

## **ELEVATOR CONTROL CABLES - REMOVAL/INSTALLATION**

*EFFECTIVITY: ALL*

### 1. General

- A. This section gives the procedures to remove and install the tension regulator of the elevator cables and the control cables of the elevator control system.
- 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).

<i>TASK NUMBER</i>	<i>DESCRIPTION</i>	<i>EFFECTIVITY</i>
27-31-01-000-801-A	ELEVATOR TENSION REGULATOR - REMOVAL	ALL
27-31-01-400-801-A	ELEVATOR TENSION REGULATOR - INSTALLATION	ALL
27-31-01-000-802-A	ELEVATOR CONTROL CABLES - REMOVAL	ALL
27-31-01-400-802-A	ELEVATOR CONTROL CABLES - INSTALLATION	ALL
27-31-01-000-803-A	AUTOPILOT CONTROL CABLE - REMOVAL	ALL
27-31-01-400-803-A	AUTOPILOT CONTROL CABLE - INSTALLATION	ALL

TASK 27-31-01-000-801-A  
EFFECTIVITY: ALL

## 2. ELEVATOR TENSION REGULATOR - REMOVAL

### A. General

(1) This task gives the procedures to remove the tension regulator of the elevator cables.

### B. References

REFERENCE	DESIGNATION
<a href="#">AMM TASK 27-31-02-000-801-A/400</a>	TORQUE TUBE QUADRANT - REMOVAL

### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Area below the cockpit floor

### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
See IPC 27-31-03	Prop Block	To permit the removal and installation of the control cables at the tension regulator	

### 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	Area below the cockpit floor

### I. Preparation

#### SUBTASK 841-002-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Remove the LH or RH elevator torque tube quadrant ( [AMM TASK 27-31-02-000-801-A/400](#) ).

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

#### SUBTASK 020-002-A

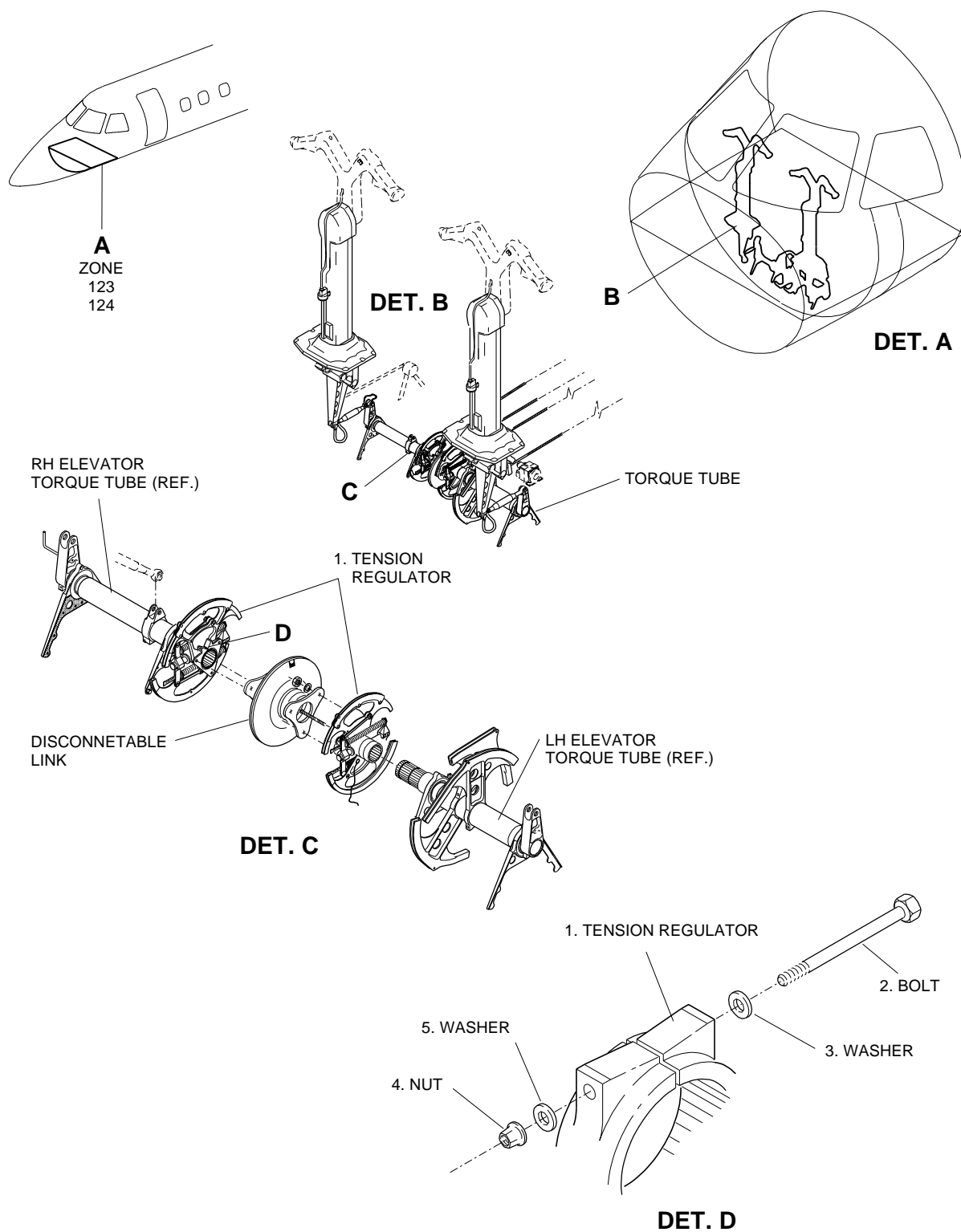
- (1) Remove the nut (4), washers (5) and (3), and bolt (2) and to release the tension regulator (1) from the elevator torque tube.

- (2) Remove the tension regulator (2) from the elevator torque tube (1).

EFFECTIVITY: ALL

Elevator Tension Regulator - Removal/Installation

Figure 401



EM145AMM270141B.DGN

TASK 27-31-01-400-801-A

EFFECTIVITY: ALL

### 3. ELEVATOR TENSION REGULATOR - INSTALLATION

#### A. General

(1) This task gives the procedures to install the tension regulator of the elevator cables.

