

**CHAPTER**

**76**

**ENGINE  
CONTROLS**

**(GE90-100 SERIES ENGINES)**

## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### CHAPTER 76 ENGINE CONTROLS

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### ENGINE CONTROL SYSTEM - ADJUSTMENT/TEST

#### 1. General

- A. This procedure has three tasks:
- (1) A test of the thrust lever travel.
  - (2) A test of the thrust lever loads.
  - (3) A test of the fuel control switches in the fuel control module.

#### TASK 76-11-00-710-801-H01

#### 2. Thrust Lever Travel Test

##### A. General

- (1) A test of the thrust lever travel.
- (2) You must have the electrical and hydraulic power to perform this task.

##### B. References

Reference	Title
27-61-00-040-802	Spoiler Deactivation (With the Spoilers Up) (P/B 201)
27-61-00-040-803	Spoiler Deactivation (With the Spoilers Down) (P/B 201)
27-61-00-440-801	Spoiler Activation (P/B 201)
78-31-00-860-818-H00	Thrust Reverser Operation - Retract (Selection) (P/B 201)
78-31-00-860-819-H00	Thrust Reverser Operation - Extend (Selection) (P/B 201)

##### 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-706	Protractor - Thrust Reverser Levers, Digital Readout Part #: G76002-19 Supplier: 81205
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy

##### 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 Thrust Lever Travel Test

SUBTASK 76-11-00-865-009-H01



**WARNING**

REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.

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- (a) Open these circuit breakers and install safety tags:

### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-00-040-002-H01



#### **WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Do the deactivation procedure for the spoilers:
- (a) With the spoilers in the up position, do this task: Spoiler Deactivation (With the Spoilers Up), TASK 27-61-00-040-802.
  - (b) With the spoilers in the down position, do this task: Spoiler Deactivation (With the Spoilers Down), TASK 27-61-00-040-803.

SUBTASK 76-11-00-010-002-H01

- (3) Remove the applicable side panel [1] from the control stand:
- (a) Loosen the thirteen quick-release fasteners [2] that hold the side panel to the control stand.
  - (b) Remove the side panel [1].

## **F. Thrust Lever Travel Test**

SUBTASK 76-11-00-710-001-H01

- (1) Do the thrust lever travel test:
- (a) Make sure that the reverse thrust levers are in the stowed position.
  - (b) Move the forward thrust levers to the full forward thrust position and back to its idle position.  
NOTE: Make sure that you can move the forward thrust levers smoothly and freely in its full range of motion. Make sure that there is no blockage to the movement of the forward thrust levers.
  - (c) Move the reverse thrust levers more than 8.5 degrees from the stowed position (Thrust Reverser Operation - Extend (Selection), TASK 78-31-00-860-819-H00).  
NOTE: Use the thrust reverser lever protractor, SPL-706 to measure the thrust lever angle of movement.
    - 1) Make sure that the forward thrust levers do not move more than approximately 2 degrees from the idle position.
  - (d) Move the reverse thrust levers back to the stowed position (Thrust Reverser Operation - Retract (Selection), TASK 78-31-00-860-818-H00).
  - (e) Move the forward thrust levers to the full forward thrust position.

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- (f) With the arm of the cam follower lightly held against the arm of the follower stop bar, move the forward thrust levers back to its idle position.

NOTE: Make sure that you can move the thrust levers smoothly and freely in its full range of motion. Make sure that there is no blockage to the movements of the thrust levers when the thrust lever cam touches the cam follower.

- (g) With the forward thrust levers within 2 degrees of the idle position, move the reverse thrust levers to the full thrust position and back to its stowed position.

NOTE: Make sure that you can move the reverse thrust levers smoothly and freely in its full range of motion. Make sure that there is no blockage to the movement of the reverse thrust levers.

- (h) Move the forward thrust levers to 5 degrees  $\pm$  2 degrees from the idle position.

NOTE: Use the thrust reverser lever protractor, SPL-706 to measure the thrust lever angle of movement.

- (i) Use a push/pull scale 0-25 pound (0-11 kilogram), STD-753 to apply a force of 10 pounds to move the reverse thrust levers away from the stowed position.

- 1) Make sure that the reverse thrust levers do not move more than 8.5 degrees from the stowed position.

NOTE: Use the thrust reverser lever protractor, SPL-706 to measure the thrust lever angle of movement.

- (j) Push forward on the speedbrake lever on the P10 control panel, to make sure it is in the DOWN position.

### G. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-00-440-001-H01

- (1) Do this task: Spoiler Activation, TASK 27-61-00-440-801

SUBTASK 76-11-00-410-001-H01

- (2) Install the side panel [1] to the control stand.

- (a) Tighten the thirteen quick-release fasteners [2] that hold the side panel [1] to the control stand.

SUBTASK 76-11-00-865-007-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

————— END OF TASK —————

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A line drawing of a ship's bridge. A red rectangle highlights a button on the console, labeled 'FIRE ALARM RESET'. An arrow points from the text 'FIRE ALARM RESET' to this button.

**A**

[1] SIDE PANEL  
(2 LOCATIONS)

[2] QUICK-RELEASE  
FASTENER  
(13 LOCATIONS  
ON EACH SIDE)

**A**



**Thrust Lever Travel Test**  
**Figure 501/76-11-00-990-801-H01 (Sheet 1 of 2)**

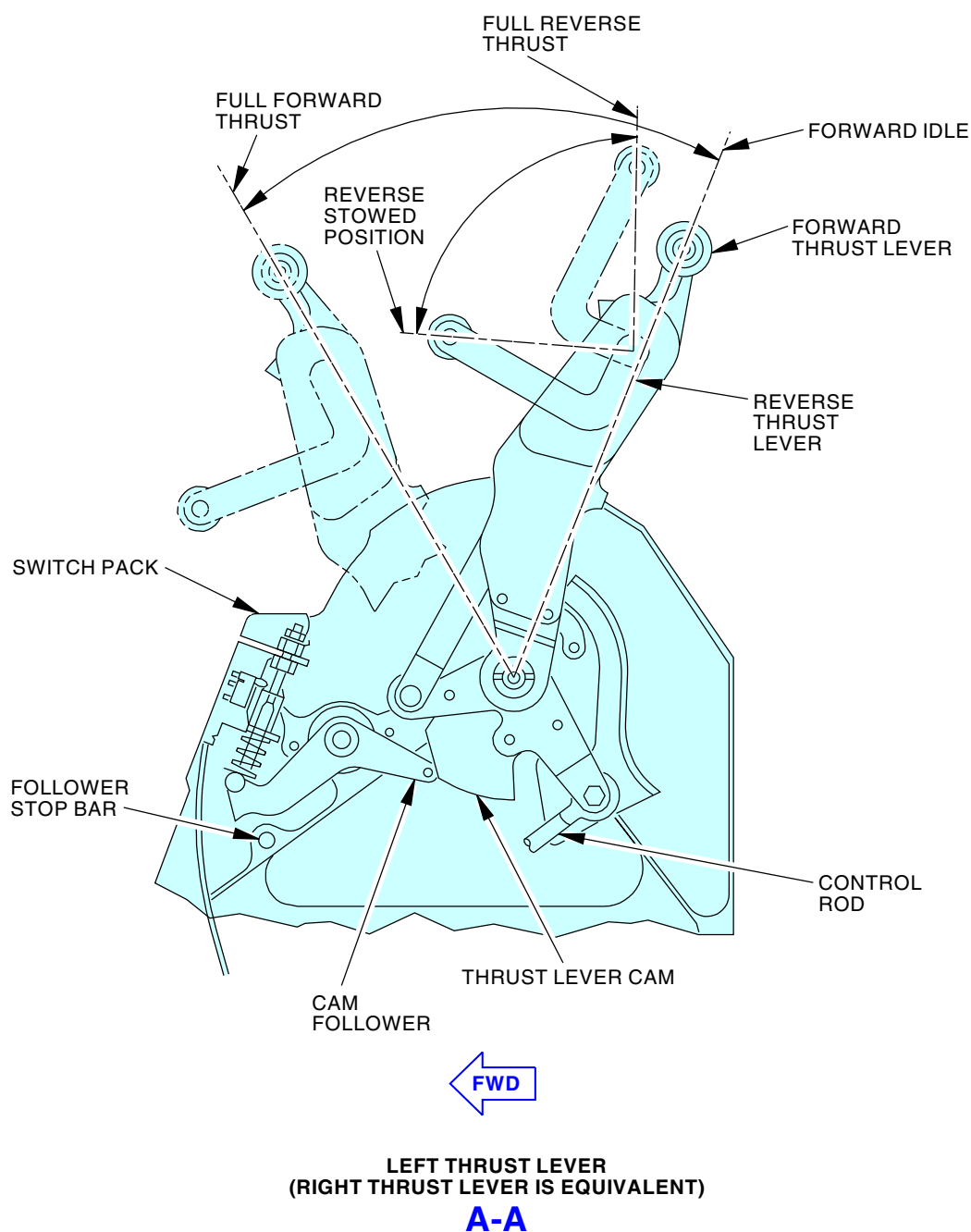
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Thrust Lever Travel Test  
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### TASK 76-11-00-700-801-H01

#### 3. Thrust Lever Load Test

##### A. General

- (1) A test of the thrust lever load.
- (2) The thrust lever is installed on the control stand.
- (3) You must have the electrical and hydraulic power to perform this task.

##### B. References

Reference	Title
27-61-00-040-802	Spoiler Deactivation (With the Spoilers Up) (P/B 201)
27-61-00-040-803	Spoiler Deactivation (With the Spoilers Down) (P/B 201)
27-61-00-440-801	Spoiler Activation (P/B 201)
78-31-00-860-818-H00	Thrust Reverser Operation - Retract (Selection) (P/B 201)
78-31-00-860-819-H00	Thrust Reverser Operation - Extend (Selection) (P/B 201)

##### 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-706	Protractor - Thrust Reverser Levers, Digital Readout Part #: G76002-19 Supplier: 81205
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy

##### 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 Thrust Lever Load Test

SUBTASK 76-11-00-865-005-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

##### Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

##### Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

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SUBTASK 76-11-00-040-003-H01

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Do the deactivation procedure for the spoilers:
  - (a) With the spoilers in the up position, do this task: Spoiler Deactivation (With the Spoilers Up), TASK 27-61-00-040-802.
  - (b) With the spoilers in the down position, do this task: Spoiler Deactivation (With the Spoilers Down), TASK 27-61-00-040-803.

**F. Thrust Lever Load Test**

SUBTASK 76-11-00-710-002-H01

- (1) Do the thrust lever load test:
  - (a) Push forward on the speedbrake lever on the P10 control panel, to make sure it is in the DOWN position.
  - (b) Make sure that the reverse thrust levers are in the idle position.
  - (c) Move the forward thrust levers from the idle position to the full forward position and back to the idle position.
    - 1) Use a push/pull scale 0-25 pound (0-11 kilogram), STD-753 to make sure that the knob load of the forward thrust levers is not more than these limits:
      - a) 3 pounds in the direction which increases forward thrust
      - b) 3.4 pounds in the direction which decreases forward thrust.
  - (d) Move the reverse thrust levers from the stow position to the full reverse position (Thrust Reverser Operation - Extend (Selection), TASK 78-31-00-860-819-H00).
    - 1) Use a push/pull scale 0-25 pound (0-11 kilogram), STD-753 and a thrust reverser lever protractor, SPL-706 to make sure that the knob load of the reverse thrust levers is in these limits:
      - a) Not more than 6.25 pounds from 0 to 45 degrees
      - b) Not more than 3.5 pounds from 45 to 91 degrees.
  - (e) Move the reverse thrust levers from the full reverse position to the stow position (Thrust Reverser Operation - Retract (Selection), TASK 78-31-00-860-818-H00).
    - 1) Use a push/pull scale 0-25 pound (0-11 kilogram), STD-753 to make sure that the knob load of the reverse thrust levers is not more than 3.5 pounds except at the reverse idle detent. At the detent the maximum knob load is 6.0 pounds.
  - (f) Push forward on the speedbrake lever on the P10 control panel, to make sure it is in the DOWN position.

**G. Put the Airplane Back to its Usual Condition**

SUBTASK 76-11-00-440-002-H01

- (1) Do this task: Spoiler Activation, TASK 27-61-00-440-801

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SUBTASK 76-11-00-865-006-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

————— **END OF TASK** —————

**TASK 76-11-00-700-802-H01****4. Fuel Control Switches (in the Fuel Control Module) Test****A. General**

- (1) This task gives the test of the fuel control switches in the fuel control module.

**B. References**

<u>Reference</u>	<u>Title</u>
31-61-00-800-804	Showing a Maintenance Page (P/B 201)
71-00-00-700-813-H01	Test No. 14 - Engine Fuel Driven Actuator Test (MAT Initiated Test) (P/B 501)
71-00-00-700-816-H01	Test No. 17 - Engine Ignition System Test (MAT Initiated Test) (P/B 501)

**C. Prepare for the Test**

SUBTASK 76-11-00-869-001-H00

- (1) Set the applicable L (R) FUEL CONTROL switch on the control stand panel, P10, to the CUTOFF position.

SUBTASK 76-11-00-869-002-H00

- (2) Set the L (R) EEC MODE switch on the overhead panel, P5, to the NORM position.

SUBTASK 76-11-00-869-003-H00

- (3) Move the forward thrust lever to minimum idle position.  
(a) Make sure the thrust levers are against the idle stop.

SUBTASK 76-11-00-869-004-H00

- (4) Make sure the applicable reverse thrust lever is in the forward and down (stowed) position.

SUBTASK 76-11-00-869-005-H00

- (5) Set the EEC MAINT L (R) ENG POWER switch on the aft, overhead maintenance panel, P61, is at the NORM position.

SUBTASK 76-11-00-869-006-H00

- (6) Set the applicable ENGINE L (R) START/IGNITION switch on the overhead panel, P5, to the NORM position.

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## SUBTASK 76-11-00-869-007-H00

- (7) Set the ADIRU switch on the overhead panel, P5, to the ON position.

**NOTE:** The air data inertial reference unit (ADIRU) is operational if the ADIRU is on and in the ALIGN mode and the EICAS message ADIRU ALIGN MODE is displayed. The ADIRU has completed alignment and is in NAV mode when the EICAS message ADIRU ALIGN MODE is not displayed and NAV ADIRU INERTIAL EICAS caution message is not displayed. The air data is given to the EEC.

## SUBTASK 76-11-00-869-008-H00

- (8) Set the AUTOSTART switch on the overhead panel, P5, to the OFF position.

## SUBTASK 76-11-00-869-009-H00

- (9) Set the FUEL L (R) PUMPS FWD and AFT switches on the overhead panel, P5 to the OFF position.

**NOTE:** The fuel boost pumps and the spar fuel valve must remain closed during this test. This test will provide electrical power to the fuel on solenoid in the FMU test. If the fuel boost pumps are on and the spar fuel valve opens, fuel will go to into the burner.

## SUBTASK 76-11-00-865-011-H00

- (10) Open the applicable circuit breakers to make sure the spar fuel valves remains closed during this test.
- (a) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

### D. Do a Test of the L (R) Fuel Control Switches in the P10 Control Panel

## SUBTASK 76-11-00-869-010-H00

- (1) Set the L (R) Fuel Control Switch on the P10 Control panel to the RUN position.
- (a) Wait for 5 seconds.

## SUBTASK 76-11-00-869-011-H00

- (2) Make sure L (R) Engine channel A and channel B TRA readings on the EICAS EPCS maintenance page 1/2 are between 33 through 35 degrees.
- (a) To show the EICAS EPCS maintenance page, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

## SUBTASK 76-11-00-869-012-H00

- (3) Move the L (R) Fuel Control switch to the CUTOFF position.

## SUBTASK 76-11-00-869-013-H00

- (4) Move the EEC MAINT L (R) ENG POWER switch on the P61 Maintenance Overhead Panel to TEST position.

## SUBTASK 76-11-00-869-014-H00

- (5) On the EICAS EPCS maintenance page 2/2, record the four digit hexadecimal value for L (R) engine, Status 8, channel A and B located at the bottom of the page.

## SUBTASK 76-11-00-869-015-H00

- (6) Move the L (R) Fuel Control switch on the P10 Control panel to the RUN position.
- (a) Wait for 5 seconds.

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## SUBTASK 76-11-00-869-016-H00

- (7) On the EICAS EPCS maintenance page 2/2, record the four digit hexadecimal value for L (R) engine, Status 8, channel A and B located at the bottom of the page again.

**NOTE:** The first digit (the right-most digit) of the Status 8 word contains a representation of the fuel control switch position as determined by the EEC. When the fuel control switch is in RUN the first digit should be even (0,2,4,6,8,A,C or E) and when in CUTOFF, the first digit should be odd (1,3,5,7,9,B,D or F).

## SUBTASK 76-11-00-730-001-H00

- (8) Do this test: Test No. 17 - Engine Ignition System Test (MAT Initiated Test), TASK 71-00-00-700-816-H01.

**NOTE:** The ignition circuits go through the fuel control switches.

- (a) Make sure that the igniters operate (fire) in the MAT initiated ground test; you can hear the igniters fire.

## SUBTASK 76-11-00-730-002-H00

- (9) Do this test: Test No. 14 - Engine Fuel Driven Actuator Test (MAT Initiated Test), TASK 71-00-00-700-813-H01.

### E. Put the Airplane Back to the Usual Condition

## SUBTASK 76-11-00-869-017-H00

- (1) Move the EEC MAINT L (R) ENG POWER switch on the P61, Maintenance Overhead Panel to the NORM position.

## SUBTASK 76-11-00-869-018-H00

- (2) Make sure the L (R) FUEL CONTROL switch on the control stand panel, P10, is set to the CUTOFF position.

## SUBTASK 76-11-00-440-003-H00

- (3) Activate the spar fuel valves.
- (a) Remove the safety tags and close these circuit breakers:

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE

## SUBTASK 76-11-00-869-019-H00

- (4) Set the ADIRU switch on the overhead panel, P5, to the OFF position.

————— **END OF TASK** —————



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**THRUST LEVERS - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has two tasks:
- (1) A removal of the thrust levers
  - (2) An installation of the thrust levers.

**TASK 76-11-01-000-801-H01****2. Thrust Levers Removal****A. General**

- (1) The thrust levers are installed on the control stand.

**B. References**

Reference	Title
27-61-00-040-801	Spoiler Deactivation (P/B 201)
76-11-10-000-805-H00	Control Stand Rails, Seal Retainers, Seal Assemblies, Covers, and Lightplates Removal (P/B 401)

**C. Location Zones**

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

**D. Prepare for the removal:**

SUBTASK 76-11-01-040-001-H01



DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do the deactivation procedure for the spoilers (TASK 27-61-00-040-801).
  - (a) Move all persons and equipment away from the spoilers.

SUBTASK 76-11-01-865-006-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (2) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

Row	Col	Number	Name
B	13	C25324	F/O SEAT

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SUBTASK 76-11-01-865-007-H01



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 THE EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (3) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-01-865-002-H01

- (4) Open these circuit breakers and install safety tags:

### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-11-01-010-001-H01

- (5) Remove the side panels of the control stand:
- Loosen the thirteen quick-release fasteners that hold each side panel to the control stand.
  - Remove the side panels.

SUBTASK 76-11-01-010-002-H01



YOU MUST BE CAREFUL WHEN YOU REMOVE THE LIGHTPLATES AND THRUST LEVERS. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE BUNDLES AND THE PAINTED FINISH ON ALL THE PARTS CAN OCCUR.

- (6) Remove the rails, covers, and seals on the control stand (TASK 76-11-10-000-805-H00).

SUBTASK 76-11-01-869-001-H01

- (7) Move the thrust levers to the forward position.

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- (8) Remove the two bolts [10], washers [11], and nuts [12] that connect the control rods [9] of the thrust levers to the autothrottle brake assemblies.

**SUBTASK 76-11-01-020-002-H01**

- (9) Remove the two bolts [13], washers [14], and nuts [15] that connect the control rods [9] to the thrust levers.

**SUBTASK 76-11-01-020-003-H01**

- (10) Remove the control rods [9] from the control stand.

**SUBTASK 76-11-01-020-004-H01**

- (11) Remove the four bolts [8] and washers [7] that attach the right support assembly [4] of the thrust levers to the control stand structure.

**SUBTASK 76-11-01-020-005-H01**

- (12) Remove the four bolts [6] and washers [5] that attach the left support assembly [3] of the thrust levers to the control stand structure.

**E. Thrust Levers Removal****SUBTASK 76-11-01-030-001-H01**

- (1) Disconnect the eight electrical connectors of the thrust levers from the electrical connector panel.

**SUBTASK 76-11-01-020-006-H01**

- (2) Carefully lift the left thrust lever assembly [1] and right thrust lever assembly [2] up and forward to remove them from the control stand.

- (a) Set the left thrust lever assembly [1] and right thrust lever assembly [2] on the control stand.

**SUBTASK 76-11-01-010-003-H01**

- (3) Carefully pull the eight electrical connectors and wire bundles through the support holes in the frame of the control stand.

**SUBTASK 76-11-01-020-007-H01**

- (4) Remove the thrust levers.

———— **END OF TASK** ————

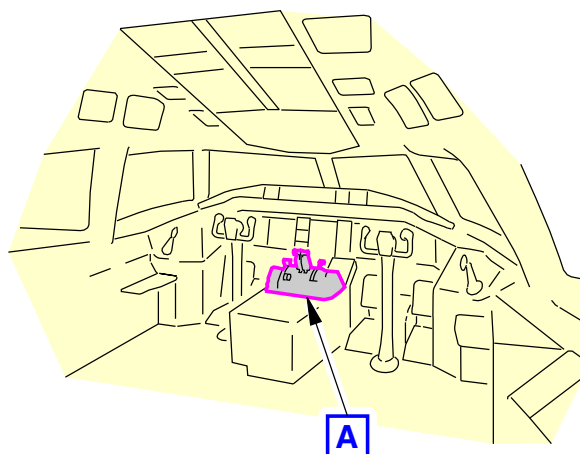
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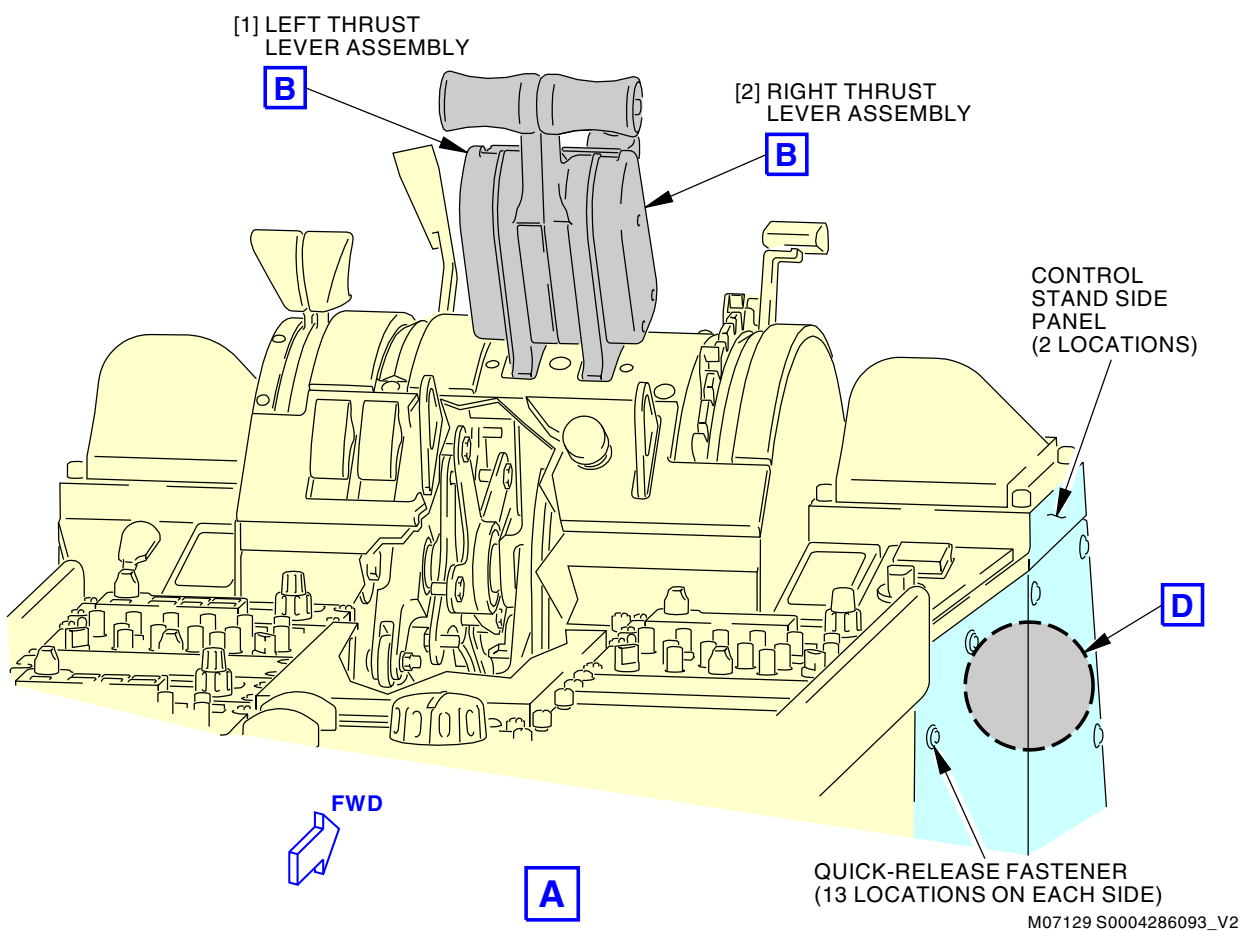
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**FLIGHT COMPARTMENT**



**Thrust Lever Installation**  
Figure 401/76-11-01-990-801-H01 (Sheet 1 of 3)

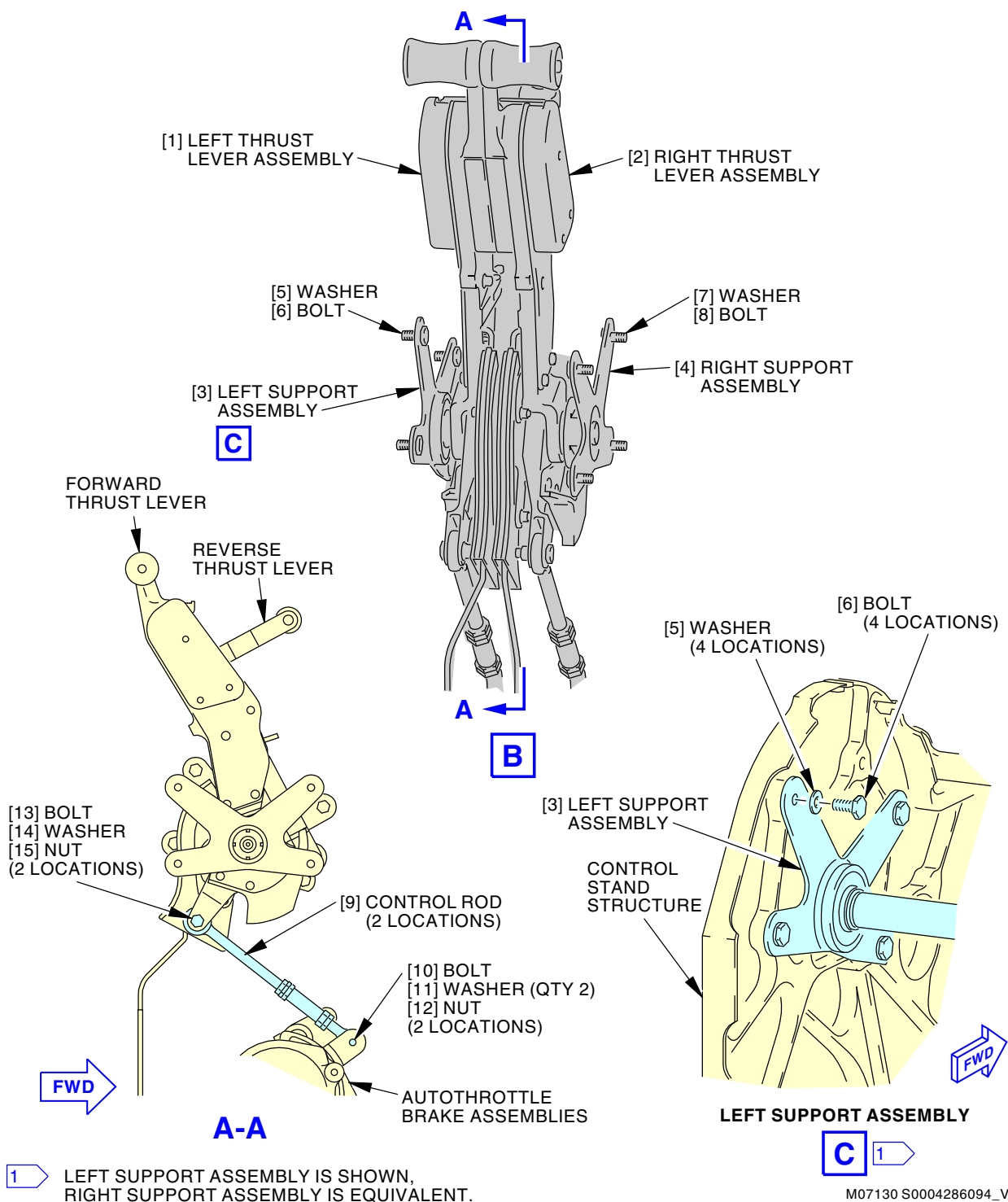
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**Thrust Lever Installation**  
Figure 401/76-11-01-990-801-H01 (Sheet 2 of 3)

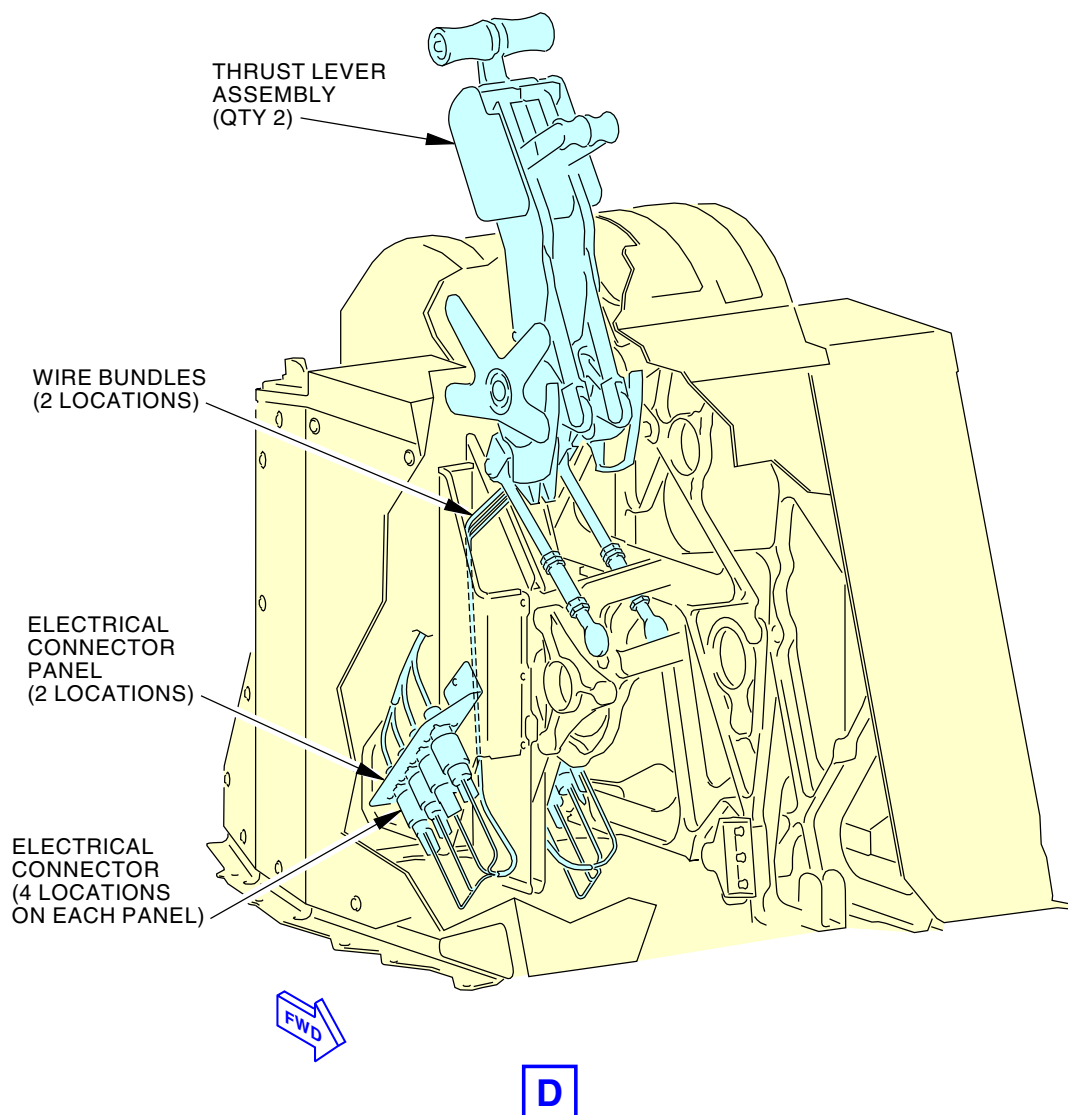
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**Thrust Lever Installation**  
**Figure 401/76-11-01-990-801-H01 (Sheet 3 of 3)**

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### TASK 76-11-01-400-801-H01

#### 3. Thrust Levers Installation

##### A. General

- (1) A test of the engine control system and the thrust reverser will be necessary after thrust lever installation.

##### B. References

Reference	Title
27-61-00-440-801	Spoiler Activation (P/B 201)
76-11-00-710-801-H01	Thrust Lever Travel Test (P/B 501)
76-11-10-400-805-H00	Control Stand Rails, Seal Retainers, Seal Assemblies, Covers, and Lightplates Installation (P/B 401)
78-31-00-710-821-H00	Thrust Reverser - Operational Test (Engine Not In Operation) (P/B 501)

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Left thrust lever assembly	76-11-01-05-150	ARO ALL
2	Right thrust lever assembly	76-11-01-05-500	ARO ALL

##### D. Location Zones

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

##### E. Thrust Levers Installation

SUBTASK 76-11-01-420-001-H01



YOU MUST BE CAREFUL WHEN YOU INSTALL THE LIGHTPLATES, THRUST LEVERS, AND THE CONTROL MODULE FOR THE ENGINE FUEL. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIREBUNDLES AND THE PAINTED FINISH ON ALL PARTS COULD OCCUR.

- (1) Carefully install the eight electrical connectors and wire bundles through the holes in the support structure.

SUBTASK 76-11-01-430-001-H01

- (2) Connect the eight electrical connectors to the electrical connector panel.

SUBTASK 76-11-01-869-002-H01

- (3) Move the left thrust lever assembly [1] and right thrust lever assembly [2] down and forward to install the thrust levers in the control stand.

SUBTASK 76-11-01-420-002-H01

- (4) Install the thrust levers in the control stand:
- (a) Install the four bolts [6] and washers [5] to attach the left support assembly [3] to the control stand structure.
  - (b) Install the four bolts [8] and washers [7] to attach the right support assembly [4] to the control stand structure.
  - (c) Attach the two control rods [9] to each thrust lever with the two bolts [13], washers [14], and nuts [15].

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- 1) Torque nuts [15] to  $70 \pm 10$  pound-inches ( $7.9 \pm 1.1$  Newton-meters).

**NOTE:** This step must be verified by qualified personnel, and an inspection seal must be installed on the nut.

- (d) Attach the two control rods [9] to each autothrottle brake with the bolts [10], washers [11], and nuts [12].

- 1) Torque nuts [12] to  $70 \pm 10$  pound-inches ( $7.9 \pm 1.1$  Newton-meters).

**NOTE:** This step must be verified by qualified personnel, and an inspection seal must be installed on the nut.

### SUBTASK 76-11-01-420-003-H01

- (5) Install the rails, covers, and seals on the control stand (TASK 76-11-10-400-805-H00).

### SUBTASK 76-11-01-410-001-H01

- (6) Install the side panels of the control stand:

- (a) Tighten the thirteen quick-release fasteners that hold each side panel to the control stand.

### SUBTASK 76-11-01-869-003-H01

- (7) Make sure that you can move the forward thrust levers freely through its full range of travel and they do not bind.

