Scandinavian Airlines System

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CHAPTER 56 - WINDOWS

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SAS MEL - MAINTENANCE PROCEDURES
SAS

1. General

A. DDG Maintenance Procedures

SAS B. The Minimum Equipment List (MEL) Maintenance procedures in this manual SAS are based on the Boeing 767 Dispatch Deviations Guide (DDG) Document SAS D630T002 Section 2 MEL. These standard DDG procedures in the 900 Page SAS Block, are "owned" by Boeing and as such, will be updated thru Boeings SAS normal process to incorporate Service Bulletins and to reflect DDG SAS revisions.

SAS C. The referenced DDG Item Number and title is indicated on top of the page. SAS The SAS Aircraft Operation Manual (AOM) MEL Item Numbers differ from the SAS 767 Master Minimum Equipment List (MMEL) Item Numbers and will not appear SAS in the 767 Maintenance Manual Chapters.

SAS D. The procedures are effective for the aircraft as indicated on the SAS individual item pages, but should be used only when a reference to an MM SAS Chapter is present in the AOM of the airline concerned.
SAS
SAS
SAS TASK 56-00-00-839-001

SAS 2. Item Location
SAS
SAS A. General

SAS (1) The MMEL Item Numbers and the DDG Item Numbers are the same.
SAS
SAS EXAMPLE: MMEL Item: 32-41-1 corresponds to:
SAS MEL/DDG Item: 32-41-1 and is located in AMM 32-00-00/901.
SAS

SAS B. SAS: How to Find the MEL/DDG Item via the SAS AOM (example).
SAS
SAS S 839-002

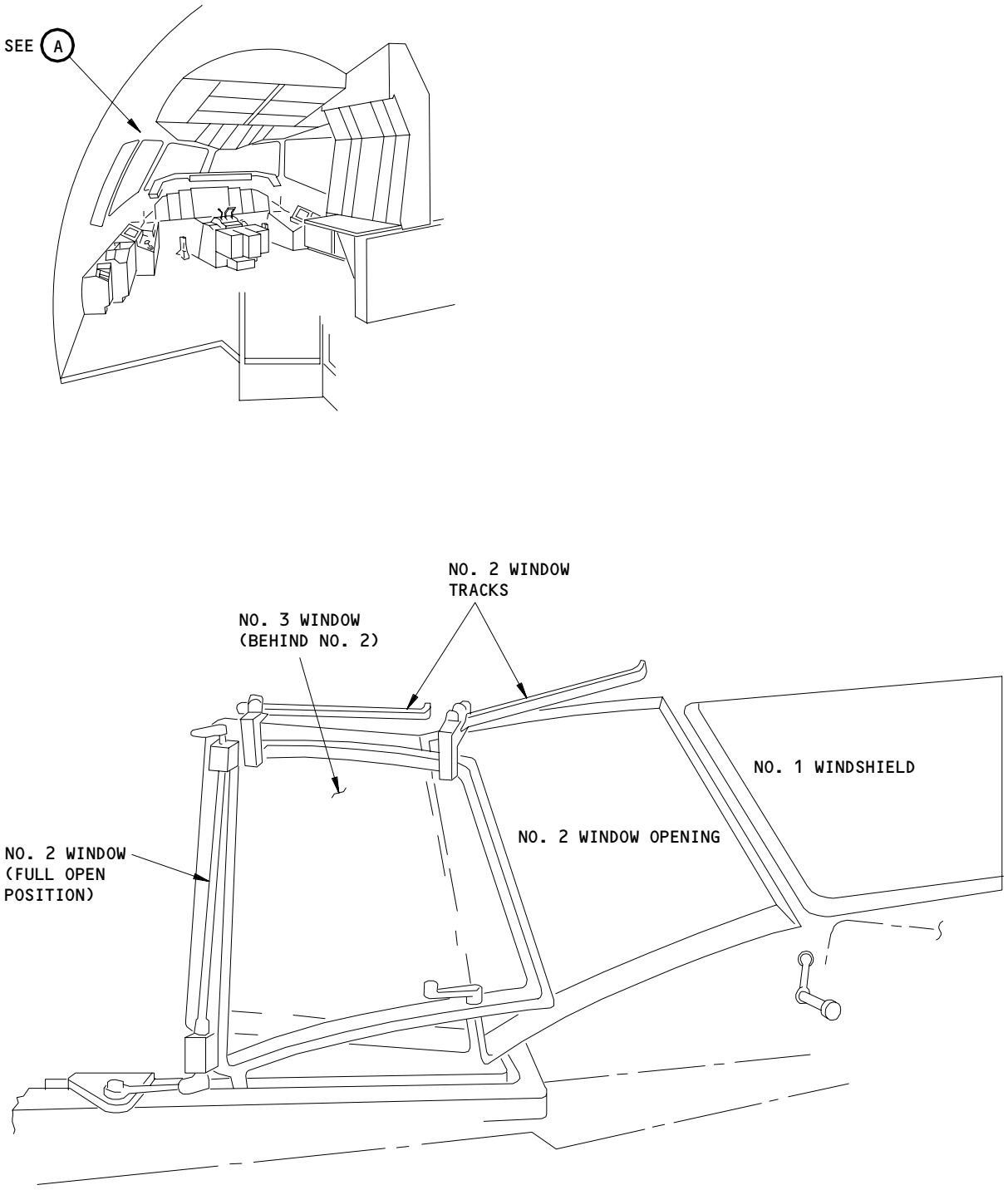
SAS (1) If SAS AOM (M) Ref. is like MM 2-32-41-01, then the Item is to be SAS found in the AMM 32-00-00/901 as DDG 32-41-1.