#### B. References

REFERENCE	DESIGNATION
<a href="#">AMM TASK 27-31-02-400-801-A/400</a>	TORQUE TUBE QUADRANT - INSTALLATION

#### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Area below the cockpit floor

#### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
See IPC 27-31-03	Prop Block	To permit the removal and installation of the control cables at the tension regulator	

#### 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	Area below the cockpit floor

#### I. Installation (Figure 401)

##### SUBTASK 420-002-A

**CAUTION:** DO NOT REMOVE THE PROP BLOCK FROM THE ELEVATOR TENSION REGULATORS BEFORE YOU INSTALL THE CONTROL CABLES. IF YOU REMOVE THE PROP BLOCK, IT WILL NOT BE POSSIBLE TO INSTALL THE CONTROL CABLES.

(1) Install the tension regulator (1) to the elevator torque tube.

(2) Install the bolt (2), washers (3) and (5), and nut (4) to the tension regulator (1).

J. Follow-on

*SUBTASK 842-002-A*

- (1) Install the respective elevator torque tube quadrant ( [AMM TASK 27-31-02-400-801-A/400](#)).

TASK 27-31-01-000-802-A

EFFECTIVITY: ALL

#### 4. ELEVATOR CONTROL CABLES - REMOVAL

##### A. General

- (1) This procedure gives the instructions to remove the control cables of the elevator control system.

##### B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM MPP 06-41-02/100	-
AMM MPP 06-42-00/100	-
<a href="#">AMM MPP 28-00-00/200</a>	- MAINTENANCE PRACTICES
<a href="#">AMM TASK 12-11-01-600-802-A/300</a>	FUEL-TANK PRESSURE DEFUELING - SERVICING
AMM TASK 25-21-01-000-801-A/400	-
AMM TASK 25-27-02-000-801-A/400	-
<a href="#">AMM TASK 25-51-01-000-801-A/400</a>	BAGGAGE COMPARTMENT LINING - REMOVAL
IPC 27-31-00	ELEVATOR PRIMARY MECHANICAL CONTROL
IPC 27-31-03	TORQUE TUBE

##### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Below the cockpit floor
124		Below the cockpit floor
131		Below the passenger cabin floor
132		Below the passenger cabin floor
141		Below the passenger cabin floor
142		Below the passenger cabin floor
151		Below the passenger cabin floor
152		Below the passenger cabin floor
153		Below the passenger cabin floor
154		Below the passenger cabin floor
155	155BZ	LH Wing stub
155	155CZ	LH Wing stub
155	155FZ	LH Wing stub
155	155LZ	LH Wing stub
156	156BZ	RH Wing stub
156	156CZ	RH Wing stub
156	156FZ	RH Wing stub
156	156LZ	RH Wing stub

(Continued)

<i>ZONE</i>	<i>PANEL/DOOR</i>	<i>LOCATION</i>
161		Below the passenger cabin floor
162		Below the passenger cabin floor
171		Below the baggage compartment floor
172		Below the baggage compartment floor
192	192AL	Center lower fairing
192	192BR	Center lower fairing
193	193AL	Aft lower fairing
271		Baggage compartment ceiling
272		Baggage compartment ceiling
273		Baggage compartment ceiling
312	272DR	Structural area aft of rear pressure bulk-head
312	312AR	Structural area aft of rear pressure bulk-head
321	321	RH Tail boom
324	324BL	Vertical stabilizer
324	324CL	Vertical stabilizer
325		Vertical stabilizer
325	325BL	Vertical stabilizer

**D. Tools and Equipment**

<i>ITEM</i>	<i>DESCRIPTION</i>	<i>PURPOSE</i>	<i>QTY</i>
<b>GSE 058</b>	Kit, rig pins, flight controls	To lock the elevator control system in the neutral position	
See IPC 27-31-03	Prop Block	To permit the removal and installation of the control cables at the tension regulator	

**E. Auxiliary Items**

Not Applicable

**F. Consumable Materials**

Not Applicable

**G. Expendable Parts**

<i>ITEM</i>	<i>IPC REFERENCE (VENDOR REFERENCE)</i>	<i>QTY</i>
Cotter pin	IPC 27-31-00	AR
Locking clip	IPC 27-31-00	AR
Pressure seal	IPC 27-31-00	8



## H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Below the floor of cockpit, passenger cabin, and baggage compartment, and at the vertical stabilizer
1	Helps the other technician	Below the floor of cockpit, passenger cabin, baggage compartment, at the vertical stabilizer

## I. Preparation

### SUBTASK 841-003-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Make sure that the hydraulic system is not pressurized.

**WARNING: BEFORE YOU DO THE TASK, OBEY THE SAFETY PRECAUTIONS GIVEN IN [AMM MPP 28-00-00/200](#) TO PREVENT INJURY TO PERSONS AND DAMAGE TO MATERIAL**

- (3) Make sure that the aircraft is defueled ( [AMM TASK 12-11-01-600-802-A/300](#)) for all wet stub wing.
- (4) On the Circuit Breaker Panel, open the AP1 circuit breaker and attach a DO-NOT-CLOSE tag to it.
- (5) Remove cockpit underfloor access hatch 123BL (AMM MPP 06-41-01/100).
- (6) Open door 272DR (AMM MPP 06-41-01/100).
- (7) Open door 312AR (AMM MPP 06-42-00/100).
- (8) Remove access panels 192AL, 192BR, 155BZ, 155CZ, 155FZ, 155LZ, 156BZ, 156CZ, 156FZ and 156LZ (AMM MPP 06-41-01/100).
- (9) Remove access panels 324BL, 324CL and 325BL (AMM MPP 06-42-00/100).
- (10) Remove the passenger seats (AMM TASK 25-21-01-000-801-A/400).
- (11) Remove the cable protection shroud (AMM TASK 25-27-02-000-801-A/400).
- (12) Valid only for 145 aircraft:  
Remove floor panels 221GF, 231BF, 231FF, 231GF, 241BF, 241DF, 251BF, 251DF, 251FF, 251HF, 261BF, 261DF, 271AF, 271BF, 271CF, 271DF and 272EF (AMM MPP 06-41-02/100).  
Valid only for 140 aircraft:  
Remove floor panels 221GF, 231BF, 231FF, 231GF, 241BF, 241DF, 251BF, 251DF, 251GF, 251JF, 261BF, 261DF, 271AF, 271BF, 271CF, 271DF and 271EF (AMM MPP 06-41-02/100).  
Valid only for 135 aircraft:

Remove floor panels 221GF, 231BF, 231FF, 231GF, 241BF, 241DF, 251DF, 251FF, 251HF, 261DF, 271AF, 271BF, 271CF, 271DF and 271EF (AMM MPP 06-41-02/100).

