

RUDDER PEDALS - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to remove and install the rudder pedal assemblies of the rudder control system.
- B. These procedures are applicable to the LH and RH rudder pedal assemblies.
- 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
27-21-03-000-801-A	RUDDER PEDAL ASSEMBLY - REMOVAL	ALL
27-21-03-400-801-A	RUDDER PEDAL ASSEMBLY - INSTALLATION	ALL
27-21-03-000-802-A	RUDDER TORQUE TUBE - REMOVAL	ALL
27-21-03-400-802-A	RUDDER PEDAL ASSEMBLY - INSTALLATION	ALL
27-21-03-040-801-A	RUDDER PEDAL ASSEMBLY - DEACTIVATION	ALL
27-21-03-440-801-A	RUDDER PEDAL ASSEMBLY - REACTIVATION	ALL

TASK 27-21-03-000-801-A

EFFECTIVITY: ALL

2. RUDDER PEDAL ASSEMBLY - REMOVAL

A. General

- (1) This procedure gives the instructions to remove the rudder pedal assembly of the rudder control system.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-02/100	-
AMM TASK 25-11-01-000-801-A/400	PILOT SEAT - REMOVAL
AMM TASK 25-12-06-000-801-A/400	PEDAL ASSEMBLY LINING - REMOVAL
AMM TASK 27-25-01-000-801-A/400	SPRING-LOADED CARTRIDGE - REMOVAL
AMM TASK 31-31-04-000-803-A/400	FDR RUDDER POTENTIOMETER - REMOVAL

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Below the cockpit floor
124		Below the cockpit floor

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 058	Kit, rig pins, flight controls	To lock the rudder control system in the neutral position	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Below the cockpit floor
1	Helps the other technician	Cockpit

I. Preparation

SUBTASK 841-002-A

- (1) Remove cockpit underfloor access hatch 123BL (AMM MPP 06-41-02/100).

- (2) Remove Pedal Assembly Lining ([AMM TASK 25-12-06-000-801-A/400](#)).
- (3) Remove the pilot seats ([AMM TASK 25-11-01-000-801-A/400](#)).
- (4) Install the rig pins to the rudder control system to lock it in the neutral position.

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

SUBTASK 020-002-A

- (1) Remove the spring-loaded cartridges (13) (2 positions) ([AMM TASK 27-25-01-000-801-A/400](#)).
- (2) Disconnect the electrical connector (6).
- (3) Disconnect the end of the rod (3) and the end of the bonding strap (4) from the bellcrank at the interconnection assembly (12). For this, remove the cotter pin, nut, four washers, bushing, and bolt (5).
- (4) Remove the potentiometer (7) of the FDR system from the interconnection assembly (12) as follows:

