

ELEVATOR AND TAB - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to remove and install the elevators.
- B. These procedures are applicable to the LH and RH elevators.
- C. On aircraft PRE-MOD. [S.B.145-27-0075](#), before you replace the elevator from different aircraft, you must do as follows:
 - On aircraft PRE-MOD. [S.B.145-55-0020](#), elevators are interchangeable.
 - On aircraft POST-MOD. [S.B.145-55-0020](#), make sure that the flight data recorder supports are installed on the elevators. Refer to [AMM TASK 31-31-06-400-804-A/400](#).
- D. On aircraft POST-MOD. [S.B.145-27-0075](#), before you replace the elevator from different aircraft, you must do as follows:
 - Make sure that the aircraft is POST-MOD. [S.B.145-55-0020](#) and the flight data recorder supports are installed on the elevators. Refer to [AMM TASK 31-31-06-400-804-A/400](#).
- E. If it is necessary to remove/install the elevator surface because of the removal of the horizontal stabilizer ([AMM TASK 55-10-00-000-801-A/400](#)), you must do as follows:
 - If you replaced the horizontal stabilizer with a new one or if you replaced it with an horizontal stabilizer used on other aircraft, do a calibration of the elevator with the control-column position transducer ([AMM TASK 27-30-00-700-801-A/500](#)).
 - If you installed the same horizontal stabilizer on the same aircraft, do not do the calibration of the elevator with the control-column position transducer ([AMM TASK 27-30-00-700-801-A/500](#)).
- F. 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
27-30-00-000-801-A	ELEVATOR - REMOVAL	ALL
27-30-00-400-801-A	ELEVATOR - INSTALLATION	ALL

TASK 27-30-00-000-801-A

EFFECTIVITY: ALL

2. ELEVATOR - REMOVAL

A. General

(1) This procedure gives the instructions to remove the elevator.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-42-00/100	-
AMM TASK 31-31-06-000-802-A/400	FDR ELEVATOR RVDTS/RVITS - REMOVAL
AMM TASK 55-36-00-000-801-A/400	TAIL BOOM - REMOVAL
S.B.145-31-0045	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
333		Horizontal stabilizer
334		Horizontal stabilizer

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 058	Rig Pin Kit	To lock the control surface in the neutral position	
GSE 196	Elevator Lock Clamp	To lock the elevator 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	Horizontal stabilizer
1	Helps the other technician	Horizontal stabilizer

I. Preparation

SUBTASK 841-002-A

(1) Remove rear fairings 321 of the vertical stabilizer ([AMM TASK 55-36-00-000-801-A/400](#)).

- (2) Remove access panels 335CB, 335DB, 335EB, 335FB, 335GB, and 335HB or 336CB, 336DB, 336EB, 336FB, 336GB and 336HB (AMM MPP 06-42-00/100).
- (3) Install GSE 196 on the elevator surface, near the servo-tab ([Figure 403](#)).

J. Removal ([Figure 401](#)) ([Figure 402](#))

SUBTASK 020-002-A

WARNING: MAKE SURE THAT THE RUDDER CANNOT BE OPERATED ACCIDENTALLY. AN ACCIDENTAL OPERATION OF THE RUDDER CAN CAUSE INJURY TO PERSONS.

CAUTION: BE CAREFUL NOT TO DAMAGE THE ELEVATOR DURING THE REMOVAL.

- (1) (For aircraft with RVDTS/RVITS and mechanical gust lock without provisions for electromechanical gust lock) Disconnect the RVDTS/RVITS electrical connector and remove the washer (4) and nut (3) to remove the rod from the elevator surface. Refer to ([Figure 407](#)).
- (2) (For aircraft with RVDTS/RVITS and electromechanical gust lock or with provisions for it PRE-MOD. [S.B.145-31-0045](#)) Disconnect the RVDTS/RVITS electrical connector and remove the bolt (2), washer (3), and nut (4), and then, carefully disconnect the elevator FDR adapter from the stabilizer structure. Refer to ([Figure 408](#)).
- (3) (For aircraft with RVDTS/RVITS and electromechanical gust lock or with provisions for it POST-MOD. [S.B.145-31-0045](#)) Remove the RVDTS/RVITS ([AMM TASK 31-31-06-000-802-A/400](#)) and remove the bolt (2), washer (3), RVDTS/RVITS harness support (5), and nut (4), to disconnect the elevator FDR adapter from the stabilizer structure. Refer to ([Figure 408](#)).
- (4) Install the rig pin to the rear sector ([Figure 404](#)).
- (5) Remove GSE 196 from the elevator ([Figure 403](#)).
- (6) Remove the nut, washers, and bolt (5) to disconnect the end of the bonding strap (6) from the bellcrank (3) at the elevator (1). Refer to DET. B, ([Figure 401](#)) or ([Figure 402](#)).
- (7) Remove the cotter pin, nut, washer, bushing, and bolt (7) to disconnect the end of the rod (2) from the bellcrank (3) at the elevator (1). Refer to DET. B, ([Figure 401](#)) or ([Figure 402](#)).
- (8) Remove the cotter pin, nut, washers, bushing, and bolt (12) to disconnect the end of the rod (13) from the support (11) at the stabilizer structure. Refer to DET. D, ([Figure 401](#)) or ([Figure 402](#)).
- (9) Remove the nut, washers, and bolt (17) to disconnect the ends of the bonding straps (15) (2 positions) and (8) from the elevator (1). Refer to DET. F, DET.E and DET.C, ([Figure 401](#)) or ([Figure 402](#)).
- (10) Remove the nuts, washers, and bolts (4) (4 positions) and, if you find shims, remove them but do not discard them, to release the torque tube of the elevator (1) from the stabilizer structure. Refer to DET. B, ([Figure 401](#)) or ([Figure 402](#)).

