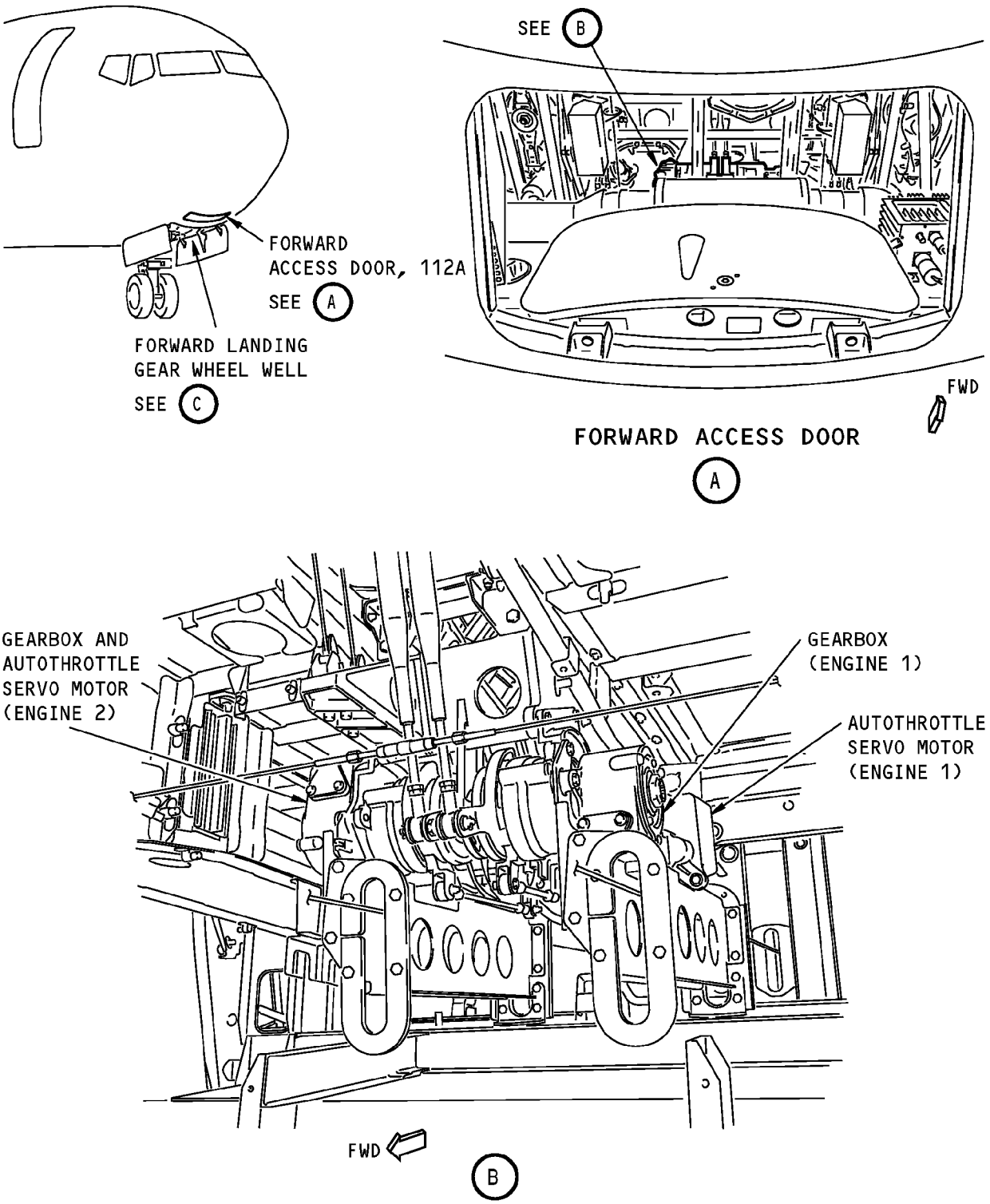
(h) Remove the spacer [42] from the autothrottle shaft [49].

SUBTASK 76-11-05-020-010-F00

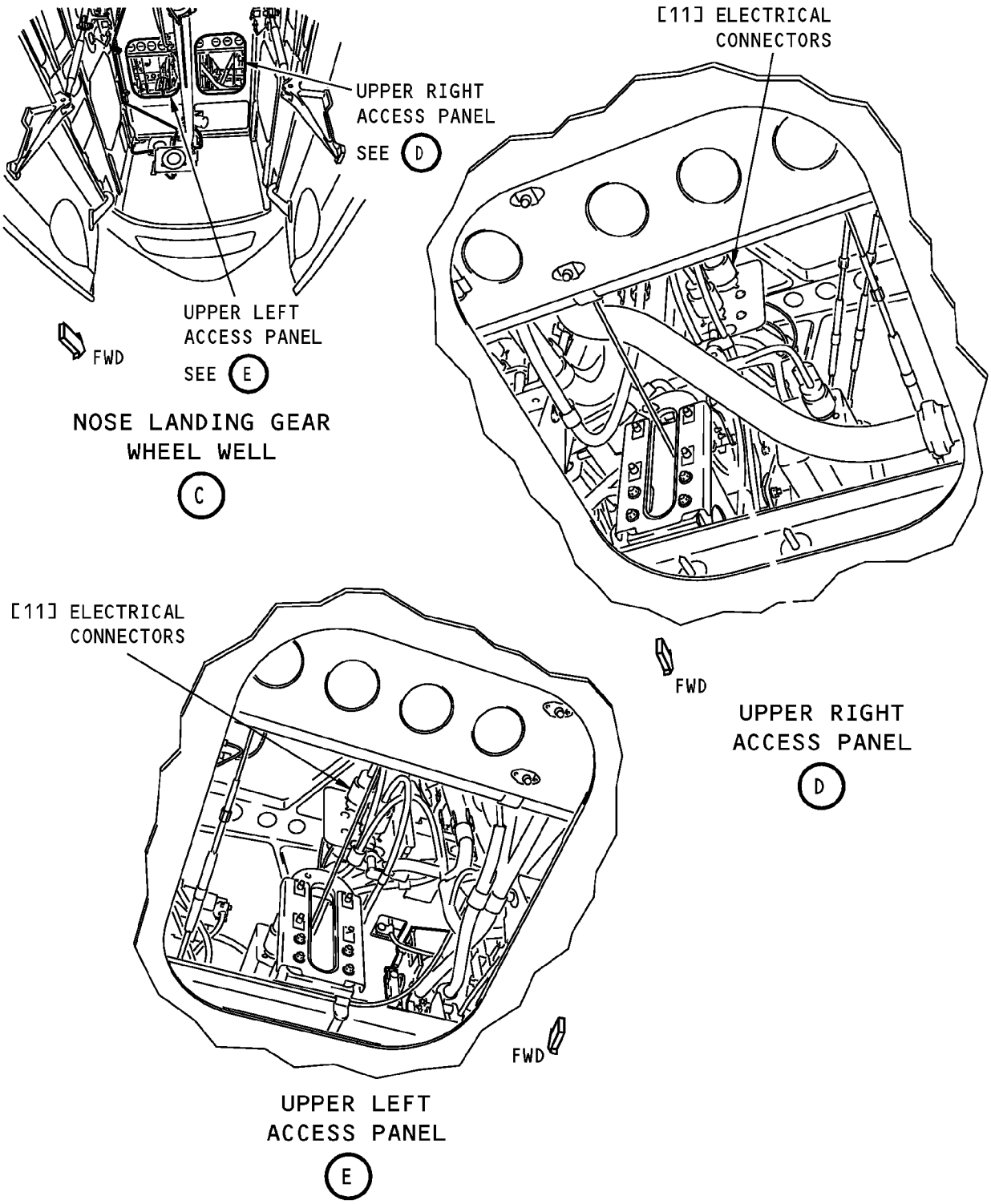
(10) Do these steps to remove the brake assembly (Figure 403):

(a) Move the brake assembly [10] from the shaft [49].

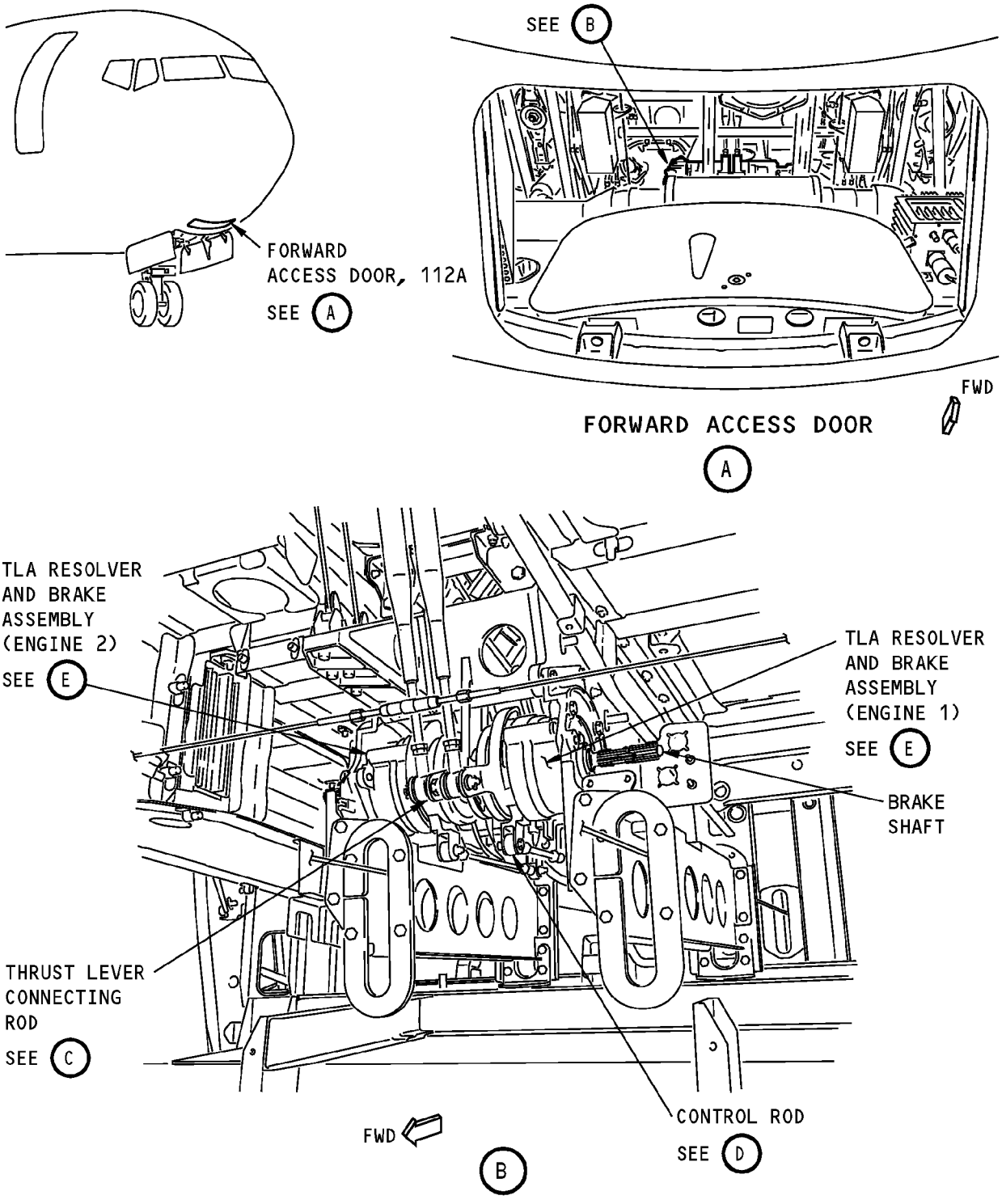
END OF TASK



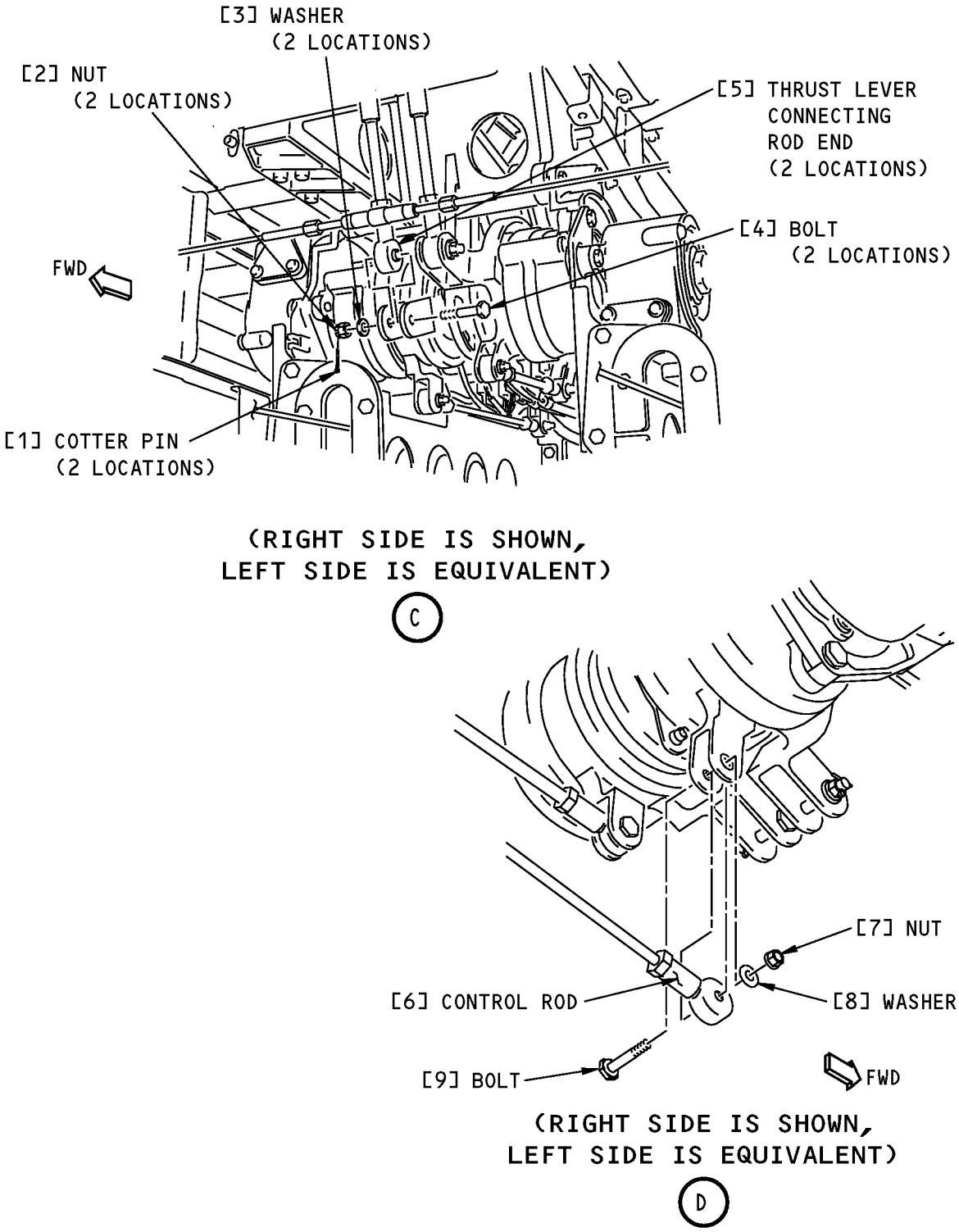
Autothrottle Mechanism Installation
Figure 401 (Sheet 1 of 2)/76-11-05-990-801-F00



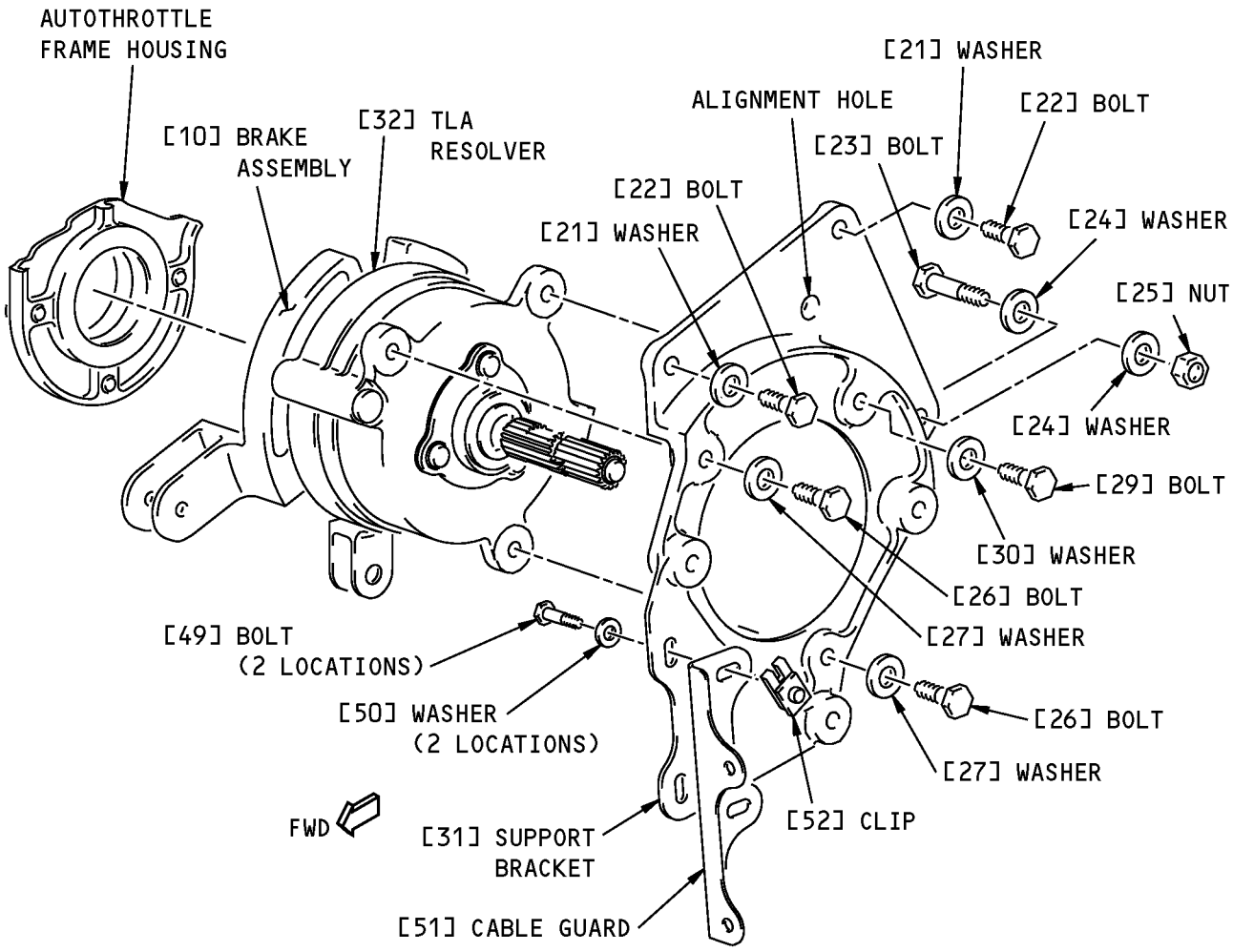
Autothrottle Mechanism Installation
Figure 401 (Sheet 2 of 2)/76-11-05-990-801-F00



Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402 (Sheet 1 of 3)/76-11-05-990-802-F00



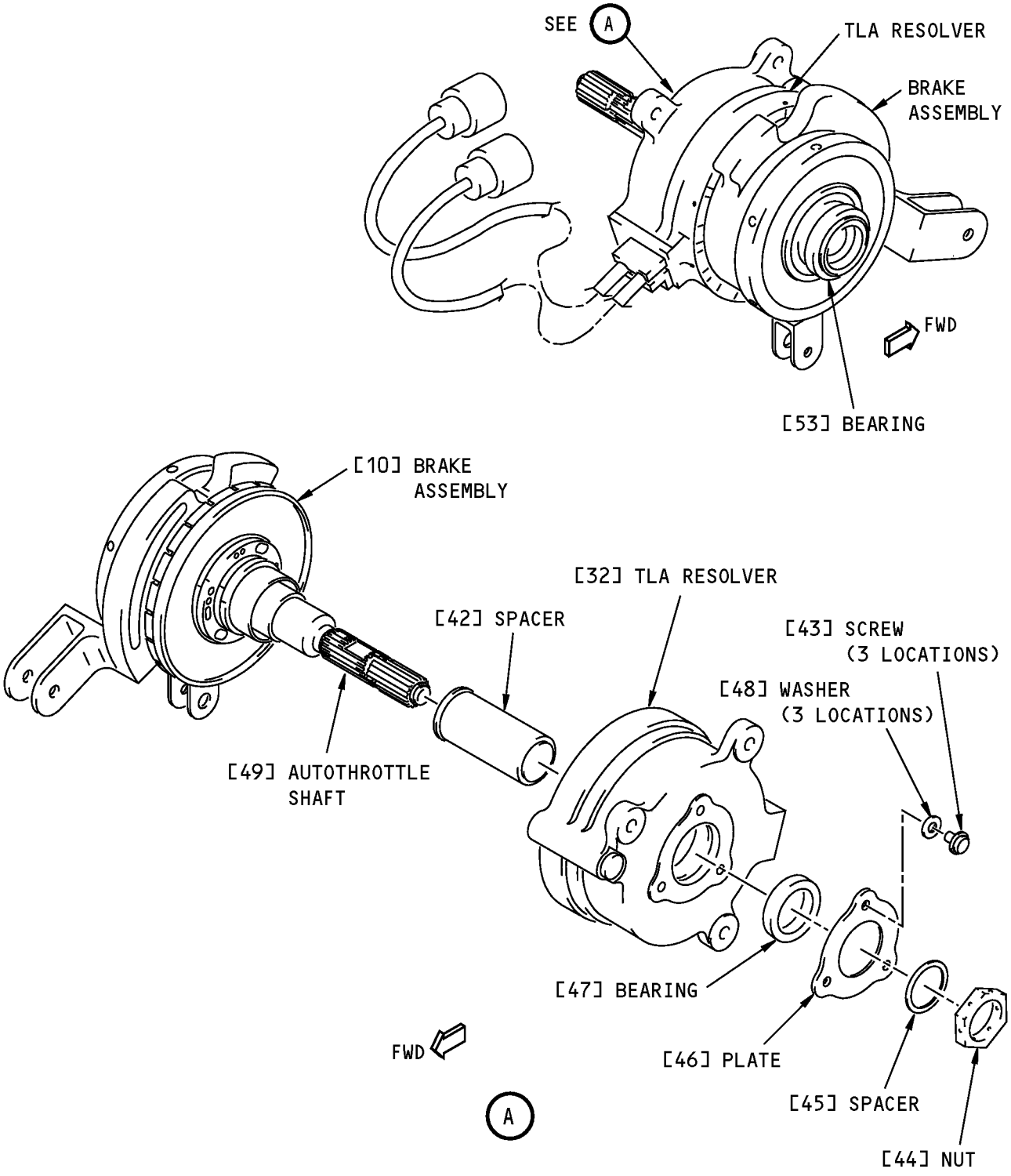
Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402 (Sheet 2 of 3)/76-11-05-990-802-F00



TLA RESOLVER AND BRAKE ASSEMBLY
(ENGINE 1 IS SHOWN, ENGINE 2 IS EQUIVALENT)

E

Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402 (Sheet 3 of 3)/76-11-05-990-802-F00



Thrust Lever Angle (TLA) Resolver Assembly and Autothrottle Brake Assembly
Figure 403/76-11-05-990-803-F00

TASK 76-11-05-400-801-F00

3. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation

A. References

Reference	Title
22-31-91-400-801	Autothrottle Servo Motor and Gearbox Installation (P/B 401)
76-11-05-820-801-F00	Thrust Lever Angle Resolver Adjustment (P/B 501)
76-11-05-820-802-F00	Autothrottle Brake Assembly Test (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2414	Tool Set - Auto Throttle Servo Assembly (Part #: J22001-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: J22001-8, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

C. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Brake assembly	22-31-81-01-105	HAP ALL
		22-31-81-02-105	HAP ALL
32	Resolver	22-31-81-01-080	HAP ALL
		22-31-81-02-080	HAP ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door

G. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation

SUBTASK 76-11-05-420-007-F00

(1) Do these steps to install the brake assembly (Figure 403):

(a) Apply grease, D00013 to the autothrottle shaft [49].

(b) Install the applicable brake assembly [10] on the autothrottle shaft [49].

SUBTASK 76-11-05-420-001-F00

(2) Do these steps to install the spacer [42]:

(a) Apply a layer of grease, D00013 to the inner side surface of the spacer.

(b) Install the spacer [42] on the autothrottle shaft.

SUBTASK 76-11-05-420-002-F00

(3) Do these steps to prepare the resolver [32] for installation:

(a) Install the bearing [47].

(b) Put the plate [46] in its position.

(c) Install the three washers [48] and the three screws [43].

SUBTASK 76-11-05-420-003-F00

(4) Do these steps to install the resolver [32]:

(a) Apply a layer of grease, D00013 to the inner side surface of the bearing [47].

(b) Install the resolver [32] on the autothrottle shaft [49] and the spacer [42].

(c) Apply a layer of grease, D00013 to the inboard and inside surface of the spacer [45].

(d) Install the spacer [45] on to the autothrottle shaft.

(e) Put the nut [44] and J22001-2 BRG nut wrench onto the slotted shaft. The BRG nut wrench is part of auto throttle servo assembly tool set, SPL-2414.

(f) Use the J22001-4 shaft wrench to hold the slotted shaft when you tighten the nut [44] onto the autothrottle shaft. The shaft wrench is part of auto throttle servo assembly tool set, SPL-2414.

1) Tighten the nut to 200 in-lb (22.6 N·m) – 220 in-lb (24.9 N·m) more than the run-on torque.

SUBTASK 76-11-05-420-008-F00

(5) Do these steps to install the resolver and brake assembly in the airplane:

(a) Carefully position the bearing [53] in the autothrottle frame housing.

(b) Make sure that you support the autothrottle shaft end [49] of the assembly in its normal position.

SUBTASK 76-11-05-420-004-F00

(6) Do these steps to install the support bracket [31] to the autothrottle frame housing (Figure 402).

(a) Put the support bracket [31] in its position on the autothrottle frame housing.

1) Make sure the alignment pin correctly engages the support bracket [31].

(b) Install the nut [25], the two washers [24], and the bolt [23].

(c) Install the two washers [21] and the two bolts [22].

