

## CONTROL YOKE - REMOVAL/INSTALLATION

*EFFECTIVITY: ALL*

### 1. General

- A. This section gives the procedures to remove and install the control yokes of the aileron control system.
- B. These procedures are applicable to the LH and RH control yokes.
- 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
27-11-08-000-801-A	CONTROL YOKE - REMOVAL	ALL
27-11-08-400-801-A	CONTROL YOKE - INSTALLATION	ALL

TASK 27-11-08-000-801-A

EFFECTIVITY: ALL

## 2. CONTROL YOKE - REMOVAL

### A. General

- (1) This procedure gives the instructions to remove the control yoke of the aileron control system.

### B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM MPP 06-41-02/100	-
<a href="#">AMM TASK 27-36-03-000-801-A/400</a>	STICK SHAKER - REMOVAL

### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
220	221DF	Cockpit
220	222DF	Cockpit

### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
<a href="#">GSE 058</a>	Kit, rig pins, flight controls	To lock the aileron 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	Cockpit
1	Helps the other technician	Cockpit

### I. Preparation

#### SUBTASK 841-002-A

- (1) Remove cockpit underfloor-access hatch 123BL (AMM MPP 06-41-01/100).
- (2) Remove floor panel 221DF or 222DF (AMM MPP 06-41-02/100) as applicable.

- (3) Remove the stick shaker (AMM TASK 27-36-03-000-801-A/400).

J. Removal (Figure 401)

SUBTASK 020-002-A

- (1) Do this step to remove the control yoke (18) from the control column.
  - (a) Install the rig pin to the control yoke (18) (Figure 402).
  - (b) Disconnect the electrical connector (28) from the stick shaker (29). Refer to DET. G.
  - (c) Disconnect the electrical connector (27) (refer to DET. F). For this, remove the nuts (24), washers (25), and screws (26) (4 positions).
  - (d) Cut and remove the tiedown straps (1) (4 positions) to release the electrical harness from the control column.
  - (e) Remove the cover (30) from the control column.
  - (f) Remove the nut (31) (4 position), washer (32) (4 position), and bolt (34) to release the attaching sheet (33). Refer to DET. H.
  - (g) Remove the attaching sheet (33) and then remove the shaft (35) from the control yoke (18).
- (2) Do this step to remove the shaft (35) and the chain (4).
  - (a) Install the rig pins to the aileron torque tube (Figure 402).
  - (b) Remove the cover (7). For this, remove the screws (8) (3 positions) and (6).
  - (c) Remove the chain protector (14). For this, remove the nuts (16), washers (15) and (13), and bolts (12) (3 positions).
  - (d) Make a mark on the link of the chain (4) as follows:
    - 1 Keep the control yoke (18) in the neutral position. If necessary, install the rig pin.
    - 2 Make a mark on the link of the chain (4) which is engaged with the cog on the top of the sprocket (5). Refer to DET. D.

NOTE: The upper cog is the one that is in the center line and Make a mark on the link above the upper hole of the sprocket (5).
  - (e) Disconnect the ends of the chain (4) from the ends of the control cables. For this, loosen the tension on the control cables and remove the cotter pin (19), nut (20), washers (21) and (23), and bolt (22) (2 positions). Discard the cotter pin (19). Refer to DET. E.
  - NOTE: To release the tension on the control cables, remove and discard the locking clips and loosen the two turnbuckles alternately.
  - (f) Lift the chain (4) and remove it from the sprocket (5).