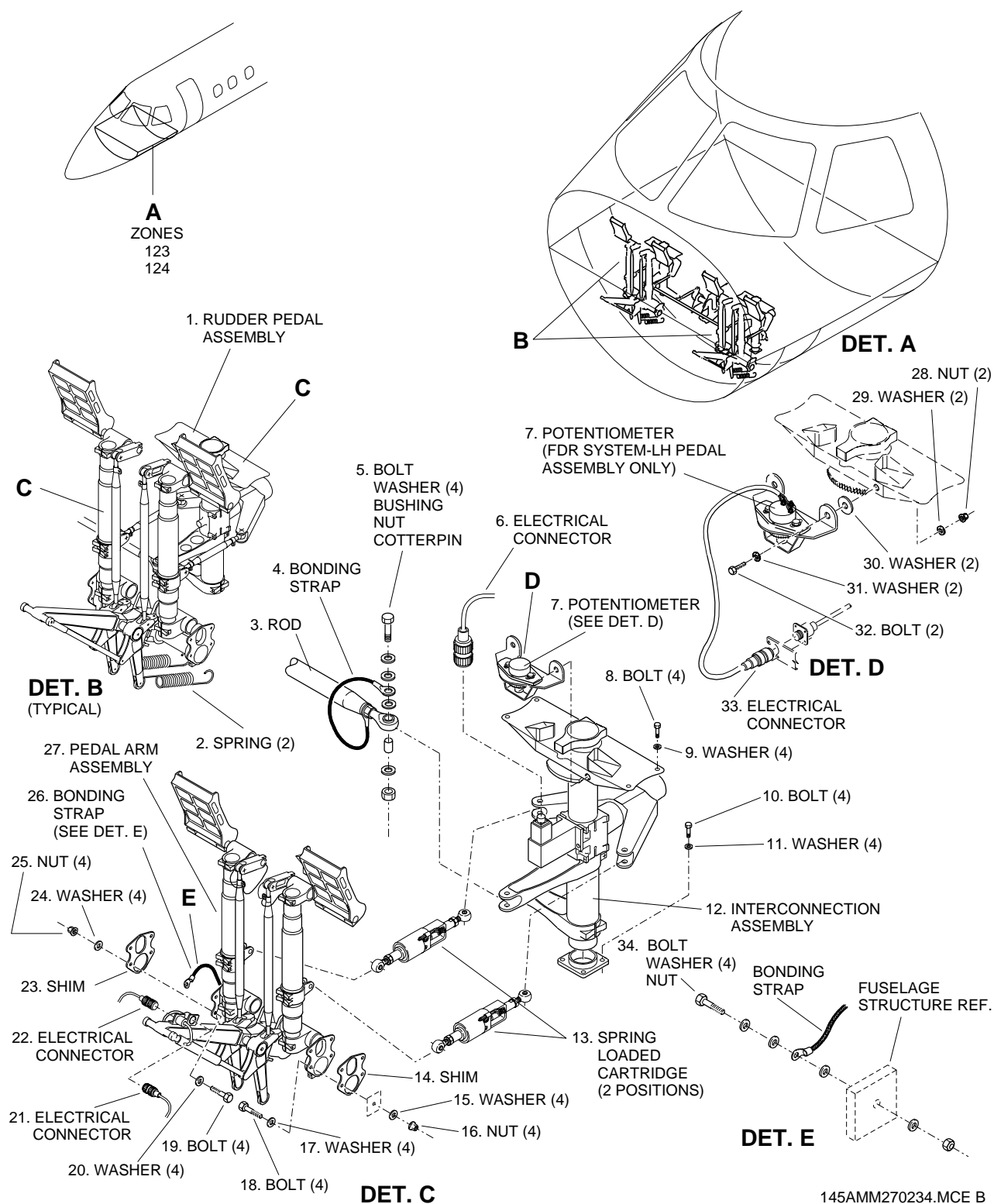
NOTE: Refer to [AMM TASK 31-31-04-000-803-A/400](#).

- (a) Disconnect the electrical connector (33).
 - (b) Remove the nut (28), washers (29), (30) and (31), and bolt (32) (2 positions).
 - (c) Remove the potentiometer (7).
- (5) Remove the bolts (10) and washers (11) (4 positions).
 - (6) Remove the bolts (8) and washers (9) (4 positions).
 - (7) Remove the interconnection assembly (12).
 - (8) Disconnect the electrical connectors (21) and (22).
 - (9) Disconnect the end of the bonding strap (26) from the fuselage structure. For this, remove the nut, four washers, and bolt (34) (refer to DET. E).
 - (10) Remove the nuts (16), washers (15) and (17), and bolts (18) (4 positions), and shim (14).
 - (11) Remove the nuts (25), washers (24) and (20), and bolts (19) (4 positions), and shim (23).
 - (12) Remove the pedal arm assembly (27).