### SUBTASK 76-11-01-869-004-H01

- (8) Make sure that you can move the reverse thrust levers freely to its full reverse position and they do not bind.

## F. Put the Airplane Back to Its Usual Condition.

### SUBTASK 76-11-01-865-003-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

### SUBTASK 76-11-01-861-001-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

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### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-01-865-008-H01

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

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-01-440-001-H01

- (4) Do the activation procedure for the spoilers if you did the deactivation procedure (TASK 27-61-00-440-801).

### G. Thrust Lever Installation Test

SUBTASK 76-11-01-730-001-H01

- (1) Do a test of the engine control system (TASK 76-11-00-710-801-H01).

SUBTASK 76-11-01-710-001-H01

- (2) Do an operational test of the thrust reverser (TASK 78-31-00-710-821-H00).

————— **END OF TASK** —————

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### THRUST LEVER ANGLE RESOLVER - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has two tasks:
- (1) A removal of the thrust lever angle (TLA) resolver
  - (2) An installation of the TLA resolver.

#### TASK 76-11-02-000-801-H01

#### 2. Thrust Lever Angle Resolver Removal

##### A. General

- (1) This procedure is the removal task for the thrust lever angle resolver (referred to as the TLA resolver).
- (2) There is one TLA resolver on the autothrottle assembly for the left engine and one TLA resolver for the right engine.
- (3) You must remove the side panel, and the gearbox and autothrottle servomotor assembly to get access to the TLA resolver.

##### B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
76-12-01-000-805-H00	Autothrottle Servomotor (ASM) 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-13333	Tool Set - Auto Throttle Servo Assembly (-1 on/off-aircraft; -8 on-aircraft only) Part #: J22001-1 Supplier: 81205

##### D. Location Zones

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

##### E. Access Panels

Number	Name/Location
112AL	Forward Access Door

##### F. Procedure

SUBTASK 76-11-02-869-001-H01

- (1) Move the first officer's and captain's seats all the way back.

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SUBTASK 76-11-02-865-016-H01

**WARNING**

REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (2) Make sure the first officer's and captain's seats can not operate.
- (a) Open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-02-865-001-H01

- (3) For the left thrust lever, open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	24	C73401	L ENG EEC ALTN PWR CHAN A
E	19	C73403	L ENG EEC ALTN PWR CHAN B

SUBTASK 76-11-02-865-002-H01

- (4) For the right thrust lever, open these circuit breakers and install safety tags:

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73400	R ENG EEC ALTN PWR CHAN A
E	11	C73402	R ENG EEC ALTN PWR CHAN B

SUBTASK 76-11-02-010-001-H01

- (5) Open the forward access panel to get access to the autothrottle assembly (TASK 06-41-00-800-801).

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

SUBTASK 76-11-02-030-001-H01

- (6) Disconnect the applicable electrical connectors from the AE0160 electrical panel:
- (a) For the left TLA resolver [12];
- 1) Connector DM73102A, position 2
  - 2) Connector DM73102B, position 12.
- (b) For the right TLA resolver [2];
- 1) Connector DM73202A, position 15
  - 2) Connector DM73202B, position 8.

SUBTASK 76-11-02-010-002-H01

- (7) Remove the applicable cable clamp [15].

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- (a) Remove the bolt [13] and the washer [14].

**SUBTASK 76-11-02-010-003-H01**

- (8) Remove the applicable side panel [21] from the control stand:
- (a) Loosen the thirteen quick-release fasteners [22] that hold the side panel [21] to the control stand.
- (b) Remove the side panel [21].

**SUBTASK 76-11-02-010-004-H01**

- (9) Do this task to get access to the TLA resolver:
- (a) Do this task: Autothrottle Servomotor (ASM) and Gearbox Removal,  
TASK 76-12-01-000-805-H00

**SUBTASK 76-11-02-010-005-H01**

- (10) Remove the applicable bracket [1] or bracket [11] from the control stand frame:
- (a) Remove the three bolts [5] or bolts [9] and washers [6] or washers [10].

**SUBTASK 76-11-02-010-006-H01**

- (11) Remove the applicable bracket [1] or bracket [11] from the TLA resolver [2] or TLA resolver [12].
- (a) Remove the three bolts [4] or bolts [8] and washers [3] or washers [7].

**SUBTASK 76-11-02-010-011-H00**

- (12) Remove the nut [16] or nut [18] from the shaft assembly.
- (a) Use the bearing nut wrench from the auto throttle servo assembly tool set, SPL-13333 and the shaft wrench from the auto throttle servo assembly tool set, SPL-13333, if necessary, to remove the nut [16] or nut [18].

**NOTE:** The shaft assemblies 254W4120-3 and on have machined flat surfaces. A standard wrench can be used on these flats to hold the shaft.

**SUBTASK 76-11-02-010-012-H00**

- (13) Remove the spacer [17] or spacer [19] from the shaft assembly.

**SUBTASK 76-11-02-020-001-H01**

- (14) Remove the applicable TLA resolver [2] or TLA resolver [12] and wire harness from the shaft of the autothrottle assembly.

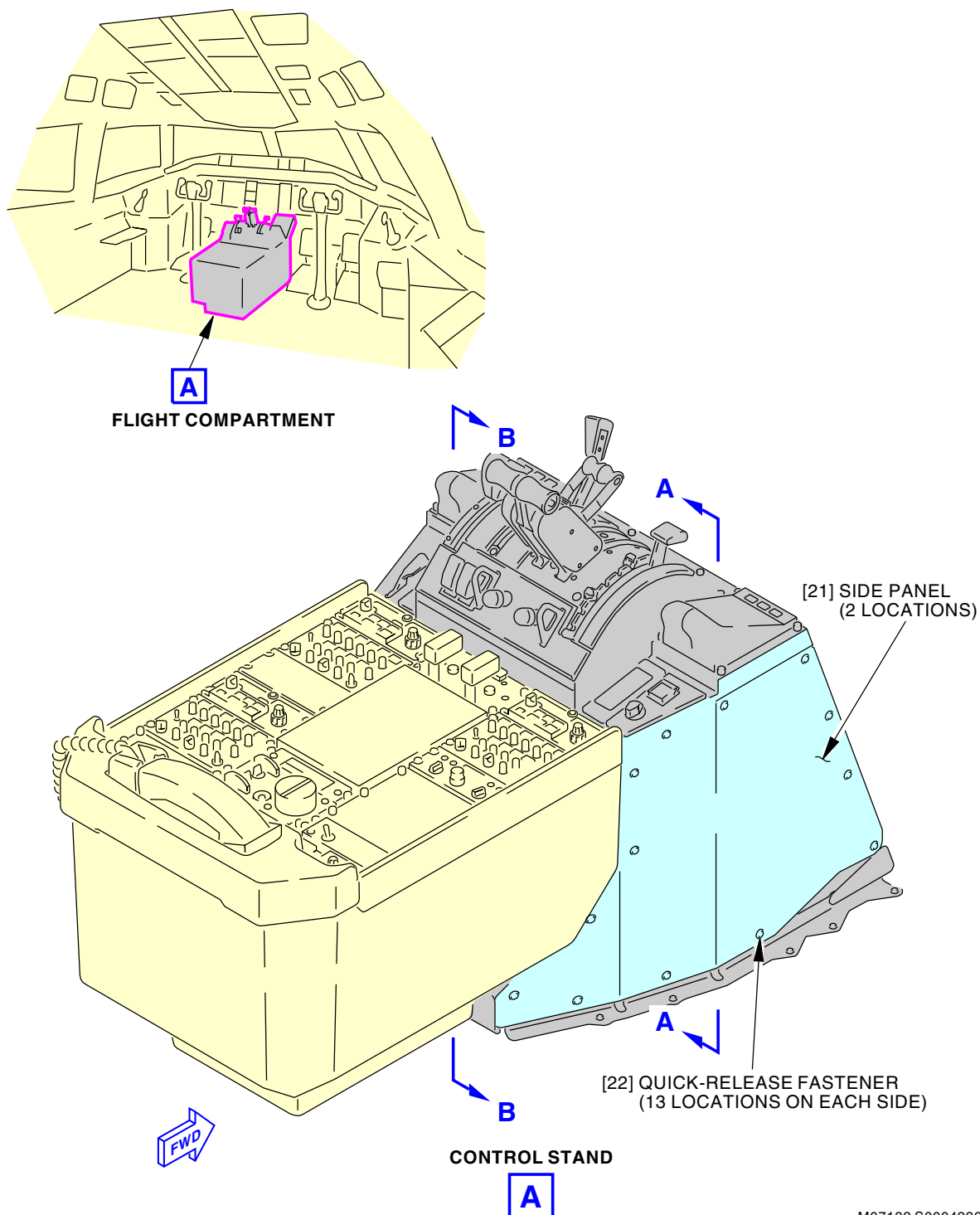
———— **END OF TASK** ————

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M07132 S0004286097\_V2

**Thrust Lever Angle (TLA) Resolver Installation**  
**Figure 401/76-11-02-990-801-H01 (Sheet 1 of 4)**

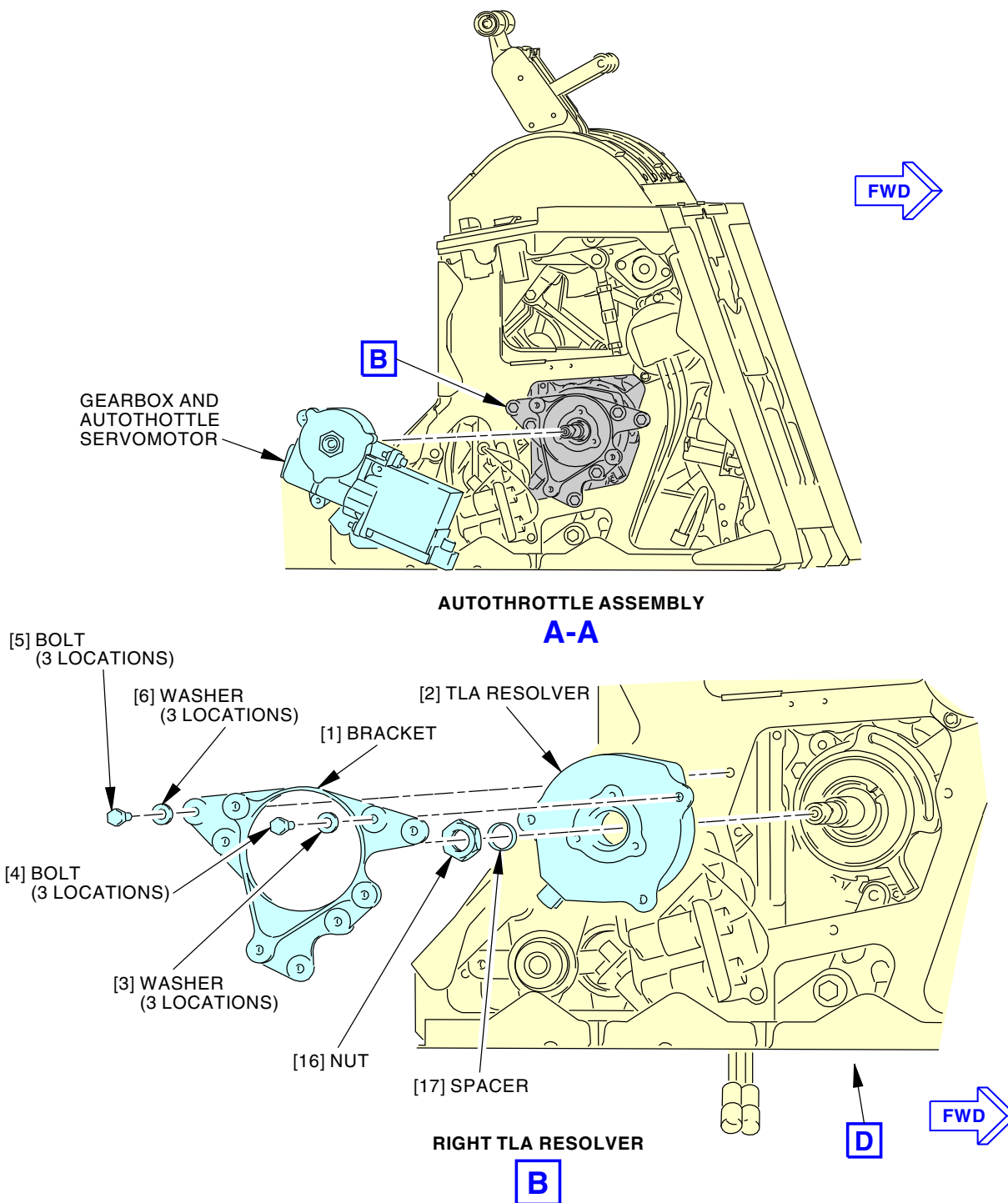
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M07133 S0004286098\_V3

Thrust Lever Angle (TLA) Resolver Installation  
Figure 401/76-11-02-990-801-H01 (Sheet 2 of 4)

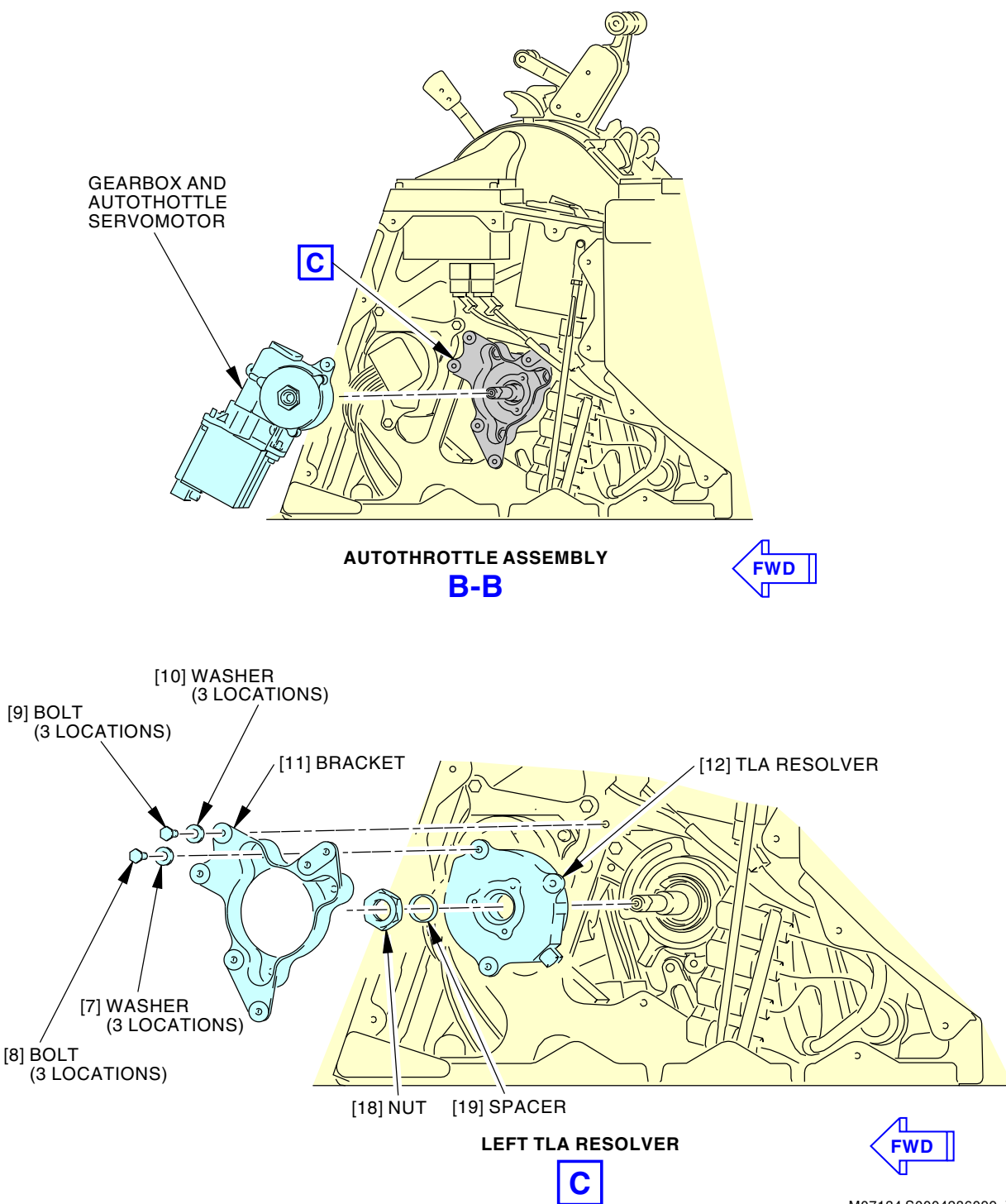
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M07134 S0004286099\_V3

Thrust Lever Angle (TLA) Resolver Installation  
Figure 401/76-11-02-990-801-H01 (Sheet 3 of 4)

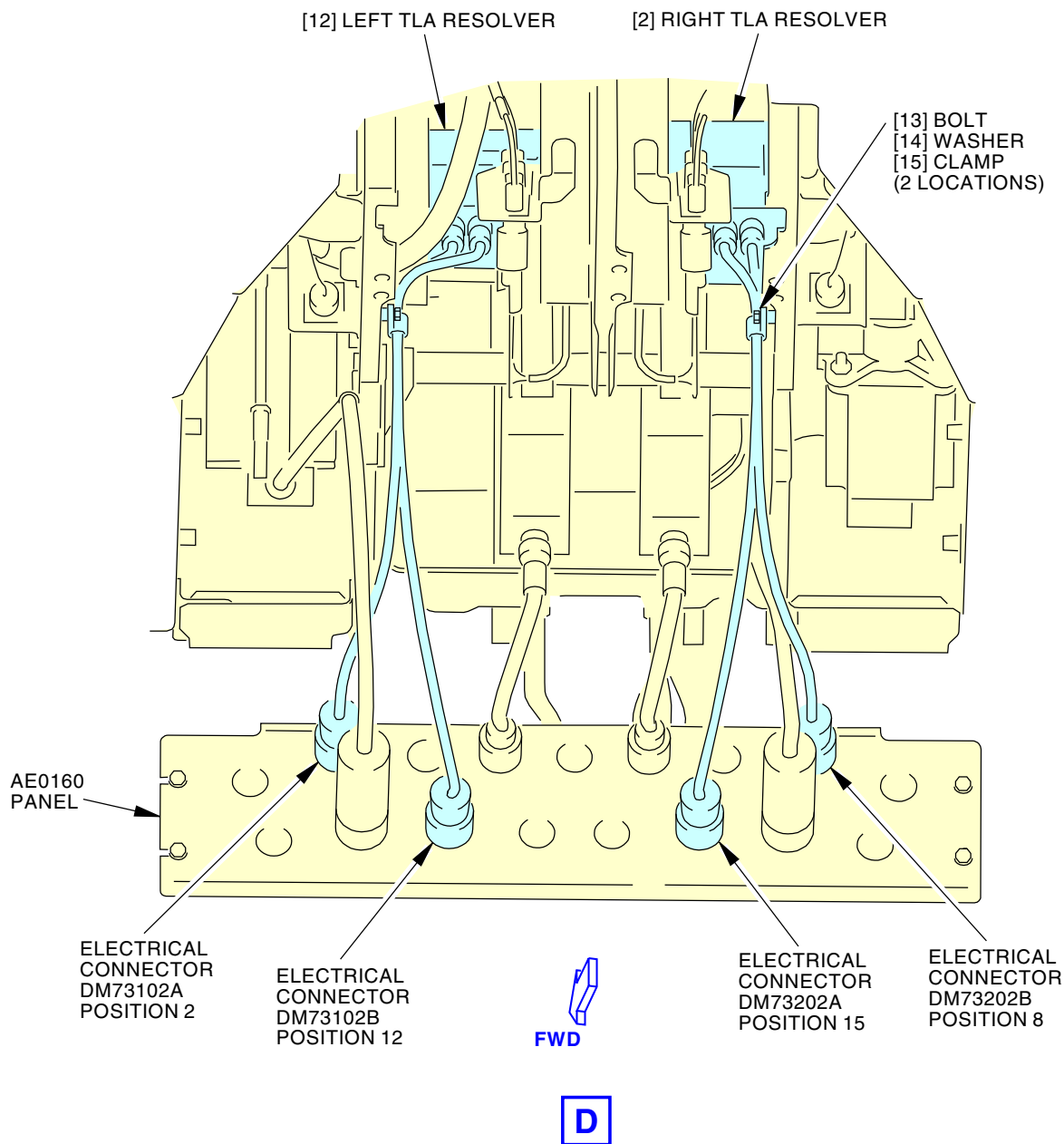
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M07135 S0004286100\_V2

**Thrust Lever Angle (TLA) Resolver Installation**  
Figure 401/76-11-02-990-801-H01 (Sheet 4 of 4)

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### TASK 76-11-02-400-801-H01

#### 3. Thrust Lever Angle Resolver Installation

##### A. General

- (1) This procedure is the installation task for the thrust lever angle resolver (referred to as the TLA resolver).
- (2) You must do an adjustment of the TLA resolver after you install it.

##### B. References

Reference	Title
76-11-02-700-801-H01	Thrust Lever Angle (TLA) Resolver Adjustment (External Equipment) (P/B 501)
76-11-02-700-802-H01	Thrust Lever Angle (TLA) Resolver Adjustment (Airplane Equipment) (P/B 501)
76-12-01-400-804-H00	Autothrottle Servomotor (ASM) and Gearbox Installation (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-13333	Tool Set - Auto Throttle Servo Assembly (-1 on/off-aircraft; -8 on-aircraft only) Part #: J22001-1 Supplier: 81205

##### D. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS3-33)

##### E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	TLA resolver	76-11-02-05-010	ARO ALL
12	TLA resolver	76-11-02-05-010	ARO ALL

##### F. Location Zones

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

##### G. Access Panels

Number	Name/Location
112AL	Forward Access Door

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AIRCRAFT MAINTENANCE MANUAL****H. TLA Resolver Installation**

SUBTASK 76-11-02-420-001-H01

- (1) Install the applicable TLA resolver [2] or TLA resolver [12]:
  - (a) For the right TLA resolver [2];
    - 1) Put the TLA resolver [2] in its position on the shaft of the autothrottle assembly.
    - 2) Apply a layer of grease, D00013 or grease, D00015 to all surfaces of spacer [17] that touch adjacent components.
    - 3) Install the spacer [17] on the shaft assembly.
    - 4) Install the nut [16] on the shaft assembly.
      - a) Use the bearing nut wrench from the auto throttle servo assembly tool set, SPL-13333 to tighten the nut [16] to 200-220 lb-in more than the run-on torque.
        - <1> Use the shaft wrench from the auto throttle servo assembly tool set, SPL-13333 to hold the shaft assembly (254W4120-1 or -2 only) while the nut [16] is tightened.
        - <2> Use a standard wrench on the machined flat surfaces to hold the shaft assembly (254W4120-3 and on) while the nut [16] is tightened.
    - 5) Put the bracket [1] in its position on the TLA resolver [2].
    - 6) Install the three bolts [4] and three washers [3] that attach the bracket [1] to the TLA resolver [2].
    - 7) Install the three bolts [5] and three washers [6] that attach the bracket [1] to the control stand.
  - (b) For the left TLA resolver [12];
    - 1) Put the TLA resolver [12] in its position on the shaft of the autothrottle assembly.
    - 2) Apply a layer of grease, D00013 or grease, D00015 to all surfaces of spacer [19] that touch adjacent components.
    - 3) Install the spacer [19] on the shaft assembly.
    - 4) Install the nut [18] on the shaft assembly.
      - a) Use the bearing nut wrench from the auto throttle servo assembly tool set, SPL-13333 to tighten the nut [18] to 200-220 lb-in more than the run-on torque.
        - <1> Use the shaft wrench from the auto throttle servo assembly tool set, SPL-13333 to hold the shaft assembly (254W4120-1 or -2 only) while the nut [18] is tightened.
        - <2> Use a standard wrench on the machined flat surfaces to hold the shaft assembly (254W4120-3 and on) while the nut [18] is tightened.
    - 5) Put the bracket [11] in its position on the TLA resolver [12].
    - 6) Install the three bolts [8] and three washers [7] that attach the bracket [11] to the TLA resolver [12].
    - 7) Install the threebolts [9] and three washers [10] that attach the bracket [11] to the control stand.

SUBTASK 76-11-02-420-002-H01

- (2) Do this task: Autothrottle Servomotor (ASM) and Gearbox Installation,  
TASK 76-12-01-400-804-H00

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## SUBTASK 76-11-02-430-001-H01

- (3) Connect the applicable electrical connectors to the electrical panel AE0160:
- (a) For the left TLA resolver [12];
    - 1) Connector DM73102A, position 2
    - 2) Connector DM73102B, position 12.
  - (b) For the right TLA resolver [2];
    - 1) Connector DM73202A, position 15
    - 2) Connector DM73202B, position 8.

## SUBTASK 76-11-02-869-002-H01

- (4) Install the marker tags on new TLA resolver, pig tail listing connector number, and position of electrical connectors.

## SUBTASK 76-11-02-410-001-H01

- (5) Install the applicable clamp [15]:
- (a) Put the clamp [15] in its position on the electrical harness.
  - (b) Install the bolt [13] and washer [14] that attach the clamp [15] and electrical harness to the control stand.

### I. Put the Airplane Back to Its Usual Condition

## SUBTASK 76-11-02-410-002-H01

- (1) Install the side panel [21] to the control stand.
- (a) Tighten the thirteen quick-release fasteners [22] that hold the side panel [21] to the control stand.

## SUBTASK 76-11-02-410-003-H01

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

## SUBTASK 76-11-02-865-017-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

## SUBTASK 76-11-02-865-004-H01

- (4) For the left thrust lever, remove the safety tags and close these circuit breakers:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	24	C73401	L ENG EEC ALTN PWR CHAN A
E	19	C73403	L ENG EEC ALTN PWR CHAN B

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SUBTASK 76-11-02-865-005-H01

- (5) For the right thrust lever, remove the safety tags and close these circuit breakers:

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73400	R ENG EEC ALTN PWR CHAN A
E	11	C73402	R ENG EEC ALTN PWR CHAN B

**J. TLA Resolver Installation Test**

SUBTASK 76-11-02-861-001-H01

- (1) Do this task: Thrust Lever Angle (TLA) Resolver Adjustment (External Equipment), TASK 76-11-02-700-801-H01 or Thrust Lever Angle (TLA) Resolver Adjustment (Airplane Equipment), TASK 76-11-02-700-802-H01

————— **END OF TASK** —————

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### THRUST LEVER ANGLE RESOLVER - ADJUSTMENT/TEST

#### 1. General

- A. This procedure has two tasks:
- (1) An adjustment of the thrust lever angle (TLA) resolver with external test equipment.
  - (2) An adjustment of the thrust lever angle (TLA) resolver with equipment on the airplane.
- B. You can do the TLA resolver adjustment with external test equipment (recommended procedure) or with equipment on the airplane (alternative procedure).
- C. It is recommended to use the external test equipment to adjust the TLA resolver. Use the alternative procedure to adjust the TLA resolver only if you do not have a sinewave oscillator, digital multimeter, frequency counter, or angle position indicator.

#### **TASK 76-11-02-700-801-H01**

#### 2. Thrust Lever Angle (TLA) Resolver Adjustment (External Equipment)

##### A. General

- (1) It is recommended to use this procedure (external equipment) to adjust the TLA resolver. Use the alternative procedure to adjust the TLA resolver only if you do not have a sinewave oscillator, digital multimeter, frequency counter, or angle position indicator.
- (2) In this procedure, the thrust lever angle resolver will be referred to as the TLA resolver.
- (3) The TLA resolvers are installed on the autothrottle assemblies on the control stand.

##### B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
27-61-00-040-801	Spoiler Deactivation (P/B 201)
27-61-00-440-801	Spoiler Activation (P/B 201)
76-11-02-000-801-H01	Thrust Lever Angle Resolver Removal (P/B 401)
76-11-02-400-801-H01	Thrust Lever Angle Resolver Installation (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
COM-210	Counter - Frequency, 120 MHZ Part #: FCA3000 Supplier: 0B7G6 Opt Part #: PM6662/013 Supplier: 89536 Opt Part #: PM6669/013 Supplier: 89536
COM-617	Generator - Signal Part #: 281-U Supplier: 89536
COM-1688	Indicator - Angle Position Part #: 8810A Supplier: 0VGU1 Opt Part #: 8810-S3128 Supplier: 0VGU1

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Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536

**D. Location Zones**

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

**E. Access Panels**

Number	Name/Location
112AL	Forward Access Door

**F. Prepare for the Adjustment**

SUBTASK 76-11-02-865-020-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

Row	Col	Number	Name
B	13	C25324	F/O SEAT

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SUBTASK 76-11-02-865-026-H01

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

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-02-865-007-H01

- (3) For the left thrust lever, open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	24	C73401	L ENG EEC ALTN PWR CHAN A
E	19	C73403	L ENG EEC ALTN PWR CHAN B

SUBTASK 76-11-02-865-008-H01

- (4) For the right thrust lever, open these circuit breakers and install safety tags:

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73400	R ENG EEC ALTN PWR CHAN A
E	11	C73402	R ENG EEC ALTN PWR CHAN B

SUBTASK 76-11-02-040-001-H01



DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (5) Do this task: Spoiler Deactivation, TASK 27-61-00-040-801.

SUBTASK 76-11-02-010-007-H01

- (6) Open the forward access panel to get access to the autothrottle assembly (TASK 06-41-00-800-801).

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

SUBTASK 76-11-02-010-008-H01

- (7) Remove the applicable side panel [1] from the control stand:
- Loosen the 13 quick-release fasteners [2] that hold the side panel [1] to the control stand.
  - Remove the side panel [1].

**G. TLA Resolver Adjustment**

SUBTASK 76-11-02-030-002-H01

- (1) Disconnect the applicable electrical connectors from the AE0160 electrical panel:
- For the left engine;
    - DM73102A (Channel A), position 2
    - DM73102B (Channel B), position 12
  - For the right engine;

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- 1) DM73202A (Channel A), position 15
- 2) DM73202B (Channel B), position 8.

**SUBTASK 76-11-02-080-001-H01**

- (2) Connect the signal generator, COM-617, digital/analog multimeter, COM-1793, 120 MHZ frequency counter, COM-210, and the angle position indicator, COM-1688 to channel A of the applicable TLA resolver .Figure 501, Figure 502

**SUBTASK 76-11-02-820-001-H01**

- (3) Set the signal generator, COM-617 outputs as follows:
  - (a) Voltage:  $7.0 \pm 0.5\%$  volts rms
  - (b) Frequency:  $3.0 \pm 0.1\%$  kHz

**SUBTASK 76-11-02-820-002-H01**

- (4) Hold the thrust lever against the idle stop.

**SUBTASK 76-11-02-869-003-H01**

- (5) Make sure that the angle position indicator, COM-1688 shows  $34.00 \pm 0.25^\circ$ .
  - (a) If the API does not show  $34.00 \pm 0.25^\circ$ , adjust the control rod until you get the correct value .
    - 1) If the angle position indicator, COM-1688 is not in limits, then replace the TLA resolver. These are the tasks: Thrust Lever Angle Resolver Removal, TASK 76-11-02-000-801-H01 and Thrust Lever Angle Resolver Installation, TASK 76-11-02-400-801-H01

**SUBTASK 76-11-02-869-007-H01**

- (6) Move the thrust lever slowly to the full forward thrust position.

**NOTE:** Do not move the thrust lever quickly to the stop position when you check the API readout.

  - (a) Make sure that the API shows  $84.7 \pm 1.0^\circ$  for channel A and channel B.

**SUBTASK 76-11-02-030-003-H01**

- (7) Disconnect the signal generator, COM-617, digital/analog multimeter, COM-1793, 120 MHZ frequency counter, COM-210, and the angle position indicator, COM-1688 from channel A of the TLA resolver .

**SUBTASK 76-11-02-430-002-H01**

- (8) Connect the signal generator, COM-617, digital/analog multimeter, COM-1793, 120 MHZ frequency counter, COM-210, and the angle position indicator, COM-1688 to channel B of the TLA resolver.

**SUBTASK 76-11-02-869-004-H01**

- (9) Hold the thrust lever against the idle stop.

**SUBTASK 76-11-02-869-005-H01**

- (10) Make sure that the angle position indicator, COM-1688 shows  $34.00 \pm 0.25^\circ$ .
  - (a) If the angle position indicator, COM-1688 does not show  $34.00 \pm 0.25^\circ$ , adjust the control rod until you get the correct value .
  - (b) If you adjusted the control rod, then make sure that the angle position indicator, COM-1688 shows  $34.00 \pm 0.25^\circ$  for channel A and channel B .



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- (11) Carefully move the thrust lever to the full forward thrust position and back to the idle stop position and release the thrust lever.

**NOTE:** Do not move the thrust lever quickly to the stop position when you check the API readout.

**SUBTASK 76-11-02-869-006-H01**

- (12) Make sure that the angle position indicator, COM-1688 shows  $34.00 \pm 0.25^\circ$ .
- (a) If the angle position indicator, COM-1688 does not show  $34.00 \pm 0.25^\circ$ , adjust the control rod until you get the correct value.

**SUBTASK 76-11-02-030-004-H01**

- (13) Disconnect the signal generator, COM-617, digital/analog multimeter, COM-1793, 120 MHZ frequency counter, COM-210, and the angle position indicator, COM-1688 from channel B of the TLA resolver .

**SUBTASK 76-11-02-430-003-H01**

- (14) Connect the signal generator, COM-617, digital/analog multimeter, COM-1793, 120 MHZ frequency counter, COM-210, and the angle position indicator, COM-1688 to channel A of the TLA resolver.

**SUBTASK 76-11-02-860-002-H01**

- (15) Make sure that the angle position indicator, COM-1688 shows  $34.00 \pm 0.25^\circ$ .
- (a) If the angle position indicator, COM-1688 does not show  $34.00 \pm 0.25^\circ$ , adjust the control rod until you get the correct value .
- (b) If you adjusted the control rod, then make sure that the angle position indicator, COM-1688 shows  $34.00 \pm 0.25^\circ$  for channel A and channel B .

**SUBTASK 76-11-02-410-004-H01**

- (16) Tighten the jamnuts on the control rod to 95-160 pound-inches .

**SUBTASK 76-11-02-860-003-H01**

- (17) Make sure that the angle position indicator, COM-1688 shows  $34.00 \pm 0.25^\circ$  and did not change.
- (a) If the API does not show  $34.00 \pm 0.25^\circ$  or changed, adjust the control rod until you get the correct value .

**SUBTASK 76-11-02-030-005-H01**

- (18) Disconnect the signal generator, COM-617, digital/analog multimeter, COM-1793, 120 MHZ frequency counter, COM-210, and the angle position indicator, COM-1688 from channel A of the TLA resolver .

**SUBTASK 76-11-02-410-005-H01**

- (19) Install lockwire on the control rod.

**SUBTASK 76-11-02-430-004-H01**

- (20) Connect the applicable electrical connectors to the AE0160 electrical panel:
- (a) For the left engine;
- 1) DM73102A (Channel A), position 2
  - 2) DM73102B (Channel B), position 12
- (b) For the right engine;
- 1) DM73202A (Channel A), position 15
  - 2) DM73202B (Channel B), position 8.

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### H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-02-410-006-H01

- (1) Install the side panel [1] on the control stand:
  - (a) Tighten the thirteen quick-release fasteners [2] that hold the side panel [1] to the control stand.

SUBTASK 76-11-02-440-001-H01

- (2) Do this task: Spoiler Activation, TASK 27-61-00-440-801.