SAS C. MartinAir: How to Find the MEL/DDG Item via the MartinAir AOM (example).
SAS
SAS S 839-003

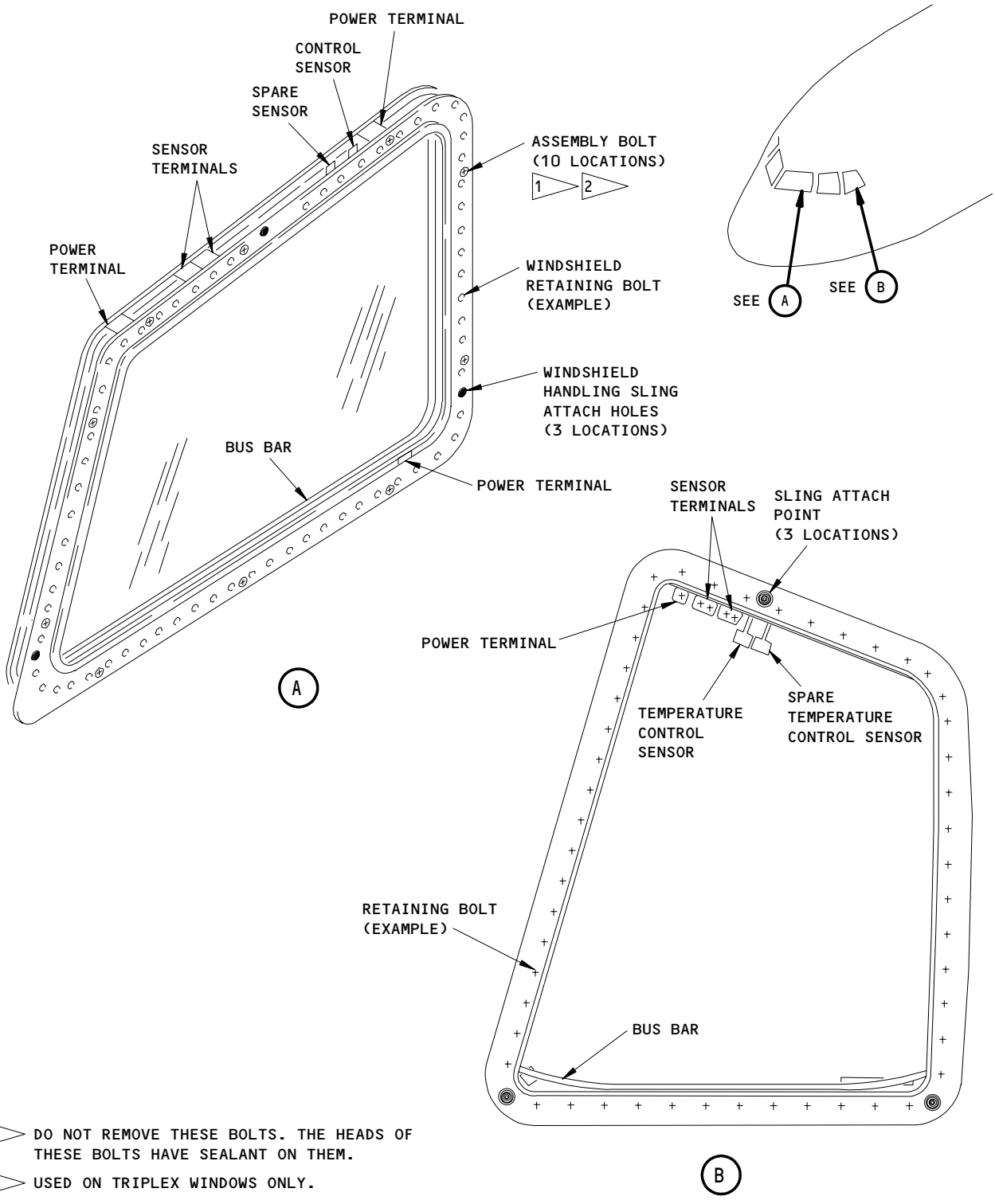
SAS (1) If MartinAir AOM MEL Nbr is like 32-41-1, then the item is to be SAS found in the AMM 32-00-00/901 as DDG 32-41-1.