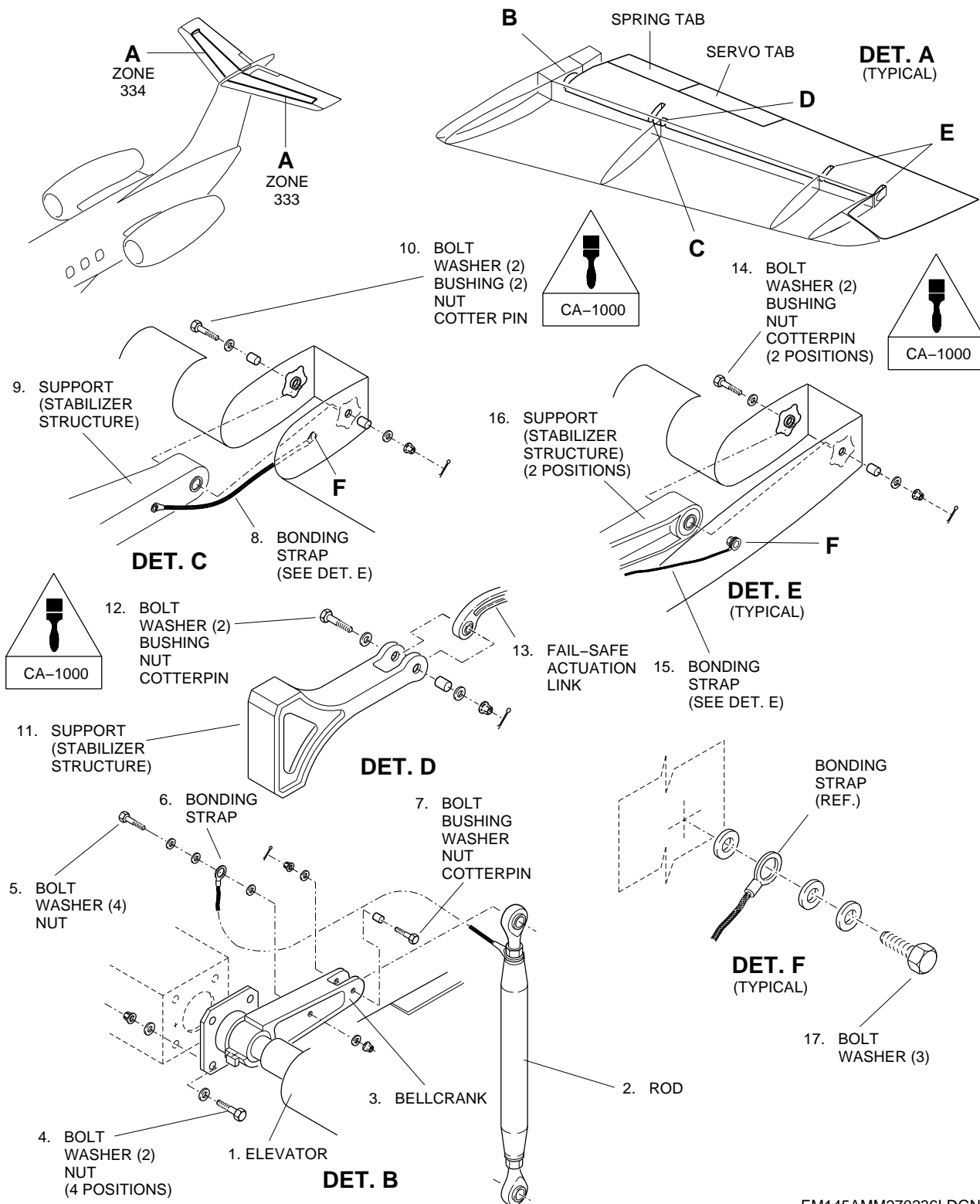
NOTE: If you find shims between the elevator torque tube and the stabilizer structure, make sure that you know their correct position so that you can install them back in the same position.

- (11) Hold the elevator (1).
- (12) Remove the cotter pin, nut, washers, bushing, and bolt (14) to disconnect the elevator (1) from the support (16) at the stabilizer structure (2 positions). Refer to DET. E, (Figure 401) or (Figure 402).
- (13) Remove the cotter pin, nut, washers, two bushings, and bolt (10) to disconnect the elevator (1) from the support (9) at the stabilizer structure. Refer to DET. C, (Figure 401) or (Figure 402).
- (14) Remove the elevator (1).