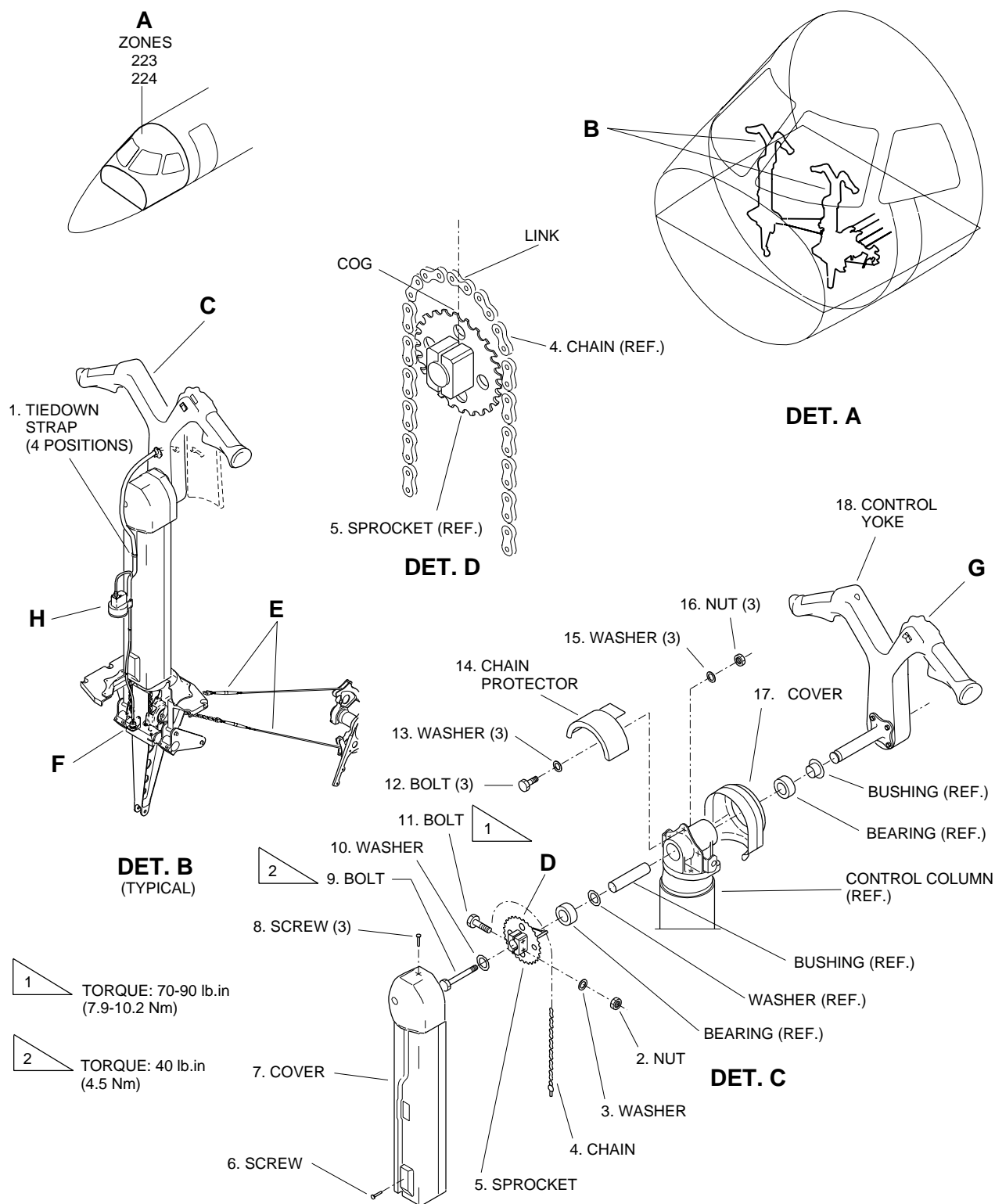


- (g) Remove the bolt (9) and washer (10).
- (h) Remove the nut (2), washer (3), and bolt (11).
- (i) Remove the sprocket (5).
- (j) Remove the shaft (35).

EFFECTIVITY: ALL

Control Yoke - Removal/Installation

Figure 401 - Sheet 1

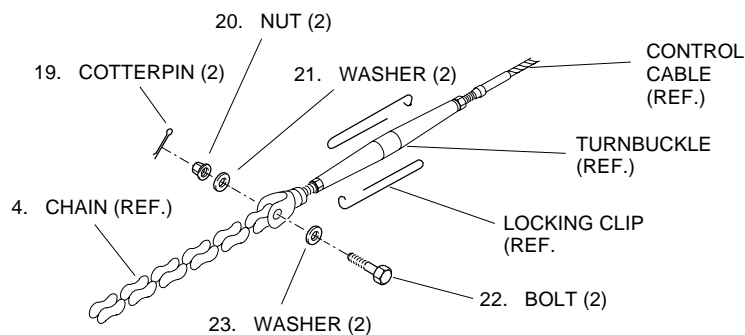


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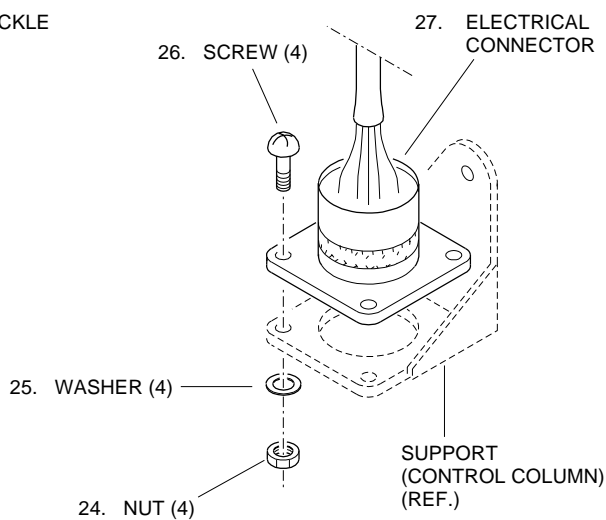
EFFECTIVITY: ALL