FLIGHT COMPARTMENT WINDOWS - DESCRIPTION AND OPERATION

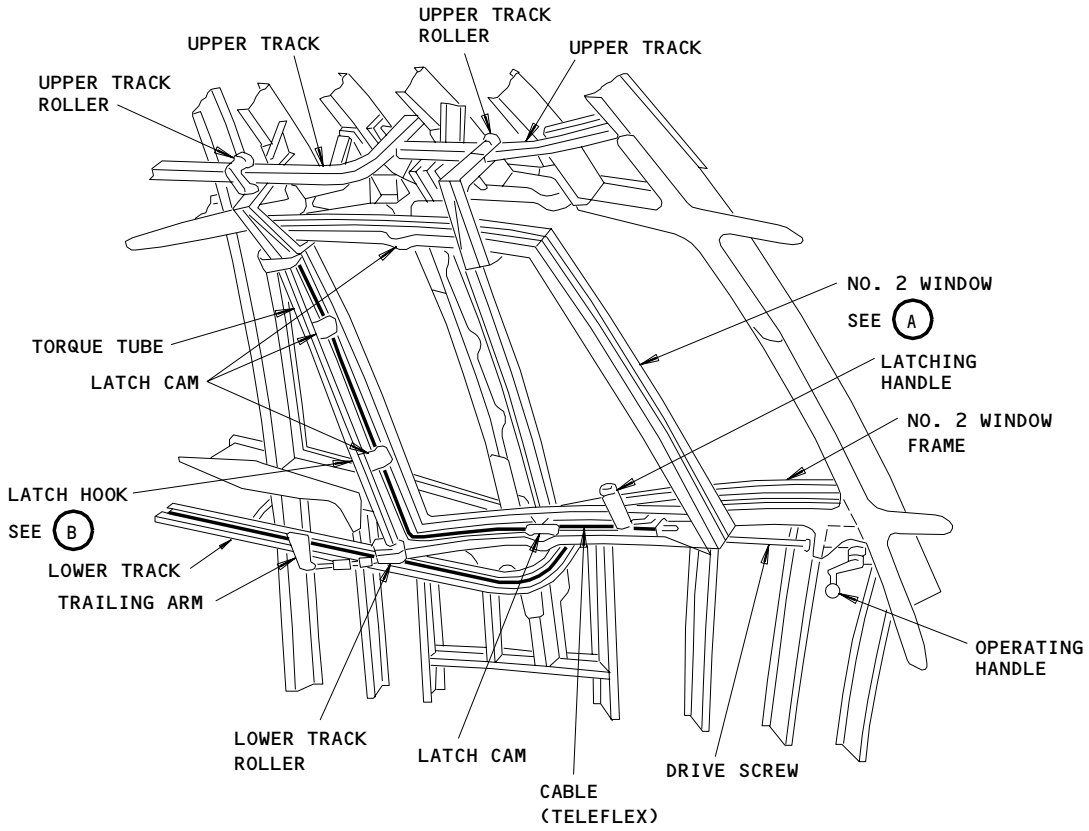
1. General
   A. The following is a description of the flight compartment windows and their component details. Operation of the No. 2 openable window is also covered.
2. Flight Compartment Windows (Fig. 1)
   A. The left and right No. 1 windows are also called windshields. The No. 2 and No. 3 windows are the side windows in the flight compartment. The flight compartment windows all have a conductive layer which is electrically heated to prevent icing and fogging.
3. Fixed Flight Compartment Windows (Fig. 2)
   A. The left and right No. 1 and No. 3 windows are the fixed flight compartment windows. The No. 1 window is flat while the No. 3 window has a compound curvature. Both the No. 1 and No. 3 windows are installed from outside the airplane and are held in place with bolts. Each fixed window has three hoisting points for removal and installation.
   B. The fixed windows have electrical connections for heating. The electrical connections are on the upper front edge on the No. 1 window and on the upper and lower front edges on the No. 3 window. Bus bars across the upper and lower edges on the fixed windows connect to a conductive layer within the windows. The fixed windows each have two temperature sensors on the upper forward edge. The sensors each have two electrical connectors and measure window temperature.
4. No. 2 Openable Window (Fig. 3)
   A. The No. 2 window has a compound curvature, the window opens by sliding aft. Latches hold the window in the frame. A teleflex cable operated by the latch handle releases the latches. The window crank turns a continuous screw through a ball nut attached to a window arm. This moves the window aft on two upper tracks and one lower track. Rollers support the window on the tracks.
   B. The window crank handle is equipped with a shear feature to prevent overloading the window operating mechanism.
   C. AIRPLANES WITH A WINDOW MOUNTED LATCH HOOK;
      The window-mounted latch hook prevents operation of the latch handle unless the window is fully closed.