EFFECTIVITY: ON AIRCRAFT S/N UP TO 43

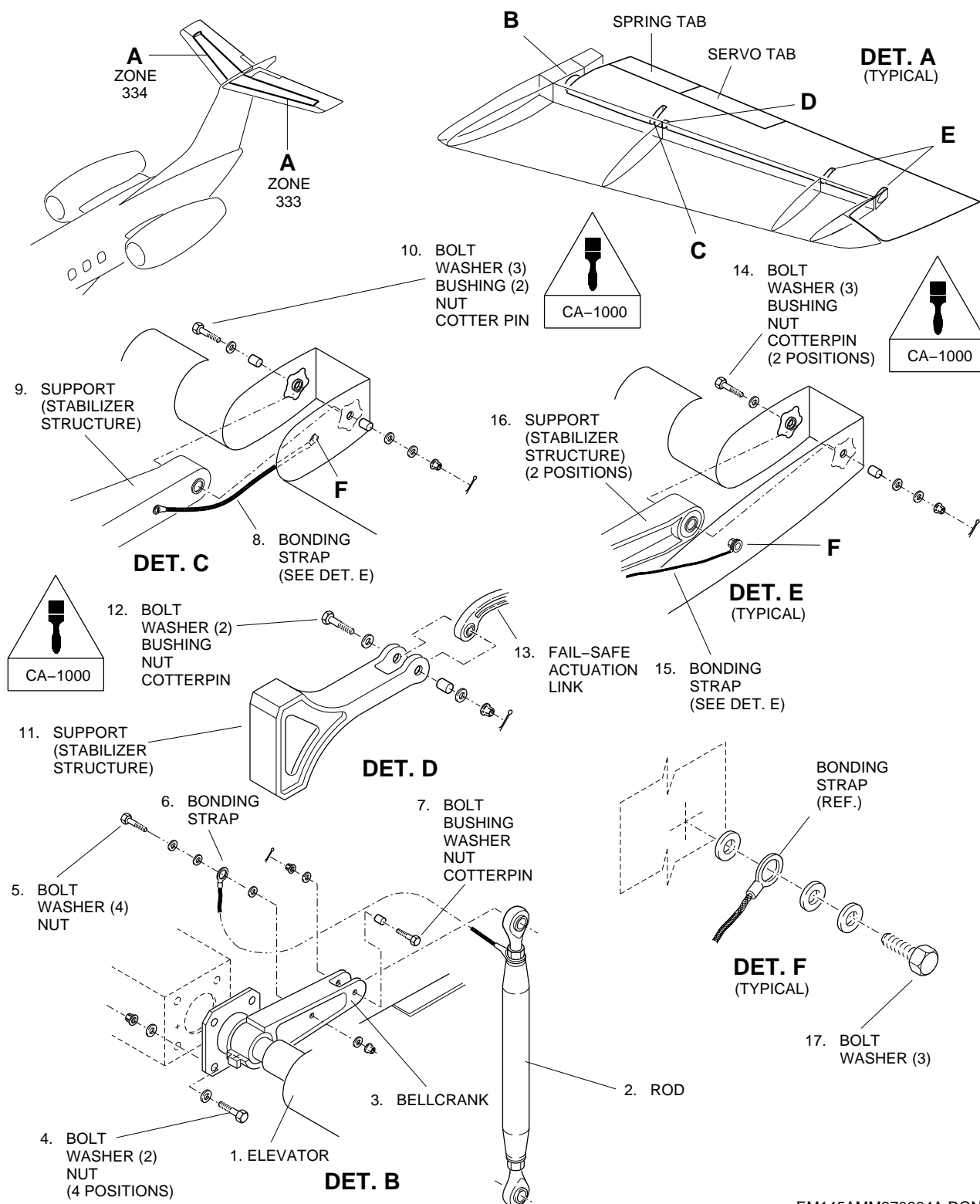
Elevator - Removal/Installation

Figure 401



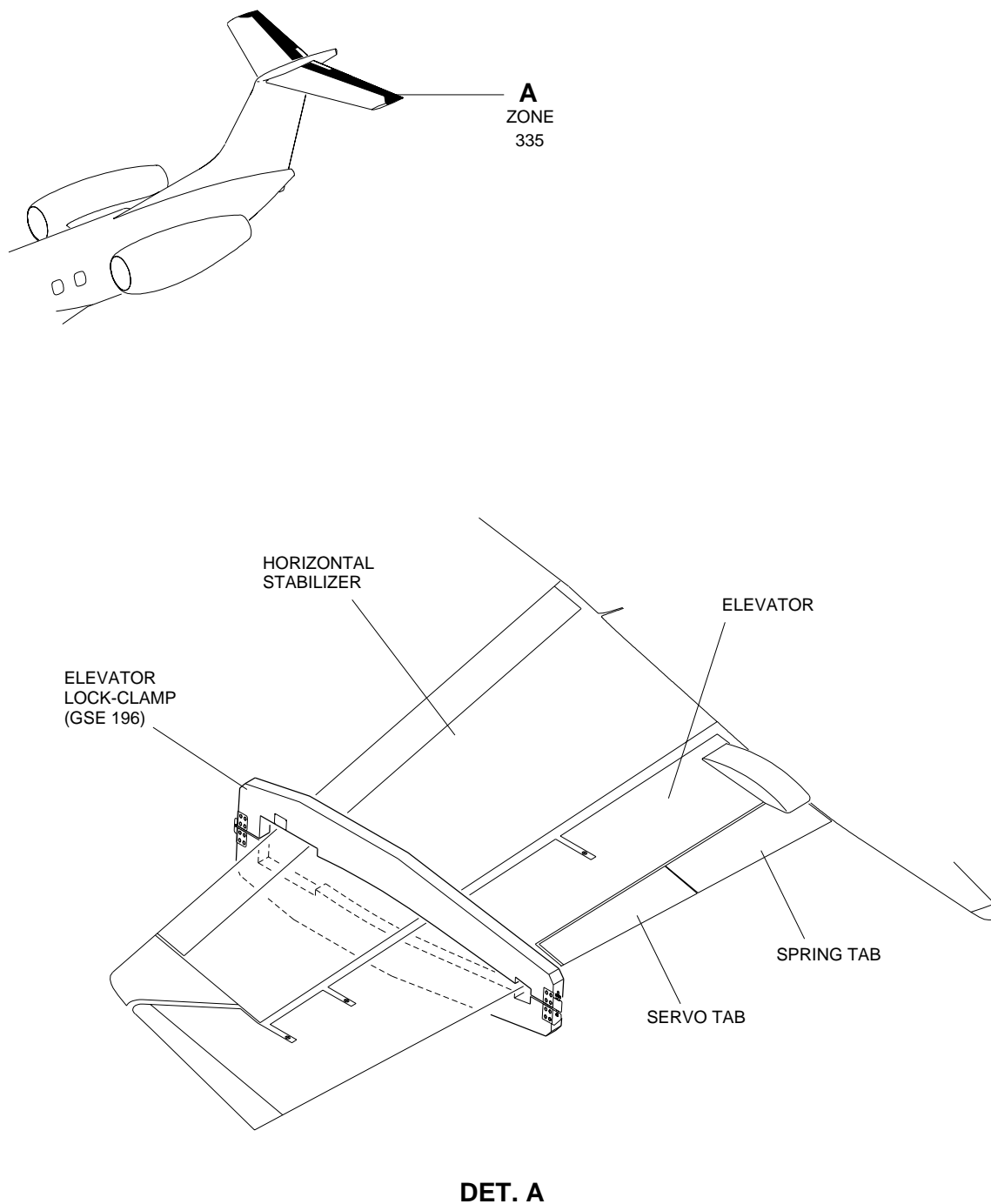
EM145AMM270236I.DGN

EFFECTIVITY: ON AIRCRAFT S/N 44 AND ON
Elevator - Removal/Installation
Figure 402