SUBTASK 76-11-02-865-009-H01

- (3) For the left thrust lever, remove the safety tags and close these circuit breakers:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	24	C73401	L ENG EEC ALTN PWR CHAN A
E	19	C73403	L ENG EEC ALTN PWR CHAN B

SUBTASK 76-11-02-865-010-H01

- (4) For the right thrust lever, remove the safety tags and close these circuit breakers:

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73400	R ENG EEC ALTN PWR CHAN A
E	11	C73402	R ENG EEC ALTN PWR CHAN B

SUBTASK 76-11-02-865-019-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-02-865-018-H01

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

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

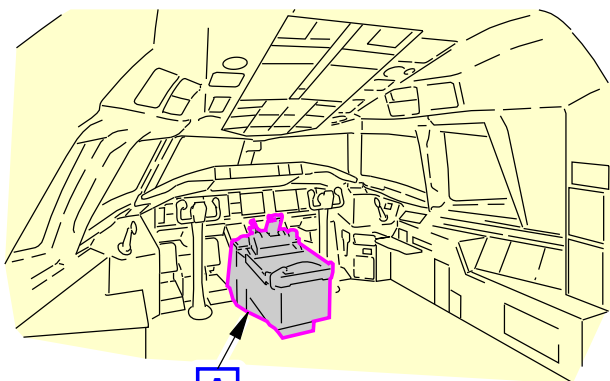
SUBTASK 76-11-02-410-007-H01

- (7) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

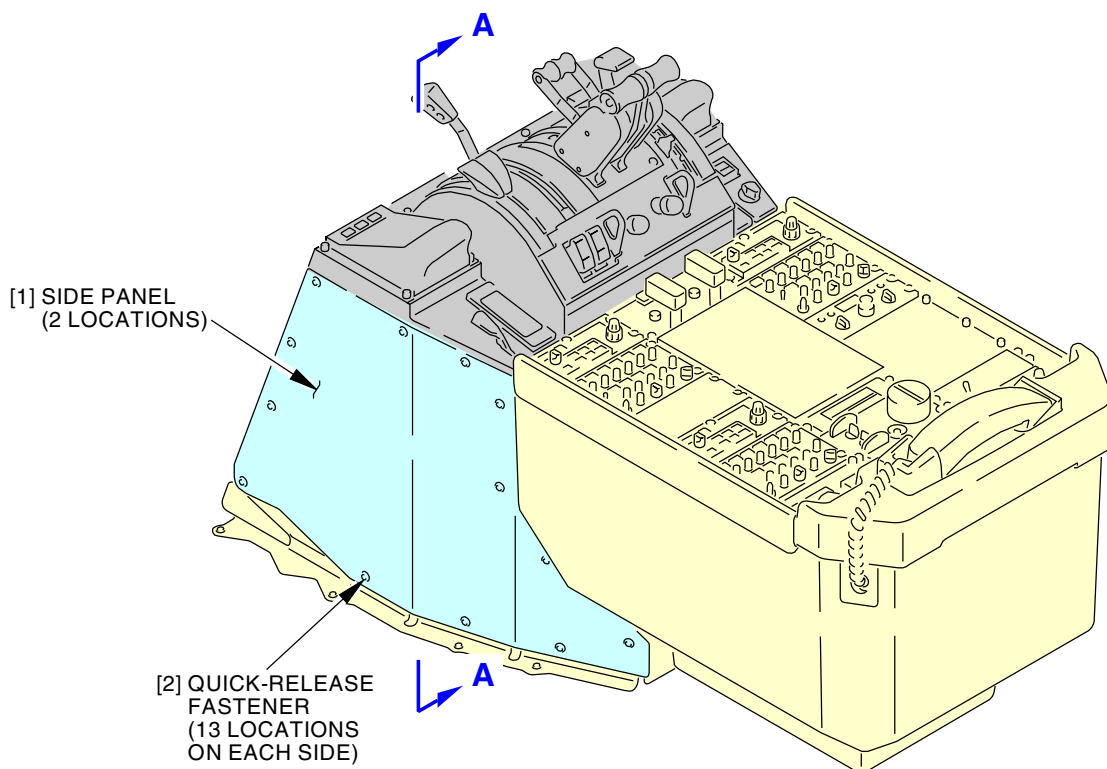
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**A**

FLIGHT COMPARTMENT



CONTROL STAND

**A**



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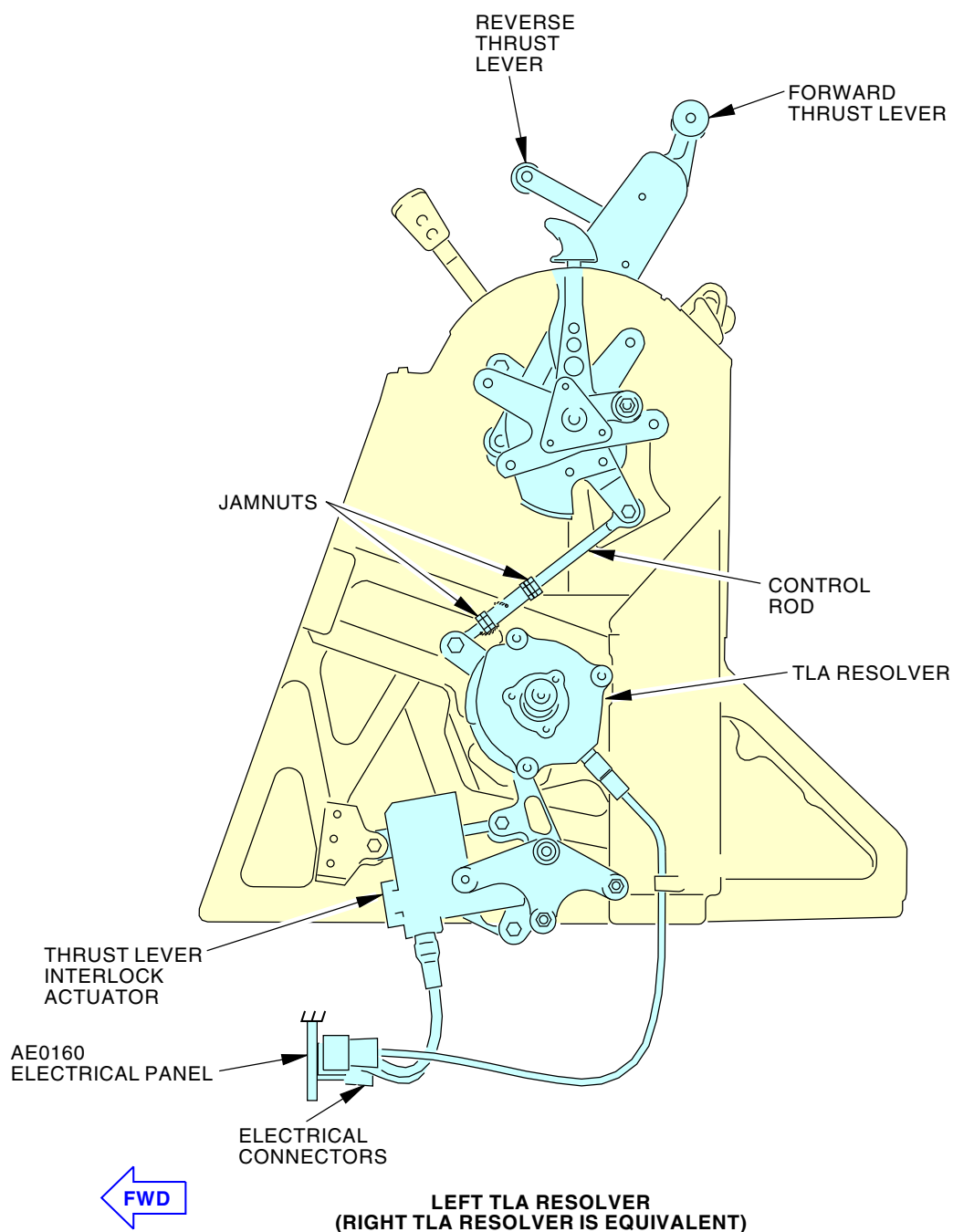
Thrust Lever Angle (TLA) Resolver Adjustment  
Figure 501/76-11-02-990-802-H01 (Sheet 1 of 2)

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**Thrust Lever Angle (TLA) Resolver Adjustment**  
**Figure 501/76-11-02-990-802-H01 (Sheet 2 of 2)**

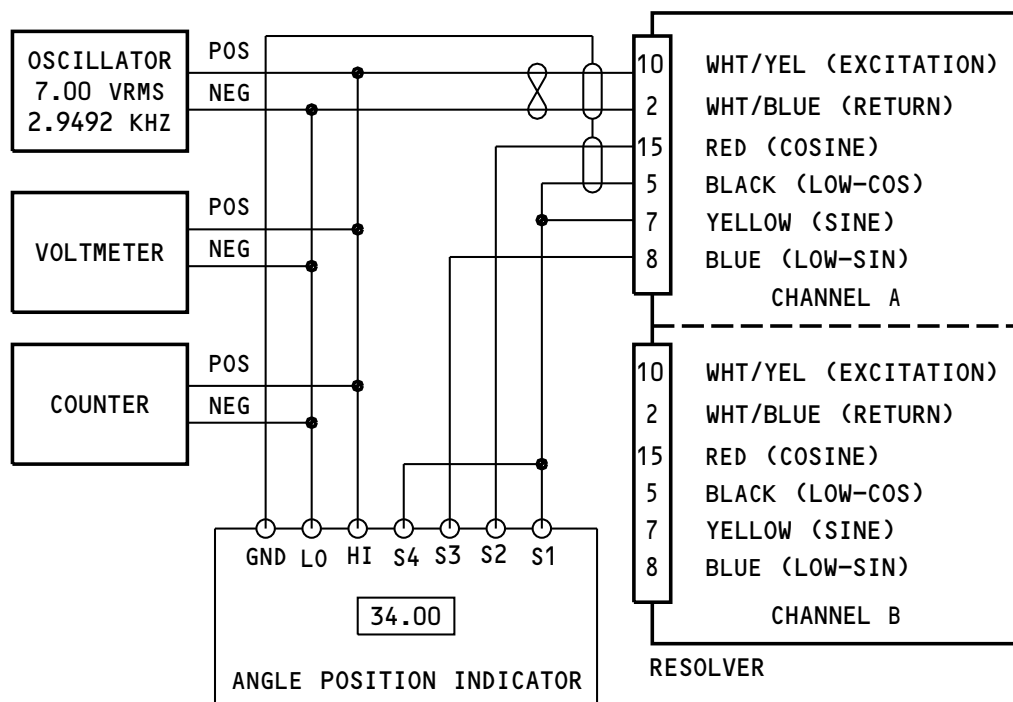
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**LEFT TLA RESOLVER ADJUSTMENT SET-UP**

M07138 S0004286103\_V1

**Thrust Lever Angle (TLA) Resolver Adjustment (with External Equipment)**  
**Figure 502/76-11-02-990-805-H01 (Sheet 1 of 2)**

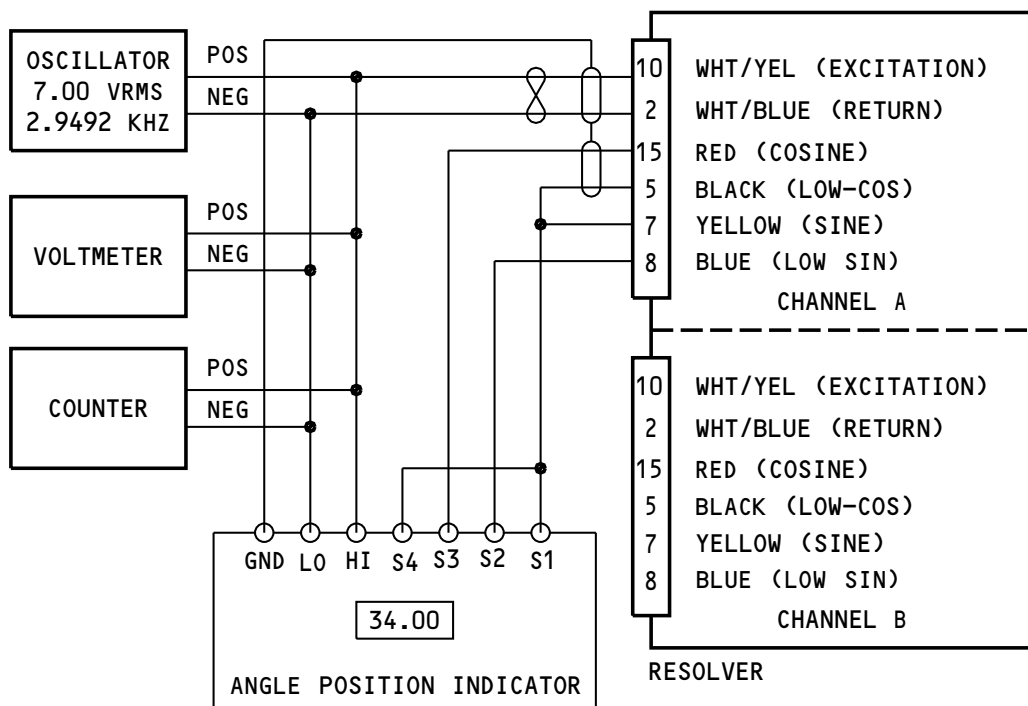
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**RIGHT TLA RESOLVER ADJUSTMENT SET-UP**

M07139 S0004286104\_V1

**Thrust Lever Angle (TLA) Resolver Adjustment (with External Equipment)**  
**Figure 502/76-11-02-990-805-H01 (Sheet 2 of 2)**

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### TASK 76-11-02-700-802-H01

### 3. Thrust Lever Angle (TLA) Resolver Adjustment (Airplane Equipment)

#### A. General

- (1) It is recommended to use the external test equipment to adjust the TLA resolver. Use this procedure (airplane equipment) to adjust the TLA resolver only if you do not have a sinewave oscillator, digital multimeter, frequency counter, or angle position indicator.
- (2) In this procedure the thrust lever angle resolver will be referred to as the TLA resolver.
- (3) The TLA resolvers are installed on the autothrottle assemblies of the control stand.

#### B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
27-61-00-040-801	Spoiler Deactivation (P/B 201)
27-61-00-440-801	Spoiler Activation (P/B 201)
31-61-00-800-804	Showing a Maintenance Page (P/B 201)
76-11-02-000-801-H01	Thrust Lever Angle Resolver Removal (P/B 401)
76-11-02-400-801-H01	Thrust Lever Angle Resolver Installation (P/B 401)

#### 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
112AL	Forward Access Door

#### E. Prepare for the Adjustment

##### SUBTASK 76-11-02-860-004-H01

- (1) Make sure the FUEL CONTROL switch is in the CUTOFF position.

##### SUBTASK 76-11-02-860-005-H01

- (2) Put the applicable EEC MAINT L(R) ENG POWER switch on the overhead maintenance panel, P61, in the TEST position.

##### SUBTASK 76-11-02-865-024-H01



#### WARNING

REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (3) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

#### Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

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### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-02-865-025-H01



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 THE EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (4) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-02-010-009-H01

- (5) Open the forward access panel to get access to the autothrottle assembly (TASK 06-41-00-800-801).

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

SUBTASK 76-11-02-040-002-H01



DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (6) Do this task: Spoiler Deactivation, TASK 27-61-00-040-801.

SUBTASK 76-11-02-010-010-H01

- (7) Remove the applicable side panel [1] from the control stand:
- Loosen the thirteen quick-release fasteners [2] that hold the side panel [1] to the control stand.
  - Remove the side panel [1].

### F. TLA Resolver Adjustment

Figure 503

SUBTASK 76-11-02-860-007-H01

- (1) To select the EPCS maintenance page on EICAS, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

SUBTASK 76-11-02-860-008-H01

- (2) Hold the thrust lever against the idle stop.

SUBTASK 76-11-02-860-009-H01

- (3) Make sure that the TRA indication on the EPCS maintenance page shows  $34.0 \pm 0.7^\circ$  for channel A and channel B.

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- (a) Make sure that the difference is less than or equal to  $0.3^{\circ}$  between the channel A TRA indication and the channel B TRA indication on the EPCS maintenance page.
- 1) If the TRA indication is not in limits, then replace the TLA resolver.

These are the tasks:

Thrust Lever Angle Resolver Removal, TASK 76-11-02-000-801-H01,

Thrust Lever Angle Resolver Installation, TASK 76-11-02-400-801-H01.

**SUBTASK 76-11-02-860-010-H01**

- (4) Move the thrust lever to the full forward thrust position.

NOTE: Do not move the thrust lever quickly.

**SUBTASK 76-11-02-860-011-H01**

- (5) Make sure that the TRA indication for the two channels on the EPCS maintenance page shows  $84.7 \pm 1.5^{\circ}$ .

- (a) Make sure that the difference is less than or equal to  $0.3^{\circ}$  between the channel A TRA indication and the channel B TRA indication on the EPCS maintenance page.

**SUBTASK 76-11-02-869-008-H01**

- (6) Move the thrust lever to the idle position and release the thrust lever.

NOTE: Do not move the thrust lever quickly.

**SUBTASK 76-11-02-869-009-H01**

- (7) Make sure that the TRA indication on the EPCS maintenance page shows  $34.0 \pm 0.7^{\circ}$  for channel A and channel B (Figure 503).

- (a) Make sure that the difference is less than or equal to  $0.3^{\circ}$  between the channel A TRA indication and the channel B TRA indication on the EPCS maintenance page.

**SUBTASK 76-11-02-410-008-H01**

- (8) Tighten the jamnuts on the control rod to 95-160 pound-inches.

**SUBTASK 76-11-02-869-010-H01**

- (9) Make sure that the TRA indication on the EPCS maintenance page did not change and still shows  $34.0 \pm 0.7^{\circ}$  for channel A and channel B (Figure 503).

- (a) Make sure that the difference is less than or equal to  $0.3^{\circ}$  between the channel A TRA indication and the channel B TRA indication on the EPCS maintenance page.

**SUBTASK 76-11-02-410-009-H01**

- (10) Install lockwire on the control rod.

**G. Put the Airplane Back to Its Usual Condition****SUBTASK 76-11-02-860-013-H01**

- (1) Put the applicable EEC MAINT L(R) ENG POWER switch on the P61 panel in the NORM position.

**SUBTASK 76-11-02-410-010-H01**

- (2) Install the side panel [1] on the control stand:

- (a) Tighten the 13 quick-release fasteners [2] that hold the side panel [1] to the control stand.

**SUBTASK 76-11-02-440-002-H01**

- (3) Do this task: Spoiler Activation, TASK 27-61-00-440-801.

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SUBTASK 76-11-02-865-022-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-02-865-023-H01

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

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-02-410-011-H01

- (6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

————— END OF TASK —————

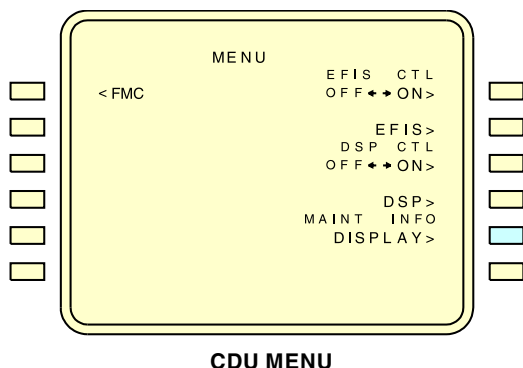
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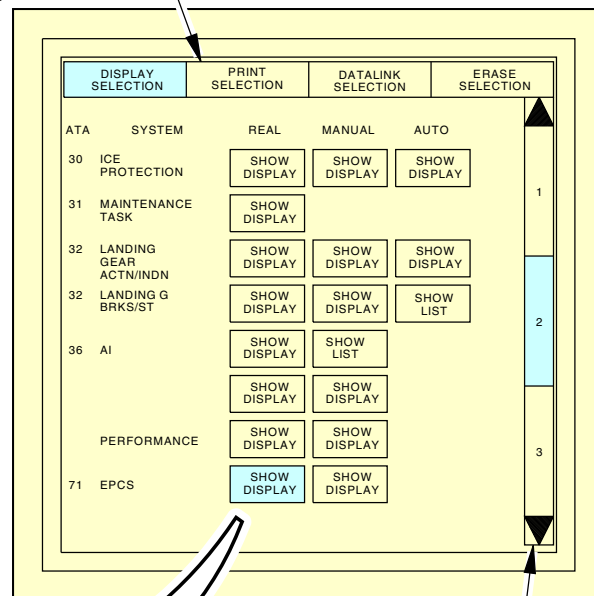
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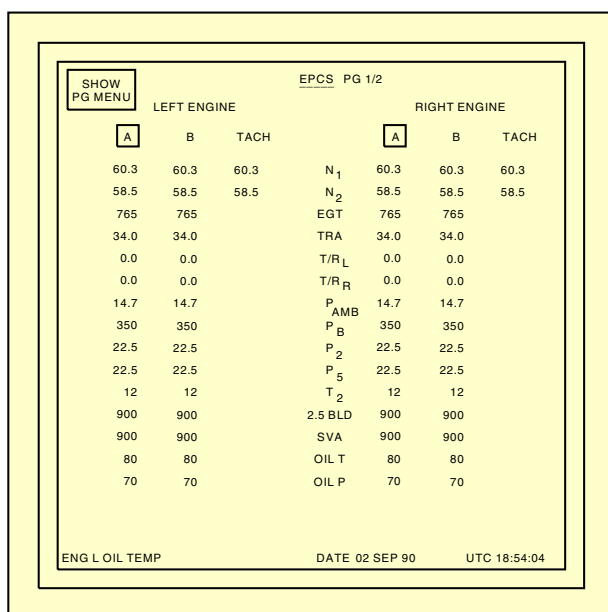


MAIN MENU BAR



SCROLL BAR

MFD DISPLAY



MFD DISPLAY

**NOTE:**

THE DATA SHOWN ON THE DISPLAYS IS ONLY AN EXAMPLE.

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## Thrust Lever Angle (TLA) Resolver Adjustment (with Airplane Equipment) Figure 503/76-11-02-990-803-H01

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### ENGINE FUEL CONTROL MODULE - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has two tasks:
- (1) A removal of the engine fuel control module
  - (2) An installation of the engine fuel control module.

#### TASK 76-11-09-000-801-H01

#### 2. Engine Fuel Control Module Removal

##### A. General

- (1) This task is the removal procedure for the engine fuel control module.
- (2) The engine fuel control module is located on the control stand.

##### B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment, Left
212	Flight Compartment, Right

##### C. Prepare to Remove the Engine Fuel Control Module

SUBTASK 76-11-09-865-006-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

##### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

##### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-09-865-002-H01

- (2) Open these circuit breakers and install safety tags:
  - (a) Center power supply assembly (PSA-C) in the E2-6 rack:
    - 1) B2 STAB TRIM
  - (b) Right power supply assembly (PSA-R) in the E5-1 rack:
    - 1) B2 STAB TRIM

SUBTASK 76-11-09-865-003-H01

- (3) Open these circuit breakers and install safety tags:

##### Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	1	C76609	L ENG EEC RST

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

**Standby Power Management Panel, P310**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	2	C76608	R ENG EEC RST
G	3	C76603	L ENG EEC RST/FUEL SPAR
G	4	C76602	R ENG EEC RST/FUEL SPAR
G	5	C76605	L ENG IGN CTRL
G	6	C76604	R ENG IGN CTRL
G	7	C76607	L ENG FUEL/IGN CTRL
G	8	C76606	R ENG FUEL/IGN CTRL

SUBTASK 76-11-09-010-001-H01

- (4) Remove the two side panel [3] and side panel [22] of the control stand:
  - (a) Remove the thirteen quick-release fasteners [4] that hold each side panel [3] and side panel [22] to the control stand.
  - (b) Remove the side panel [3] and side panel [22].

**D. Engine Fuel Control Module Removal**

Figure 401

SUBTASK 76-11-09-030-001-H01



YOU MUST BE CAREFUL WHEN YOU REMOVE THE COMPONENTS FROM THE CONTROL STAND. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUT PLATES, WIRE BUNDLES AND THE PAINTED FINISH ON ALL THE PARTS CAN OCCUR.

- (1) Disconnect the four electrical connector [5], electrical connector [6], electrical connector [7], electrical connector [8] from the electrical connector panels.

SUBTASK 76-11-09-010-002-H01

- (2) Remove the three clamps [10] and clamps [26].
  - (a) Remove the screws [11] and screws [27] and washers [12] from each clamps [10] and clamps [26].

SUBTASK 76-11-09-010-003-H01

- (3) Remove the two lens caps from the two fuel control switches [1].

SUBTASK 76-11-09-010-004-H01

- (4) Remove the fuel control lightplate [13] by loosening the 4 captive fasteners.

SUBTASK 76-11-09-010-005-H01

- (5) Remove the four screws [16] and screws [23] that hold the panel [18] to the control stand and tilt the forward edge back approximately 90 degrees for service access.

SUBTASK 76-11-09-020-001-H01

- (6) Remove the two switch guards [19] and the two STAB CUTOFF switches [24] from the panel [18]:
  - (a) Turn the two switch guards [19] to the open position.
  - (b) Remove the two nuts [21] and lockwashers [20].
  - (c) Remove the two STAB CUTOFF switches [24] and set them aside on the control stand.

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AIRCRAFT MAINTENANCE MANUAL****SUBTASK 76-11-09-010-006-H01**

- (7) Carefully remove the panel [18], the two fuel control switches [1], the wire bundle [2] and wire bundle [9], and the electrical connector [5], electrical connector [6], electrical connector [7], and electrical connector [8] out of the control stand.

**SUBTASK 76-11-09-010-007-H01**

- (8) Remove the two nuts [14], two lockwashers [15], two keywashers [17], and two fuel control switches [1] from the panel [18].

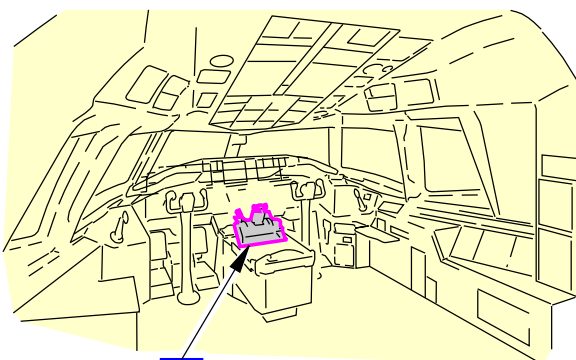
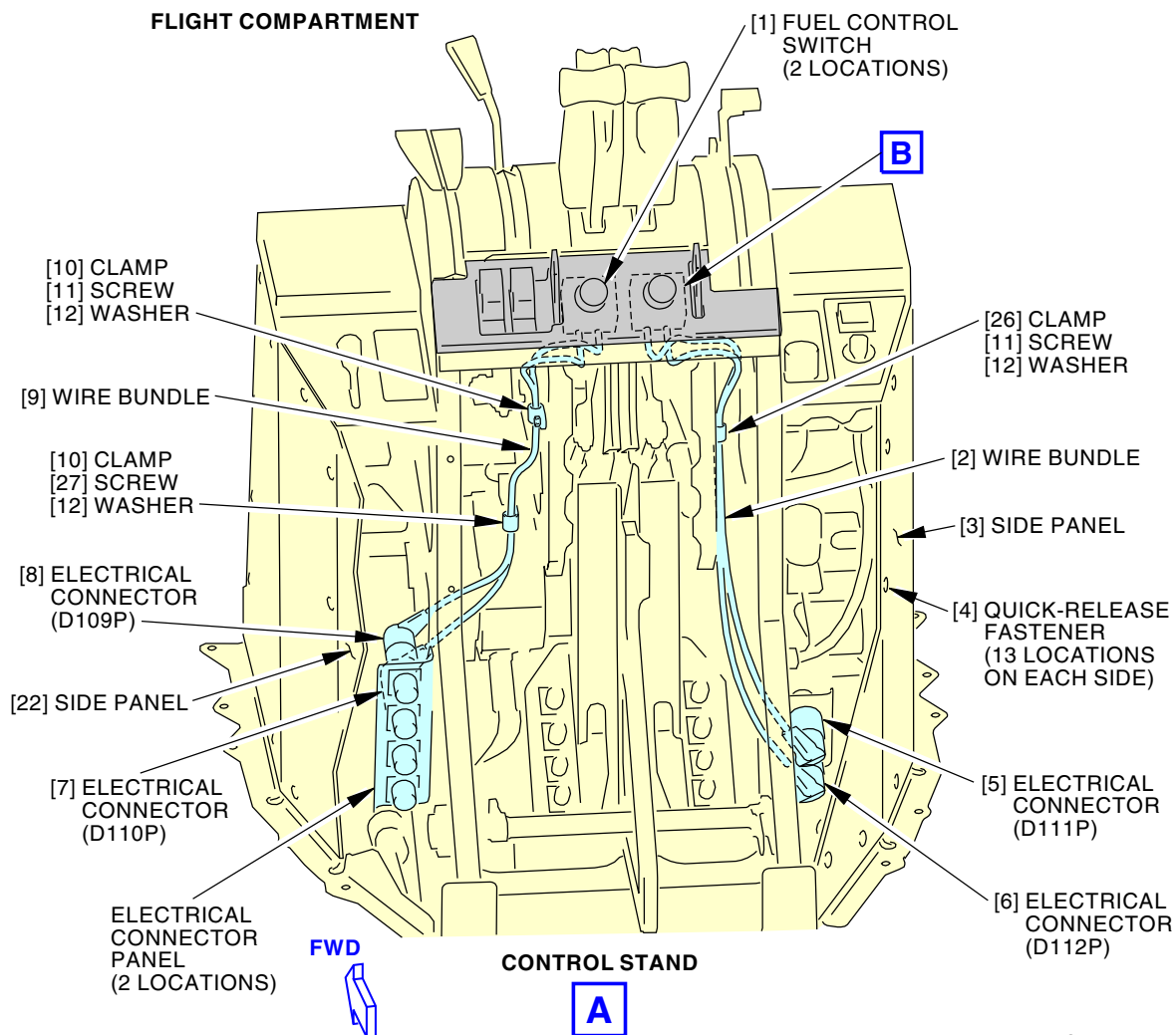
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**A****FLIGHT COMPARTMENT**

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**Engine Fuel Control Module Installation**  
**Figure 401/76-11-09-990-801-H01 (Sheet 1 of 2)**

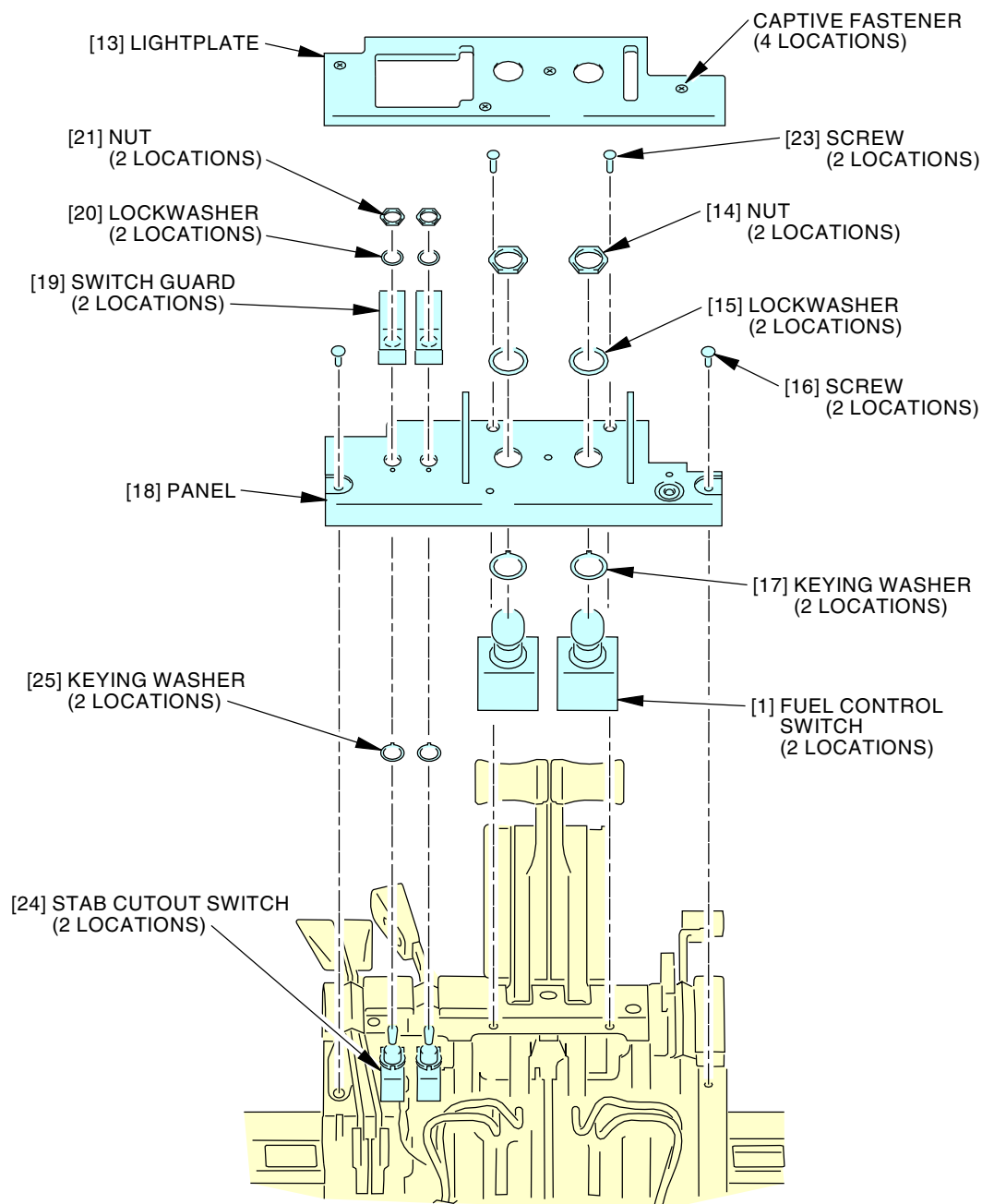
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**B**

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**Engine Fuel Control Module Installation**  
Figure 401/76-11-09-990-801-H01 (Sheet 2 of 2)

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### TASK 76-11-09-400-801-H01

#### 3. Engine Fuel Control Module Installation

##### A. General

(1) This task is the installation procedure for the engine fuel control module.

##### B. References

Reference	Title
28-22-00-710-801	Engine Fuel Spar Valve - Electrical Control and Indication Test (P/B 501)
28-22-00-720-803	Fuel Shutoff Valve Battery - Test (P/B 501)
33-16-00-710-801	Master Dim and Test - Operational Test (P/B 501)
76-11-00-700-801-H01	Thrust Lever Load Test (P/B 501)
76-11-00-710-801-H01	Thrust Lever Travel Test (P/B 501)

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel control switch	76-11-09-05-070	ARO ALL
		76-11-09-05-110	ARO ALL
19	Switch guard	27-41-04-05-010	ARO ALL

##### D. Location Zones

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

##### E. Engine Fuel Control Module Installation

SUBTASK 76-11-09-410-001-H01



YOU MUST BE CAREFUL WHEN YOU INSTALL THE COMPONENTS ON THE CONTROL STAND. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE BUNDLES AND PAINTED FINISH ON ALL THE PARTS CAN OCCUR.

(1) Install the two STAB CUTOUT switches [24]:

- (a) Install the two switch guards [19] and the two STAB CUTOUT switches [24] to the panel [18].
  - 1) Install the two nuts [21], two lockwashers [20] and two keywashers [25].

SUBTASK 76-11-09-410-002-H01

(2) Install the two fuel control switches [1]:

- (a) Put the two keywashers [17] on the fuel control switches [1].
- (b) Install the panel [18] over the two fuel control switches [1]:

**NOTE:** Make sure that the keys on the two keywashers are engaged to the holes in the panel. This will prevent the fuel control switch from moving to the incorrect direction.

- 1) Install the two nuts [14] and two lockwashers [15] to the two fuel control switches [1].

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## SUBTASK 76-11-09-430-001-H01

- (3) Connect the four electrical connector [5], electrical connector [6], electrical connector [7], and electrical connector [8]:
  - (a) Carefully put the four electrical connector [5], electrical connector [6], electrical connector [7], and electrical connector [8] and the two wire bundle [2] in the control stand.
  - (b) Install the three clamps [10] and clamps [26] with the three screws [11] and screws [27] and the three washers [12].
 

**NOTE:** Before you tighten the screws make sure that you can rotate the panel along the lower edge at least 90 degrees aft for servicing.
  - (c) Connect the four electrical connector [5], electrical connector [6], electrical connector [7], electrical connector [8] to the two electrical connector panels.

## SUBTASK 76-11-09-410-003-H01

- (4) Install the panel [18] to the control stand.
  - (a) Install the four screws [16] and screws [23] to install the panel [18] on the control stand.

## SUBTASK 76-11-09-410-004-H01

- (5) Install the fuel control lightplate [13] on the panel [18].

## SUBTASK 76-11-09-410-005-H01

- (6) Install the two lens caps on the two fuel control switches [1].

### F. Put the Airplane Back to Its Usual Condition

## SUBTASK 76-11-09-410-006-H01

- (1) Install the side panel [3] and side panel [22] of the control stand.
  - (a) Tighten the thirteen quick-release fasteners [4] that hold each side panel [3] and side panel [22] the control stand.