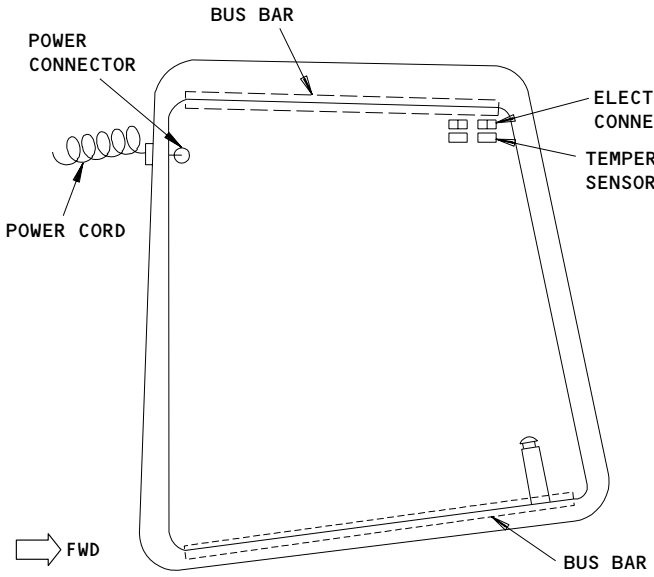


Flight Compartment Windows
Figure 1

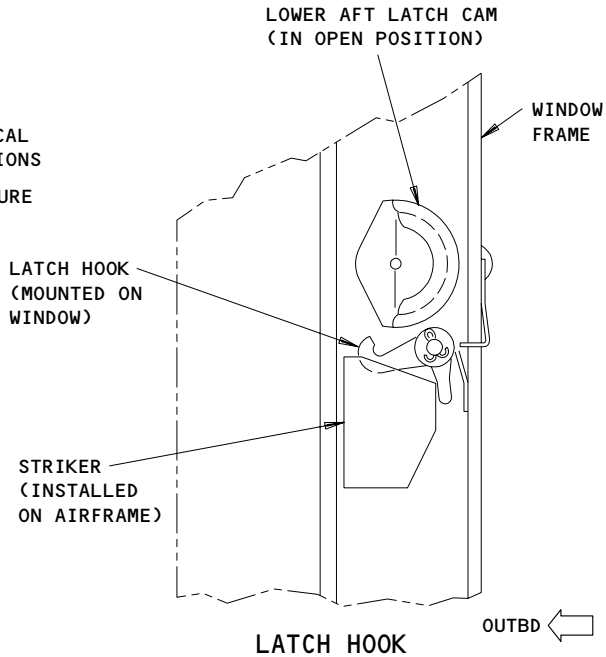


Fixed Flight Compartment Windows
Figure 2





NO. 2 WINDOW
A

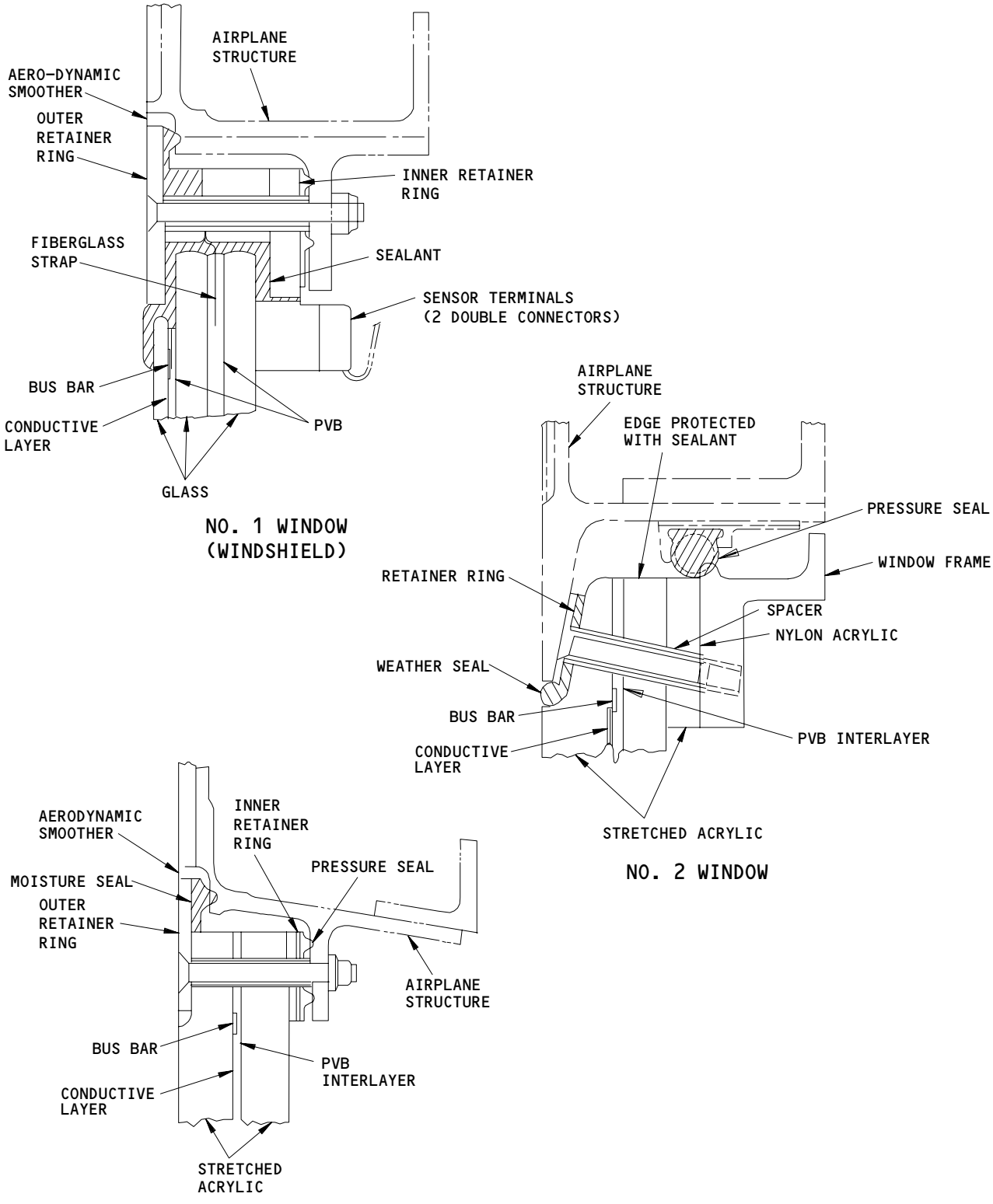


LATCH HOOK
(WHEN YOU LOOK FORWARD)
B

No. 2 Openable Window
Figure 3

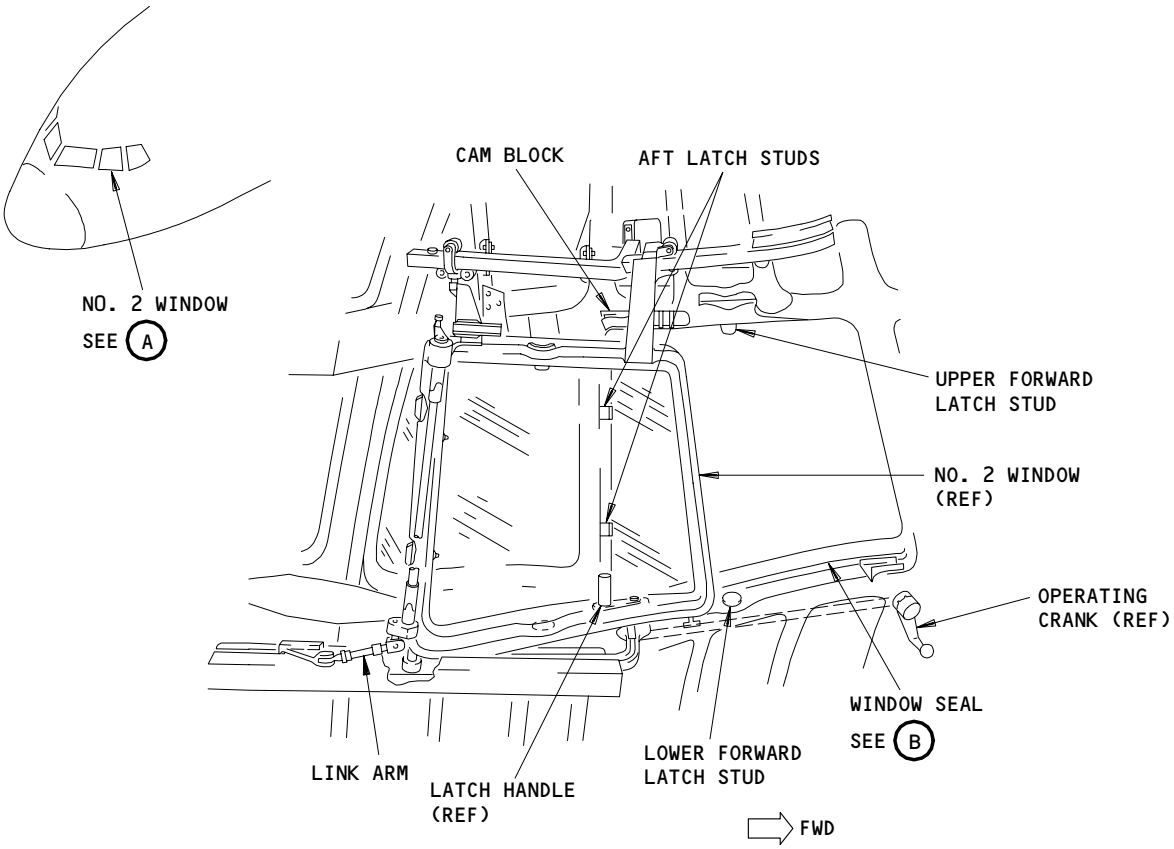
D. The No. 2 window has electrical connections for heating on the upper aft corner. Bus bars across the upper and lower edge of the No. 2 window connect to a conductive layer within the window. A spiral cord moves with the window providing the power for heating. The No. 2 windows each have two temperature sensors on the upper forward edge. The sensors each have two electrical connectors and measure window temperature.

5. Flight Compartment Window Structure (Fig. 4)
   A. The flight compartment windows are made of several layers. The No. 1 window has three layers of glass separated by two layers of poly vinyl butyral (PVB). The No. 2 acrylic windows have two layers of stretched acrylic separated by a PVB interlayer. The No. 2 window also has an inner layer of nylon acrylic. The No. 2 glass windows are a lamination of glass, plastic, and an anti-fog heating film. The external and internal window surfaces are glass. The No. 3 acrylic window have two layers of stretched acrylic separated by a PVB interlayer. The No. 3 glass windows are a lamination of glass, plastic, and an anti-fog heating film. The external and internal window surfaces are glass.
   B. Each window has a conductive layer. The conductive layer has high enough resistance to heat the window when current is passed through it. This protects the windows from icing and fogging.
   C. The No. 1 and No. 3 windows have an inner and outer retaining ring to distribute any forces along the entire edge of the window. Sealant fills the gaps around the window and aerodynamic smoother makes a smooth contour with the fuselage.