Control Yoke - Removal/Installation

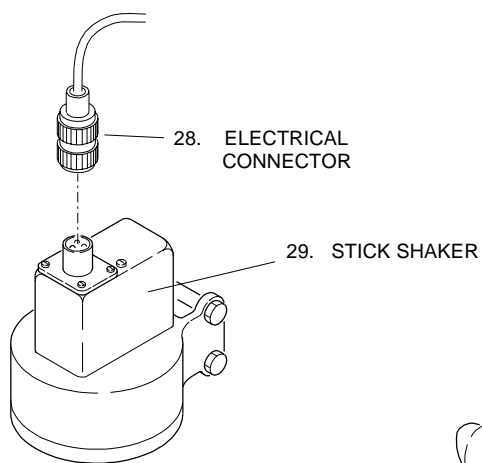
Figure 401 - Sheet 2



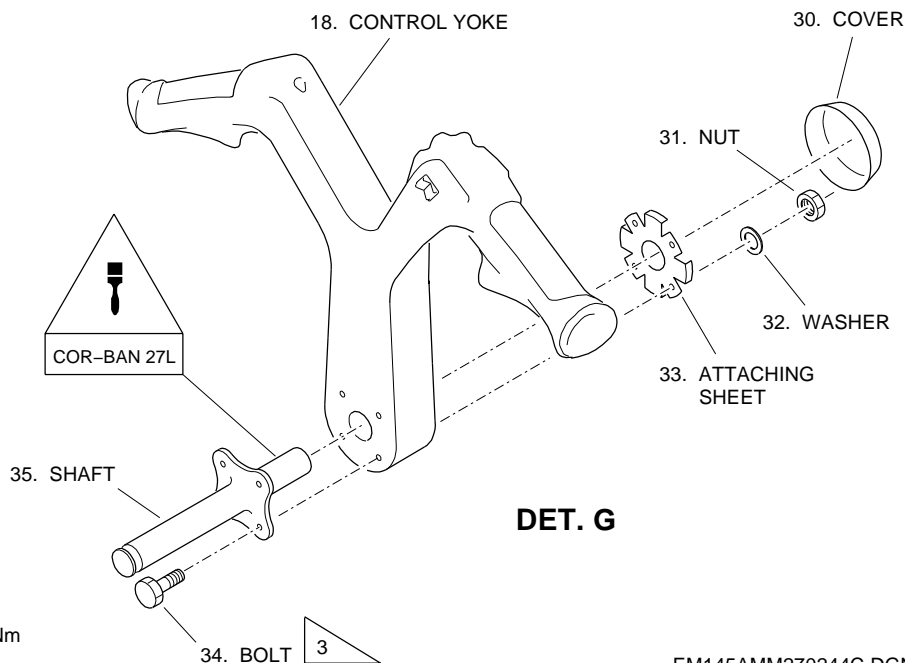
**DET. E**



**DET. F**



**DET. H**



**DET. G**

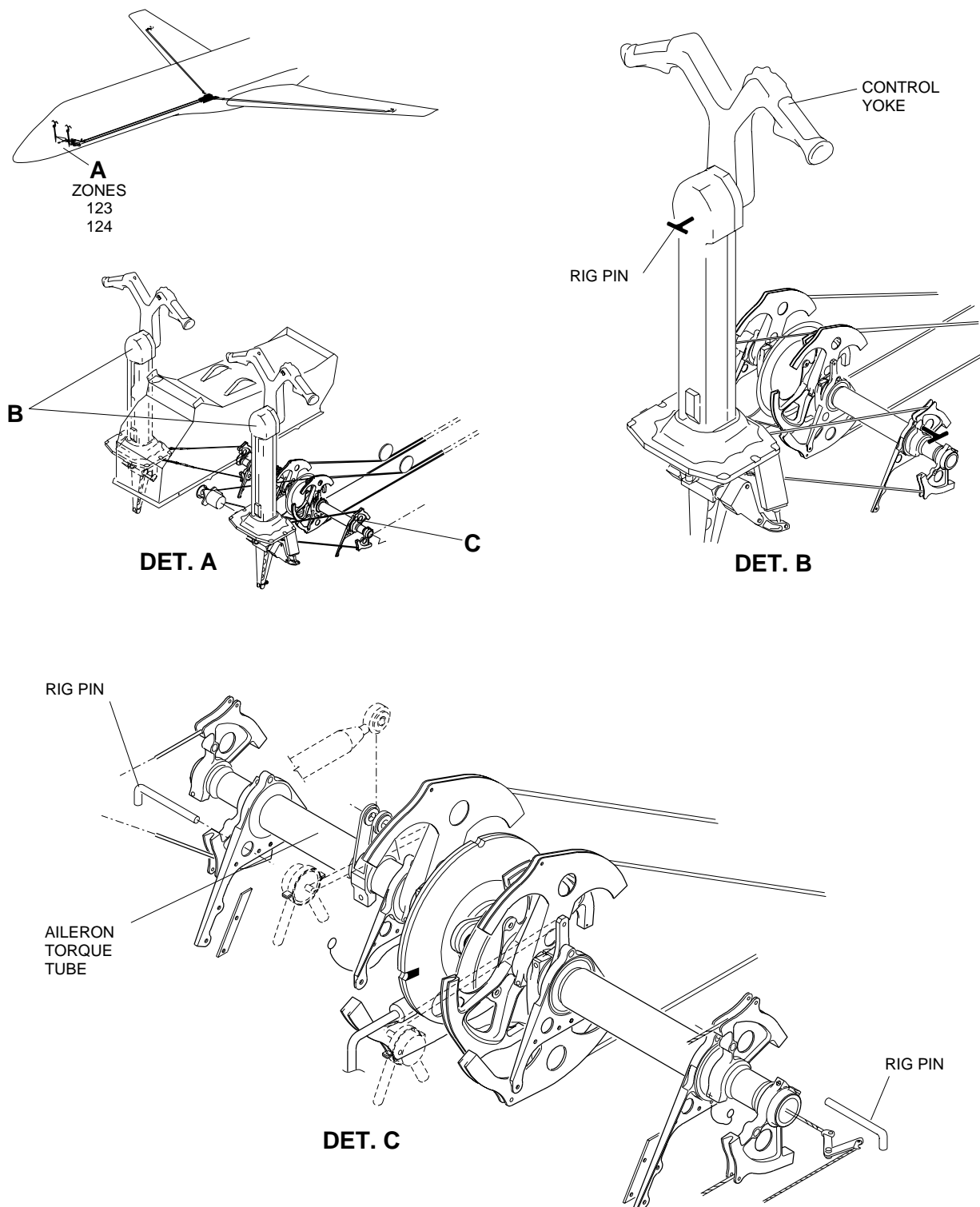
3 TORQUE : 7.91 TO 10.17 Nm  
(70 TO 90 lbf.in)