EM145AMM270864A.DGN

EFFECTIVITY: ALL
Elevator Lock Clamp - Installation
Figure 403

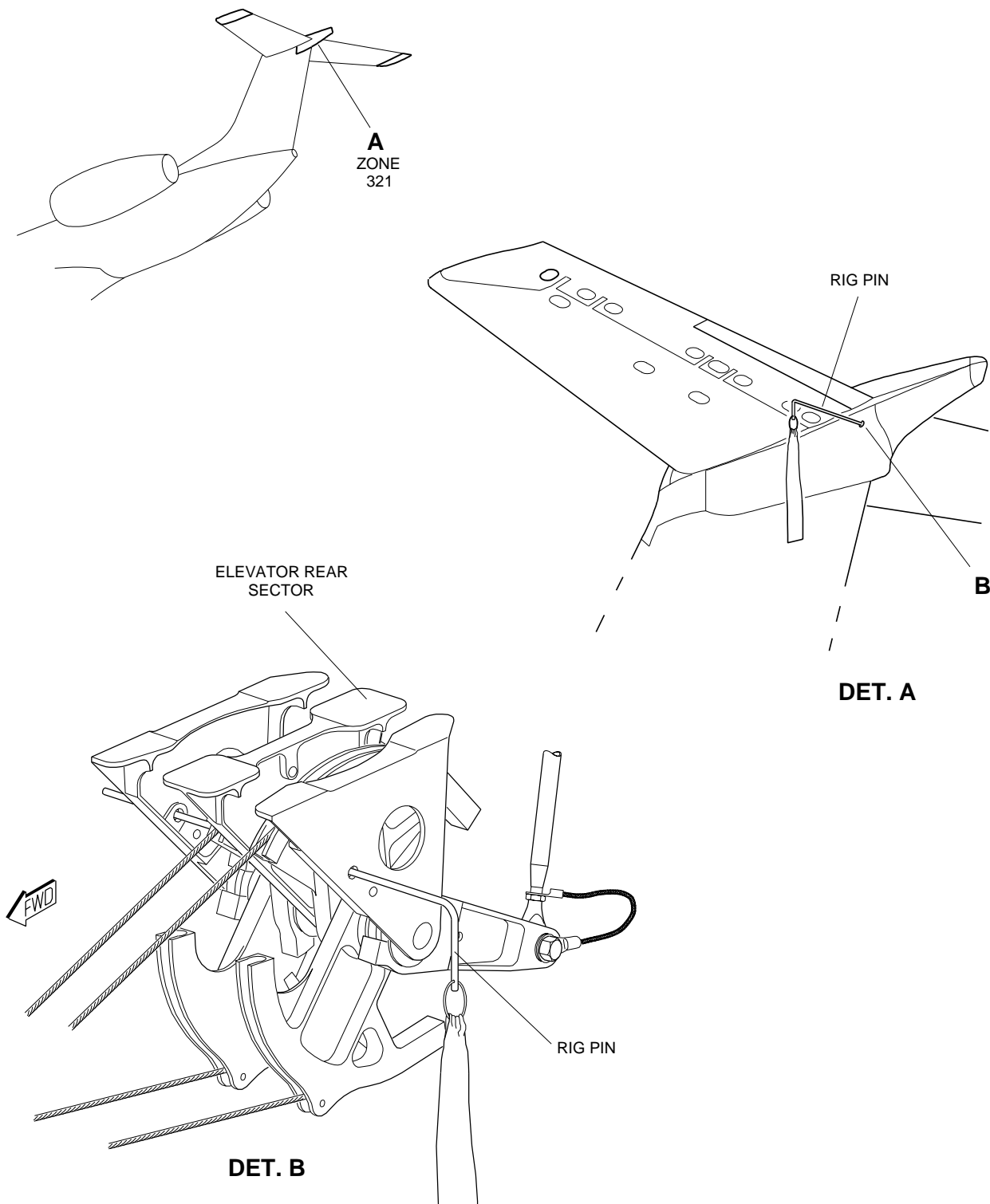


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EFFECTIVITY: ALL

Rig Pin - Location

Figure 404

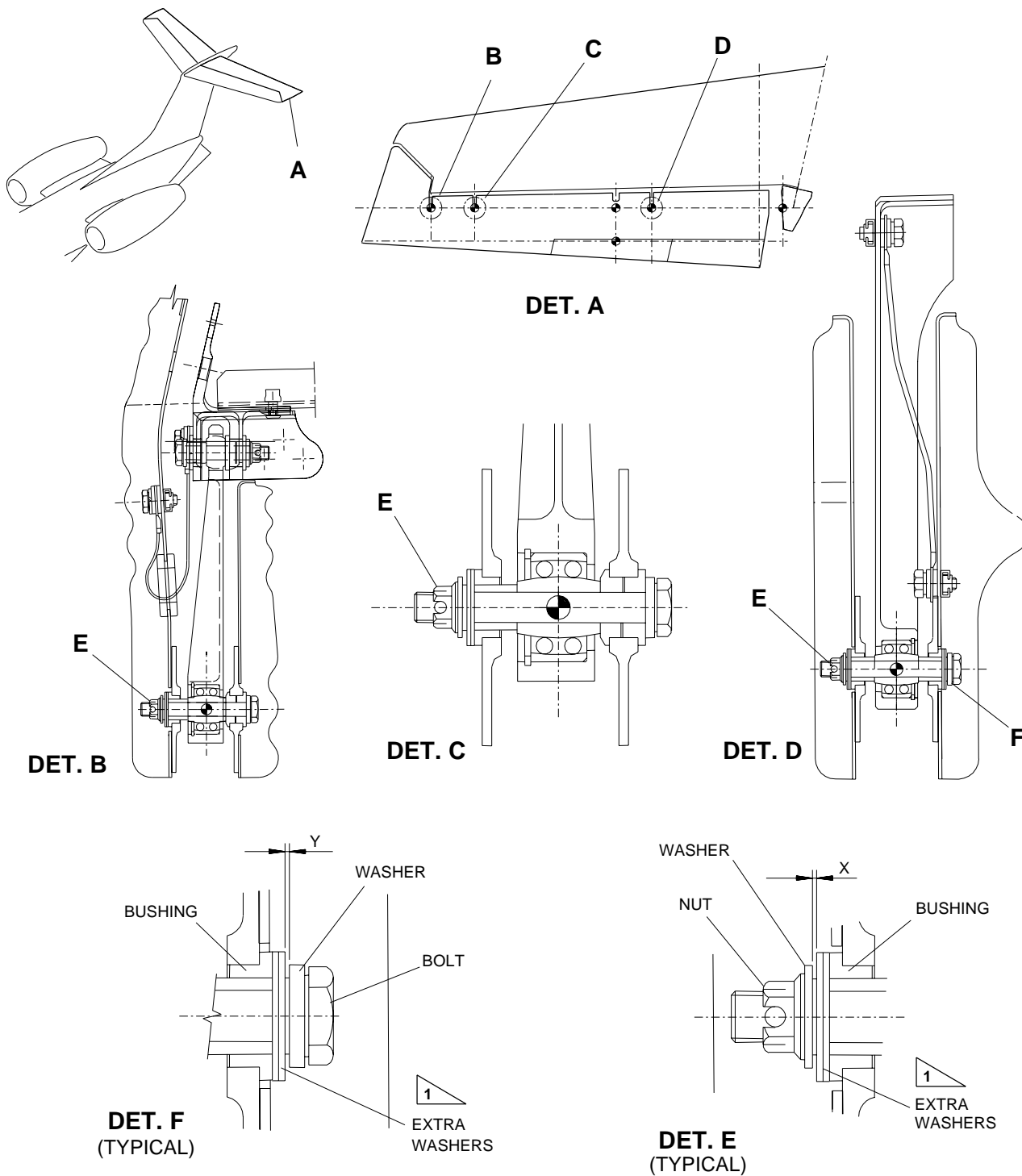


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EFFECTIVITY: ON AIRCRAFT S/N UP TO 43 AND POST-MOD SB 145-55-0032

Elevator Hinge Fittings - Adjustment

Figure 405

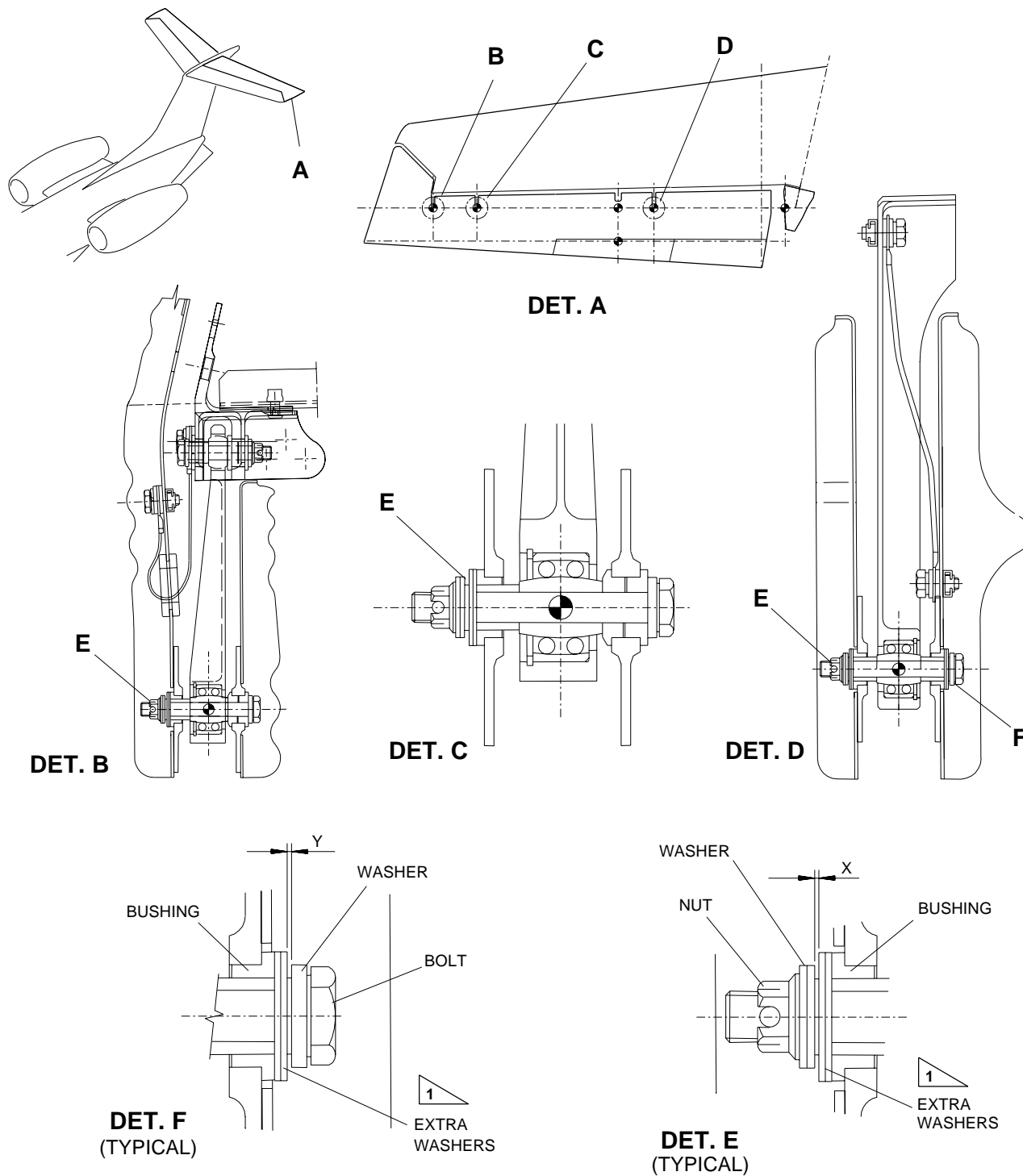


1 INSTALL EXTRA WASHERS AS REQUIRED.

EM145AMM270884A.DGN

EFFECTIVITY: ON AIRCRAFT S/N 44 UP TO 725 and POST-MOD SB 145-55-0032 or AIRCRAFT S/N 726 UP TO 791 27-30-00-400-801-A

Elevator Hinge Fittings - Adjustment
Figure 406



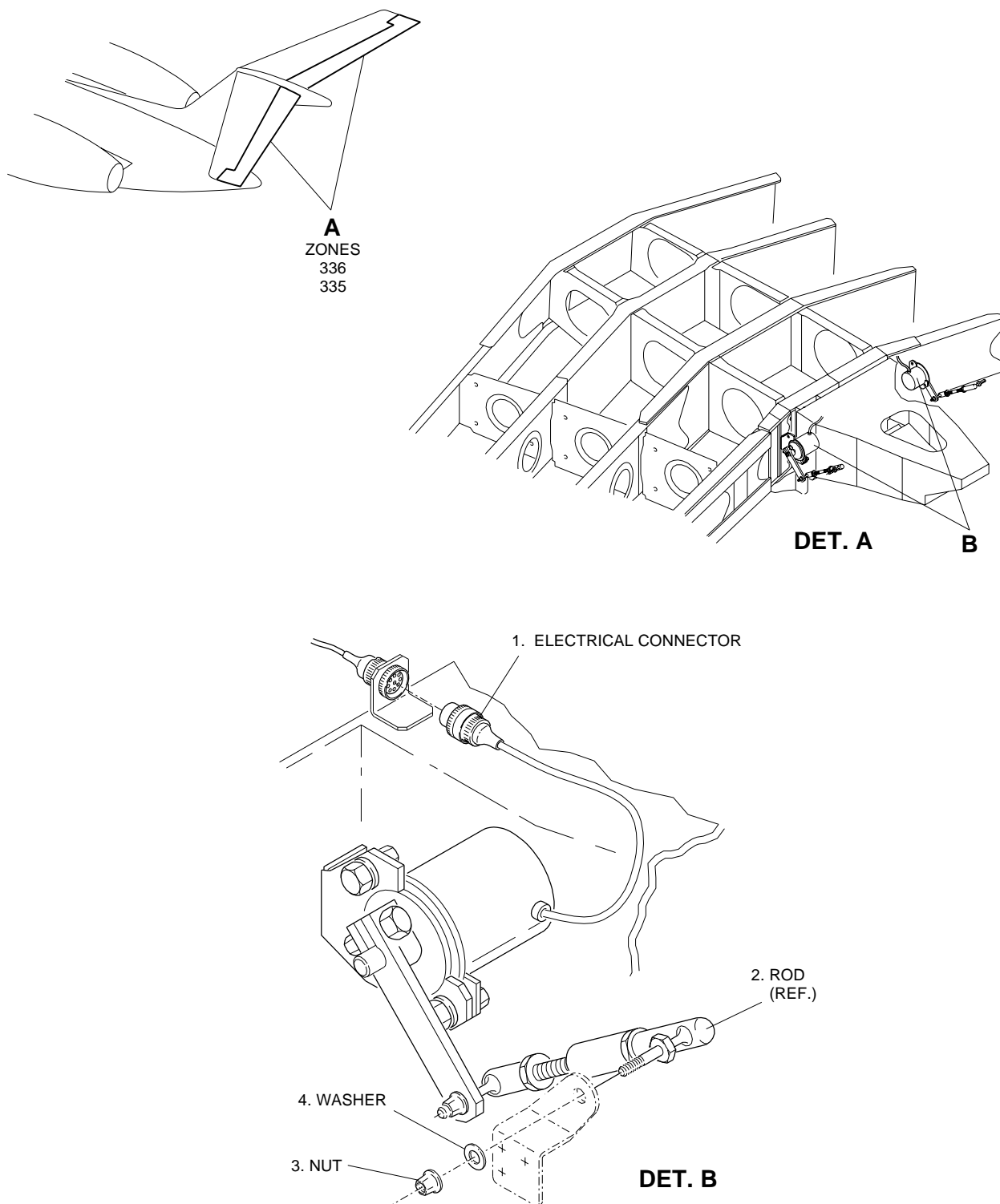
1 INSTALL EXTRA WASHERS AS REQUIRED

145AMM270635.MCE

EFFECTIVITY: For aircraft with RVDTS/RVITS and mechanical gust lock

RVDTS/RVITS - Mechanical Gust Lock

Figure 407

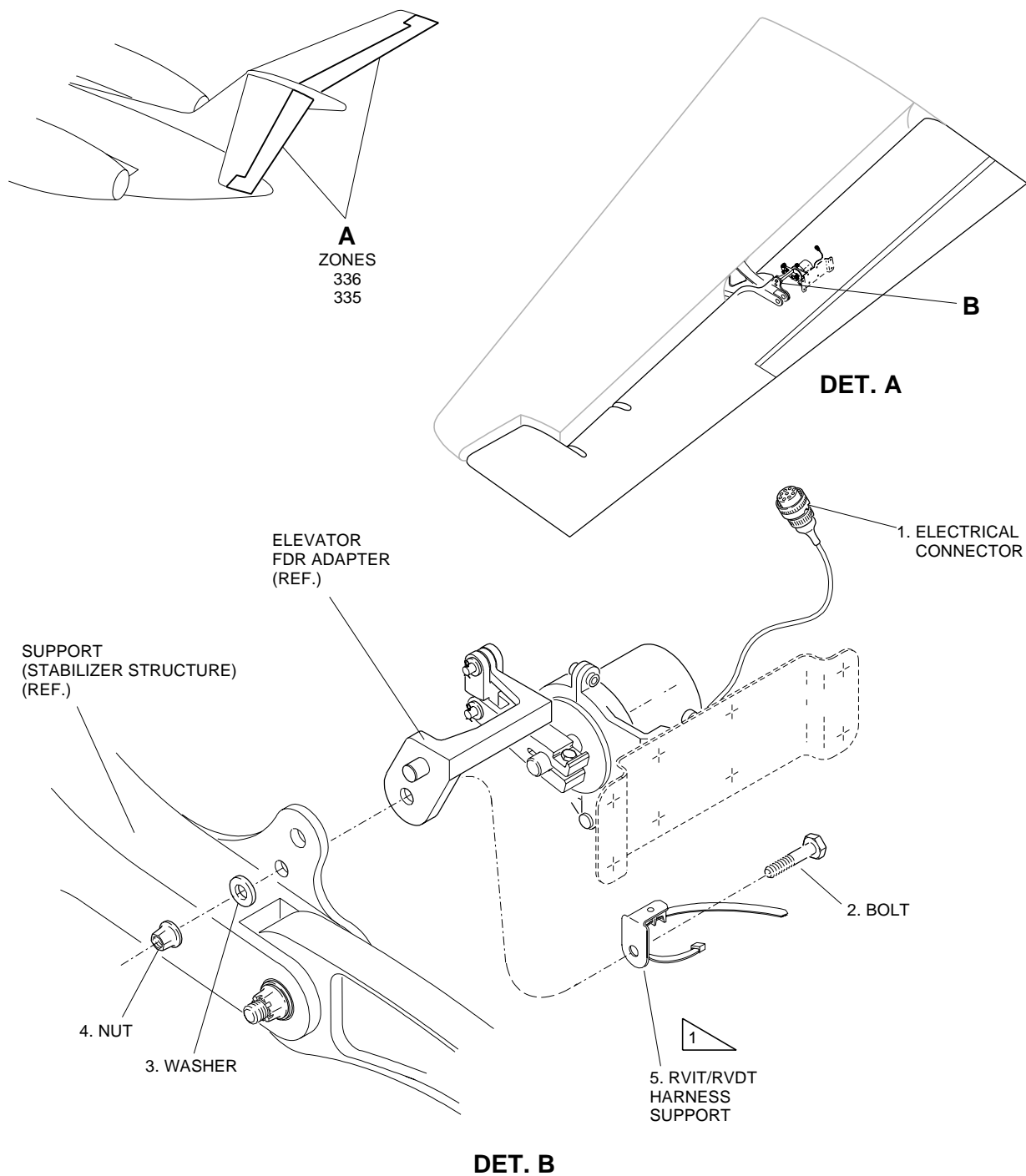


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EFFECTIVITY: For aircraft with RVDTS/RVITS and electromechanical gust lock

RVDTS/RVITS - Electromechanical Gust Lock

Figure 408



1 POST – MOD S.B.145-31- 0045

145AMM270650A.MCE

TASK 27-30-00-400-801-A
EFFECTIVITY: ALL

3. ELEVATOR - INSTALLATION

A. General