6. Operation
   A. Openable Window Operation (Fig. 3)
      (1) The latch handle operates a flexible cable which moves cams on the upper, lower, and aft edges of the No. 2 window. The cams hold the window against the window frame and provide support against forces on the outside of the window. When the latch handle is locked forward, the cams prevent the window from opening. To release the No. 2 window latches, depress the button on top of the latch handle and rotate the latch handle aft to its aft locked position. The No. 2 window opens by moving aft on two upper tracks and one lower track. Rotating the operating crank opens the window by turning a screw through a ball nut. An audible pop should be heard when the window is driven open. The snap is produced when the upper aft cam roller on the torque tube goes past the high center point of the cam block. The ball nut attaches to the trailing arm of the window. This pulls the window open or pushes it closed. To close the No. 2, window rotate the operating handle in the opposite direction until the window reaches the end of the tracks. An audible snap may be heard, but is not required when the upper aft cam roller on the torque tube rotates into place upon closing. Rotating the latch handle forward locks it closed.



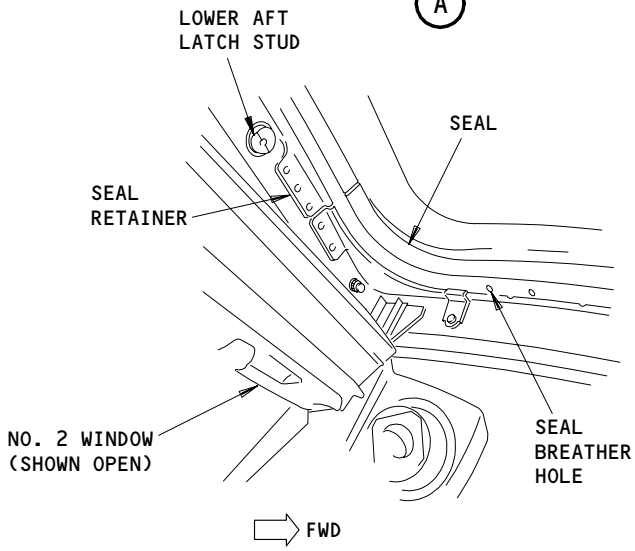
Flight Compartment Window Structure
Figure 4

NOTE: AIRPLANES WITH WINDOW MOUNTED LATCH HOOKS;
A window mounted latch hook prevents rotation of the lower aft latch cam when the window is open. The latch cams can not rotate until the window is driven to the final 0.3 inch of window travel. The hook is released by a striker, allowing the latch handle to move to the locked position.



