



# AIRCRAFT MAINTENANCE MANUAL

## RUDDER ACTUATORS - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

### 1. General

- A. This section gives the procedures to remove and install the rudder actuator on the vertical stabilizer.
- B. 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
27-22-02-000-801-A	RUDDER ACTUATOR - REMOVAL	ALL
27-22-02-400-801-A	RUDDER ACTUATOR - INSTALLATION	ALL



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TASK 27-22-02-000-801-A

EFFECTIVITY: ALL

2. RUDDER ACTUATOR - REMOVAL

A. General

- (1) This task gives the procedures to remove the rudder actuator from the PCU.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-42-00/100	-
AMM TASK 27-22-07-000-801-A/400	BLEED VALVE - REMOVAL
AMM TASK 29-10-00-860-801-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH HTS

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
325		Vertical stabilizer

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 036	Platform, hydraulic	To get access to the vertical stabilizer	

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base, Fluid-Resistant	Protection for the hands	1 pair
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1 pair

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Vertical stabilizer

I. Preparation

SUBTASK 841-002-A

- (1) Make sure that hydraulic systems 1 and 2 are not pressurized.

- (2) Release the pressure of the hydraulic system ([AMM TASK 29-10-00-860-801-A/200](#)).
- (3) On the circuit breaker panel, open the ELEC PUMP 1, ELEC PUMP 2, RUDDER 1, and RUDDER 2 circuit breakers and attach a DO-NOT-CLOSE tag to them.
- (4) Get access to the vertical stabilizer and open access door 325CL and 326DL(AMM MPP 06-42-00/100).

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

SUBTASK 020-002-A

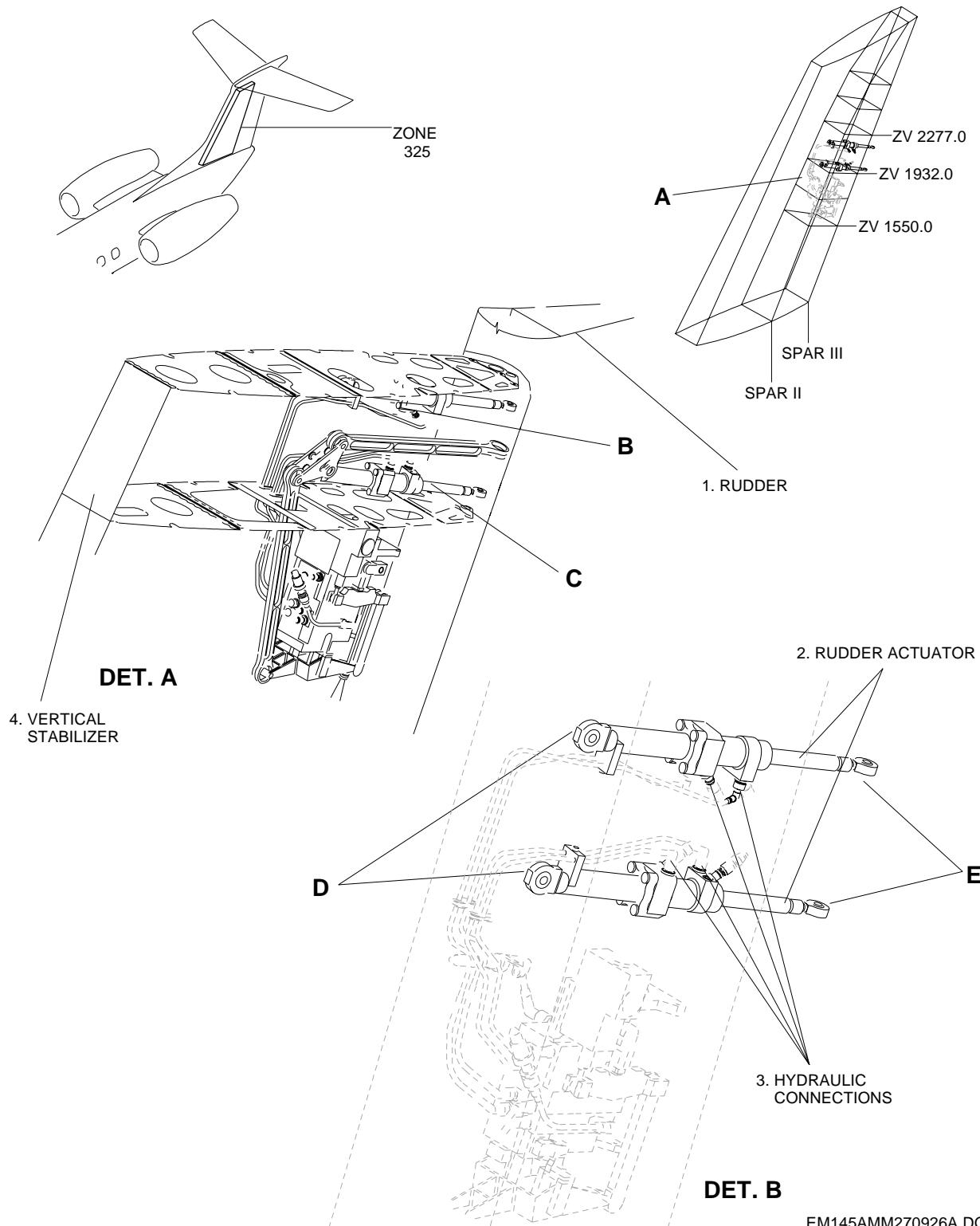
**WARNING: THE HYDRAULIC SYSTEM CONTAINS PHOSPHATE-ESTER HYDRAULIC FLUID. THE FLUID CAN CAUSE IRRITATION IN YOUR SKIN OR INJURY TO YOUR EYES. USE THE APPLICABLE RUBBER GOGGLES AND GLOVES. IF THE FLUID TOUCHES YOU, FLUSH YOUR SKIN WITH WATER. IF IT GETS IN YOUR EYES, FLUSH THEM WITH WATER AND GET MEDICAL HELP.**