(13) Remove the baggage compartment ceiling ( [AMM TASK 25-51-01-000-801-A/400](#)).

J. Removal ([Figure 402](#)) ([Figure 403](#))

*SUBTASK 020-003-A*

**CAUTION:** IDENTIFY THE POSITIONS OF THE CONTROL CABLES TO INSTALL THEM AGAIN IN THE SAME POSITIONS.

(1) Install the rig pins to the elevator control system to lock it in the neutral position.

**CAUTION:** DO NOT REMOVE THE PROP BLOCK FROM THE ELEVATOR TENSION REGULATORS BEFORE YOU INSTALL THE CONTROL CABLES. IF YOU REMOVE THE PROP BLOCK, IT WILL NOT BE POSSIBLE TO INSTALL THE CONTROL CABLES.

(2) Install the prop block (refer to IPC 27-31-03) to the elevator tension regulators before you loosen the elevator control cables (02), (05), (19) and (21). Refer to [Figure 403](#).

(3) Remove the LH forward control cable (21) as follows:

**NOTE:** These procedures are applicable to the two LH forward control cables (21).

- (a) Release the tension of the LH forward control cable (21).
- (b) If applicable, remove the cable guard (37) (DET. E) from the pulleys (18) and (22).
- (c) Disconnect the end of the LH forward control cable (21) from the LH rear control cable (19). For this, remove and discard the locking clips (30) (DET. D) and disconnect the turnbuckle (6).
- (d) Disconnect the other end of the LH forward control cable (21) from the sector at the forward torque tube. For this, remove and discard the cotter pins (23) and (25) and remove pin (24) (refer to DET. A).
- (e) Remove the nylon grommets (1) (14 positions) and (20) (3 positions) and release the LH forward control cable (21) from the supports.
- (f) Remove the two bolts (26) and washers (27), plate (28), pressure seal (3) and gasket (29) (2 positions) (DET. C). Discard pressure seal (3).
- (g) Remove the LH forward control cable (21).

(4) Remove the LH rear control cable (19) as follows:

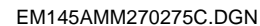
**NOTE:** These procedures are applicable to the two LH rear control cables (19).

- (a) Release the tension of the LH rear control cable (19) and RH rear control cable (5).
- (b) Remove the cable guard (37) (DET. E) from the pulleys (18), (7), (8), (9) and (11).
- (c) Remove the cable guard (33) (DET. F) from the pulley (12). For this, remove the nut (31) and washer (32).

- (d) Remove the pin (34) (DET. G) from the support at the carbon box. For this, remove the cotter pin (35) and washer (36). Discard the cotter pin (35).
  - (e) Disconnect the end of the LH rear control cable (19) from the LH forward control cable (21). For this, remove and discard the locking clips (30) (DET. D) and disconnect the turnbuckle (6).
  - (f) Disconnect the other end of the LH rear control cable (19) from the sector at the rear torque tube. For this, remove and discard the cotter pins (23) and (25) and remove pin (24) (refer to DET. A).
  - (g) Remove the two bolts (26) and washers (27), plate (28), pressure seal (10) and gasket (29) (2 positions) (DET. C). Discard pressure seal (10).
  - (h) Remove the cotter pin (44), nut (43), washer (42), bushing (41), washer (40), and bolt (39) to remove the pulley (38).
  - (i) Remove the LH rear control cable (19).
- (5) Remove the RH forward control cable (2) as follows:
- NOTE: These procedures are applicable to the two RH forward control cables (2).
- (a) Release the tension of the RH forward control cable (2).
  - (b) If applicable, remove the cable guard (37) (DET. E) from the pulley (22).
  - (c) Disconnect the end of the RH forward control cable (2) from the RH rear control cable (5). For this, remove and discard the locking clips (30) (DET. D) and disconnect the turnbuckle (4).
  - (d) Disconnect the other end of the RH forward control cable (2) from the sector at the forward torque tube. For this, remove and discard the cotter pins (23) and (25) and remove pin (24) (refer to DET. A).
  - (e) Remove the nylon grommets (1) (14 positions) and (20) (3 positions), and release the RH forward control cable (2) from the supports.
  - (f) Remove the two bolts (26) and washers (27), plate (28), pressure seal (3) and gasket (29) (2 positions) (DET. C). Discard pressure seal (3).
  - (g) Remove the RH forward control cable (2).
- (6) Remove the RH rear control cable (5) as follows:
- NOTE: These procedures are applicable to the two RH rear control cables (5).
- (a) Release the tension of the RH rear control cable (5) and LH rear control cable (19).
  - (b) Remove the cable guard (37) (DET. E) from the pulleys (17), (15), (14) and (13).
  - (c) Remove the cable guard (33) (DET. F) from the pulley (12). For this, remove the nut (31) and washer (32).

- (d) Remove the pin (34) (DET. G) from the support at the carbon box. For this, remove the cotter pin (35) and washer (36). Discard the cotter pin (35).
- (e) Disconnect the end of the RH rear control cable (5) from the RH forward control cable (2). For this, remove and discard the locking clips (30) (DET. D) and disconnect the turnbuckle (4).
- (f) Disconnect the other end of the RH rear control cable (5) from the sector at the rear torque tube. For this, remove and discard the cotter pins (23) and (25) and remove pin (24) (refer to DET. A).
- (g) Remove the two bolts (26) and washers (27), plate (28), pressure seal (16) and gasket (29) (2 positions) (DET. C). Discard pressure seal (16).
- (h) Remove the cotter pin (44), nut (43), washer (42), bushing (41), washer (40), and bolt (39) to remove the pulley (38).
- (i) Remove the RH rear control cable (5).

