

## UPPER DOOR - REMOVAL/INSTALLATION

*EFFECTIVITY: ALL*

1. General

- A. This section gives the procedures to remove and install the thrust-reverser upper door.
- B. These procedures are applicable to the LH and RH thrust reversers.
- C. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	DESCRIPTION	EFFECTIVITY
78-31-02-000-801-A	THRUST-REVERSER UPPER DOOR - RE-MOVAL	ALL
78-31-02-400-801-A	THRUST-REVERSER UPPER DOOR - INSTALLATION	ALL

TASK 78-31-02-000-801-A

EFFECTIVITY: ALL

## 2. THRUST-REVERSER UPPER DOOR - REMOVAL

### A. General

(1) Obey these instructions to remove the thrust-reverser upper door.

### B. References

REFERENCE	DESIGNATION
AMM MPP 06-43-00/100	- COMPONENT LOCATION
AMM MPP 78-30-00/200	- MAINTENANCE PRACTICES
AMM TASK 54-52-01-000-801-A/400	PYLON FAIRINGS - REMOVAL
AMM TASK 78-31-01-940-801-A/200	THRUST REVERSER - OPENING PROCEDURE
AMM TASK 78-34-02-000-801-A/400	ENGINE THRUST-REVERSER MICROSWITCH (DE- PLOY) - REMOVAL
AMM TASK 78-34-03-000-801-A/400	DEPLOY MICROSWITCH STRIKER - REMOVAL
S.B.145-78-0032	-

### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
416	416SL	LH Thrust reverser left side
416	416VZ	LH Thrust reverser left side
416	416RR	LH Thrust reverser right side
416	416XZ	LH Thrust reverser right side
416	416MT	LH Thrust reverser upper side
416	416NT	LH Thrust reverser upper side
426	426SL	RH Thrust reverser left side
426	426VZ	RH Thrust reverser left side
426	426RR	RH Thrust reverser right side
426	426XZ	RH Thrust reverser right side
426	426MT	RH Thrust reverser upper side
426	426NT	RH Thrust reverser upper side

### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Workstand	To get access to the engine nacelle	

### E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
2	Remove the thrust-reverser door	Thrust reverser

I. Preparation

SUBTASK 841-002-A

**WARNING:** • REFER TO THE GROUND SAFETY PRECAUTIONS GIVEN IN [AMM MPP 78-30-00/200](#) WHEN YOU DO THE THRUST REVERSER MAINTENANCE PROCEDURES.

- MAKE SURE THAT THE ELECTRICAL POWER SUPPLY IS REMOVED FROM THE THRUST REVERSERS. ENERGIZED CIRCUITS CAN CAUSE INJURY TO PERSONS.
- MAKE SURE THAT THE HYDRAULIC TEST STAND IS NOT CONNECTED.

**CAUTION:** MAKE SURE THAT ALL THE HYDRAULIC LINES ARE CONNECTED NOT TO PERMIT THE HYDRAULIC OIL TO FALL OUT.

- (1) Put the workstand under the thrust reverser.
- (2) Open the thrust-reverser doors ([AMM TASK 78-31-01-940-801-A/200](#)).
- (3) On the circuit breaker panel, open these circuit breakers and attach a DO-NOT-CLOSE tag to them:
  - THRUST REVERSER 1/2.
  - HYD. ELEC. PUMP 1/2.
- (4) Put a DO-NOT-OPERATE-THE-THRUST-REVERSERS sign on the instrument panel, in the cockpit.
- (5) Remove the pylon trailing-edge fairing ( [AMM TASK 54-52-01-000-801-A/400](#)).
- (6) For aircraft POST-MOD. [S.B.145-78-0032](#), remove the deploy microswitch striker to prevent damage to the door, striker and thrust reverser structure ( [AMM TASK 78-34-03-000-801-A/400](#)).

**WARNING:** DO NOT APPLY HYDRAULIC POWER TO THE AIRCRAFT, AND DO NOT OPERATE THE THRUST REVERSER WHILE THE MAINTENANCE PERSONS ARE AT WORK.

- (7) Remove pivot upper access panels 416SL, 416RR, 426SL, and 426RR ( [AMM MPP 06-43-00/100](#)) to get access, at the pivot point, to the door attaching point outer side of the 3-o'clock beam and 9-o'clock beam.

- (8) Remove the upper deploy microswitch ([AMM TASK 78-34-02-000-801-A/400](#)).
- (9) Through the thrust-reverser door hole, remove pivot-point cover access panels 416XZ and 426XZ ( [AMM MPP 06-43-00/100](#)) to get access, at the pivot point, to the door attaching point inner side of the 3-o'clock door side.
- (10) From the upper pivot door outer surface, remove circular access panels 416MT, 416NT, 426MT, and 426NT ( [AMM MPP 06-43-00/100](#)) to get access to the actuator bolt at the door attaching point.