SUBTASK 76-11-05-420-005-F00

(7) Do these steps to connect the resolver to the support bracket [31].

(a) Align the resolver [32] with the support bracket [31].

(b) Install the washer [30] and the bolt [29].

(c) Put the plate [28] in its position.

(d) Install the two washers [27] and the two bolts [26].

SUBTASK 76-11-05-420-009-F00

(8) Do this step to install the cable guard [51]:

(a) Put the cable guard [51] on the support bracket [31].

(b) Install the bolt [49] and washer [50].

SUBTASK 76-11-05-420-010-F00

(9) Do this step to attach the applicable control rod [6]:

(a) Put the control rod end [6] to the brake assembly [10].

(b) Install the bolt [9], washer [8], and nut [7].

SUBTASK 76-11-05-420-011-F00

(10) Do these steps to attach the applicable thrust lever connecting rod [5]:

(a) Put the thrust lever connecting rod end [5] to the brake assembly [10].

(b) Install the bolt [4] with its head on the inboard side of the thrust lever connecting rod end [5].

(c) Install the washer [3], and nut [2].

(d) Install the cotter pin [1].

SUBTASK 76-11-05-020-011-F00

(11) Connect the applicable wire harness connectors [11] (Figure 402):

(a) For engine 1 resolver,

1) Electrical connector, D11158.

2) Electrical connector, D11160.

(b) For engine 2 resolver,

1) Electrical connector, D11162.

2) Electrical connector, D11164.

SUBTASK 76-11-05-420-006-F00

(12) Do this task: Autothrottle Servo Motor and Gearbox Installation, TASK 22-31-91-400-801.

H. Thrust Lever Angle Resolver Installation Test

SUBTASK 76-11-05-440-001-F00

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1
HAP 001-013, 015-026, 028-030			
E	3	C01141	AUTOTHROTTLE DC 2

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
HAP ALL			
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-05-860-002-F00

(2) Remove the DO-NOT-OPERATE tags from the thrust levers.

SUBTASK 76-11-05-700-004-F00

(3) If you replaced the brake assembly, do this task: Autothrottle Brake Assembly Test, TASK 76-11-05-820-802-F00.

SUBTASK 76-11-05-700-001-F00

(4) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-F00.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-05-410-001-F00

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

END OF TASK

THRUST LEVER ANGLE RESOLVER AND AUTOTHROTTLE BRAKE ASSEMBLY - ADJUSTMENT/TEST

1. General

A. This procedure has two tasks:

(1) An adjustment of the thrust lever angle resolver with equipment on the airplane.

(2) A test of the autothrottle brake assembly.

TASK 76-11-05-820-801-F00

2. Thrust Lever Angle Resolver Adjustment

(Figure 501)

A. General

(1) This task is the adjustment of the thrust lever angle resolver. The position data is signals from the TLA resolver through the EEC to the FMCS control display unit (CDU).

(2) There is one resolver installed on each of engine 1 and engine 2 autothrottle assemblies.

(3) The adjustment procedure is the same for each resolver.

(4) For this procedure the thrust lever angle resolver will be referred to as the resolver.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Adjustment

SUBTASK 76-11-05-010-003-F00

(1) To gain access to the resolvers, do this step:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 76-11-05-480-001-F00

(2) Do these steps to prepare for the test:

(a) Make sure that the airplane has electrical power.

1) If it is necessary, do this task: Supply Electrical Power, TASK 24-22-00-860-811.

(b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B

Row	Col	Number	Name
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
A	6	C01017	FMCS CMPTR 1
D	2	C01372	DISPLAY CTR UPR
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	10	C01361	DISPLAY DEU 1 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	13	C01179	INDICATOR MASTER DIM SECT 7

WARNING: MAKE SURE YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM; THE ADVANCEMENT OF THE THRUST LEVERS WILL CAUSE THE AUTOMATIC ACTIVATION OF THE SYSTEM. IF YOU DO NOT, YOU CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT.

(c) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

(d) Make sure that the Engine START LEVERS are in the CUTOFF position.

(e) Make sure that the ENGINE START switches are in the off position and attach a DO-NOT-OPERATE tag.

(f) Make sure that the engine thrust levers are in the IDLE position.

(g) Make sure that the thrust reversers are in the retracted (stowed) position.

SUBTASK 76-11-05-700-002-F00

(3) Do these steps to set up the FMCS CDU for the applicable Engine 1 or Engine 2 resolver adjustment (Figure 501):

(a) Get access to the FMCS CDU in the flight compartment.

(b) If the FMCS CDU is not active from other engine tests, do these steps:

1) Press the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push these line select keys (LSK) on the FMCS CDU:

a) INDEX

b) MAINT

NOTE: This LSK causes the MAINT BITE INDEX screen to show.

c) ENGINE

NOTE: This LSK causes the ENGINE/EXCEED BITE INDEX screen to show.

d) ENGINE X for the applicable resolver.

NOTE: This LSK causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X LSK automatically applies power to the EEC and causes the EEC to initialize. The CDU will show INITIALIZING EEC X, and EEC SORTING FAULT HISTORY DATA for a short time, just before the ENGINE X BITE TEST MAIN MENU shows.

(c) If the FMCS CDU is active from other EEC tests, do these steps:

1) Push the INDEX LSK several times, until the MAINT BITE INDEX shows.

2) Push the ENGINE LSK.

NOTE: This causes the ENGINE/EXCEED BITE INDEX screen to show.

3) Push the ENGINE X LSK for the applicable resolver.

NOTE: This causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X1 LSK automatically applies power to the EEC and causes the EEC to initialize. The CDU will show INITIALIZING EEC X, and EEC SORTING FAULT HISTORY DATA for a short time, just before the ENGINE X BITE TEST MAIN MENU shows.

SUBTASK 76-11-05-710-001-F00

(4) Do these steps to find if the applicable Engine X resolver is in limits:

(a) Make sure that the applicable engine thrust lever against the IDLE stop.

(b) Push the INPUT MONITORING LSK.

NOTE: This will cause the CAUTION SCREEN of INPUT MONITORING to show.

(c) Push the CONTINUE LSK.

(d) Push the CONTROL LOOPS LSK.

NOTE: This will cause screen 1 of the CONTROL LOOPS to show.

(e) Push the NEXT PAGE key two times.

NOTE: This will cause screen 3 of the CONTROL LOOPS to show.

(f) Push the TRA line select key (LSK) on screen 3 of the CONTROL LOOPS.

NOTE: This causes the Thrust Lever Resolver Angle (TRA) for channels A and B, of Engine X, to show.

NOTE: The data for the channel that is in control will show first.

1) The TRA POSITION CH A and TRA POSITION CH B indications on the CDU must read 36.0 ±0.8 degrees.

2) The difference between the TRA POSITION CH A and the TRA POSITION CH B should be less than 0.8 degree.

(g) If the indications are not in the specified range, do the resolver adjustment procedure below for the applicable resolver; and continue the procedure at the step that follows.

CAUTION: DO NOT LET THE SEL POSITION DISPLAY SHOW GREATER THAN 80.0 DEGREES, AS YOU DO THIS STEP. IF THE DISPLAY SHOWS MORE THAN 80.0 DEGREES, YOU MUST MOVE THE THRUST LEVER TO THE IDLE STOP AND START AGAIN. IF YOU DO NOT OBEY THESE INSTRUCTIONS, THE RESULTS OF THE TEST ARE NOT ACCURATE.

(h) If the POSITION CH A and POSITION CH B indications are in the specified range, do these steps:

1) Slowly move the thrust lever forward until the TRA POSITION reads:

a) The TRA POSITION CH A and TRA POSITION CH B indications on the CDU read 78.0 ±2.0 degrees.

b) Stop for a minimum of 2 seconds.

(i) Make sure that the thrust lever does not move from this position.

(j) Record the value that shows in the POSITION CH A line to the nearest tenth of a degree.

SUBTASK 76-11-05-720-001-F00

(5) Do these steps to set the alignment with the opposite thrust lever:

(a) Push the INDEX LSK four times, to get access to the MAINT BITE INDEX screen.

(b) Push the ENGINE LSK.

NOTE: This causes the ENGINE/EXCEED BITE INDEX screen to show.

(c) Push the opposite ENGINE X LSK.

NOTE: This causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X LSK automatically applies power to the EEC and causes the EEC to initialize. The CDU will show INITIALIZING EEC X, and EEC SORTING FAULT HISTORY DATA for a short time, just before the ENGINE X BITE TEST MAIN MENU shows.

(d) Push the INPUT MONITORING LSK.

NOTE: This will cause the INPUT MONITORING menu to show.

(e) Push the CONTROL LOOPS LSK.

NOTE: This will cause screen 1 of the CONTROL LOOPS to show.

(f) Push the NEXT PAGE key two times, to get access to screen 3 of the CONTROL LOOPS.

(g) Push the TRA line select key (LSK) on screen 3 of the CONTROL LOOPS.

NOTE: This causes the thrust lever resolver angle (TRA) for channels A and B, of Engine X, to show.

NOTE: The data for the channel that is in control will show first.

1) The TRA POSITION CH A and TRA POSITION CH B indications on the CDU must read 36.0 ±0.8 degree.

2) If the indications are not in the specified range, do the applicable resolver adjustment below and continue the procedure at the step that follows.

CAUTION: MAKE SURE THAT YOU DO NOT MOVE THE INITIAL THRUST LEVER AS YOU DO THIS STEP. DO NOT MOVE THE OPPOSITE THRUST LEVER TO A POSITION THAT IS GREATER THAN THE INITIAL THRUST LEVER. IF YOU DO, YOU MUST MOVE THE OPPOSITE THRUST LEVER TO THE IDLE STOP AND MOVE IT FORWARD AGAIN. IF YOU DO NOT OBEY THESE INSTRUCTIONS, THE RESULTS OF THE TEST ARE NOT ACCURATE.

(h) Slowly move the opposite thrust lever forward until the knob aligns with the knob on the initial thrust lever, ±1/16 of a knob width.

(i) Record the value that shows in the POSITION CH A line to the nearest tenth of a degree.

(j) Calculate the difference between opposite POSITION CH A and initial POSITION CH A.

NOTE: (Opposite Engine POSITION CH A) - (Engine under test POSITION CH A) = difference.

(k) Make sure that the difference is 0.0 ±1.0 degree.

1) If the indications are not in the specified range, do the resolver adjustment below for the initial or opposite thrust lever.

2) Use the position values which you recorded at IDLE to find which resolver to adjust.

a) Choose the resolver which you can adjust to be in the limits at IDLE and at the 78 degree position.

3) Continue the procedure at the step that follows.

(l) If the difference is in the specified range, the test is completed.

(m) Move the two thrust levers to the idle stop.

(n) If you wish to do other tests, push the INDEX LSK several times, until the correct menu shows.

(o) To end the test, push the INIT REF key.

NOTE: This causes the test to stop and automatically removes electrical power from the EEC.

F. Resolver Adjustment

SUBTASK 76-11-05-820-001-F00

(1) Adjust the thrust control rod for the applicable resolver until you get the correct value (Figure 502):

(a) Move the applicable thrust lever against the IDLE stop.

(b) Disconnect the thrust lever from the autothrottle brake assembly

1) Remove the cotter pin [1], the nut [2] and the washer [3].

a) Discard the cotter pin [1].

2) Remove the bolt [4].

(c) Move the rod end [5] from the autothrottle brake assembly clevis.

(d) Move the autothrottle brake assembly clevis to get the correct TRA value on the FMCS CDU.

(e) Make sure they are in these limits:

1) POSITION CH A indication reads 36.0 ±0.8 degree.

2) POSITION CH B indication reads 36.0 ±0.8 degree.

3) The difference between the TRA POSITION CH A and the TRA POSITION CH B should be less than 0.8 degree.

(f) Loosen the jamnut [6] and turn the rod end to align it with the autothrottle brake assembly clevis.

NOTE: Use the bolt [4] to make sure the parts are aligned.

1) Insert the bolt [4] with the bolt head on the inboard side of the autothrottle brake assembly.
2) Install the washer [3], the nut [2], and a new cotter pin [1].
3) Tighten the jamnut [6] on the control rod to 95 in-lb (10.7 N·m) – 160 in-lb (18.1 N·m).

(g) Make sure that the POSITION CH A and POSITION CH B indications on the CDU still read 36.0 ±0.8 degrees, and the difference is less than 0.8 degree.

1) If the values are not in the specified range, adjust the thrust control rod until you get the correct values.

SUBTASK 76-11-05-820-003-F00

(2) To do a check of the adjustment:

(a) Carefully move the thrust lever to the full forward thrust position.

1) Stop for a minimum of 2 seconds.
2) Make sure that the POSITION CH A and POSITION CH B indications on the FMCS CDU read 84.0 ±1.8 degrees.
3) If the values are not in the specified range, adjust the thrust control rod again until you get the correct value.

CAUTION: MAKE SURE THAT YOU DO NOT MOVE THE INITIAL THRUST LEVER AS YOU DO THIS STEP. DO NOT MOVE THE OPPOSITE THRUST LEVER TO A POSITION THAT IS GREATER THAN THE INITIAL THRUST LEVER. IF YOU DO, YOU MUST MOVE THE OPPOSITE THRUST LEVER TO THE IDLE STOP AND MOVE IT FORWARD AGAIN. IF YOU DO NOT OBEY THESE INSTRUCTIONS, THE RESULTS OF THE TEST ARE NOT ACCURATE.

(b) Do a check the alignment between the thrust levers.

1) Move the thrust lever that you adjusted to IDLE and stop for a minimum of 2 seconds.
2) Move the thrust lever forward to align with the knob on the other thrust lever, which should be still be set at 78 degrees.
3) Make sure that the knob alignment difference is not more than ±1/16 with the other knob.
4) Make sure that the difference in POSITION CH A values is not more than 0.0 ±1.0 degree.
5) If the difference is not in the specified range, do the thrust lever adjustment again until you get the correct value.
6) If the difference is in the specified range, the check is completed.

(c) Move the thrust levers to the IDLE stop.

(d) If you wish to do other tests, push the INDEX LSK several times, until the correct menu shows.

(e) To end the test, push the INIT REF key.

NOTE: This causes the test to stop and automatically removes electrical power from the EEC.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-05-000-001-F00

(1) Remove the DO-NOT-OPERATE tag from the start switches.

SUBTASK 76-11-05-010-004-F00

(2) Close this access panel:

Number	Name/Location
112A	Forward Access Door

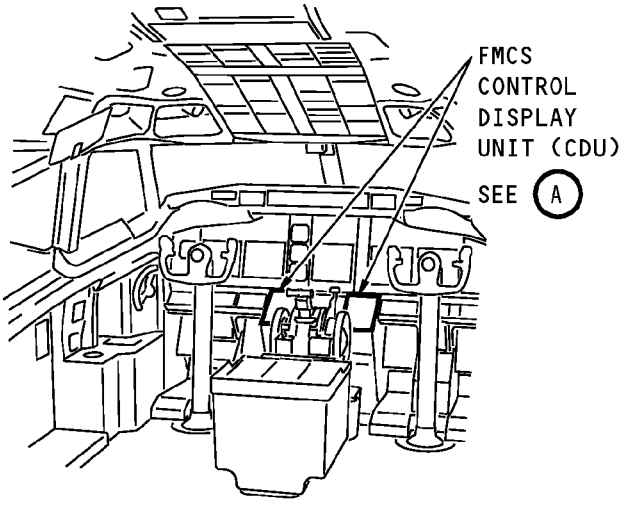
SUBTASK 76-11-05-860-003-F00

(3) Remove the safety tag and close this circuit breaker:

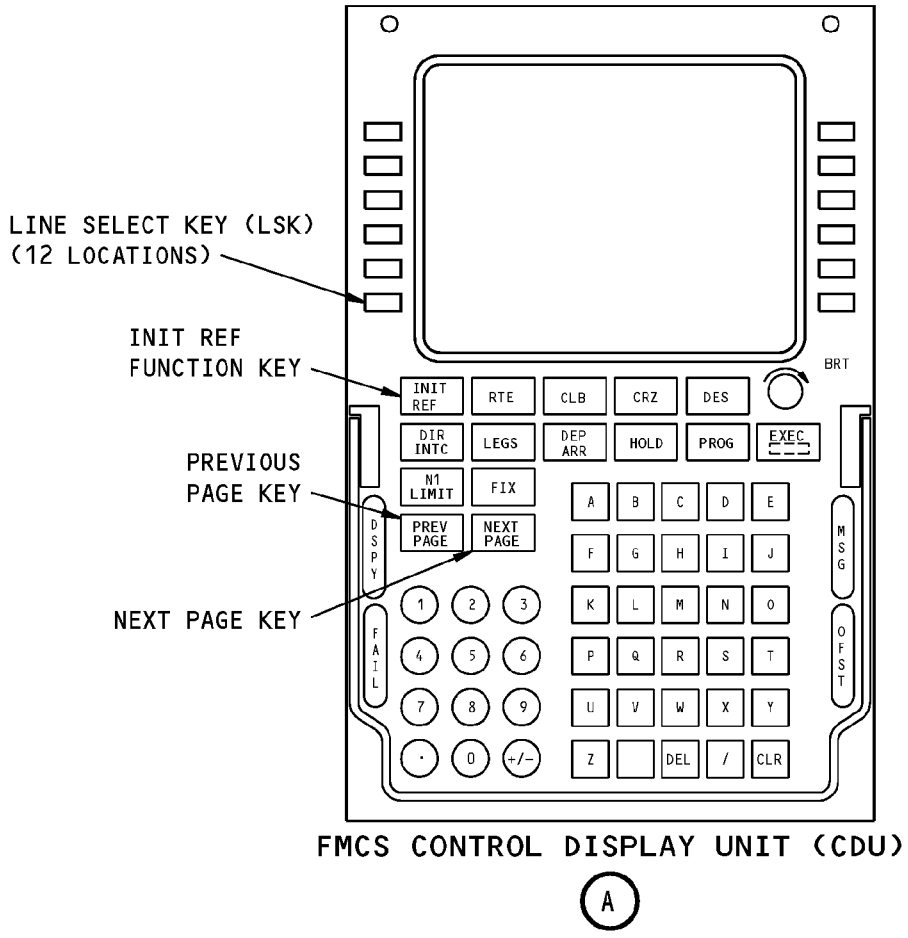
F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

END OF TASK



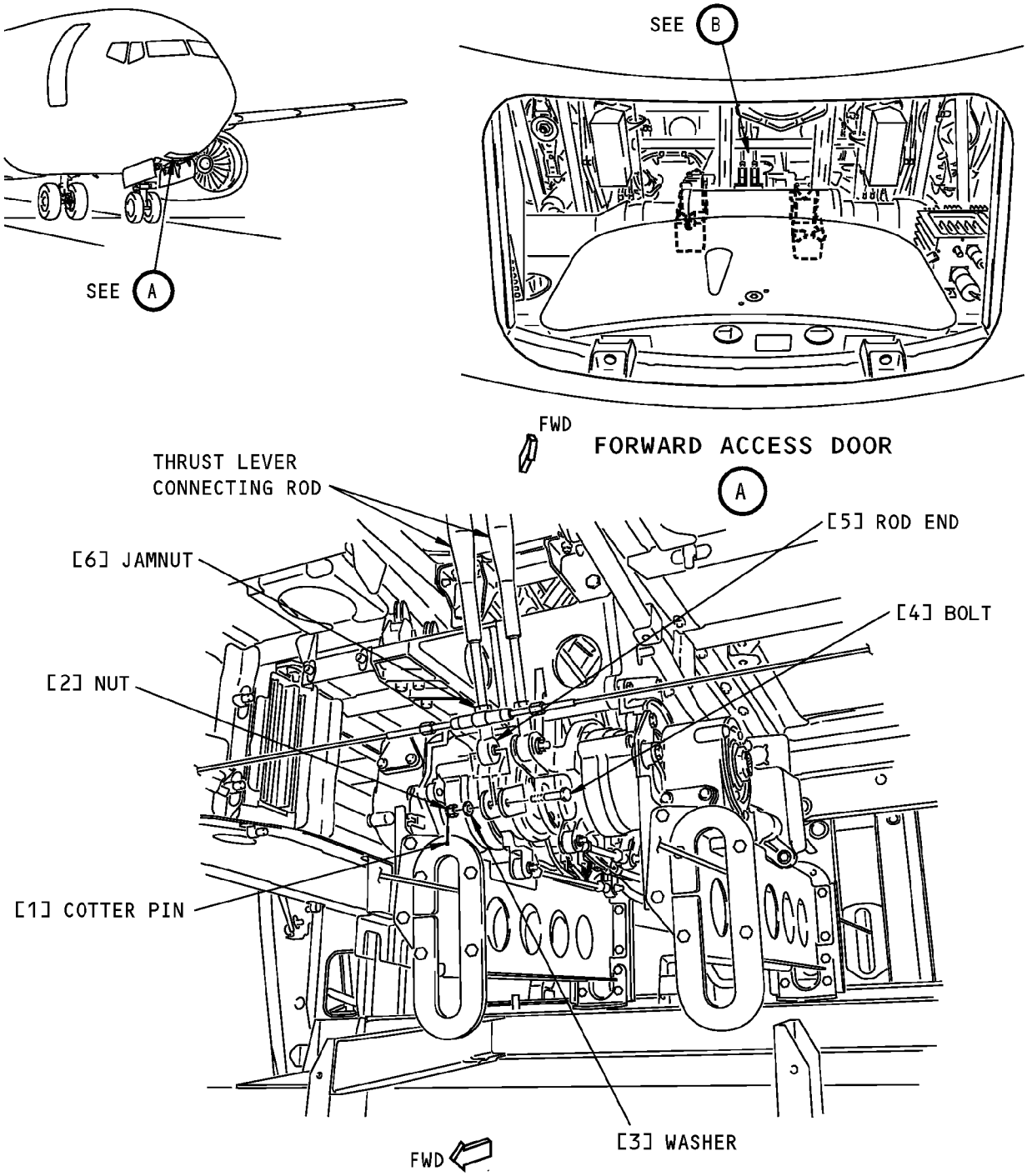
FLIGHT COMPARTMENT



FMCS CONTROL DISPLAY UNIT (CDU)

A

FMCS Control Display Unit Adjustment
Figure 501/76-11-05-990-804-F00



Thrust Lever Angle (TLA) Resolver Adjustment
Figure 502/76-11-05-990-805-F00

TASK 76-11-05-820-802-F00

3. Autothrottle Brake Assembly Test

A. General

(1) This task is the autothrottle brake assembly test of the loads that are used to prevent the free movement of the thrust levers.

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force (Part #: DG-200, Supplier: 92456, A/P Effectivity: 737-ALL) (Part #: DPP-500G, Supplier: 92456, A/P Effectivity: 737-ALL) (Part #: DPPH-150, Supplier: 92456, A/P Effectivity: 737-ALL) (Part #: DPPH-200, Supplier: 92456, A/P Effectivity: 737-ALL) (Part #: DPPH-50, Supplier: 92456, A/P Effectivity: 737-ALL) (Part #: FDIX 100, Supplier: 0BFD9, A/P Effectivity: 737-ALL) (Part #: FDIX 50, Supplier: 0BFD9, A/P Effectivity: 737-ALL) (Part #: FDV 50, Supplier: 0BFD9, A/P Effectivity: 737-ALL) (Part #: LG-050, Supplier: 92456, A/P Effectivity: 737-ALL) (Opt Part #: FDI 100, Supplier: 0BFD9, A/P Effectivity: 737-ALL)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 76-11-05-480-002-F00

(1) Do these steps to prepare for the test:

(a) Make sure that the engine thrust levers are in the IDLE position.

(b) Make sure that the reverse thrust levers are in the retracted (stowed) position.

WARNING: MAKE SURE YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM; THE ADVANCEMENT OF THE THRUST LEVERS WILL CAUSE THE AUTOMATIC ACTIVATION OF THE SYSTEM. IF YOU DO NOT, YOU CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT.

(c) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

E. Do a Test of the Autothrottle Brake Assembly

SUBTASK 76-11-05-820-004-F00

(1) Do these steps to measure the load that is necessary to operate the forward thrust levers:

(a) Put the force gauge, COM-1557 at the aft side of the forward thrust lever.

1) The spring scale must touch the knob of the forward thrust lever at the center.

(b) Hold the scale at 90 degrees to the line that connects the knob and the pivot axis of the lever.

(c) Use the scale to move the forward thrust lever through the full forward travel.

1) Measure the force that is necessary to move the thrust lever.

2) Record the force value.

(d) Make sure the load is 2.0 lb (0.9 kg) to 6.0 lb (2.7 kg).

(e) Remove the force gauge, COM-1557 from the thrust lever.

(f) Move the spring scale to the forward side of the forward thrust lever you just tested.

1) The spring scale must touch the knob of the forward thrust lever at the center.

(g) Hold the scale at 90 degrees to the line that connects the knob and the pivot axis of the lever.

(h) Do this check of the thrust lever free play:

1) Apply a force of 1.0 lb (0.45 kg) to 1.5 lb (0.68 kg) in the decreasing thrust direction.

2) Make sure the lever moves no more than 0.10 in. (2.5 mm) at the knob centerline.

(i) Remove the spring scale.

(j) Move the lever to the idle position.

SUBTASK 76-11-05-860-004-F00

(2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

END OF TASK

REVERSE THRUST INTERLOCK SOLENOID - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) The removal of the reverse thrust interlock solenoid.

(2) The installation of the reverse thrust interlock solenoid.

TASK 76-11-06-000-801-F00

2. Reverse Thrust Interlock Solenoid Removal

A. General

(1) This task give you instructions to remove the reverse thrust interlock solenoid from the autothrottle assembly.

(2) There are two interlock solenoids installed in the autothrottle, and they are not interchangeable.

(3) For this procedure the reverse thrust interlock solenoid will be referred to as the interlock solenoid.

B. References

Reference	Title
20-10-91-000-801	Control Cables Removal (P/B 401)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
78-31-00-040-802-F00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
114AW	Forward Nose Wheel Well Panel

E. Prepare for the Removal of the Interlock Solenoid

SUBTASK 76-11-06-860-001-F00

WARNING: MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Operate the stabilizer trim system to provide cable clearance for access of the autothrottle assembly.

(a) Set the stabilizer trim lever at 4.2 degrees or the NOSE UP stop.