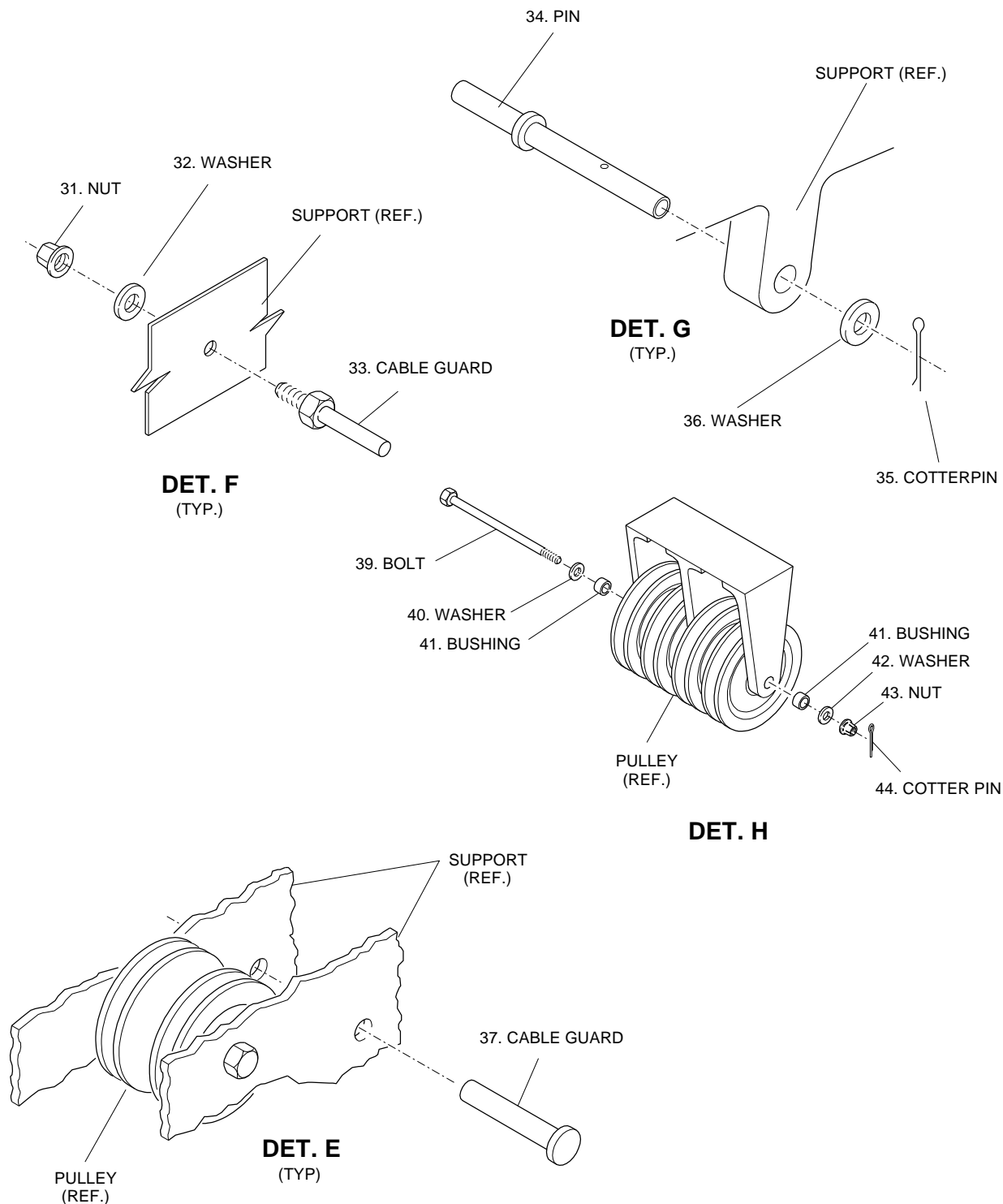
Figure 402 - Sheet 1



EFFECTIVITY: ALL

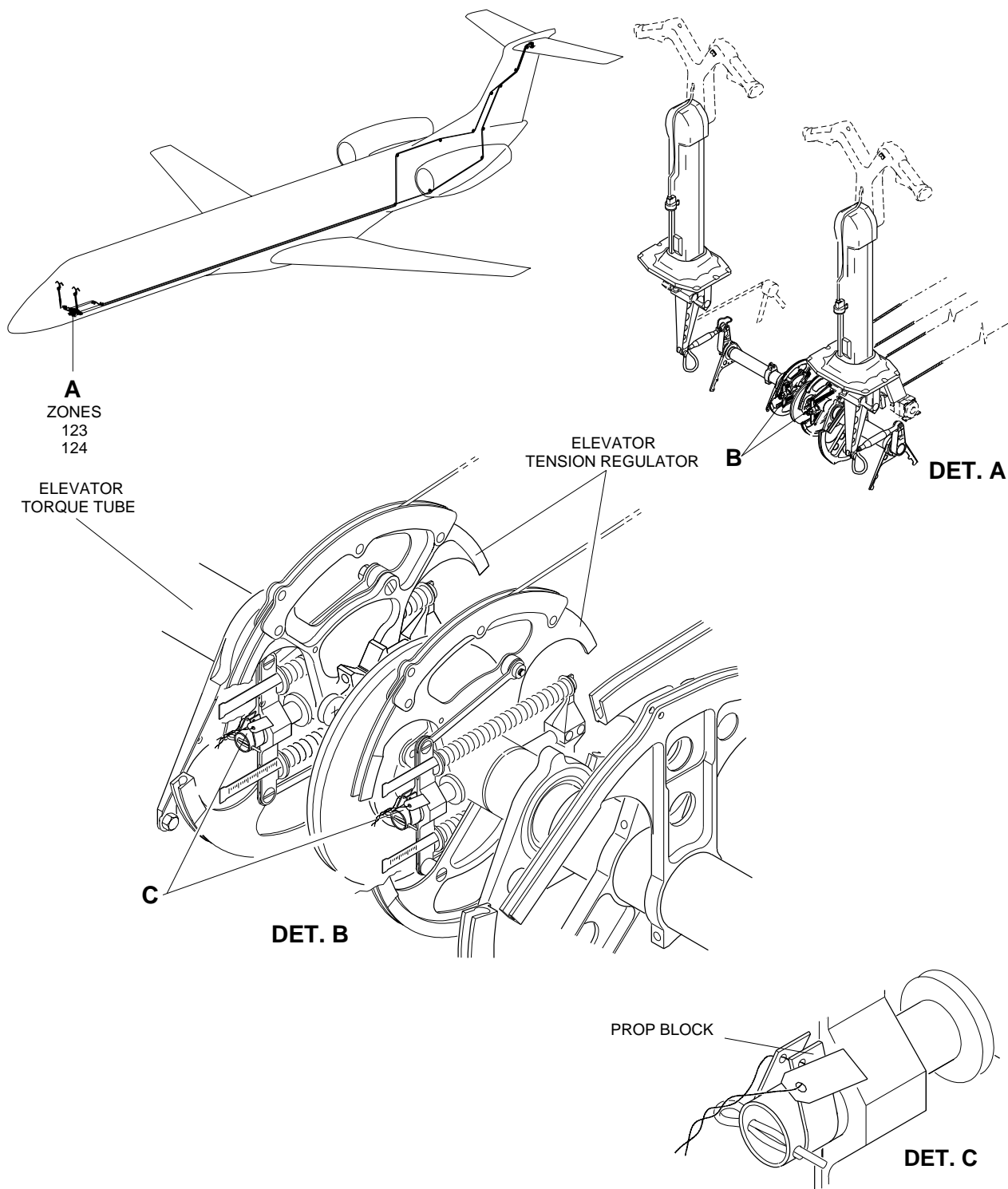
Control Cables of the Elevator Control System - Removal/Installation

