## UPPER AND LOWER SUPPORTS - REMOVAL/INSTALLATION

*EFFECTIVITY: ALL*

1. General

A. This section gives the procedures to remove and install the upper and lower supports that attach the windshield center post to the fuselage.

B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

| *TASK NUMBER* | *DESCRIPTION* | *EFFECTIVITY* |
|---|---|---|
| 53-12-02-000-801-A | UPPER AND LOWER SUPPORTS - REMOVAL | ALL |
| 53-12-02-400-801-A | UPPER AND LOWER SUPPORTS - INSTALLATION | ALL |

TASK 53-12-02-000-801-A
*EFFECTIVITY: ALL*

## 2. UPPER AND LOWER SUPPORTS - REMOVAL

### A. General

(1) This task gives the procedures to remove the upper and lower supports that attach the windshield center post to the fuselage.

### B. References

| *REFERENCE* | *DESIGNATION* |
|---|---|
| AMM TASK 53-12-01-000-801-A/400 | WINDSHIELD CENTER POST - REMOVAL |
| ITEM GSE 498 | TOOL SET- INSTL/RMV, LUG BUSHING |

### C. Zones and Accesses

| *ZONE* | *PANEL/DOOR* | *LOCATION* |
|---|---|---|
| 223 | | Cockpit LH partition |
| 223 | | Cockpit RH partition |

### D. Tools and Equipment

| *ITEM* | *DESCRIPTION* | *PURPOSE* | *QTY* |
|---|---|---|---|
| Commercially available | Workstand | To get access to the work area | |
| Commercially available | Wrench | To remove the bolts and bushings | |
| Commercially available | Heat Gun | To apply hot air | |
| Commercially available | Thermometer, -40 to +100 °C (-40 to +212 °F) Minimum Range | To measure temperature | |
| GSE 498 | | To remove bushing | |
| Commercially available | Hocking Phasec 2200 or equivalent | To measure electrical conductivity | |

### E. Auxiliary Items

| *ITEM* | *DESCRIPTION* | *PURPOSE* | *QTY* |
|---|---|---|---|
| Commercially available | Protective Gloves | For protection of technician's hands | 1 |
| Commercially available | Safety Goggles | For protection of technician's eyes | 1 |

F. Consumable Materials

| *SPECIFICATION (BRAND)* | *DESCRIPTION* | *QTY* |
|---|---|---|
| ASTM-D-740 | Methyl Ethyl Ketone - MEK | AR |

G. Expandable Parts

Not Applicable

H. Persons Recommended

| *QTY* | *FUNCTION* | *PLACE* |
|---|---|---|
| 1 | Does the task | In the forward fuselage |

I. Preparation

*SUBTASK 841-002-A*

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

(2) Remove the windshield center post ( AMM TASK 53-12-01-000-801-A/400).

J. Removal (Figure 401) (Figure 402)

*SUBTASK 020-002-A*

(1) To remove the windshield center-post upper support (11) (Figure 401):

(a) Remove the self-locking nuts (4), washers (2), and bolts (1) that attach the upper support (11) to the fuselage structure (3).

(b) Remove the windshield center-post upper support (11).

(2) To remove the windshield center-post lower support (12) (Figure 401):

(a) Remove the self-locking nuts (9), washers (8) and (6), and bolts (5) that attach the lower support (12) to the fuselage structure (7).

CAUTION: THE SHIMS ARE VERY IMPORTANT IN THE ADJUSTMENT OF THE WINDSHIELD. BE CAREFUL NOT TO LOSE THEM OR CHANGE THEIR POSITIONS.

(b) Remove the shims (10).

NOTE: Mark each part to make sure that you install them back in the same position.

(c) Remove the windshield center-post lower support (12).

(3) For the removal of the bushing (Figure 402, sheet 2):

NOTE: It is not necessary to remove the lower support (12) or the upper support (11). Refer to Figure 402.

(a) Put the puller (GSE 498) in position. Refer to DET. B of Figure 402, sheet 2.

**WARNING: OBEY THE SAFETY PRECAUTIONS WHEN YOU DO TASKS WITH A HEATING GUN. IF YOU USE AN INCORRECT HEAT GUN NEAR FLAMMABLE MATERIAL OR FUEL VENT, EXPLOSION CAN OCCUR.**

(b) With a heat gun, apply hot air to the upper or lower support. Refer to Figure 402, sheet 2.

(c) With a thermometer, control the temperature. Refer to Figure 402, sheet 2.

NOTE: The temperature must not be higher than 70°C (158 °F).

(d) Remove the bushings using the Bumper and Puller, which are contained in ITEM GSE 498 kit. Refer to Figure 402, sheet 3.

(e) For the support made of AL 7050-T7451:

NOTE: This step is not applicable for the support made of TI 6AL-4V.

1 Measure electrical conductivity, by the IACS method, around the hole of the support.

NOTE: The value should be greater than 38% IACS value. Replace the support if the electrical conductivity measured is less than 38% IACS value.