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EFFECTIVITY: ALL

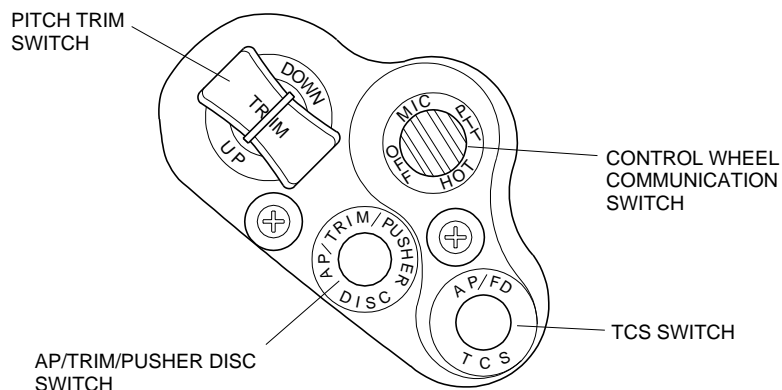
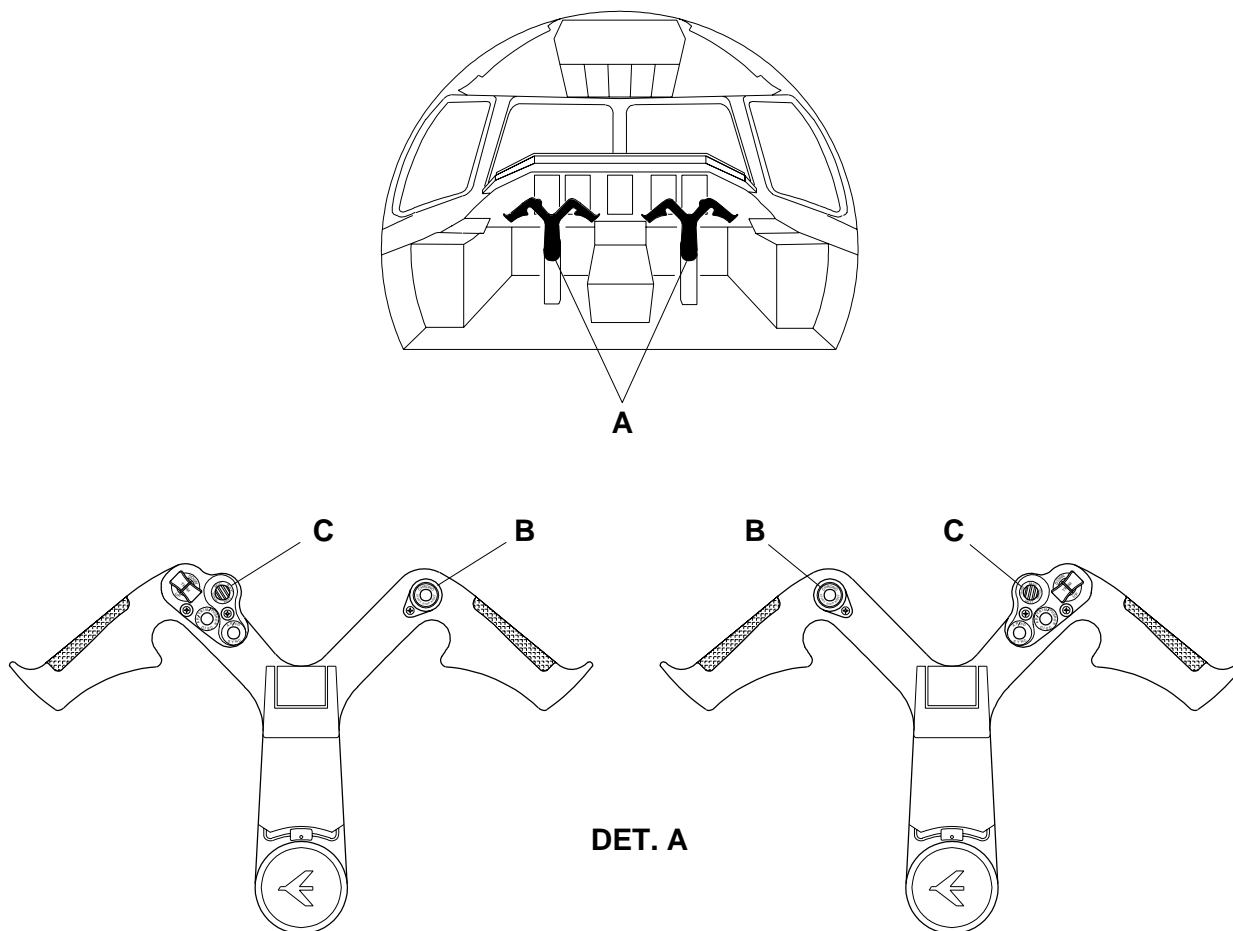
Rig Pins Location