Figure 402 - Sheet 2



EM145AMM270276B.DGN

EFFECTIVITY: ALL  
Prop Block - Location  
Figure 403



145AMM270480.MCE A

TASK 27-31-01-400-802-A

EFFECTIVITY: ALL

## 5. ELEVATOR CONTROL CABLES - INSTALLATION

### A. General

- (1) This procedure gives the instructions to install the control cables of the elevator control system.

### B. References

REFERENCE	DESIGNATION
AMM 06-42-01/101	-
AMM MPP 06-41-01/100	-
AMM MPP 06-41-02/100	-
AMM MPP 06-42-00/100	-
AMM TASK 25-21-01-400-801-A/400	-
AMM TASK 25-27-02-400-801-A/400	-
AMM TASK 25-51-01-400-801-A/400	BAGGAGE COMPARTMENT LINING - INSTALLATION
AMM TASK 27-31-01-700-801-A/500	TENSION OF THE ELEVATOR CONTROL CABLES - FUNCTIONAL CHECK
AMM TASK 28-41-00-200-801-A/600	-
IPC 27-31-00	ELEVATOR PRIMARY MECHANICAL CONTROL
IPC 27-31-03	TORQUE TUBE

### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
123	123BL	Below the cockpit floor
124		Below the cockpit floor
131		Below the passenger cabin floor
132		Below the passenger cabin floor
141		Below the passenger cabin floor
142		Below the passenger cabin floor
151		Below the passenger cabin floor
152		Below the passenger cabin floor
153		Below the passenger cabin floor
154		Below the passenger cabin floor
155	155BZ	LH Wing stub
155	155CZ	LH Wing stub
155	155FZ	LH Wing stub
155	155LZ	LH Wing stub
156	156BZ	RH Wing stub
156	156CZ	RH Wing stub



(Continued)

ZONE	PANEL/DOOR	LOCATION
156	156FZ	RH Wing stub
156	156LZ	RH Wing stub
161		Below the passenger cabin floor
162		Below the passenger cabin floor
171		Below the baggage compartment floor
172		Below the baggage compartment floor
192	192AL	Center lower fairing
192	192BR	Center lower fairing
193	193AL	Aft lower fairing
271		Baggage compartment ceiling
272		Baggage compartment ceiling
273		Baggage compartment ceiling
312	272DR	Structural area aft of rear pressure bulk-head
312	312AR	Structural area aft of rear pressure bulk-head
321	321	RH Tail boom
324	324BL	Vertical stabilizer
324	324CL	Vertical stabilizer
325		Vertical stabilizer
325	325BL	Vertical stabilizer

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
<a href="#">GSE 058</a>	Kit, rig pins, flight controls	To lock the elevator control system in the neutral position	
See IPC 27-31-03	Prop Block	To permit the removal and installation of the control cables at the tension regulator	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Cotter pin	IPC 27-31-00	AR
Locking clip	IPC 27-31-00	AR

(Continued)

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Pressure seal	IPC 27-31-00	8

## H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Below the cockpit floor, passenger cabin and baggage compartment and at the vertical stabilizer
1	Helps the other technician	Below the cockpit floor, passenger cabin and baggage compartment and at the vertical stabilizer

## I. Installation (Figure 404) (Figure 402) (Figure 403)

### SUBTASK 420-003-A

**CAUTION:** THE CONTROL CABLES MUST BE INSTALLED IN THE SAME POSITIONS AS THOSE THEY WERE REMOVED FROM. REFER TO THEIR IDENTIFICATION POSITIONS.

- (1) Install the LH forward control cable (21) as follows:

**NOTE:** These procedures are applicable to the two LH forward control cables (21).

- (a) Connect the end of the LH forward control cable (21) to the sector at the forward torque tube with new cotter pins (23) and (25) and pin (24) (refer to DET. A).
- (b) Put the LH forward control cable (21) through the wing stub and put the gaskets (29) and plates (28) on it.

**NOTE:** To prevent air leakage, make sure that the rubber of the control cable with the smaller diameter is turned to the semi-sphere seal.

- (c) If applicable, put the LH forward control cable (21) on the pulleys (18) and (22).
- (d) Put the LH forward control cable (21) in the supports along the fuselage (17 positions).
- (e) Connect the other end of the LH forward control cable (21) to the LH rear control cable (19) through the turnbuckle (6).

**WARNING:** MAKE SURE THAT YOU MOVE THE CABLE THROUGH THE PULLEY CORRECTLY. BE CAREFUL NOT TO INSTALL THE CABLE ABOVE THE CABLE GUARD.

- (f) If applicable, install the cable guard (37) (DET. E) to the pulleys (18) and (22).
- (g) Put a new pressure seal between the plate (28) and gasket (29) on the control cable. Refer to DET. C.
- (h) Use your fingers to tighten the bolts of the pressure seal (26) with their washers (27).

- (i) Install the nylon grommets (1) (14 positions) and (20) (3 positions) in the supports along the fuselage. Refer to DET. B.
- (j) Make sure that there is no interference between the LH forward elevator control cable and the forward aileron torque tube. Refer to [Figure 404](#).

- (2) Install the LH rear control cable (19) as follows:

**NOTE:** These procedures are applicable to the two LH rear control cables (19).

- (a) Connect the end of the LH rear control cable (19) to the sector at the rear torque tube with new cotter pins (23) and (25) and pin (24) (refer to DET. A).
- (b) Put the LH rear control cable (19) on the pulleys (12) and (11).
- (c) Put the gasket (29) and plate (28) on the LH rear control cable (19) (DET. C).

**NOTE:** To prevent air leakage, make sure that the rubber of the control cable with the smaller diameter is turned to the semi-sphere seal.

- (d) Put the LH rear control cable (19) on the pulleys (9), (8) and (7).
- (e) Connect the other end of the LH rear control cable (19) to the LH forward control cable (21) through the turnbuckle (6).
- (f) Install the pin (34) to the support at the carbon box and attach it with the washer (36) and new cotter pin (35) (DET. G).