EFFECTIVITY: ALL

Rudder Pedal Assembly - Removal/Installation

Figure 401



145AMM270234.MCE B

TASK 27-21-03-400-801-A

EFFECTIVITY: ALL

3. RUDDER PEDAL ASSEMBLY - INSTALLATION

A. General

- (1) This procedure gives the instructions to install the rudder pedal assembly of the rudder control system.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-02/100	-
AMM TASK 20-13-21-910-801-A/200	TYPES OF ELECTRICAL BONDING AND SURFACE PREPARATION - STANDARD PROCEDURES
AMM TASK 25-11-01-400-801-A/400	PILOT SEAT - INSTALLATION
AMM TASK 25-12-06-400-801-A/400	PEDAL ASSEMBLY LINING - INSTALLATION
AMM TASK 27-25-00-700-801-A/500	RUDDER PEDALS AUTOSHUTOFF AND RUDDER MANUAL SHUTOFF FUNCTIONS- OPERATIONAL CHECK
AMM TASK 27-25-01-400-801-A/400	SPRING-LOADED CARTRIDGE - INSTALLATION
AMM TASK 31-31-04-400-803-A/400	FDR RUDDER POTENTIOMETER - INSTALLATION
IPC 27-21-00	RUDDER PRIMARY MECHANICAL CONTROL

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123		Below the cockpit floor
124		Below the cockpit floor

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 058	Kit rig pins, flight controls	To lock the rudder control system in the neutral position	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Cotter pin	IPC 27-21-00	1
Shim	IPC 27-21-00	1

(Continued)

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Shim	IPC 27-21-00	1

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Below the cockpit floor
1	Helps the other technician	Cockpit

I. Installation (Figure 401)

SUBTASK 420-002-A

- (1) Put the pedal arm assembly (27) and shims (14) and (23) in their installation position.
- (2) Install the bolts (18), washers (17) and (15), and nuts (16) (4 positions).
- (3) Install the bolts (19), washers (20) and (24), and nuts (25) (4 positions).
- (4) Connect the end of the bonding strap (26) to the fuselage structure. For this, install the bolt, four washers, and nut (34). Refer to DET. E.

NOTE: Refer to [AMM TASK 20-13-21-910-801-A/200](#) for the correct installation of the bonding strap (26).

- (5) Connect the electrical connectors (21) and (22).
- (6) Put the interconnection assembly (12) in its installation position.
- (7) Install the bolts (8) and washers (9) (4 positions).
- (8) Install the bolts (10) and washers (11) (4 positions).
- (9) Install the potentiometer (7) of the FDR system to the interconnection assembly (12) as follows:

NOTE: Refer to [AMM TASK 31-31-04-400-803-A/400](#) for the correct installation of the potentiometer (7).

- (a) Put the potentiometer (7) on the interconnection assembly (12) and attach it with the bolts (32), washers (29), (30) and (31), and nuts (28) (2 positions).
 - (b) Connect the electrical connector (33).
- (10) Connect the rod (3) and bonding strap (4) to the bellcrank at the interconnection assembly (12), and attach them with the bolt, four washers, bushing, nut, and cotter pin (5).

NOTE: Refer to [AMM TASK 20-13-21-910-801-A/200](#) for the correct installation of the bonding strap (4).

- (11) Connect the electrical connector (6).

- (12) Install the spring-loaded cartridges (13) (2 positions) ([AMM TASK 27-25-01-400-801-A/400](#)).

J. Follow-on

SUBTASK 842-002-A

- (1) Remove the rig pins from the rudder control system.
- (2) Do a check on the rudder control system ([AMM TASK 27-25-00-700-801-A/500](#)).
- (3) Install Pedal Assembly Lining ([AMM TASK 25-12-06-400-801-A/400](#)).
- (4) Install cockpit underfloor access hatch 123BL (AMM MPP 06-41-02/100).
- (5) Install the pilot seats ([AMM TASK 25-11-01-400-801-A/400](#)).