Figure 402

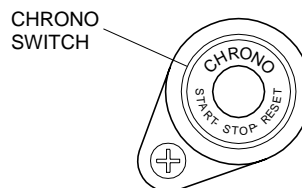


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EFFECTIVITY: ALL  
Control Yoke Switches  
Figure 403



DET. C

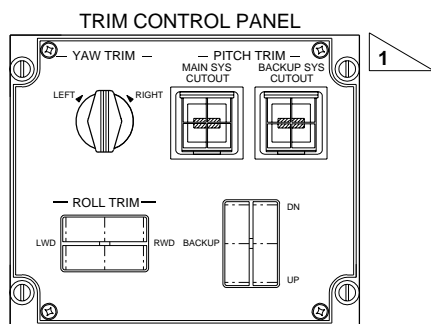
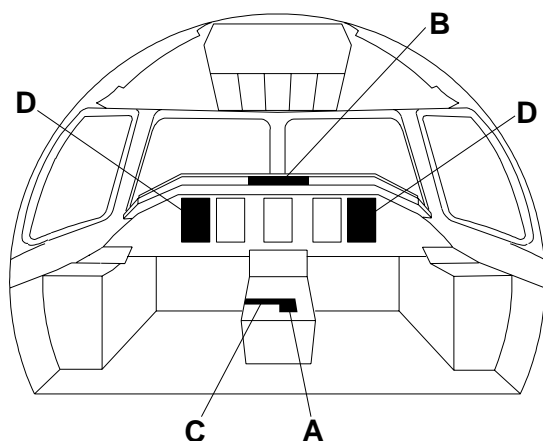


DET. B

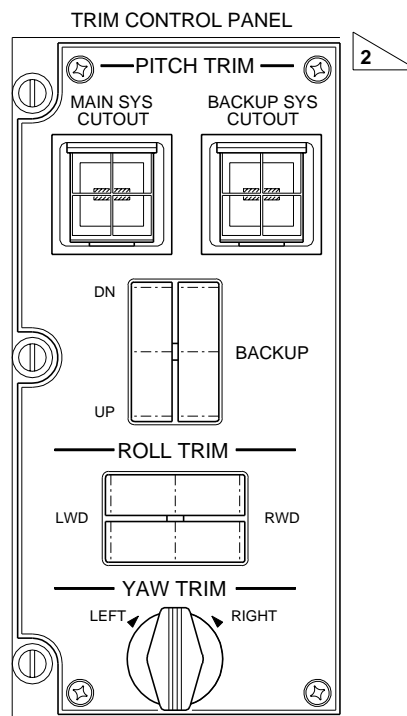
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The diagram illustrates the cockpit environment. A callout 'A' points to the 'ZONES 223 224' display on the left side of the cockpit. A callout 'B' points to the 'ET/CHR READOUT' on the right side of the cockpit. A callout 'C' points to the 'ET PUSHBUTTON' located below the readout.