**WARNING: MAKE SURE THAT YOU MOVE THE CABLE THROUGH THE PULLEY CORRECTLY. BE CAREFUL NOT TO INSTALL THE CABLE ABOVE THE CABLE GUARD.**

- (g) Install the cable guard (33) to the pulley (12) and attach it with the washer (32) and nut (31) (DET. F).

**WARNING: MAKE SURE THAT YOU MOVE THE CABLE THROUGH THE PULLEY CORRECTLY. BE CAREFUL NOT TO INSTALL THE CABLE ABOVE THE CABLE GUARD.**

- (h) Install the cable guard (37) to the pulleys (11), (9), (8) and (7) (DET. E).
  - (i) Put a new pressure seal between the plate (28) and gasket (29) on the control cable. Refer to DET. C.
  - (j) Finger-tighten the bolts of the pressure seal (26) with their washers (27).
- (3) Install the RH forward control cable (2) as follows:

**NOTE:** These procedures are applicable to the two RH forward control cables (2).

- (a) Connect the end of the RH forward control cable (2) to the sector at the forward torque tube with new cotter pins (23) and (25) and pin (24) (refer to DET. A).
- (b) If applicable, put the RH forward control cable (2) on the pulley (22).
- (c) Put the RH forward control cable (2) in the supports (17 positions) along the fuselage and through the wing stub.

- (d) Put the gaskets (29) and plates (28) on the RH forward control cable (2), in the region of the wing stub.

**NOTE:** To prevent air leakage, make sure that the rubber of the control cable with the smaller diameter is turned to the semi-sphere seal.

- (e) Connect the other end of the RH forward control cable (2) to the RH rear control cable (5) through the turnbuckle (4).

**WARNING: MAKE SURE THAT YOU MOVE THE CABLE THROUGH THE PULLEY CORRECTLY. BE CAREFUL NOT TO INSTALL THE CABLE ABOVE THE CABLE GUARD.**

- (f) If applicable, install the cable guard (37) (DET. E) to the pulley (22).
- (g) Put a new pressure seal between the plate (28) and gasket (29) on the control cable. Refer to DET. C.
- (h) Use your finger to tighten the bolts of the pressure seal (26) with their washers (27).
- (i) Install the nylon grommets (1) (14 positions) and (20) (3 positions) in the supports along the fuselage. Refer to DET. B.
- (j) Make sure that there is no interference between the RH forward elevator control cable and the forward aileron torque tube. Refer to [Figure 404](#).

- (4) Install the RH rear control cable (5) as follows:

**NOTE:** These procedures are applicable to the two RH rear control cables (5).

- (a) Connect the end of the RH rear control cable (5) to the sector at the rear torque tube with new cotter pins (23) and (25) and pin (24) (refer to DET. A).
- (b) Put the RH rear control cable (5) on the pulleys (12), (13), (14) and (15).
- (c) Put the gasket (29) and plate (28) on the RH rear control cable (5) (DET. C).

**NOTE:** To prevent air leakage, make sure that the rubber of the control cable with the smaller diameter is turned to the semi-sphere seal.

- (d) Put the RH rear control cable (5) on the pulley (17).
- (e) Connect the other end of the RH rear control cable (5) to the RH forward control cable (2) through the turnbuckle (4).
- (f) Install the pin (34) to the support at the carbon box and attach it with the washer (36) and new cotter pin (35) (DET. G).
- (g) Put a new pressure seal between the plate (28) and gasket (29) on the control cable. Refer to DET. C.
- (h) Use your finger to tighten the bolts of the pressure seal (26) with their washers (27).

**WARNING: MAKE SURE THAT YOU MOVE THE CABLE THROUGH THE PULLEY CORRECTLY. BE CAREFUL NOT TO INSTALL THE CABLE ABOVE THE CABLE GUARD.**

- (i) Install the cable guard (33) to the pulley (12) and attach it with the washer (32) and nut (31) (DET. F).

**WARNING: MAKE SURE THAT YOU MOVE THE CABLE THROUGH THE PULLEY CORRECTLY. BE CAREFUL NOT TO INSTALL THE CABLE ABOVE THE CABLE GUARD.**

- (j) Install the cable guard (37) to the pulleys (13), (14), (15) and (17).
- (5) If you removed the rear control cables, install the pulley (38) as follows:
  - (a) Install bolt (39), washer (40), bushing (41), washer (42), nut (43), and cotter pin (44).
- (6) Use the turnbuckle to stretch the control cable, but do not apply final tension at this time.
- (7) Remove the prop block (Refer to IPC 27-31-03) of the elevator tension regulators (Figure 403) after you adjust the elevator control cables.
- (8) Remove the rig pins from the elevator control system.
- (9) Move the control column forward and backward while you align the pressure seal with the cable.
- (10) Tighten the bolt (26) until it touches the structure surface and turn the bolt (26) 1/4 turn more.

**NOTE:** Make sure that the pressure seals are aligned with the cable and there is no friction between the control cable and the plate to prevent jamming and wear.

J. Follow-on

*SUBTASK 842-003-A*

- (1) Apply tension to the control cables of the elevator control system ( [AMM TASK 27-31-01-700-801-A/500](#)).
- (2) Install new locking clips (29) (refer to Figure 402, DET. D) to the turnbuckles of the elevator control cables.
- (3) On the Circuit Breaker Panel, close the AP1 circuit breaker and remove the DO-NOT-CLOSE tag from it.
- (4) Do an inspection of the fuel quantity indication harness (AMM TASK 28-41-00-200-801-A/600).

**NOTE:** The inspection of fuel quantity indication harness is a part of Critical Design Configuration Control Limitations (CDCCL) in the Airworthiness Limitations (Section 6) of the Maintenance Review Board Report (MRB).

- (5) Only for 145 aircraft:

Install the floor panels 221GF, 231BF, 231FF, 231GF, 241BF, 241DF, 251BF, 251DF, 251FF, 251HF, 261BF, 261DF, 271AF, 271BF, 271CF, 271DF and 272EF (AMM MPP 06-41-02/100).

Only for 140 aircraft:

Install the floor panels 221GF, 231BF, 231FF, 231GF, 241BF, 241DF, 251BF, 251DF, 251GF, 251JF, 261BF, 261DF, 271AF, 271BF, 271CF, 271DF and 271EF (AMM MPP 06-41-02/100).