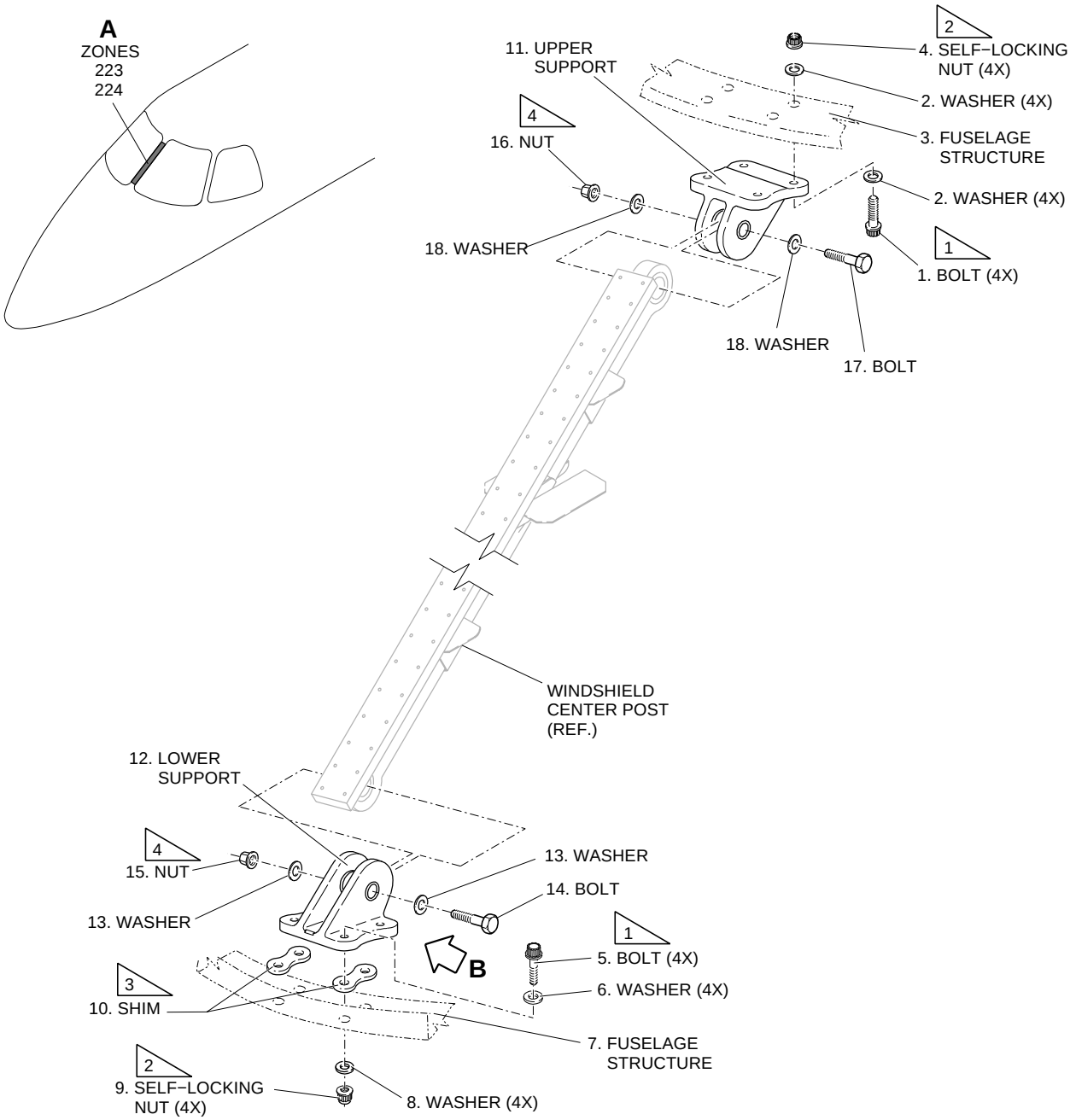
(f) If you find corrosion or wear in the internal side of the bushing, discard the bushing.

**WARNING: BE CAREFUL WHEN YOU USE SOLVENTS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN YOU HANDLE THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.**

(4) With a cloth soaked in Methyl-Ethyl-Ketone (ASTM-D740), clean the housing surface.

*EFFECTIVITY: ALL*

Windshield Center-Post Upper and Lower Supports - Removal/Installation
Figure 401 - Sheet 1