TASK 27-21-03-000-802-A

EFFECTIVITY: ALL

4. RUDDER TORQUE TUBE - REMOVAL

A. General

- (1) This procedure gives the instructions to remove the rudder torque tube from the rudder pedal assembly.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM TASK 25-11-01-000-801-A/400	PILOT SEAT - REMOVAL
AMM TASK 25-12-06-000-801-A/400	PEDAL ASSEMBLY LINING - REMOVAL
AMM TASK 27-25-01-000-801-A/400	SPRING-LOADED CARTRIDGE - REMOVAL

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Below the cockpit floor
124		Below the cockpit floor

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 058	Kit, rig pins, flight controls	To lock the rudder control system in the neutral position	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Below the cockpit floor
1	Helps the other technician	Cockpit

I. Preparation

SUBTASK 841-008-A

- (1) Remove cockpit underfloor access hatch 123BL (AMM MPP 06-41-01/100).

- (2) Remove Pedal Assembly Lining ([AMM TASK 25-12-06-000-801-A/400](#)).
- (3) Remove the pilot seats ([AMM TASK 25-11-01-000-801-A/400](#)).
- (4) Install the rig pins to the rudder control system to lock it in the neutral position.
- (5) Remove the spring-loaded cartridges ([AMM TASK 27-25-01-000-801-A/400](#)).

