PITOT-STATIC SYSTEM - INSPECTION/CHECK

EFFECTIVITY: ALL

1. General

   A. This section gives the procedures to do the inspection of the pitot/static ports to make sure that they contain no unwanted material.

   B. Use the applicable torque wrench for the correct torque application. If it is necessary to use extensions, the torque wrench must be adjusted to make an allowance for the torque value increase or decrease. Refer to the torque connection method in (AMM MPP 20-10-01/200)

   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*
34-13-00-200-801-A ♦	PITOT/STATIC PORTS - INSPECTION	ALL
34-13-00-200-802-A	PITOT DRAIN HOSE - INSPECTION	POST-MOD S.B. 145-34-0008
34-13-00-200-803-A	PITOT LINES - INSPECTION	ALL
34-13-00-220-801-A	PITOT SENSORS - DAMAGE ASSESSMENT	ALL

TASK 34-13-00-200-801-A
EFFECTIVITY: ALL

2. PITOT/STATIC PORTS - INSPECTION

A. General

(1) This task gives the procedures to do the visual inspection of the pitot/static ports for absence of foreign matter.

B. Zones and Accesses

Not Applicable

C. Tools and Equipment

Not Applicable

D. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially Available	Inspection mirror	To inspect the pitots	

E. Consumable Materials

Not Applicable

F. Expandable Parts

Not Applicable

G. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	On the aircraft

H. Preparation

SUBTASK 841-002-A

(1) Make sure that the aircraft is safe for maintenance.

(2) Make sure that the Sensors (PITOT 1/TAT 1/AOA 1, PITOT 3 and PITOT 2/TAT 2/AOA 2) pushbuttons, on the overhead panel, are set at OFF.

(3) On the circuit breaker panel, located on the cockpit ceiling, make sure that the SENSORS HTG circuit breaker is open.

I. Inspect (Visual Inspection) Pitot/Static Ports for Absence of Foreign Material (Figure 601)

SUBTASK 212-002-A

WARNING: TO PREVENT INJURY TO PERSONS, DO NOT TOUCH THE PITOT, PITOT/ STATIC SENSORS, ANEMOMETRIC STATIC PORTS, AND INTERNAL TUBES IMMEDIATELY AFTER THE HEATER WAS TURNED OFF.

WARNING: BE CAREFUL WHEN YOU TOUCH SHARP EDGES. THEY CAN CAUSE INJURIES TO YOUR FINGERS.

(1) Do a visual inspection of the pitots for contamination.

(2) Do a visual inspection of the pitots for general condition, dirt, or residues of paint.

(3) For pitot 1 and 2, do a visual inspection of pitot pressure opening and drain hole. Make sure that no foreign matter obstructs the holes.

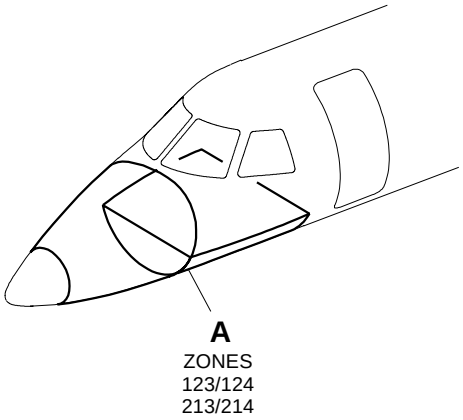
(4) For pitot 3, do a visual inspection of pitot pressure opening, static ports, and drain hole. Make sure that no foreign matter obstructs the holes.

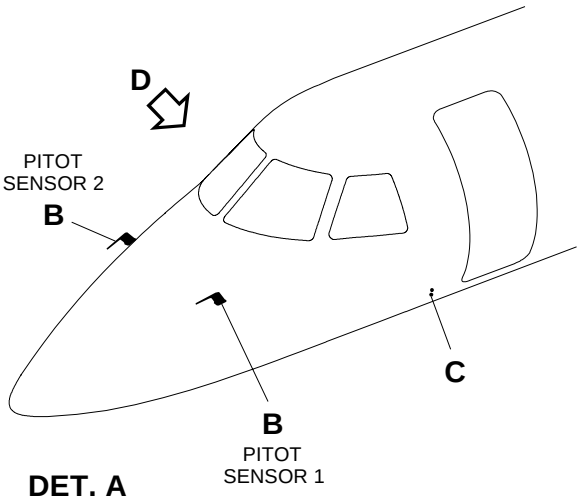
NOTE: If necessary, use a mirror to do the inspection.

(5) Do a visual inspection of the anemometric static ports 1, 2, 3, and 4. Make sure that no foreign matter obstructs the ports.

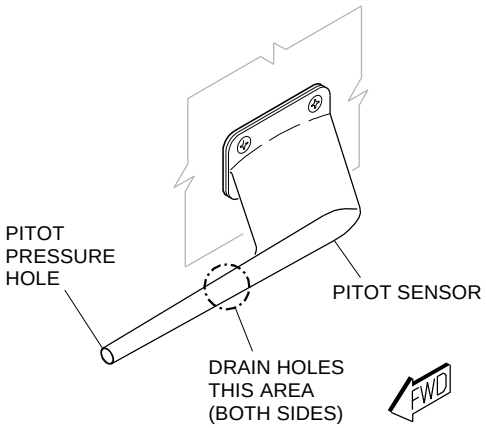
EFFECTIVITY: ALL

Pitot/Static Ports - Visual Inspection
Figure 601

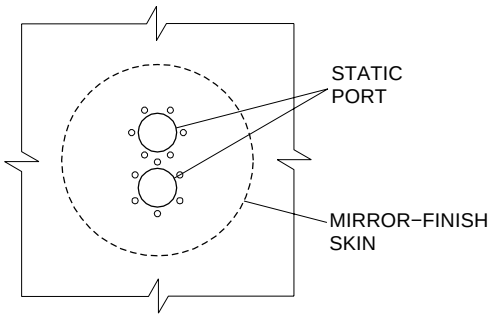




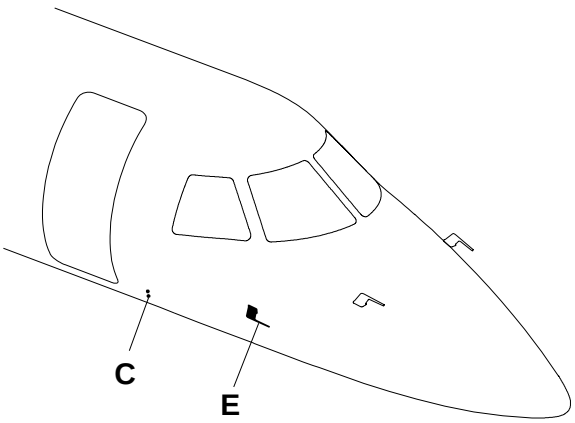
DET. A



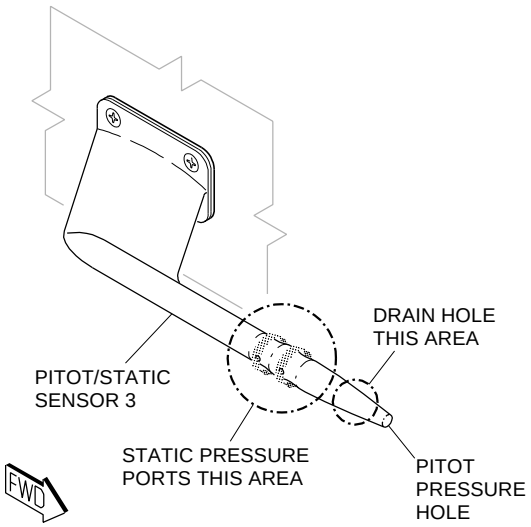
DET. B



DET. C



VIEW D



DET. E

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TASK 34-13-00-200-802-A
EFFECTIVITY: POST-MOD S.B. 145-34-0008

3. PITOT DRAIN HOSE - INSPECTION

A. General

(1) This task gives the procedures to inspect the pitot drain hose for the presence of water in the pitot lines.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-01/100	-
AMM TASK 34-13-00-680-801-A/300	PITOT-STATIC SYSTEM - DRAIN
S.B.145-34-0070	-

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
113	113AZ	NLG compartment left side
114	114AZ	NLG compartment right side
213	113CZ	Electronic compartment - LH upper side
214	113CZ	Electronic compartment - RH upper side

D. Tools and Equipment

Not Applicable

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	Nose landing gear compartment

I. Preparation

SUBTASK 841-003-A

(1) Make sure that the nose-landing-gear safety pin is installed.

(2) (PRE-MOD S.B.145-34-0070) On the nose-landing-gear compartment, remove the 113AZ and 114AZ access panels (AMM MPP 06-41-01/100).

(3) (POST-MOD S.B.145-34-0070) Open access door 113CZ (AMM MPP 06-41-01/100).

J. Inspect (General Visual) Pitot Drain Hose for the Presence of Water in Pitot Lines (Figure 602) (Figure 603) (Figure 604)

SUBTASK 212-003-A

(1) NOTE: A level indicator float in the clear PVC hose permits an easy inspection for the presence of water.

Visually examine the left and right pitot drain hoses for presence of water in the pitot lines.