NO. 2 WINDOW

A



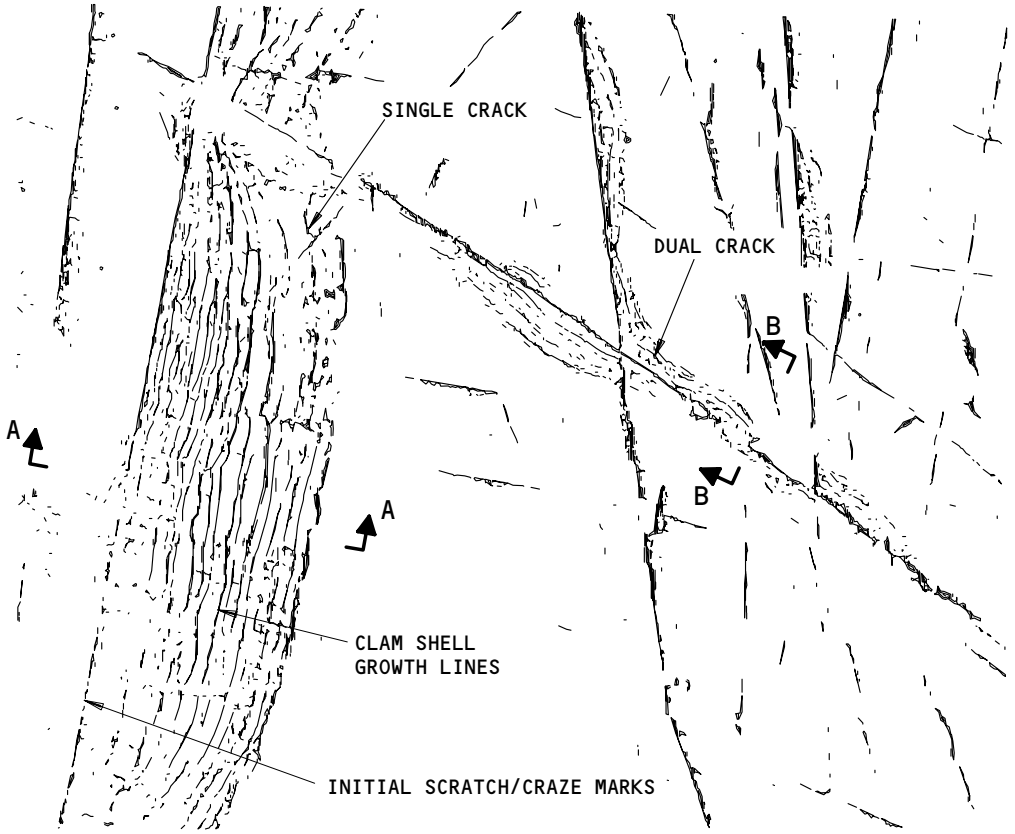
WINDOW SEAL

B

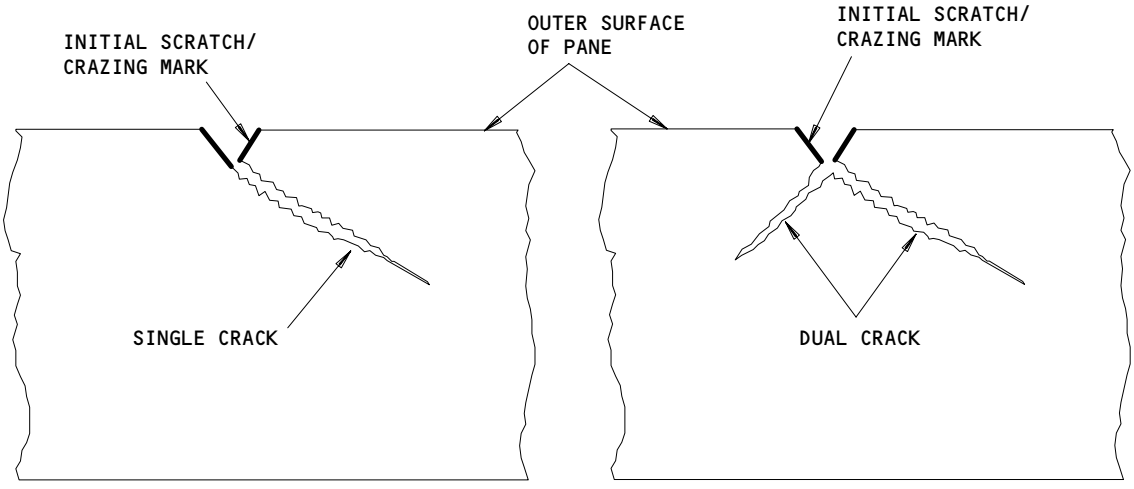
Flight Compartment Windows – Component Location
Figure 101

FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK

1. General
   A. This procedure contains three tasks:
      (1) Examine the No. 1 windows in the flight compartment.
      (2) Examine the No. 2 and No. 3 windows in the flight compartment.
      (3) Leak Check of the No. 2 Openable Window.
   B. Different types of damage are as follows:
      (1) Arcing:
         (a) Arcing is a discharge or short circuit across a discontinuity in a wire, bus bar, conductive heating film, or other internal window components.
         (b) Arcing usually occurs near the window bus bars, and are typically the result of moisture ingress.
         (c) You can identify the heat damage caused by arcing, as follows:
            1) Brown or black burn marks in the interlayer.
            2) Brown or black burn marks on the bus bars or sensor wires.
            3) Bubbles in the interlayers.
            4) Cracks in the windshield face ply.
         (d) Arcs in the heating film away from the bus bar can occur as a jagged line and is also known as a line arc.
      (2) Crazing (acrylic plies only):
         (a) Crazing is many very fine fissures with no visible width or depth at the surface of a ply.
         (b) Crazing will start to be noticeable when the depth of the cracks are 0.002 to 0.004 inch.
         (c) In dim light, and light normal to the surface, crazing is difficult to see.
         (d) In a bright light shown from an angle to the surface, crazing looks frosted and appears to light up.
         (e) Crazing often develops into cracks.
      (3) Cracks:
         (a) A crack is a break or discontinuity of the material. A list of descriptions of cracks by material is as follows:
            1) Acrylic Panes: Cracks in an acrylic pane do not always grow to an edge in a window and can occur as many small fissures in a pane.
               a) Cast acrylic panes: Cracks will look equivalent to smooth fissures perpendicular to the surface.