- (1) Remove the cotter pin (15), nut (11), washer (12), bolt (13), and bushing (14) to disconnect the rudder actuator (2) from the rudder (1) ([Figure 401](#), Sheet 2).
- (2) Disconnect the hydraulic connections (3) from the actuator (2) and put a cap on the tube end (4) ([Figure 401](#), Sheet 1).
- (3) Remove the bleed valves from the actuator ([AMM TASK 27-22-07-000-801-A/400](#)).
- (4) Release the clamps (6) from the actuator rod rubber boot (5). Refer to ([Figure 401](#), Sheet 2)
- (5) Remove the cotter pin (16), nut (10), washers (9), bushing (17), and bolt (8) that attach the actuator to the vertical stabilizer. Refer to ([Figure 401](#), Sheet 2)
- (6) Remove the actuator (2). Refer to ([Figure 401](#), Sheet 2)

**EFFECTIVITY: ALL**

Rudder Actuator - Removal/Installation

Figure 401 - Sheet 1

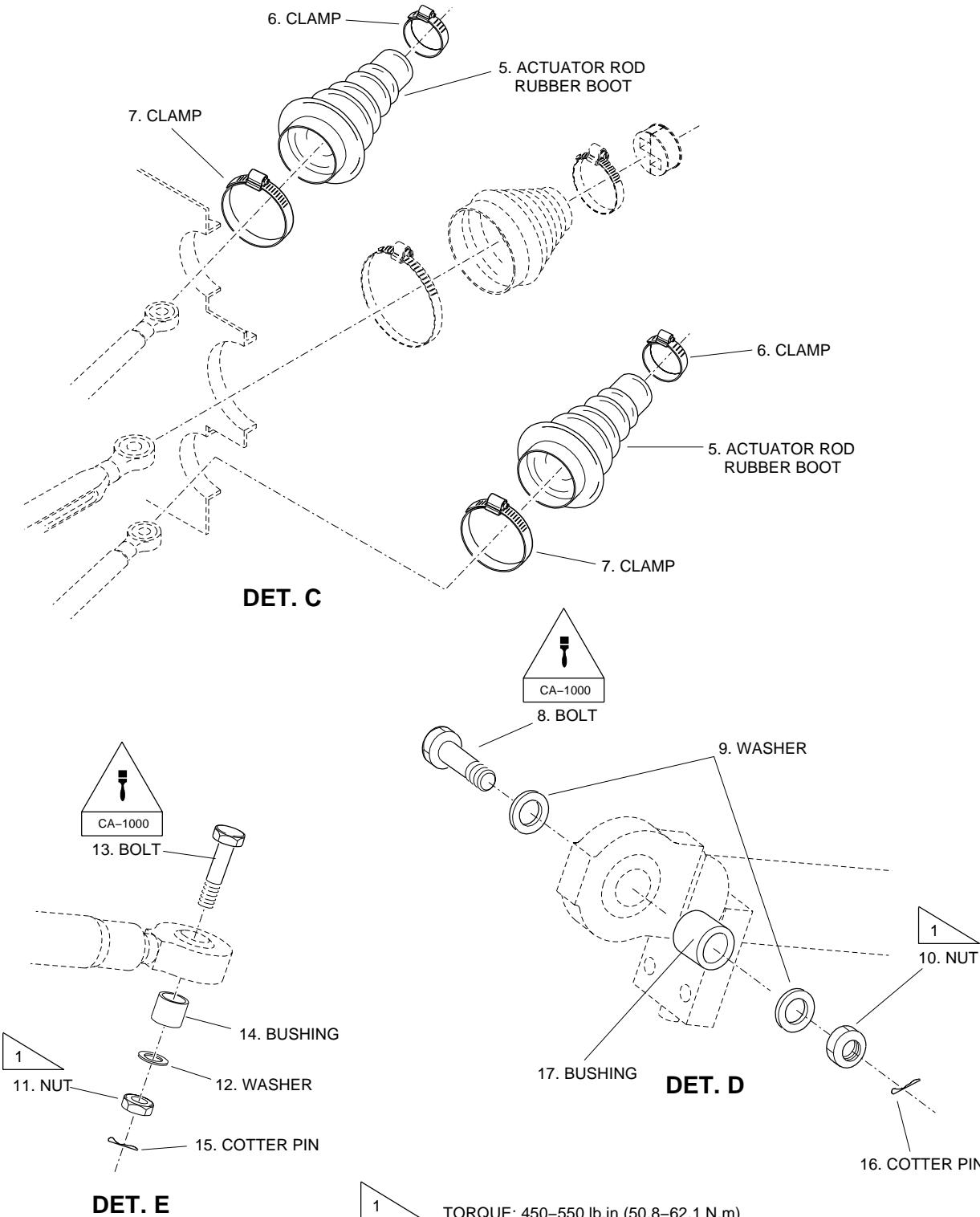


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**EFFECTIVITY: ALL**

Rudder Actuator - Removal/Installation

Figure 401 - Sheet 2





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TASK 27-22-02-400-801-A

EFFECTIVITY: ALL

## 3. RUDDER ACTUATOR - INSTALLATION

### A. General

(1) This task gives the procedures to install the rudder actuator on the PCU.

### B. References

REFERENCE	DESIGNATION
AMM MPP 06-42-00/100	-
AMM MPP 52-40-04/400	- REMOVAL/INSTALLATION
AMM TASK 27-20-00-700-801-A/500	ADJUSTMENT OF THE RUDDER NEUTRAL POSITION AND DEFLECTIONS OF RUDDER I AND RUDDER II
AMM TASK 27-22-00-700-801-A/500	-
AMM TASK 27-22-00-870-801-A/300	RUDDER ACTUATOR BLEEDING