If there is water, drain the pitot lines (AMM TASK 34-13-00-680-801-A/300).

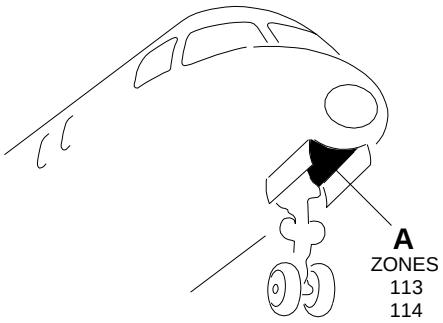
K. Follow-on

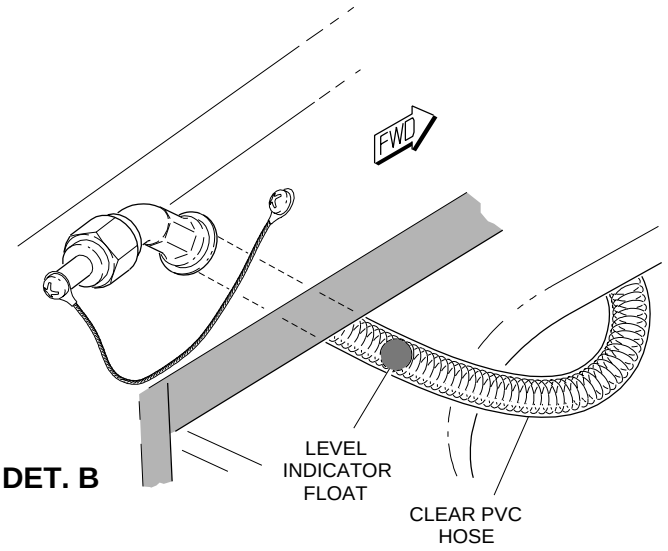
SUBTASK 842-002-A

(1) (PRE-MOD S.B.145-34-0070) On the nose-landing-gear compartment, install the 113AZ and 114AZ access panels (AMM MPP 06-41-01/100).

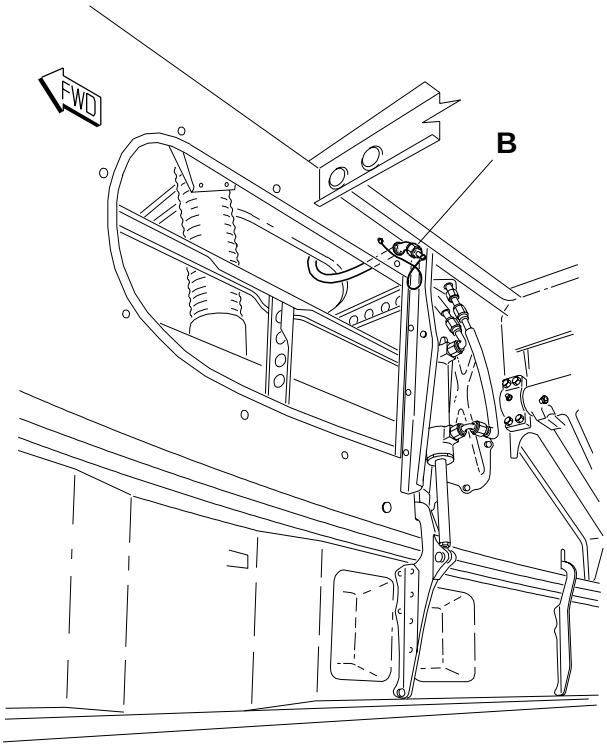
(2) (POST-MOD S.B.145-34-0070) Close access door 113CZ (AMM MPP 06-41-01/100).