**DET. A**

1 APPLY COR−BAN 27L.

2 TORQUE: 21.5 − 26.0 N.m (190 − 230 lb.in) PLUS DRAG TORQUE: 0.7 − 6.8 N.m (6.5 − 60.0 lb.in).

3 APPLY INTERFACE SEALANT PR1776M B−2 (AMS3281).

4 TORQUE: 11.3 − 13.6 N.m (100 − 120 lb.in) PLUS DRAG TORQUE: 1.6 − 11.3 N.m (14 − 100 lb.in).

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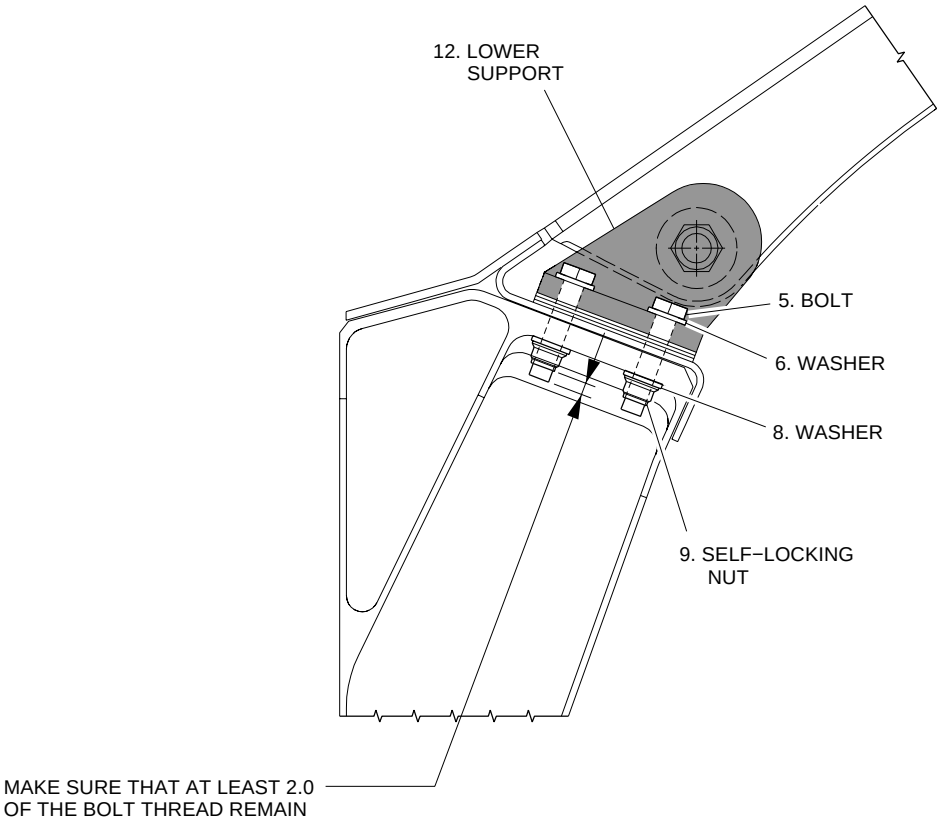
*EFFECTIVITY: ALL*

Windshield Center-Post Upper and Lower Supports - Removal/Installation
Figure 401 - Sheet 2




**VIEW B**

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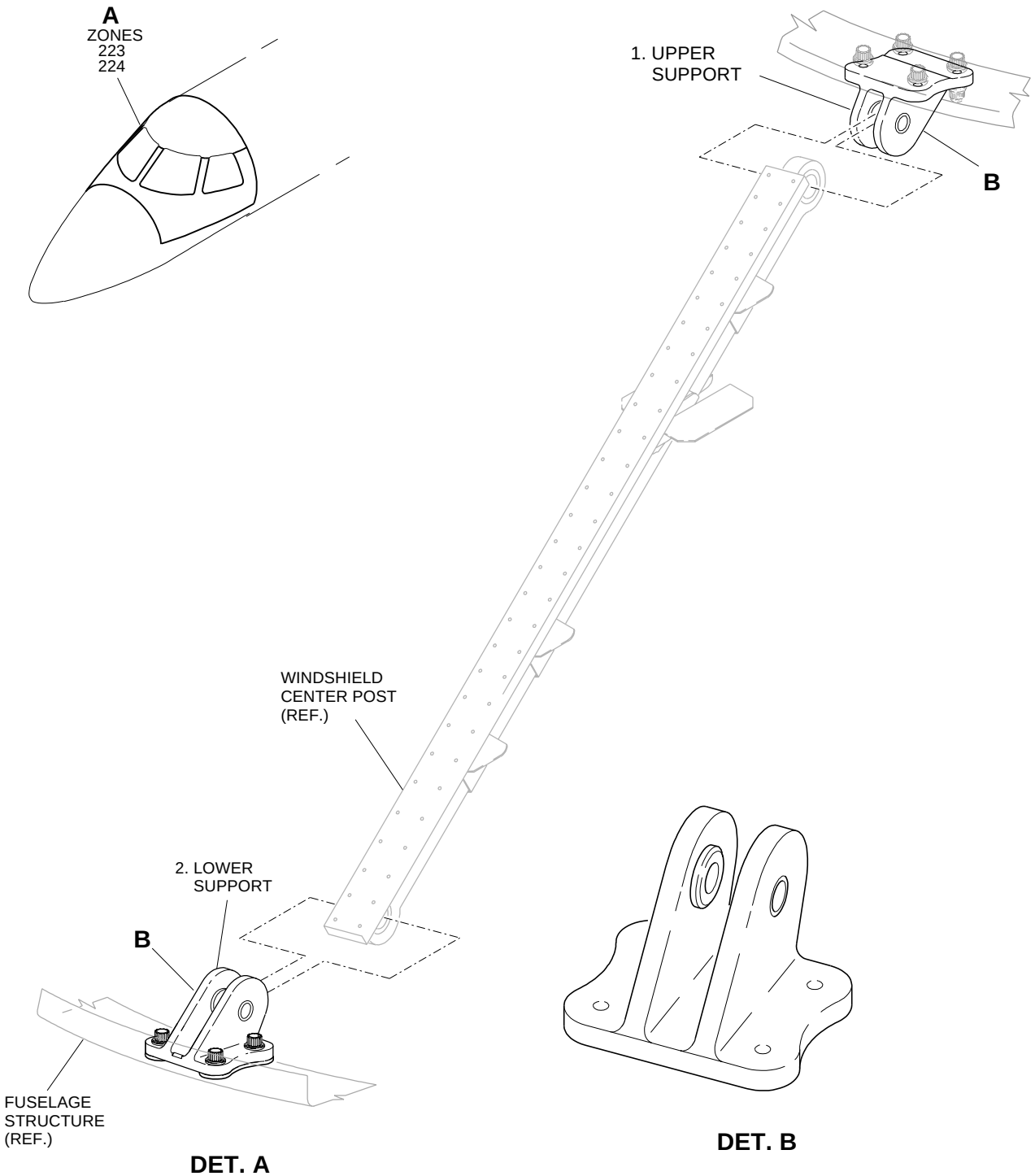
*EFFECTIVITY: ALL*