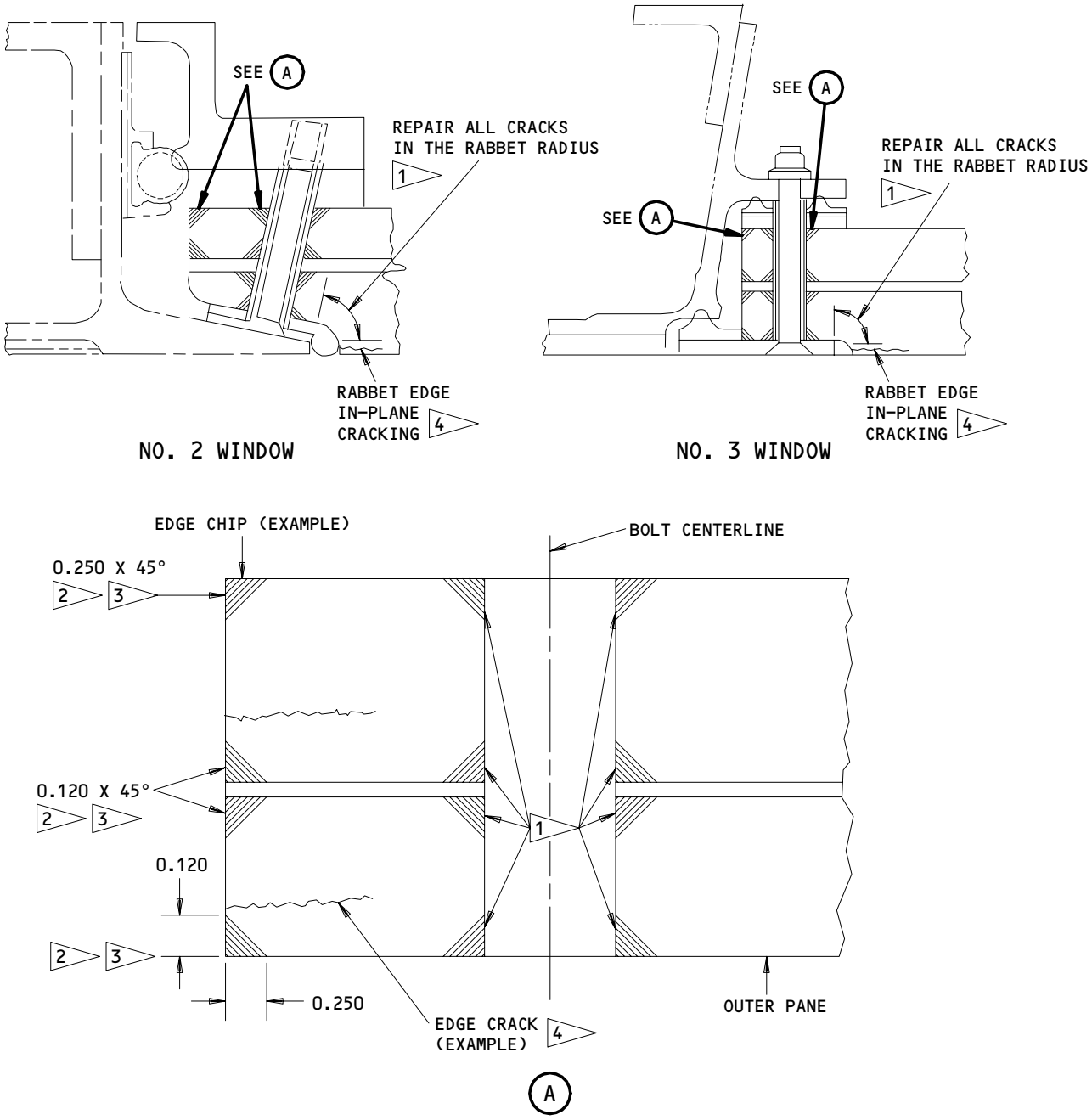


WINDOW SURFACE



A–A B–B

No. 2 and 3 Window Surface Damage
Figure 601



NOTE: ALL DIMENSIONS ARE IN INCHES.