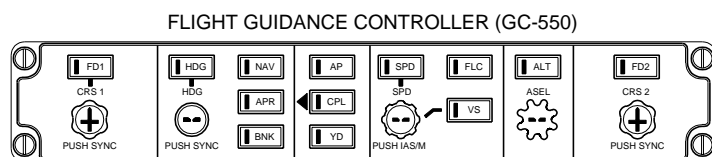
EFFECTIVITY: ALL  
Autopilot - Operational Test  
Figure 405



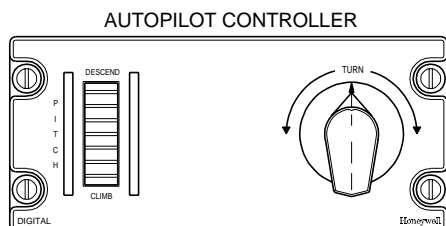
DET. A



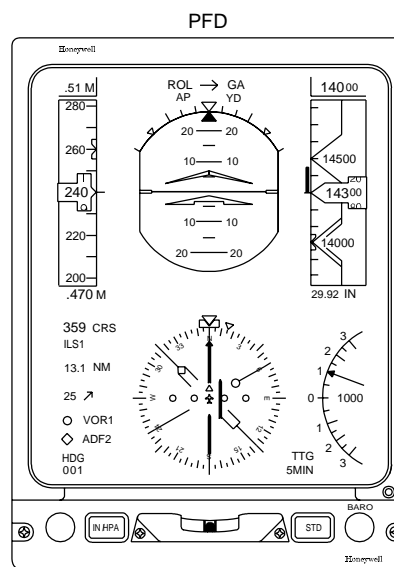
DET. A



DET. B



DET. C

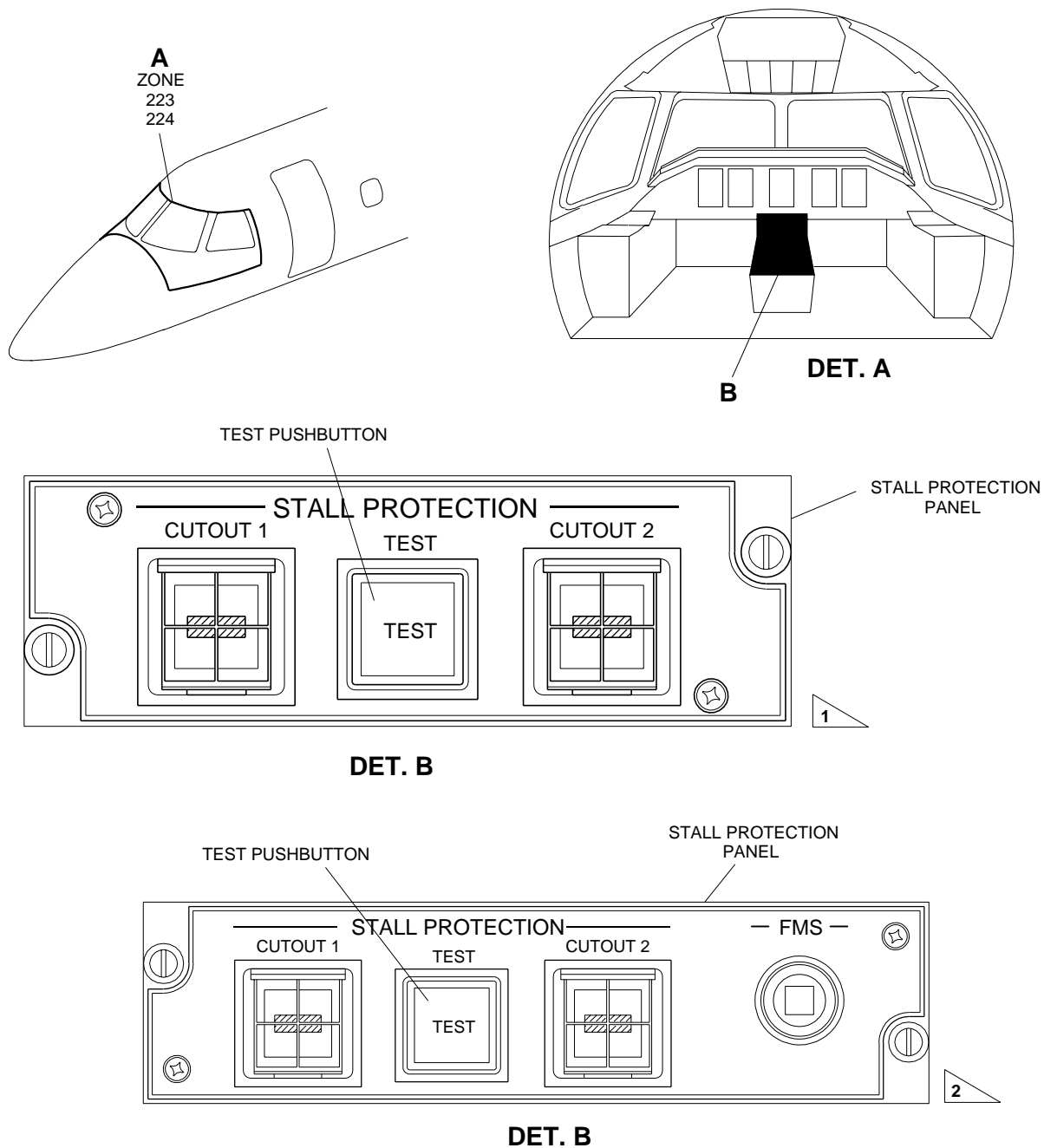


DET. D

- 1 APPLICABLE TO AIRCRAFT WITH DUAL FMS INSTALLED.
- 2 APPLICABLE TO AIRCRAFT WITH SINGLE FMS INSTALLED.