(1) This procedure gives the instructions to install the elevator.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-42-00/100	-
AMM TASK 20-13-21-910-801-A/200	TYPES OF ELECTRICAL BONDING AND SURFACE PREPARATION - STANDARD PROCEDURES
AMM TASK 27-30-00-700-801-A/500	ELEVATOR CALIBRATION WITH CONTROL-COLUMN POSITION TRANSDUCERS
AMM TASK 27-31-00-700-801-A/500	ELEVATOR PRIMARY MECHANICAL CONTROL BACKLASH - FUNCTIONAL CHECK
AMM TASK 27-31-00-700-803-A/500	ELEVATOR - DEFLECTIONS
AMM TASK 27-31-00-700-804-A/500	ELEVATOR CONNECTING ROD - ADJUSTMENT/CHECK
AMM TASK 27-31-04-700-802-A/500	SERVO-TAB - DEFLECTION
AMM TASK 27-31-08-700-801-A/500	SPRING TAB - ADJUSTMENT
AMM TASK 31-31-06-400-802-A/400	FDR ELEVATOR RVDTS/RVITS - INSTALLATION
AMM TASK 31-31-06-820-802-A/500	FDR ELEVATOR RVDTS/RVITS - CALIBRATION
AMM TASK 51-60-00-700-801-A/500	ELEVATOR STATIC BALANCING
AMM TASK 55-20-02-000-802-A/400	ELEVATOR TORSION-BAR BEARING - REMOVAL
AMM TASK 55-36-00-400-801-A/400	TAIL BOOM - INSTALLATION
IPC 27-31-00	ELEVATOR PRIMARY MECHANICAL CONTROL
IPC 27-31-02	ELEVATOR
S.B.145-31-0045	-
SB145-55-0032	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
333		Horizontal stabilizer
334		Horizontal stabilizer

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves	Protection for the hands	1

(Continued)

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Goggles	Protection for the eyes	1