## SUBTASK 76-11-09-865-007-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

## SUBTASK 76-11-09-410-007-H01

- (3) Close these circuit breakers and remove the DO-NOT-CLOSE tags:
  - (a) Center power supply assembly (PSA-C) in the E2-6 rack:
    - 1) B2 STAB TRIM
  - (b) Right power supply assembly (PSA-R) in the E5-1 rack:
    - 1) B2 STAB TRIM

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SUBTASK 76-11-09-865-005-H01

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

### Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	1	C76609	L ENG EEC RST
G	2	C76608	R ENG EEC RST
G	3	C76603	L ENG EEC RST/FUEL SPAR
G	4	C76602	R ENG EEC RST/FUEL SPAR
G	5	C76605	L ENG IGN CTRL
G	6	C76604	R ENG IGN CTRL
G	7	C76607	L ENG FUEL/IGN CTRL
G	8	C76606	R ENG FUEL/IGN CTRL

### G. Do a Test of the Engine Fuel Control Module

SUBTASK 76-11-09-410-008-H01

- (1) Do this task: Master Dim and Test - Operational Test, TASK 33-16-00-710-801.

SUBTASK 76-11-09-410-009-H01

- (2) Do this task: Engine Fuel Spar Valve - Electrical Control and Indication Test, TASK 28-22-00-710-801.

SUBTASK 76-11-09-410-010-H01

- (3) Do this task: Fuel Shutoff Valve Battery - Test, TASK 28-22-00-720-803.

SUBTASK 76-11-09-410-011-H01

- (4) Do this task: Thrust Lever Travel Test, TASK 76-11-00-710-801-H01.

SUBTASK 76-11-09-410-012-H01

- (5) Do this task: Thrust Lever Load Test, TASK 76-11-00-700-801-H01.

————— **END OF TASK** —————

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### CONTROL STAND RAILS, COVERS AND SEALS - REMOVAL/INSTALLATION

#### 1. General

A. This procedure has two tasks:

- (1) A removal of the rail, seal retainers, seal assemblies, covers, and lightplates from the control stand.
- (2) An installation of the rail, seal retainers, seal assemblies, covers, and lightplates to the control stand.

#### **TASK 76-11-10-000-805-H00**

#### 2. Control Stand Rails, Seal Retainers, Seal Assemblies, Covers, and Lightplates Removal

##### A. **General**

- (1) Removal of the rails, seal retainers, seal assemblies (referred to as seals), covers and lightplates will let you get access to these components in the control stand: the thrust levers, the speedbrake lever, the pitch trim lever, the flap lever and the switch pack.
- (2) This procedure has the removal of these primary assemblies:
  - (a) The cover assembly of the pitch trim lever.
  - (b) The cover assembly of the speedbrake lever.
  - (c) The cover assembly of the thrust levers.
  - (d) The cover assembly of the flap lever.

##### B. **References**

Reference	Title
27-61-00-040-802	Spoiler Deactivation (With the Spoilers Up) (P/B 201)
27-61-00-040-803	Spoiler Deactivation (With the Spoilers Down) (P/B 201)
76-11-09-000-801-H01	Engine Fuel Control Module Removal (P/B 401)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

##### C. **Location Zones**

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

##### D. **Prepare for the Removal**

SUBTASK 76-11-10-865-005-H01



**WARNING**

REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

##### **Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

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### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-10-040-001-H01

**WARNING**

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00

SUBTASK 76-11-10-865-004-H01

**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 THE EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (3) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-10-040-002-H01

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) Do the deactivation procedure for the spoilers;
- (a) With the spoilers in the up position, do this task: Spoiler Deactivation (With the Spoilers Up), TASK 27-61-00-040-802.
  - (b) With the spoilers in the down position, do this task: Spoiler Deactivation (With the Spoilers Down), TASK 27-61-00-040-803.

### E. Control Stand Rails, Seal Retainers, Seal Assemblies, Covers, and Lightplates Removal

SUBTASK 76-11-10-010-001-H01

**CAUTION**

YOU MUST BE CAREFUL WHEN YOU REMOVE THE COMPONENTS FROM THE CONTROL STAND. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, WIRE HARNESSSES AND THE PAINTED FINISH ON ALL THE PARTS CAN OCCUR IF YOU ARE NOT CAREFUL.

- (1) Do this task: Engine Fuel Control Module Removal, TASK 76-11-09-000-801-H01

SUBTASK 76-11-10-020-001-H01

- (2) Remove the switch pack cover [1].
- (a) Remove the four screws [3] and screws [4].

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AIRCRAFT MAINTENANCE MANUAL****SUBTASK 76-11-10-010-002-H01**

- (3) Remove the cover assembly of the pitch trim lever [5]:
- (a) Remove the cover [8].
    - 1) Remove the four screws [7] and one screw [9].
  - (b) Remove the seal assembly [6].

**SUBTASK 76-11-10-010-003-H01**

- (4) Remove the cover assembly of the speedbrake lever [2]:
- (a) Remove the pitch trim lever lightplate [10].
    - 1) Loosen the two captive screws [19].
  - (b) Remove the cover [18].
    - 1) Remove the one screw [16], one screw [17], one screw [11], and eight screws [20].
    - 2) Disconnect the electrical connector [12] from the connector of the wire bundle assembly.
  - (c) Remove the two seal [14] and seal [15].
  - (d) Remove the two seal retainers [13].

**SUBTASK 76-11-10-010-004-H01**

- (5) Remove the cover [24] of the thrust levers [32]:
- (a) Remove the speedbrake lever lightplate [37].
    - 1) Remove the two screws [36].
  - (b) Remove the screws [36].
    - 1) Remove the one screw [25], one screw [35], two screws [23], four screws [34], and ten screws [21].
    - 2) Disconnect the electrical connector [22] from the connector of the wire bundle assembly.
  - (c) Remove the four seal [26], seal [27], seal [28], and seal [33].
  - (d) Remove the rail [30].
  - (e) Remove the two seal retainer [29] and seal retainer [31].

**SUBTASK 76-11-10-010-005-H01**

- (6) Remove the cover assembly of the flap lever [49]:
- (a) Remove the flap lever lightplate [44].
    - 1) Remove the two screw [43].
  - (b) Remove the cover [46].
    - 1) Remove the two screws [45] and four screws [47].
    - 2) Disconnect the electrical connector [42] from the connector of the wire bundle assembly.
  - (c) Remove the detent plate [39] of the flap lever [49].
    - 1) Remove the eight rivets [38].
    - 2) Remove the two screws [41 ] and two washers [40].
  - (d) Remove the seal [48].

———— **END OF TASK** ————

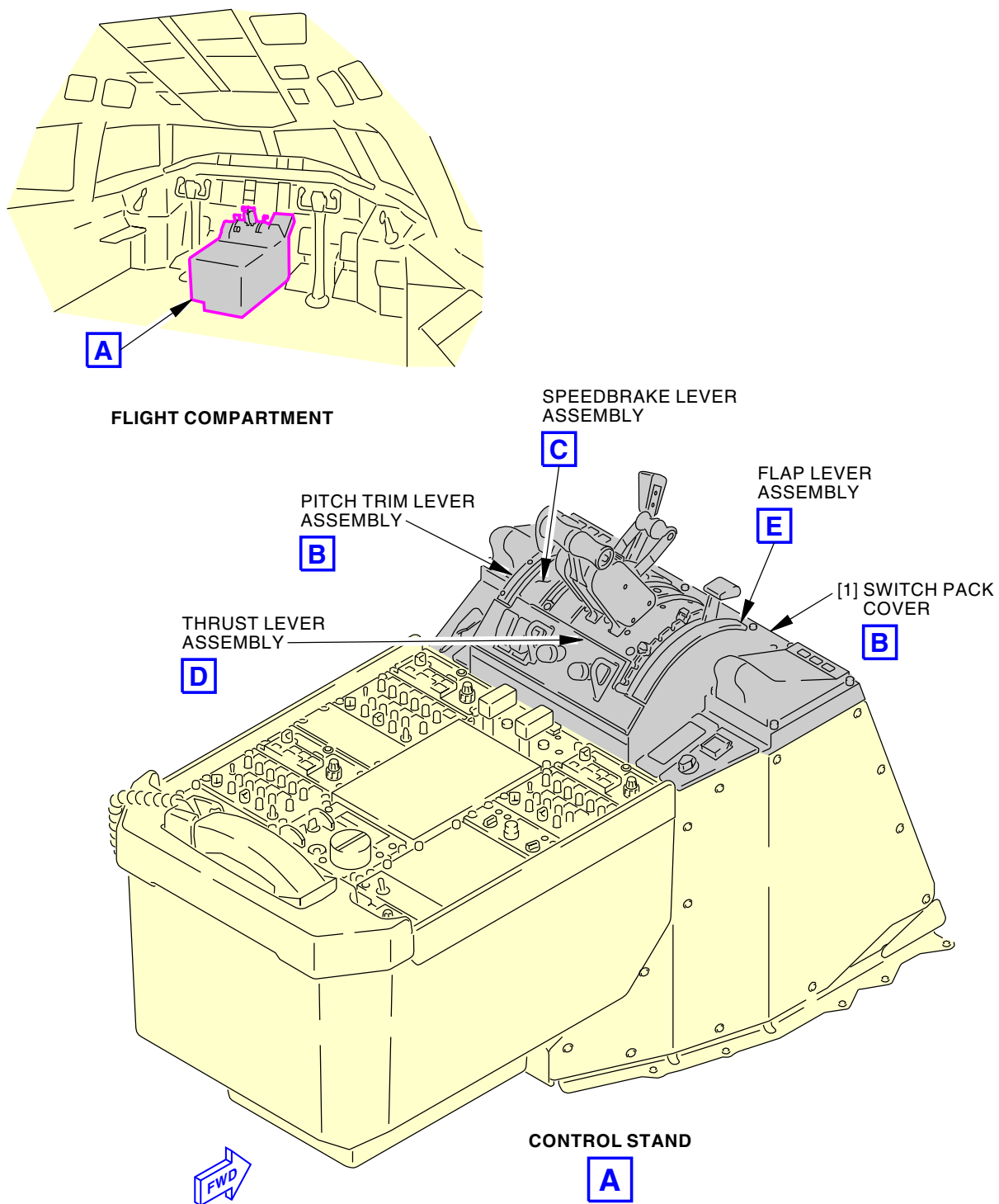
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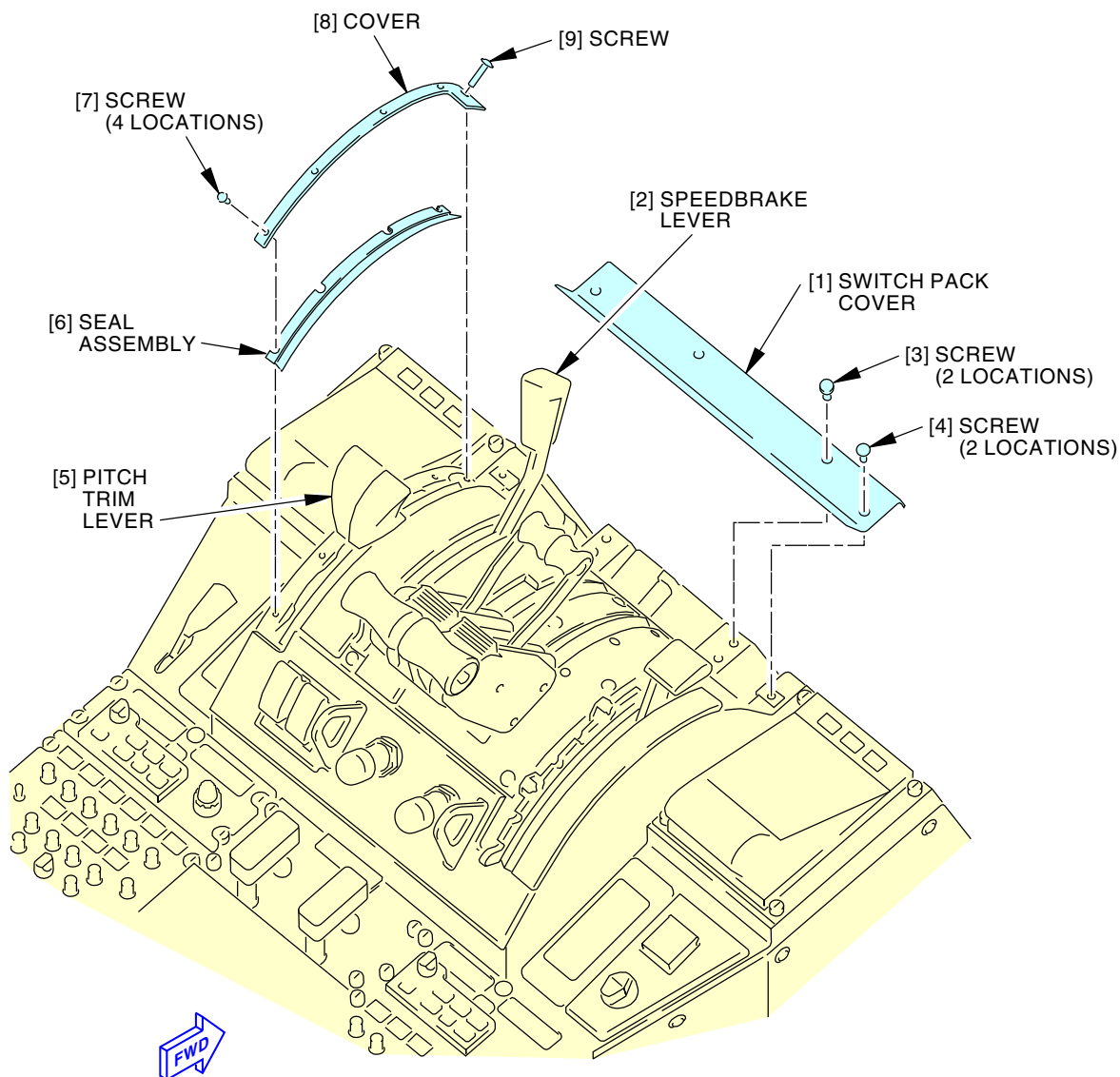
Control Stand Rails, Covers and Seals Installation  
Figure 401/76-11-10-990-801-H01 (Sheet 1 of 5)

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**PITCH TRIM LEVER ASSEMBLY AND SWITCH PACK COVER**
**B**

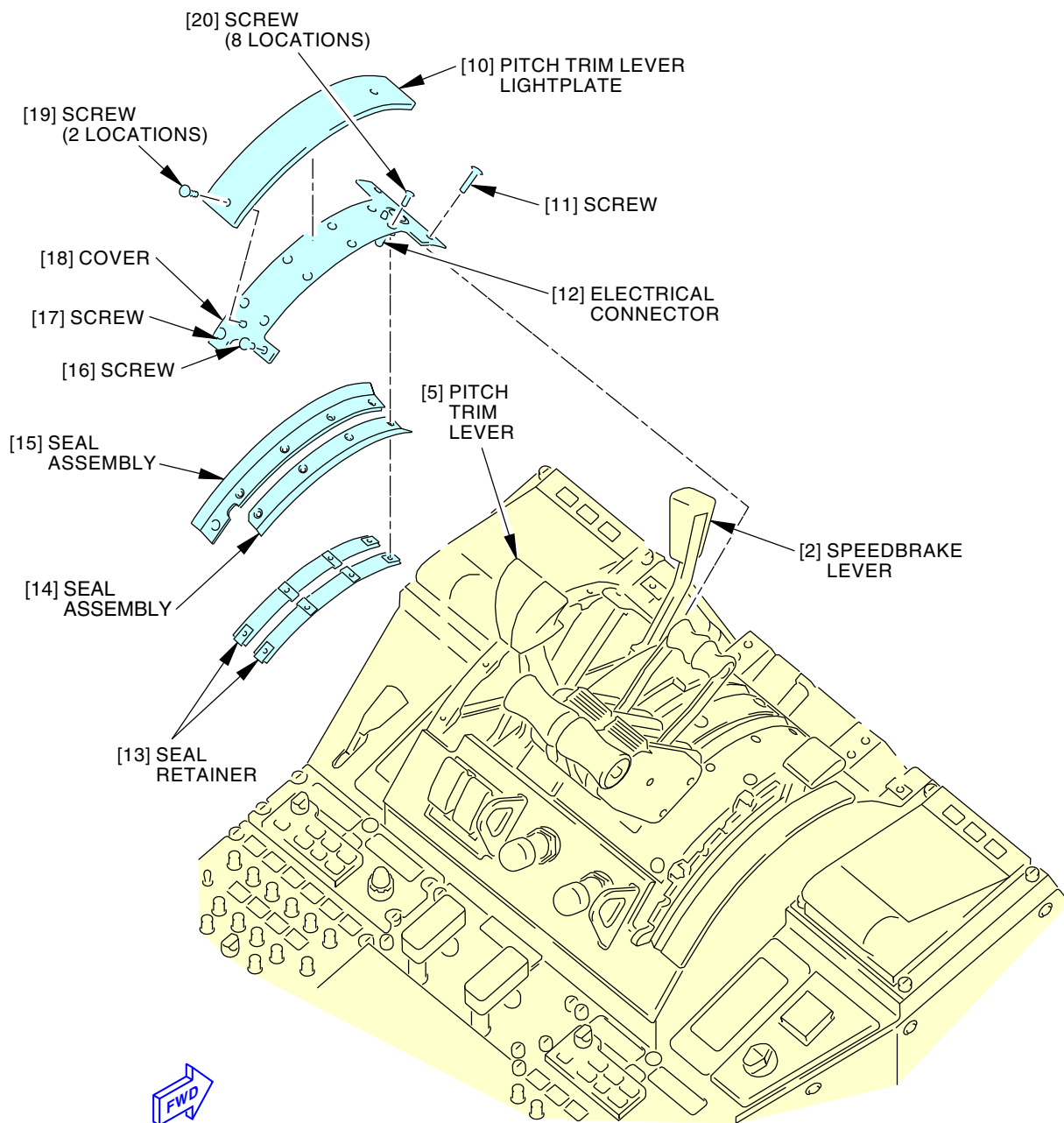
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**Control Stand Rails, Covers and Seals Installation  
Figure 401/76-11-10-990-801-H01 (Sheet 2 of 5)**
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**SPEEDBRAKE LEVER ASSEMBLY**
**C**

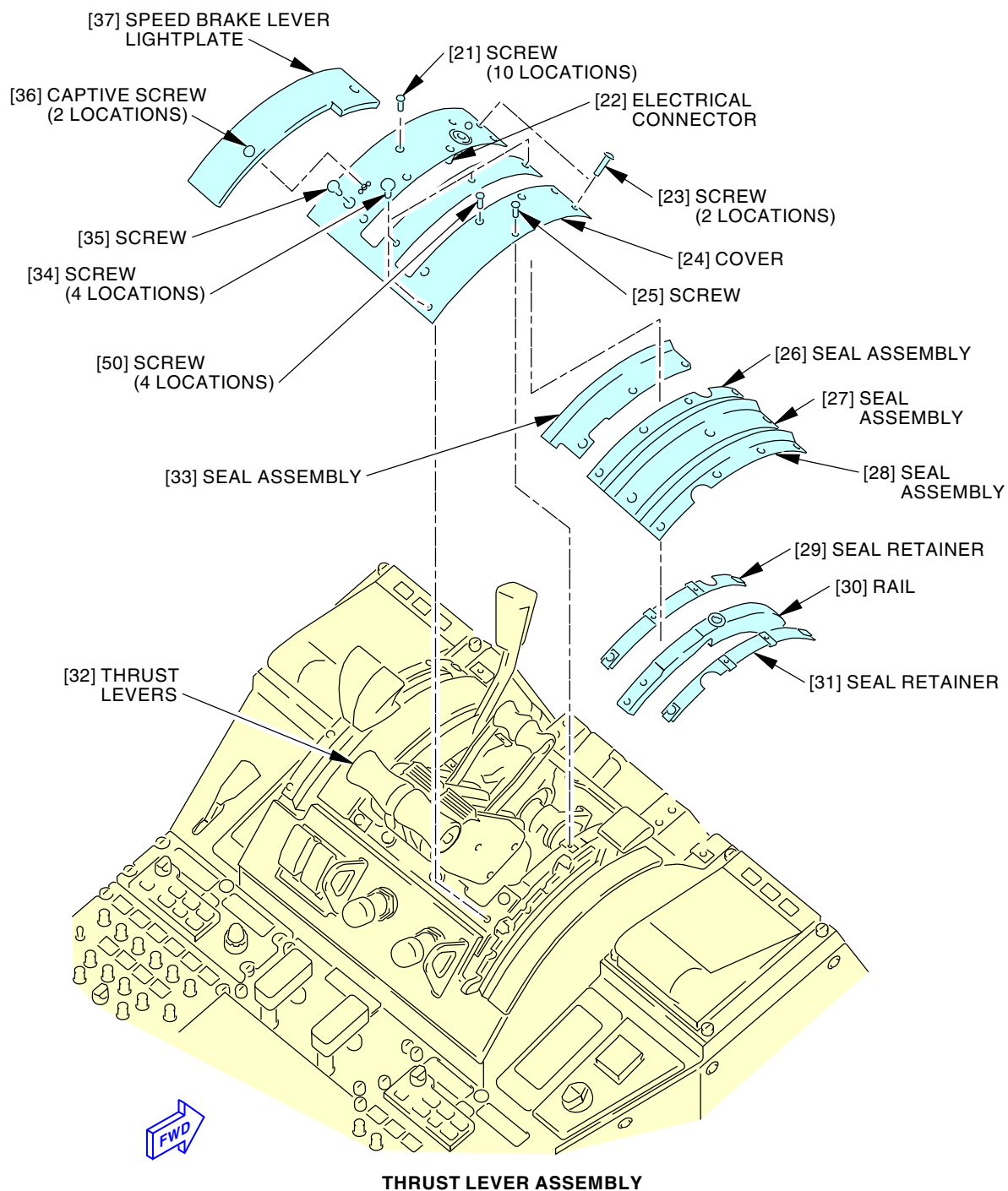
M07144 S0004286112\_V2

**Control Stand Rails, Covers and Seals Installation  
Figure 401/76-11-10-990-801-H01 (Sheet 3 of 5)**
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**Control Stand Rails, Covers and Seals Installation**  
Figure 401/76-11-10-990-801-H01 (Sheet 4 of 5)

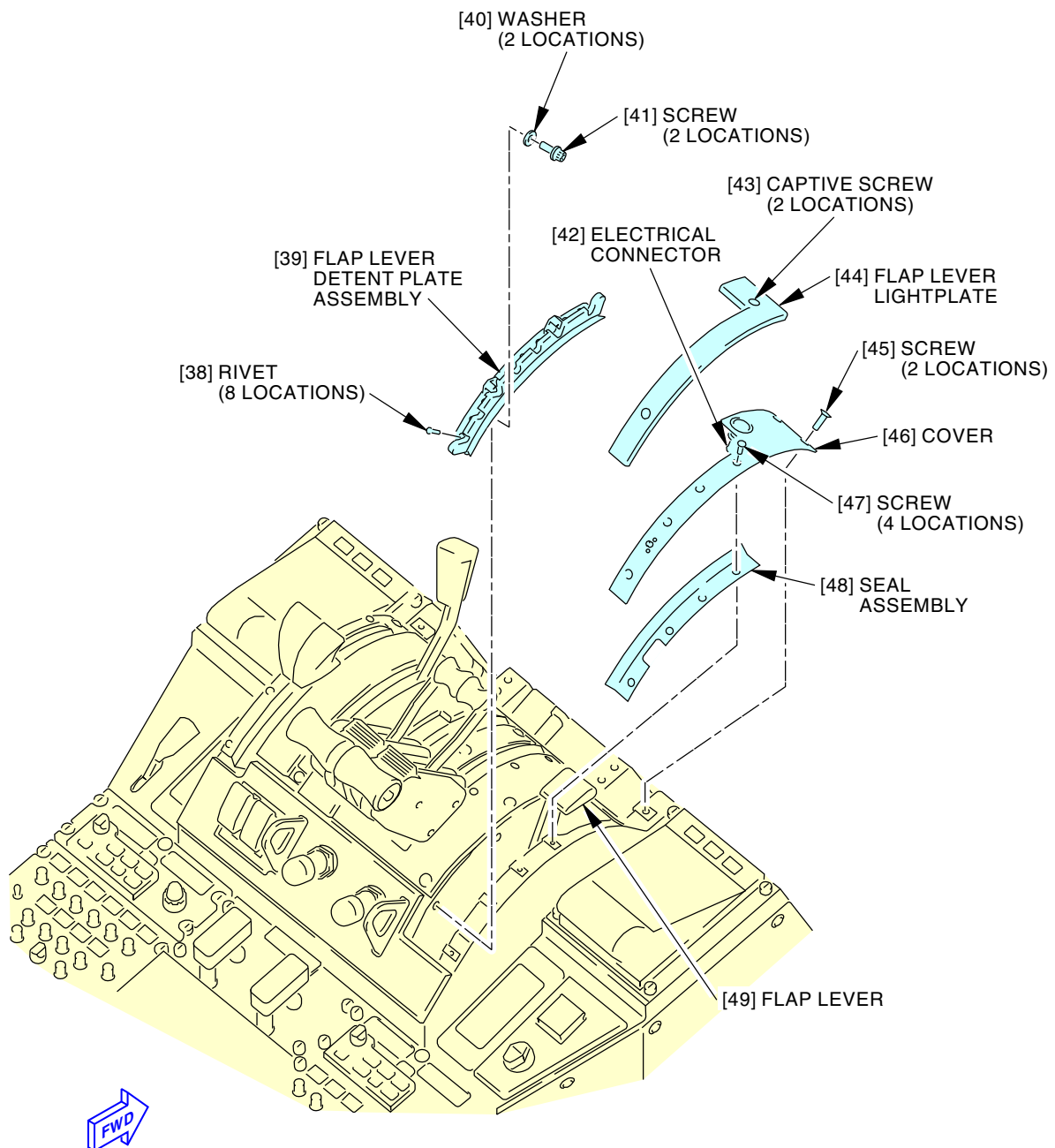
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**FLAP LEVER ASSEMBLY**

**E**

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**Control Stand Rails, Covers and Seals Installation  
Figure 401/76-11-10-990-801-H01 (Sheet 5 of 5)**

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**TASK 76-11-10-400-805-H00****3. Control Stand Rails, Seal Retainers, Seal Assemblies, Covers, and Lightplates Installation****A. General**

- (1) This procedure has the installation of these primary assemblies:
- (a) The cover assembly of the flap lever.
  - (b) The cover assembly of the thrust levers.
  - (c) The cover assembly of the speedbrake lever.
  - (d) The cover assembly of the pitch trim lever.

**B. References**

Reference	Title
27-61-00-440-801	Spoiler Activation (P/B 201)
76-11-09-400-801-H01	Engine Fuel Control Module Installation (P/B 401)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

**C. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch pack cover	76-11-10-05-025	ARO ALL
8	Cover	76-11-10-05-050	ARO ALL
13	Seal retainer	76-11-10-05-070	ARO ALL
14	Seal	76-11-10-05-095	ARO ALL
15	Seal	76-11-10-05-085	ARO ALL
26	Seal	76-11-10-05-185	ARO ALL
27	Seal	76-11-10-05-195	ARO ALL
28	Seal	76-11-10-05-185	ARO ALL
29	Seal retainer	76-11-10-05-170	ARO ALL
31	Seal retainer	76-11-10-05-170	ARO ALL
33	Seal	76-11-10-05-175	ARO ALL

**D. Location Zones**

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

**E. Control Stand Rails, Seal Retainers, Seal Assemblies, Covers, and Lightplates Installation****SUBTASK 76-11-10-410-001-H01**

- (1) Install the cover assembly of the flap lever [49]:
- (a) Install the detent plate [39] of the flap lever [49].
    - 1) Install the two screws [41 ] and the two washers [40].
    - 2) Install the eight rivets [38].
  - (b) Set the seal [48] in its location.
  - (c) Install the cover [46].
    - 1) Connect the electrical connector [42] to the connector of the wire bundle assembly.

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- 2) Install the two screws [45] and the four screws [47].

NOTE: Make sure the seal fits tightly against the adjacent seal. If there is a gap between the seals, you must loosen the screws, adjust the position of the seals, and tighten the screws again.

- (d) Install the flap lever lightplate [44].

- 1) Install the two screw [43].

**SUBTASK 76-11-10-410-002-H01**

- (2) Install the cover assembly of the thrust levers [32]:

- (a) Set the two seal retainer [29] and seal retainer [31], in their locations.

- (b) Set the rail [30] in its location.

- (c) Set the four seal [33], seal [26], seal [27], and seal [28] in their locations.

- (d) Install the cover [24].

- 1) Connect the electrical connector [22] to the connector of the wire bundle assembly.

- 2) Install the one screw [25], one screw [35], two screws [23], four screws [34], and ten screws [21].

NOTE: Make sure the seal fits tightly against the adjacent seal. If there is a gap between the seals, you must loosen the screws, adjust the position of the seals, and tighten the screws again.

- (e) Install the speedbrake lever lightplate [37].

- 1) Install the two screws [36].

**SUBTASK 76-11-10-410-003-H01**

- (3) Install the cover assembly of the speedbrake lever [2]:

- (a) Set the two seal retainers [13] in their locations.

- (b) Set the two seal [14] and seal [15] in their locations.

- (c) Install the cover [18].

- 1) Connect the electrical connector [12] to the connector of the wire bundle assembly.

- 2) Install the one screw [11], one screw [16], one screw [17], and eight screws [20].

NOTE: Make sure the seal fits tightly against the adjacent seal. If there is a gap between the seals, you must loosen the screws, adjust the position of the seals, and tighten the screws again.

- (d) Install the pitch trim lever lightplate [10].

- 1) Install the two captive screws [19].

**SUBTASK 76-11-10-410-004-H01**

- (4) Install the cover assembly of the pitch trim lever [5]:

- (a) Set the seal assembly [6] in its location.

- (b) Install the cover [8].

- 1) Install the one screw [9] and four screws [7].

NOTE: Make sure the seal fits tightly against the adjacent seal. If there is a gap between the seals, you must loosen the screws, adjust the position of the seals, and tighten the screws again.

**SUBTASK 76-11-10-420-001-H01**

- (5) Install the switch pack cover [1].

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- (a) Tighten the four screws [3] and screws [4].

SUBTASK 76-11-10-410-005-H01

- (6) Do this task: Engine Fuel Control Module Installation, TASK 76-11-09-400-801-H01

SUBTASK 76-11-10-820-001-H01

- (7) Make sure that you can move the pitch trim lever, the speedbrake lever, the thrust levers and the flap lever back and forth freely.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-10-865-007-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-11-10-865-006-H01

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

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-10-440-001-H01

- (3) Do this task: Spoiler Activation, TASK 27-61-00-440-801

SUBTASK 76-11-10-440-002-H01

- (4) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00

————— **END OF TASK** —————

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**SWITCH PACK - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has two tasks:
- (1) A removal of the switch pack
  - (2) An installation of the switch pack.
- B. The switch pack has these six switches:
- (1) S1 - autobrake inhibit switch L1
  - (2) S2 - autobrake inhibit switch L2
  - (3) S3 - autobrake inhibit switch R1
  - (4) S4 - autobrake inhibit switch R2
  - (5) S5 - left reverse thrust directional control valve switch
  - (6) S6 - right reverse thrust directional control valve switch.

**TASK 76-11-11-000-804-H00****2. Switch Pack Removal****A. General**

- (1) This task is the removal of the switch pack.
- (2) The switch pack is installed in the front of the control stand.

**B. Location Zones**

<b>Zone</b>	<b>Area</b>
211	Flight Compartment, Left
212	Flight Compartment, Right

**C. Prepare for the Removal****SUBTASK 76-11-11-865-001-H01**

- (1) Open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
M	20	C32613	LG AUTOBRAKE/BITE/R-COMM CB 1

**Right Power Management Panel, P210**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
N	1	C32614	LG AUTOBRAKE/BITE/R-COMM CB 2

**SUBTASK 76-11-11-865-002-H01**

- (2) Open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
P	23	C78605	L ENG T/R CTRL

**Right Power Management Panel, P210**

<b><u>Row</u></b>	<b><u>Col</u></b>	<b><u>Number</u></b>	<b><u>Name</u></b>
N	12	C78604	R ENG T/R CTRL

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SUBTASK 76-11-11-010-001-H01

- (3) Remove the right side panel [3]:
- (a) Loosen the thirteen quick-release fasteners.

**D. Switch Pack Removal**

SUBTASK 76-11-11-030-001-H01

- (1) Disconnect the two electrical connector [1] and electrical connector [2] from the electrical panel.

SUBTASK 76-11-11-010-002-H01

- (2) Remove the switch pack cover [4].
- (a) Remove the two screws [5] and two screws [6].

SUBTASK 76-11-11-010-003-H01

- (3) Remove the switch pack housing [14].
- (a) Remove the two screws [9].

SUBTASK 76-11-11-010-004-H01

- (4) Remove the cover [7].
- (a) Remove the two screws [8].

SUBTASK 76-11-11-020-001-H01

- (5) Remove the applicable switch:
- (a) Remove the lockstitch [21].
- (b) For the switches S2, S4, S5 or S6, remove the two screws [11] and the two nuts [12].
- (c) For switches S1 or S3, remove the two screws [16] and the two nuts [17].
- (d) Remove the switch and spacer [15] from the switch pack housing [14].
- (e) With a soldering iron, remove the electrical wires from the switch.