Windshield Center-Post Upper and Lower Support Bushings - Removal
Figure 402 - Sheet 1

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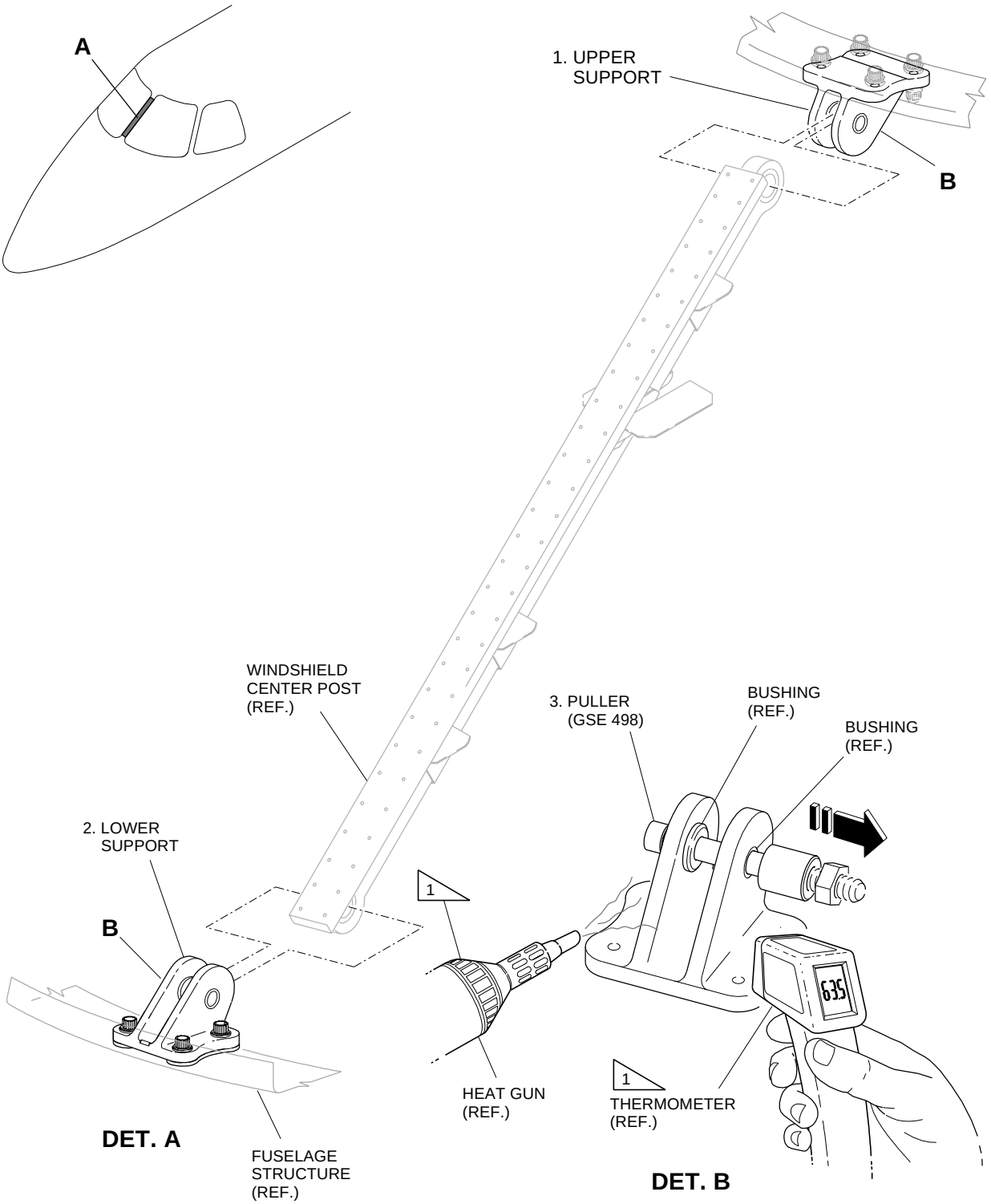
*EFFECTIVITY: ALL*