F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MS24665-153	Cotter pin	1
MEP 09-060	Corrosion-Inhibiting Compound (CA-1000)	AR
MEP 09-075	Corrosion-Inhibiting Compound (COR-BAN 27L)	AR

G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Cotter pin	IPC 27-31-00	1
Cotter pin	IPC 27-31-02	3

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Horizontal stabilizer
1	Helps the other technician	Horizontal stabilizer

I. Preparation

SUBTASK 841-003-A

- (1) Make sure that the elevator is statically balanced ([AMM TASK 51-60-00-700-801-A/500](#)).

WARNING: CA-1000 OR COR-BAN 27L CORROSION-INHIBITING COMPOUND IS TOXIC TO SKIN, EYES, AND RESPIRATORY TRACT. USE GOGGLES AND PROTECTIVE GLOVES. USE ONLY IN WELL VENTILATED AREAS. OBEY THE MANUFACTURER'S HEALTH AND SAFETY INSTRUCTIONS.

- (2) Apply CA-1000 or COR-BAN 27L as shown in (Figure 401) or (Figure 402).

J. Installation Figure 401 Figure 402 (Figure 403) (Figure 404) (Figure 405) (Figure 406) (Figure 407) (Figure 408)

SUBTASK 420-002-A

WARNING: BEFORE YOU INSTALL AN ELEVATOR OF AN "ER"-CONFIGURED AIRCRAFT ON AN "LR"-CONFIGURED AIRCRAFT, MAKE SURE THAT THIS ELEVATOR ALREADY INCORPORATES SB 145-27-0034.

- (1) Put the elevator (1) on the stabilizer structure.

- (2) Install the bolt, washers, two bushings, and nut (10) to connect the elevator (1) to the support (9) at the stabilizer structure. Refer to DET. C, (Figure 401) or (Figure 402).