———— **END OF TASK** ————

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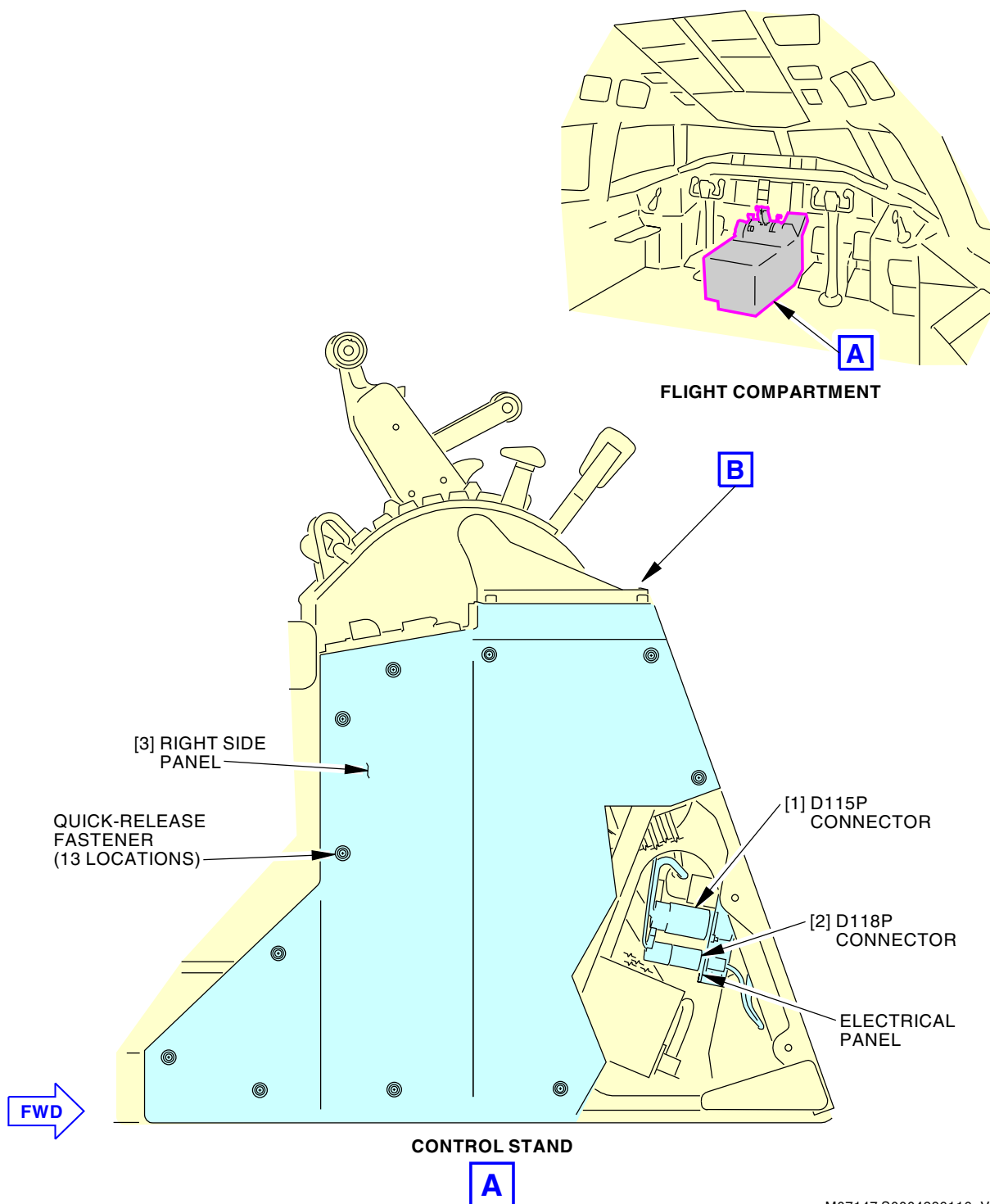
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Switch Pack Installation  
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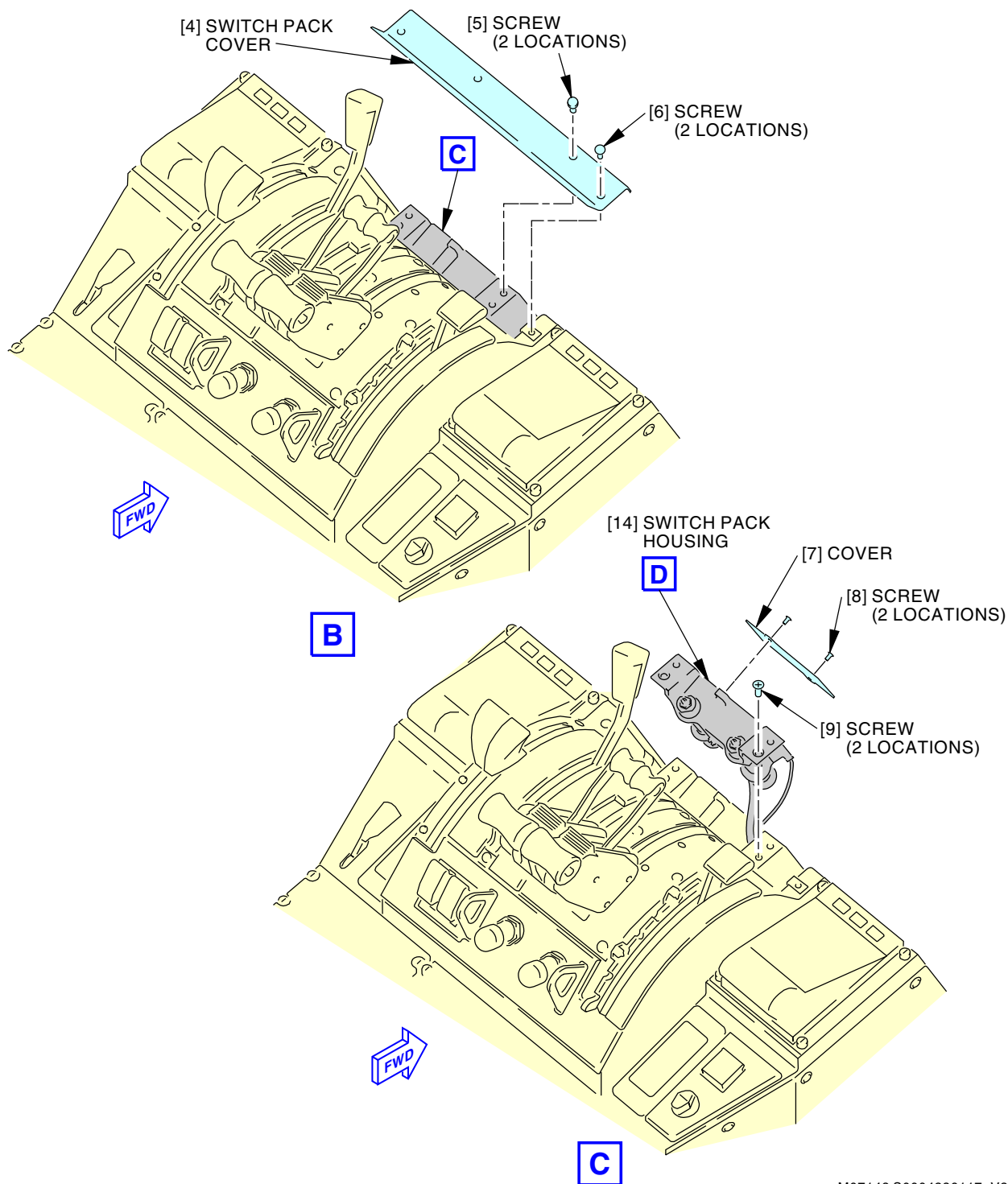
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**Switch Pack Installation**  
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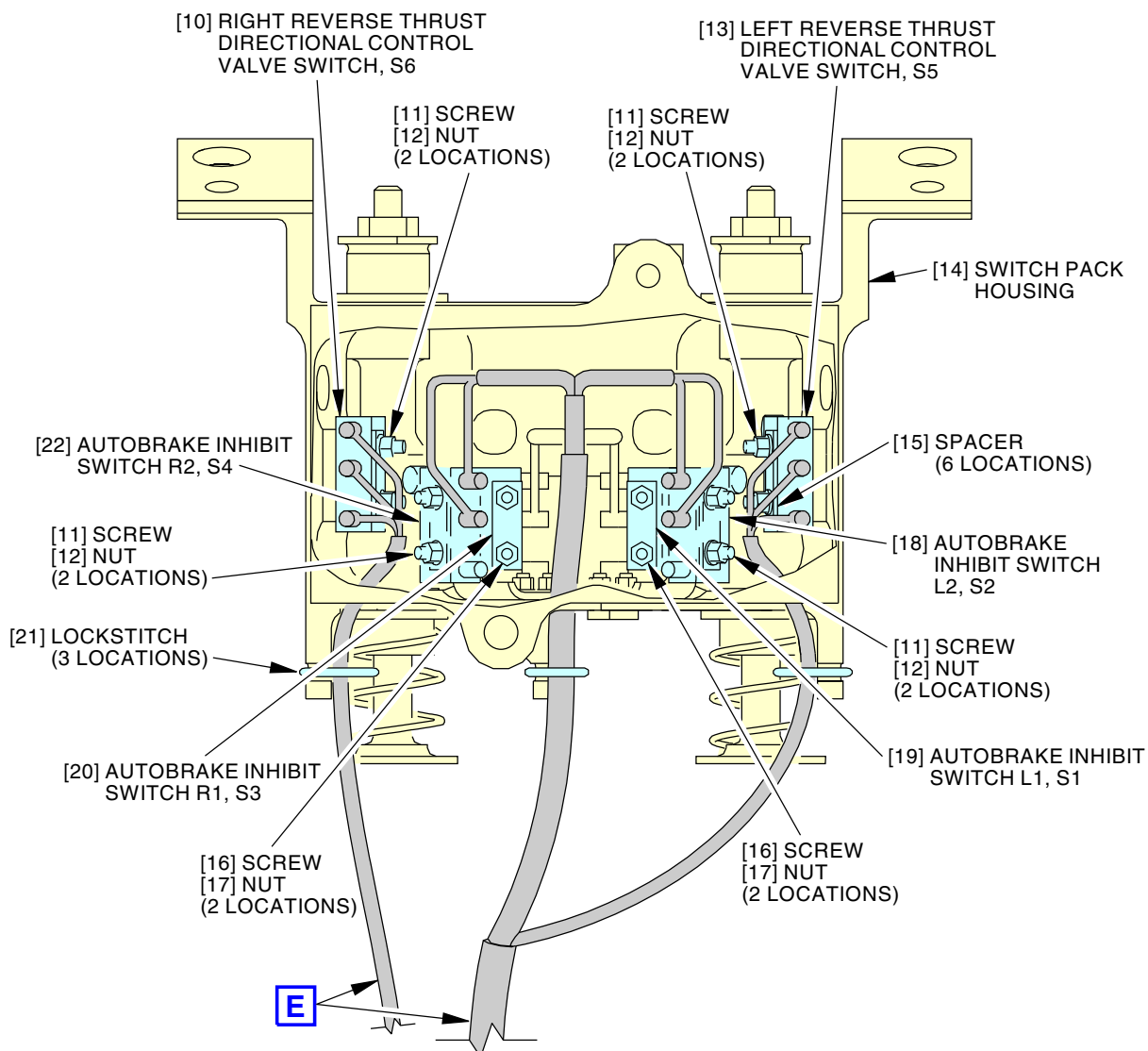
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**SWITCH PACK ASSEMBLY**

**D**

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**Switch Pack Installation  
Figure 401/76-11-11-990-801-H01 (Sheet 3 of 4)**

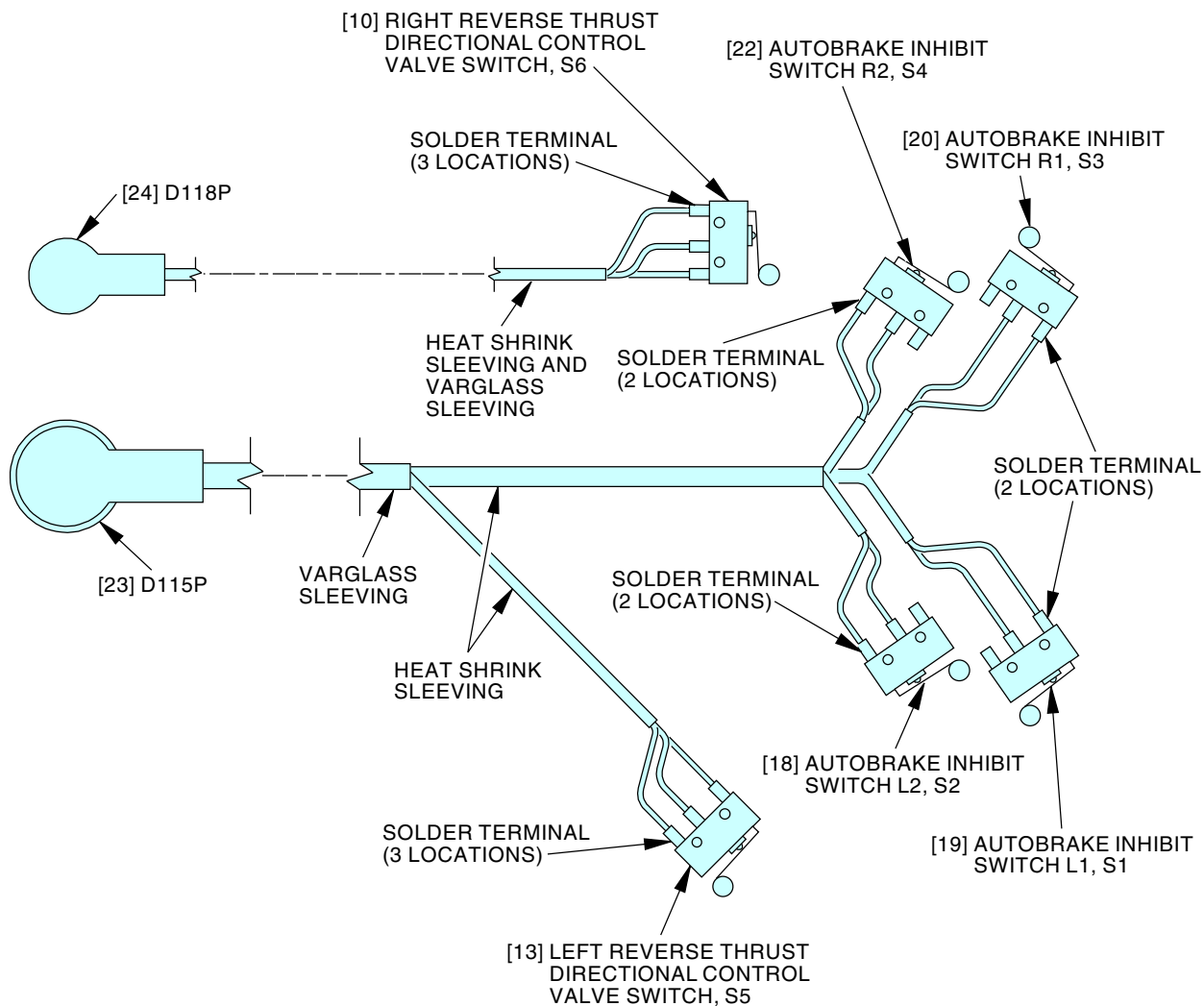
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## WIRE BUNDLES AND SWITCHES

**E**

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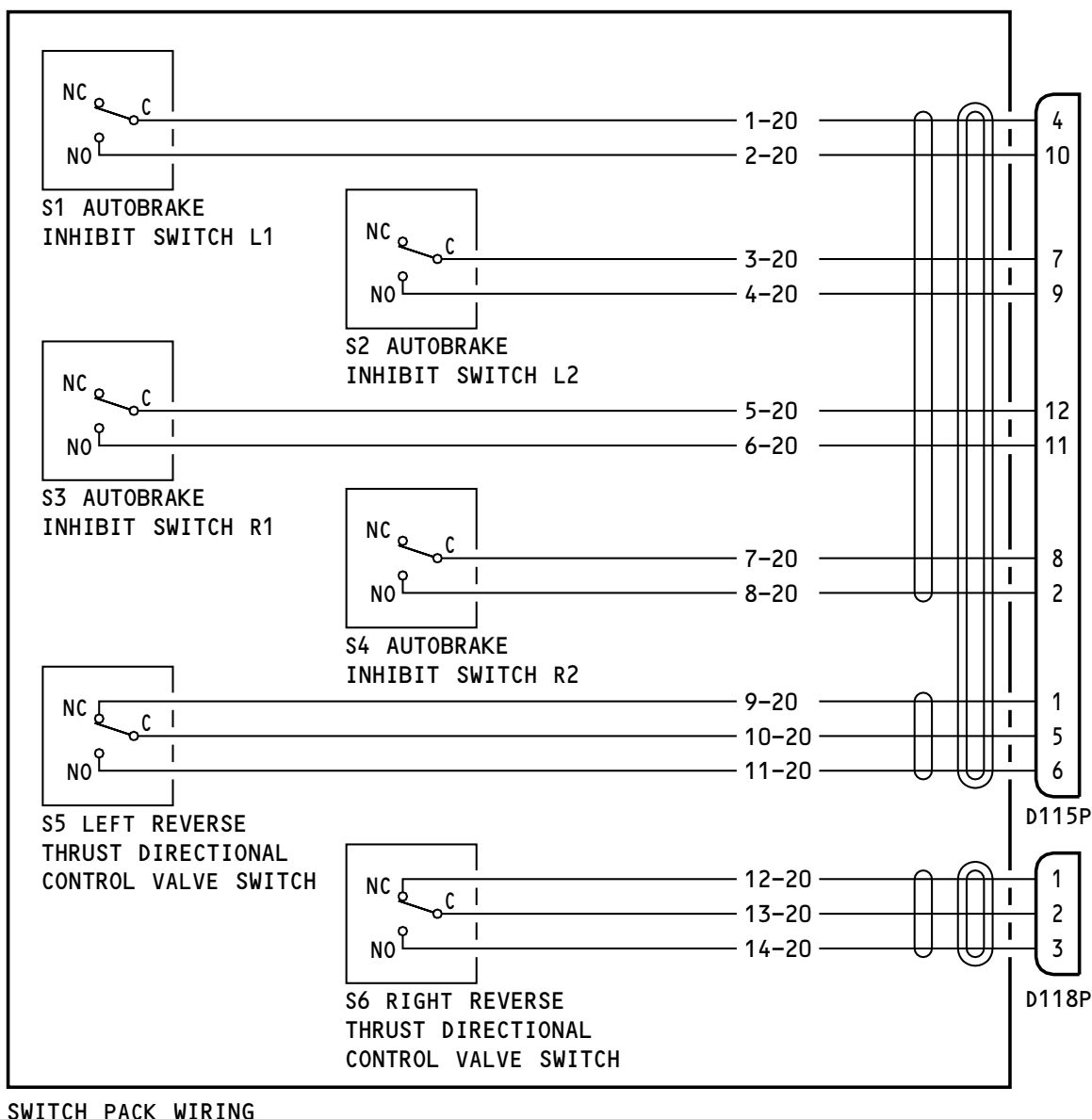
**Switch Pack Installation**  
Figure 401/76-11-11-990-801-H01 (Sheet 4 of 4)

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**Switch Pack Schematic**  
**Figure 402/76-11-11-990-804-H01**

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### TASK 76-11-11-400-804-H00

#### 3. Switch Pack Installation

##### A. General

- (1) This task is the installation of the switch pack.

##### B. References

Reference	Title
76-11-11-700-801-H01	Switch Pack Adjustment (P/B 501)
76-11-11-700-802-H00	Switch Pack Adjustment (Alternative Method) (P/B 501)

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
14	Switch pack housing	76-11-11-05-010	ARO ALL

##### D. Location Zones

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

##### E. Switch Pack Installation

###### SUBTASK 76-11-11-420-001-H01

- (1) Install the applicable switch:
- (a) Solder the electrical wires to the terminals of the switch (see Detail E).
  - (b) For the switches S2, S4, S5 or S6, install the two screws [11] and the two nuts [12] to hold the spacer [15] and the switch to the switch pack housing [14].
  - (c) For switches S1 or S3, install the two screws [16] and the two nuts [17] to hold the spacer [15] and the switch to the switch pack housing [14].
  - (d) Install the lockstitch [21] to the wire bundle.

###### SUBTASK 76-11-11-820-001-H01

- (2) Do the adjustment of the switch pack (TASK 76-11-11-700-801-H01 or TASK 76-11-11-700-802-H00).

###### SUBTASK 76-11-11-410-001-H01

- (3) Install the cover [7].
- (a) Install the two screws [8].

###### SUBTASK 76-11-11-410-002-H01

- (4) Install the switch pack housing [14].
- (a) Install the two screws [9].

###### SUBTASK 76-11-11-410-003-H01

- (5) Install the switch pack cover [4].
- (a) Install the two screws [5] and two screws [6].

###### SUBTASK 76-11-11-430-001-H01

- (6) Connect the two electrical connector [1] and electrical connector [2] to the electrical panel.

###### SUBTASK 76-11-11-410-004-H01

- (7) Install the right side panel [3].
- (a) Tighten the thirteen quick-release fasteners.

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SUBTASK 76-11-11-865-003-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-11-11-865-013-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	20	C32613	LG AUTOBRAKE/BITE/R-COMM CB 1

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	1	C32614	LG AUTOBRAKE/BITE/R-COMM CB 2

————— **END OF TASK** —————

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### SWITCH PACK - ADJUSTMENT/TEST

#### 1. General

- A. This procedure has the tasks that follow:
- (1) An adjustment of the switches from the switch pack.
  - (2) An alternative adjustment of the switches from the switch pack.
- B. The switch pack has these six switches:
- (1) S1 - autobrake inhibit switch L1
  - (2) S2 - autobrake inhibit switch L2
  - (3) S3 - autobrake inhibit switch R1
  - (4) S4 - autobrake inhibit switch R2
  - (5) S5 - left reverse thrust directional control valve switch
  - (6) S6 - right reverse thrust directional control valve switch.

#### TASK 76-11-11-700-801-H01

#### 2. Switch Pack Adjustment

##### A. General

- (1) This task is the adjustment of the autobrake inhibit switches and the reverse thrust directional control valve switches (Referred to as the reverse thrust DCV switches) in the switch pack.
- (2) The switch pack has these six switches:
  - (a) S1 - autobrake inhibit switch L1 [8]
  - (b) S2 - autobrake inhibit switch L2 [6]
  - (c) S3 - autobrake inhibit switch R1 [9]
  - (d) S4 - autobrake inhibit switch R2 [10]
  - (e) S5 - left reverse thrust DCV switch [5]
  - (f) S6 - right reverse thrust DCV switch [11].

##### B. References

Reference	Title
76-11-11-000-804-H00	Switch Pack Removal (P/B 401)
76-11-11-400-804-H00	Switch Pack Installation (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.



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Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536
SPL-706	Protractor - Thrust Reverser Levers, Digital Readout Part #: G76002-19 Supplier: 81205

### D. Location Zones

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

### E. Prepare for the Adjustment

SUBTASK 76-11-11-865-016-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

#### Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 76-11-11-865-005-H01

- (2) Open these circuit breakers and install safety tags:

#### Left Power Management Panel, P110

Row	Col	Number	Name
P	23	C78605	L ENG T/R CTRL

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### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-11-11-865-006-H01

- (3) Open these circuit breakers and install safety tags:

### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	20	C32613	LG AUTOBRAKE/BITE/R-COMM CB 1

### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	1	C32614	LG AUTOBRAKE/BITE/R-COMM CB 2

SUBTASK 76-11-11-865-017-H01



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 THE EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (4) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-11-010-005-H01

- (5) Remove the right side panel [3].
- (a) Loosen the thirteen quick-release fasteners.

SUBTASK 76-11-11-030-002-H01

- (6) Disconnect these electrical connectors from the electrical panel:
- (a) D115P [1]
- (b) D118P [2]

## F. Procedure

SUBTASK 76-11-11-010-006-H01

- (1) Do this task: Switch Pack Removal, TASK 76-11-11-000-804-H00.

SUBTASK 76-11-11-820-002-H01

- (2) Press and hold the switch pack housing [4] down on a flat surface until the dimension X is  $0.087 \pm 0.01$  inch.

SUBTASK 76-11-11-490-001-H01

- (3) Use a digital/analog multimeter, COM-1793 to do a continuity check at these locations to make sure that the autobrake inhibit switches - S1, S2, S3 and S4 closed:
- (a) Make sure there is continuity at connector D115P [1], between pin 4 and pin 10.
- (b) Make sure there is continuity at connector D115P [1], between pin 7 and pin 9.
- (c) Make sure there is continuity at connector D115P [1], between pin 11 and pin 12.

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- (d) Make sure there is continuity at connector D115P [1], between pin 2 and pin 8.

**SUBTASK 76-11-11-820-003-H01**

- (4) Continue to press the switch pack housing [4] down on a flat surface until the dimension X is  $0.431 \pm 0.01$  inch.

**SUBTASK 76-11-11-490-002-H01**

- (5) Use a digital/analog multimeter, COM-1793 to do a continuity check at these locations to make sure that the reverse thrust DCV switches - S5 and S6 closed:
- (a) Make sure there is continuity at connector D115P [1], between pin 5 and pin 6.
  - (b) Make sure there is no continuity at connector D115P [1], between pin 1 and pin 5.
  - (c) Make sure there is continuity at connector D118P [2], between pin 2 and pin 3.
  - (d) Make sure there is no continuity at connector D118P [2], between pin 1 and pin 2.

**SUBTASK 76-11-11-410-005-H01**

- (6) Do these steps if the applicable switch does not operate correctly:
- (a) Loosen the two screws [13].
  - (b) Move the switch away from the switch actuator.
  - (c) Tighten the two screws [13].
  - (d) If the switch still does not operate correctly then bend the switch actuator arm as much as 0.06 inch to get the correct switch operation.

**SUBTASK 76-11-11-860-001-H01**

- (7) Make sure the roller of the switch is vertical to the cam surface [12] so that the roller does not contact the cam surface [12] on the roller edge.

**SUBTASK 76-11-11-010-007-H01**

- (8) Release the switch pack housing [4].

**SUBTASK 76-11-11-490-003-H01**

- (9) Use a digital/analog multimeter, COM-1793 to do a continuity check at these locations to make sure that the switches are not closed:
- (a) Make sure there is no continuity at connector D115P [1], between pin 4 and pin 10.
  - (b) Make sure there is no continuity at connector D115P [1], between pin 7 and pin 9.
  - (c) Make sure there is no continuity at connector D115P [1], between pin 5 and pin 6.
  - (d) Make sure there is continuity at connector D115P [1], between pin 1 and pin 5.
  - (e) Make sure there is no continuity at connector D115P [1], between pin 11 and pin 12.
  - (f) Make sure there is no continuity at connector D115P [1], between pin 2 and pin 8.
  - (g) Make sure there is no continuity at connector D118P [2], between pin 2 and pin 3.
  - (h) Make sure there is continuity at connector D118P [2], between pin 1 and pin 2.

**SUBTASK 76-11-11-869-001-H01**

- (10) Press the switch pack housing [4] down on a flat surface until the dimension X is approximately 0.50 inch (12.7 mm).

**SUBTASK 76-11-11-490-004-H01**

- (11) Use a digital/analog multimeter, COM-1793 to do a continuity check at these locations to make sure that the switches closed:
- (a) Make sure there is continuity at connector D115P [1], between pin 4 and pin 10.
  - (b) Make sure there is continuity at connector D115P [1], between pin 7 and pin 9.

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- (c) Make sure there is continuity at connector D115P [1], between pin 5 and pin 6.
- (d) Make sure there is no continuity at connector D115P [1], between pin 1 and pin 5.
- (e) Make sure there is continuity at connector D115P [1], between pin 11 and pin 12.
- (f) Make sure there is continuity at connector D115P [1], between pin 2 and pin 8.
- (g) Make sure there is continuity at connector D118P [2], between pin 2 and pin 3.
- (h) Make sure there is no continuity at connector D118P [2], between pin 1 and pin 2.

### SUBTASK 76-11-11-410-006-H01

- (12) Do this task: Switch Pack Installation, TASK 76-11-11-400-804-H00.
  - (a) Do not connect these electrical connectors to the electrical panel:
    - 1) D115P [1]
    - 2) D118P [2]

### SUBTASK 76-11-11-820-007-H00

- (13) Do a check of the installed reverse thrust DCV switches S5 [5] and S6 [11] with thrust lever movement.
  - (a) Do the steps for the applicable thrust lever and thrust reverser switch:
    - 1) Left thrust lever, S5 switch and connector D115P [1].
    - 2) Right thrust lever, S6 switch and connector D118P [2].
  - (b) Make sure the reverse thrust lever is in the idle position.
  - (c) Use a digital/analog multimeter, COM-1793 to do a continuity check at these locations to make sure the switch is open:
    - 1) Make sure there is no continuity at connector D115P [1], between pin 5 and pin 6.
    - 2) Make sure there is no continuity at connector D118P [2], between pin 2 and pin 3.
  - (d) Move the thrust lever for reverse thrust and continue with the continuity check.
    - 1) Use a thrust reverser lever protractor, SPL-706 to measure the thrust lever angle of movement.
  - (e) When the thrust lever moves to 23 - 25 degrees, do this check for a closed switch:
    - 1) Make sure there is continuity at connector D115P [1], between pin 5 and pin 6.
    - 2) Make sure there is continuity at connector D118P [2], between pin 2 and pin 3.
  - (f) Do these steps if adjustment of the actuation position of the S5 or S6 switch is necessary:
    - 1) Loosen the applicable jamnut.
    - 2) Turn the plunger with respect to the outer sleeve.  
NOTE: One turn is approximately 3 degrees of lever travel.
    - 3) Do the continuity check again for the applicable S5 or S6 switch.
    - 4) Tighten the jamnut if adjustment is not necessary.
  - (g) If the continuity check is correct, do these steps:
    - 1) Make sure the thrust lever is in the idle position.
    - 2) Remove the thrust reverser lever protractor, SPL-706.

## G. Put the Airplane Back to Its Usual Condition

### SUBTASK 76-11-11-430-002-H01

- (1) Connect these electrical connectors to the electrical panel:

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- (a) D115P [1]
- (b) D118P [2].

SUBTASK 76-11-11-410-007-H01

- (2) Install the right side panel [3].
  - (a) Install the thirteen quick-release fasteners.

SUBTASK 76-11-11-865-015-H01

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

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-11-11-865-010-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-11-11-865-011-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	20	C32613	LG AUTOBRAKE/BITE/R-COMM CB 1

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	1	C32614	LG AUTOBRAKE/BITE/R-COMM CB 2

SUBTASK 76-11-11-865-014-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

————— END OF TASK —————

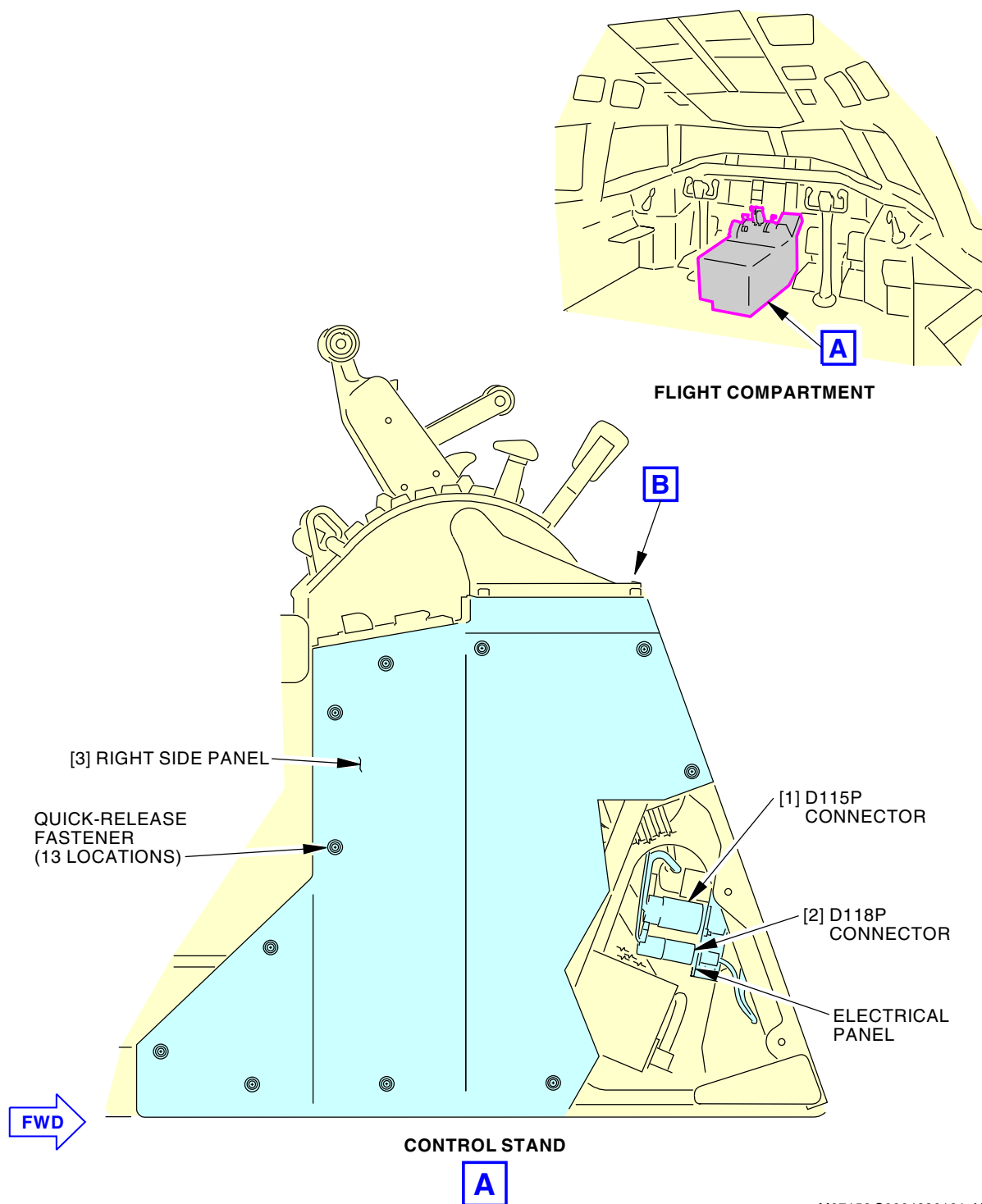
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M07152 S0004286121\_V2

**Switch Pack Adjustment**  
Figure 501/76-11-11-990-802-H01 (Sheet 1 of 3)

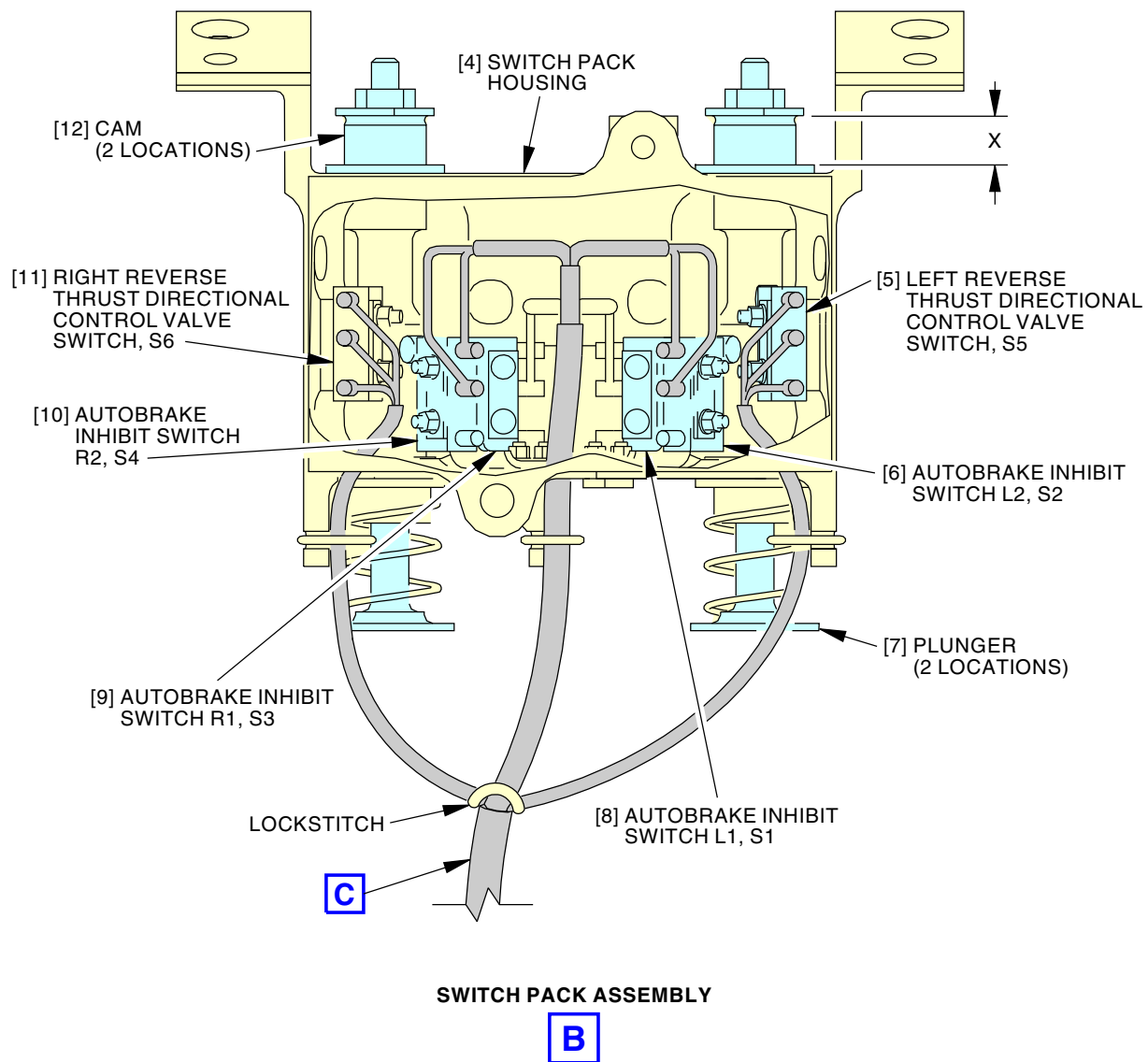
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M07153 S0004286122\_V2