Only for 135 aircraft:

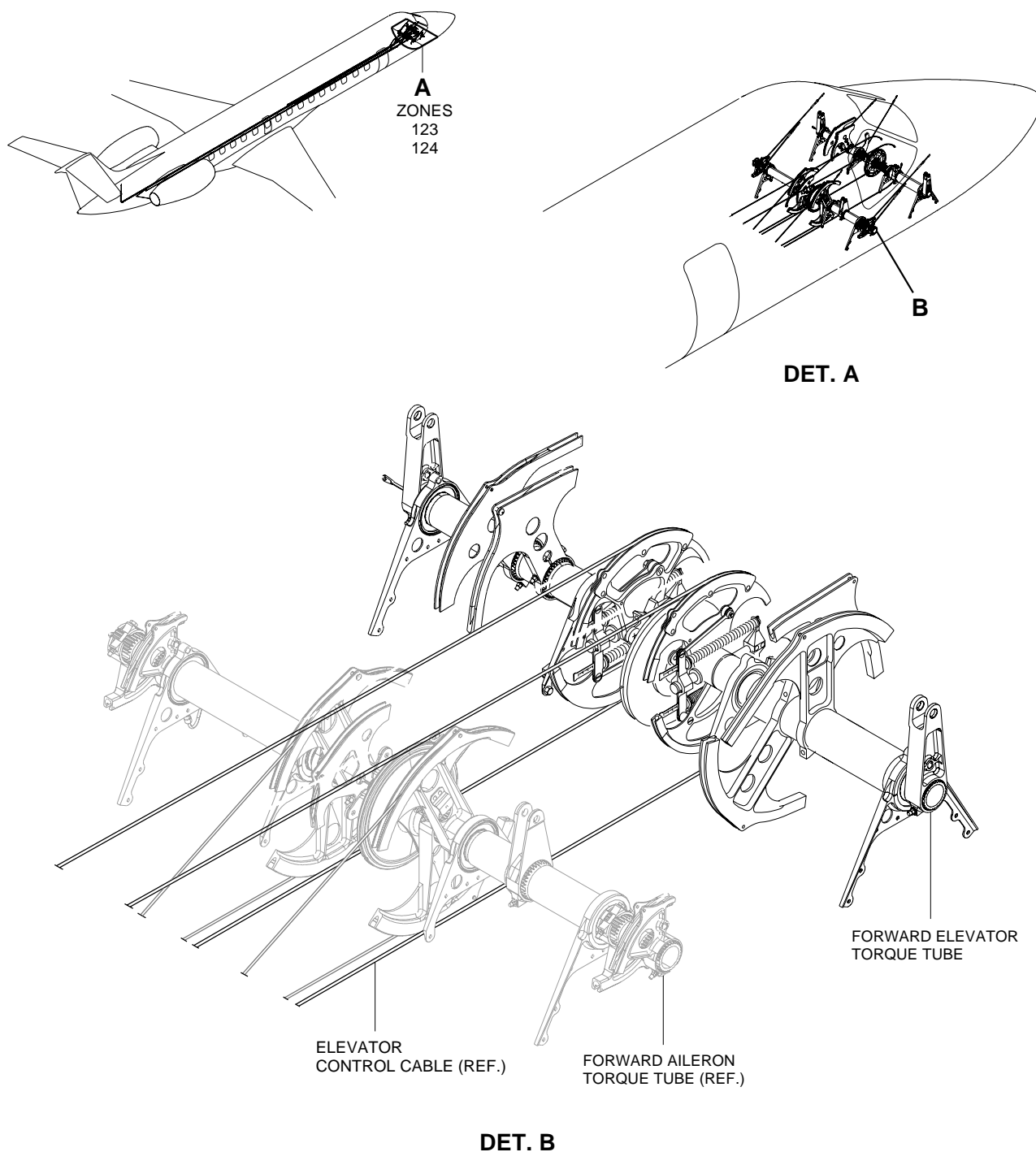
Install the floor panels 221GF, 231BF, 231FF, 231GF, 241BF, 241DF, 251DF, 251FF, 251HF, 261DF, 271AF, 271BF, 271CF, 271DF and 271EF (AMM MPP 06-41-02/100).

- (6) Install the cable protection shroud (AMM TASK 25-27-02-400-801-A/400).
- (7) Install the passenger seats (AMM TASK 25-21-01-400-801-A/400).
- (8) Install the baggage compartment ceiling ( [AMM TASK 25-51-01-400-801-A/400](#)).
- (9) Install cockpit underfloor access hatch 123BL (AMM MPP 06-41-01/100).
- (10) Close door 272DR (AMM MPP 06-41-01/100).
- (11) Close door 312AR (AMM MPP 06-42-00/100).
- (12) Install access panels 192AL, 192BR, 155BZ, 155CZ, 155FZ, 155LZ, 156BZ, 156CZ, 156FZ and 156LZ (AMM MPP 06-41-01/100).
- (13) Install access panels 324BL, 324CL and 325BL (AMM 06-42-01/101).

EFFECTIVITY: ALL

Control Cables of the Elevator Control System - Installation

Figure 404



EM145AMM270871A.DGN

TASK 27-31-01-000-803-A

EFFECTIVITY: ALL

## 6. AUTOPILOT CONTROL CABLE - REMOVAL

### A. General

- (1) This procedure gives the instructions to remove the control cables of the autopilot control system.

### B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
IPC 22-10-04	ELEVATOR SERVO
IPC 27-31-00	ELEVATOR PRIMARY MECHANICAL CONTROL

### C. Zones and Accesses

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

### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
<a href="#">GSE 058</a>	Kit, rig pins, flight controls	To lock the elevator 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 27-31-00	4
Locking clip	IPC 22-10-04	4

### H. Persons Recommended

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

### I. Preparation

**SUBTASK 841-004-A**



- (1) On the Circuit Breaker Panel, open the AP1 circuit breaker and attach a DO-NOT-CLOSE tag to it.
- (2) Remove cockpit underfloor access hatch 123BL (AMM MPP 06-41-01/100).
- (3) Install the rig pins to the elevator control system to lock it in the neutral position.