AMM TASK 27-22-01-700-801-A/500	RUDDER POWER CONTROL UNIT/ACTUATORS DIFFERENTIAL PRESSURE -FUNCTIONAL CHECK
AMM TASK 27-22-02-700-801-A/500	ADJUSTMENT OF THE RUDDER ACTUATORS
AMM TASK 27-22-07-400-801-A/400	BLEED VALVE - INSTALLATION
AMM TASK 29-10-00-860-803-A/200	HYDRAULIC SYSTEM - BLEED OF AIR
IPC 27-22-00	RUDDER HYDRAULIC ACTUATION
SB145-27-0015	-

### C. Zones and Accesses

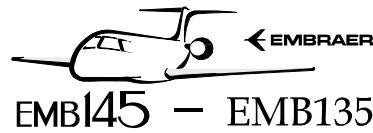
ZONE	PANEL/DOOR	LOCATION
325	325JR	Vertical stabilizer

### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 036	Platform, hydraulic	To get access to the vertical stabilizer	
Commercially available	Torque wrench	To apply the torques	

### E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base, Fluid-Resistant	Protection for the hands	1 pair
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1 pair



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## F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MEP 09-060	Corrosion-Inhibiting Compound	As nec- essary

## G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
O-ring	IPC 27-22-00	1/LRU
O-ring	IPC 27-22-00	1/LRU
Cotter pin	IPC 27-22-00	2/LRU
Cotter pin	IPC 27-22-00	2/LRU

## H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Vertical stabilizer

## I. Preparation

### SUBTASK 841-005-A

- (1) Drain the storage fluid of the hydraulic actuator. Keep the caps installed.
- (2) Do the adjustment procedure ([AMM TASK 27-22-02-700-801-A/500](#)) for the rudder actuator that is installed.