SUBTASK 76-11-06-040-001-F00

WARNING: DO THE TRAILING EDGE FLAP DEACTIVATION PROCEDURE BEFORE YOU DO WORK ON THE FLAP SYSTEM. WITH THE FLAPS ACTIVATED, THE FLAPS CAN MOVE AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 76-11-06-040-002-F00

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

SUBTASK 76-11-06-040-003-F00

(4) Make sure the ENGINE START switches are set to off and install DO-NOT-OPERATE tags.

SUBTASK 76-11-06-040-004-F00

WARNING: DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-802-F00.

SUBTASK 76-11-06-010-001-F00

(6) Open this access panel:

Number	Name/Location
114AW	Forward Nose Wheel Well Panel

(Figure 401).

SUBTASK 76-11-06-010-002-F00

(7) Remove the two access panels at the top of the wheel well, to get access to the autothrottle and flap control cables.

SUBTASK 76-11-06-410-001-F00

(8) Open this access panel:

Number	Name/Location
112A	Forward Access Door

F. Interlock Solenoid Removal Procedure

SUBTASK 76-11-06-020-001-F00

(1) Go into the lower forward access area under the flight compartment (Figure 401).

(a) Do these steps to disconnect the two thrust lever connecting rods from the autothrottle clutch pack:

1) Remove and discard the cotter pins [4].

2) Remove the nuts [3], washers [2], and bolts [1].

3) Move the connecting rods [5] from the autothrottle clutch pack.

SUBTASK 76-11-06-020-002-F00

(2) Go into the nose wheel well, to get access the flap control cables.

(a) Disconnect the WFA and WFB cables; do this task: Control Cables Removal, TASK 20-10-91-000-801.

SUBTASK 76-11-06-020-003-F00

(3) Do these steps to disconnect each of the aft two cable guards from the nose wheel well housing:

(a) Remove the four nuts [6] and washers [7].

(b) Remove the four bolts [8].

SUBTASK 76-11-06-020-004-F00

(4) Loosen the aft autothrottle attachment bolts [9] and [10].

NOTE: Do not remove the bolts, you want the autothrottle to pivot from these bolts.

SUBTASK 76-11-06-010-003-F00

(5) Do these steps to lower the autothrottle assembly:

NOTE: The forward part of the autothrottle will pivot down from the aft bolt attachments.

(a) Put wood blocks on the blankets of the nose wheel well.

NOTE: Make sure you have sufficient wood blocks to keep the autothrottle off the control cables.

(b) Remove the forward autothrottle attachment bolts.

1) Remove the right bolts [11] and washer [12].

2) Hold the autothrottle assembly in it position, while you remove the side bolt [13] and washer [14].

3) Carefully lower the autothrottle assembly until cable guards rest on the wood blocks.

SUBTASK 76-11-06-020-005-F00

(6) Do these steps to disconnect the applicable wire bundles (Figure 402) (View B):

(a) For the right interlock solenoid, do these steps:

1) Disconnect the connector V156.

2) Disconnect the three clamps.

3) Remove the wire bundle from the protective cover.

4) Add protective covers on the electrical connectors and receptacles.

(b) For the left interlock solenoid, do these steps:

1) Disconnect the connector V155.

2) Disconnect the three clamps.

3) Remove the wire bundle from the protective cover.

4) Add protective covers on the electrical connectors and receptacles.

SUBTASK 76-11-06-020-006-F00

(7) Do these steps to remove the applicable rod assembly [20] from the interlock solenoid and latch assembly (Figure 402) (view C):

(a) Remove the nut [21] and washer [22].

(b) Remove the bolt [26] and washer [27].

(c) Remove the rod assembly.

SUBTASK 76-11-06-020-007-F00

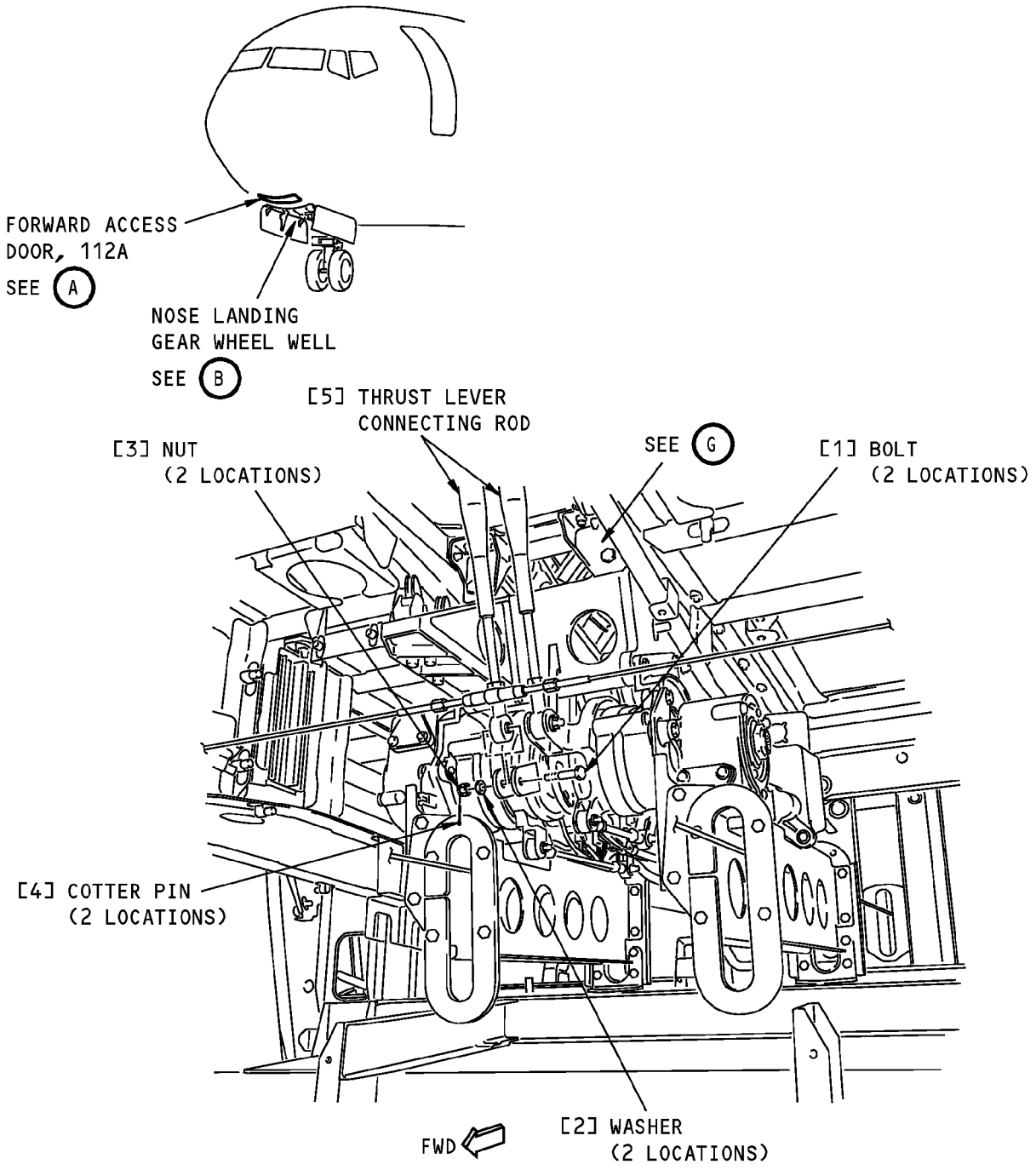
(8) Do these steps to remove the applicable interlock solenoid:

(a) Remove the two nuts [28] and the two washers [29].

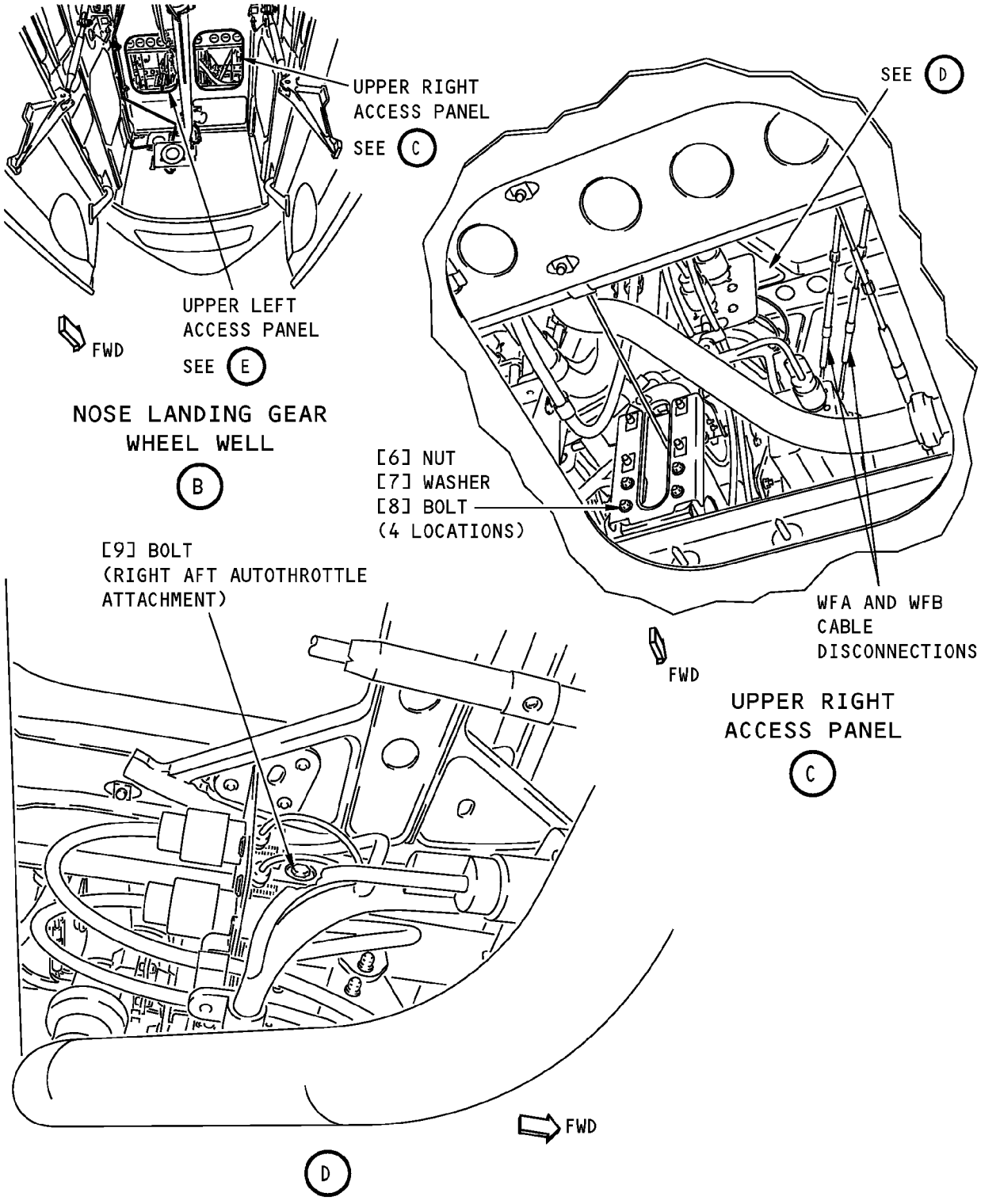
(b) Remove the right interlock solenoid [31] or the left interlock solenoid [32].

(c) Remove the spacer [30].

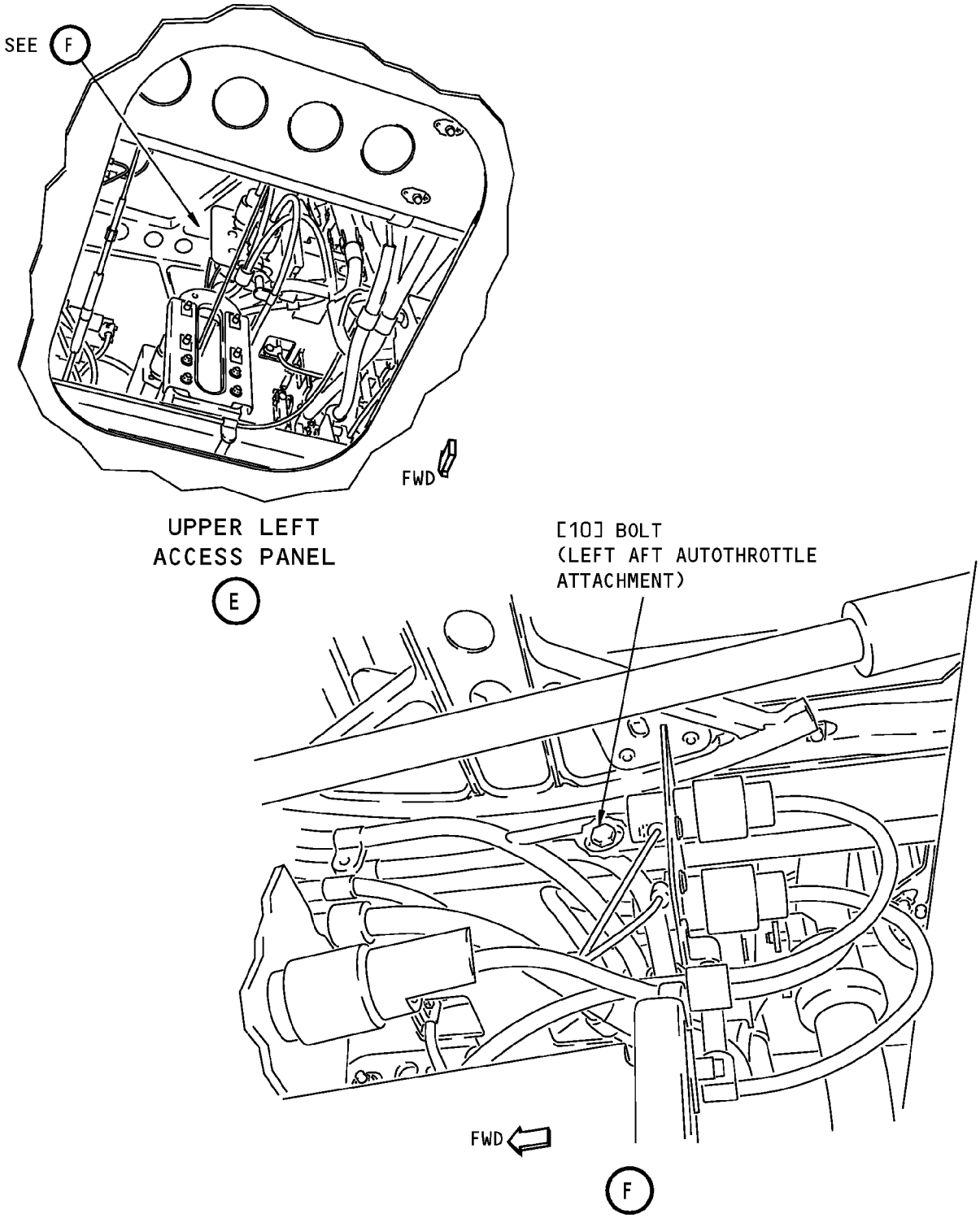
END OF TASK



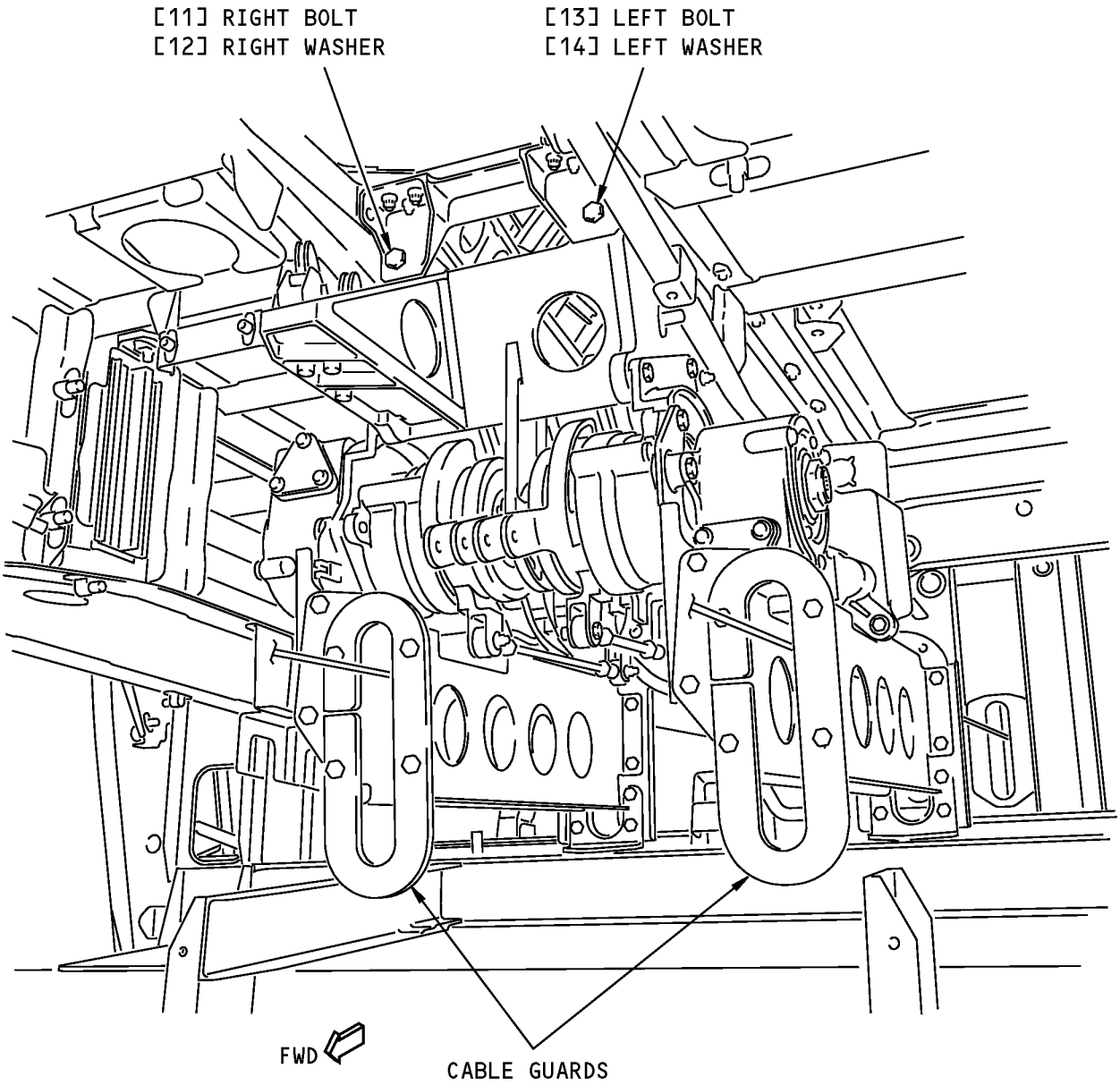
Autothrottle Disconnection
Figure 401 (Sheet 1 of 4)/76-11-06-990-801-F00



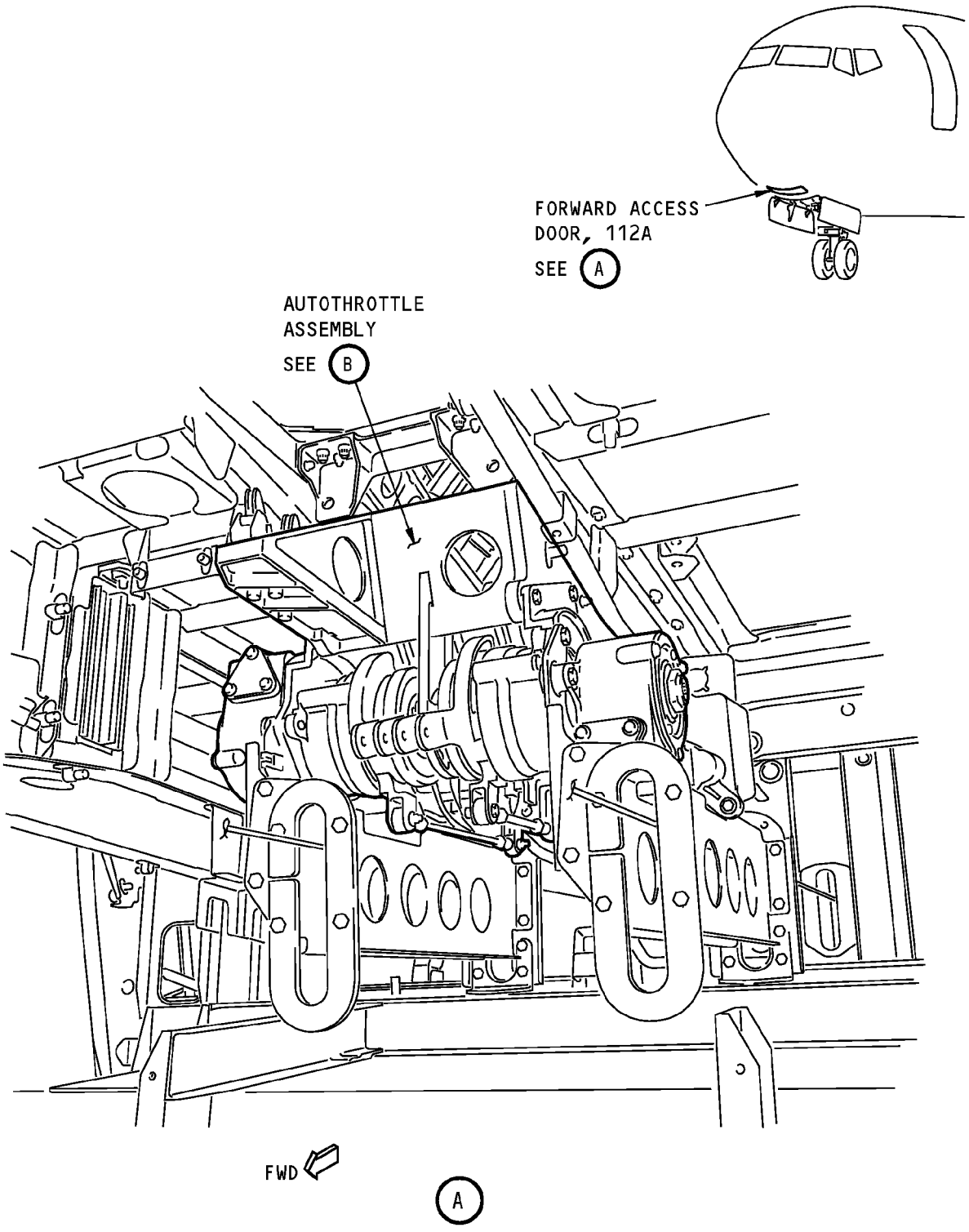
Autothrottle Disconnection
Figure 401 (Sheet 2 of 4)/76-11-06-990-801-F00



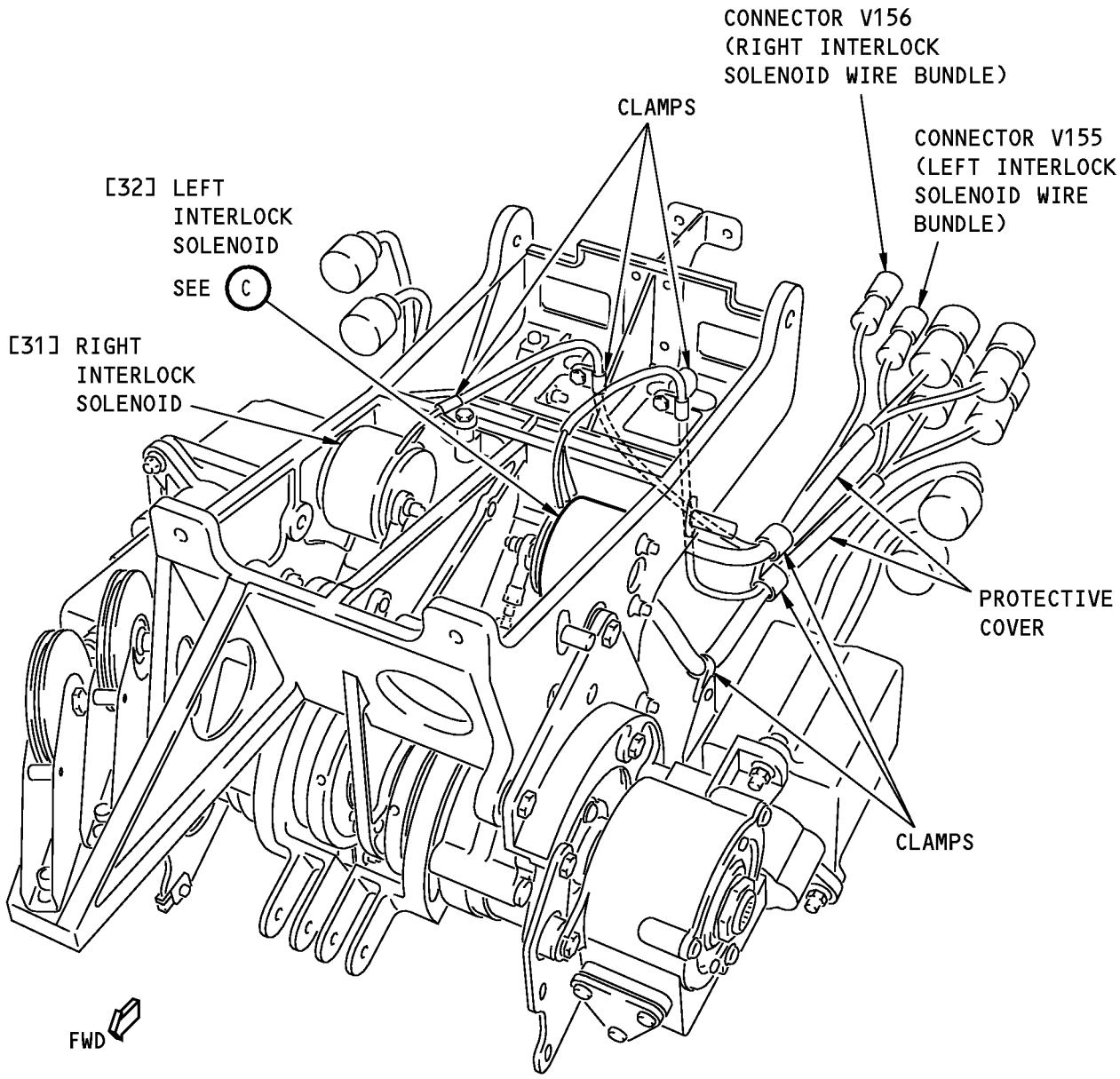
Autothrottle Disconnection
Figure 401 (Sheet 3 of 4)/76-11-06-990-801-F00