J. Removal ([Figure 401](#))

*SUBTASK 020-002-A*

- (1) Remove the plate (16) and the support (17).
- (2) Remove the detachable seal compressor (14).
- (3) Remove the split pin (1), nut (2), and washers (3).
- (4) Remove the actuator attaching bolt (4) and sliding bearing (5).

**WARNING: KEEP THE DOOR IN ITS DEPLOYED POSITION BECAUSE, AFTER THE ACTUATOR BOLT IS REMOVED FROM THE DOOR, THE MOVEMENT OF THE DOOR AROUND THE PIVOT POINTS IS FREE. LET THE ACTUATOR MOVE AT THE BOX ATTACHING POINT UNTIL IT STAYS AT A STABLE POSITION.**

- (5) Through the access panels removed before, on the 3-o'clock beam and 9-o'clock beam outer surface and on the pivot door 3-o'clock side and 9-o'clock side inner surface, remove the cotter pin (6), nut (7), and washer (8), and let the pivot bolt (9) hold the upper door to the structure.
- (6) From the 3-o'clock and 9-o'clock pivot points, remove the pivot bolts (9) which also hold the upper door.

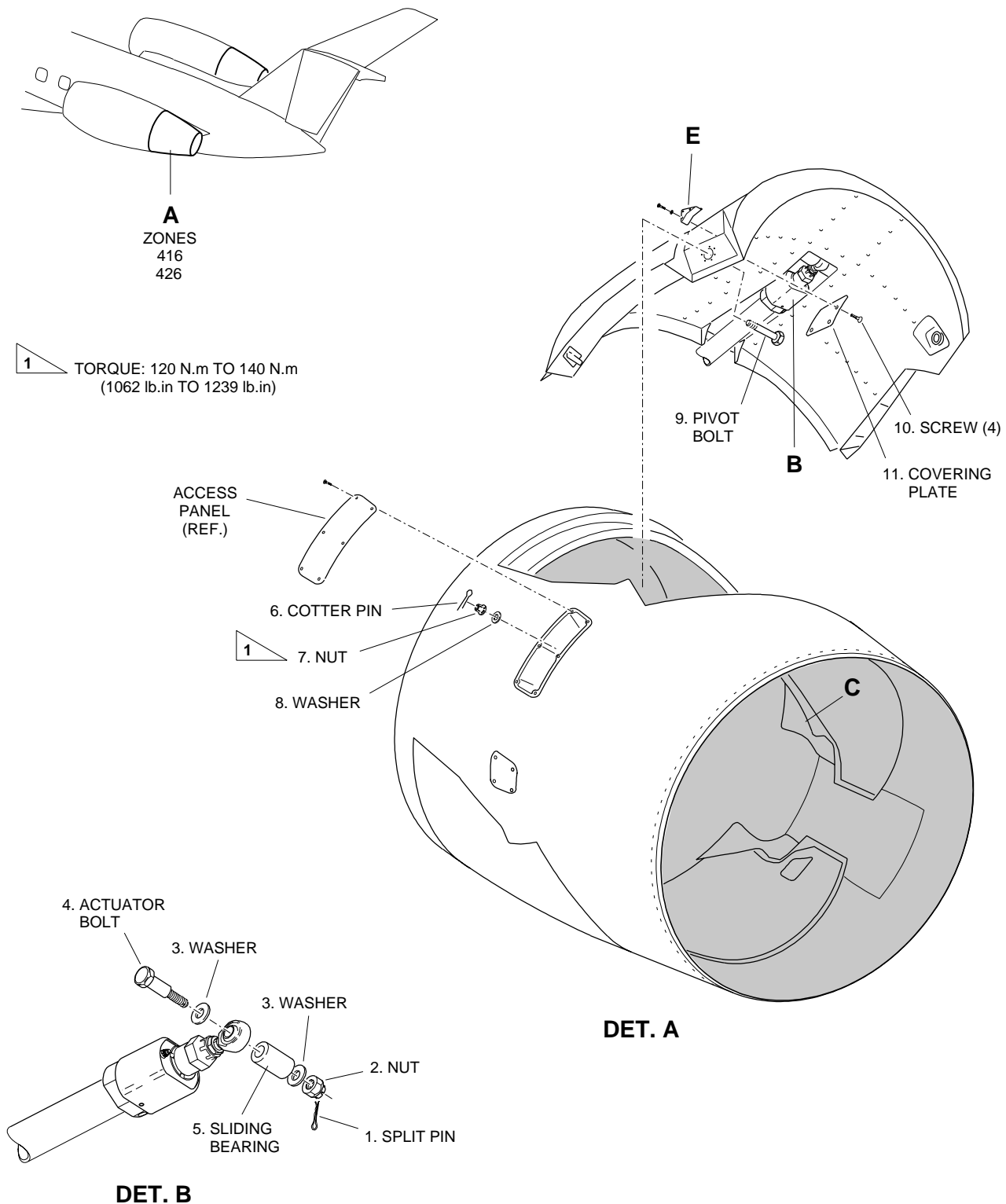
**CAUTION: KEEP THE UPPER PIVOT DOOR ON A TRESTLE TO PREVENT DAMAGE TO THE DOOR.**