J. Removal ([Figure 402](#))

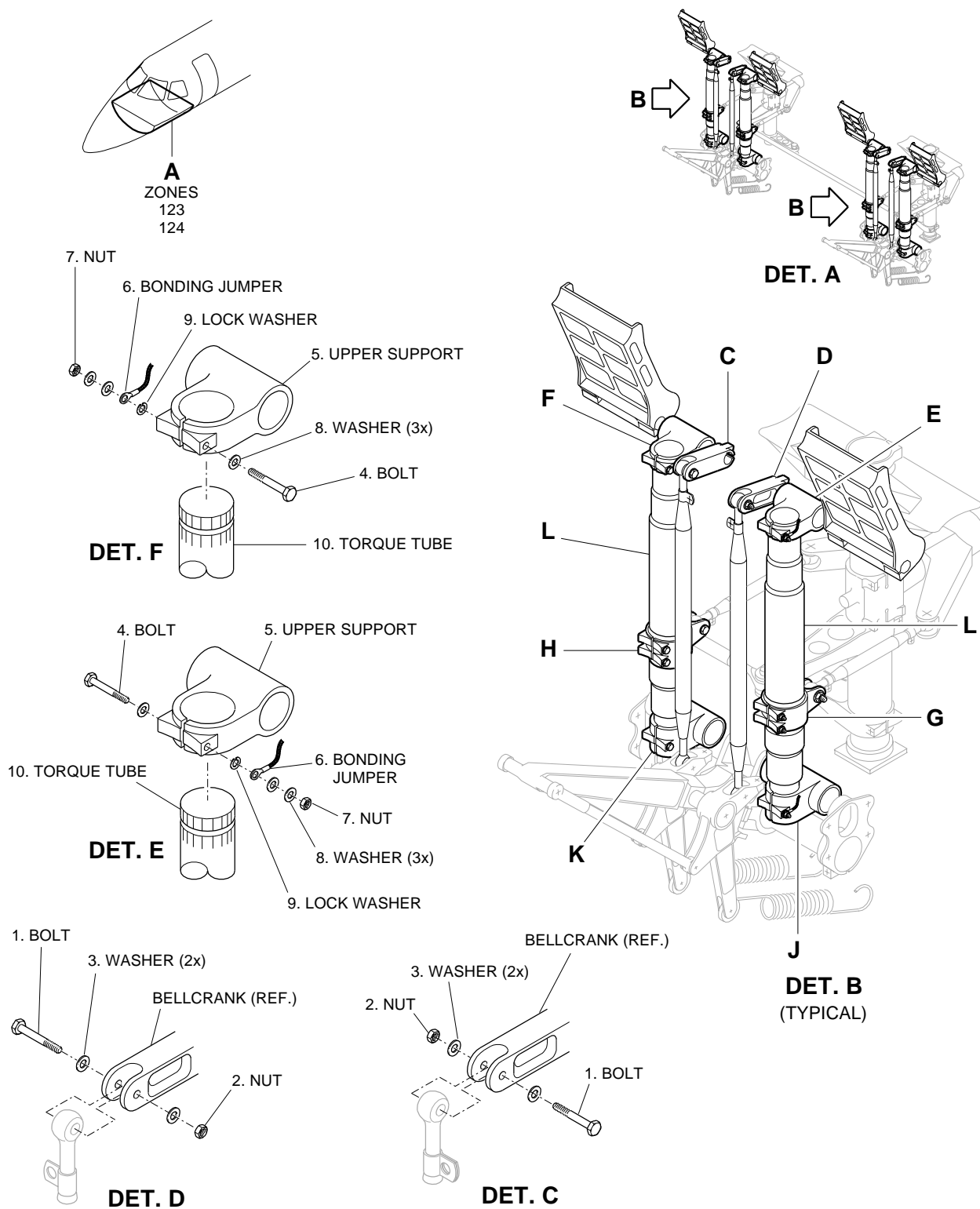
SUBTASK 020-004-A

- (1) Remove the nut (2), washers (3) , and bolt (1) to disconnect the rod from the bellcrank.
- (2) Remove the nut (16), washers (19), bonding jumper (17), lock washer (18) and bolt (20) from the lower support (15).
- (3) Remove the torque tube (10) from the lower support (15).
- (4) Remove the upper support (6) from the torque tube (10). For this Remove the nut (7), washers (8), bonding jumper (6), lock washer (9) and bolt (4).
- (5) Remove the spring-loaded cartridges support from the torque tube (10). For this remove the nut (14), washers (12), and bolt (11).