**Switch Pack Adjustment**  
Figure 501/76-11-11-990-802-H01 (Sheet 2 of 3)

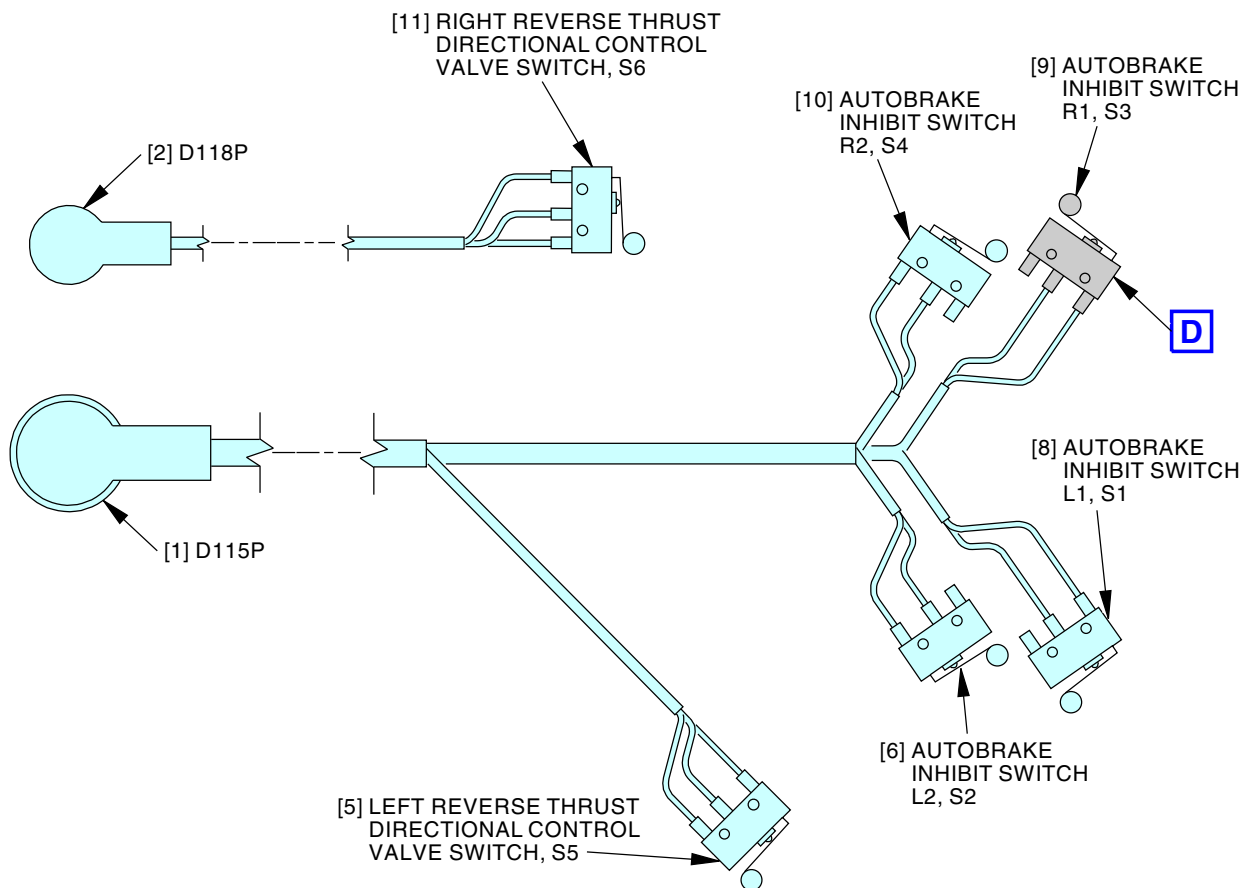
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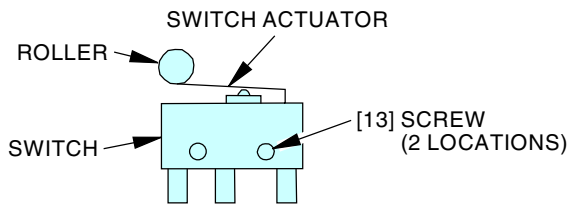
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## WIRE BUNDLES AND SWITCHES

**C**



## SWITCH ASSEMBLY

**D**

M07154 S0004286123\_V2

**Switch Pack Adjustment**  
Figure 501/76-11-11-990-802-H01 (Sheet 3 of 3)

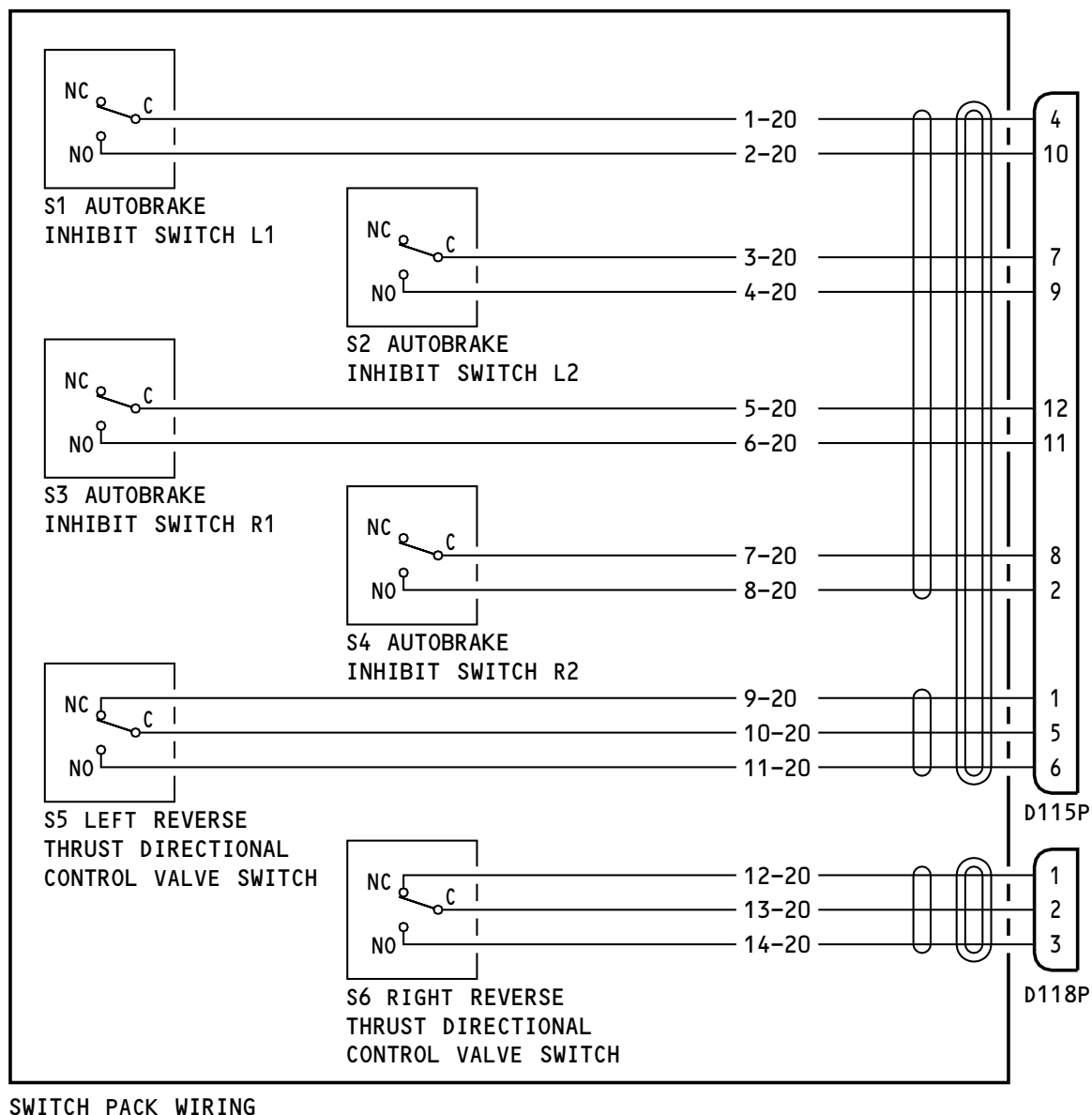
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M07155 S0004286124\_V1

**Switch Pack Schematic**  
**Figure 502/76-11-11-990-803-H01**

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### TASK 76-11-11-700-802-H00

#### 3. Switch Pack Adjustment (Alternative Method)

(Figure 503, Figure 504, and Figure 505)

##### A. General

- (1) This section has one task:
  - (a) The task is the adjustment of the autobrake inhibit switches and the reverse thrust directional control valve switches (referred to as the reverse thrust DCV switches).
  - (b) This adjustment is done after the replacement of the switch pack housing is installed.

##### B. References

Reference	Title
76-11-11-000-804-H00	Switch Pack Removal (P/B 401)
76-11-11-400-804-H00	Switch Pack Installation (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
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536
SPL-4558	Protractor - Forward and Reverse Thrust Reverser Levers Part #: G76002-19 Supplier: 81205

##### D. Location Zones

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

##### E. Access Panels

Number	Name/Location
112AL	Forward Access Door

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### F. Prepare for the Adjustment

SUBTASK 76-11-11-860-002-H00

- (1) If necessary, remove power from the circuit:  
Open these circuit breakers and install safety tags:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-11-11-860-003-H00

- (2) If necessary, remove power from the circuit:  
Open these circuit breakers and install safety tags:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	20	C32613	LG AUTOBRAKE/BITE/R-COMM CB 1

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	1	C32614	LG AUTOBRAKE/BITE/R-COMM CB 2

SUBTASK 76-11-11-010-008-H00

- (3) If necessary, remove the switch pack cover (TASK 76-11-11-000-804-H00).

SUBTASK 76-11-11-820-004-H00

- (4) If necessary first adjust the switches as follows:

NOTE: Adjustments are done after installation in the control stand.

- (a) As the plungers are depressed, make sure switches S1, S2, S3, and S4 are actuated at a dimension X of 0.087 +/- 0.01 inch.
- (b) As the plungers are depressed further, make sure switches S5 and S6 are actuated at a dimension X of 0.431 +/- 0.01 inch.
- (c) Switch actuator arms may be bend as much as 0.06 inch to get the correct switch operation.
- (d) Make sure the roller of the switch is vertical to the cam surface so that the roller does not contact the cam surface on the roller edge.

SUBTASK 76-11-11-010-009-H00

- (5) To get access to the AE0150 electrical connector panel under the control stand, open the forward fuselage access door.

NOTE: The access door is forward of the wheel well of the nose landing gear.

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

SUBTASK 76-11-11-020-002-H00

- (6) Disconnect these electrical connectors from the AE0150 panel:

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- (a) D4972P [1] - left reverse thrust DCV circuit path
- (b) D4973P [2] - right reverse thrust DCV circuit path.

### G. Procedure

#### SUBTASK 76-11-11-860-004-H00

- (1) Hold the thrust levers against the forward idle stops.

#### SUBTASK 76-11-11-860-005-H00

- (2) Lift the left (right) reverse thrust lever.
  - (a) Use a digital/analog multimeter, COM-1793, to make sure there is continuity at connector D4972P (D4973P), between pins 28 (23) and 29 (24).
  - (b) Make sure that the circuit closes between 23 and 25 degrees of lever travel while the lever is raised.
    - 1) Measure the angle with a protractor, SPL-4558.

#### SUBTASK 76-11-11-820-005-H00

- (3) Do these steps if adjustment of the actuation position is necessary:
  - (a) Loosen the jamnut.
  - (b) Turn the plunger with respect to the outer sleeve.

NOTE: One turn is approximately 3 degrees of lever travel.

#### SUBTASK 76-11-11-820-006-H00

- (4) Check the actuation position again, adjust if necessary.
  - (a) Tighten the jamnut if adjustment is not necessary.

NOTE: Be sure not to change the adjustment.

### H. Put the Airplane Back to Its Usual Condition

#### SUBTASK 76-11-11-420-002-H00

- (1) Connect these electrical connectors to the AE0150 panel:
  - (a) D4972P [1]
  - (b) D4973P [2].

#### SUBTASK 76-11-11-410-008-H00

- (2) Close the forward fuselage access door.

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

#### SUBTASK 76-11-11-410-009-H00

- (3) Install the switch pack cover (TASK 76-11-11-400-804-H00).

#### SUBTASK 76-11-11-860-006-H00

- (4) Return electrical power to the circuit:  
Remove the safety tags and close these circuit breakers:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	20	C32613	LG AUTOBRAKE/BITE/R-COMM CB 1
P	23	C78605	L ENG T/R CTRL

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ARO ALL

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AIRCRAFT MAINTENANCE MANUAL****Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	1	C32614	LG AUTOBRAKE/BITE/R-COMM CB 2
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-11-11-940-001-H00

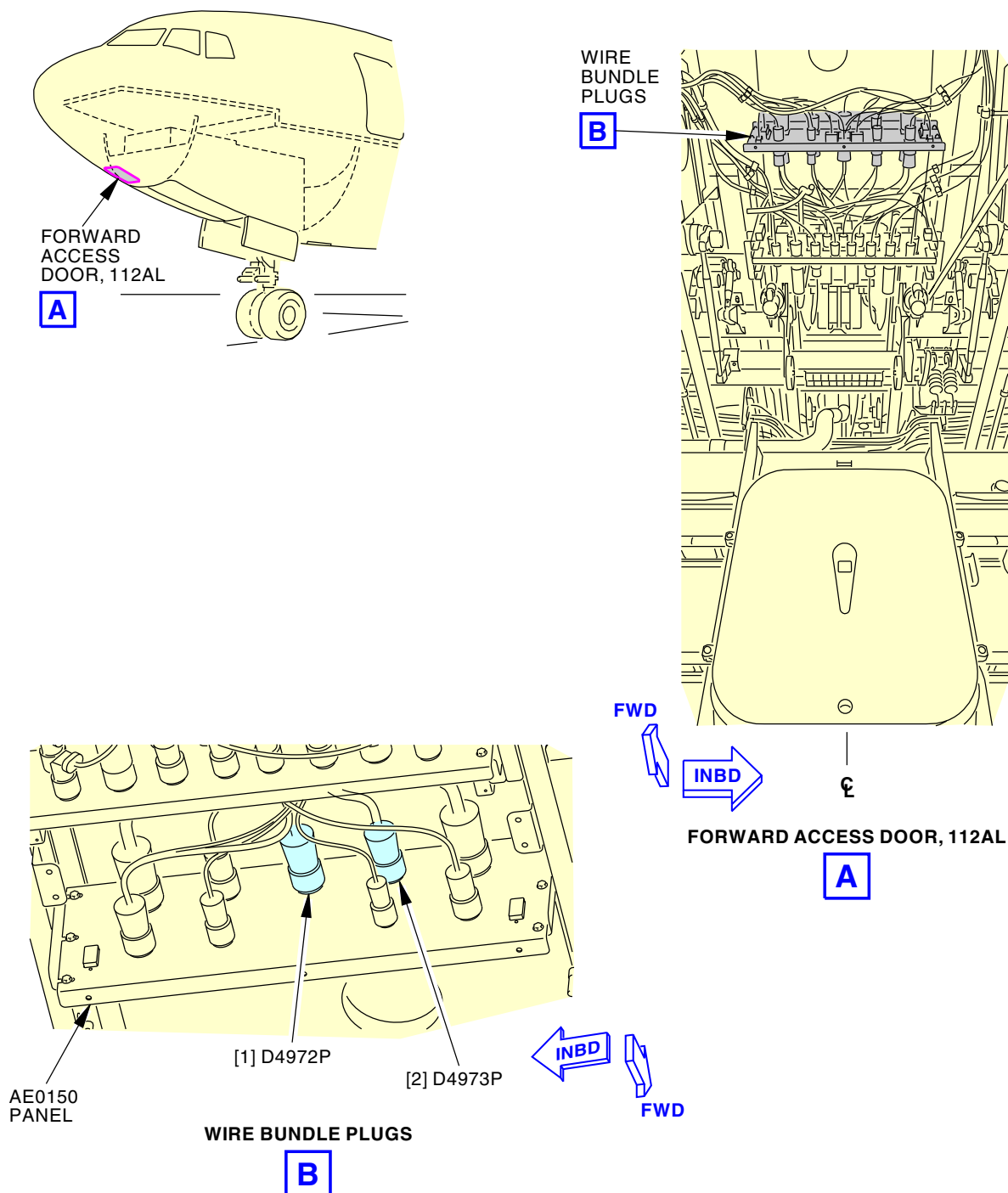
(5) Clean the areas of all tools.

**END OF TASK**EFFECTIVITY  
ARO ALL

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1859001 S0000329290\_V2

Electrical Connector Locations  
Figure 503/76-11-11-990-805-H00

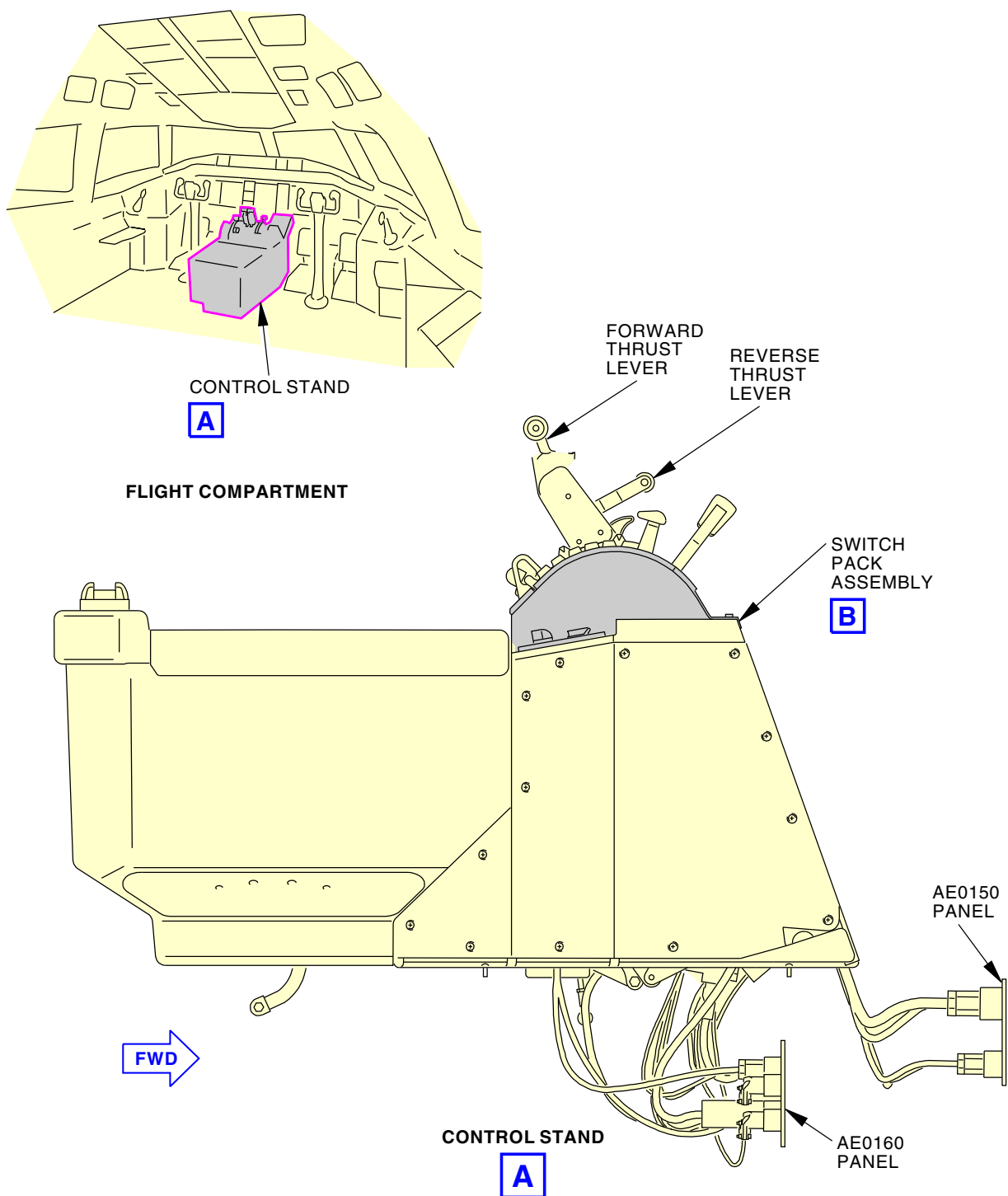
EFFECTIVITY  
ARO ALL

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1859057 S0000285252\_V2

**Switch Pack Adjustment**  
**Figure 504/76-11-11-990-806-H00 (Sheet 1 of 2)**

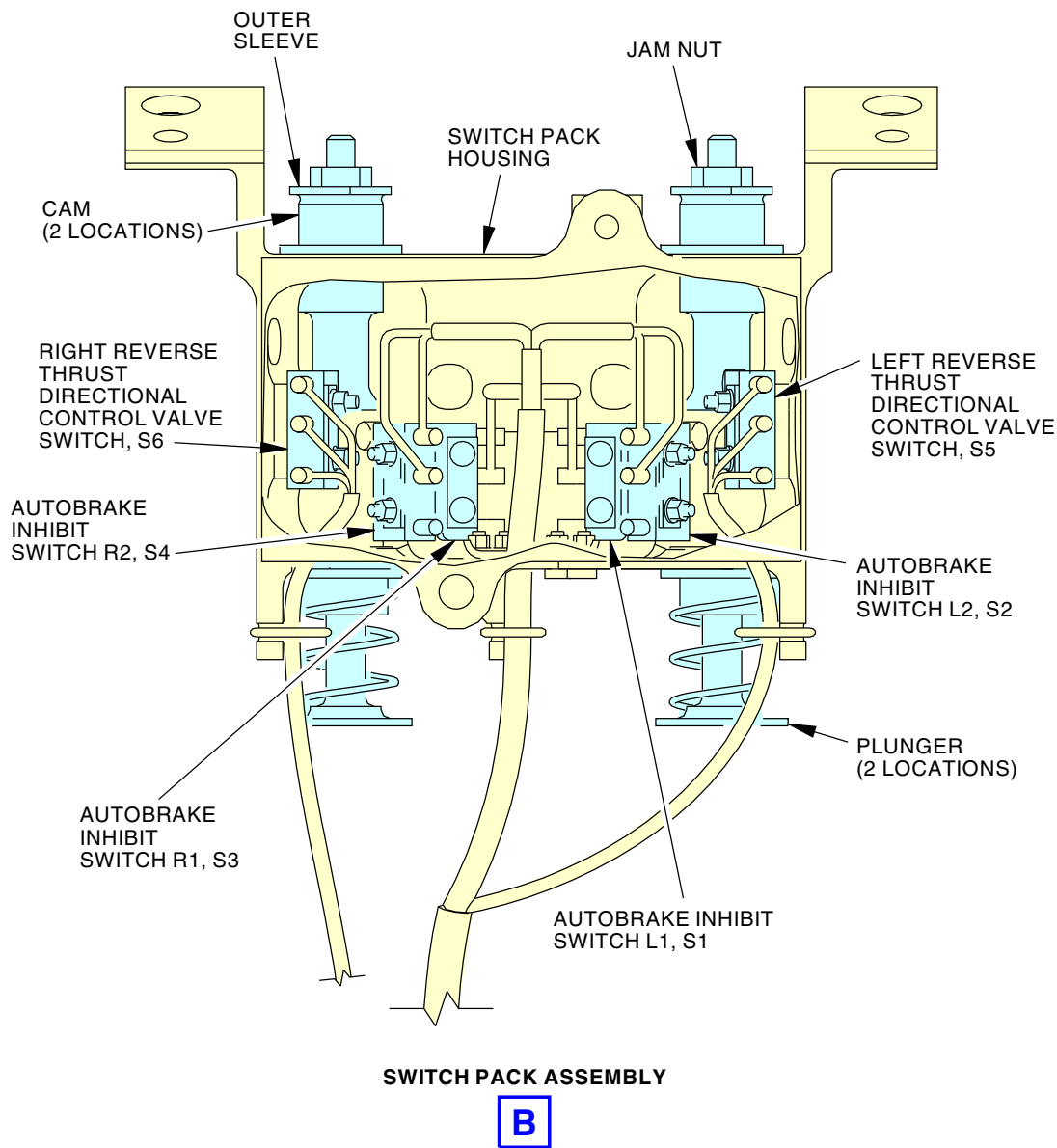
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1859090 S0000285254\_V3

**Switch Pack Adjustment**  
**Figure 504/76-11-11-990-806-H00 (Sheet 2 of 2)**

EFFECTIVITY  
 ARO ALL

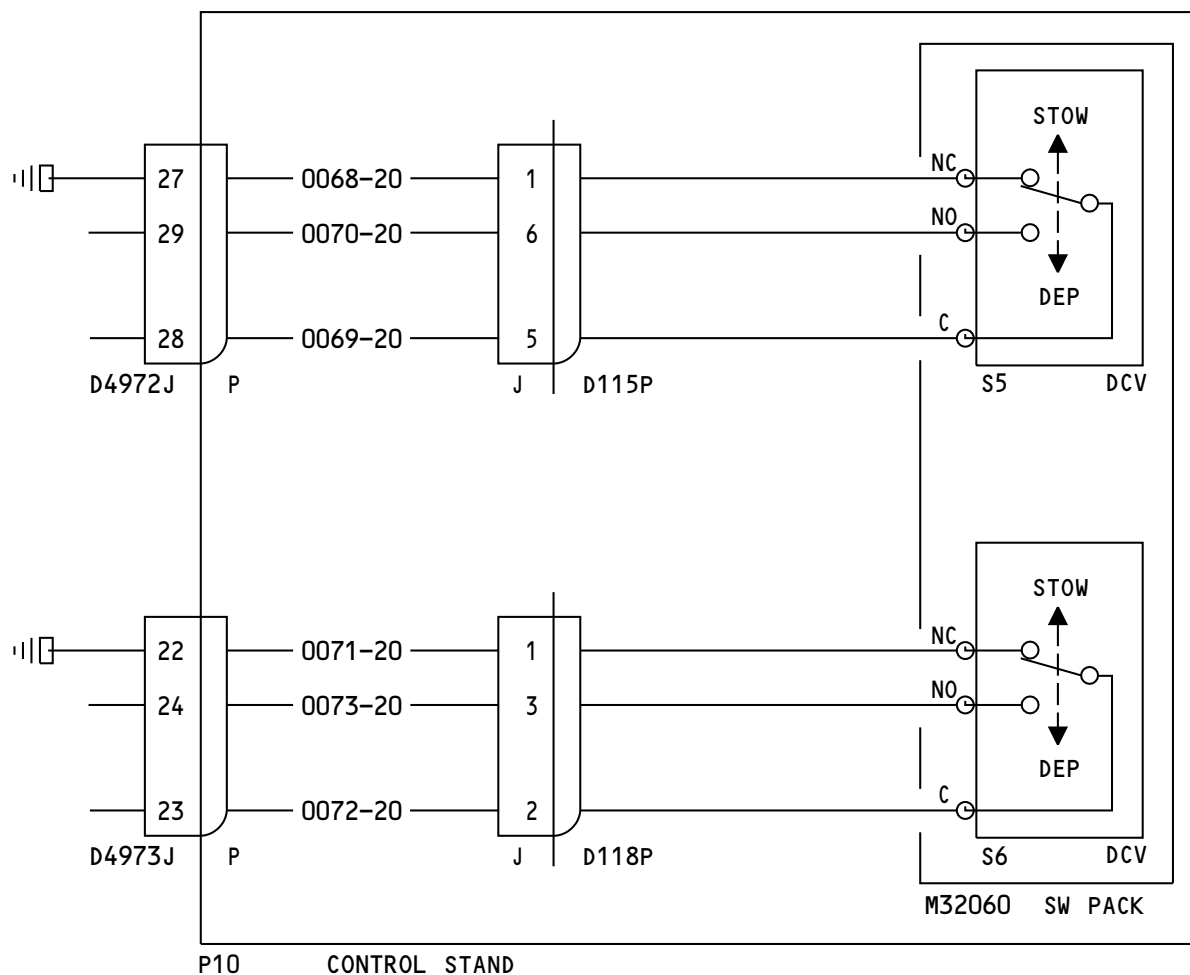
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1859254 S0000328696\_V1

**Switch Pack Schematic  
Figure 505/76-11-11-990-807-H00**

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### AUTOTHROTTLE SERVOMOTOR (ASM) AND GEARBOX - REMOVAL/INSTALLATION

#### 1. General

A. This procedure has two tasks:

- (1) A removal of the autothrottle servomotor and the gearbox.
- (2) An installation of the autothrottle servomotor and the gearbox.

#### TASK 76-12-01-000-805-H00

#### 2. Autothrottle Servomotor (ASM) and Gearbox Removal

##### A. General

- (1) The autothrottle servomotor (referred to as the servomotor) is installed on the gearbox of the autothrottle assembly.
- (2) The gearbox is installed on the autothrottle assembly.
- (3) The servomotor and the gearbox can also be removed and installed as a unit. For this task, do not remove the servomotor from the gearbox.

##### B. Location Zones

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

##### C. Access Panels

Number	Name/Location
112AL	Forward Access Door

##### D. Prepare for the Removal

SUBTASK 76-12-01-865-008-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

##### Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

##### Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 76-12-01-865-002-H01

- (2) Open these circuit breakers and install safety tags:

##### Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
F	5	C22620	A/T SERVO L

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ARO ALL

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(Continued)

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C22621	A/T SERVO R

SUBTASK 76-12-01-865-007-H01



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 THE EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (3) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-12-01-010-001-H01

- (4) Remove the applicable side panel [21] from the control stand:
- Release the thirteen quick-release fasteners [22] that hold the side panel [21] to the control stand.
  - Remove the side panel [21].

SUBTASK 76-12-01-860-001-H01

- (5) Attach the DO-NOT-OPERATE tags to the thrust levers.

**E. Autothrottle Servomotor (ASM) Removal**

SUBTASK 76-12-01-010-002-H01

- (1) Open the forward access panel to gain access to the AE0160 electrical panel.

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

SUBTASK 76-12-01-010-003-H01

- (2) Remove the electrical connector [5] from the AE0160 electrical panel if the servomotor is to be removed from the control stand.

SUBTASK 76-12-01-010-004-H01

- (3) Remove the clamp [2], screw [3], and washer [4] from the wire bundle on the servomotor.

SUBTASK 76-12-01-010-005-H01

- (4) Remove the servomotor [1] from the gearbox [13]:
- Remove the three screws [6], washers [7], and nuts [8] that hold the servomotor [1] to the gearbox [13].

**F. Gearbox Removal**

SUBTASK 76-12-01-020-001-H01

- (1) Remove the gearbox [13] from the support bracket:
- Remove the screw [12] from the ramp plug [11].
  - Remove the ramp plug [11].

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- (c) Remove the three bolts [10] and washers [9] from the gearbox [13].
- (d) Remove the gearbox [13].

———— **END OF TASK** ————

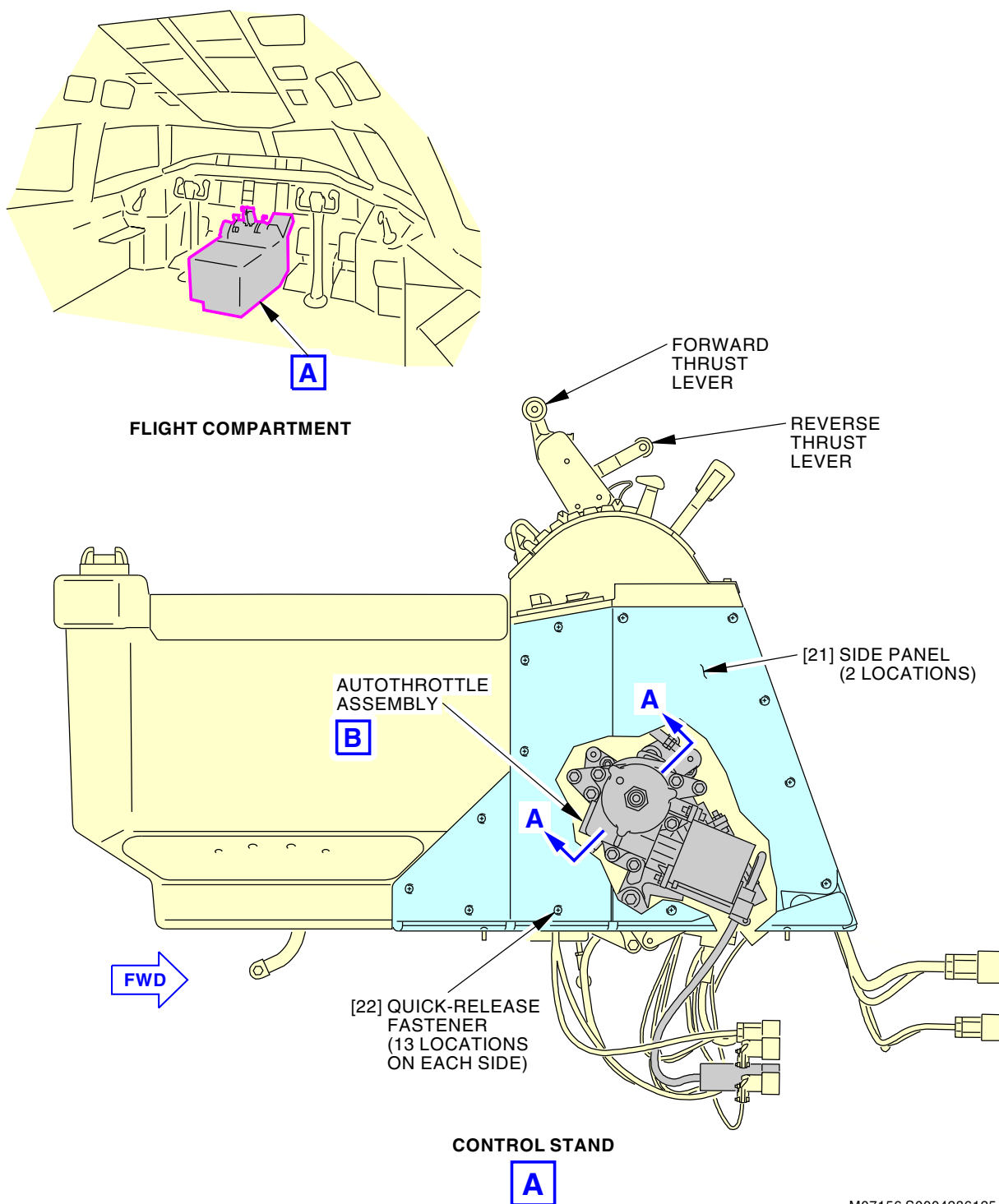
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M07156 S0004286125\_V2

**Autothrottle Servomotor (ASM) and Gearbox Installation**  
Figure 401/76-12-01-990-801-H01 (Sheet 1 of 3)

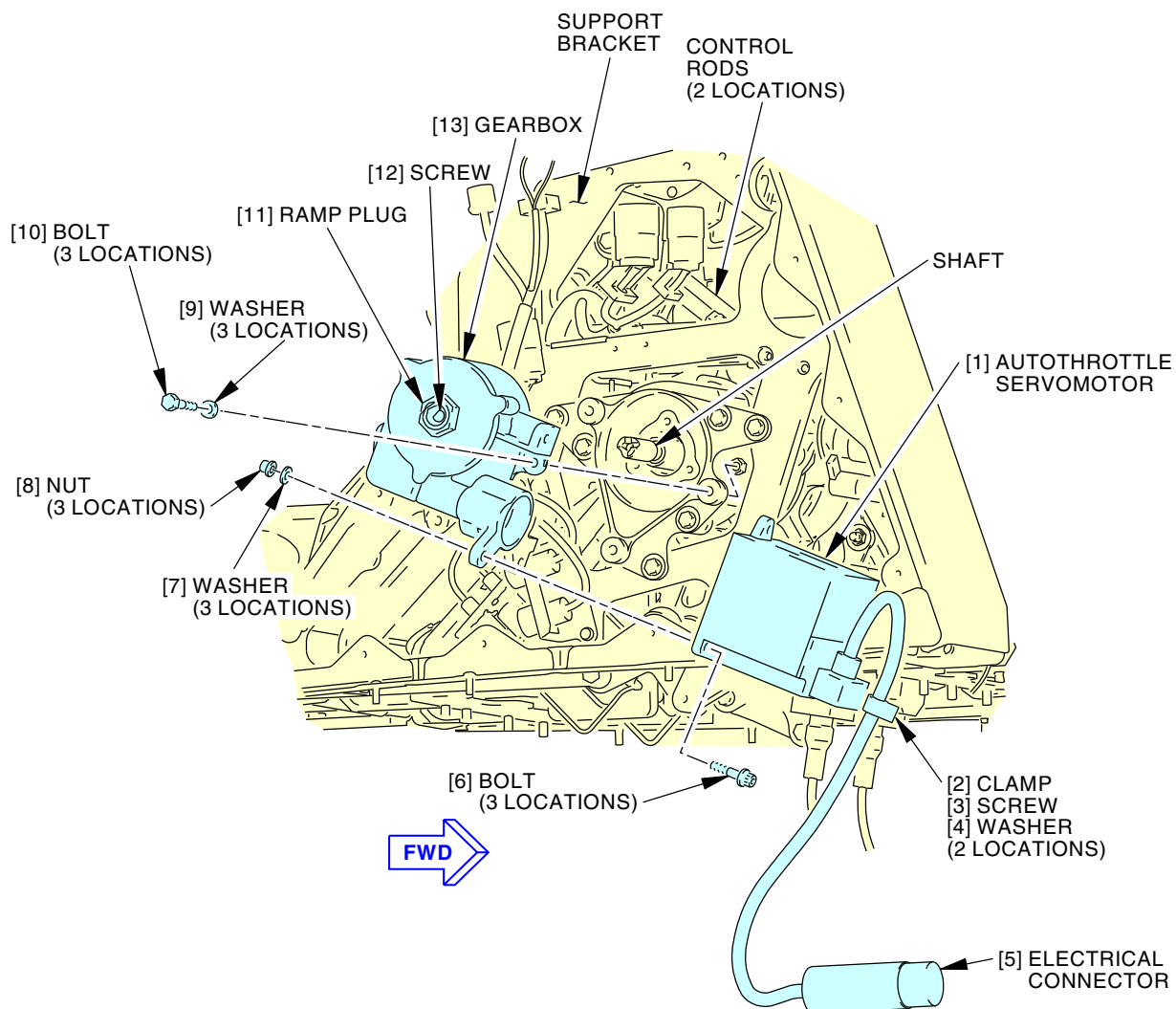
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**RIGHT AUTO THROTTLE ASSEMBLY  
(LEFT AUTO THROTTLE ASSEMBLY IS EQUIVALENT)**

**B**

M07157 S0004286126\_V2

**Autothrottle Servomotor (ASM) and Gearbox Installation  
Figure 401/76-12-01-990-801-H01 (Sheet 2 of 3)**

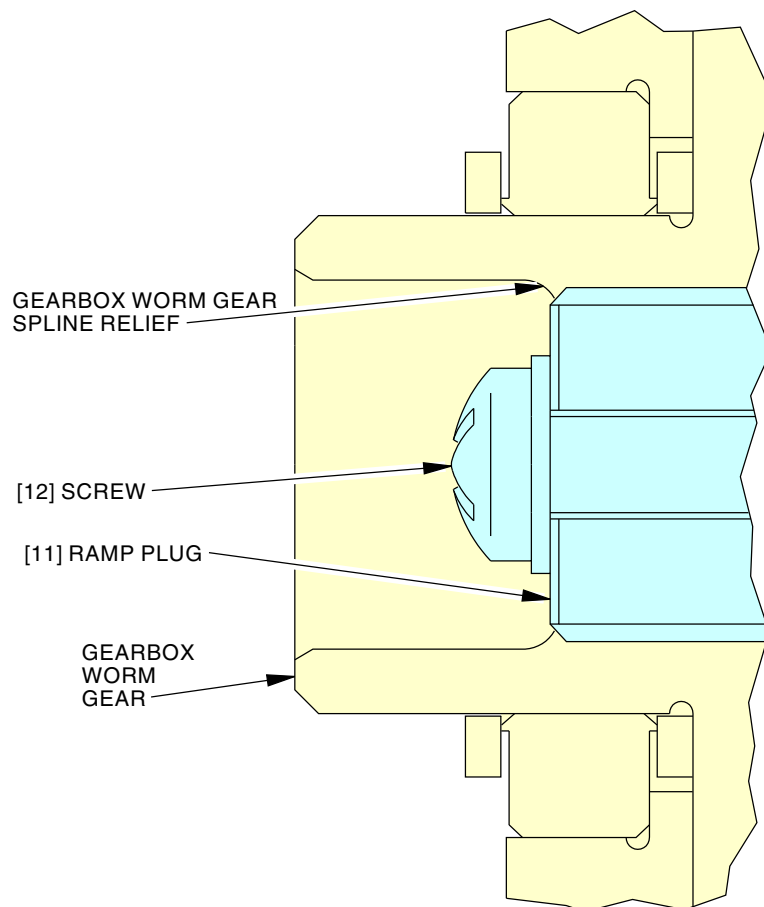
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**A-A**

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**Autothrottle Servomotor (ASM) and Gearbox Installation**  
Figure 401/76-12-01-990-801-H01 (Sheet 3 of 3)

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 76-12-01-400-804-H00

### 3. Autothrottle Servomotor (ASM) and Gearbox Installation

#### A. General

- (1) You must do the Servo Loop System Test after you install the servomotor and gearbox.