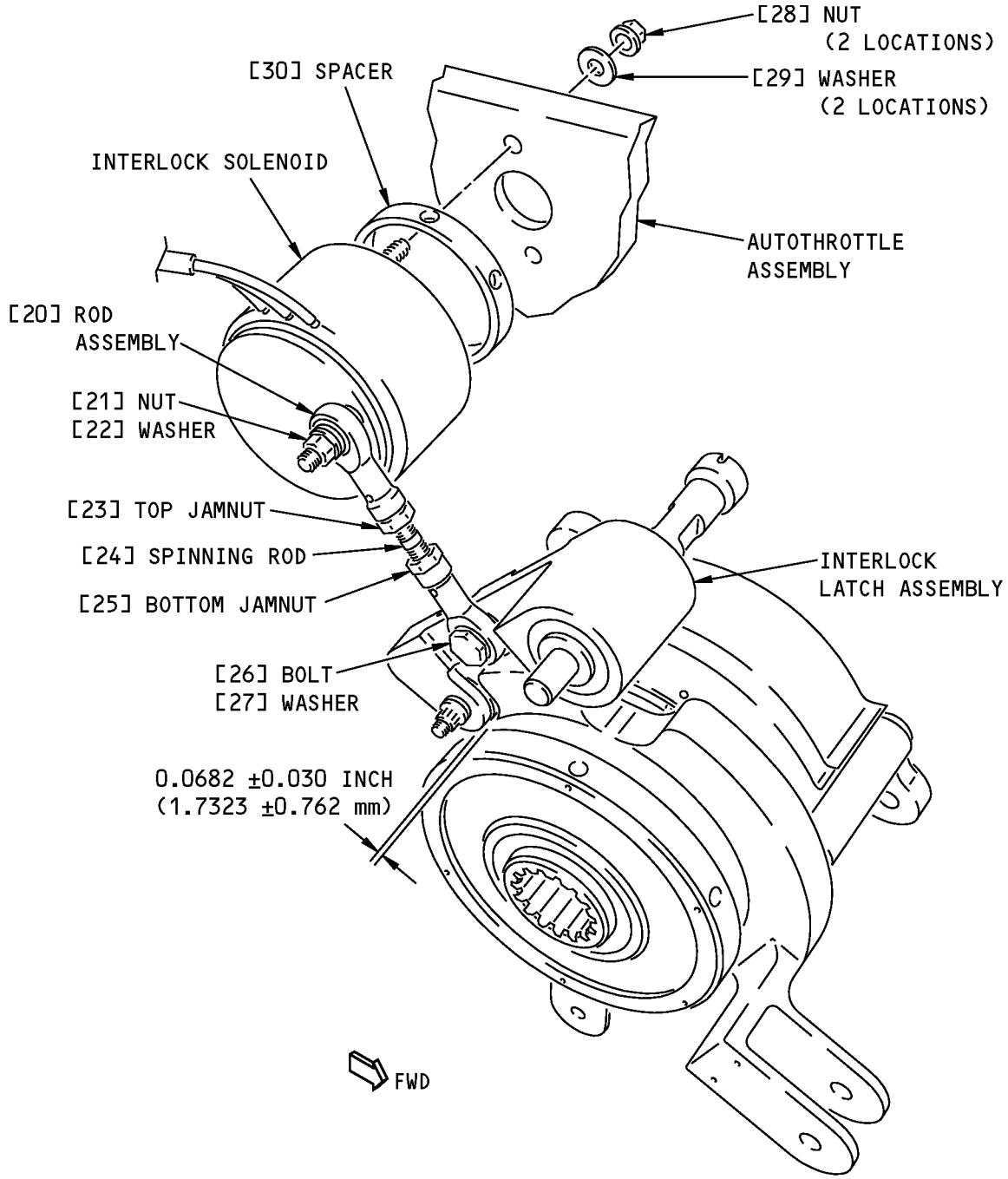
Autothrottle Disconnection
Figure 401 (Sheet 4 of 4)/76-11-06-990-801-F00



Reverse Thrust Interlock Solenoid Installation
Figure 402 (Sheet 1 of 3)/76-11-06-990-802-F00



Reverse Thrust Interlock Solenoid Installation
Figure 402 (Sheet 2 of 3)/76-11-06-990-802-F00



LEFT INTERLOCK SOLENOID
(RIGHT INTERLOCK SOLENOID IS OPPOSITE)

C

Reverse Thrust Interlock Solenoid Installation
Figure 402 (Sheet 3 of 3)/76-11-06-990-802-F00

TASK 76-11-06-440-801-F00

3. Reverse Thrust Interlock Solenoid Installation

A. General

(1) This task give you instructions to install the interlock solenoid into the autothrottle assembly.

(2) There are two interlock solenoids installed in the autothrottle, and they are not interchangeable.

(3) For this procedure the reverse thrust interlock solenoid will be referred to as the interlock solenoid.

B. References

Reference	Title
20-10-91-400-801	Control Cables Installation (P/B 401)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
73-21-00-700-805-F00	T/R LEVER INTLK (Interlock) TEST (P/B 501)
76-11-05-820-801-F00	Thrust Lever Angle Resolver Adjustment (P/B 501)
78-31-00-440-803-F00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
31	Solenoid	22-31-51-01-225	HAP ALL
32	Solenoid	22-31-51-01-230	HAP ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
114AW	Forward Nose Wheel Well Panel

F. Installation Procedure

SUBTASK 76-11-06-420-001-F00

(1) Do these steps to install the applicable interlock solenoid (Figure 402) (view C):

(a) Install the spacer [30].

(b) Put the applicable interlock solenoid in its position.

1) Make sure you install the left interlock solenoid [32] only on the left side.

2) Make sure you install the right interlock solenoid [31] only on the right side.

(c) Install the two nuts [28] and the two washers [29].

1) Tighten the nuts to 20 in-lb (2.26 N·m) – 25 in-lb (2.82 N·m).

SUBTASK 76-11-06-420-008-F00

(2) Do these steps to install the applicable rod assembly [20] to the interlock solenoid [31] or [32] and latch assembly:

(a) Put the rod assembly [20] on the interlock solenoid drive pin.

(b) Install the nut [21] and washer [22].

1) Tighten the nut to 20 in-lb (2.26 N·m) – 25 in-lb (2.82 N·m).

(c) Set the rod end in its position on the interlock latch assembly.

(d) Install the bolt [26] and washer [27].

SUBTASK 76-11-06-420-002-F00

(3) Do these steps to connect the applicable wire bundles:

(a) For the right interlock solenoid, do these steps:

1) Make sure you route the bundle correctly.

2) Connect the four clamps.

3) Put the wire bundle in the protective cover.

4) Make sure you remove the protective covers from the electrical connectors and receptacles.

5) Connect the connector V156.

(b) For the left interlock solenoid, do these steps:

1) Make sure you route the bundle correctly.

HAP 001-013, 015-026 POST SL 737-76-021

a) It is recommended to route the bundle through the left aft lightening hole to prevent interference with the left reverse thrust lever assembly.

NOTE: The bundle for the right interlock solenoid routes through the right aft lightening hole.

HAP ALL

2) Connect the three clamps.

3) Make sure you remove the protective covers from the electrical connectors and receptacles.

4) Connect the connector V155.

5) Put the wire bundle in the protective cover.

SUBTASK 76-11-06-820-001-F00

(4) Do these steps to adjust the latch assembly:

(a) Do these steps to set the distance between the roller and the brake assembly

1) Loosen the top jamnut [23].

2) Loosen the bottom jamnut [25].

3) Turn the spinning rod [24] to set the limits

a) Set the distance between the roller and the brake assembly at 0.0682 ±0.0300 in. (1.7323 ±0.7620 mm).

4) Make sure the spinning rod does not turn when you tighten the top jamnut [23] and the bottom jamnut [25].

SUBTASK 76-11-06-420-004-F00

(5) Do these steps to attach the forward autothrottle assembly to the floor frame (Figure 401):

(a) Move the autothrottle assembly up into its location:

1) Install the right bolt [11] and washer [12].

2) Install the left bolt [13] and washer [14].

(b) Remove all of the wood blocks.

SUBTASK 76-11-06-420-005-F00

(6) Do these steps to tighten the aft autothrottle assembly to the floor frame:

(a) Tighten the right bolt [9].

(b) Tighten the left bolt [10].

SUBTASK 76-11-06-020-008-F00

(7) Do these steps to connect the aft two cable guards to the nose wheel well housing:

(a) Install the four bolts [8].

(b) Install the four nuts [6] and washers [7].

SUBTASK 76-11-06-420-007-F00

(8) Attach the flap control cables.

(a) To connect the WFA and WFB cables, do this task: Control Cables Installation, TASK 20-10-91-400-801.

SUBTASK 76-11-06-420-006-F00

(9) Do these steps to connect the two thrust lever connecting rods to the autothrottle clutch pack:

(a) Set the applicable connecting rod to the autothrottle clutch pack.

1) Make sure you put the head of the bolt on the inboard side of the applicable clutch pack.

2) Install the nut [3], washers [2], and bolt [1].

3) Install a new cotter pin [4].

G. Put the Airplane Back to its Usual Condition

SUBTASK 76-11-06-710-003-F00

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

SUBTASK 76-11-06-710-004-F00

(2) Do this task: T/R LEVER INTLK (Interlock) TEST, TASK 73-21-00-700-805-F00.

SUBTASK 76-11-06-710-005-F00

(3) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-F00.

SUBTASK 76-11-06-010-005-F00

(4) Close this access panel:

Number	Name/Location
114AW	Forward Nose Wheel Well Panel

SUBTASK 76-11-06-010-006-F00

(5) Install the two access panels at the top of the wheel well.

SUBTASK 76-11-06-410-004-F00

(6) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 76-11-06-440-004-F00

(7) Remove the DO-NOT-OPERATE tag from the ENGINE START switches.

SUBTASK 76-11-06-440-003-F00

(8) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-803-F00.

SUBTASK 76-11-06-440-005-F00

(9) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK

AUTOTHROTTLE SWITCHPACK ASSEMBLY AND SWITCHES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the autothrottle switchpack assembly.

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES

(2) A removal of a switch from the autothrottle switchpack assembly.

(3) A installation of a switch into the autothrottle switchpack assembly.

HAP ALL

(4) A installation of the autothrottle switchpack assembly.

TASK 76-11-07-020-802-F00

2. Autothrottle Switchpack Assembly Removal

(Figure 401)

A. General

(1) This procedure gives the instructions to remove an autothrottle switchpack assembly.

(2) The autothrottle switchpack assembly for the left engine, M1766 and autothrottle switchpack assembly for the right engine, M1767 (referred to as the left and right switchpacks) are inside the forward access door.

(3) You must get access to the switchpack through the upper nose wheel well panels.

(4) There are nine switches installed in each switchpack.

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Prepare for the Removal

SUBTASK 76-11-07-860-015-F00

(1) Do these steps:

WARNING: MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER OR THE OPERATION OF THE SWITCH S8 CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(WARNING PRECEDES)

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

(b) For Engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL

(c) For Engine 2, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

SUBTASK 76-11-07-860-016-F00

(2) Attach the DO-NOT-OPERATE tags to the thrust levers.

SUBTASK 76-11-07-010-006-F00

(3) To gain access to the forward parts of the left or right switchpack, do this step:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 76-11-07-010-007-F00

(4) Remove the applicable left or right nose wheel well panel.

E. Switchpack Removal

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES

SUBTASK 76-11-07-020-003-F00

(1) Do these steps to remove a switchpack:

(a) For the left switchpack [9], disconnect the electrical connectors, D11128P and D11130P.

(b) For the right switchpack [9], disconnect the electrical connectors, D11132P and D11134P.

(c) Remove the bolt [4], washer [7], and nut [8].

(d) Move the rod [5] from the crank [6].

(e) Remove the two bolts [2], washers [14], and nuts [13].

(f) Slide the switchpack [9] off the collar [1].

(g) Remove the switchpack assembly [9] from the autothrottle assembly.

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES

SUBTASK 76-11-07-020-006-F00

(2) Do these steps to remove a switchpack:

(a) For the left switchpack [9], disconnect the electrical connectors, D11128P and D11130P.

(b) For the right switchpack [9], disconnect the electrical connectors, D11132P and D11134P.

(c) Remove the bolt [4], washer [7], and nut [8].

(d) Move the rod [5] from the crank [6].

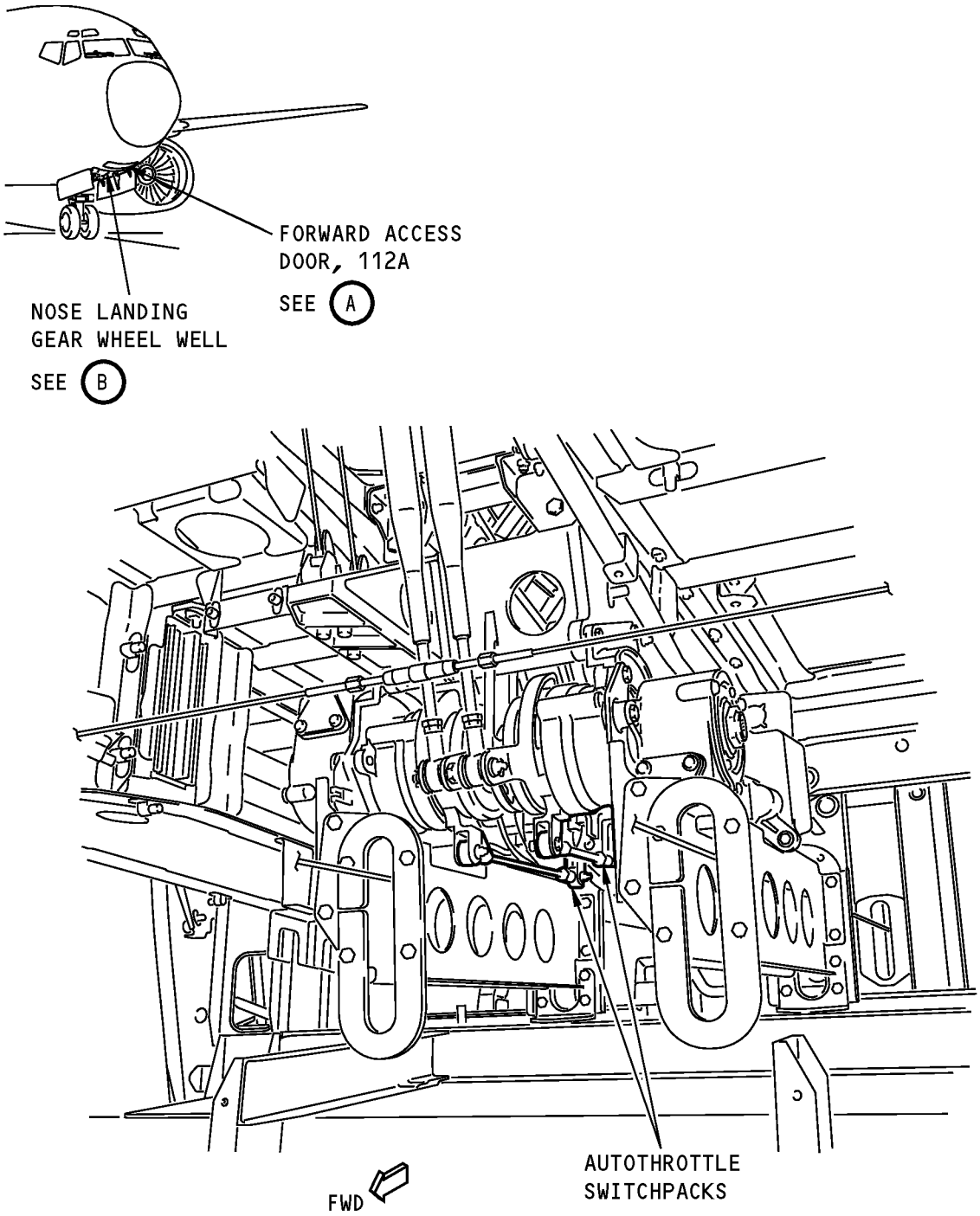
(e) Remove the two bolts [2], washers [14], and nuts [13].

(f) Slide the switchpack [9] off the bushing [1] and remove the switchpack [9].

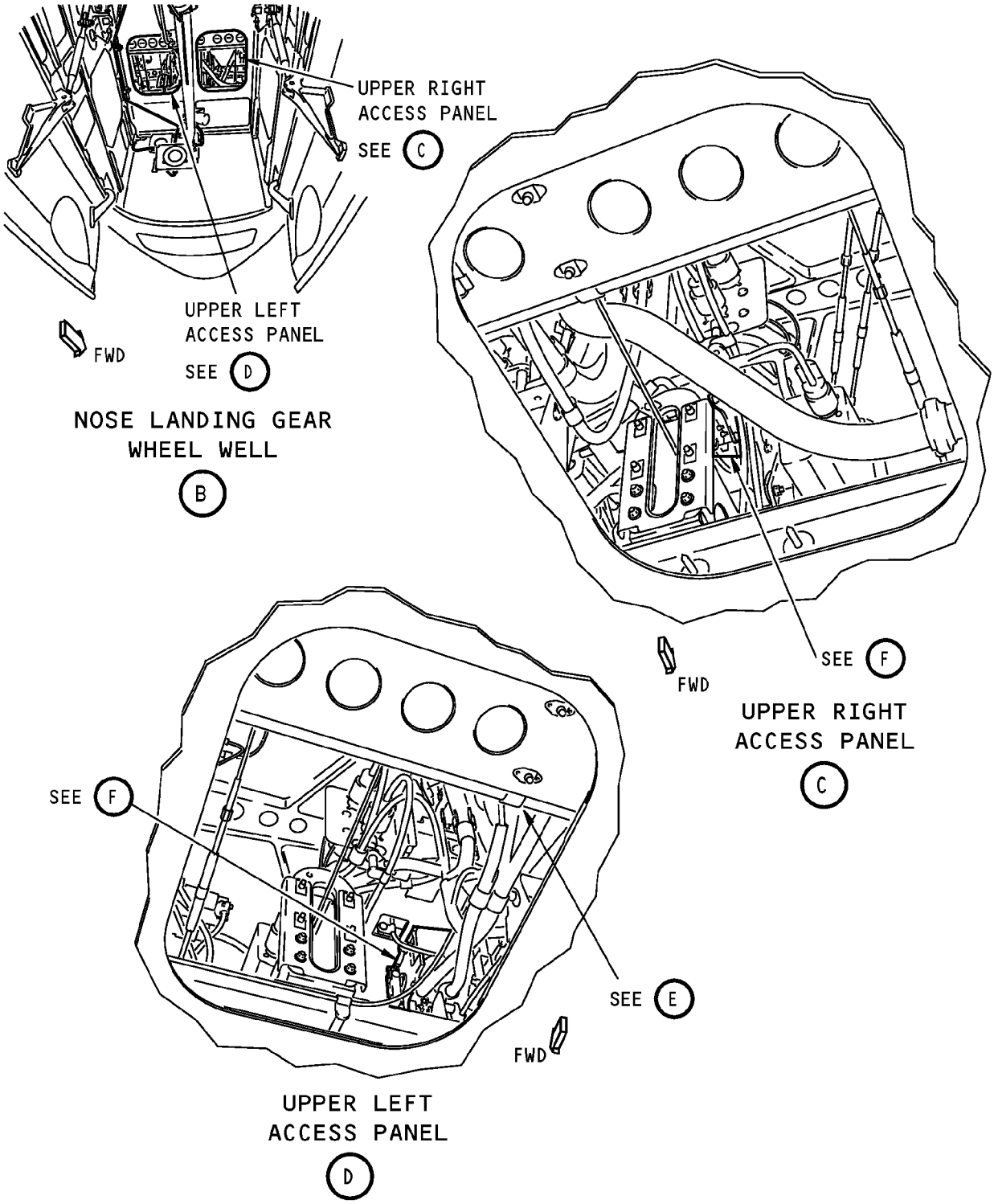
NOTE: It is not necessary to remove the bushing in order to remove the switchpack.

HAP ALL

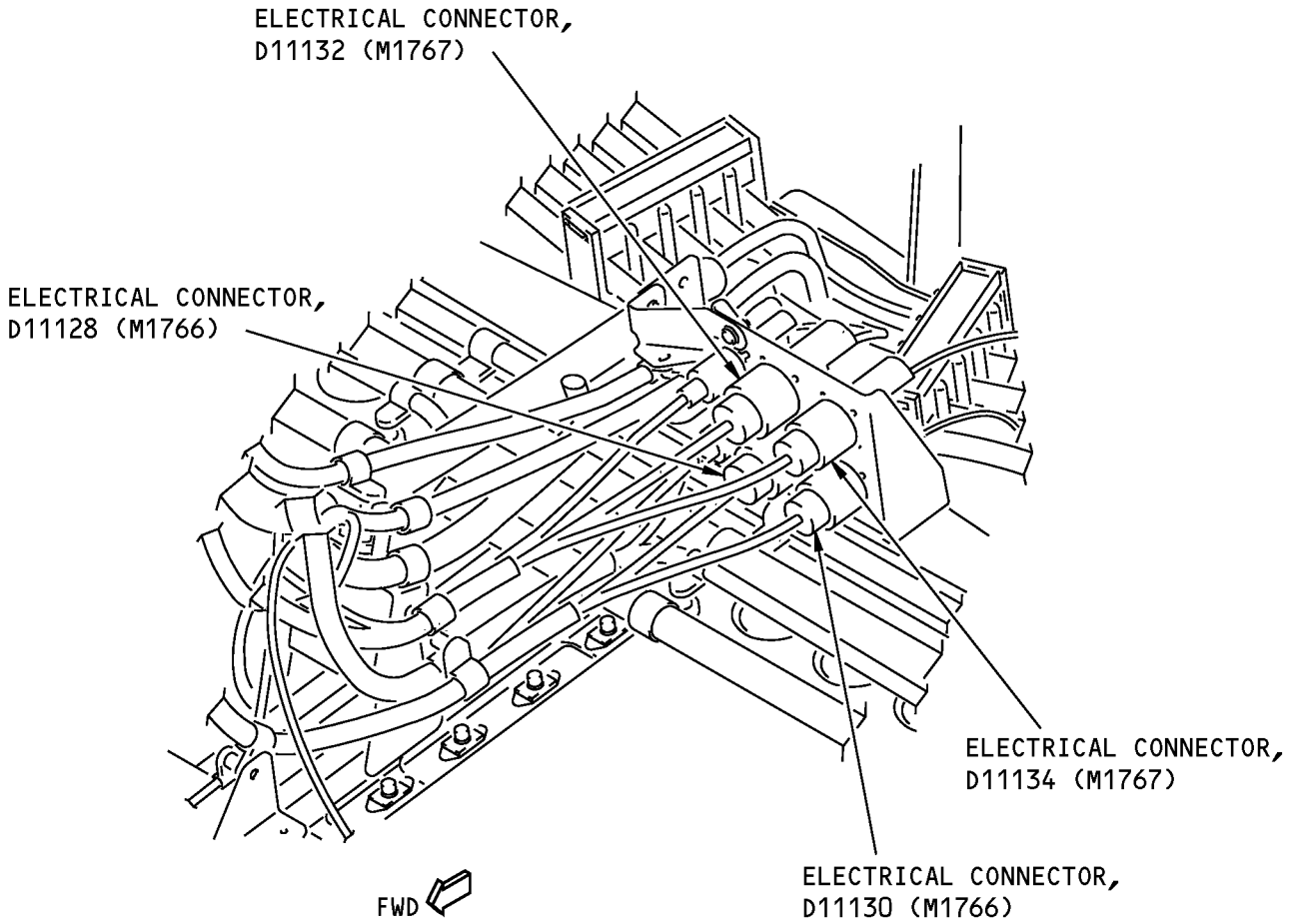
END OF TASK



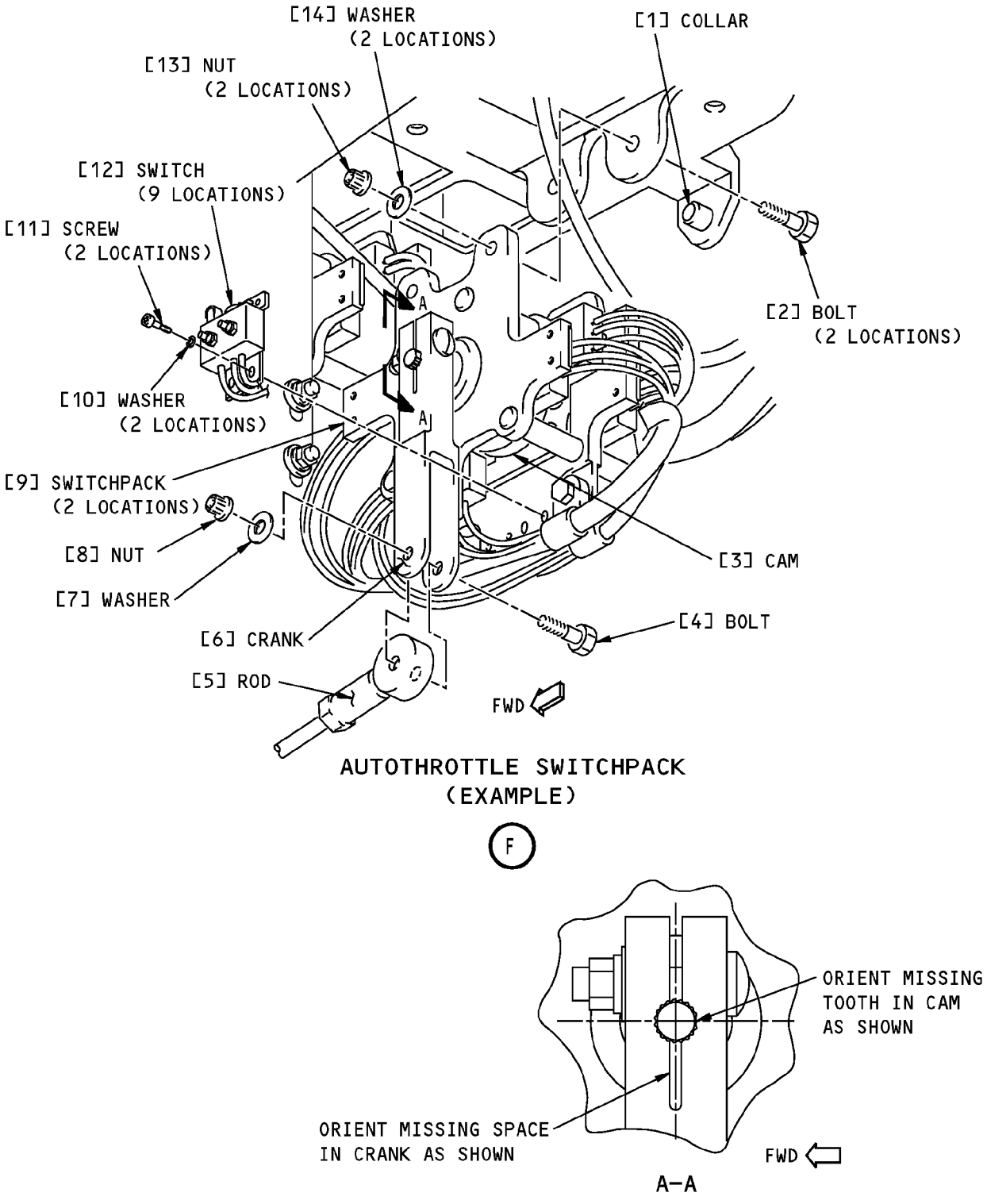
Autothrottle Switchpack Installation
Figure 401 (Sheet 1 of 5)/76-11-07-990-801-F00