NOTE: Make sure that the bushings of the support (9) at the stabilizer structure are correctly installed and facing the support. If not, install them correctly.

- (3) Install the bolt, washers, bushing, and nut (14) to connect the elevator (1) to the supports (16) at the stabilizer structure (2 positions). Refer to DET. E, (Figure 401) or (Figure 402).

NOTE: Make sure that the bushings of the supports (16) at the stabilizer structure are correctly installed and facing the support. If not, install them correctly.

- (4) ON AIRCRAFT S/N 44 UP TO 725 and POST-MOD [SB145-55-0032](#) or AIRCRAFT S/N 726 UP TO 791, refer to (Figure 405) or (Figure 406) do as follows:

- (a) Refer to DET. B and DET. C and measure the gap between the bushing and the nut at the left end of pivot bolt, to define the quantity of extra washer(s) to be installed.

- (b) If the gap is greater than 0.5 mm (0.020 in), do as follows:

- 1 Install extra washer(s) in the gap, as shown in DET. E.
- 2 Refer to DET. E and measure the dimension "x" (between the washer and extra washer(s) at the bushing-nut side). This dimension must be between 0.2 mm (0.008 in) and 0.5 mm (0.020 in).

- (c) If the gap is less than 0.2 mm (0.008 in), do as follows:

- 1 Remove extra washer(s) in the gap, as shown in DET. E.