Windshield Center-Post Upper and Lower Support Bushings - Removal
Figure 402 - Sheet 2




1 THE TEMPERATURE MUST NOT BE HIGHER THAN 70°C (158°F).

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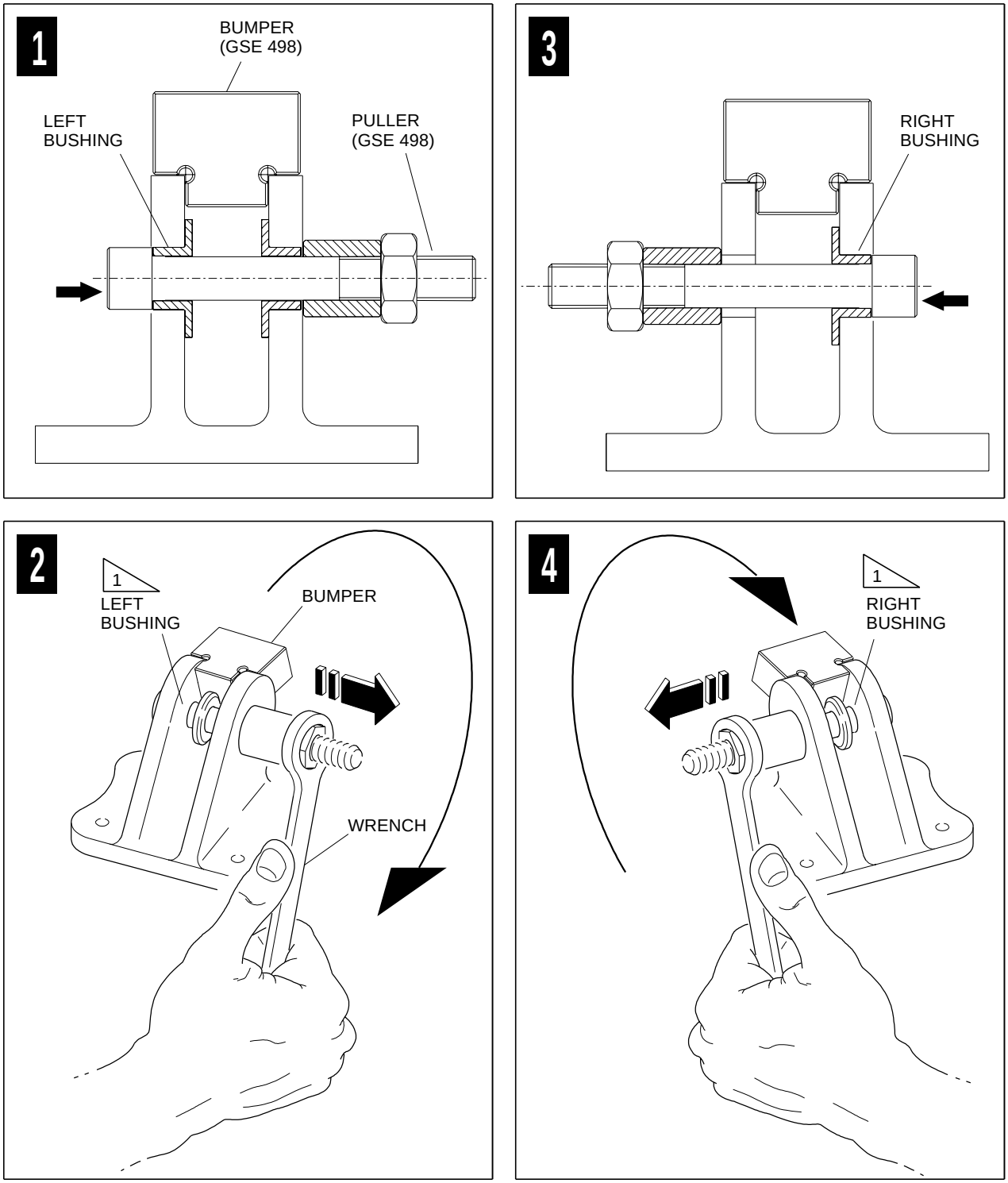
*EFFECTIVITY: ALL*

Windshield Center-Post Upper and Lower Support Bushings - Removal
Figure 402 - Sheet 3