#### B. References

Reference	Title
22-31-00-730-802	Left TMCF - Autothrottle Servo Loop - System Test (P/B 501)
22-31-00-730-806	Right TMCF - Autothrottle Servo Loop - System Test (P/B 501)

#### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Servomotor	76-12-01-05-055	ARO ALL
13	Gearbox	76-12-01-05-120	ARO ALL
		76-12-01-05-255	ARO ALL

#### D. Location Zones

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

#### E. Access Panels

Number	Name/Location
112AL	Forward Access Door

#### F. Gearbox Installation

##### SUBTASK 76-12-01-869-001-H01

- (1) Align the gearbox spline on the splined shaft and set the gearbox [13] against the support frame.

##### SUBTASK 76-12-01-420-001-H01

- (2) Install the three bolts [10] and washers [9] on the gearbox [13].

##### SUBTASK 76-12-01-869-002-H01

- (3) Align the spline teeth of the ramp plug [11] with the spline teeth of the shaft so that the adjacent ramp faces make contact with each other.

**NOTE:** A properly installed ramp plug will have the end of the ramp plug approximately even with the spline relief on the gearbox worm gear. If the end of the ramp plug is too high or below the spline relief, adjust it by removing the ramp plug, turning it, and reengaging the ramp plug spline.

##### SUBTASK 76-12-01-420-002-H01

- (4) Install the screw [12] through the ramp plug [11]:
- (a) Tighten the screw [12] to 25-35 pound-inches.

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### G. Autothrottle Servomotor (ASM) Installation

SUBTASK 76-12-01-410-001-H01



YOU MUST INSTALL THE SERVOMOTOR CAREFULLY. THIS WILL PREVENT DAMAGE TO THE SPLINE SHAFT ON THE SERVOMOTOR. DO NOT SIDE LOAD THE SPLINE WHEN YOU TIGHTEN THE MOUNTING BOLTS.

- (1) Install the servomotor [1] to the gearbox [13].
  - (a) Install the three screws [6], washers [7], and nuts [8].

SUBTASK 76-12-01-410-002-H01

- (2) Install the clamp [2], screw [3], and washer [4].

SUBTASK 76-12-01-430-001-H01

- (3) Connect the electrical connector [5] on the servomotor to the AE0160 electrical panel.

SUBTASK 76-12-01-410-003-H01

- (4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

### H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-12-01-410-004-H01

- (1) Install the side panel [21] to the control stand:
  - (a) Tighten the thirteen quick-release fasteners [22] that hold the side panel [21] to the control stand.

SUBTASK 76-12-01-865-004-H01

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

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	5	C22620	A/T SERVO L
F	18	C22621	A/T SERVO R

SUBTASK 76-12-01-865-009-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-12-01-865-010-H01

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

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

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SUBTASK 76-12-01-410-005-H01

(5) Do this task: Left TMCf - Autothrottle Servo Loop - System Test, TASK 22-31-00-730-802.

SUBTASK 76-12-01-440-001-H01

(6) Do this task: Right TMCf - Autothrottle Servo Loop - System Test, TASK 22-31-00-730-806.

———— **END OF TASK** ————

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### AUTOTHROTTLE DISCONNECT SWITCH - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has two tasks:
- (1) A removal of the autothrottle disconnect switch
  - (2) An installation of the autothrottle disconnect switch.

#### TASK 76-12-02-000-807-H00

#### 2. Autothrottle Disconnect Switch Removal

##### A. General

- (1) The autothrottle disconnect switches are installed in the handles of the forward thrust levers.

##### B. References

Reference	Title
27-61-00-040-802	Spoiler Deactivation (With the Spoilers Up) (P/B 201)
27-61-00-040-803	Spoiler Deactivation (With the Spoilers Down) (P/B 201)

##### C. Location Zones

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

##### D. Prepare for the Removal

SUBTASK 76-12-02-865-011-H01



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 THE EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (1) Open these circuit breakers and install safety tags:

##### Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-12-02-040-001-H01



DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Do the deactivation procedure for the spoilers;
- (a) With the spoilers in the up position, do this task: Spoiler Deactivation (With the Spoilers Up), TASK 27-61-00-040-802.
  - (b) With the spoilers in the down position, do this task: Spoiler Deactivation (With the Spoilers Down), TASK 27-61-00-040-803.

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SUBTASK 76-12-02-865-002-H01

- (3) Open these circuit breakers and install safety tags:

### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

## E. Autothrottle Disconnect Switch Removal

SUBTASK 76-12-02-010-001-H01

- (1) Remove the snap ring [1] from the knob [5].

SUBTASK 76-12-02-020-001-H01

- (2) Remove the autothrottle disconnect switch [4] from the knob [5].

SUBTASK 76-12-02-030-001-H01

- (3) Disconnect the electrical wiring from the autothrottle disconnect switch [4].

SUBTASK 76-12-02-020-002-H01

- (4) Remove the O-ring [3].

SUBTASK 76-12-02-010-002-H01

- (5) Remove the retainer [2].

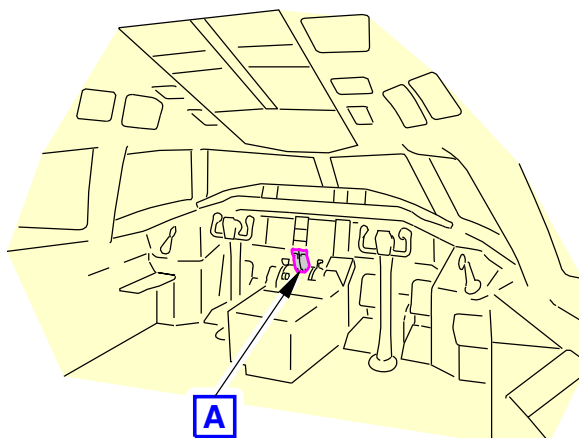
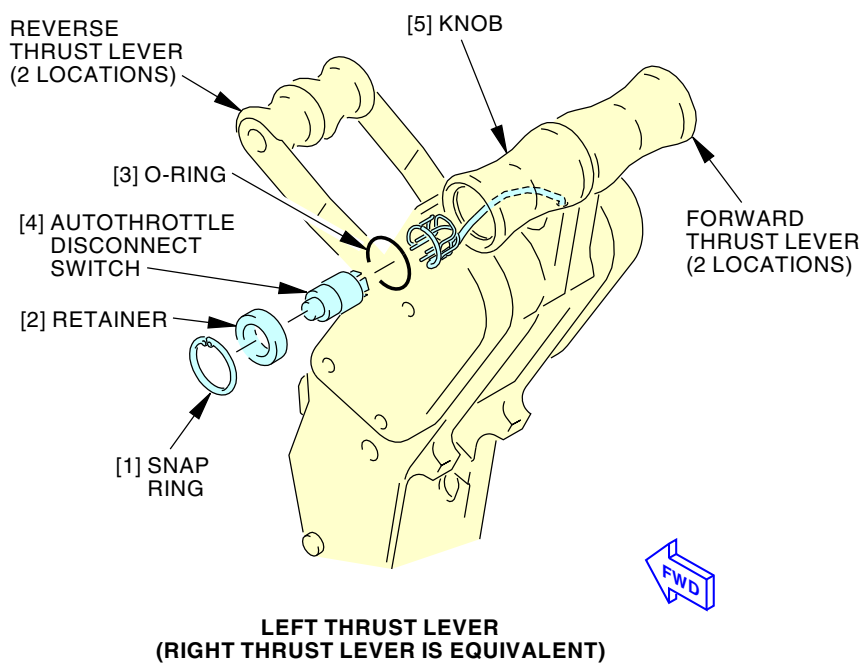
————— END OF TASK —————

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**FLIGHT COMPARTMENT****LEFT THRUST LEVER  
(RIGHT THRUST LEVER IS EQUIVALENT)****A**

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**Autothrottle Disconnect Switch Installation  
Figure 401/76-12-02-990-801-H01**
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### TASK 76-12-02-400-804-H00

#### 3. Autothrottle Disconnect Switch Installation

##### A. General

- (1) The autothrottle disconnect switches are installed in the handles of the forward thrust levers.

##### B. References

Reference	Title
27-61-00-440-801	Spoiler Activation (P/B 201)
76-12-02-710-801-H01	Autothrottle Disconnect Switch Test (P/B 501)

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	O-ring	76-11-01-05-195	ARO ALL
4	Autothrottle disconnect switch	76-11-01-05-200	ARO ALL

##### D. Location Zones

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

##### E. Autothrottle Disconnect Switch Installation

###### SUBTASK 76-12-02-420-001-H01

- (1) Install the retainer [2] on the autothrottle disconnect switch [4].

###### SUBTASK 76-12-02-420-002-H01

- (2) Install the O-ring [3] on the autothrottle disconnect switch [4].

###### SUBTASK 76-12-02-430-001-H01

- (3) Connect the electrical wiring to the autothrottle disconnect switch [4].

###### SUBTASK 76-12-02-420-003-H01

- (4) Install the autothrottle disconnect switch [4] into the knob [5].

###### SUBTASK 76-12-02-420-004-H01

- (5) Install the snap ring [1].

##### F. Put the Airplane Back to Its Usual Condition

###### SUBTASK 76-12-02-865-003-H01

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

###### Left Power Management Panel, P110

Row	Col	Number	Name
P	23	C78605	L ENG T/R CTRL

###### Right Power Management Panel, P210

Row	Col	Number	Name
N	12	C78604	R ENG T/R CTRL

###### SUBTASK 76-12-02-410-001-H01

- (2) Do this task: Autothrottle Disconnect Switch Test, TASK 76-12-02-710-801-H01.

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SUBTASK 76-12-02-865-012-H01

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

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 76-12-02-440-001-H01

- (4) Do this task: Spoiler Activation, TASK 27-61-00-440-801.

———— **END OF TASK** ————

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### AUTOTHROTTLE DISCONNECT SWITCH - ADJUSTMENT/TEST

#### 1. General

- A. This procedure has one task:
- (1) A test of the autothrottle disconnect switch.

#### **TASK 76-12-02-710-801-H01**

#### 2. Autothrottle Disconnect Switch Test

##### A. General

- (1) The autothrottle disconnect switches are installed in the handles of the forward thrust levers.

##### B. References

Reference	Title
27-61-00-040-802	Spoiler Deactivation (With the Spoilers Up) (P/B 201)
27-61-00-040-803	Spoiler Deactivation (With the Spoilers Down) (P/B 201)
27-61-00-440-801	Spoiler Activation (P/B 201)
76-12-02-000-807-H00	Autothrottle Disconnect Switch Removal (P/B 401)
76-12-02-400-804-H00	Autothrottle Disconnect Switch Installation (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
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536

##### D. Location Zones

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

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### E. Prepare for the Test

SUBTASK 76-12-02-865-014-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-12-02-865-006-H01

- (2) Open these circuit breakers and install safety tags:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-12-02-865-007-H01

- (3) Open these circuit breakers and install safety tags:

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

SUBTASK 76-12-02-040-002-H01



DO THE DEACTIVATION PROCEDURE FOR THE SPOILERS, OR MOVE ALL PERSONNEL AND EQUIPMENT AWAY FROM THE SPOILERS. THE SPOILERS CAN RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) Do the deactivation procedure for the spoilers:
  - (a) With the spoilers in the up position, do this task: Spoiler Deactivation (With the Spoilers Up), TASK 27-61-00-040-802.
  - (b) With the spoilers in the down position, do this task: Spoiler Deactivation (With the Spoilers Down), TASK 27-61-00-040-803.

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## SUBTASK 76-12-02-010-003-H01

- (5) Remove the two side panels [6].
  - (a) Loosen the thirteen quick-release fasteners that hold each side panels [6] to the control stand.

## SUBTASK 76-12-02-030-002-H01

- (6) Remove these electrical connectors from the two electrical connector panels:
  - (a) D104P [2]
  - (b) D108P [4].

**F. Autothrottle Disconnect Switch Test**

## SUBTASK 76-12-02-869-001-H01

- (1) Make sure the reverse thrust lever is in the fully forward and down position.

## SUBTASK 76-12-02-490-001-H01

- (2) Use a digital/analog multimeter, COM-1793 to do a continuity test to make sure these conditions occur:
  - (a) There is continuity at connector D104P [2] for pin 1 and pin 2.
  - (b) There is no continuity at connector D104P [2] for pin 4 and pin 5.
  - (c) There is continuity at connector D108P [4] for pin 1 and pin 2.
  - (d) There is no continuity at connector D108P [4] for pin 3 and pin 4.

## SUBTASK 76-12-02-860-001-H01

- (3) Push the autothrottle disconnect switch [1] in and hold it in this position while you use a digital/analog multimeter, COM-1793 to do a continuity test to make sure these conditions occur:
  - (a) There is no continuity at connector D104P [2] for pin 1 and pin 2.
  - (b) There is continuity at connector D104P [2] for pin 4 and pin 5.
  - (c) There is no continuity at connector D108P [4] for pin 1 and pin 2.
  - (d) There is continuity at connector D108P [4] for pin 3 and pin 4.

## SUBTASK 76-12-02-420-005-H01

- (4) If these conditions do not occur, then replace the autothrottle disconnect switch. These are the tasks: Autothrottle Disconnect Switch Removal, TASK 76-12-02-000-807-H00 and Autothrottle Disconnect Switch Installation, TASK 76-12-02-400-804-H00.

**G. Put the Airplane Back to Its Usual Condition**

## SUBTASK 76-12-02-430-002-H01

- (1) Install these electrical connectors to the two electrical connector panels:
  - (a) D104P [2]
  - (b) D108P [4].

## SUBTASK 76-12-02-410-002-H01

- (2) Install the two side panels [6].
  - (a) Install the thirteen quick-release fasteners that hold each side panels [6] to the control stand.

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SUBTASK 76-12-02-865-008-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-12-02-865-013-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-12-02-865-010-H01

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

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

SUBTASK 76-12-02-410-003-H01

- (6) Do this task: Spoiler Activation, TASK 27-61-00-440-801.

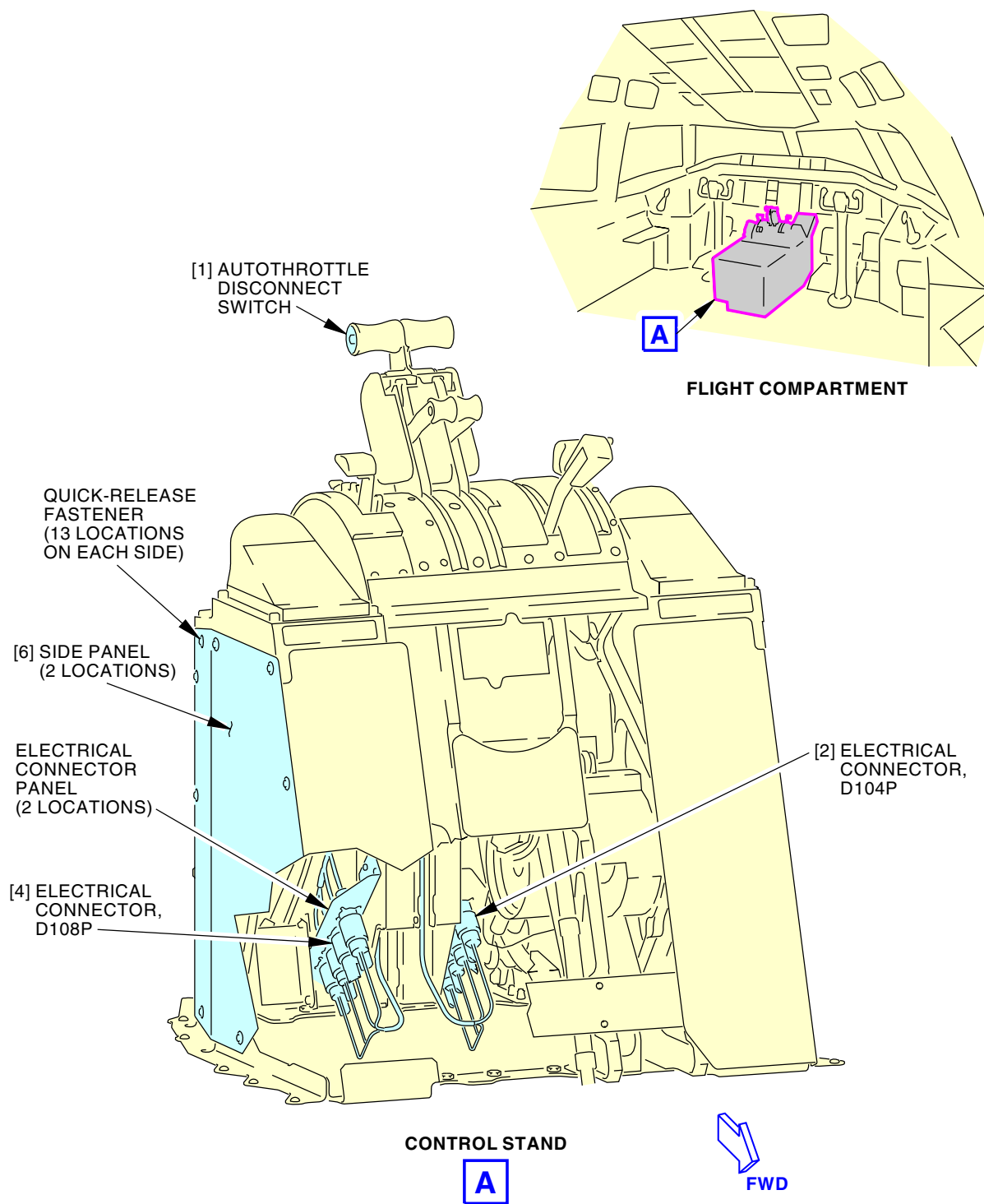
————— **END OF TASK** —————

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**Autothrottle Disconnect Switch Adjustment**  
**Figure 501/76-12-02-990-802-H01**

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TAKEOFF AND GO-AROUND SWITCH - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has two tasks:
- (1) A removal of the takeoff and go-around switch
  - (2) An installation of the takeoff and go-around switch.

#### TASK 76-12-03-000-804-H00

#### 2. Takeoff and Go-Around Switch Removal

##### A. General

- (1) The takeoff and go-around switches are installed on the thrust levers. There are three switches on each of the thrust lever. The left thrust lever has these switches: S22003, S22005, and S22007. The right thrust lever has these switches: S22004, S22006, and S22008.

##### B. Location Zones

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

##### C. Prepare for the Removal

SUBTASK 76-12-03-865-013-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

##### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

##### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-12-03-865-002-H01

- (2) Open these circuit breakers and install safety tags:

##### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

##### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

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SUBTASK 76-12-03-865-003-H01

- (3) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

### D. Takeoff and Go-Around Switch Removal

SUBTASK 76-12-03-010-001-H01

- (1) Remove the switch cover [2] and switch cover [9] from the outboard side of the applicable thrust lever.
- (a) Remove the three screws [1] from the applicable switch cover [2] and switch cover [9].

SUBTASK 76-12-03-010-002-H01

- (2) Remove the two screws [4] and two screws [5] which attach the applicable takeoff and go-around switch [6] and switch actuator [8] to the thrust lever.

SUBTASK 76-12-03-020-001-H01

- (3) Remove the takeoff and go-around switch [6] and switch actuator [8] from the thrust lever.

SUBTASK 76-12-03-860-001-H01

- (4) Pull the wire terminals [3] off the switch terminals [7].

————— **END OF TASK** —————

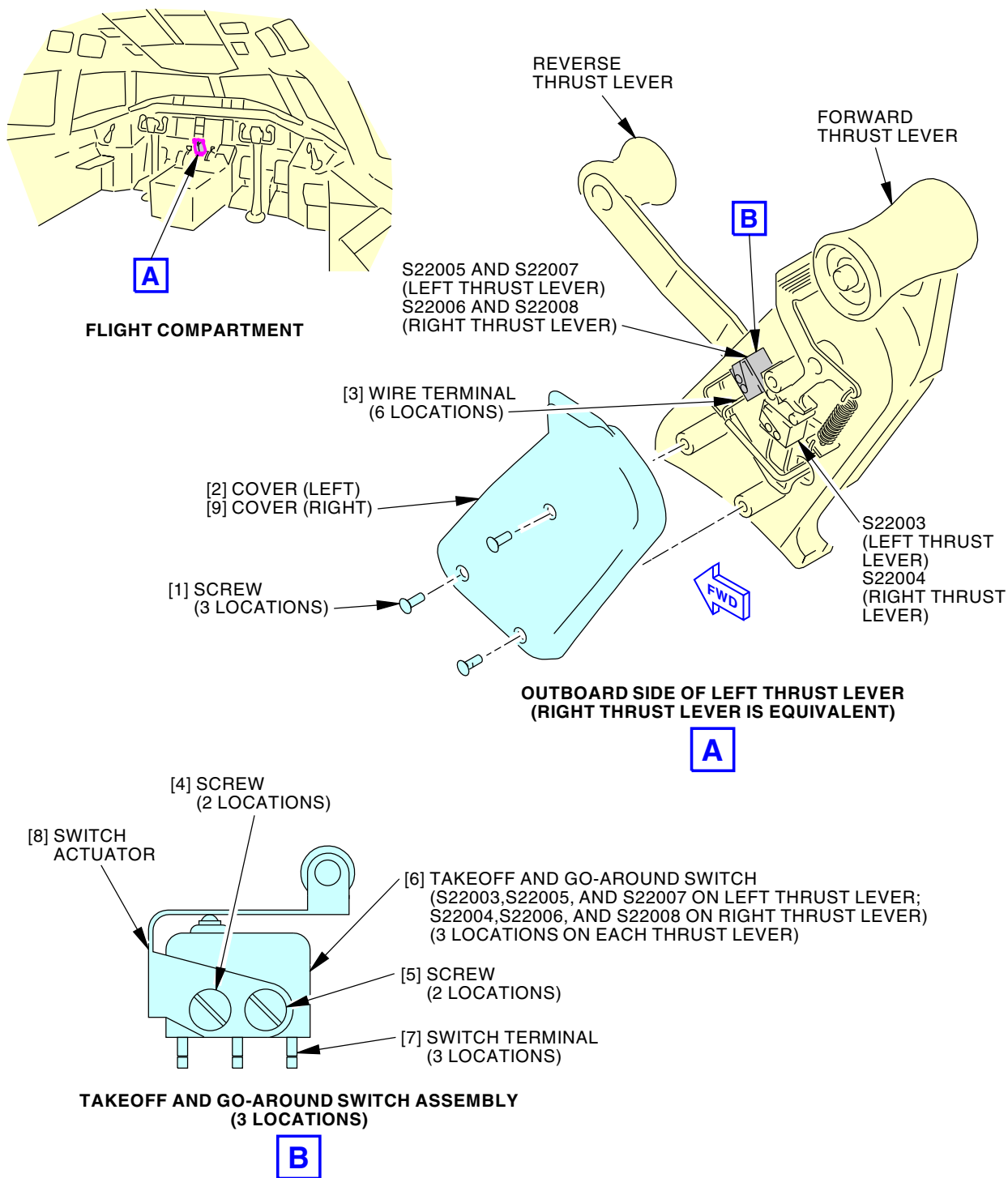
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**Takeoff and Go-Around Switch Installation**  
**Figure 401/76-12-03-990-802-H01**

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 76-12-03-400-804-H00

#### 3. Takeoff and Go-Around Switch Installation

##### A. General

- (1) The takeoff and go-around switches are installed on the thrust levers. There are three switches on each of the thrust lever. The left thrust lever has these switches: S22003, S22005, and S22007. The right thrust lever has these switches: S22004, S22006, and S22008.

##### B. References

Reference	Title
76-12-03-700-801-H01	Takeoff and Go-Around Switch Adjustment (P/B 501)

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Takeoff and go-around switch	76-11-01-05-280	ARO ALL
		76-11-01-05-680	ARO ALL

##### D. Location Zones

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

##### E. Takeoff and Go-Around Switch Installation

###### SUBTASK 76-12-03-420-001-H01

- (1) Install the takeoff and go-around switch [6]:
- (a) Connect the pair of wire terminals [3] to the switch terminals [7] of the takeoff and go-around switch [6].
 

**NOTE:** You can only connect each set of the wire terminals [3] to the two outer switch terminals [7] on the takeoff and go-around switch [6]. Install heat-shrink tubing on the middle switch terminals [7] so that you can not connect a wire terminals [3] to the middle switch terminals [7]. It does not make a difference in which sequence the wires are connected to the outer terminals.
  - (b) Install the takeoff and go-around switch [6] and the switch actuator [8] to the thrust lever.
    - 1) Tighten the two screws [4] and two screws [5].

###### SUBTASK 76-12-03-410-001-H01

- (2) Install the switch cover [2] and switch cover [9].
- (a) Install the three screws [1].

##### F. Put the Airplane Back to Its Usual Condition

###### SUBTASK 76-12-03-865-004-H01

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

###### Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

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SUBTASK 76-12-03-865-011-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-12-03-865-014-H01

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

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-12-03-440-001-H01

- (4) Do this task: Takeoff and Go-Around Switch Adjustment, TASK 76-12-03-700-801-H01.

————— **END OF TASK** —————

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TAKEOFF AND GO-AROUND SWITCH - ADJUSTMENT/TEST

#### 1. General

A. This procedure has one task:

- (1) An adjustment of the takeoff and go-around switch.

#### TASK 76-12-03-700-801-H01

#### 2. Takeoff and Go-Around Switch Adjustment

##### A. General

- (1) The takeoff and go-around switches are installed on the thrust levers. There are three switches on each of the thrust lever. The left thrust lever has these takeoff and go-around switches: S22003, S22005, and S22007. The right thrust lever has these takeoff and go-around switches: S22004, S22006, and S22008.
- (2) For this procedure the takeoff and go-around switch is referred to as the switch.

##### B. Location Zones

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

##### C. Prepare for the Adjustment

SUBTASK 76-12-03-865-018-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

##### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

##### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

SUBTASK 76-12-03-865-017-H01



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 THE EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (2) Open these circuit breakers and install safety tags:

##### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T

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(Continued)

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C34438	WXR R R/T

SUBTASK 76-12-03-865-005-H01

- (3) Open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	23	C78605	L ENG T/R CTRL

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	12	C78604	R ENG T/R CTRL

SUBTASK 76-12-03-865-007-H01

- (4) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

SUBTASK 76-12-03-010-003-H01

- (5) Remove the two side panels [7].

- (a) Loosen the thirteen quick-release fasteners that hold each side panel to the control stand.

SUBTASK 76-12-03-030-001-H01

- (6) Disconnect the electrical connectors from the applicable thrust lever:

- (a) For the left thrust lever;
- 1) D103P [1]
  - 2) D102P [2]
  - 3) D101P [3].
- (b) For the right thrust lever;
- 1) D106P [4]
  - 2) D107P [5]
  - 3) D105P [6].

SUBTASK 76-12-03-010-004-H01

- (7) Remove the cover [9] of the thrust lever

- (a) Remove the three screws [8].

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**777-200/300  
AIRCRAFT MAINTENANCE MANUAL****D. Takeoff and Go-Around Switch Adjustment**

## SUBTASK 76-12-03-869-002-H01

- (1) For the left thrust lever, push the switch lever on the thrust lever down and verify the three switches change from closed to open in 0.04 to 0.07 inch (1.016-1.778 mm) from the switch lever stop.
  - (a) Do a check between pin 1 and pin 2 at these locations:
    - 1) Connector D101P [3] of switch S22005
    - 2) Connector D102P [2] of switch S22007
    - 3) Connector D103P [1] of switch S22003.

## SUBTASK 76-12-03-869-003-H01

- (2) Release the switch lever and verify the three switches change from open to closed in 0.04 to 0.07 inch from the switch stop.
  - (a) Do a check between pin 1 and pin 2 at these locations:
    - 1) Connector D101P [3] of switch S22005
    - 2) Connector D102P [2] of switch S22007
    - 3) Connector D103P [1] of switch S22003.

## SUBTASK 76-12-03-010-005-H01

- (3) Do these steps if the takeoff and go-around switch [11] does not operate correctly:
  - (a) Loosen the two screws [10] or screws [12].
  - (b) Adjust the takeoff and go-around switch [11] and the switch actuator [13] relative to the cam and to each other.
  - (c) Tighten the two screws [10] or screws [12].
  - (d) If the takeoff and go-around switch [11] still does not operate correctly then bend the switch actuator arm as much as 0.06 inch (1.524 mm) to get the correct switch operation.

## SUBTASK 76-12-03-869-004-H01

- (4) For the right thrust lever, push the switch lever on the thrust lever down and verify the three switches change from closed to open within 0.04 to 0.07 inch (1.016-1.778 mm) from the switch lever stop.
  - (a) Do a check between pin 1 and pin 2 at these locations:
    - 1) Connector D105P [6] of switch S22006
    - 2) Connector D106P [4] of switch S22008
    - 3) Connector D107P [5] of switch S22004.

## SUBTASK 76-12-03-869-005-H01

- (5) Release the switch lever and verify the three switches change from opened to close in 0.04 to 0.07 inch (1.016-1.778 mm) from the switch stop.
  - (a) Do a check between pin 1 and pin 2 at these locations:
    - 1) Connector D105P [6] of switch S22006
    - 2) Connector D106P [4] of switch S22008
    - 3) Connector D107P [5] of switch S22004.

## SUBTASK 76-12-03-869-006-H01

- (6) Do these steps if the takeoff and go-around switch [11] does not operate correctly:
  - (a) Loosen the two screws [10] or screws [12].

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- (b) Adjust the takeoff and go-around switch [11] and the switch actuator [13] relative to the cam and to each other.
- (c) Tighten the two screws [10] or screws [12].
- (d) If the takeoff and go-around switch [11] still does not operate correctly then bend the switch actuator arm as much as 0.06 inch (1.524 mm) to get the correct switch operation.

### E. Put the Airplane Back to Its Usual Condition

#### SUBTASK 76-12-03-430-001-H01

- (1) Connect the electrical connectors to the applicable thrust lever:

- (a) For the left thrust lever;
  - 1) D103P [1]
  - 2) D102P [2]
  - 3) D101P [3]
- (b) For the right thrust lever;
  - 1) D106P [4]
  - 2) D107P [5]
  - 3) D105P [6].

#### SUBTASK 76-12-03-410-002-H01

- (2) Install the cover [9] of the thrust lever switch.
  - (a) Tighten the three screws [8].

#### SUBTASK 76-12-03-410-003-H01

- (3) Install the two side panels [7].
  - (a) Tighten the thirteen quick-release fasteners that hold each side panel to the control stand.