EFFECTIVITY: PRE-MOD S.B. 145-34-0021
Pitot Drain Hose - Inspection
Figure 602

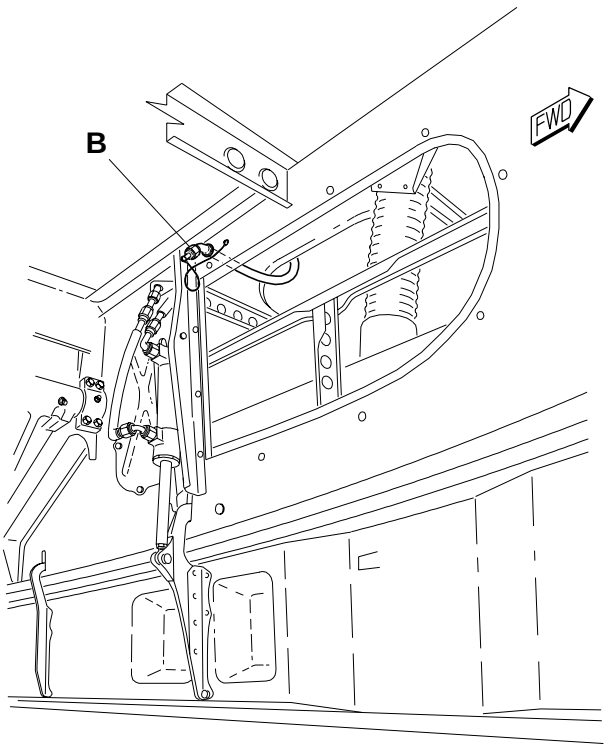




DET. B



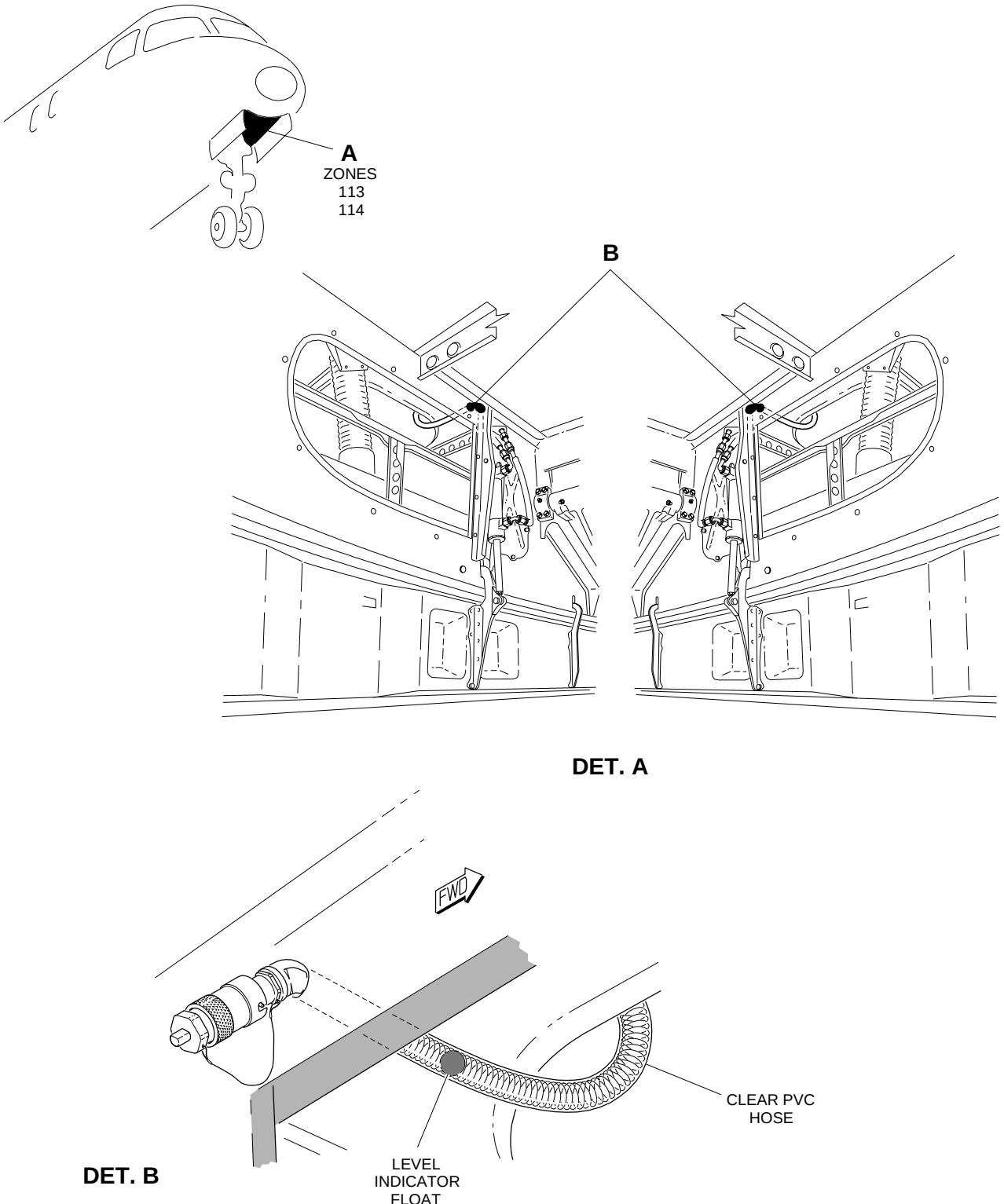
DET. A



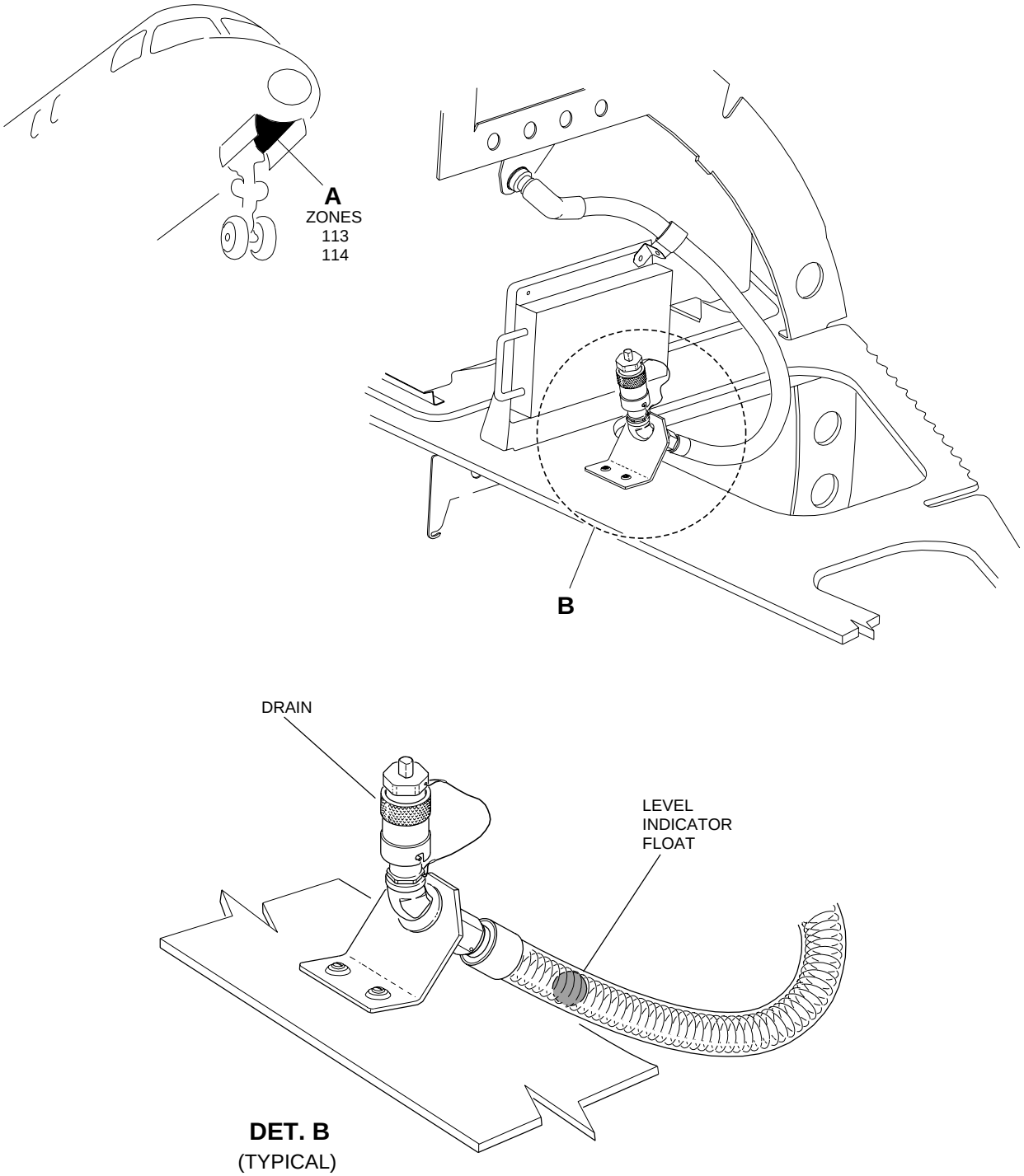
DET. A

145AMM340293.MCE A

EFFECTIVITY: POST-MOD S.B. 145-34-0021 AND PRE-MOD S.B. 145-34-0070
Pitot Drain Hose - Inspection
Figure 603



EFFECTIVITY: POST-MOD S.B. 145-34-0070
Pitot Drain Hose - Inspection
Figure 604



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TASK 34-13-00-200-803-A
EFFECTIVITY: ALL

4. PITOT LINES - INSPECTION

A. General

(1) This task gives the procedures to do a visual inspection on the pitot lines to make sure that their geometric design is not bent.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-01/100	-
AMM MPP 30-31-03/400	- REMOVAL/INSTALLATION
AMM MPP 34-13-05/400	- REMOVAL/INSTALLATION
AMM TASK 34-13-05-400-801-A/400	PITOT SENSOR TUBING - INSTALLATION
S.B.145-25-0110	-
S.B.145-30-0056	-

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
213	113CZ	Forward Electronic Compartment

D. Tools and Equipment

Not Applicable

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	Forward Electronic Compartment

I. Preparation

SUBTASK 841-004-A

(1) Make sure that the aircraft is safe for maintenance.

(2) Make sure that the Sensors (PITOT 1/TAT 1/AOA 1, PITOT 3 and PITOT 2/TAT 2/AOA 2) pushbuttons on the overhead panel are set at OFF.

(3) Open access door 113CZ (AMM MPP 06-41-01/100).

(4) (POST-MOD S.B.145-25-0110) To get access to the pitot sensor base:

- Remove the polyimide adhesive tape from the covering insulation blanket, as applicable.
- Open the covering insulation blanket through the hook-and-loop fastener.

(5) (PRE-MOD S.B.145-30-0056) Remove the insulation blankets and, if applicable, the heaters from the tubes (AMM MPP 30-31-03/400).

(6) (POST-MOD S.B.145-30-0056) Remove the heaters from the tubes (AMM MPP 30-31-03/400).

J. Inspect (Visual Inspection) Pitot lines for linearity assembly. (Figure 605) (Figure 606)

SUBTASK 212-004-A

WARNING: TO PREVENT INJURY TO PERSONS, DO NOT TOUCH THE PITOT, PITOT/ STATIC SENSORS, ANEMOMETRIC STATIC PORTS, AND INTERNAL TUBES IMMEDIATELY AFTER THE HEATER WAS TURNED OFF.

(1) Examine the items that follow of the pitot lines system 1 and 2, for correct position, making sure that the lines assembly are not bent in order to prevent water accumulation: (Figure 605)

- Tubes.
- Hoses.
- Fittings.
- Clamps.

NOTE:
- If damage is found, replace the applicable parts refer to AMM MPP 34-13-05/400.
- If you have either a different or undetermined scenario as described in this procedure, please contact the EMBRAER Technical Support Department.

(2) Make sure the total pressure tubes inclination (systems 1 and 2) is according to Figure 606. This is to avoid contact between the tubes and structural elements.

NOTE: If the tube inclination is different from Figure 606, correct it. Refer to AMM TASK 34-13-05-400-801-A/400.

K. Follow-on

SUBTASK 842-003-A

(1) (PRE-MOD S.B.145-30-0056) Install the insulation blankets and, if applicable, the heaters to the tubes (AMM MPP 30-31-03/400).

(2) (POST-MOD S.B.145-30-0056) Install the heaters to the tubes (AMM MPP 30-31-03/400).

(3) (POST-MOD S.B.145-25-0110) Install the following items:

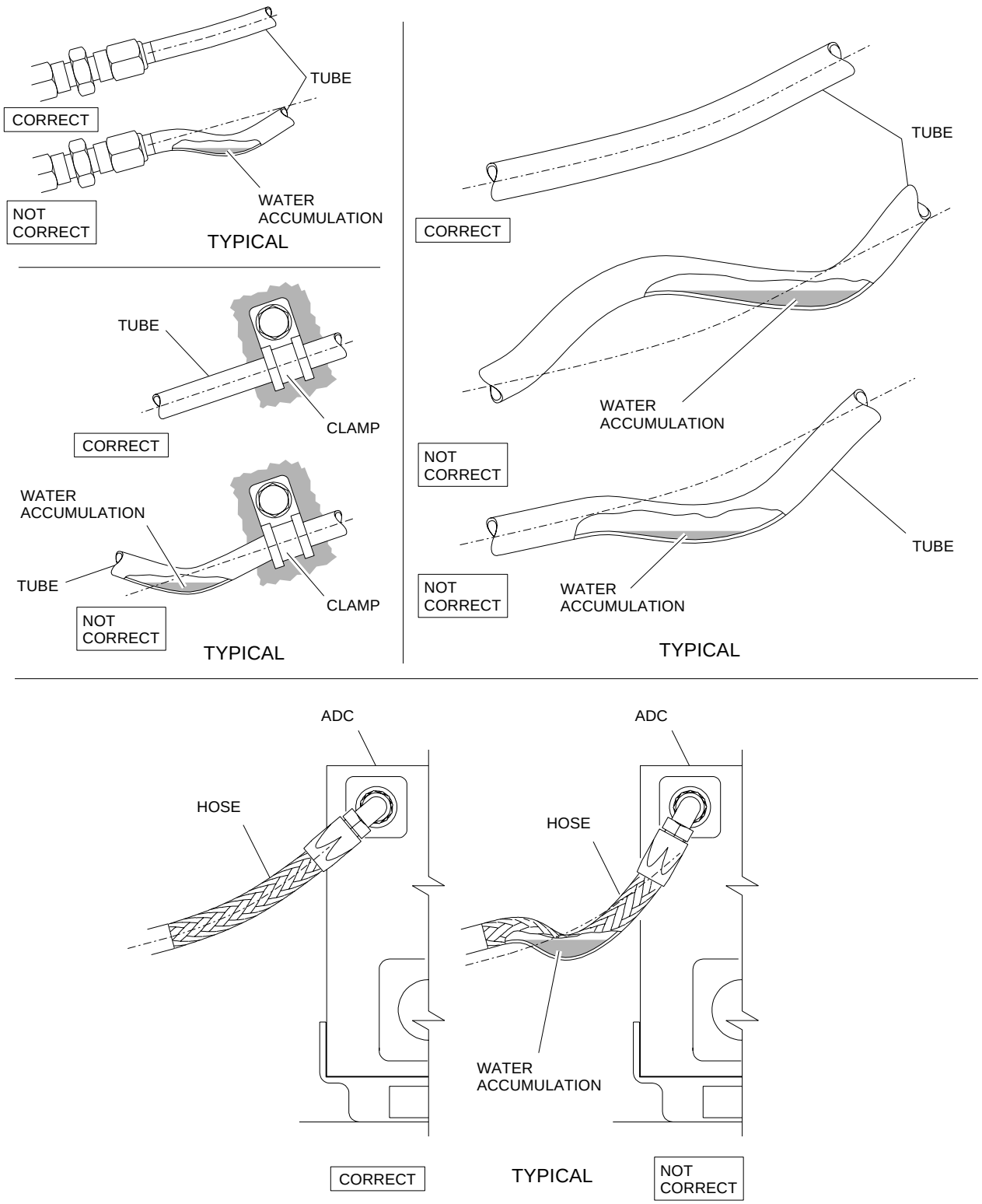
- Close the covering insulation blanket through the hook-and-loop fastener.