1 USE THE PULLER TO REMOVE THE BUSHING.

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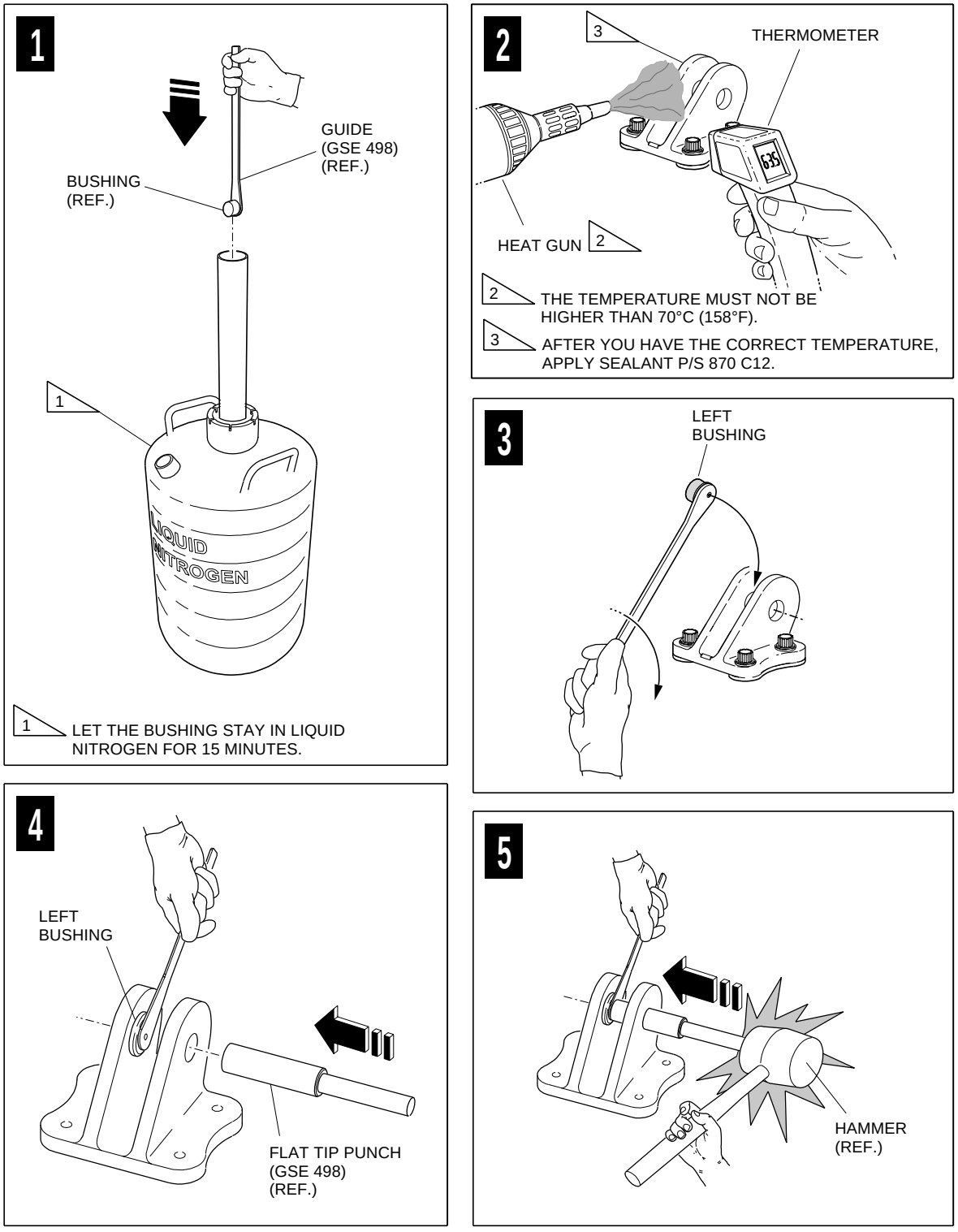
*EFFECTIVITY: ALL*

Windshield Center-Post Upper and Lower Support Bushings - Installation
Figure 403 - Sheet 1