- (7) Remove the upper pivot door.

EFFECTIVITY: ALL

Thrust-Reverser Upper Door - Removal/Installation

Figure 401 - Sheet 1

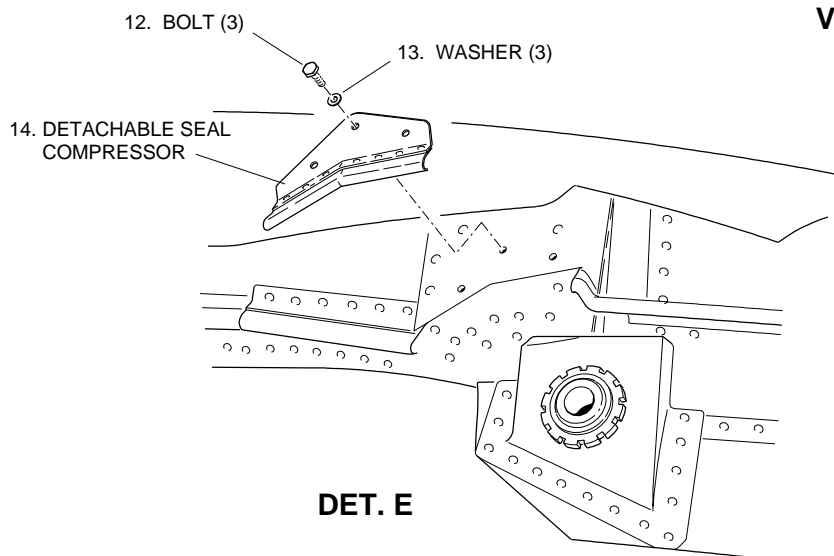
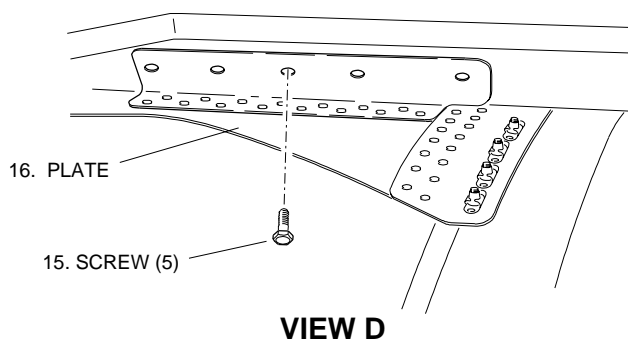
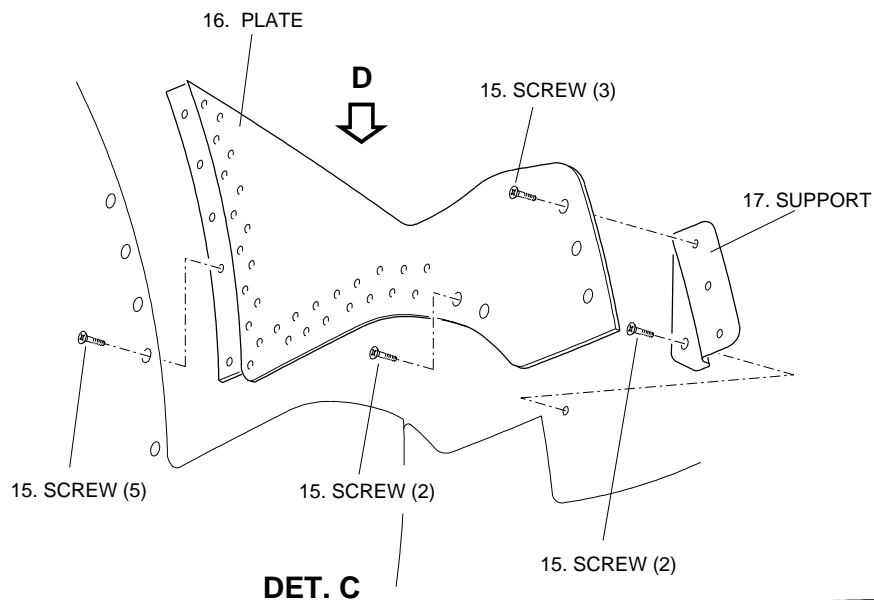