- Apply the polyimide adhesive tape around the covering insulation blanket removed.

(4) Close access door 113CZ (AMM MPP 06-41-01/100).

EFFECTIVITY: ALL

Pitot Lines - Visual Inspection
Figure 605



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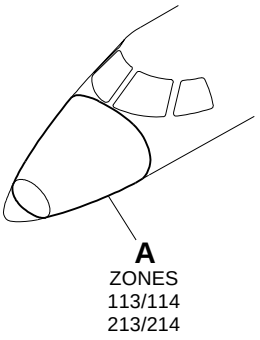
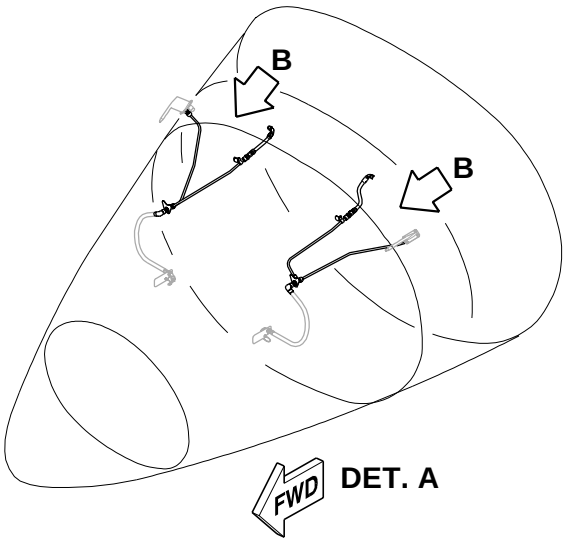
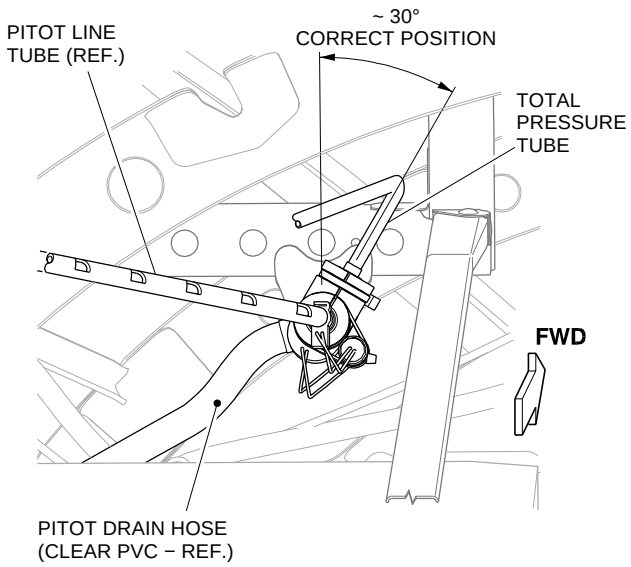
EFFECTIVITY: ALL

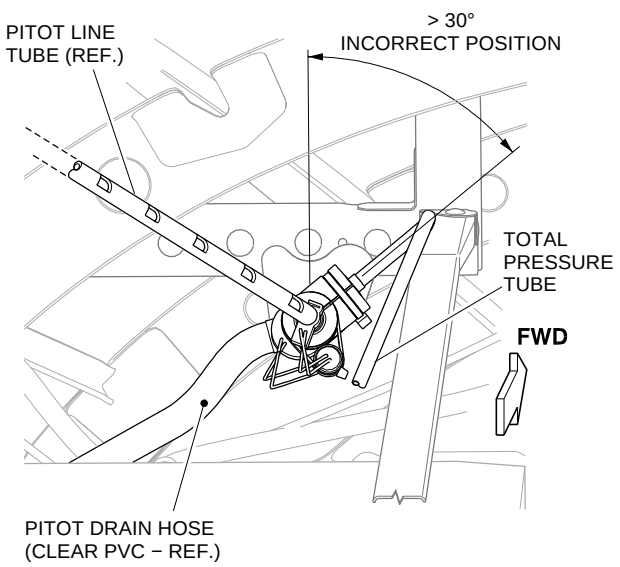
Total Pressure Tube - Visual Inspection
Figure 606







VIEW B
(TYPICAL)



VIEW B
(TYPICAL)

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TASK 34-13-00-220-801-A
EFFECTIVITY: ALL

5. PITOT SENSORS - DAMAGE ASSESSMENT

A. General

(1) This task gives the procedures to do the damage assessment of the pitots 1, 2, and 3.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 34-13-01/400	- REMOVAL/INSTALLATION

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially Available	Caliper	To measure pitot flat, dent in, flare out, and nick	
Commercially Available	Goniometer	To measure pitot scarf angle	
Commercially Available	Square Edge	To measure pitot scarf dimension	
Commercially Available	Feeler Gauge	To measure pitot scarf dimension	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially Available	10x Magnifier	To inspect the pitots	
Commercially Available	Rigid Ruler	To assist on nicks measurement	

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	On the aircraft

I. Preparation

SUBTASK 840-002-A

(1) Make sure that the aircraft is safe for maintenance.

(2) Make sure that the Sensors (PITOT 1/TAT 1/AOA 1, PITOT 3 and PITOT 2/TAT 2/AOA 2) pushbuttons, on the overhead panel, are set at OFF.

(3) On the circuit breaker panel, located on the overhead panel in the cockpit, make sure that the SENSORS HTG circuit breaker is open.

J. Pitot Sensors 1 and 2 - Damage Assessment

SUBTASK 220-002-A

WARNING: TO PREVENT INJURY TO PERSONS, DO NOT TOUCH THE PITOT, PITOT/ STATIC SENSORS, ANEMOMETRIC STATIC PORTS, AND INTERNAL TUBES IMMEDIATELY AFTER THE HEATER WAS TURNED OFF.

WARNING: BE CAREFUL WHEN YOU TOUCH SHARP EDGES. THEY CAN CAUSE INJURIES TO YOUR FINGERS.

(1) With a 10x magnifier, do a visual inspection on the pitot lip. Look for flat, dent in, flare out, scarf, or nicks.

(2) If you find any of the damage above, do its assessment.

(3) For pitot flat, do as follows. Refer to Figure 607.

(a) Open a caliper until you read 0.025 inch (0.635 mm) on the scale and lock it.

(b) Use the caliper to find if there is a flat greater than 0.025 in (0.635mm) on the pitot lip.

(c) Choose at least eight points around the lip, so that they cover the majority of its contour.

(d) If damage exceeds the limit, replace the respective pitot sensor (AMM MPP 34-13-01/400).

(4) For pitot dent in, do as follows. Refer to Figure 608.

(a) With a caliper, measure the pitot lip diameter in the dent in area. Make sure that the diameter you find is above 0.360 inch (9.144 mm).

(b) With a 10x magnifier, check the extent of the dent on the pitot lip and draw the affected area over the drawing line on Figure 608.

(c) Make sure that the damage does not exceed 20% of the circumference, represented by the shaded area on the drawing.

(d) If damage exceeds the limit, replace the respective pitot sensor (AMM MPP 34-13-01/400).

(5) For pitot flare out, do as follows. Refer to Figure 609.

(a) With a caliper, measure the pitot lip diameter in the flare out area. Make sure that the diameter you find does not exceed 0.470 inch (11.938 mm).