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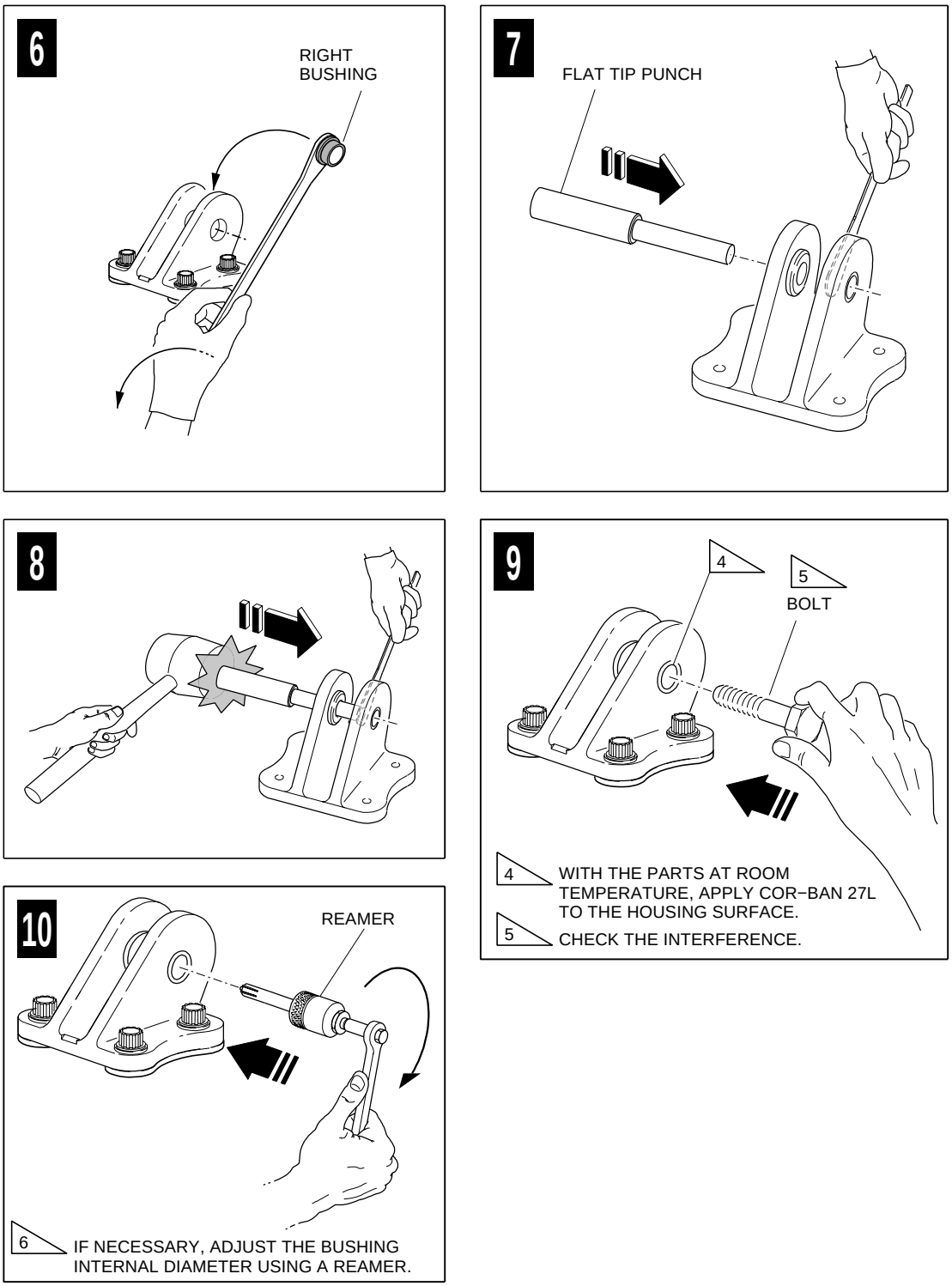
*EFFECTIVITY: ALL*

Windshield Center-Post Upper and Lower Support Bushings - Installation
Figure 403 - Sheet 2

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TASK 53-12-02-400-801-A
*EFFECTIVITY: ALL*

3. UPPER AND LOWER SUPPORTS - INSTALLATION

A. General

(1) This task gives the procedures to install the upper and lower supports that attach the windshield center post to the fuselage.

B. References

| *REFERENCE* | *DESIGNATION* |
|---|---|
| AMM TASK 53-12-01-400-801-A/400 | WINDSHIELD CENTER POST - INSTALLATION |
| IPC 53-12-00 | FORWARD II |
| SRM 51-20-01-PR | - |

C. Zones and Accesses

| *ZONE* | *PANEL/DOOR* | *LOCATION* |
|---|---|---|
| 223 | | Cockpit LH partition |
| 223 | | Cockpit RH partition |

D. Tools and Equipment

| *ITEM* | *DESCRIPTION* | *PURPOSE* | *QTY* |
|---|---|---|---|
| Commercially available | Workstand | To get access to the work area | |
| Commercially available | Wrench | To install the bolts and bushings | |
| Commercially available | Hammer | To install the bushings | |
| Commercially available | Heat Gun | To apply hot air | |
| Commercially available | Thermometer, -40 to +100 °C (-40 to +212 °F) Minimum Range | To measure temperature | |
| GSE 498 | | To install bushing | |
| Commercially available | Hocking Phasec 2200 or equivalent | Measure electrical conductivity | |
| Commercially available | Reamer | To install bushing | |

E. Auxiliary Items

| *ITEM* | *DESCRIPTION* | *PURPOSE* | *QTY* |
|---|---|---|---|
| Commercially available | Protective Gloves | For protection of technician's hands | 1 |
| Commercially available | Safety Goggles | For protection of technician's eyes | 1 |

F. Consumable Materials

| *SPECIFICATION (BRAND)* | *DESCRIPTION* | *QTY* |
|---|---|---|
| MIL-S-81733 TYPE IV-12 | Sealant P/S 870C-12 | AR |
| Commercially available | Liquid Nitrogen | AR |
| ASTM-D-740 | Methyl Ethyl Ketone - MEK | AR |
| MEP 09-075 | Corrosion-Inhibiting Compound (COR-BAN 27L) | AR |
| AMS 3281 | Polisulfide Sealant PR1776M B-2 | AR |

G. Expendable Parts

| *ITEM* | *IPC REFERENCE (VENDOR REFERENCE)* | *QTY* |
|---|---|---|
| Fuselage Forward II | IPC 53-12-00 | AR |

H. Persons Recommended

| *QTY* | *FUNCTION* | *PLACE* |
|---|---|---|
| 2 | Does the task | In the forward fuselage |

I. Installation (Figure 401) (Figure 403)

*SUBTASK 420-002-A*

(1) To install the windshield center-post upper support (11) (Figure 401):

(a) Apply interface sealant PR1776M B-2 between the fuselage structure (3) and the upper support (11).