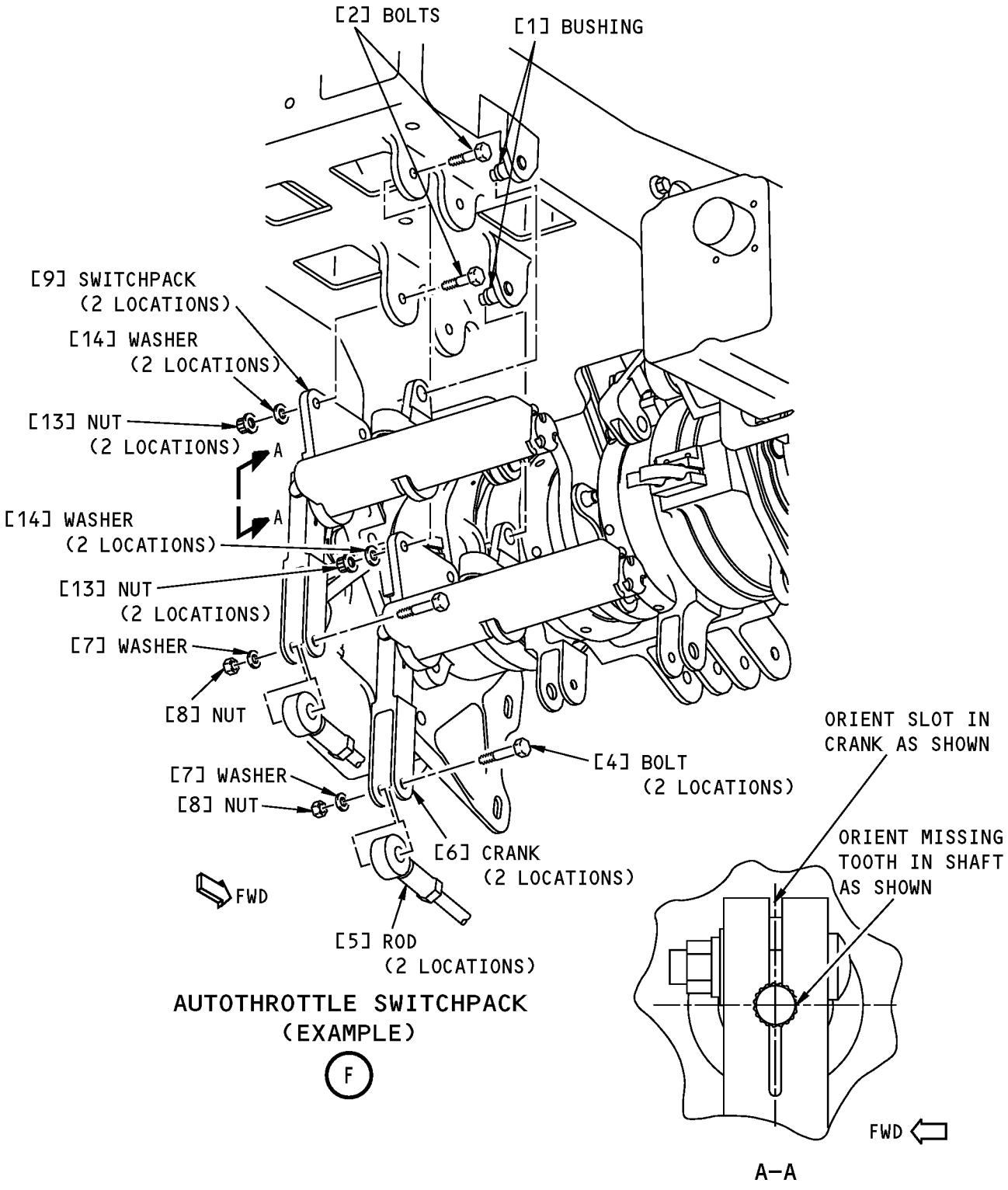
Autothrottle Switchpack Installation
Figure 401 (Sheet 2 of 5)/76-11-07-990-801-F00



Autothrottle Switchpack Installation
Figure 401 (Sheet 3 of 5)/76-11-07-990-801-F00



Autothrottle Switchpack Installation
Figure 401 (Sheet 4 of 5)/76-11-07-990-801-F00



Autothrottle Switchpack Installation
Figure 401 (Sheet 5 of 5)/76-11-07-990-801-F00

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES

TASK 76-11-07-020-801-F00

3. Switch Removal

(Figure 401)

A. General

(1) This procedure gives the instructions to remove a switch from the autothrottle switch pack.

(2) There are nine switches installed in each switchpack.

(3) There are six switches that can be removed with the autothrottle switchpack assembly installed.

(4) For switches S3, S4 and S7 (if the switchpack is still installed), you must remove the applicable switchpack.

(5) This is a list of the switch number, subject and the System Schematic Manual (SSM) (Table 401).

Table 401/76-11-07-993-804-F00

SWITCH	SUBJECT	SSM
	ENGINE 1 SWITCHPACK	
S1	Auto Ground Speedbrake Control	27-62-11
S1	Landing Gear Warning	32-61-21
S2	Autobrake System	32-42-11
S3	Autobrake System	32-42-11
S4	ENG 1 T/R Synchronous Shaft Locks	78-32-51
S5	ENG 1 Thrust Reverser Control	78-34-11
S6	ENG 1 Thrust Reverser Control	78-34-11
S7	Wing Thermal Anti-Ice System	30-11-11
S8	Aural Warning - Takeoff Warning	31-53-11
S8	Weather Radar	34-41-11
S9	Landing Gear Warning	32-61-21
	ENGINE 2 SWITCHPACK	
S1	Auto Ground Speedbrake Control	27-62-11
S1	Landing Gear Warning	32-61-21
S2	Autobrake System	32-42-11
S3	Autobrake System	32-42-11
S4	ENG 2 T/R Synchronous Shaft Locks	78-32-61
S5	ENG 2 Thrust Reverser Control	78-34-21
S6	ENG 2 Thrust Reverser Control	78-34-21
S7	Wing Thermal Anti-Ice System	30-11-11
S8	Aural Warning - Takeoff Warning	31-53-11
S8	Weather Radar	34-41-11
S9	Landing Gear Warning	32-62-21

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 76-11-07-020-005-F00

(1) For switches S3, S4 and S7 (if the applicable switchpack is still installed), do this task: Autothrottle Switchpack Assembly Removal, TASK 76-11-07-020-802-F00.

SUBTASK 76-11-07-860-021-F00

(2) If you will not remove the applicable switchpack to access the remaining switches, do these steps:

WARNING: MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER OR THE OPERATION OF THE SWITCH S8 CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

(b) For Engine 1, do this step;

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL

(c) For Engine 2, do this step;

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

(d) Attach DO-NOT-OPERATE tags to the thrust levers.

(e) Remove the applicable left or right nose wheel well panel.

(f) Do these steps to remove the connectors for the applicable switch in its switchpack:

1) For the left switchpack [9], disconnect the electrical connectors, D11128P and D11130P.

2) For the right switchpack [9], disconnect the electrical connectors, D11132P and D11134P.

D. Switch Removal

SUBTASK 76-11-07-020-002-F00

(1) Do these steps to remove a switch [12] from the switchpack [9]:

(a) Remove the two screws [11] and washers [10].

(b) Remove the applicable switch [12].

(c) Remove the three switch wires from its associated connector as shown below (Table 402):

Table 402/76-11-07-993-805-F00

Switchpack	Switch	Connector	Pins
Left	S1	D11128P	1, 2, 3
Left	S2	D11130P	1, 2, 3
Left	S3	D11130P	4, 5, 6
Left	S4	D11128P	14, 7, 8
Left	S5	D11130P	7, 8, 9
Left	S6	D11130P	13, 14, 15
Left	S7	D11128P	10, 11, 12
Left	S8	D11128P	16, 17, 18
Left	S9	D11128P	22, 23, 24
Right	S1	D11132P	1, 2, 3
Right	S2	D11134P	1, 2, 3
Right	S3	D1134P	4, 5, 6

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES (Continued)

(Continued)

Switchpack	Switch	Connector	Pins
Right	S4	D11132P	14, 7, 8
Right	S5	D11134P	7, 8, 9
Right	S6	D11134P	13, 14, 15
Right	S7	D11132P	10, 11, 12
Right	S8	D11132P	16, 17, 18
Right	S9	D11132P	22, 23, 24

END OF TASK

TASK 76-11-07-400-801-F00

4. Switch Installation

(Figure 401)

A. References

Reference	Title
76-11-07-820-801-F00	Switch Check and Adjustment (P/B 501)

B. Consumable Materials

Reference	Description	Specification
G01148	Sleeve - Insulation, Electrical, Heat Shrinkable - RT-876	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	Switch	30-11-51-01-035	HAP ALL
		32-43-51-01-040	HAP ALL
		32-61-11-01-035	HAP ALL
		78-34-04-01-035	HAP ALL
		78-34-05-02-037	HAP ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Switch Installation

SUBTASK 76-11-07-420-001-F00

(1) Do these steps to install a switch [12] on the switchpack [9]:

(a) Install a contact on each wire.

(b) Put a 1 in. (25.4 mm) long RT-876 sleeve, G01148 on each wire set from the switch housing.

(c) Insert the three wires into the associated connector pins as shown below (Table 403):

NOTE: Each switch circuit (NO, C, or NC) is marked on each wire lead.

Table 403/76-11-07-993-806-F00

Switchpack	Switch	Connector	Pin (Lead ID)
Left	S1	D11128P	1 (NO), 2 (C), 3 (NC)
Left	S2	D11130P	1 (NO), 2 (C), 3 (NC)
Left	S3	D11130P	4 (NO), 5 (C), 6 (NC)
Left	S4	D11128P	14 (NO), 7 (C), 8 (NC)
Left	S5	D11130P	7 (NO), 8 (C), 9 (NC)
Left	S6	D11130P	13 (NO), 14 (C), 15 (NC)
Left	S7	D11128P	10 (NO), 11 (C), 12 (NC)
Left	S8	D11128P	16 (NO), 17 (C), 18 (NC)
Left	S9	D11128P	22 (NO), 23 (C), 24 (NC)
Right	S1	D11132P	1 (NO), 2 (C), 3 (NC)
Right	S2	D11134P	1 (NO), 2 (C), 3 (NC)
Right	S3	D11134P	4 (NO), 5 (C), 6 (NC)
Right	S4	D11132P	14 (NO), 7 (C), 8 (NC)
Right	S5	D11134P	7 (NO), 8 (C), 9 (NC)
Right	S6	D11134P	13 (NO), 14 (C), 15 (NC)
Right	S7	D11132P	10 (NO), 11 (C), 12 (NC)
Right	S8	D11132P	16 (NO), 17 (C), 18 (NC)
Right	S9	D11132P	22 (NO), 23 (C), 24 (NC)

(d) Loosely install the applicable switch [12] on the switchpack [9].

1) Install two screws [11] and two washers [10].

(e) Make sure the replaced wiring is held in the applicable wire bundle sheath.

SUBTASK 76-11-07-820-004-F00

(2) To adjust the switch, do these steps:

(a) Make sure that the applicable switch roller is set on the largest radius of the cam.

(b) Push the switch to the cam until switch actuation occurs.

(c) Move the switch 0.005 in. (0.127 mm) – 0.010 in. (0.254 mm) more on the cam and hold the position.

(d) Tighten the screws [11].

SUBTASK 76-11-07-420-004-F00

(3) If you did not remove the autothrottle switchpack assembly, do this task: Switch Check and Adjustment, TASK 76-11-07-820-801-F00.

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES (Continued)

SUBTASK 76-11-07-420-005-F00

(4) If you removed the autothrottle switchpack assembly, do this task: Autothrottle Switchpack Assembly Installation, TASK 76-11-07-400-802-F00.

HAP ALL

——————— END OF TASK ———————

TASK 76-11-07-400-802-F00

5. Autothrottle Switchpack Assembly Installation

(Figure 401)

A. References

Reference	Title
27-62-00-720-801	Engine Throttle Switch (S1) Functional Test (P/B 501)
30-11-00-710-801	Wing Anti-Icing - Operational Test (P/B 501)
31-51-00-741-804	Autothrottle Switchpack Test (P/B 501)
32-09-10-710-801	Proximity Switch Electronics Unit (PSEU) - Operational Test (P/B 501)
32-42-00-720-801	Antiskid/Autobrake Control Unit Functional Test (P/B 501)
34-43-00-710-803-002	Weather Radar (WXR) System - Operational Test (P/B 501)
76-11-07-820-801-F00	Switch Check and Adjustment (P/B 501)
78-31-00-700-801-F00	Thrust Reverser Normal Operation Test (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Switchpack assembly	22-31-51-01-200	HAP ALL
		22-31-51-01-205	HAP ALL

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Switchpack Installation

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES

SUBTASK 76-11-07-420-006-F00

(1) Do these steps to install the switchpack:

(a) Put the switchpack assembly [9] on the collar [1] of the autothrottle assembly.

(b) Make sure that the missing tooth in the switchpack cam is in the aft direction (See View A-A).

(c) Put the space of the crank [6] in the up position.

NOTE: The space in the crank must be 90 degrees to the missing tooth on the cam.

(d) Install the two bolts [2], washers [14], and nuts [13].

(e) Move the rod [5] into its position on the crank [6].

(f) Install the bolt [4], washer [7], and nut [8].

(g) Make sure the switchpack wire bundle is held in the applicable wire bundle sheath.

(h) To do the initial alignment of the switchpack, use the FMCS CDU in the flight compartment to show the TRA (thrust lever resolver angle) position values:

NOTE: To show the TRA position values on the FMCS CDU, do the applicable steps in the Switch Installation Test in this reference (TASK 76-11-07-820-801-F00).

1) Monitor the continuity of the S5 switch, pins 8 and 9, at the applicable electrical connector D11130P (left switchpack) or D11134P (right switchpack) as you slowly move the thrust lever in the reverse direction.

NOTE: There is approximately a 2-second delay between the movement of the reverse thrust lever and when the value shows on the FMCS CDU.

2) The S5 switch should change from CLOSE to OPEN at a TRA between 31.5 degrees and 32.0 degrees.

(i) If the switch operation is not in the specified range, do these steps:

1) loosen the two jamnuts and turn the rod [5] coupling to get the correct TRA position values.

NOTE: There is approximately a 2-second delay between the adjustment and when the value shows on the FMCS CDU.

2) Tighten the two jamnuts to 24 in-lb (2.7 N·m) — 30 in-lb (3.4 N·m).

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES

SUBTASK 76-11-07-420-007-F00

(2) Do these steps to install the switchpack:

(a) Put the switchpack [9] on the bushing [1] of the autothrottle assembly.

(b) Make sure that the missing tooth in the switchpack cam is in the aft direction (See View A-A).

(c) Put the slot of the crank [6] in the up position.

NOTE: The slot in the crank must be 90 degrees to the missing tooth on the shaft.

(d) Install the two bolts [2], washers [14], and nuts [13].

(e) Move the rod [5] into its position on the crank [6].

(f) Install the bolt [4], washer [7], and nut [8].

(g) Make sure the switchpack wire bundle is held in the applicable wire bundle sheath.

(h) To do the initial alignment of the switchpack, use the FMCS CDU in the flight compartment to show the TRA (thrust lever resolver angle) position values:

NOTE: To show the TRA position values on the FMCS CDU, do the applicable steps in the Switch Installation Test in this reference (TASK 76-11-07-820-801-F00).

1) Monitor the continuity of the S5 switch, pins 8 and 9, at the applicable electrical connector D11130P (left switchpack) or D11134P (right switchpack) as you slowly move the thrust lever in the reverse direction.

NOTE: There is approximately a 2-second delay between the movement of the reverse thrust lever and when the value shows on the FMCS CDU.

2) The S5 switch should change from CLOSE to OPEN at a TRA between 31.5 degrees and 32.0 degrees.

(i) If the switch operation is not in the specified range, do these steps:

1) Loosen the two jamnuts and turn the rod [5] coupling to get the correct TRA position values.

NOTE: There is approximately a 2-second delay between the adjustment and when the value shows on the FMCS CDU.

2) Tighten the two jamnuts to 24 in-lb (2.7 N·m) — 30 in-lb (3.4 N·m).

HAP ALL

SUBTASK 76-11-07-700-003-F00

(3) To check the applicable switch installation, do this task: Switch Check and Adjustment, TASK 76-11-07-820-801-F00.

SUBTASK 76-11-07-400-001-F00

(4) Make sure you install applicable switchpack connectors as follows:

(a) For the left switchpack [9], connect the electrical connectors, D11128P and D11130P.

(b) For the right switchpack [9], connect the electrical connectors, D11132P and D11134P.

SUBTASK 76-11-07-010-008-F00

(5) Install the applicable left or right nose wheel well panel.

SUBTASK 76-11-07-410-002-F00

(6) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 76-11-07-860-017-F00

(7) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 76-11-07-860-018-F00

(8) For Engine 1, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL

SUBTASK 76-11-07-860-019-F00

(9) For Engine 2, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

SUBTASK 76-11-07-860-020-F00

(10) Remove the DO-NOT-OPERATE tags to the thrust levers.

F. Put the Airplane Back to its Usual Condition

SUBTASK 76-11-07-710-014-F00

(1) If you replaced the complete autothrottle switchpack assembly, then do all of the tests that are listed below.

NOTE: If you re-install the original switchpack assembly after switch(es) replacement, do the listed test for the replaced switch(es).

SUBTASK 76-11-07-710-015-F00

(2) If you replaced the S1 switch, do these task: Engine Throttle Switch (S1) Functional Test, TASK 27-62-00-720-801 and Proximity Switch Electronics Unit (PSEU) - Operational Test, TASK 32-09-10-710-801.

SUBTASK 76-11-07-710-016-F00

(3) If you replaced the S2 or S3 switch, do this task: Antiskid/Autobrake Control Unit Functional Test, TASK 32-42-00-720-801.

SUBTASK 76-11-07-710-017-F00

(4) If you replaced the S4, S5 or S6 switch, do this task: Thrust Reverser Normal Operation Test, TASK 78-31-00-700-801-F00.

SUBTASK 76-11-07-710-018-F00

(5) If you replaced the S7 switch, do this task: Wing Anti-Icing - Operational Test, TASK 30-11-00-710-801.

SUBTASK 76-11-07-710-019-F00

(6) If you replaced the S8 switch, do these tasks: Autothrottle Switchpack Test, TASK 31-51-00-741-804 and Weather Radar (WXR) System - Operational Test, TASK 34-43-00-710-803-002.

SUBTASK 76-11-07-710-020-F00

(7) If you replaced the S9 switch, do this task: Proximity Switch Electronics Unit (PSEU) - Operational Test, TASK 32-09-10-710-801.

——————— END OF TASK ———————

AUTOTHROTTLE SWITCHPACK ASSEMBLY AND SWITCHES - ADJUSTMENT/TEST

1. General

A. This procedure has one task:

(1) A check and adjustment of the switches for the autothrottle switchpack assembly.

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES

TASK 76-11-07-820-801-F00

2. Switch Check and Adjustment

(Figure 501)

A. General

(1) This task gives the instructions to do a check of the adjustment of a switch on the autothrottle switchpack assembly (referred to as the switchpack). The switchpack must be installed to do this check.

(2) There are nine switches in each switchpack.

(3) There are six switches that can be adjusted with the switchpack still installed.

(4) There are three switches that you must remove the switchpack for adjustment.

(5) The adjustment procedure is the same for each switch.

B. References

Reference	Title
76-11-07-020-802-F00	Autothrottle Switchpack Assembly Removal (P/B 401)
76-11-07-400-802-F00	Autothrottle Switchpack Assembly Installation (P/B 401)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Check and Adjustment

SUBTASK 76-11-07-420-003-F00

(1) If the switchpack is not installed, do this task: Autothrottle Switchpack Assembly Installation, TASK 76-11-07-400-802-F00.

Do not do the post-installation tests at this time.

SUBTASK 76-11-07-860-014-F00

(2) If not already done, do these steps to prepare the airplane:

WARNING: MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY OR DEATH TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

(b) For Engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL

(c) For Engine 2, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

(d) Make sure the thrust levers and reverse thrust levers are at their idle stops.

(e) To gain access to the forward parts of the left or right switchpack, do this step:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

(f) Remove the applicable left or right nose wheel well panel.

SUBTASK 76-11-07-040-001-F00

(3) If not already done, do these steps to disconnect the applicable switchpack connectors (Figure 501):

(a) For the left switchpack, disconnect the electrical connectors, D11128P and D11130P.

(b) For the right switchpack, disconnect the electrical connectors, D11132P and D11134P.

F. Switch Installation Test

SUBTASK 76-11-07-700-002-F00

(1) Do these steps to show engine test menu on the FMCS CDU:

(a) Make sure that the applicable engine thrust lever and reverse thrust lever is at the IDLE stop.

(b) Get access to the FMCS CDU in the flight compartment.

(c) Press the INIT REF key to show the PERF INIT screen on the FMCS CDU.

(d) Push these line select keys (LSK) on the FMCS CDU:

1) INDEX.

2) MAINT.

NOTE: This LSK causes the MAINT BITE INDEX screen to show.

3) ENGINE.

NOTE: This LSK causes the ENGINE/EXCEED BITE INDEX screen to show.

4) ENGINE X for the applicable resolver.

NOTE: This LSK causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X LSK automatically applies power to the EEC and causes the EEC to initialize. The CDU will show INITIALIZING EEC X, and EEC SORTING FAULT HISTORY DATA for a short time, just before the ENGINE X BITE TEST MAIN MENU shows.

SUBTASK 76-11-07-710-011-F00

(2) Do these steps to show the TRA values for the Engine X thrust lever:

(a) Push the INPUT MONITORING LSK.

NOTE: This will cause the CAUTION SCREEN OF INPUT MONITORING to show.

(b) Push the CONTROL LOOPS LSK.

NOTE: This will cause screen 1 of the CONTROL LOOPS to show.

(c) Push the NEXT PAGE key two times.

NOTE: This will cause screen 3 of the CONTROL LOOPS to show.

(d) Push the TRA line select key (LSK) on screen 3 of the CONTROL LOOPS.

NOTE: This causes the thrust lever resolver angle (TRA) for channels A and B, of Engine X, to show.

NOTE: The data for the channel that is in control will show first.

SUBTASK 76-11-07-710-012-F00

(3) Do these steps to do a check of the applicable switch in the left switchpack:

(a) Insert a rod below the left reverse thrust interlock solenoid latch.

1) Move the latch up and off of the autothrottle brake cam.

(b) Mechanically restrain the rod to hold the left interlock solenoid off the autothrottle brake cam.

NOTE: This will let the brake house turn and not be limited by the solenoid.

(c) Move the left thrust lever and reverse thrust lever until the TRA value that shows on the CDU is in the range shown in the table below (Table 501):

NOTE: The forward mechanical stop (full forward thrust) is at 84 +/-1 degrees TRA, the idle stop is at 36 +/-0.25 degrees TRA, and the aft mechanical stop (full reverse thrust) is at 6 +/-1 degrees TRA.

(d) Do a continuity check at the applicable switch connector.

Table 501/76-11-07-993-810-F00

SWITCH	CONNECTOR	PINS	TRA VALUE	CONDITION
S1	D11128P	1-2	8.00-42.00 46.00-82.00	Open Closed
		2-3	8.00-42.00 46.00-82.00	Closed Open
S2	D11130P	1-2	8.00-42.00 46.00-82.00	Open Closed
		2-3	8.00-42.00 46.00-82.00	Closed Open
S3	D11130P	4-5	8.00-42.00 46.00-82.00	Open Closed
		5-6	8.00-42.00 46.00-82.00	Closed Open
S4	D11128P	14-7	8.00-30.00 34.00-82.00	Closed Open
		7-8	8.00-30.00 34.00-82.00	Open Closed
S5	D11130P	7-8	8.00-30.00 34.00-82.00	Closed Open
		8-9	8.00-30.00 34.00-82.00	Open Closed

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES (Continued)

(Continued)

SWITCH	CONNECTOR	PINS	TRA VALUE	CONDITION
S6	D11130P	13-14	8.00-30.00 34.00-82.00	Closed Open
		14-15	8.00-30.00 34.00-82.00	Open Closed
S7	D11128P	10-11	8.00-58.00 62.00-82.00	Open Closed
		11-12	8.00-58.00 62.00-82.00	Closed Open
S8	D11128P	16-17	8.00-51.00 55.00-82.00	Open Closed
		17-18	8.00-51.00 55.00-82.00	Closed Open
S9	D11128P	22-23	8.00-62.00 66.00-82.00	Open Closed
		23-24	8.00-62.00 66.00-82.00	Closed Open

(e) Remove the restraint from the left interlock solenoid.

(f) If the switch operation is not in the specified limits, then do the switch adjustment that follows:

(g) If the switch is in adjustment, then do the section below to put the airplane back to its servicable condition.

SUBTASK 76-11-07-710-013-F00

(4) Do these steps to check the applicable switch in the right switchpack:

(a) Insert a rod under the right reverse thrust interlock soleniod latch.

1) Move the latch up off of the autothrottle brake cam.