(b) If the damage exceeds the limit, replace the respective pitot sensor (AMM MPP 34-13-01/400).

(6) For pitot scarf, follow one of the methods below. Refer to Figure 610.

(a) Method 1: Lean a goniometer over the longitudinal axis of pitot and measure the angle of the pitot scarf. Make sure it is less than 2 degrees.

(b) Choose at least four points over the longitudinal axis of the pitot, so that they cover the majority of the lip.

(a) Method 2: Lean a square edge over the longitudinal axis of the pitot.

(b) Use a feeler gauge to check if the distance between the square edge and pitot lip is not greater than 0.015 inch (0.381 mm).

(c) Choose at least four points over the longitudinal axis of the pitot, so that they cover the majority of the lip.

(d) If damage exceeds the limit, replace the respective pitot sensor (AMM MPP 34-13-01/400).

(7) For pitot nick, do as follows. Refer to Figure 611.

(a) Open the caliper until you read 0.080 inch (2.032 mm) on the scale.

(b) Put one of the inside jaws on the nick edge.

(c) With a rigid ruler, push carefully the other inside jaw in the direction of the pitot lip until the ruler faces it completely.

(d) Read the caliper scale and make sure it does not exceed 0.060 inch (1.524 mm) if there is only one nick, or 0.050 inch (1.27 mm) if there are two nicks.

(e) If the damage exceeds the limit, replace the respective pitot sensor (AMM MPP 34-13-01/400).

K. Pitot Sensor 3 - Damage Assessment

SUBTASK 220-003-A

(1) Do a visual inspection of the static pressure ports as follows. Refer to Figure 612.

WARNING: TO PREVENT INJURY TO PERSONS, DO NOT TOUCH THE PITOT, PITOT/ STATIC SENSORS, ANEMOMETRIC STATIC PORTS, AND INTERNAL TUBES IMMEDIATELY AFTER THE HEATER WAS TURNED OFF.

WARNING: BE CAREFUL WHEN YOU TOUCH SHARP EDGES. THEY CAN CAUSE INJURIES TO YOUR FINGERS.

(a) With a 10x magnifier, do a visual inspection on the static pressure ports to make sure that the edges are sharp.

(b) With a 10x magnifier, look for scratches on the area around the static pressure ports (0.5 inch (12.7mm) from the ports).

(c) If you find any of the damage above, replace pitot sensor 3 (AMM MPP 34-13-01/400).

(2) With a 10x magnifier, do a visual inspection of the pitot lip. Look for flat, dent in, flare out, or nicks.

(3) If you find any of the damages above, do its assessment.

(4) For pitot flat, do as follows. Refer to Figure 613.

(a) Open a caliper until you read 0.025 inch (0.635 mm) on the scale and lock it.

(b) Use the caliper to find if there is a flat greater than 0.025 in (0.635mm) on the pitot lip.

(c) Choose at least eight points around the lip, so that they cover the majority of its contour.

(d) If damage exceeds the limit, replace pitot sensor 3 (AMM MPP 34-13-01/400).

(5) For pitot dent in, do as follows. Refer to Figure 614.

(a) With a caliper, measure the pitot lip diameter in the dent in area. Make sure that the diameter you find is above 0.278 inch (7.061 mm).

(b) With a 10x magnifier, check the extent of the dent on the pitot lip and draw the affected area over the drawing line on Figure 614.

(c) Make sure that damage does not exceed 20% of the circumference, represented by the shaded area on the drawing.

(d) If damage exceeds the limit, replace pitot sensor 3 (AMM MPP 34-13-01/400).

(6) For pitot flare out, do as follows.

(a) Slide your fingernail along the outer surface of the lip edge to see if it is curled or flared out.

(b) The outer surface of the lip edge must be smooth. If you find the condition above, replace pitot sensor 3 (AMM MPP 34-13-01/400).

(7) For pitot nick, do as follows. Refer to Figure 615.

(a) Open the caliper until you read 0.080 inch (2.032 mm) on the scale.

(b) Put one of the inside jaws on the nick edge.

(c) With a rigid ruler, push carefully the other inside jaw in the direction of the pitot lip until the ruler faces it completely.

(d) Read the caliper scale and make sure it does not exceed 0.035 inch (0.889 mm) if there is only one nick, or 0.025 inch (6.35 mm) if there are two nicks.

(e) If damage exceeds the limit, replace pitot sensor 3 (AMM MPP 34-13-01/400).

L. Follow-on

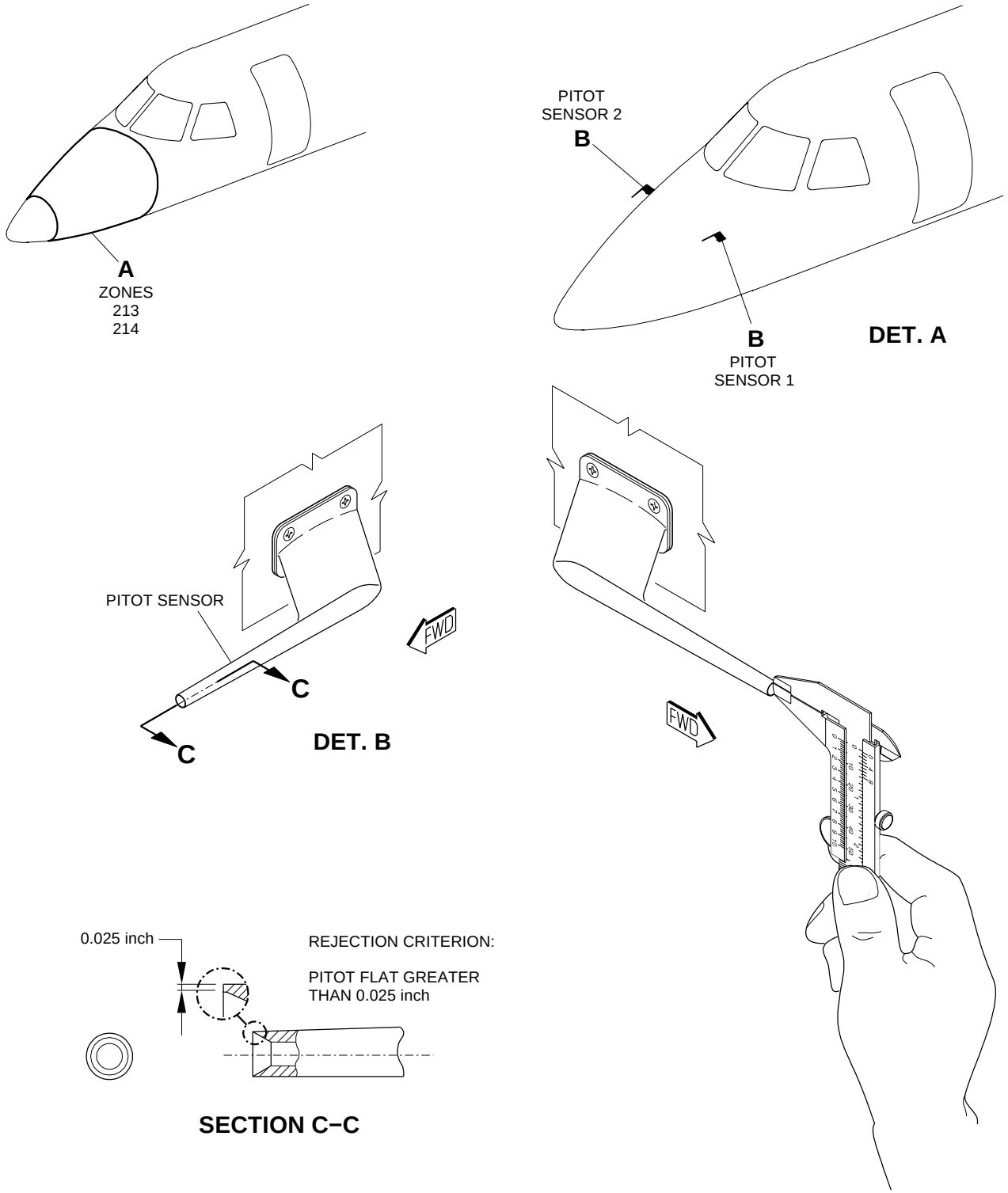
SUBTASK 842-004-A

(1) On the overhead panel, return the Sensors (PITOT 1/TAT 1/AOA 1, PITOT 3 and PITOT 2/TAT 2/AOA 2) pushbuttons to their original position.

(2) On the circuit breaker panel, located on the overhead panel in the cockpit, return the SENSORS HTG circuit breaker to its original condition.