J. Removal ([Figure 405](#))

*SUBTASK 020-004-A*

**CAUTION:** IDENTIFY THE POSITIONS OF THE CONTROL CABLES TO INSTALL THEM AGAIN IN THE SAME POSITIONS.

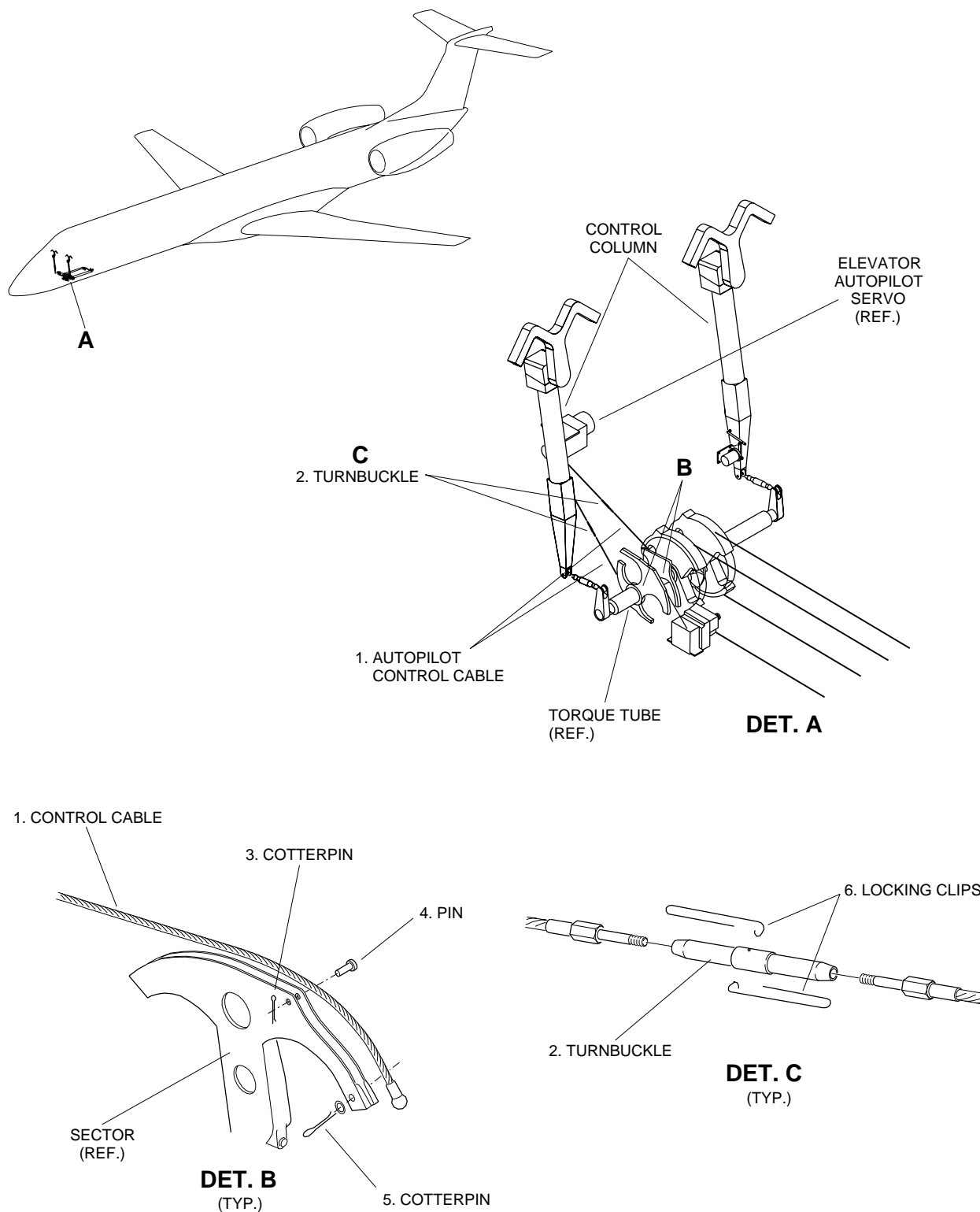
**NOTE:** These procedures are applicable to the two autopilot control cables (1).

- (1) Release the tension of the autopilot control cable (1).
- (2) Disconnect the end of the autopilot control cable (1) from the control cable of the autopilot servo. For this, remove and discard the locking clips (6) (DET. C) and disconnect the turnbuckle (2).
- (3) Disconnect the other end of the autopilot control cable (1) from the sector at the torque tube. For this, remove and discard the cotter pins (3) and (5) and remove pin (4) (refer to DET. B).
- (4) Remove the autopilot control cable (1).

EFFECTIVITY: ALL

Autopilot Control Cable - Installation

Figure 405



145AMM270277.MCE

TASK 27-31-01-400-803-A  
EFFECTIVITY: ALL

## 7. AUTOPILOT CONTROL CABLE - INSTALLATION

### A. General

- (1) This procedure gives the instructions to install the control cables of the autopilot control system.

### B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
<a href="#">AMM TASK 27-31-01-700-802-A/500</a>	TENSION OF THE ELEVATOR AUTOPILOT-SERVO CABLES
IPC 22-10-04	ELEVATOR SERVO
IPC 27-31-00	ELEVATOR PRIMARY MECHANICAL CONTROL

### C. Zones and Accesses

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

### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
<a href="#">GSE 058</a>	Kit, rig pins, flight controls	To lock the elevator 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 27-31-00	4
Locking clip	IPC 22-10-04	4

### H. Persons Recommended

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

I. Installation (Figure 405)

*SUBTASK 420-004-A*

**CAUTION:** THE CONTROL CABLES MUST BE INSTALLED IN THE SAME POSITIONS AS THOSE THEY WERE REMOVED FROM. REFER TO THEIR IDENTIFICATION POSITIONS.

**NOTE:** These procedures are applicable to the two autopilot control cables (1).

- (1) Connect the end of the autopilot control cable (1) to the sector at the torque tube with new cotter pins (3) and (5) and pin (4). Refer to DET. B.
- (2) Connect the other end of the autopilot control cable (1) to the control cable of the autopilot servo (DET. C) through the turnbuckle (2).

J. Follow-on

*SUBTASK 842-004-A*

- (1) Remove the rig pins from the elevator control system.
- (2) Apply tension to the control cables of the autopilot control system ( [AMM TASK 27-31-01-700-802-A/500](#)).
- (3) Install new locking clips (6) to the turnbuckle (2). Refer to Figure 405, DET. C.
- (4) On the Circuit Breaker Panel, close the AP1 circuit breaker and remove the DO-NOT-CLOSE tag from it.
- (5) Install cockpit underfloor access hatch 123BL (AMM MPP 06-41-01/100).