EFFECTIVITY: ALL

Rudder Torque Tube - Removal/Installation

Figure 402 - Sheet 1

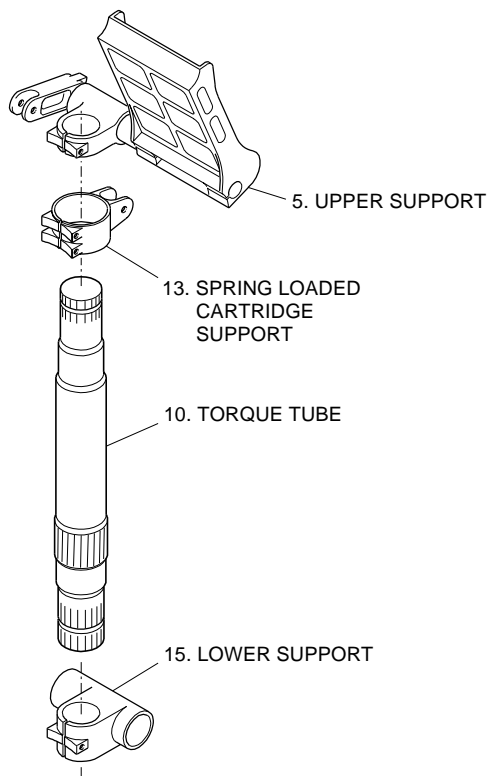


EM145AMM270997A.DGN

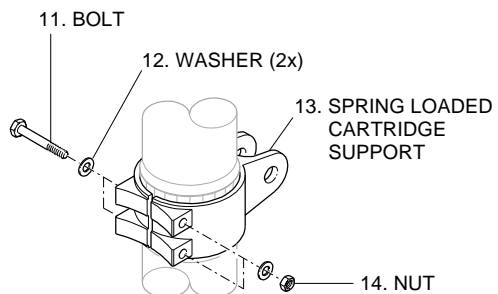
EFFECTIVITY: ALL

Rudder Torque Tube - Removal/Installation

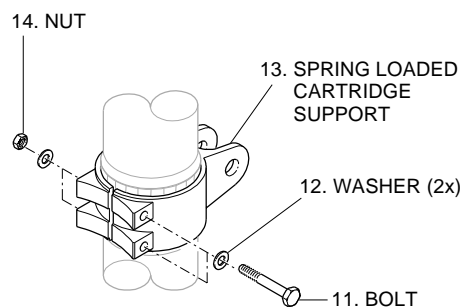
Figure 402 - Sheet 2



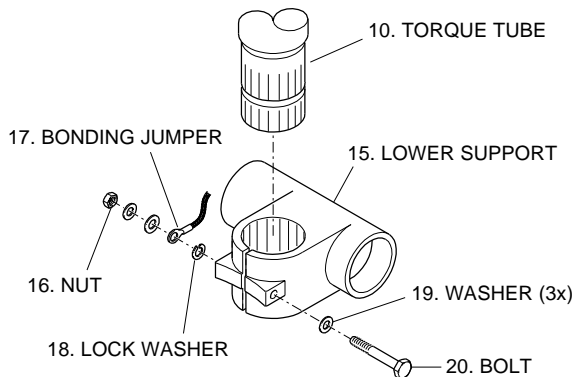
DET. L
(TYPICAL)



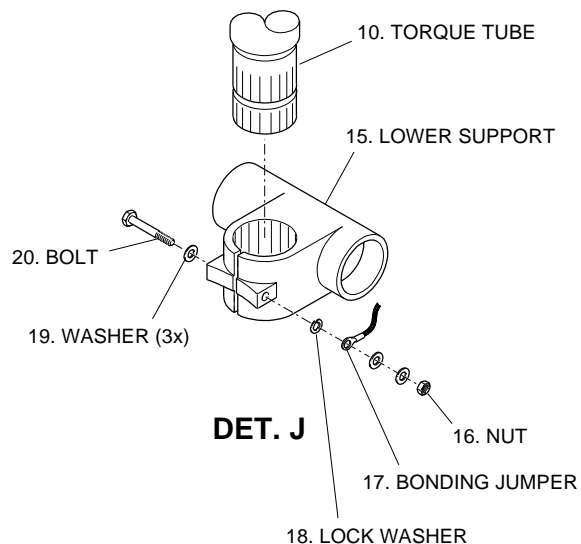
DET. G



DET. H



DET. K



DET. J

EM145AMM270998A.DGN

TASK 27-21-03-400-802-A

EFFECTIVITY: ALL

5. RUDDER PEDAL ASSEMBLY - INSTALLATION

A. General

- (1) This procedure gives the instructions to install the rudder torque tube to the rudder pedal assembly.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM TASK 25-11-01-400-801-A/400	PILOT SEAT - INSTALLATION
AMM TASK 25-12-06-400-801-A/400	PEDAL ASSEMBLY LINING - INSTALLATION
AMM TASK 27-25-00-700-801-A/500	RUDDER PEDALS AUTOSHUTOFF AND RUDDER MANUAL SHUTOFF FUNCTIONS- OPERATIONAL CHECK
AMM TASK 27-25-01-400-801-A/400	SPRING-LOADED CARTRIDGE - INSTALLATION

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123		Below the cockpit floor
124		Below the cockpit floor

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 058	Kit rig pins, flight controls	To lock the rudder control system in the neutral position	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Below the cockpit floor
1	Helps the other technician	Cockpit

I. Installation (Figure 403)

SUBTASK 420-004-A

- (1) Install the spring-loaded cartridges support on the torque tube (10) with bolt (11), washers (12), and nut (14).
- (2) Install the upper support on the torque tube (10) with bolt (4), washers (8), lock washer (9), bonding jumper (6), and nut (7).
- (3) Install the torque tube (10) on the lower support (15) with bolt (20), washers (19), lock washer (18), bonding jumper (17), and nut (16).
- (4) Install the rod to the bellcrank with bolt (1), washers (3), and nut (2).