(b) Mechanically restrain the rod to hold the right interlock solenoid off the autothrottle brake cam.

NOTE: This will let the brake house turn and not be limited by the solenoid.

(c) Move the right thrust lever and reverse thrust lever until the TRA value that shows on the CDU is in the range shown in the table below (Table 502):

NOTE: The forward mechanical stop (full forward thrust) is at 84 +/-1 degrees TRA, the idle stop is at 36 +/-0.25 degrees TRA, and the aft mechanical stop (full reverse thrust) is at 6 +/-1 degrees TRA.

(d) Do a continuity check at the applicable switch connector.

HAP ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES (Continued)

Table 502/76-11-07-993-811-F00

SWITCH	CONNECTOR	PINS	TRA VALUE	CONDITION
S1	D11132P	1-2	8.00-42.00 46.00-82.00	Open Closed
		2-3	8.00-42.00 46.00-82.00	Closed Open
S2	D11134P	1-2	8.00-42.00 46.00-82.00	Open Closed
		2-3	8.00-42.00 46.00-82.00	Closed Open
S3	D11134P	4-5	8.00-42.00 46.00-82.00	Open Closed
		5-6	8.00-42.00 46.00-82.00	Closed Open
S4	D11132P	14-7	8.00-30.00 34.00-82.00	Closed Open
		7-8	8.00-30.00 34.00-82.00	Open Closed
S5	D11134P	7-8	8.00-30.00 34.00-82.00	Closed Open
		8-9	8.00-30.00 34.00-82.00	Open Closed
S6	D11134P	13-14	8.00-30.00 34.00-82.00	Closed Open
		14-15	8.00-30.00 34.00-82.00	Open Closed
S7	D11132P	10-11	8.00-58.00 62.00-82.00	Open Closed
		11-12	8.00-58.00 62.00-82.00	Closed Open
S8	D11132P	16-17	8.00-51.00 55.00-82.00	Open Closed
		17-18	8.00-51.00 55.00-82.00	Closed Open
S9	D11132P	22-23	8.00-62.00 66.00-82.00	Open Closed
		23-24	8.00-62.00 66.00-82.00	Closed Open

(e) Remove the restraint from the right interlock solenoid.

(f) If the switch operation is not in the specified limits, then do the switch adjustment that follows:

(g) If the switch is in adjustment, then do the section below to put the airplane back to its servicable condition.

G. Switch Adjustment

SUBTASK 76-11-07-010-004-F00

(1) For switches S3, S4 and S7 (if the switchpack is still installed), do this task: Autothrottle Switchpack Assembly Removal, TASK 76-11-07-020-802-F00.

SUBTASK 76-11-07-820-003-F00

(2) Do these steps to adjust the switch:

(a) Make sure that the applicable switch roller is set on the largest radius of the cam.

(b) Loosen the screws that attach the switch.

(c) Adjust the switch to the cam as follows:

1) To make the switch actuation open or close sooner, move the switch toward the cam.

2) To make the switch actuation open or close later, move the switch away from the cam.

(d) When the switch is adjusted, tighten the screws.

(e) For switches S3, S4 and S7 (if the switchpack was removed), do this task: Autothrottle Switchpack Assembly Installation, TASK 76-11-07-400-802-F00.

(f) Move the applicable thrust lever or reverse thrust lever to make sure the switch actuation occurs.

(g) Do the above electrical check again for the applicable switch to make sure the adjustment is correct.

H. Put the Airplane Back to its Serviceable Condition

SUBTASK 76-11-07-040-002-F00

(1) If not already done, do these steps to connect the applicable switchpack connectors:

(a) For the left switchpack, connect the electrical connectors, D11128P and D11130P.

(b) For the right switchpack, connect the electrical connectors, D11132P and D11134P.

SUBTASK 76-11-07-010-005-F00

(2) If not already done, do these steps:

(a) Install the applicable left or right nose wheel well panel.

(b) Close this access panel:

Number	Name/Location
112A	Forward Access Door

(c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

(d) For Engine 1, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL

(e) For Engine 2, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

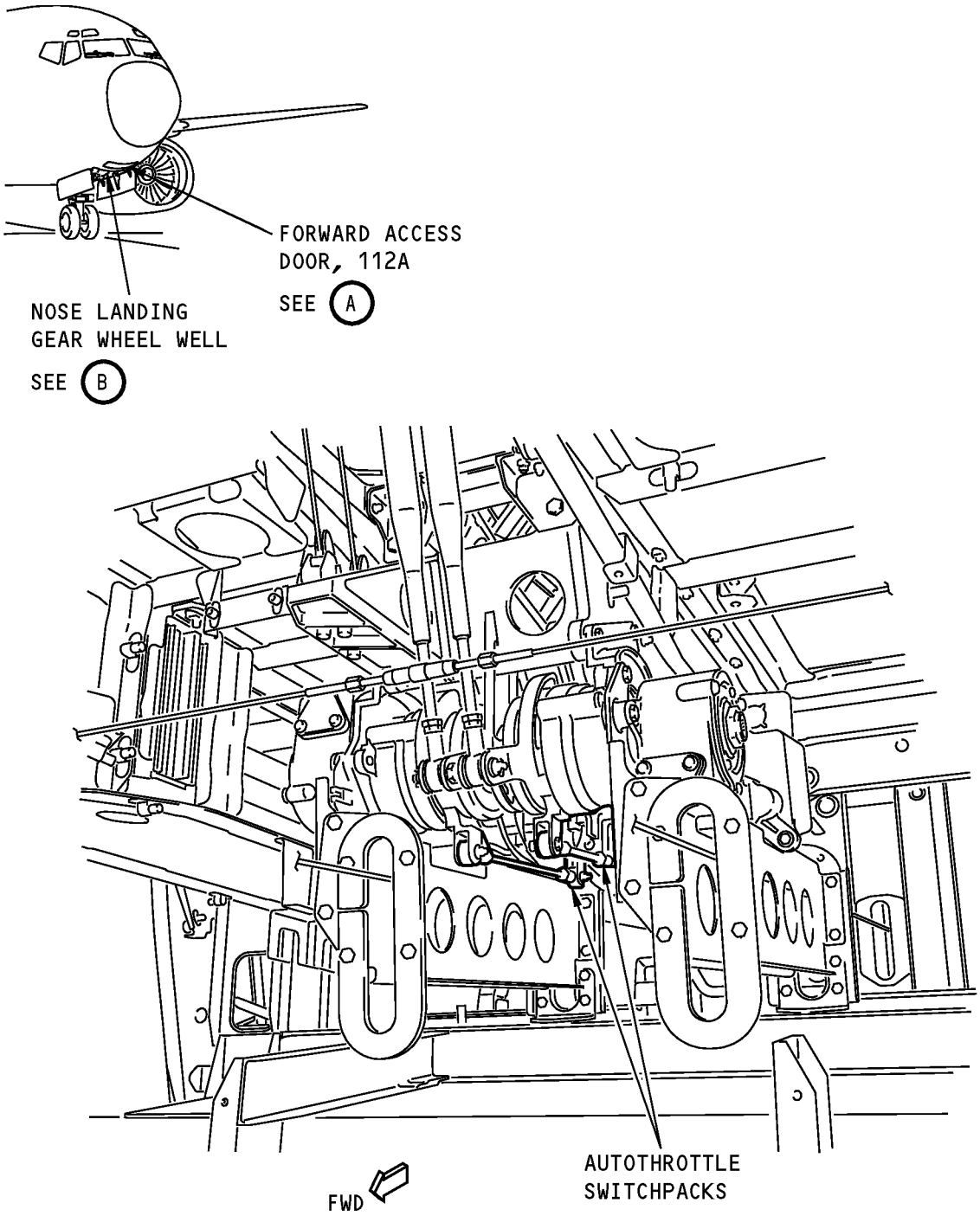
Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

(f) Do the applicable post-installation test in the autothrottle switchpack assembly installation task (Autothrottle Switchpack Assembly Installation, TASK 76-11-07-400-802-F00).

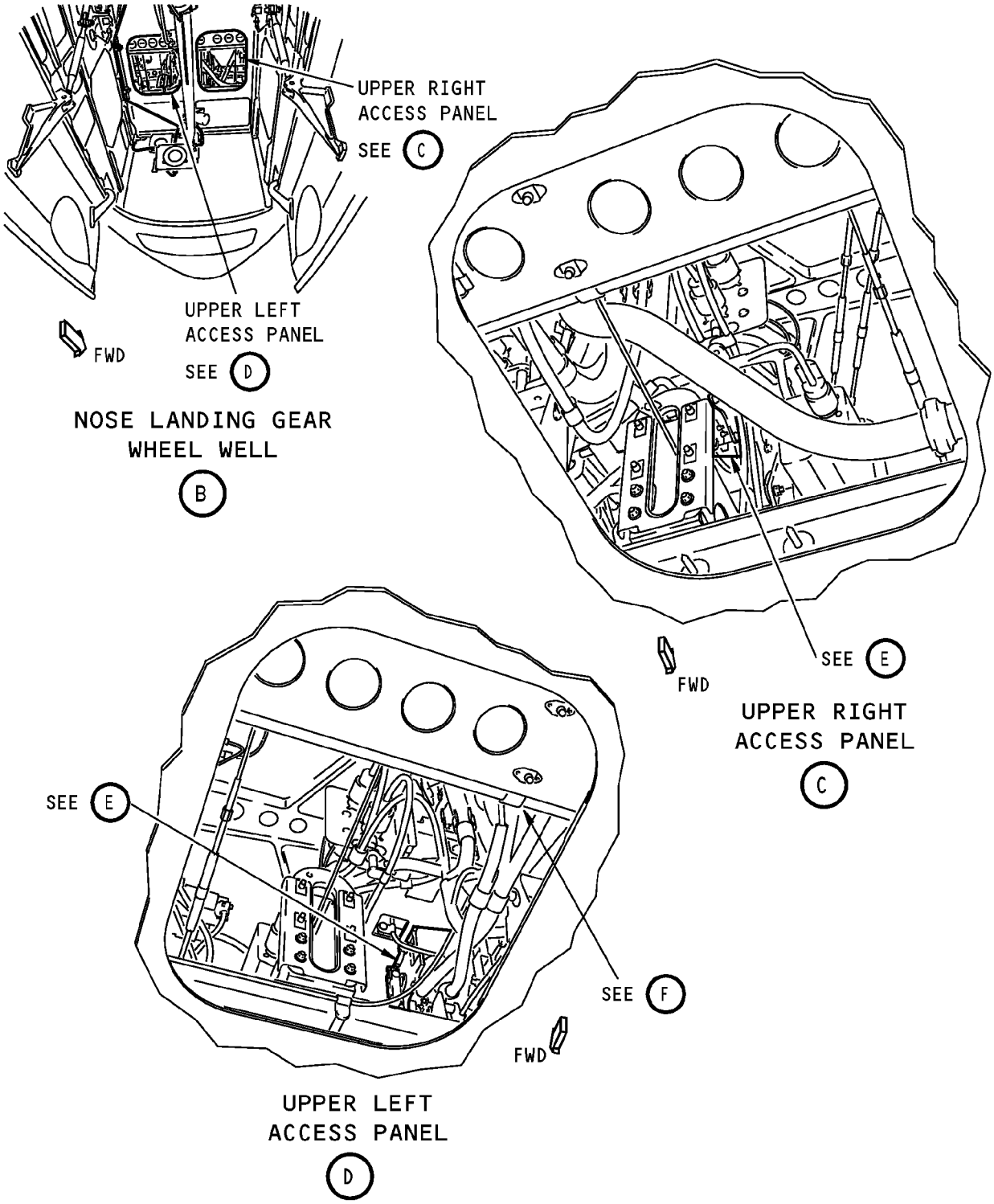
——————— END OF TASK ———————



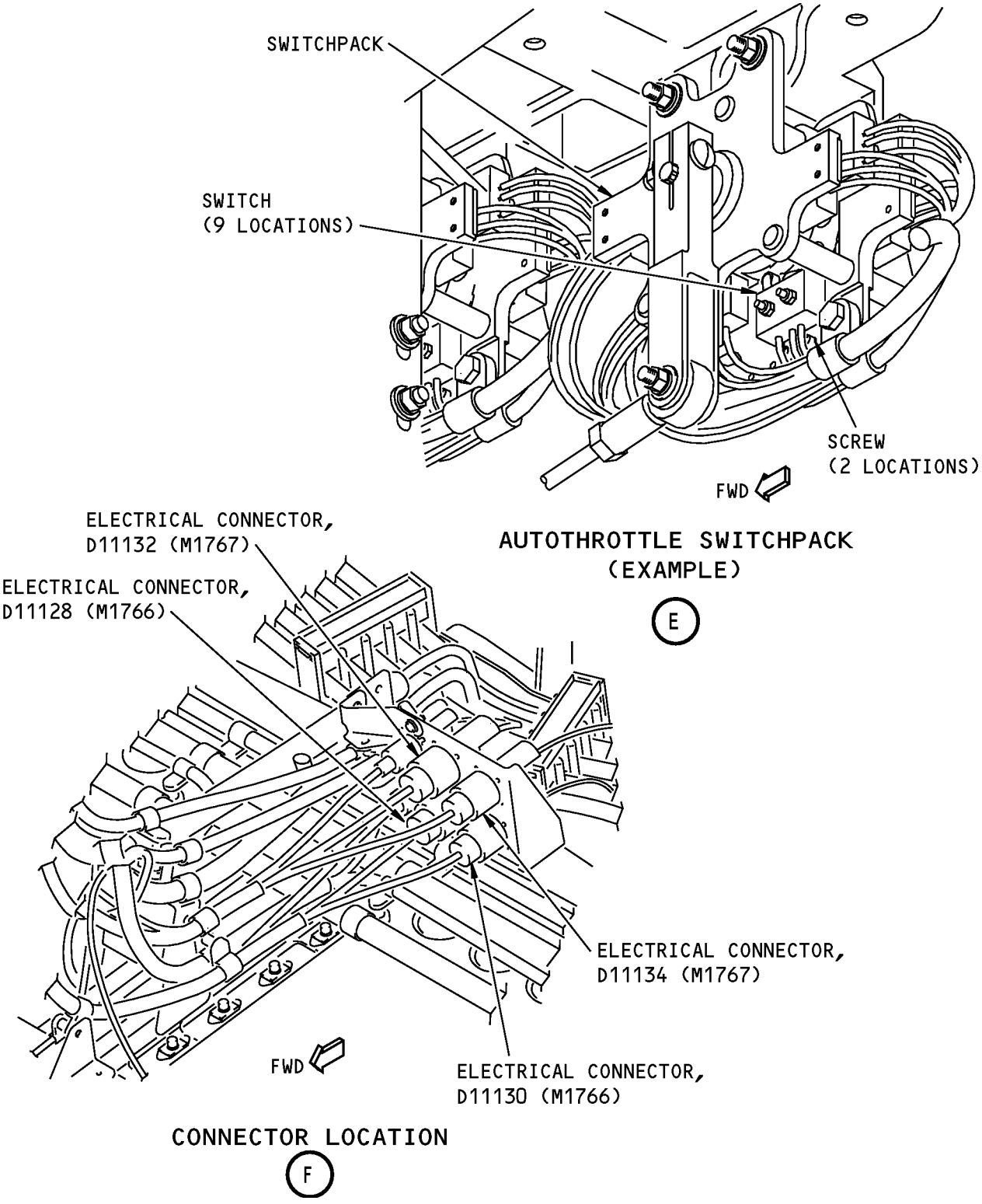
FORWARD ACCESS DOOR

A

Autothrottle Switchpack Adjustment/Test
Figure 501 (Sheet 1 of 3)/76-11-07-990-809-F00



Autothrottle Switchpack Adjustment/Test
Figure 501 (Sheet 2 of 3)/76-11-07-990-809-F00



Autothrottle Switchpack Adjustment/Test
Figure 501 (Sheet 3 of 3)/76-11-07-990-809-F00

ENGINE START BRAKE ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) The removal of the engine start brake assembly.

(2) The installation of the engine start brake assembly.

TASK 76-11-10-010-801-F00

2. Engine Start Brake Assembly Removal

A. General

(1) This task gives you instructions to remove the engine start brake assemblies from the aisle control stand.

(2) For this procedure the engine start brake assembly will be referred to as the start brake assembly.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's Seat Removal (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal of the Start Brake Assembly

SUBTASK 76-11-10-040-001-F00

(1) Make sure the left and right engine start switches are off and install a DO-NOT-OPERATE tag.

SUBTASK 76-11-10-040-002-F00

(2) For Engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-10-040-003-F00

(3) For Engine 2, do this step:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-10-040-004-F00

(4) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1
HAP 001-013, 015-026, 028-030			
E	3	C01141	AUTOTHROTTLE DC 2

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
HAP ALL			
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	5	C00540	FUEL SPAR VALVE IND

SUBTASK 76-11-10-010-001-F00

(5) Do this task: Captain's and First Officer's Seat Removal, TASK 25-11-01-000-801.

E. Start Brake Assembly Removal Procedure

SUBTASK 76-11-10-010-002-F00

(1) Do these tasks to get access to the start brake assembly in the control stand (Figure 401):

(a) Remove four screws [2] and the left upper side cover [1].

(b) Remove five screws [2] and the left lower side cover [5].

(c) Remove four screws [2] and the right upper side cover [3].

(d) Remove four screws [2] and the right lower side cover [4].

SUBTASK 76-11-10-020-001-F00

(2) For the left start brake assembly, do these steps to disconnect the electrical harness (Figure 402):

(a) Remove the electrical connector, D11286P [23].

(b) Remove the electrical connector, D11288P [22].

(c) Disconnect the three clamps [21].

SUBTASK 76-11-10-020-002-F00

(3) For the right start brake assembly, do these steps to disconnect the electrical harness (Figure 403):

(a) Remove the electrical connector, D11292P [42].

(b) Remove the electrical connector, D11290P [43].

(c) Disconnect the three clamps [41].

SUBTASK 76-11-10-020-003-F00

(4) Do these steps to disconnect the applicable start lever from the start brake assembly (Figure 404):

(a) Move the start lever to the IDLE position.

(b) Remove the nut [61], the washer [62], the washer [63], the washer [64], and the bolt [65].

SUBTASK 76-11-10-020-004-F00

(5) Do these steps to remove the applicable start brake assembly, (engine 1) [71] or (engine 2) [72]:

(a) Remove the bolt [73] and the washer [74] from the upper aft position.

(b) Remove the bolt [73] and the washer [74] from the lower aft position.

(c) Do these steps to remove the start brake assembly from the control stand:

NOTE: The start brake assembly can pivot from its usual position.

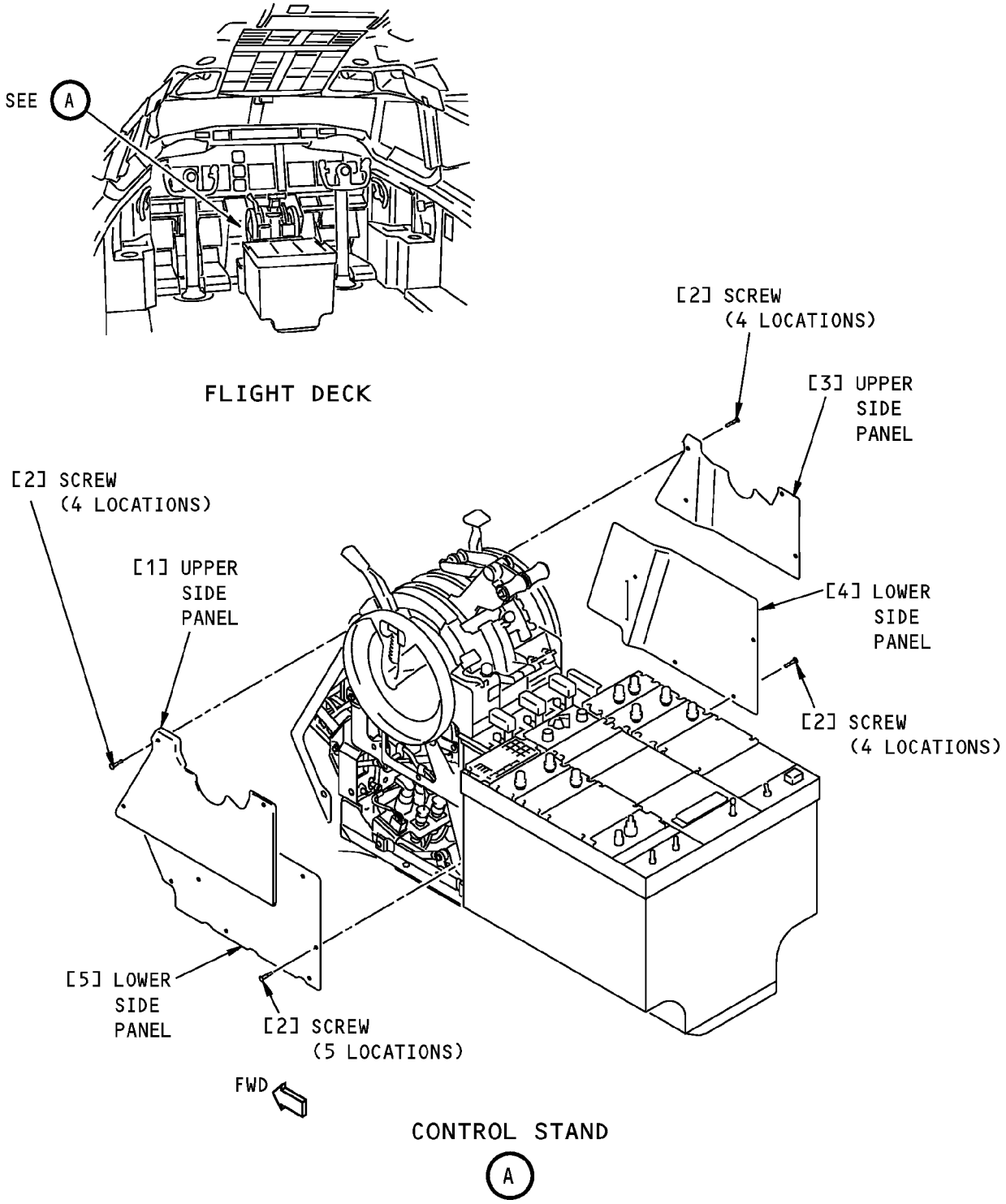
1) Remove the nut [66] and the washer [67] from the forward center position.

2) Hold the applicable start brake assembly [71] or [72] in its position.

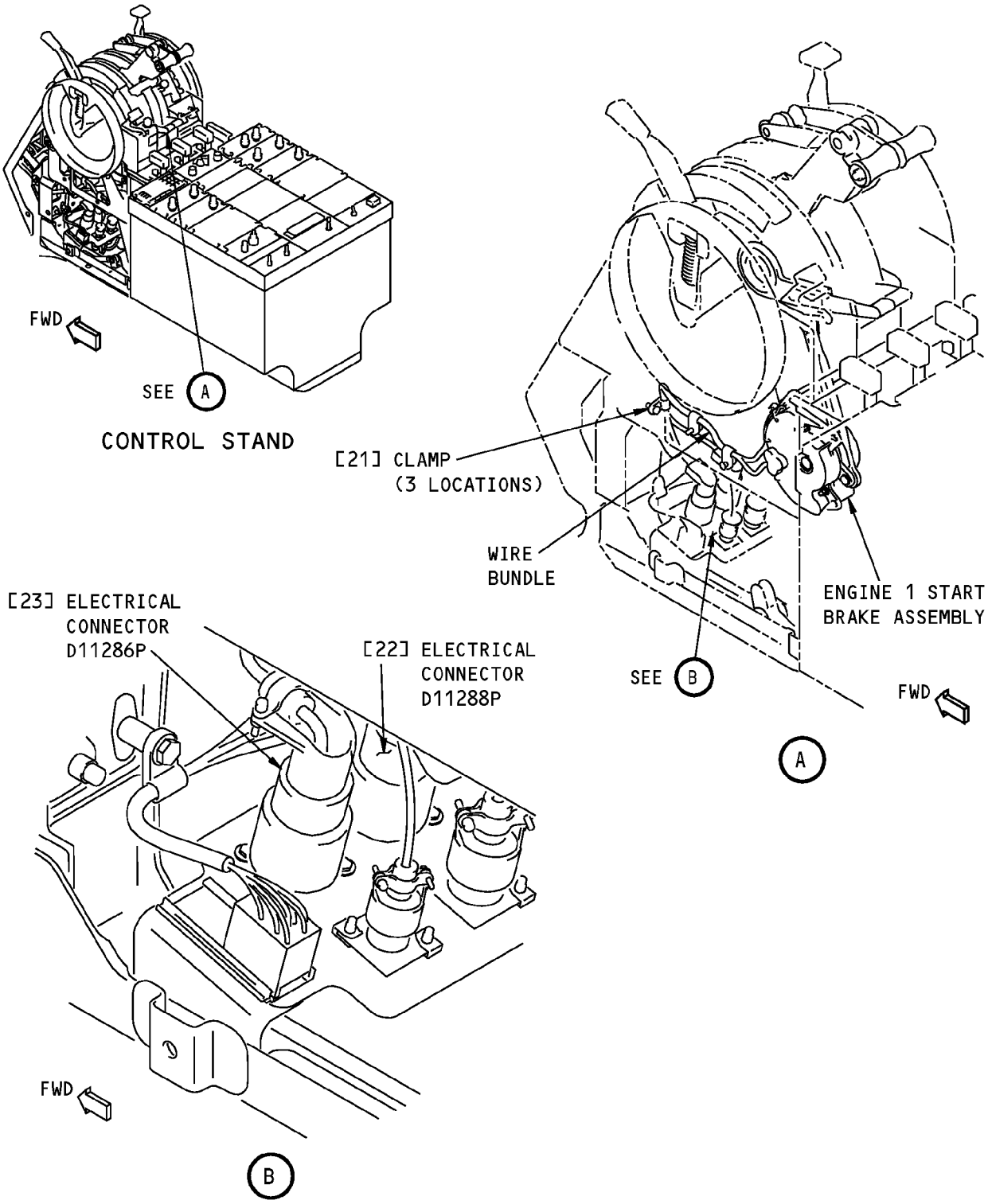
a) Remove the bolt [68], washer [69], and spacer [70].

3) Remove the applicable brake assembly [71] or brake assembly [72] down and out of the control stand.