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EFFECTIVITY: ALL

Thrust-Reverser Upper Door - Removal/Installation

Figure 401 - Sheet 2



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TASK 78-31-02-400-801-A  
EFFECTIVITY: ALL

### 3. THRUST-REVERSER UPPER DOOR - INSTALLATION

#### A. General

- (1) Obey these instructions to install the thrust-reverser upper door.

#### B. References

REFERENCE	DESIGNATION
-	-
AMM MPP 06-43-00/100	- COMPONENT LOCATION
AMM MPP 78-30-00/200	- MAINTENANCE PRACTICES
AMM TASK 54-52-01-400-801-A/400	PYLON FAIRINGS - INSTALLATION
AMM TASK 78-31-01-820-801-A/500	THRUST REVERSER - RIGGING PROCEDURE
AMM TASK 78-31-01-820-802-A/500	THRUST REVERSER - MANUAL RIGGING PROCEDURE
AMM TASK 78-31-01-940-802-A/200	THRUST REVERSER - CLOSURE PROCEDURE
AMM TASK 78-31-05-400-801-A/400	THRUST-REVERSER PIVOT BOLTS - INSTALLATION
AMM TASK 78-34-02-400-801-A/400	ENGINE THRUST-REVERSER MICROSWITCH (DEPLOY) - INSTALLATION
AMM TASK 78-34-03-400-801-A/400	DEPLOY MICROSWITCH STRIKER - INSTALLATION
S.B.145-78-0032	-

#### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
416	416SL	LH Thrust reverser left side
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416	416XZ	LH Thrust reverser right side
416	416MT	LH Thrust reverser upper side
416	416NT	LH Thrust reverser upper side
426	426SL	RH Thrust reverser left side
426	426VZ	RH Thrust reverser left side
426	426RR	RH Thrust reverser right side
426	426XZ	RH Thrust reverser right side
426	426MT	RH Thrust reverser upper side
426	426NT	RH Thrust reverser upper side

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Workstand	To get access to the engine nacelle	
Commercially available	Torque wrench	To tighten the attachment nuts	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
Dow Corning Molykote P40 or P37	Metal-free adhesive lubricating paste	AR

G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Split pin	-	1
Cotter pin	-	2

H. Persons Recommended

QTY	FUNCTION	PLACE
2	Do the task	Thrust reverser

I. Preparation

SUBTASK 841-003-A

- WARNING:**
- REFER TO THE GROUND SAFETY PRECAUTIONS GIVEN IN [AMM MPP 78-30-00/200](#) WHEN YOU DO THE THRUST REVERSER MAINTENANCE PROCEDURES.
  - CLEANING PRODUCTS ARE TOXIC AND FLAMMABLE. A GOOD FLOW OF AIR MUST BE AVAILABLE WHEN THE WORK IS DONE IN A CLOSED AREA.



- CAUTION:**
- MAKE SURE THAT ALL THE HYDRAULIC LINES ARE CONNECTED NOT TO PERMIT THE HYDRAULIC OIL TO FALL OUT.
  - DO NOT PERMIT THE CLEANING PRODUCT TO TOUCH PAINT-FINISH SURFACES NOT TO CAUSE DAMAGE TO THEM.
  - USE CLEAN, SOFT (COTTON), NON-SYNTHETIC, AND LINT-FREE CLOTHS ONLY. DO NOT PUT REMAINING CLEANING MATERIAL BACK INTO ORIGINAL CONTAINERS TO PREVENT CONTAMINATION.
  - DO NOT POUR CLEANING PRODUCT DIRECTLY ON THE SURFACE TO BE CLEANED.
  - DO NOT PERMIT CLEANING PRODUCT TO EVAPORATE BEFORE IT IS DRIED WITH THE CLOTH.
- (1) On the circuit breaker panel, open these circuit breakers and attach a DO-NOT-CLOSE tag to them:
- THRUST REVERSER 1/2.
  - HYD. ELEC. PUMP 1/2.