J. Follow-on

SUBTASK 842-008-A

- (1) Install the spring-loaded cartridges ([AMM TASK 27-25-01-400-801-A/400](#)).
- (2) Remove the rig pins from the rudder control system.
- (3) Do a check on the rudder control system ([AMM TASK 27-25-00-700-801-A/500](#)).
- (4) Install Pedal Assembly Lining ([AMM TASK 25-12-06-400-801-A/400](#)).
- (5) Install cockpit underfloor access hatch 123BL (AMM MPP 06-41-01/100).
- (6) Install the pilot seats ([AMM TASK 25-11-01-400-801-A/400](#)).

TASK 27-21-03-040-801-A

EFFECTIVITY: ALL

6. RUDDER PEDAL ASSEMBLY - DEACTIVATION

A. General

- (1) This procedure gives the instructions to deactivate the rudder pedal adjustment mechanism of the rudder control system.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-02/100	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Below the cockpit floor

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Torque wrench	To turn the pedal regulator guide.	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Cockpit

I. Preparation

SUBTASK 841-003-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Do not do other tasks on the rudder system.
- (3) Open the PEDAL ADJUST circuit breaker and attach a DO NOT CLOSE tag to it.
- (4) Remove cockpit underfloor access hatch 123BL (AMM MPP 06-41-02/100).

J. Deactivation ([Figure 403](#))

SUBTASK 040-002-A

- (1) At the interconnection pedal assembly, locate the pedal regulator guide (Refer to [Figure 403](#)). There is a pedal regulator spindle inside the guide. Using an adjustable wrench, turn clockwise or counterclockwise to move the rudder pedal assembly forward or rearward as applicable.

NOTE: Make sure the adjustable wrench fits in the protruded end of the spindle to avoid any damage to the component.