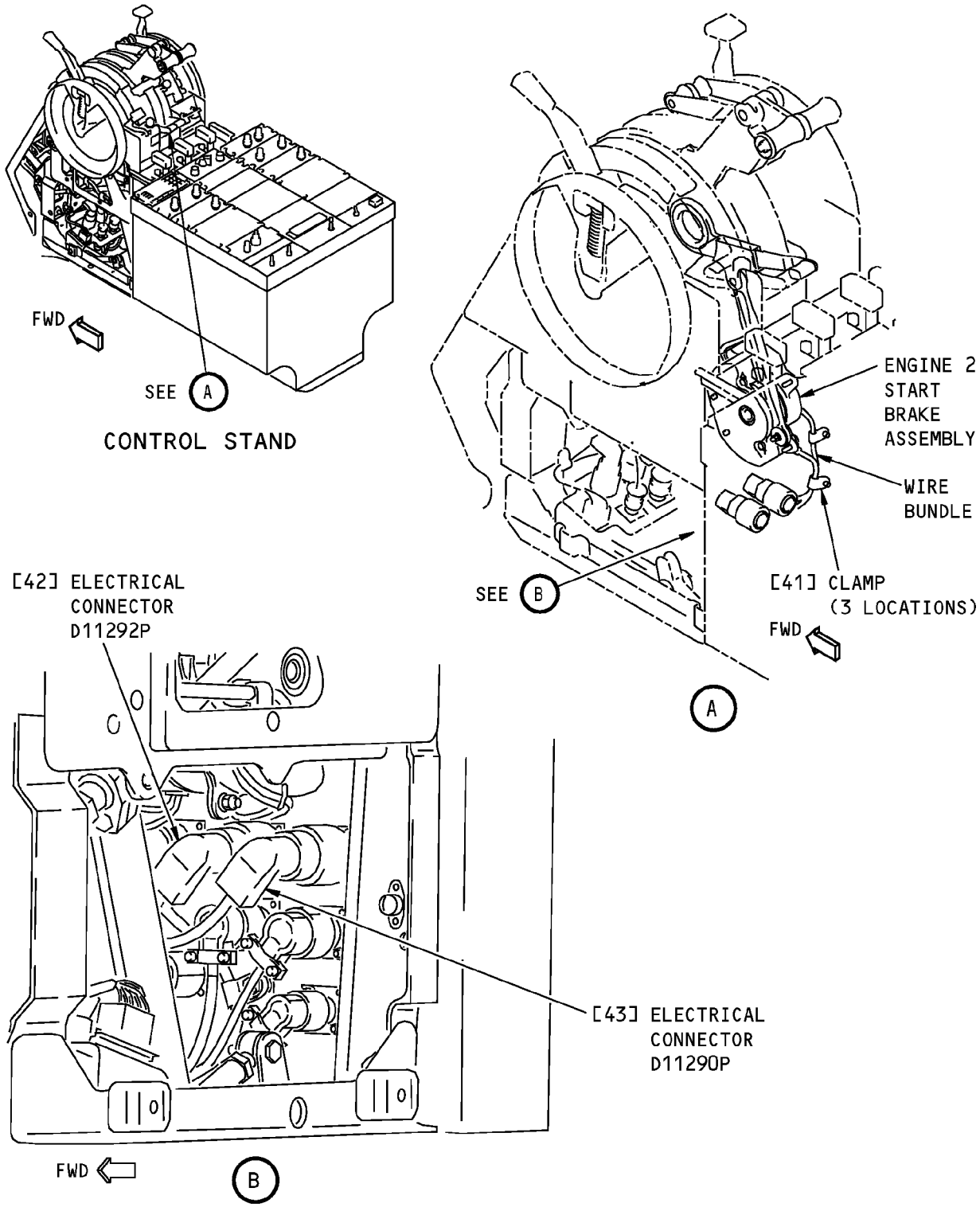
——————— END OF TASK ———————



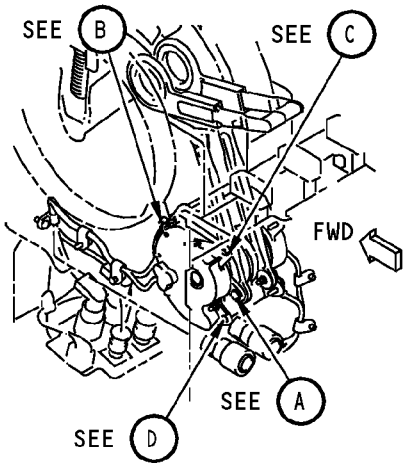
Control Stand Installation
Figure 401/76-11-10-990-801-F00



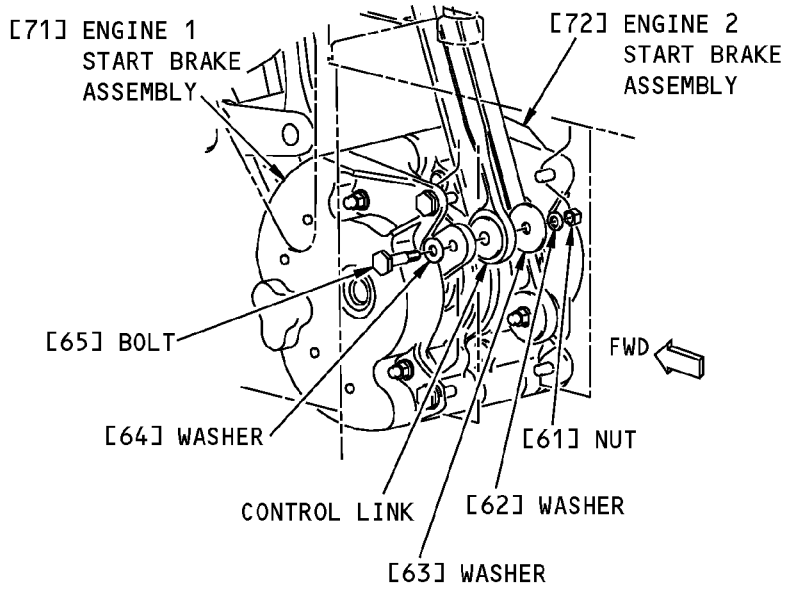
Engine 1 Start Brake Electrical Harness Installation
Figure 402/76-11-10-990-802-F00



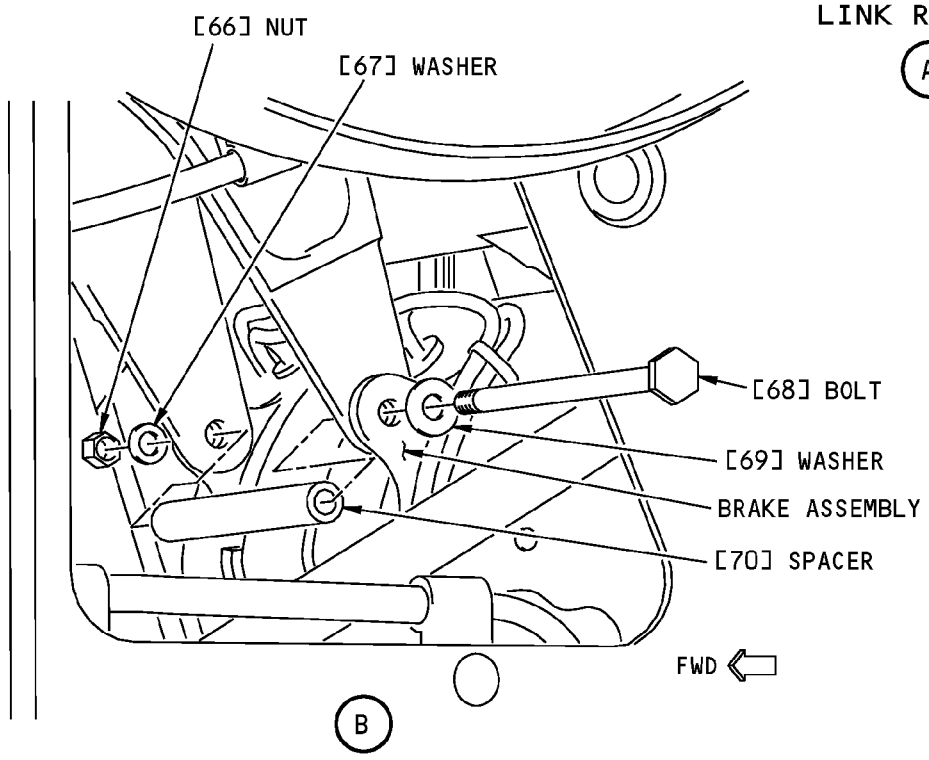
Engine 2 Start Lever Electrical Harness Installation
Figure 403/76-11-10-990-803-F00



CONTROL STAND

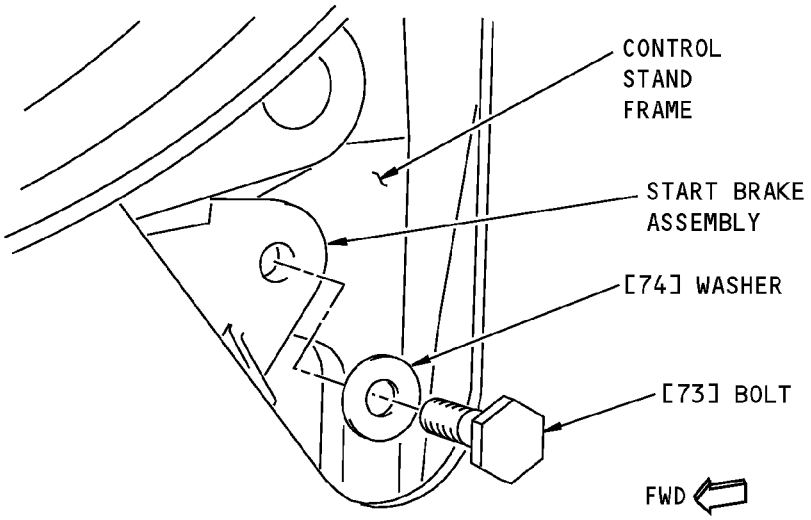


ENGINE START BRAKE ASSEMBLY
LINK REMOVAL



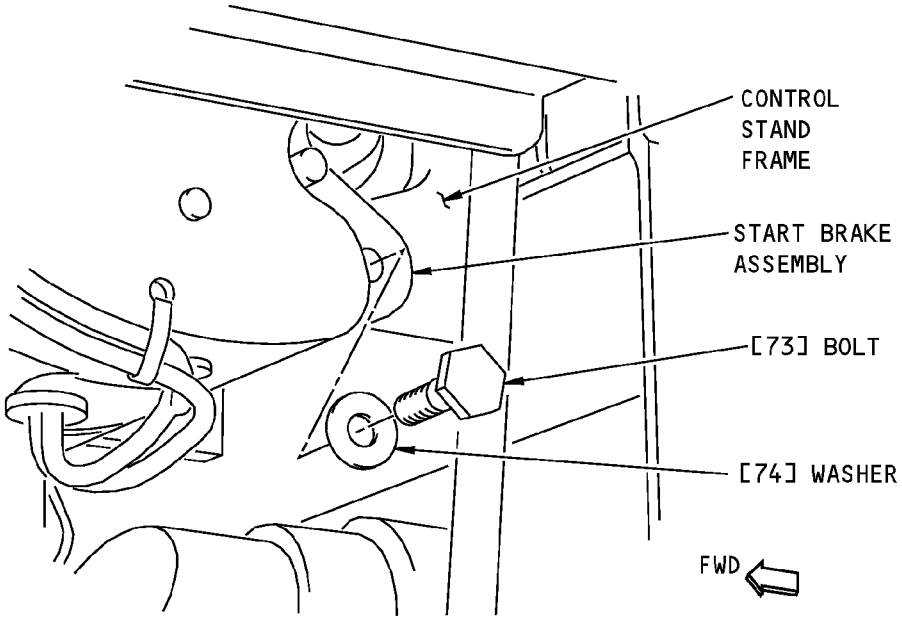
NOTE: ENGINE 1 IS SHOWN;
ENGINE 2 IS OPPOSITE.

Engine Start Brake Assembly Installation
Figure 404 (Sheet 1 of 2)/76-11-10-990-804-F00



START BRAKE ASSEMBLY MOUNT (UPPER)

C



START BRAKE ASSEMBLY MOUNT (LOWER)

D

NOTE: ENGINE 1 IS SHOWN;
ENGINE 2 IS OPPOSITE.

Engine Start Brake Assembly Installation
Figure 404 (Sheet 2 of 2)/76-11-10-990-804-F00

TASK 76-11-10-420-801-F00

3. Engine Start Brake Installation

A. General

(1) This task gives you instructions to install an engine start brake assembly (referred to as the start brake assembly) into the aisle control stand.

B. References

Reference	Title
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)
28-22-00-710-801	Engine Fuel Spar Valve - Electrical Control and Indication Test (P/B 501)
73-21-00-700-804-F00	EEC TEST (P/B 501)
73-21-00-700-809-F00	EEC Discretes Test (P/B 501)
74-00-00-750-801-F00	Audible Test of the Ignition System - EEC BITE Igniters Test (P/B 501)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-754	Scale - Spring, 0-150 Pounds, With Hook and Pad Adapter Kit (Part #: DG-200, Supplier: 92456, A/P Effectivity: 737-ALL) (Part #: DPPH-150, Supplier: 92456, A/P Effectivity: 737-ALL)
COM-1550	Meter - Bonding (Approved Explosion Proof & Intrinsically Safe) (Part #: C15292 (MODEL T477W), Supplier: 01014, A/P Effectivity: 737-ALL) (Part #: M1, Supplier: 3AD17, A/P Effectivity: 737-ALL) (Part #: M1B, Supplier: 3AD17, A/P Effectivity: 737-ALL)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
71	Brake assembly	76-11-10-02-005	HAP ALL
72	Brake assembly	76-11-10-02-010	HAP ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Installation Procedure

SUBTASK 76-11-10-020-005-F00

(1) Do these steps to install the applicable start brake assembly (engine 1) [71] or (engine 2) [72] (Figure 404):

(a) Put the applicable brake assembly [71] or brake assembly [72] to its position in the control stand.

1) Put the start brake assembly in its position for the installation of the forward pivot parts.

(b) Install the washer [69] and the bolt [68] only through the brake assembly and the first frame of the control stand.

(c) Put the spacer [70] in its position.

(d) Move the bolt and washer through the spacer, the second control stand frame, and brake assembly.

1) Install the nut [66] and washer [67].

(e) Pivot the speed brake up to do these steps:

1) Install the washer [74] and the bolt [73] for the upper start brake assembly mount.

2) Install the washer [74] and the bolt [73] for the lower start brake assembly mount.

SUBTASK 76-11-10-020-006-F00

(2) Do these steps to install the applicable start lever to the start brake assembly (Figure 404):

(a) Move the start lever to the IDLE position.

(b) Move the actuator arm of the start brake assembly to align with the control link.

(c) Install the bolt [65], the washer [64], the washer [63], the washer [62], and the nut [61].

SUBTASK 76-11-10-820-001-F00

(3) After you complete the installation of the applicable start brake assembly, do these checks:

(a) Move the start lever from the CUTOFF position to the IDLE position 2 or 3 times.

1) The lever must move freely and smoothly.

NOTE: The lever must not touch or catch on parts in the control stand.

(b) Measure the resistance in the movement of the start lever from the CUTOFF to the IDLE position:

1) Attach the spring scale (0-150 Pounds, With Hook and Pad Adapter Kit, COM-754 to the start lever knob.

2) Not more than 10 lbf (44.5 N) resistance.

(c) Measure the resistance to get the start lever from its detent position:

1) Attach the spring scale (0-150 Pounds, With Hook and Pad Adapter Kit, COM-754 to the start lever knob.

2) Not more than 5 lbf (22.24 N) resistance.

SUBTASK 76-11-10-700-001-F00

(4) Do this check of the start brake assembly [71] for engine 1:

NOTE: Do the check only when you replace the LRU.

(a) Do these steps before you attach the electrical connectors:

1) Set the engine 1 start lever to the CUTOFF position.

2) Do a check of the CUTOFF position for the switch circuits in the start brake assembly.

a) The Table 401 shows the necessary circuit values to be measured with the bonding meter, COM-1550.

Table 401/76-11-10-993-801-F00

CIRCUIT SETTINGS		
Connector (Switch)	**Connector Pin Numbers**	**Circuit Condition (Switch Settings)**
D11286P (S88)	11 and 12	More than 1 megohm
D11286P (S88)	11 and 13	Less than 1 ohm
D11286P (S1024)	15 and 5	More than 1 megohm

(Continued)

CIRCUIT SETTINGS		
Connector (Switch)	**Connector Pin Numbers**	**Circuit Condition (Switch Settings)**
D11286P (S1024)	15 and 4	Less than 1 ohm
D11286P (S1026)	9 and 8	More than 1 megohm
D11286P (S1026)	9 and 7	Less than 1 ohm
D11288P (S89)	11 and 12	More than 1 megohm
D11288P (S89)	11 and 13	Less than 1 ohm
D11288P (S1025)	15 and 5	More than 1 megohm
D11288P (S1025)	15 and 4	Less than 1 ohm
D11288P (S595)	9 and 8	More than 1 megohm
D11288P (S595)	9 and 7	Less than 1 ohm

3) Set the engine 1 start lever to the IDLE position.

4) Do a check of the IDLE position for the switch circuits in the start brake assembly.

a) The Table 402 shows the necessary circuit values to be measured with the bonding meter, COM-1550.

Table 402/76-11-10-993-802-F00

CIRCUIT SETTINGS		
Connector (Switch)	**Connector Pin Numbers**	**Circuit Condition (Switch Settings)**
D11286P (S88)	11 and 12	Less than 1 ohm
D11286P (S88)	11 and 13	More than 1 megohm
D11286P (S1024)	15 and 5	Less than 1 ohm
D11286P (S1024)	15 and 4	More than 1 megohm
D11286P (S1026)	9 and 8	Less than 1 ohm
D11286P (S1026)	9 and 7	More than 1 megohm
D11288P (S89)	11 and 12	Less than 1 ohm
D11288P (S89)	11 and 13	More than 1 megohm
D11288P (S1025)	15 and 5	Less than 1 ohm
D11288P (S1025)	15 and 4	More than 1 megohm
D11288P (S595)	9 and 8	Less than 1 ohm
D11288P (S595)	9 and 7	More than 1 megohm

(b) If you find that the measured circuits are as shown, move to the installation step for the connectors.

SUBTASK 76-11-10-700-002-F00

(5) Do this check of the start brake assembly [72] for engine 2:

NOTE: Do the check only when you replace the LRU.

(a) Do these steps before you attach the electrical connectors:

1) Set the engine 2 start lever to the CUTOFF position.

2) Do a check of the CUTOFF position for the switch circuits in the start brake assembly.

a) The Table 403 shows the necessary circuit values to be measured with the bonding meter, COM-1550,

Table 403/76-11-10-993-803-F00

CIRCUIT SETTINGS		
Connector (Switch)	**Connector Pin Numbers**	**Circuit Condition (Switch Settings)**
D11290P (S90)	11 and 12	More than 1 megohm
D11290P (S90)	11 and 13	Less than 1 ohm
D11290P (S1027)	15 and 5	More than 1 megohm
D11290P (S1027)	15 and 4	Less than 1 ohm
D11290P (S1029)	9 and 8	More than 1 megohm
D11290P (S1029)	9 and 7	Less than 1 ohm
D11292P (S91)	11 and 12	More than 1 megohm
D11292P (S91)	11 and 13	Less than 1 ohm
D11292P (S1028)	15 and 5	More than 1 megohm
D11292P (S1028)	15 and 4	Less than 1 ohm
D11292P (S596)	9 and 8	More than 1 megohm
D11292P (S596)	9 and 7	Less than 1 ohm

3) Set the engine 2 start lever to the IDLE position.

4) Do a check of the IDLE position for the switch circuits in the start brake assembly.

a) The Table 404 shows the necessary circuit values to be measured with the bonding meter, COM-1550.

Table 404/76-11-10-993-804-F00

CIRCUIT SETTINGS		
Connector (Switch)	**Connector Pin Numbers**	**Circuit Condition (Switch Settings)**
D11290P (S90)	11 and 12	Less than 1 ohm
D11290P (S90)	11 and 13	More than 1 megohm
D11290P (S1027)	15 and 5	Less than 1 ohm
D11290P (S1027)	15 and 4	More than 1 megohm

(Continued)

CIRCUIT SETTINGS		
Connector (Switch)	**Connector Pin Numbers**	**Circuit Condition (Switch Settings)**
D11290P (S1029)	9 and 8	Less than 1 ohm
D11290P (S1029)	9 and 7	More than 1 megohm
D11292P (S91)	11 and 12	Less than 1 ohm
D11292P (S91)	11 and 13	More than 1 megohm
D11292P (S1028)	15 and 5	Less than 1 ohm
D11292P (S1028)	15 and 4	More than 1 megohm
D11292P (S596)	9 and 8	Less than 1 ohm
D11292P (S596)	9 and 7	More than 1 megohm

(b) If you find that the measured circuits are as shown, move to the installation step for the connectors.

SUBTASK 76-11-10-420-001-F00

(6) Connect the electrical harness for the engine 1 start brake assembly (Figure 402).

(a) Install the electrical connector, D11286P [23].

(b) Install the electrical connector, D11288P [22].

(c) Attach the three clamps [21].

SUBTASK 76-11-10-020-007-F00

(7) Connect the electrical harness for the engine 2 start brake assembly (Figure 403).

(a) Install the electrical connector, D11292P [42].

(b) Install the electrical connector, D11290P [43].

(c) Attach the three clamps [41].

SUBTASK 76-11-10-010-003-F00

(8) Install the access covers on to the control stand (Figure 401):

(a) Install the left upper side cover [1].

1) Attach with four screws [2].

(b) Install the left lower side cover [5].

1) Attach with five screws [2].

(c) Install the right upper side cover [3].

1) Attach with four screws [2].

(d) Install the right lower side cover [4].

1) Attach with four screws [2].

G. Start Brake Test

SUBTASK 76-11-10-860-003-F00

(1) For Engine 1, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-10-860-004-F00

(2) For Engine 2, do this step:

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-10-040-006-F00

(3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1
HAP 001-013, 015-026, 028-030			
E	3	C01141	AUTOTHROTTLE DC 2

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
HAP ALL			
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	5	C00540	FUEL SPAR VALVE IND

SUBTASK 76-11-10-860-005-F00

(4) Remove the DO-NOT-OPERATE tag from the engine start switch.

SUBTASK 76-11-10-700-003-F00

(5) Do this task: Engine Fuel Spar Valve - Electrical Control and Indication Test, TASK 28-22-00-710-801.

SUBTASK 76-11-10-700-006-F00

(6) Do this task: EEC TEST, TASK 73-21-00-700-804-F00.

SUBTASK 76-11-10-700-007-F00

(7) Do this task: EEC Discretes Test, TASK 73-21-00-700-809-F00.

SUBTASK 76-11-10-700-004-F00

(8) Do this task: Audible Test of the Ignition System - EEC BITE Igniters Test, TASK 74-00-00-750-801-F00.

H. Put the Airplane Back to its Usual Condition

SUBTASK 76-11-10-410-002-F00

(1) Do this task: Captain's and First Officer's Seat Installation, TASK 25-11-01-400-801.

——————— END OF TASK ———————

ENGINE START BRAKE ASSEMBLY SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) The removal of a switch from the engine start brake assembly.

(2) The installation of a switch into the engine start brake assembly.

TASK 76-11-11-010-801-F00

2. Engine Start Brake Assembly Switch Removal

A. General

(1) This task gives you instructions to remove the switches from the engine start brake assemblies.

(2) There are six switches that are installed in each engine start brake assembly.

(3) For this procedure the engine start brake assembly will be referred to as the start brake assembly.

B. References

Reference	Title
76-11-10-010-801-F00	Engine Start Brake Assembly Removal (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 76-11-11-010-001-F00

(1) For the applicable engine, do this task: Engine Start Brake Assembly Removal, TASK 76-11-10-010-801-F00.

E. Switch Removal

SUBTASK 76-11-11-020-001-F00

(1) Do these steps to remove applicable switch [5] from the start brake assembly (Figure 401), (Figure 402):

(a) Remove two bolts [3], one screw [4], six washers [2] and three nuts [1].

(b) Separate the housing assembies [12].

(c) Remove the rotor assembly [8].

(d) Do these steps to remove the applicable switch [5] for a two-switch installation from a housing assembly [12] .

1) Remove two screws [7] and two washers [6].

2) Remove the two switches [5].

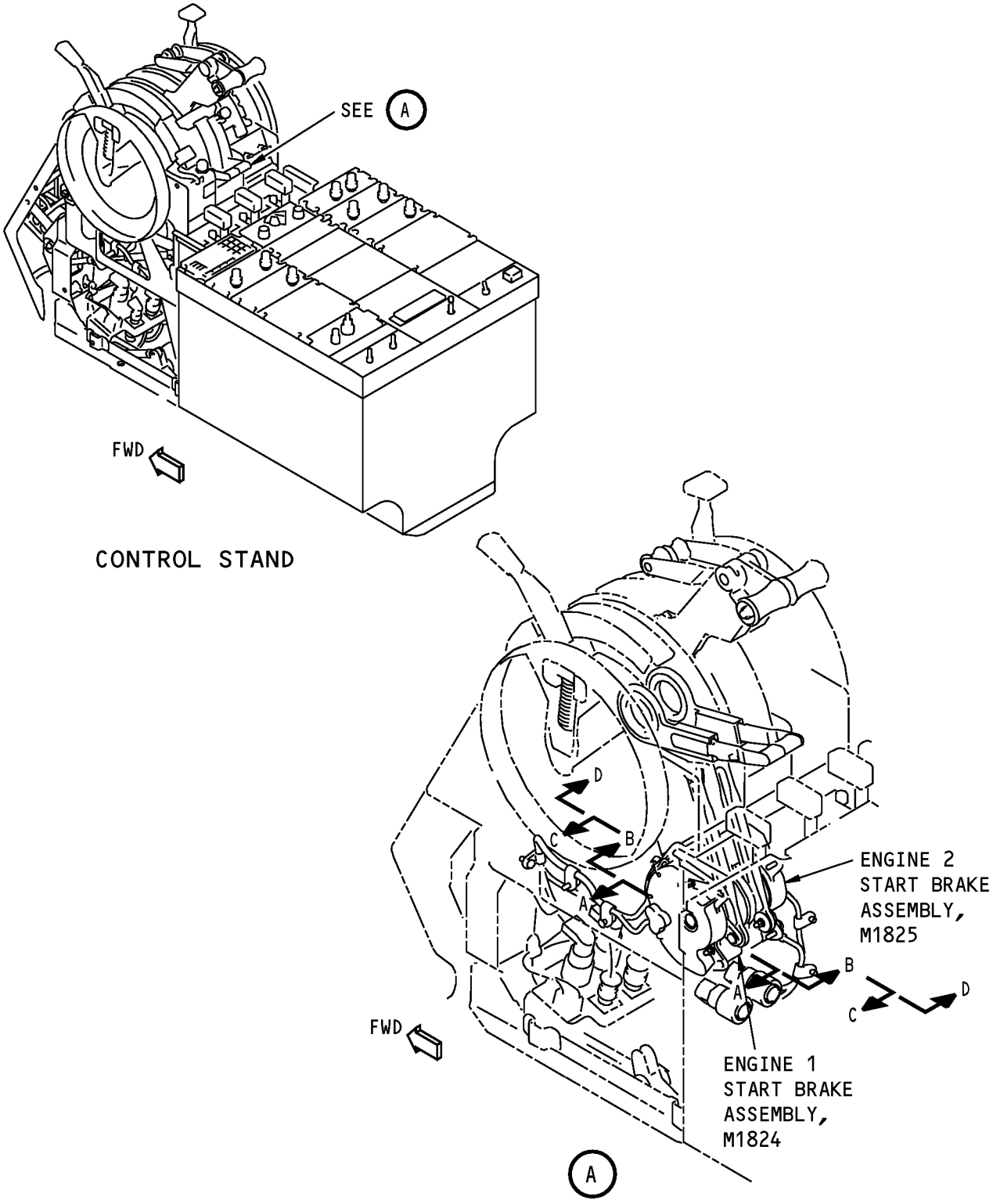
3) Disconnect the applicable switch [5] from the wires.