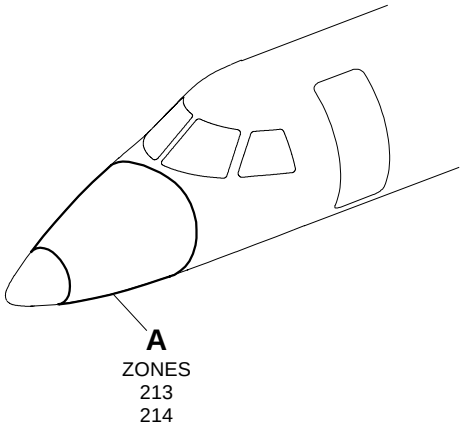
EFFECTIVITY: ALL

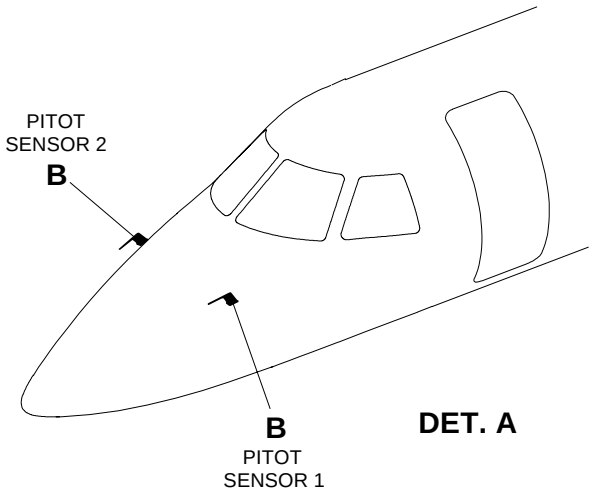
Pitot Sensors 1 and 2 - Flat Measurement
Figure 607



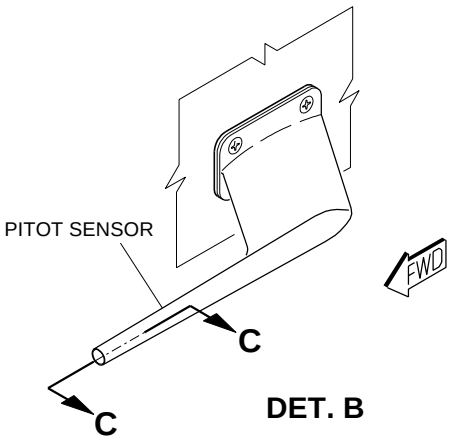
EFFECTIVITY: ALL

Pitot Sensors 1 and 2 - Dent-in Measurement
Figure 608

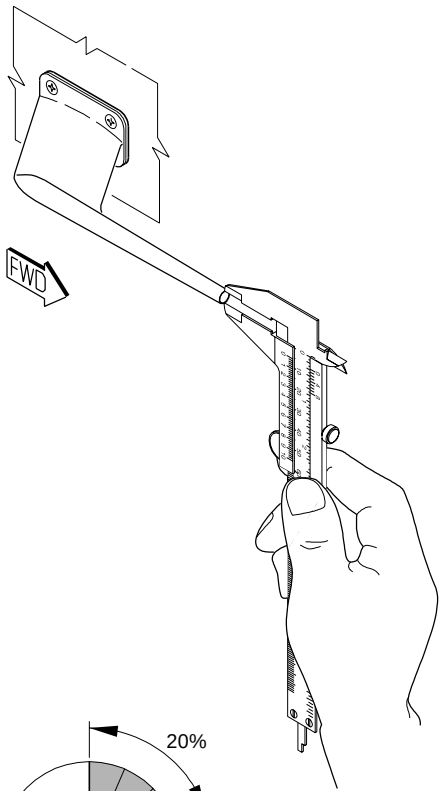




DET. A

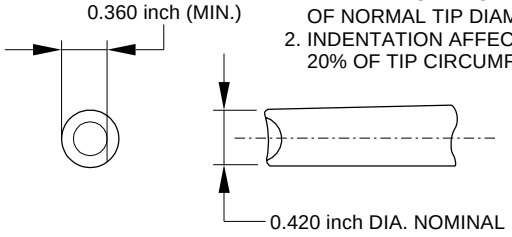


DET. B

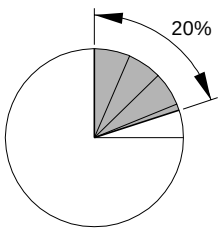


REJECTION CRITERIA:

1. INDENTATION EXCEEDING 0.060 inch OF NORMAL TIP DIAMETER
2. INDENTATION AFFECTING MORE THAN 20% OF TIP CIRCUMFERENCE



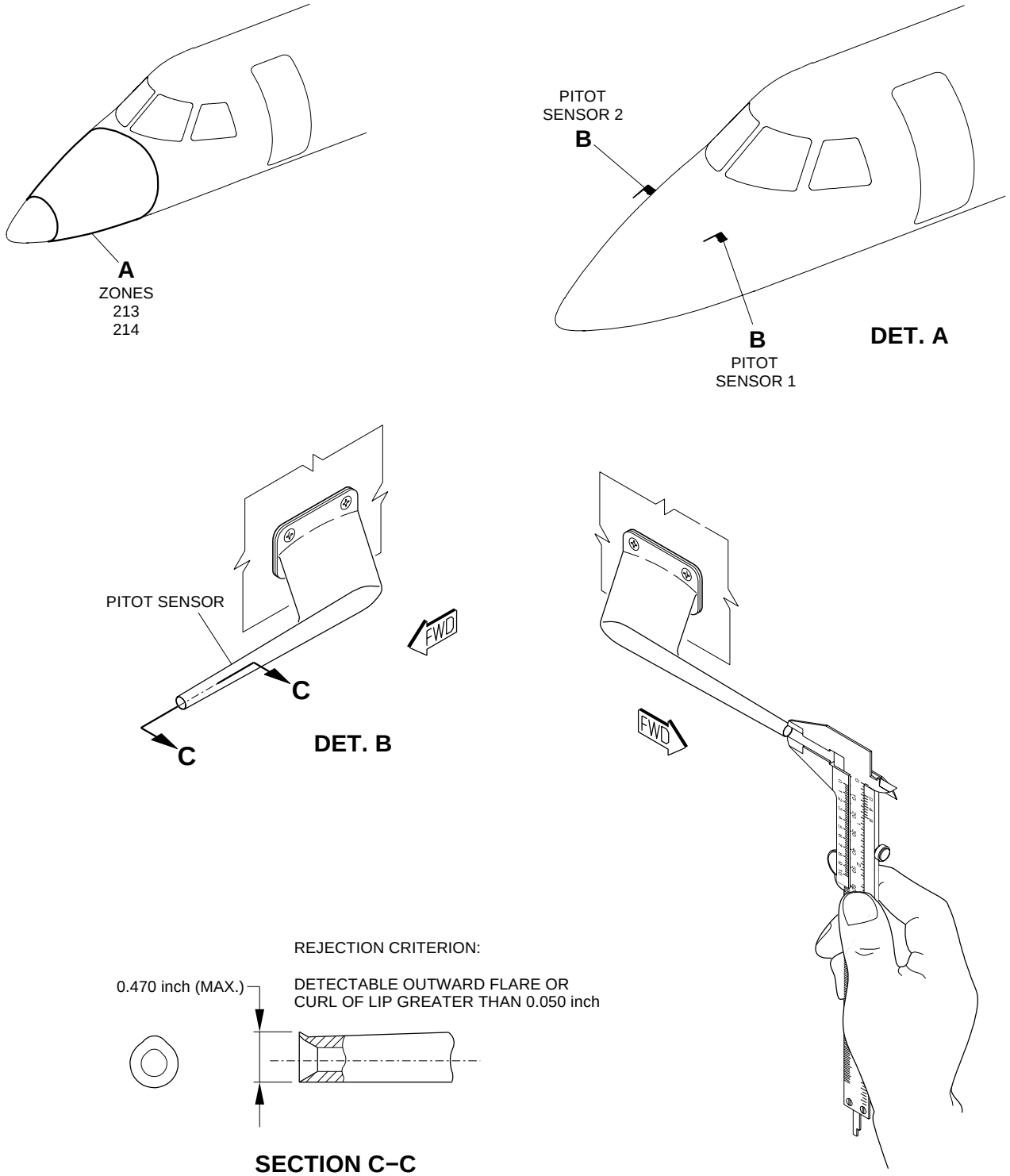
SECTION C–C



EM145AMM341330A.DGN

EFFECTIVITY: ALL

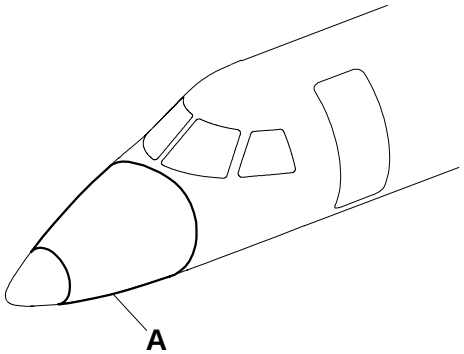
Pitot Sensors 1 and 2 - Flare-out Measurement
Figure 609