#### SUBTASK 76-12-03-865-015-H01

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

#### Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

#### SUBTASK 76-12-03-865-019-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

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SUBTASK 76-12-03-865-010-H01

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

**Overhead Circuit Breaker Panel, P11**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C22606	AFDC WARN
A	24	C22604	AFDC-C
F	10	C22603	AFDC-L
F	11	C22607	AFDC BACK DRIVE L
F	24	C22602	AFDC-R
F	25	C22608	AFDC BACK DRIVE R

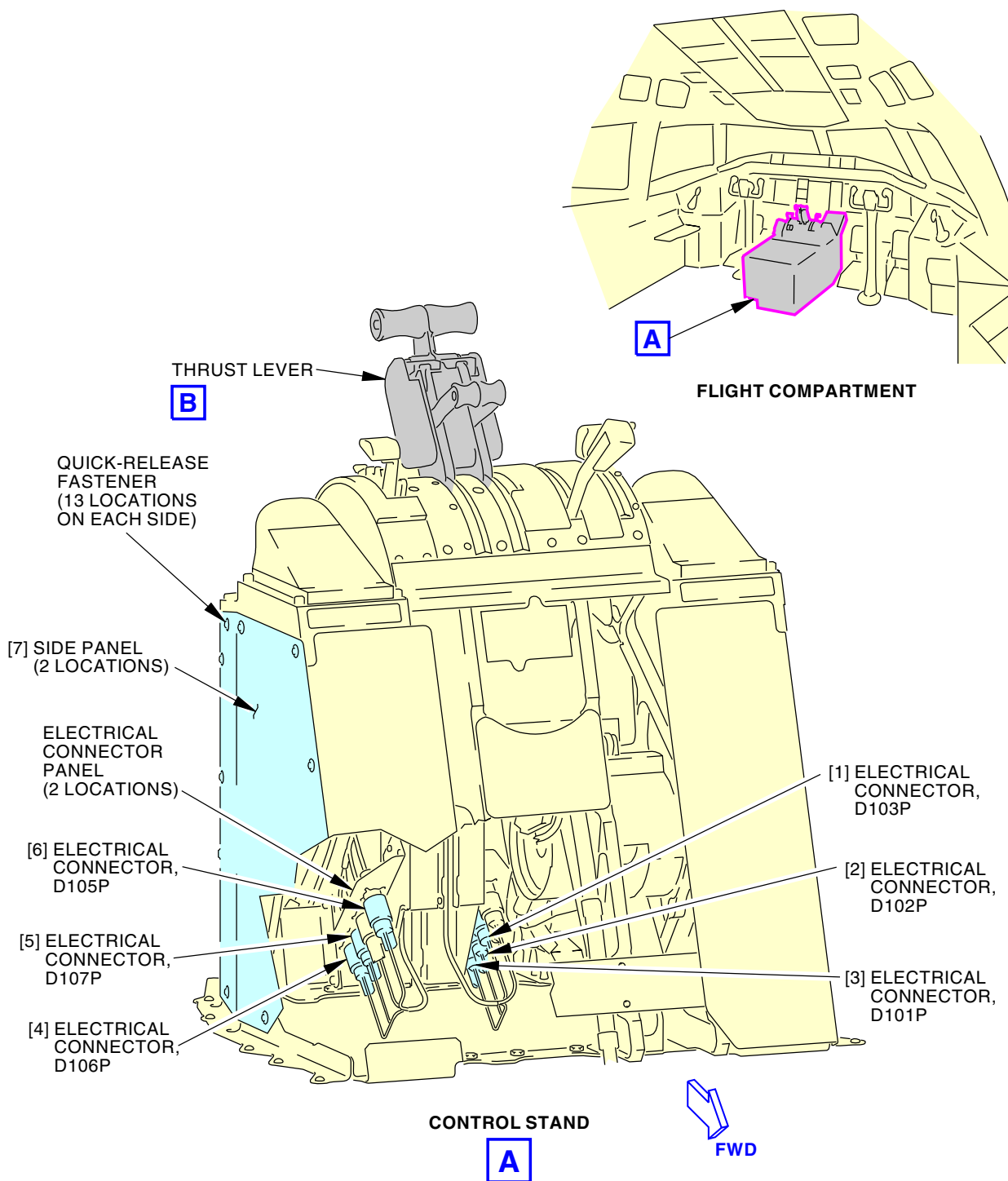
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**Takeoff and Go-Around Switch Adjustment**  
**Figure 501/76-12-03-990-801-H01 (Sheet 1 of 3)**

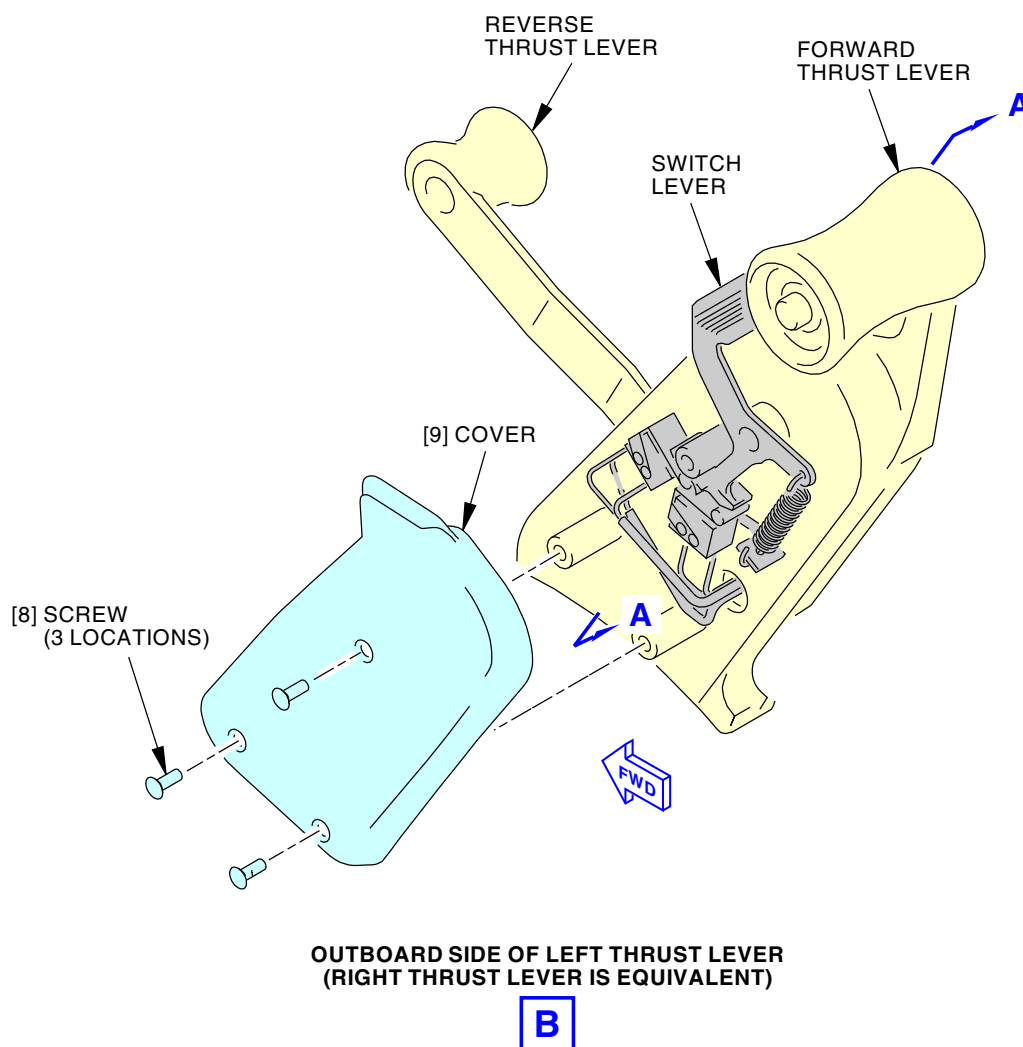
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Takeoff and Go-Around Switch Adjustment  
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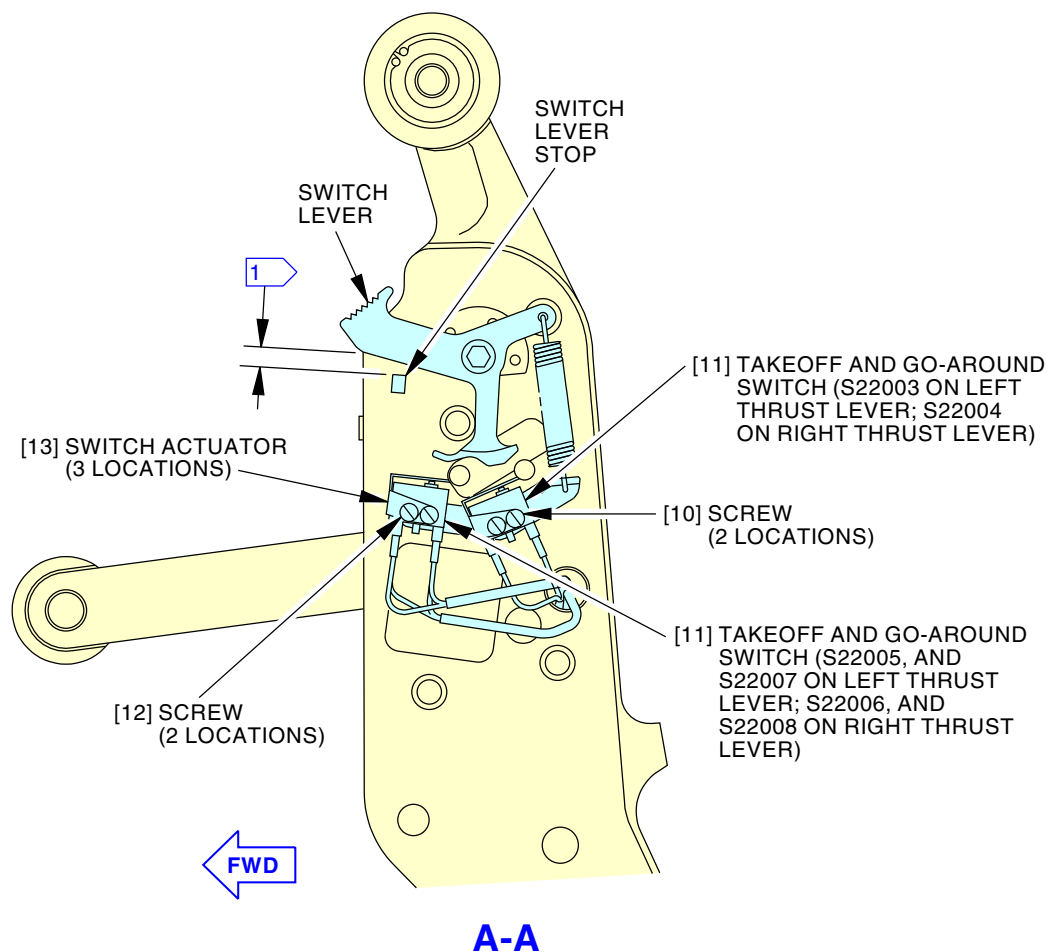
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1 SWITCHING POSITION OF SWITCH LEVER IS 0.04-0.07 INCH FROM THE SWITCH LEVER STOP

M07164 S0004286136\_V2

**Takeoff and Go-Around Switch Adjustment**  
Figure 501/76-12-03-990-801-H01 (Sheet 3 of 3)

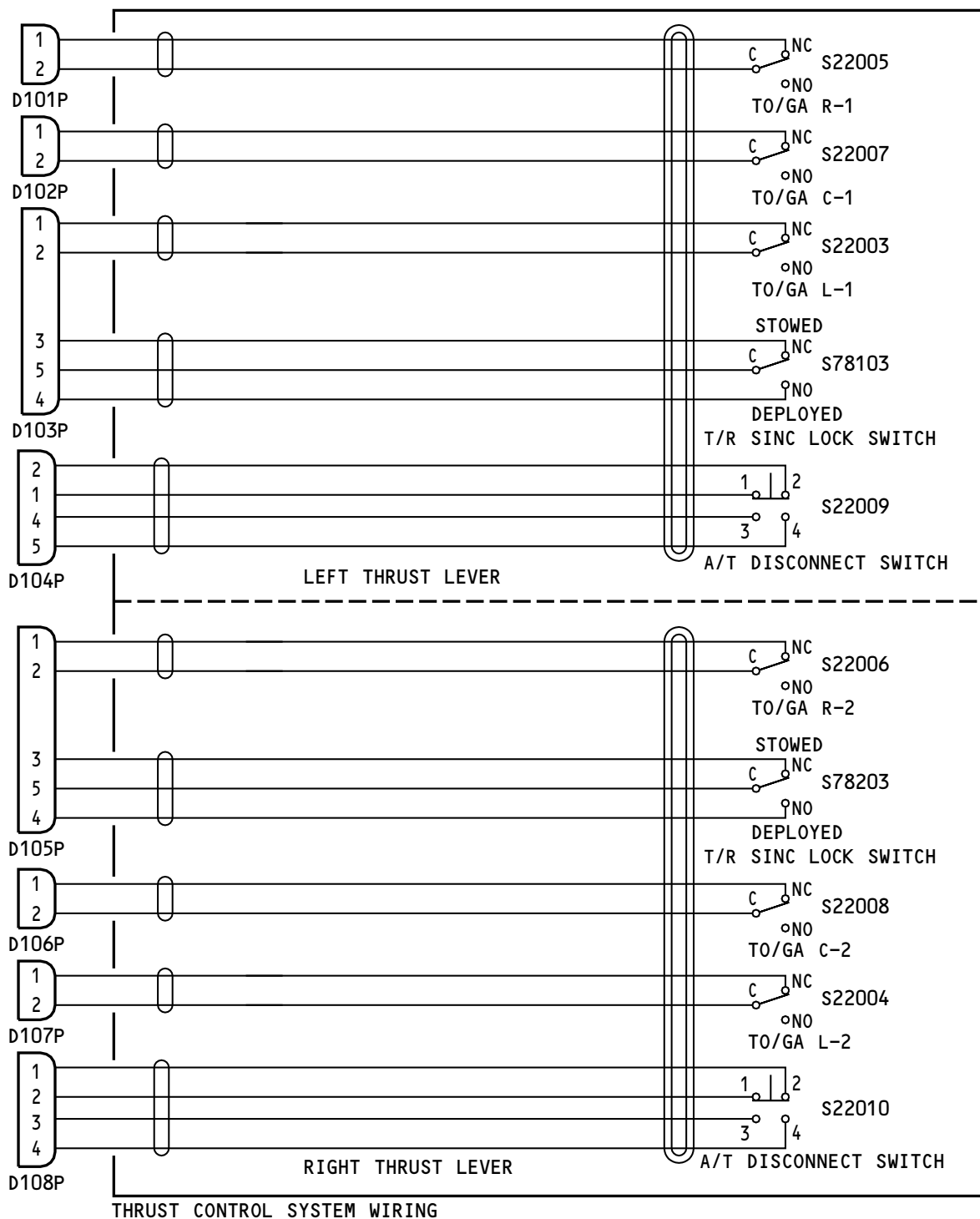
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M07165 S0004286137\_V1

**Thrust Control System Schematic**  
**Figure 502/76-12-03-990-803-H01**

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### AUTOTHROTTLE BRAKE ASSEMBLY - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has two tasks:
- (1) A removal of the autothrottle brake assembly.
  - (2) An installation of the autothrottle brake assembly.

#### TASK 76-12-04-000-801-H01

#### 2. Autothrottle Brake Assembly Removal

##### A. General

- (1) There are two autothrottle brake assemblies on an airplane.
- (2) The autothrottle brake assemblies are installed on the autothrottle servo assemblies of the control stand and the autothrottle servo assemblies must be removed from the control stand to remove the autothrottle brake assemblies.

##### B. References

Reference	Title
76-12-01-000-805-H00	Autothrottle Servomotor (ASM) and Gearbox Removal (P/B 401)

##### 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
112AL	Forward Access Door

##### E. Prepare for the Removal

SUBTASK 76-12-04-865-006-H01



REMOVE THE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

- (1) Make sure the first officer's and captain's seats can not operate.
  - (a) Open these circuit breakers and install safety tags:

##### Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

##### Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

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SUBTASK 76-12-04-865-001-H01

- (2) For the left thrust lever, open these circuit breakers and install safety tags:

**Left Power Management Panel, P110**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	24	C73401	L ENG EEC ALTN PWR CHAN A
E	19	C73403	L ENG EEC ALTN PWR CHAN B

SUBTASK 76-12-04-865-002-H01

- (3) For the right thrust lever, open these circuit breakers and install safety tags:

**Right Power Management Panel, P210**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73400	R ENG EEC ALTN PWR CHAN A
E	11	C73402	R ENG EEC ALTN PWR CHAN B

SUBTASK 76-12-04-010-001-H01

- (4) Open the forward access door to get access to the AE0160 electrical panel .

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

SUBTASK 76-12-04-030-001-H01

- (5) Disconnect the applicable electrical connector [9] from the AE0160 electrical panel.
- (a) For the left autothrottle assembly: connector DM73102A position 2 and DM73102B position 12.
  - (b) For the right autothrottle assembly: connector DM73202A position 15 and DM73202B position 8.

SUBTASK 76-12-04-010-002-H01

- (6) Remove the cable clamp [6].
- (a) Remove the screw [7] and washer [8].

**F. Autothrottle Brake Assembly Removal**

SUBTASK 76-12-04-010-003-H01

- (1) Remove the applicable side panel [1] from the control stand:
- (a) Loosen the thirteen quick-release fasteners that hold the side panel [1] to the control stand.
  - (b) Remove the side panel [1].

SUBTASK 76-12-04-010-004-H01

- (2) Remove the applicable autothrottle servomotor [5] from the autothrottle gearbox [21] and lay it aside (TASK 76-12-01-000-805-H00).
- (a) Remove the three screws [10], washers [11], and nuts [12].

SUBTASK 76-12-04-020-001-H01

- (3) Remove the thrust lever control rod [2] from the autothrottle servo assembly.
- (a) Remove the bolt [13], the two washers [3], and the nut [4].

SUBTASK 76-12-04-020-002-H01

- (4) Remove the autothrottle servo assembly from the control stand.
- (a) Remove the three screws [15] and washers [14].

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AIRCRAFT MAINTENANCE MANUAL****SUBTASK 76-12-04-020-003-H01**

- (5) Remove the autothrottle gearbox [21] from the autothrottle servo assembly (TASK 76-12-01-000-805-H00).
- (a) Remove the screw [22] and washer [23] from the ramp plug [24].
  - (b) Remove the ramp plug [24].
  - (c) Remove the three bolts [25] and washers [26].
  - (d) Remove the autothrottle gearbox [21].

**SUBTASK 76-12-04-030-002-H01**

- (6) Disassemble the autothrottle brake assembly [16] from the autothrottle servo assembly.
- (a) Remove the spanner nut [27].  
**NOTE:** A special tool is necessary to hold the splined shaft unless wrench flats are incorporated on the shaft.
  - (b) Remove the three bolts [20] and washers [19].
  - (c) Remove the TLA resolver assembly [17] from the bracket [18].
  - (d) Remove the autothrottle brake assembly [16] from the shaft [28].

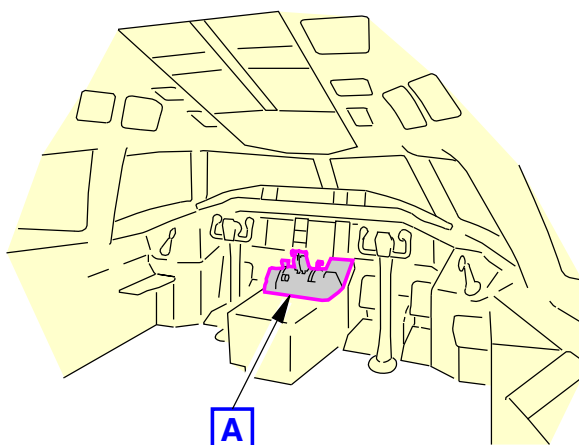
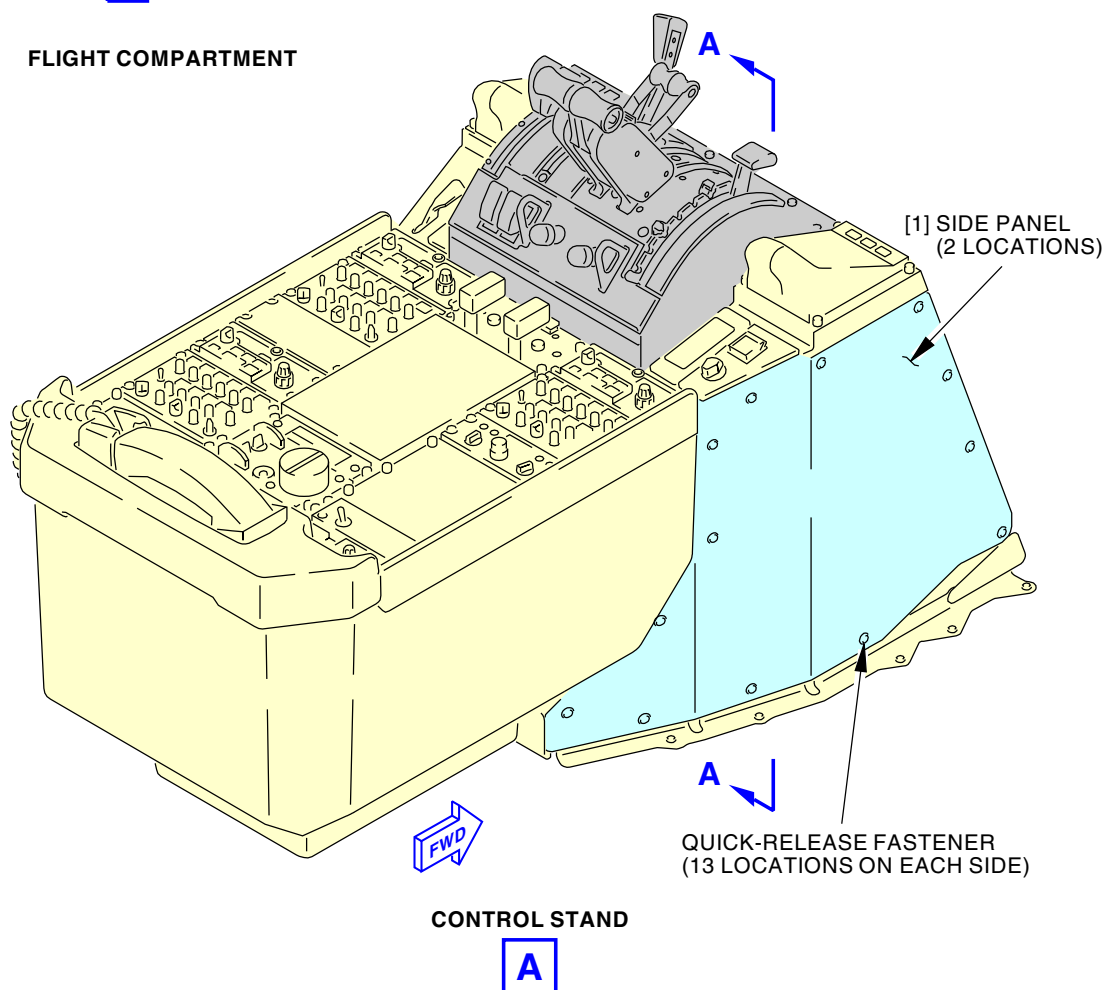
———— **END OF TASK** ————

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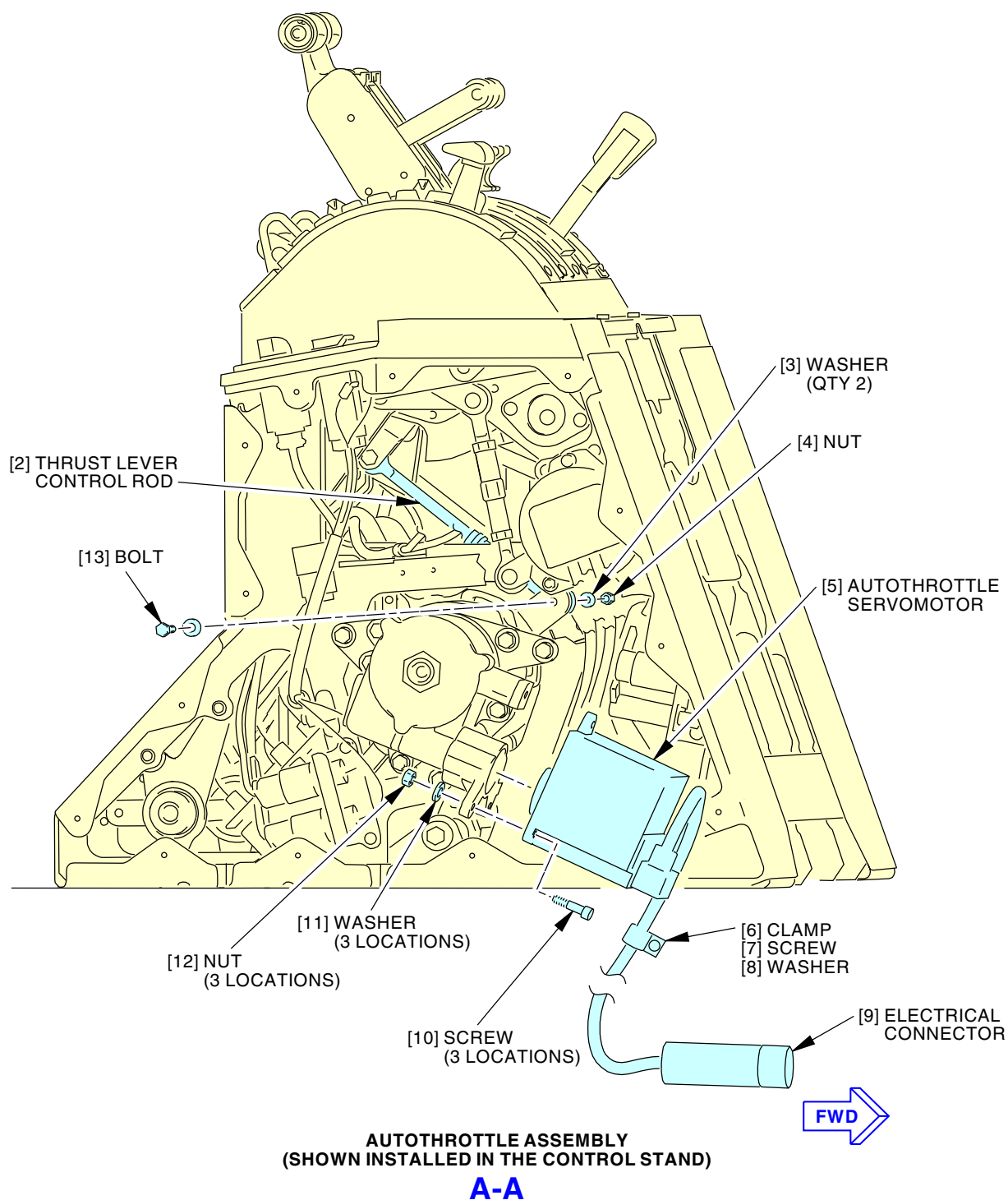
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**FLIGHT COMPARTMENT**

M07166 S0004286138\_V2

**Thrust Brake Assembly Installation**  
**Figure 401/76-12-04-990-801-H01 (Sheet 1 of 4)**
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**Thrust Brake Assembly Installation**  
**Figure 401/76-12-04-990-801-H01 (Sheet 2 of 4)**

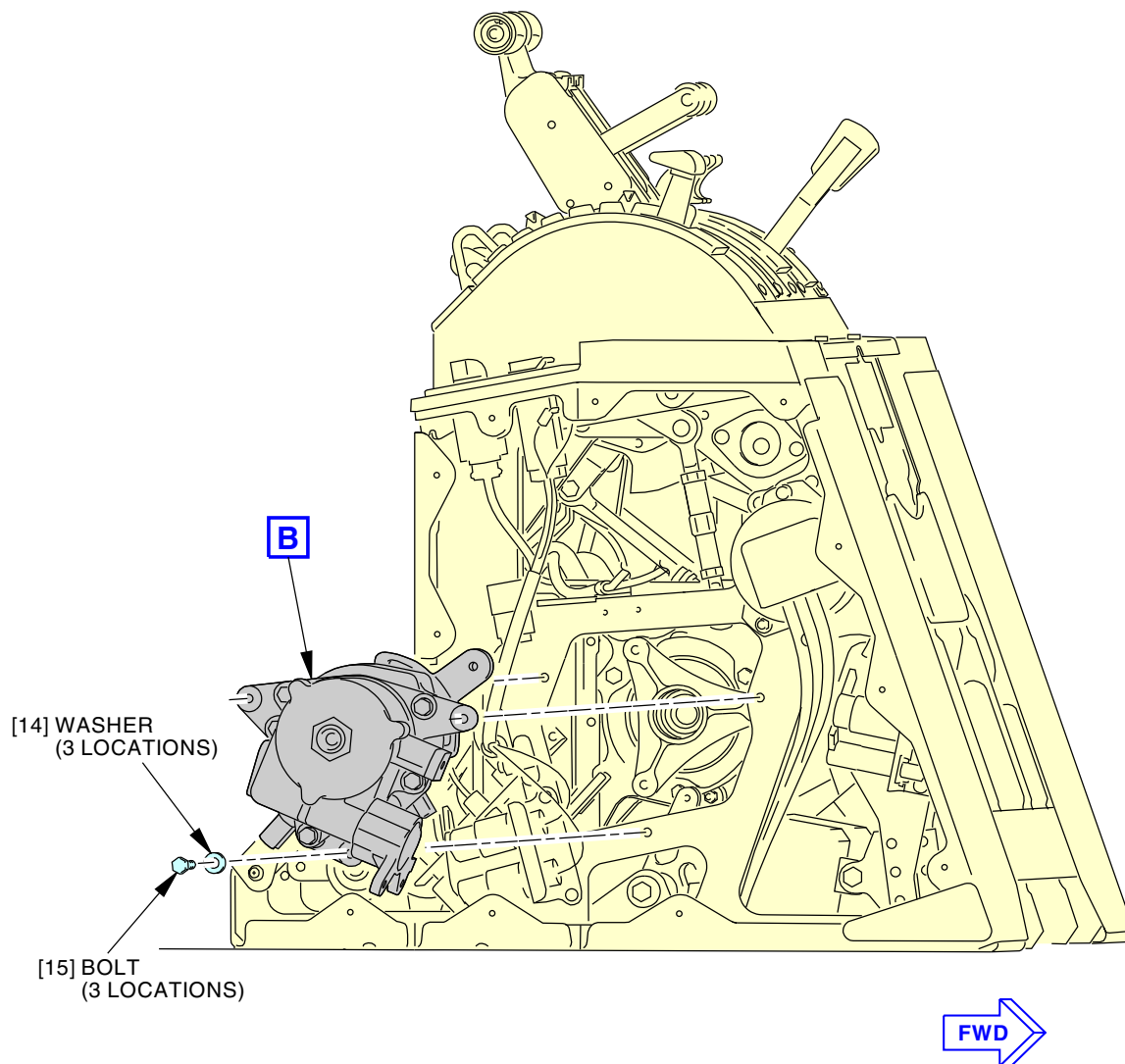
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**AUTOTHROTTLE ASSEMBLY  
(SHOWN REMOVED FROM THE CONTROL STAND)**

**A-A**

M07168 S0004286140\_V2

**Thrust Brake Assembly Installation**  
**Figure 401/76-12-04-990-801-H01 (Sheet 3 of 4)**

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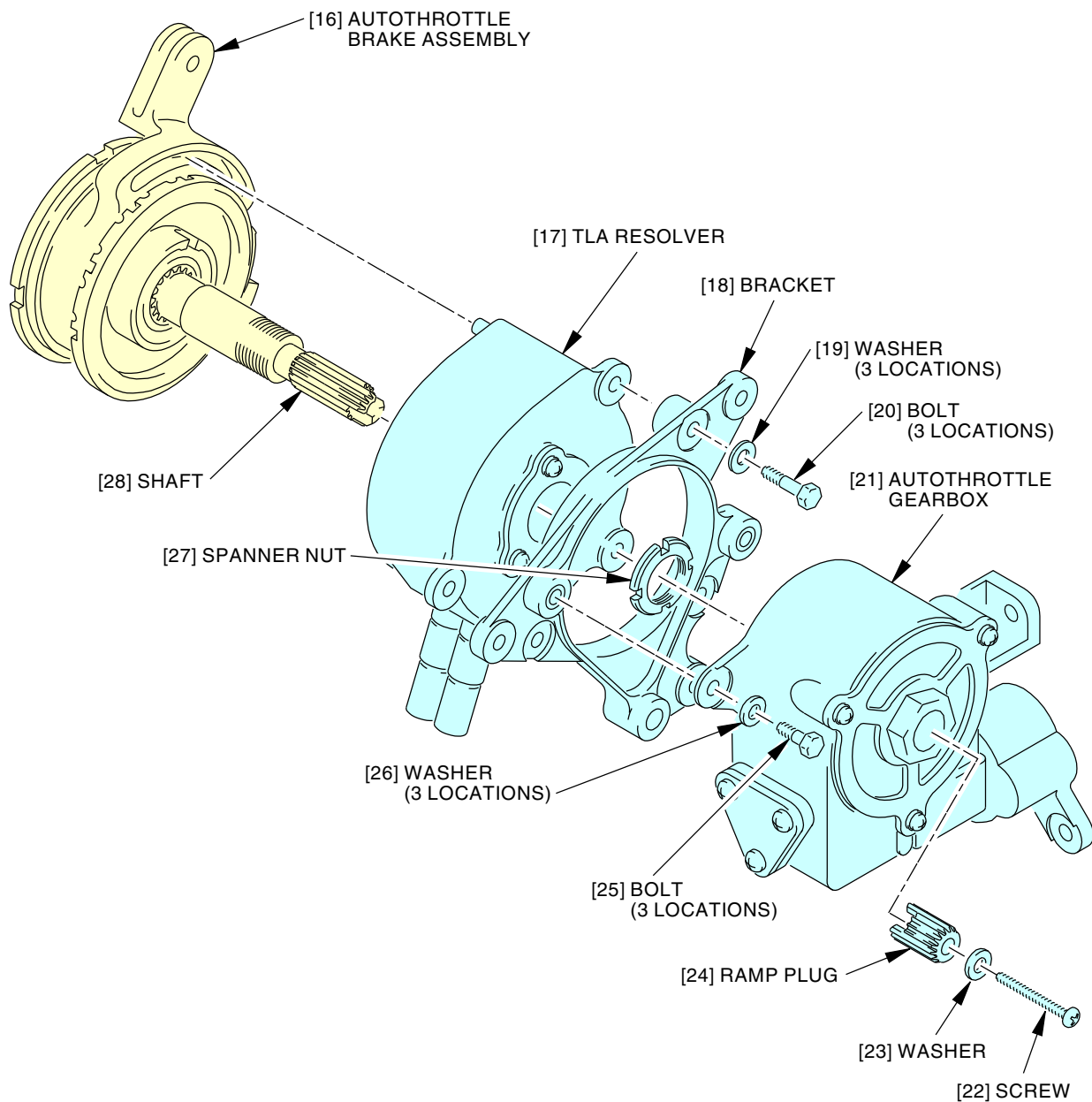
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**B**

M07169 S0004286141\_V2

**Thrust Brake Assembly Installation  
Figure 401/76-12-04-990-801-H01 (Sheet 4 of 4)**

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 76-12-04-400-801-H01

#### 3. Autothrottle Brake Assembly Installation

##### A. General

- (1) There are two autothrottle brake assemblies on an airplane.
- (2) The autothrottle brake assemblies are installed on the autothrottle servo assemblies of the control stand.

##### B. References

Reference	Title
76-12-01-400-804-H00	Autothrottle Servomotor (ASM) and Gearbox Installation (P/B 401)

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
16	Autothrottle brake assembly	76-12-04-05-005	ARO ALL
		76-12-04-05-015	ARO ALL

##### D. Location Zones

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

##### E. Access Panels

Number	Name/Location
112AL	Forward Access Door

##### F. Autothrottle Brake Assembly Installation

###### SUBTASK 76-12-04-430-001-H01

- (1) Assemble the autothrottle servo assembly:
  - (a) Assemble the autothrottle brake assembly [16] on the shaft [28].
  - (b) Assemble the TLA resolver assembly [17] on the bracket [18].  
**NOTE:** The resolver pick-up pin must engage the slot in the brake assembly.
    - 1) Install the three bolts [20] and washers [19].
  - (c) Install the spanner nut [27] and tighten it to 200-220 pound-inches (22.6-24.9 Newton-meters) above run-on torque.
  - (d) Assemble the autothrottle gearbox [21] on the autothrottle servo assembly (TASK 76-12-01-400-804-H00).
    - 1) Install the three bolts [25] and washers [26].
    - 2) Install the ramp plug [24].
    - 3) Install the screw [22] and the washer [23].

###### SUBTASK 76-12-04-420-001-H01

- (2) Install the autothrottle servo assembly in the control stand.
  - (a) Install the three screws [15] and washers [14].

###### SUBTASK 76-12-04-430-002-H01

- (3) Connect the thrust lever control rod [2] to the autothrottle servo assembly:
  - (a) Install the bolt [13], the two washers [3], and the nut [4].

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## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

## SUBTASK 76-12-04-420-002-H01

- (4) Install the autothrottle servomotor [5] onto the autothrottle gearbox [21].
  - (a) Install the three screws [10], washers [11], and nuts [12].
  - (b) Install the cable clamp [6], the screw [7], and the washer [8].

## SUBTASK 76-12-04-430-003-H01

- (5) Connect the applicable electrical connectors to the AE0160 panel.

### G. Put the Airplane Back to Its Usual Condition

## SUBTASK 76-12-04-410-001-H01

- (1) Install the side panel [1] to the control stand:
  - (a) Tighten the thirteen quick-release fasteners that hold the side panel [1] to the control stand.

## SUBTASK 76-12-04-410-002-H01

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

## SUBTASK 76-12-04-865-007-H01

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

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C25323	CAPT SEAT

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	13	C25324	F/O SEAT

## SUBTASK 76-12-04-865-004-H01

- (4) For the left thrust lever, remove the safety tags and close these circuit breakers:

#### Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	24	C73401	L ENG EEC ALTN PWR CHAN A
E	19	C73403	L ENG EEC ALTN PWR CHAN B

## SUBTASK 76-12-04-865-005-H01

- (5) For the right thrust lever, remove the safety tags and close these circuit breakers:

#### Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C73400	R ENG EEC ALTN PWR CHAN A
E	11	C73402	R ENG EEC ALTN PWR CHAN B

————— **END OF TASK** —————

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