(e) Do these steps to remove the applicable switch [5] for a one-switch installation from the housing assembly [12].

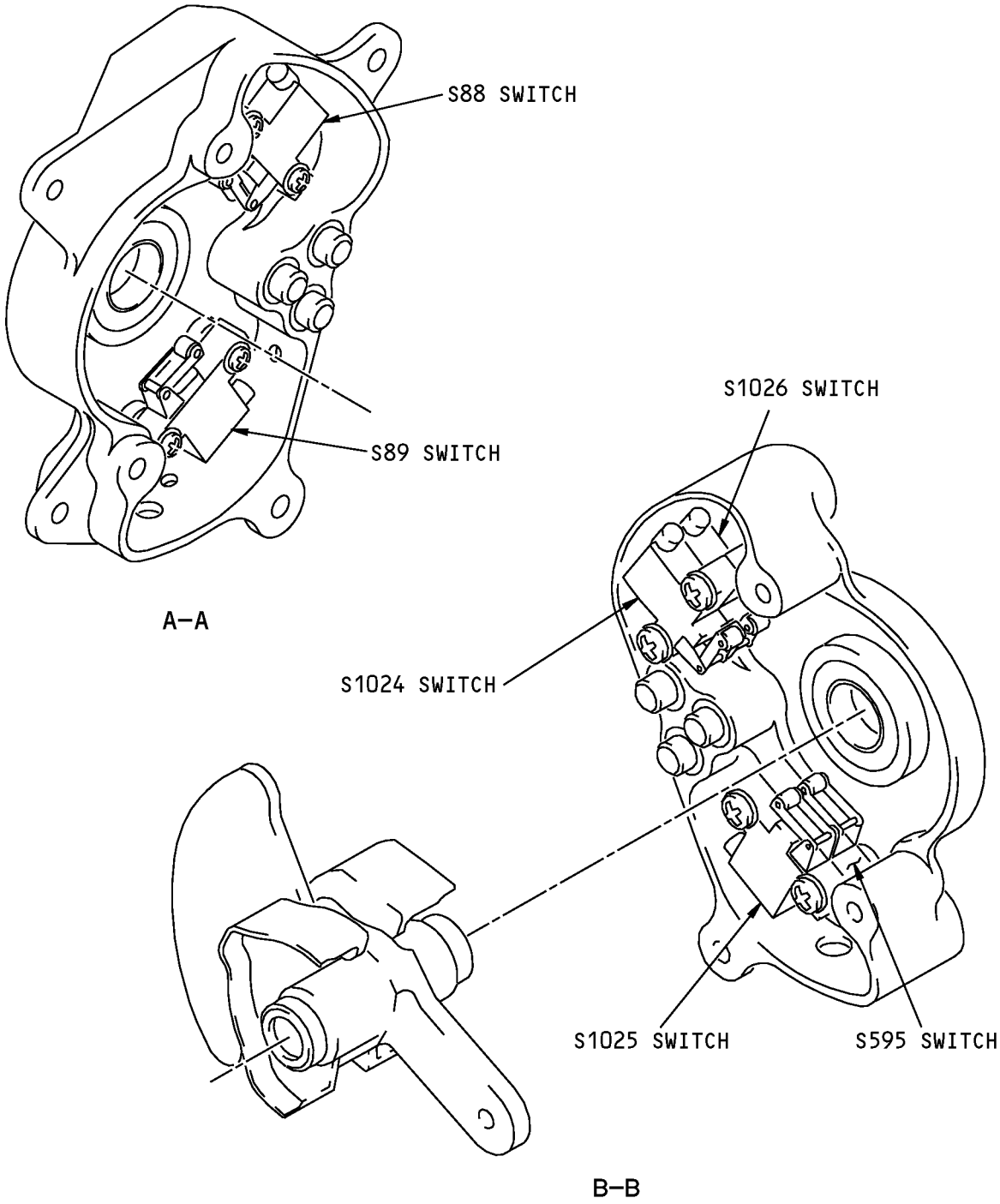
1) Remove two screws [11], two washers [10], and the switch [5].

2) Disconnect the switch [5] from the wires.

END OF TASK

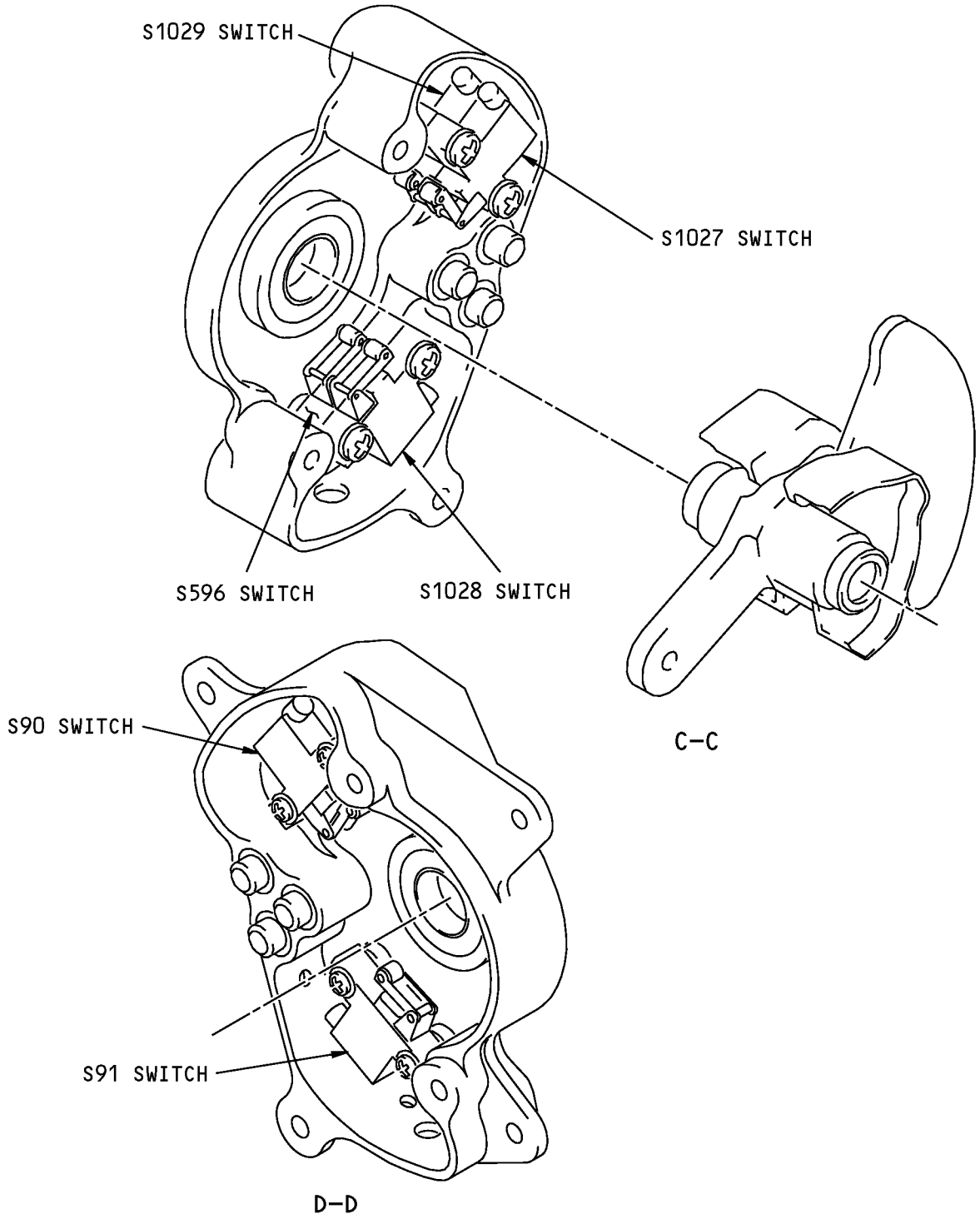


Engine Start Brake Assembly Switch Location
Figure 401 (Sheet 1 of 3)/76-11-11-990-801-F00

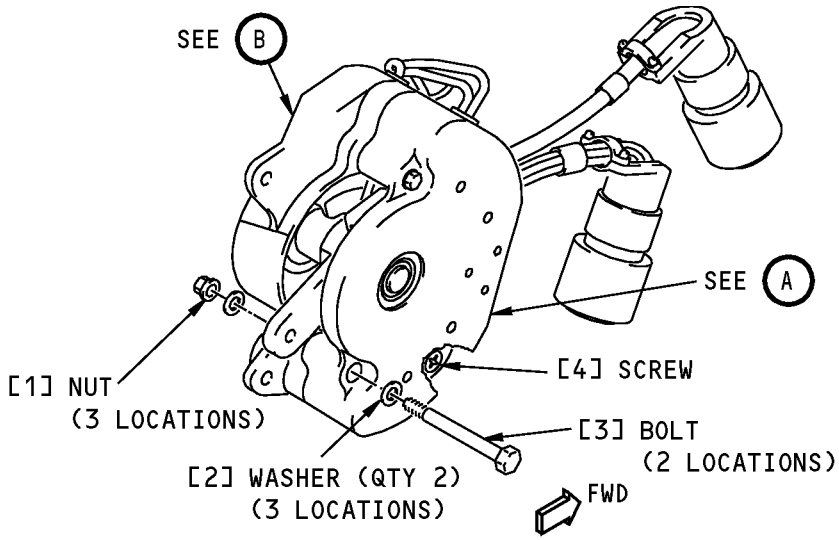


ENGINE 1 START BRAKE ASSEMBLY, M1824

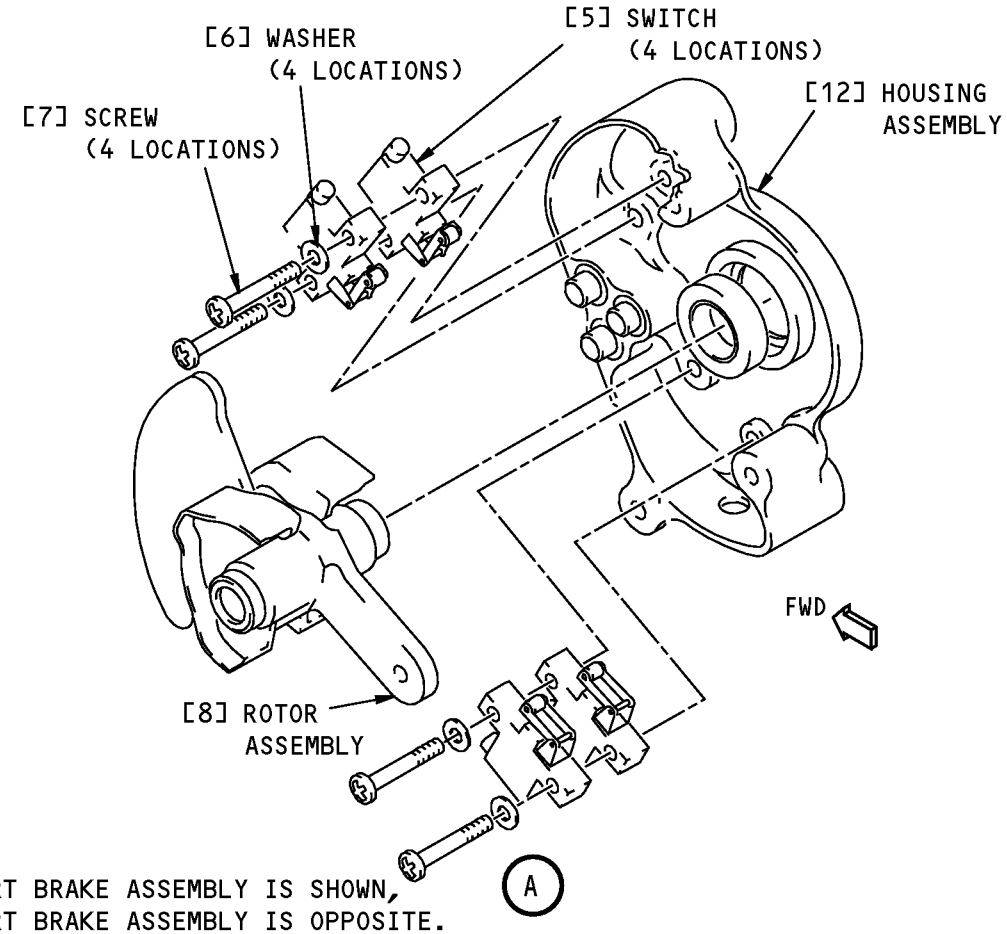
Engine Start Brake Assembly Switch Location
Figure 401 (Sheet 2 of 3)/76-11-11-990-801-F00



Engine Start Brake Assembly Switch Location
Figure 401 (Sheet 3 of 3)/76-11-11-990-801-F00

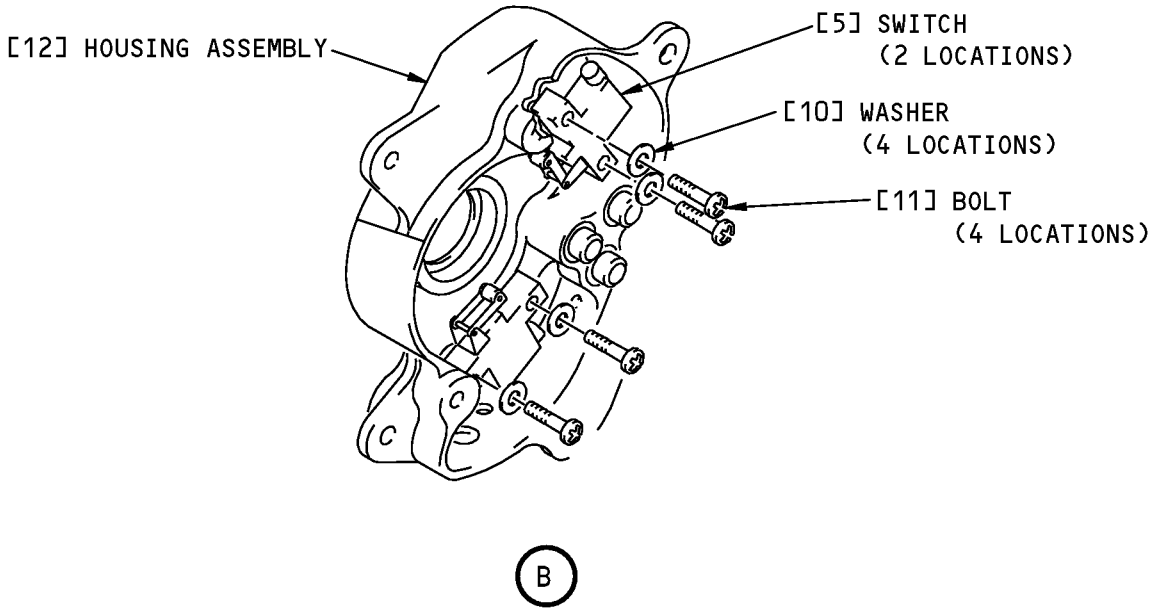


ENGINE START BRAKE ASSEMBLY



NOTE: ENGINE 1 START BRAKE ASSEMBLY IS SHOWN,
ENGINE 2 START BRAKE ASSEMBLY IS OPPOSITE.

Engine Start Brake Assembly Switch Installation
Figure 402 (Sheet 1 of 2)/76-11-11-990-802-F00



NOTE: ENGINE 1 START BRAKE ASSEMBLY IS SHOWN,
ENGINE 2 START BRAKE ASSEMBLY IS OPPOSITE.

Engine Start Brake Assembly Switch Installation
Figure 402 (Sheet 2 of 2)/76-11-11-990-802-F00

TASK 76-11-11-420-801-F00

3. Engine Start Brake Switch Installation

A. General

(1) This task gives you instructions to install an switch into the engine start brake assembly (referred to as the start brake assembly).

B. References

Reference	Title
76-11-10-420-801-F00	Engine Start Brake Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Switch Installation

SUBTASK 76-11-11-020-002-F00

(1) Do these steps to install the applicable switch [5] into the start brake assembly:

(a) Do these steps to install the applicable switch [5] for a one-switch installation into the housing assembly [50] (Figure 402), (Figure 403).

1) Connect the applicable switch to the wires.

2) Install the switch using two screws [11] and two washers [10].

(b) Do these steps to install the applicable switches [5] for a two-switch installation into the housing assembly [115] (Figure 402), (Figure 403).

1) Connect the applicable switch [5] to the wires.

2) Put the two switches [5] into their positions.

3) Install the switches [5] with two screws [7] and two washers [6].

(c) Make sure the surfaces of the rotor assembly [8] are clean before installation into the housing assebly [12] (Figure 402).

(d) Install the rotor assembly [8].

(e) Assemble the housing assemblies [12].

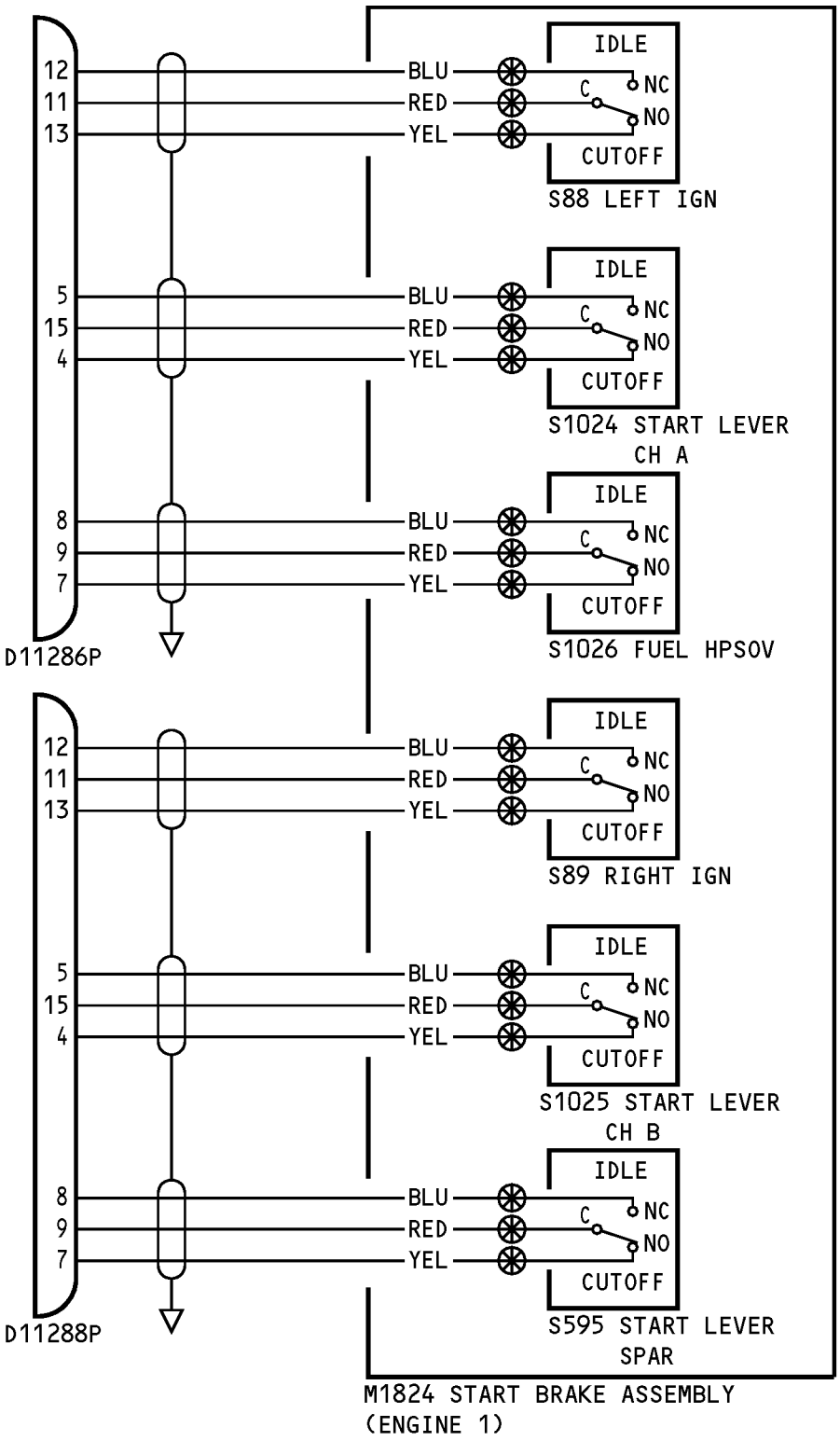
(f) Install the two bolts [3], one screw [4], six washers [2] and three nuts [1].

E. Put the Airplane back to its Usual Condition

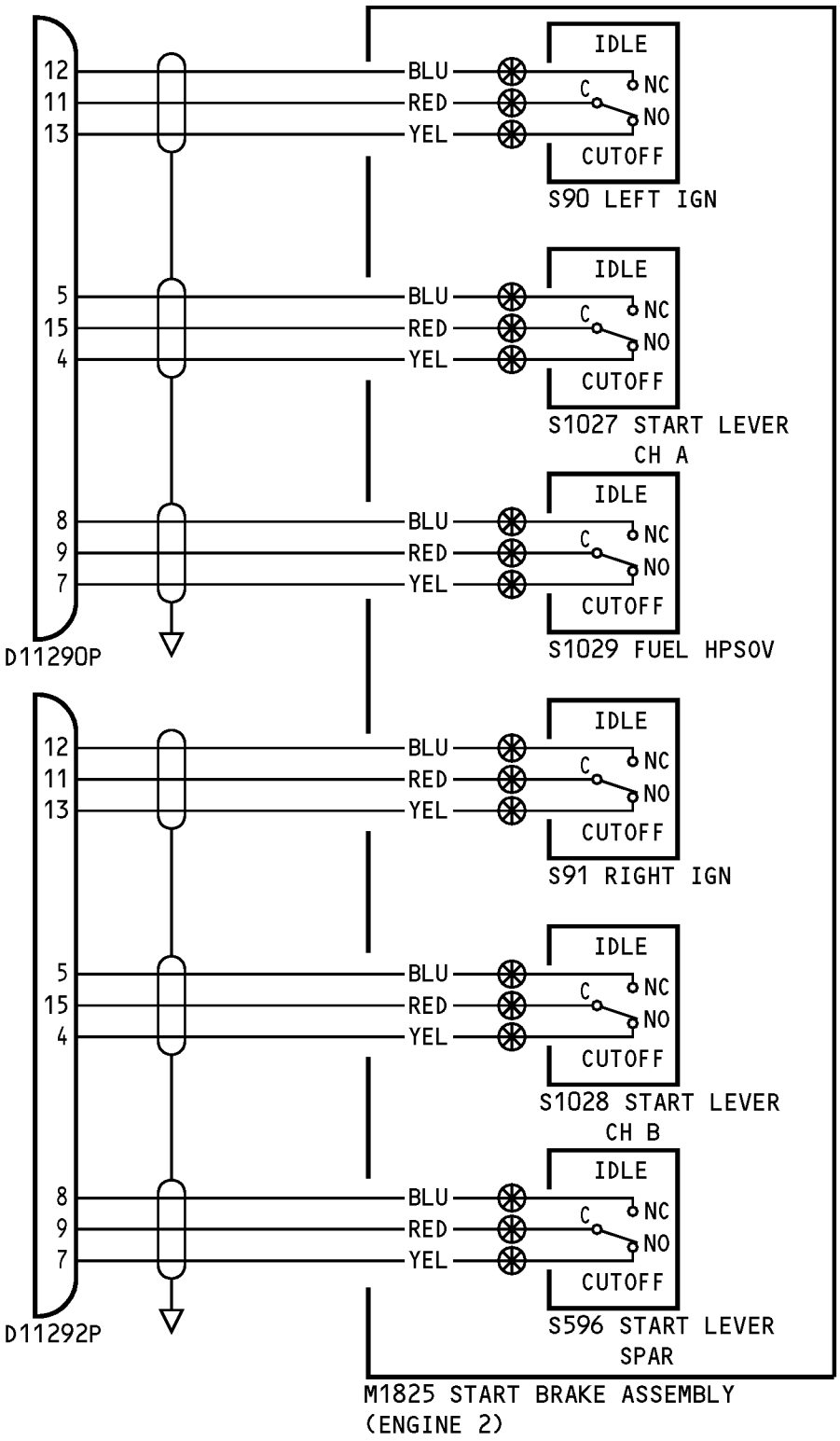
SUBTASK 76-11-11-010-002-F00

(1) Do this task: Engine Start Brake Installation, TASK 76-11-10-420-801-F00.

END OF TASK



Wiring Diagram
Figure 403 (Sheet 1 of 2)/76-11-11-990-803-F00



Wiring Diagram
Figure 403 (Sheet 2 of 2)/76-11-11-990-803-F00