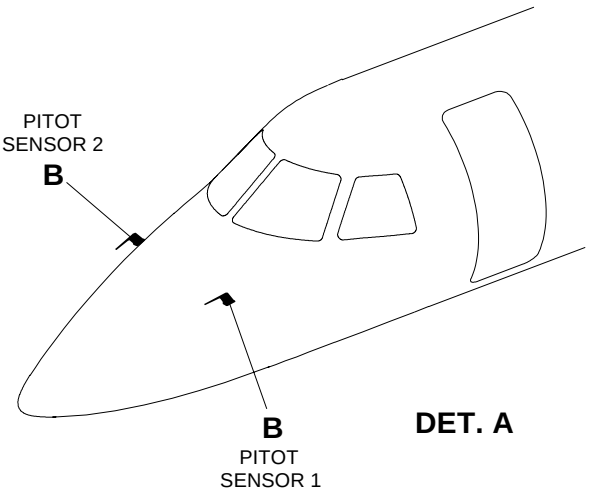


EM145AMM341331A.DGN

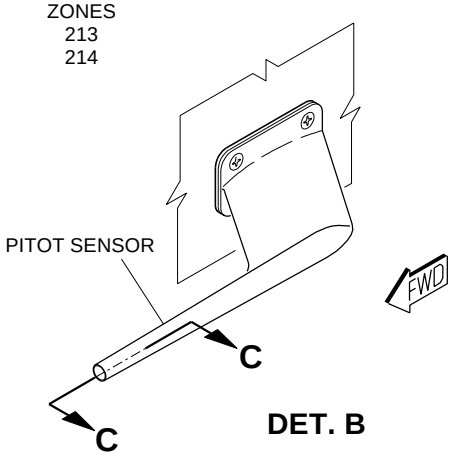
EFFECTIVITY: ALL

Pitot Sensors 1 and 2 -Scarf Measurement
Figure 610





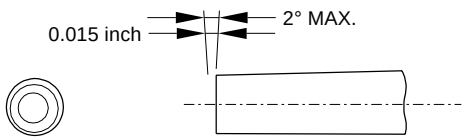
DET. A



DET. B

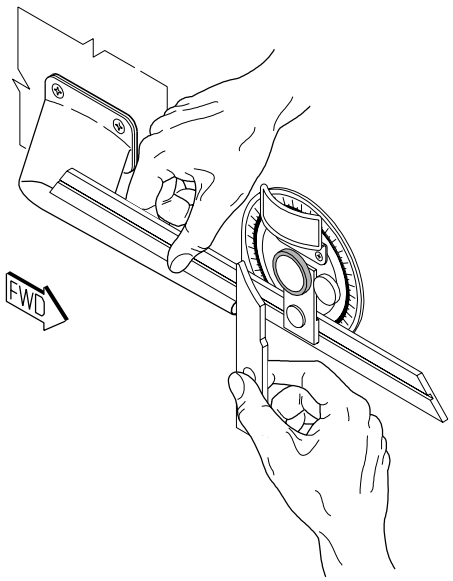
REJECTION CRITERION:

MAXIMUM SIDE−TO−SIDE DIFFERENCE
EXCEEDING 0.015 inch

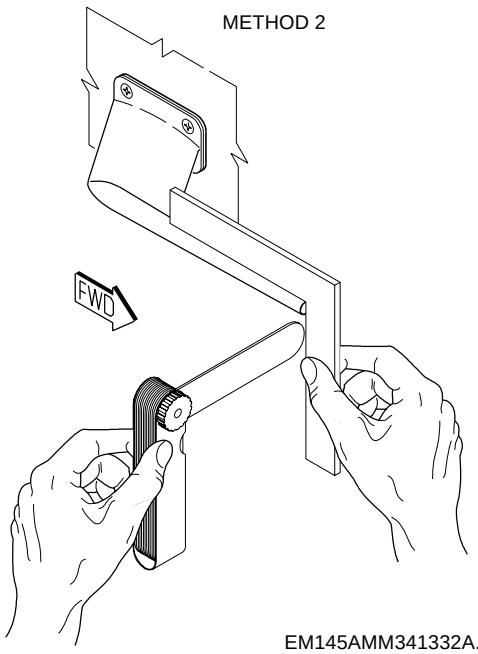


SECTION C−C

METHOD 1



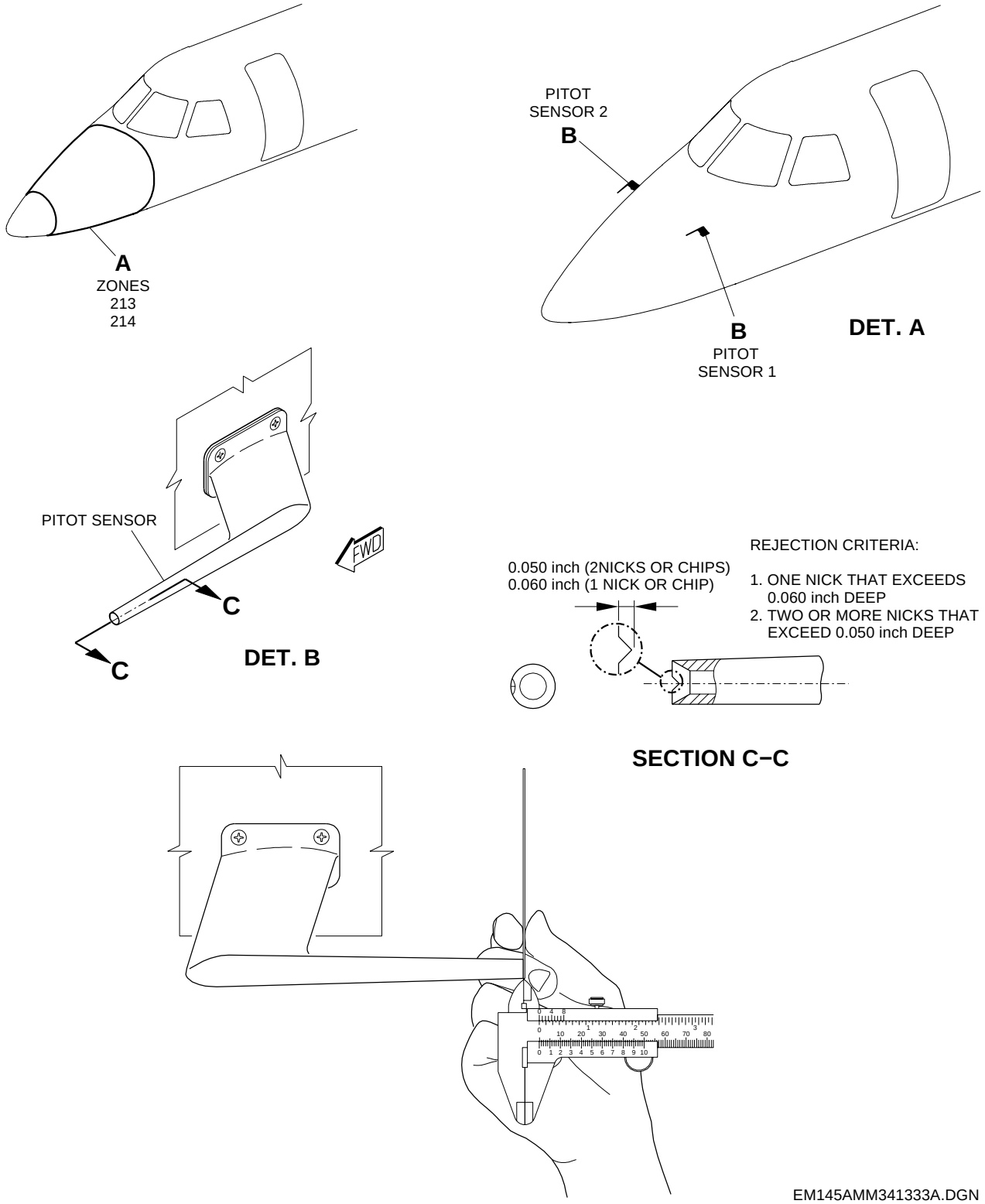
METHOD 2



EM145AMM341332A.DGN

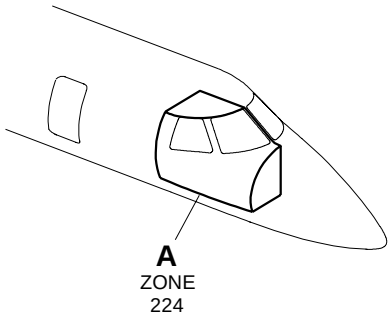
EFFECTIVITY: ALL

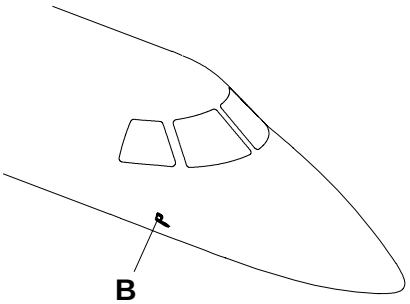
Pitot Sensors 1 and 2 - Nick Measurement
Figure 611