NOTE: If there is (are) no extra washer(s) in the gap, make sure that the bushings of the support (9) at the stabilizer structure are correctly installed and facing the support. Refer to DET.C, (Figure 401) or (Figure 402).

- 2 Refer to DET. E and measure the dimension "x" (between the bushing and washer at the bushing-nut side). This dimension must be between 0.2 mm (0.008 in) and 0.5 mm (0.020 in).

- (5) ON AIRCRAFT S/N 44 UP TO 725 and POST-MOD [SB145-55-0032](#) or AIRCRAFT S/N 726 UP TO 791, refer to (Figure 405) or (Figure 406) do as follows:

- (a) Refer to DET. D and measure the gap between the bushing and the nut and between the bushing and the bolt head side, to define the quantity of extra washer(s) to be installed.

- (b) If the gaps are greater than 0.5 mm (0.020 in), do as follows:

- 1 Install extra washer(s) in the gap, as shown in DET. E and DET. F.
- 2 Refer to DET. E and DET. F and measure the dimensions "x" (between the washer and extra washer(s) at the bushing-nut side) and "y" (between the washer and extra washer(s) at the bushing-bolt head side). These dimensions must be between 0.2 mm (0.008 in) and 0.5 mm (0.020 in).

- (c) If the gap is less than 0.2 mm (0.008 in), do as follows:
- 1 Remove extra washer(s) in the gap, as shown in DET. E and DET. F.

NOTE: If there are no extra washer(s) in the gap, make sure that the bushings of the supports (16) at the stabilizer structure are correctly installed and facing the support. Refer to DET.C, (Figure 401) or (Figure 402).
 - 2 Refer to DET. E and DET. F and measure the dimensions "x" (between the bushing and the washer at bushing-nut side) and "y" (between the bushing and the washer at the bushing-bolt head side). These dimensions must be between 0.2 mm (0.008 in) and 0.5 mm (0.020 in).
- (6) Attach the torque tube of the elevator (1) to the stabilizer structure with the bolts, washers, and nuts (4) (4 positions) and, if you removed shims, install them back in the same position. Refer to DET. B, (Figure 401) or (Figure 402).
- (7) Install cotter pins to the bolts (14) (2 positions) and (10). Refer to , DET. E and DET. C, (Figure 401) or (Figure 402).
- (8) Put the end of the rod (13) in the support (11) at the stabilizer structure and attach it with the bolt, washers, bushing, nut, and cotter pin (12). Refer to , DET. D, (Figure 401) or (Figure 402).
- (9) Do the check of the rod (2) that connects the elevator to the rear quadrant and adjust it if necessary ([AMM TASK 27-31-00-700-804-A/500](#)).
- (10) Put the end of the rod (2) in the bellcrank (3) of the elevator (1) and attach it with the bolt, washer, bushing, nut, and cotter pin (7). Refer to DET. B, (Figure 401) or (Figure 402).
- (11) Connect the bonding strap (6) to the bellcrank (3) of the elevator (1) with the bolt, washers and nut (5). Refer to DET. B, (Figure 401) or (Figure 402).
- NOTE:** Refer to [AMM TASK 20-13-21-910-801-A/200](#) for the correct installation of the bonding strap (6).
- (12) Connect the bonding straps (15) (2 positions) and (8) to the supports (16) (2 positions) and (9) at the stabilizer structure with the bolt, washers and nut (17). Refer to DET. F, (Figure 401) or (Figure 402).
- NOTE:** Refer to [AMM TASK 20-13-21-910-801-A/200](#) for the correct installation of the bonding straps (15) and (8).
- (13) Remove the rig pin from the rear sector.
- (14) (For aircraft with RVDTS/RVITS and mechanical gust lock without provisions for electromechanical gust lock) Reconnect the RVDTS/RVITS electrical connector and install the washer (4) and nut (3) to connect the rod to the elevator surface. Refer to (Figure 407).
- (15) (For aircraft with RVDTS/RVITS and electromechanical gust lock or with provisions for it PRE-MOD. [S.B.145-31-0045](#)) Reconnect the RVDTS/RVITS electrical connector and

install the bolt (2), washer (3) and nut (4), and then, carefully reconnect the elevator FDR adapter to the stabilizer structure. Refer to (Figure 408).

- (16) (For aircraft with RVDTS/RVITS and electromechanical gust lock or with provisions for it POST-MOD. [S.B.145-31-0045](#)) Install the bolt (2), washer (3), RVDT/RVIT harness support (5), and nut (4), to reconnect the elevator FDR adapter to the stabilizer structure and install the RVDTS/RVITS ([AMM TASK 31-31-06-400-802-A/400](#)). Refer to (Figure 408).

K. Follow-on

SUBTASK 842-002-A

- (1) Adjust the spring-tab ([AMM TASK 27-31-08-700-801-A/500](#)).
- (2) Do the elevator deflection test ([AMM TASK 27-31-00-700-803-A/500](#)).
- (3) Do the servo-tab deflection test ([AMM TASK 27-31-04-700-802-A/500](#)).

NOTE: Do this step only if you replaced the elevator with a new one or if you replaced it with an elevator used on other aircraft, or if you changed the shims of the servo-tab support.

- (4) Do the RVDTS/RVITS calibration procedure ([AMM TASK 31-31-06-820-802-A/500](#)).
- (5) Do a check of the elevator primary mechanical control backlash ([AMM TASK 27-31-00-700-801-A/500](#)).

NOTE: Do this step only if you replaced the elevator with a new one, if you replaced it with an elevator used on other aircraft or if you replace any bearings elevator torsion bar, refer to ([AMM TASK 55-20-02-000-802-A/400](#)).

- (6) Install access panels 335CB, 335DB, 335EB, 335FB, 335GB, and 335HB or 336CB, 336DB, 336EB, 336FB, 336GB and 336HB (AMM MPP 06-42-00/100).
- (7) Install front fairings 321 of the vertical stabilizer ([AMM TASK 55-36-00-400-801-A/400](#)).
- (8) Do the elevator calibration with the control-column position transducers ([AMM TASK 27-30-00-700-801-A/500](#)).

NOTE: Do this step only If you replaced the elevator and/or the horizontal stabilizer with a new one or if you replaced them with an elevator and/or an horizontal stabilizer used on other aircraft