**WARNING: COR-BAN 27L IS TOXIC TO SKIN, EYES, AND RESPIRATORY INHALATION. USE PVC GLOVES AND EYE PROTECTION GOGGLES. USE ONLY IN WELL VENTILATED AREAS. OBEY THE MANUFACTURER'S HEALTH AND SAFETY INSTRUCTIONS.**

(b) Wet-install bolts (1), washers (2), and self-locking nuts (4). For this, use compound COR-BAN 27L.

1 Turn the nut (4) and measure the drag torque with a torque wrench.

2 Make sure that the drag torque measured is between 0.7 − 6.8 N.m (6.5 − 60.0 lb.in).

3 Add the measured drag torque value to the standard torque of 21.5 − 26.0 N.m (190 − 230 lb.in) to get the final torque.

4 Use a torque wrench to apply the final torque to the nuts (4).

(2) To install the windshield center-post lower support (12) (Figure 401):

(a) Wet-install bolts (5), washers (6) and (9), and self-locking nuts (10). For this, use compound COR-BAN 27L.

NOTE: • Make sure that at least 2.0 of the bolt thread remain. Refer to Figure 401 - sheet 2.

• Install the shims (10) between the lower support (12) and the fuselage structure (7) in the same position marked, applying interface sealant PR1776M B-2.

1 Turn the nut (9) and measure the drag torque with a torque wrench.

2 Make sure that the drag torque measured is between 0.7 − 6.8 N.m (6.5 − 60.0 lb.in).

3 Add the measured drag torque value to the standard torque of 21.5 − 26.0 N.m (190 − 230 lb.in) to get the final torque.

4 Use a torque wrench to apply the final torque to the nuts (9).

(3) For the installation of bushings:

**WARNING: LIQUID NITROGEN IS VERY COLD. CONTACT OF THE COLD GAS OR LIQUID WITH THE SKIN CAN CAUSE SEVERE BURNS. NITROGEN VAPORS CAN CAUSE QUICK SUFFOCATION BECAUSE OF THE DEFICIENCY OF OXYGEN. PROTECT THE CONTAINER AGAINST PHYSICAL DAMAGE. STORE IT AND USE IT IN VENTILATED ROOMS. DO NOT LET THE LIQUID TOUCH EYES, SKIN, OR CLOTHING. ALWAYS WEAR PROTECTION FOR THE SKIN, HANDS, AND EYES.**

(a) With the Guide (GSE 498), put the bushing in liquid nitrogen. Refer to step 1 of (Figure 403), sheet 1.

(b) Let the bushing stay in liquid nitrogen for 15 minutes.

**WARNING: OBEY THE SAFETY PRECAUTIONS WHEN YOU DO TASKS WITH A HEATING GUN. IF YOU USE AN INCORRECT HEAT GUN NEAR FLAMMABLE MATERIAL OR FUEL VENT, EXPLOSION CAN OCCUR.**

(c) With a heat gun, apply hot air to the upper or lower support. Refer to step 2 of (Figure 403), sheet 1.

(d) With a thermometer, control the temperature.

NOTE: The temperature must not be higher than 70°C (158 °F).

**WARNING: BE CAREFUL WHEN YOU USE SEALANTS. FOR DATA ON RISKS, PROTECTION, AND HANDLING OF MATERIAL, REFER TO MATERIAL SAFETY DATA SHEET.**

(e) Apply sealant P/S 870C-12 around the housing.

NOTE: The sealant cure time changes with the environmental conditions. Refer to SRM 51-20-01-PR.

(f) Remove the bushing from the liquid nitrogen and install the bushing into the housing immediately. Refer to (Figure 403), sheets 1 and 2.

(g) With the aid of the Flat Tip Punch (GSE 498) conclude bushing assembly. Refer to (Figure 403), sheets 1 and 2.

(h) For the support made of AL 7050-T7451:

NOTE: This step is not applicable for the support made of TI 6AL-4V.

1 Measure electrical conductivity, by the IACS method, around the hole of the support.

NOTE: The value should be greater than 38% IACS value. Replace the support if the electrical conductivity measured is less than 38% IACS value.

(i) Try to put into the bushing the bolt used to install the windshield center post. If the diameter of the bushing causes a very close fit, use a reamer. Refer to (Figure 403), sheet 3.

**WARNING: BE CAREFUL WHEN YOU USE SOLVENTS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN YOU HANDLE THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.**

(j) With a cloth soaked in Methyl-Ethyl-Ketone (ASTM-D740), clean the housing surface.

**WARNING: COR-BAN 27L IS TOXIC TO SKIN, EYES, AND RESPIRATORY INHALATION. USE PVC GLOVES AND EYE PROTECTION GOGGLES. USE ONLY IN WELL VENTILATED AREAS. OBEY THE MANUFACTURER'S HEALTH AND SAFETY INSTRUCTIONS.**

(k) Apply COR-BAN 27L to the housing surface.

J. Follow-on

*SUBTASK 842-002-A*

(1) Install the windshield center post ( AMM TASK 53-12-01-400-801-A/400).

(2) Put the aircraft back to its normal condition.