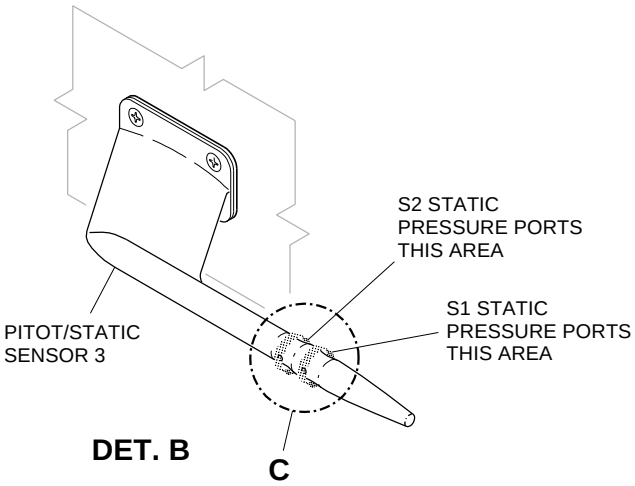
EFFECTIVITY: ALL

Pitot Sensor 3 - Static Ports Visual Inspection
Figure 612

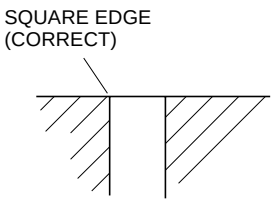




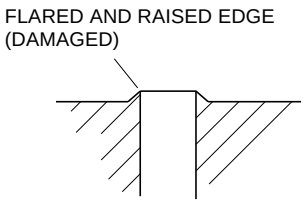
DET. A



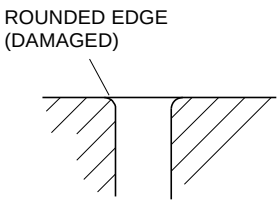
DET. B



DET. C



DET. C

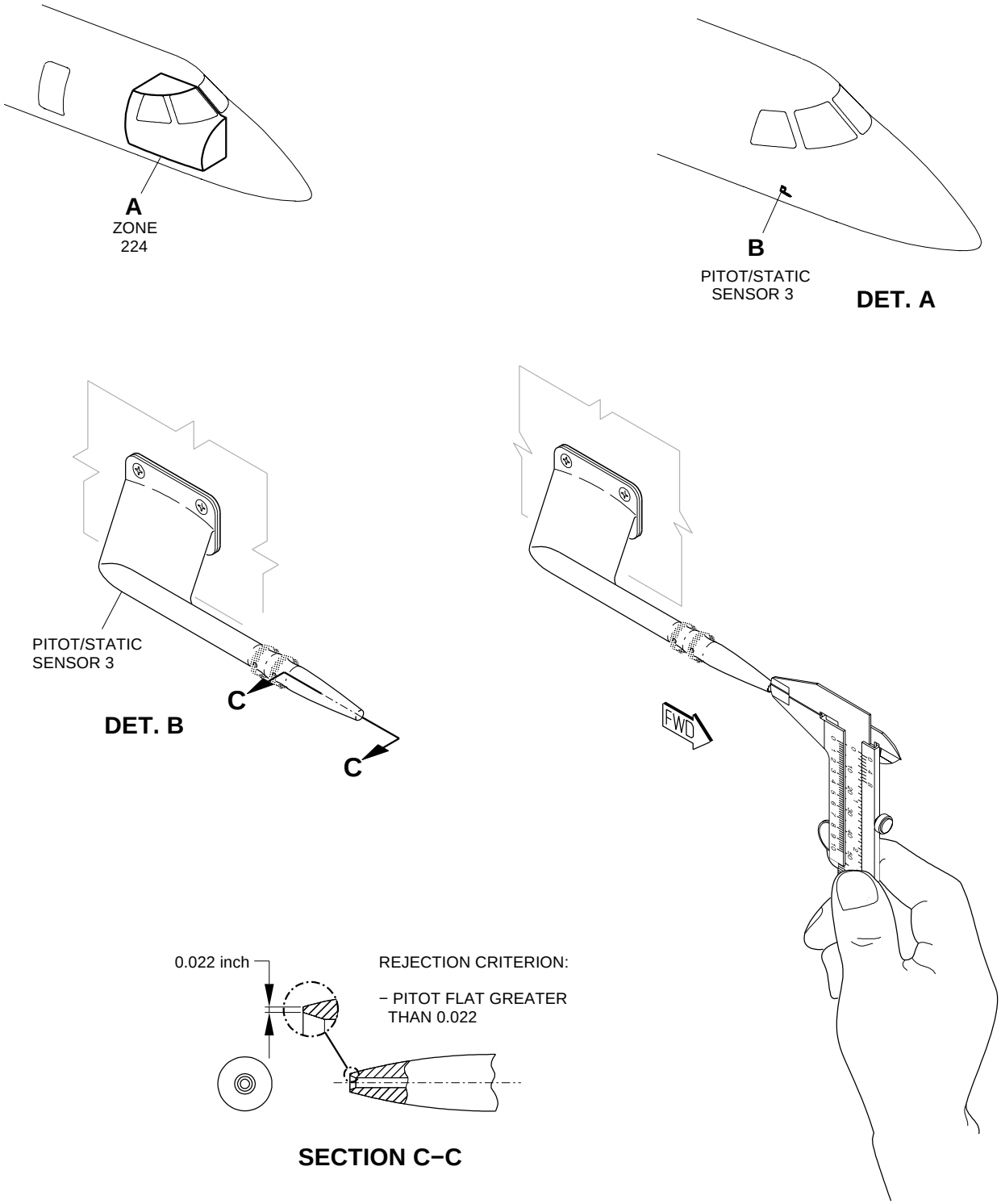


DET. C

EM145AMM341334A.DGN

EFFECTIVITY: ALL

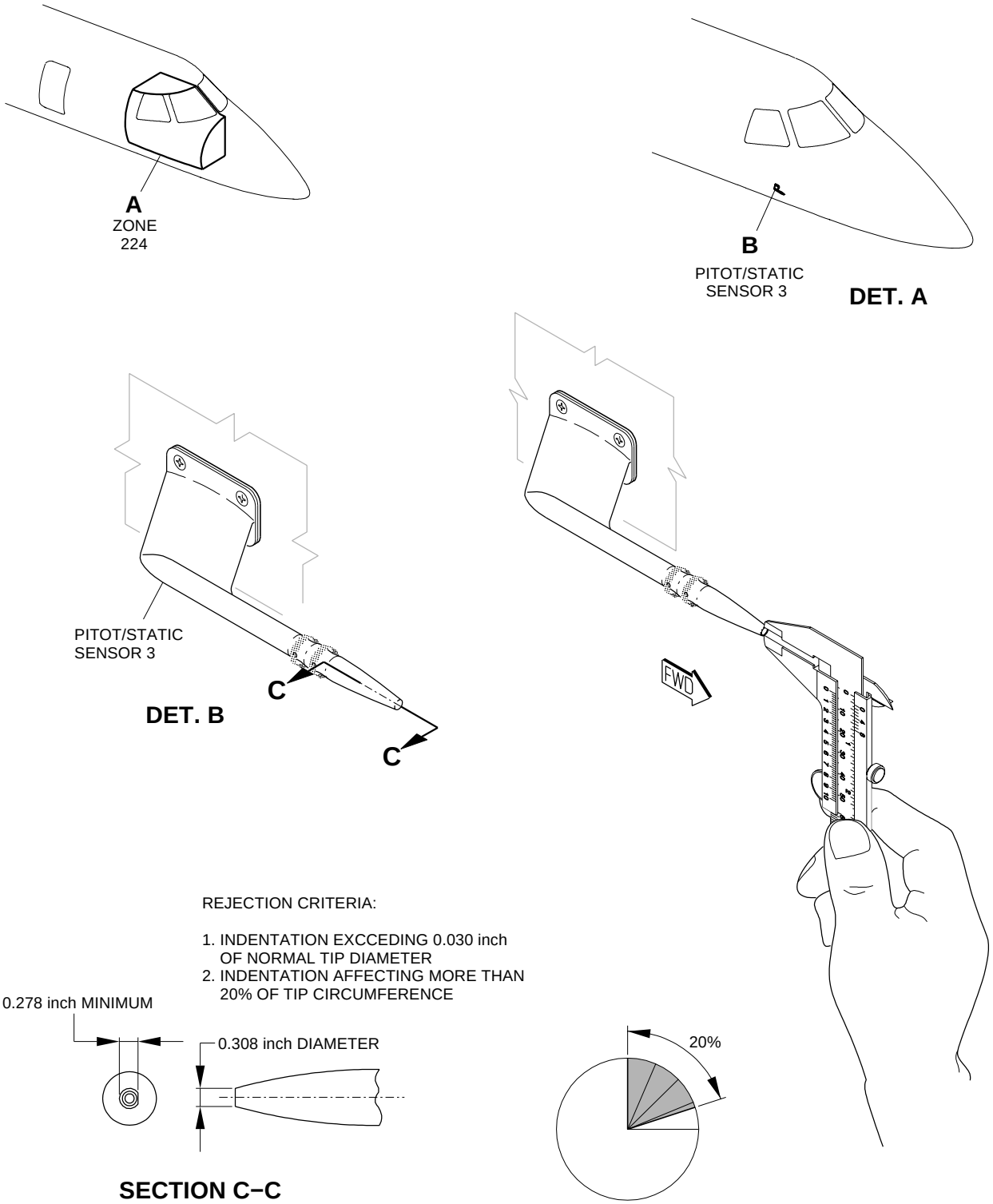
Pitot Sensor 3 - Flat Measurement
Figure 613



EM145AMM341335A.DGN

EFFECTIVITY: ALL

Pitot Sensor 3 - Dent-in Measurement
Figure 614



EM145AMM341336A.DGN

EFFECTIVITY: ALL

Pitot Sensor 3 - Nick Measurement
Figure 615