K. Follow-on

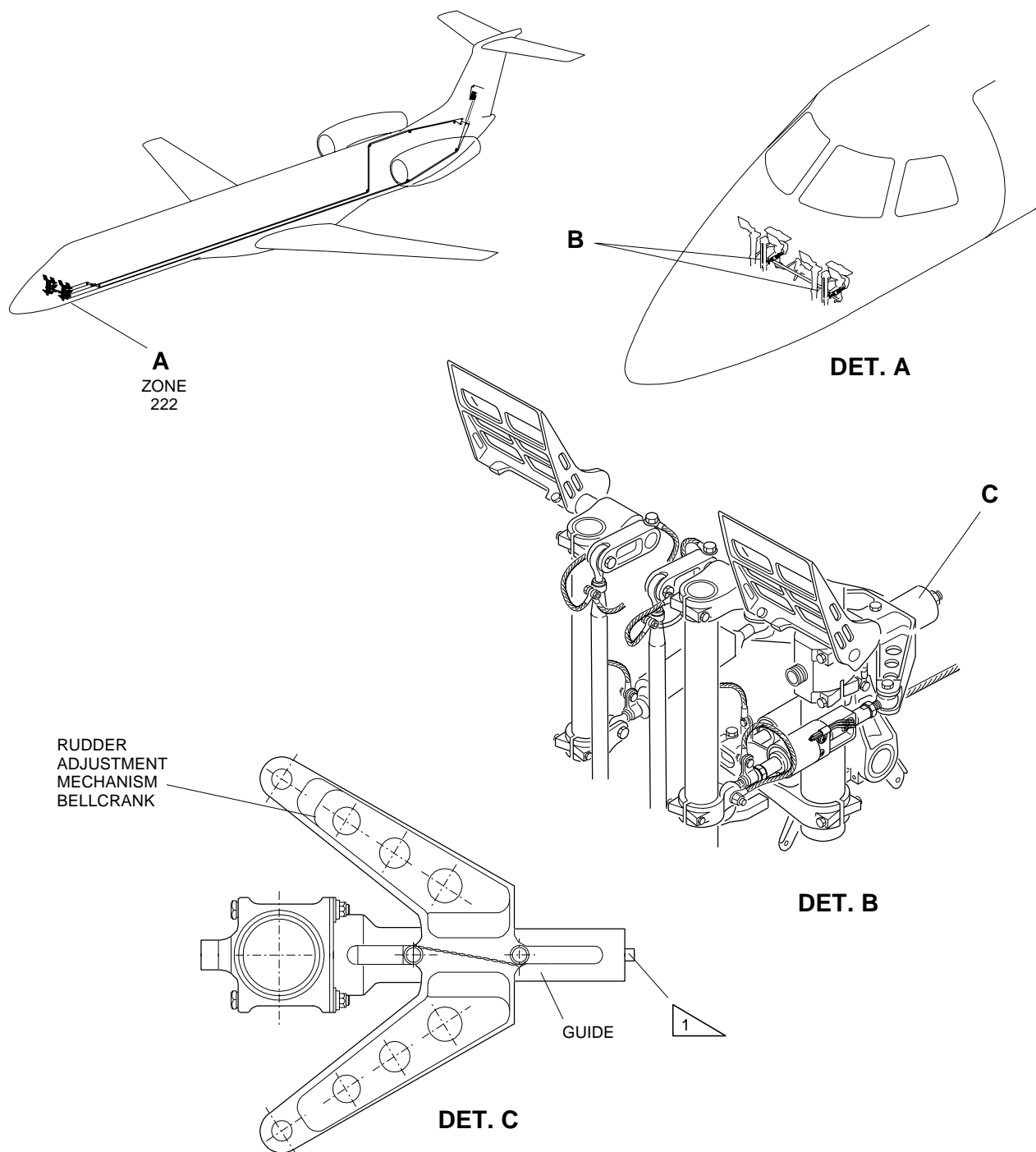
SUBTASK 842-003-A

- (1) Install the cockpit underfloor access hatch 123BL (AMM MPP 06-41-02/100).
- (2) Close the PEDAL ADJUST circuit breaker and remove the DO NOT CLOSE tag.
- (3) Attach an INOP placard near the pedal adjustment switch.

EFFECTIVITY: ALL

Rudder Adjustment Mechanism Bellcrank

Figure 403



1 USE AN ADJUSTABLE WRENCH TO ADJUST THE RUDDER PEDAL TO SUIT
INDIVIDUAL PILOT'S REQUIREMENT.

EM145AMM270803A.DGN

TASK 27-21-03-440-801-A
EFFECTIVITY: ALL

7. RUDDER PEDAL ASSEMBLY - REACTIVATION

A. General

- (1) This procedure gives the instructions to reactivate the rudder pedal adjustment mechanism of the rudder control system.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-02/100	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Below the cockpit floor

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Torque wrench	To turn the pedal regulator guide.	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Cockpit

I. Preparation

SUBTASK 841-004-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Do not do other tasks on the rudder system.
- (3) Open the PEDAL ADJUST circuit breaker and attach a DO NOT CLOSE tag to it.
- (4) Remove cockpit underfloor access hatch 123BL (AMM MPP 06-41-02/100).

J. Reactivation (Figure 402)

SUBTASK 040-003-A

- (1) Manually turn the spindle of the pedal assembly and the rotating device of the pedal actuator (1) clockwise or counterclockwise until they reach their full positions.

NOTE: The spindle and the rotating device must be turned to the same direction.

K. Follow-on

SUBTASK 842-004-A

- (1) Close the PEDAL ADJUST circuit breaker and remove the DO NOT CLOSE tag.
- (2) Do an operational check of the pedal regulation system as follows:
 - (a) Set the PEDALS ADJ switch to the FWD position.
 - 1 Make sure that the rudder pedals go to the fully FWD position.
 - (b) Set the PEDALS ADJ switch to the AFT position.
 - 1 Make sure that the rudder pedals go to the fully AFT position.
- (3) Install the cockpit underfloor access hatch 123BL (AMM MPP 06-41-02/100).