**NOTE:** If you need to install two new actuators, do the adjustment procedure ([AMM TASK 27-22-02-700-801-A/500](#)) for the two actuators, after you install each actuator.

**WARNING: CA-1000 CORROSION-INHIBITING COMPOUND IS TOXIC TO SKIN, EYES AND RESPIRATORY TRACT. USE PVC GLOVES AND EYE PROTECTION. USE ONLY IN WELL VENTILATED AREAS. OBEY THE MANUFACTURERS' HEALTH AND SAFETY INSTRUCTIONS.**

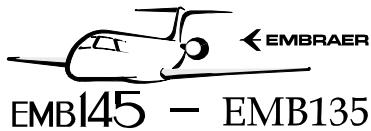
- (3) Apply the corrosion-inhibiting compound specification MEP 09-060 to the bolts (8) and (13). Use gloves, goggles and a brush for it.

## J. Installation (Figure 401)

### SUBTASK 420-004-A

**WARNING: THE HYDRAULIC SYSTEM CONTAINS PHOSPHATE-ESTER HYDRAULIC FLUID. THE FLUID CAN CAUSE IRRITATION IN YOUR SKIN OR INJURY TO YOUR EYES. USE THE APPLICABLE RUBBER GOGGLES AND GLOVES. IF THE FLUID TOUCHES YOU, FLUSH YOUR SKIN WITH WATER. IF IT GETS IN YOUR EYES, FLUSH THEM WITH WATER AND GET MEDICAL HELP.**

- (1) Install the hydraulic connections (3) to the rudder actuator. Use new O-rings and apply a torque of 10.7 N.m - 11.8 N.m (95 lbf.in - 105 lbf.in).



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- (2) Install the bleed valves to the rudder actuator ([AMM TASK 27-22-07-400-801-A/400](#)).
- (3) Install the rudder actuator (2) on the vertical stabilizer (4). Put the actuator rod through the rubber boot (5). Refer to sheets 1 and 2 of (Figure 401).
- (4) Attach the rudder actuator (2) to the vertical stabilizer.
- (5) Attach the clamps (6) and (7) of the rubber boot (5) to the actuator rod.
- (6) Manually put the rudder (1) in the neutral position.
- (7) Install the rudder actuator (2) to the rudder. If necessary, adjust the actuator rod length.
- (8) Torque the nuts as shown in (Figure 401).

K. Follow-on

SUBTASK 842-004-A

- (1) Do the rudder adjustment procedure ([AMM TASK 27-22-02-700-801-A/500](#)).
- (2) Do a check of the rudder differential pressure ([AMM TASK 27-22-01-700-801-A/500](#)).  
NOTE: Perform the check of the rudder differential pressure only if the actuator installed was removed from another aircraft.
- (3) Install the cotter pins (15) and (16).
- (4) On the circuit breaker panel, close the ELEC PUMP 1, ELEC PUMP 2, RUDDER 1, and RUDDER 2 circuit breakers and remove the DO-NOT-CLOSE tag from them.
- (5) Bleed the air from the rudder actuator lines ([AMM TASK 27-22-00-870-801-A/300](#)).
  - If necessary, bleed the air from the hydraulic lines [AMM TASK 29-10-00-860-803-A/200](#).
- (6) Make sure that there are no leaks in the rudder actuator.
- (7) Do a check of the deflection of rudder . See Table 401.

Table 401 - RUDDER I DEFLECTIONS

FAA/CTA/IAC-AR - CERTIFIED AIRCRAFT	JAA-CERTIFIED AIRCRAFT	
	PRE-MOD <a href="#">SB145-27-0015</a>	POST-MOD <a href="#">SB145-27-0015<sup>[1]</sup></a>
On the Ground condition <sup>[2]</sup>	15 degrees ± 1 degree	10 degrees ± 30 minutes
In flight condition <sup>[2]</sup>		10 degrees ± 30 minutes

[1] Or factory-incorporated modification.

[2] See [AMM TASK 27-20-00-700-801-A/500](#) as applicable.

- (8) Do a check of the rudder backlash ([AMM TASK 27-22-00-700-801-A/500](#)).

NOTE: Do this step only if you replaced the rudder I or actuator with a new one or if you replaced it with a rudder I or actuator used on other aircraft.



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- (9) Close access door 325JR (AMM MPP 06-42-00/100, [AMM MPP 52-40-04/400](#)).
- (10) Remove platform GSE 036.