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EFFECTIVITY: ALL  
Stall Protection Panel  
Figure 406



1 APPLICABLE TO AIRCRAFT WITH SINGLE FMS INSTALLED.

2 APPLICABLE TO AIRCRAFT WITH DUAL FMS INSTALLED.

145AMM270060.MCE C

TASK 27-11-08-400-801-A

EFFECTIVITY: ALL

### 3. CONTROL YOKE - INSTALLATION

#### A. General

(1) This procedure gives the instructions to install the control yoke of the aileron control system.

#### B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM MPP 06-41-02/100	-
AMM SDS 23-12-00/1	
AMM SDS 23-81-00/1	
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 27-10-00-700-801-A/500	AILERON ADJUSTMENT AND CHECK
AMM TASK 27-11-01-700-801-A/500	-
IPC 27-00-00	FLIGHT CONTROLS
IPC 27-11-00	AILERON PRIMARY MECHANICAL CONTROL

#### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
220	221DF	Cockpit
220	222DF	Cockpit

#### D. Tools and Equipment

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

#### 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

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MS3367-4-9	Tiedown strap	4

(Continued)

<i>SPECIFICATION (BRAND)</i>	<i>DESCRIPTION</i>	<i>QTY</i>
MS20995C32	Lockwire	As necessary
MEP 09-075	Corrosion-Inhibiting Compound (COR-BAN 27L)	As necessary

G. Expendable Parts

<i>ITEM</i>	<i>IPC REFERENCE (VENDOR REFERENCE)</i>	<i>QTY</i>
Cotter pin	IPC 27-00-00	2
Locking Clip	IPC 27-11-00	2

H. Persons Recommended

<i>QTY</i>	<i>FUNCTION</i>	<i>PLACE</i>
1	Does the task	Cockpit
1	Helps the other technician	Cockpit

I. Installation (Figure 401)

*SUBTASK 420-002-A*

**WARNING: COR-BAN 27L 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.**

- (1) Do this step to install the shaft (35) to the control yoke (18).
  - (a) Apply corrosion inhibiting compound to the shaft (35) as shown in (Figure 401).
  - (b) Install the shaft (35) to the control yoke (18). Use attaching sheet (33), bolt (34) (4 position), washer (32) (4 position), and nut (31) (4 position). Refer to DET. G.
  - (c) Apply torque as shown in (Figure 401). Add drag torque.
- (2) Put the control yoke (18) to the control column. Refer to DET. C.
- (3) Put the sprocket (5) on the end of the shaft of the control yoke (18).
- (4) Attach the sprocket (5) to the end of the shaft of the control yoke (18) with the bolt (11), washer (3), and nut (2).
  - Apply torque as shown in (Figure 401).
- (5) Install the bolt (9) and washer (10).
  - Apply torque as shown in (Figure 401) to the bolt (9). Add drag torque and safety them.

- (6) Put the chain (4) on the sprocket (5) and along the control column.
- (7) Keep the control yoke (18) in the neutral position and make sure that the link of the chain (4) with the mark is engaged with the upper cog of the sprocket (5).  
**NOTE:** The upper cog is the one that is in the center line and above the upper hole of the sprocket (5).
- (8) Connect the ends of the chain (4) to the ends of the control cables. Attach with the bolts (22), washers (21) and (23), nuts (20), and new cotter pins (19) (2 positions). Refer to DET. E.
- (9) Put the chain protector (14) in its installation position and attach it with the bolts (12), washers (13) and (15), and nuts (16) (3 positions).
- (10) Put the cover (17) in its installation position.
- (11) Install the cover (30) to the control yoke (18).
- (12) Put the cover (7) in its installation position and attach it with the screws (8) (3 positions) and (6).
- (13) Connect the electrical connector (28) to the stick shaker (29). Refer to DET. G.
- (14) Attach the electrical harness of the control yoke (18) to the control column with the tiedown straps (1) (4 positions).
- (15) Connect the electrical connector (27) (refer to DET. F) and attach it with the screws (26), washers (25), and nuts (24) (4 positions).