J. Installation (Figure 401)

*SUBTASK 420-002-A*

- WARNING:**
- **MAKE SURE THAT THE ELECTRICAL POWER SUPPLY IS REMOVED FROM THE THRUST REVERSERS. ENERGIZED CIRCUITS CAN CAUSE INJURY TO PERSONS.**
  - **MAKE SURE THAT THE HYDRAULIC TEST STAND IS NOT CONNECTED.**

**CAUTION:** THRUST REVERSER DOORS S/N 769 AND ON HAVE CARBON FIBER SIDEWALLS. WHEN YOU INSTALL THIS DOOR, CONTACT WITH THE STRUCTURE CAN CAUSE DAMAGE TO THE SIDEWALLS. PROTECT THE EDGES OF THE SIDEWALLS WHEN YOU REMOVE THE DOORS.

**CAUTION:** GREASE CAN CAUSE DAMAGE TO THE COATING OF SOME PIVOT DOOR BEARINGS. ONLY APPLY GREASE TO BEARINGS THAT HAVE PART NUMBER RBF12DAT. YOU MUST NOT APPLY GREASE TO BEARINGS THAT HAVE OTHER PART NUMBER.

- (1) (Applicable only to pivot door bearing P/N RBF12DAT) Apply Dow Corning P40 or P37 (in grease form) to the full face of the pivot door bearing ball. To do this, turn the bearing out of its housing and apply the grease largely with a brush. Make sure that the maximum surface area of the bearing face is covered.
- (2) Put the thrust-reverser upper door, on the thrust-reverse module, in its deployed position.

**CAUTION:** DO NOT WET-ASSEMBLE OR LUBRICATE THE PIVOT BOLTS. THE PIVOT BOLTS HAVE A COATING THAT DOES NOT NEED LUBRICANT.

- (3) Align the upper door fittings with the pivot attaching holes in the 3-o'clock and 9-o'clock upper beams, and install the pivot bolts (9) ([AMM TASK 78-31-05-400-801-A/400](#)).

- (4) Make sure that the actuator is at its maximum length (deployed position).
- (5) Align the upper-door actuator-shaft head with the attaching fitting point at the inner surface of the door.
- (6) With the door fitting and actuator head aligned, and through the circular access holes in the outer surface of the door, install the actuator bolt (4).
- (7) Install the sliding bearing (5), washers (3), nut (2), and split pin (1).
- (8) Install the support (17) and the plate (16).
- (9) Install the plate (14).

K. Follow-on

*SUBTASK 842-002-A*

**CAUTION:** EXAMINE ALL THE WORK ZONES TO MAKE SURE THAT YOU DID NOT LET TOOLS OR OTHER EQUIPMENT STAY BEHIND.

- (1) Install the deploy microswitch ([AMM TASK 78-34-02-400-801-A/400](#)).
- (2) For aircraft POST-MOD. [S.B.145-78-0032](#), install the deploy microswitch striker ( [AMM TASK 78-34-03-400-801-A/400](#)).
- (3) Through the thrust-reverser door hole, install pivot point cover access panels 416XZ and 426XZ ( [AMM MPP 06-43-00/100](#)), on the inner side of the upper door at the 3-o'clock.
- (4) On the upper-pivot outer surface, install circular access panels 416MT, 416NT, 426MT, and 426NT ( [AMM MPP 06-43-00/100](#)).
- (5) Install upper-pivot access panels 416SL, 416RR, 426SL, and 426RR ( [AMM MPP 06-43-00/100](#)) on the 3-o'clock and 9-o'clock outer surface.
- (6) Install the pylon trailing-edge fairing ( [AMM TASK 54-52-01-400-801-A/400](#)).
- (7) On the circuit breaker panel, close these circuit breakers and remove the DO-NOT-CLOSE tag from them:
  - THRUST REVERSER 1/2.
  - HYD. ELEC. PUMP 1/2.
- (8) Close the thrust-reverser doors ( [AMM TASK 78-31-01-940-802-A/200](#)).
- (9) Remove the DO-NOT-OPERATE-THE-THRUST-REVERSERS sign from the instrument panel, in the cockpit.
- (10) Remove the workstand from the work area.

**CAUTION:** THRUST REVERSER RIGGING IS NECESSARY TO MAKE SURE OF THE CORRECT THRUST REVERSER OPERATION. IF THE THRUST REVERSER IS NOT CORRECTLY RIGGED, FAILURE MESSAGES WILL COME INTO VIEW ON THE EICAS AND CMC, AND CAUSE INTERRUPTIONS IN THE AIRCRAFT OPERATION.



EMB145 – EMB135

## AIRCRAFT MAINTENANCE MANUAL

- (11) Do the thrust-reverser rigging procedure ( [AMM TASK 78-31-01-820-801-A/500](#)) or ( [AMM TASK 78-31-01-820-802-A/500](#)), as applicable.