**J. Follow-on**

**SUBTASK 842-002-A**

- (1) Do a check of the tension of the aileron control cables (AMM TASK 27-11-01-700-801-A/500).
- (2) Install new locking clips to the turnbuckles. Refer to (Figure 401), Sheet 2.
- (3) Remove the rig pins from the aileron control system.
- (4) Do a check on the aileron control system ([AMM TASK 27-10-00-700-801-A/500](#)).
- (5) Make sure that the aircraft is energized with the External DC Power Supply ( [AMM TASK 20-40-01-860-801-A/200](#)).
- (6) For CTA/FAA/IAC-AR-certified aircraft, do a check of the pilot's (and/or copilot's, as applicable) pusher quick-disconnect switch.
  - (a) Make sure that the TEST pushbutton light, on the SPS control panel, is on (Figure 406).
  - (b) If the TEST pushbutton light is off, reset the system. For it, open the STALL PROTECTION CHANNEL 1 and CHANNEL 2 circuit breakers, on the Circuit Breaker panel.

**NOTE:** • When you open a circuit breaker, on the Circuit Breaker Panel, the MASTER CAUTION lights and/or WARNING CAUTION lights on

the glareshield panel, can flash. When it occurs, push one of the MASTER CAUTION lights and/or one of the WARNING CAUTION lights to turn them off.

- When you open/close a circuit breaker on the Circuit Breaker Panel, messages not related with this task can come into view/go out of view on the EICAS display. Ignore them

Result:

- 1 The TEST pushbutton light comes on.
- 2 After 30 seconds, the stall protection system will be reset.

- (c) Push the TEST pushbutton on the stall protection panel and immediately push the quick-disconnect switch and hold it pushed until the shakers finish its actuation.

Result:

- 1 The pusher must not operate.

- (7) If you remove the pilot control yoke, do a check of the pilot Quick-Disconnect switch as follows.

- Operate the pilot trim switch on the control yoke (Figure 403).
- While the system operates, push the pilot Quick-Disconnect switch, on the pilot control yoke, and keep it pushed.

Result:

- 1 The system stops.

- Operate the copilot trim switch on the control yoke (Figure 403).
- While the system operates, push the pilot Quick-Disconnect switch, on the pilot control yoke, and keep it pushed.

Result:

- 1 The system stops.

- (8) If you remove the copilot control yoke, do a check of the copilot Quick-Disconnect switch as follows.

- Operate the pilot trim switch on the control yoke (Figure 403).
- While the system operates, push the copilot Quick-Disconnect switch, on the copilot control yoke, and keep it pushed.

Result:

- 1 The system stops.

- Operate the copilot trim switch on the control yoke (Figure 403).
- While the system operates, push the copilot Quick-Disconnect switch, on the copilot control yoke, and keep it pushed.

Result:

- 1 The system stops.

- (9) Do the test of the pilot (and/or copilot, as applicable) control wheel communication switch, as follows:

- Set RMU 1 (RMU 2) to the COM 1 (COM 2) window ([AMM SDS 23-81-00/1](#)).

- (b) Tune in the COM 1 (COM 2) system, on RMU 1 (RMU 2), to a local ground station or to a hand-held COM ([AMM SDS 23-12-00/1](#)).
  - (c) On the pilot (copilot) DAP, select the COM 1 (COM 2) microphone switch and set the COM 1 (COM 2) volume control to mid range.
  - (d) On the control yoke, momentarily push the PTT switch.  
Result:
    - 1 RMU 1 (RMU 2) shows the TX indication, on the COM 1 (COM 2) window.
  - (e) Speak with the local ground station, through the boom and hand microphones, and make sure that the transmission and reception of audio are good.
- (10) Do the check of the CHR function of the chrono switch as follows:
- (a) Put the selector switch in the LOC or GMT position. Refer to Figure 404.
  - (b) Push the chrono switch.  
Result:
    - 1 The chronometer sweep hand starts to move.
    - 2 The hour digits go off.
    - 3 The minute digits start.
  - (c) Push the chrono switch again.  
Result:
    - 1 The minute counter and chronometer sweep hand stop.
- (11) Do the check of the Autopilot Roll axis as follows (Figure 405):
- (a) Center the control wheel.
  - (b) On the PFD, set the Heading bug to the fore lubber line.
  - (c) On GC-550, select the HDG mode.  
Result:
    - 1 On the PFDs, the HDG annunciators come on.
  - (d) On GC-550, push the AP engage pushbutton.  
Result:
    - 1 On the PFDs, the AP and YD annunciators come on.
  - (e) On the Autopilot controller (PC-400), turn the TURN knob totally clockwise.  
Result:
    - 1 The HDG annunciator goes out of view on the PFDs.
    - 2 The Autopilot and control wheel obey the TURN knob command.
  - (f) On the Autopilot controller (PC-400), turn the TURN knob totally counterclockwise.  
Result:
    - 1 The Autopilot and control wheel obey the TURN knob command.
  - (g) Push and release the AP/TRIM/DISC switch, on the control wheel.  
Result:
    - 1 The Autopilot disengages.



# AIRCRAFT MAINTENANCE MANUAL

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