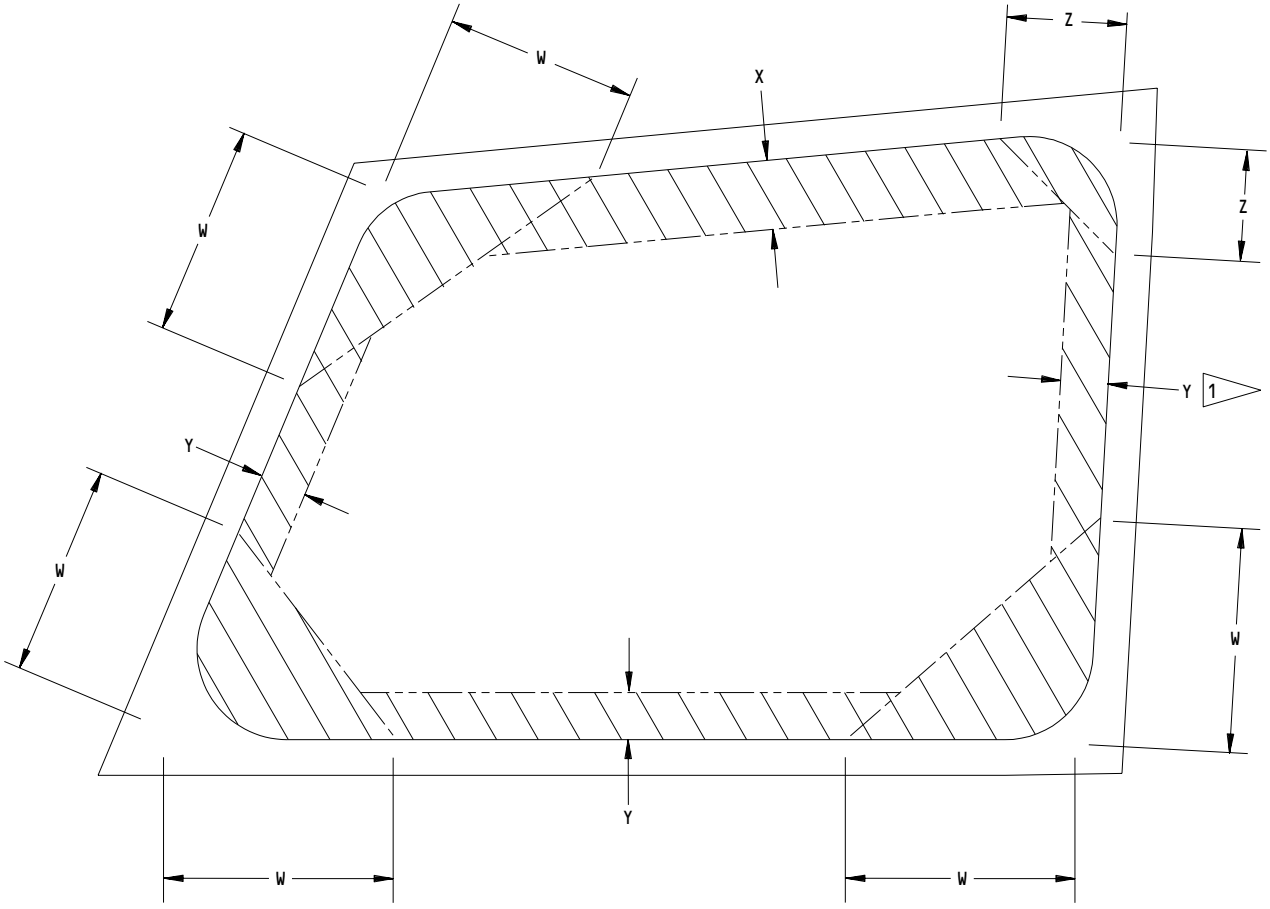
1 > YOU MUST REPAIR THE DAMAGE IN THIS AREA AS SPECIFIED IN THE COMPONENT MAINTENANCE MANUAL

2 > MAY BE SMOOTHER TO 62RMS FINISH

3 > ONLY ONE DEFECT IS PERMITTED IN A CROSS SECTION OF THE INNER OR OUTER PANE WHEN THE DEFECT IS ONE INCH OR LESS FROM THE MOUNTING HOLE CENTERLINE. THIS LIMITATION DOES NOT APPLY TO DEFECTS MORE THAN ONE INCH FROM THE MOUNTING BOLT HOLE CENTERLINE.

4 > YOU MUST REPAIR THE EDGE CRACKS (INPLANE CRACKS) THAT ARE PARALLEL TO THE PANE FACE

No. 2 and 3 Window Acrylic Edge Damage
Figure 602



LEGEND

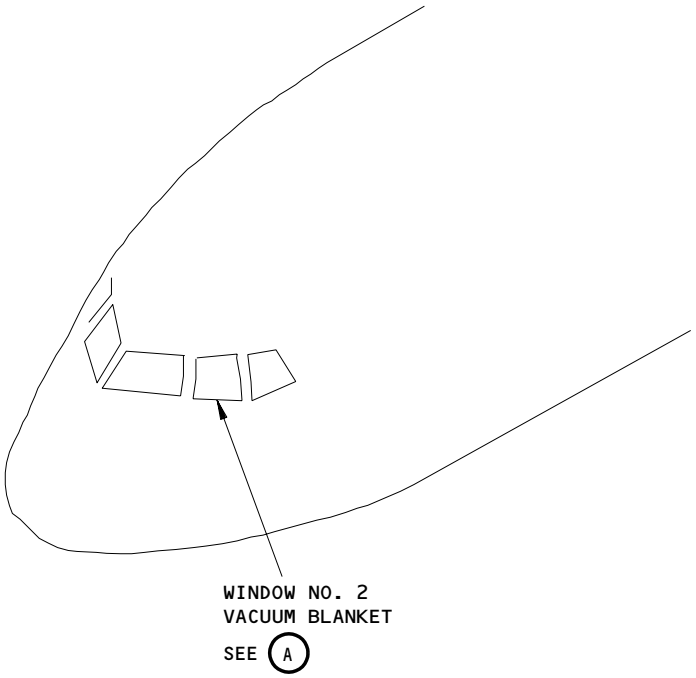
W = 10.0 INCHES (254.0 mm)
X = 3.0 INCHES (76.2 mm)
Y = 2.0 INCHES (50.8 mm)
Z = 5.0 INCHES (127.0 mm)

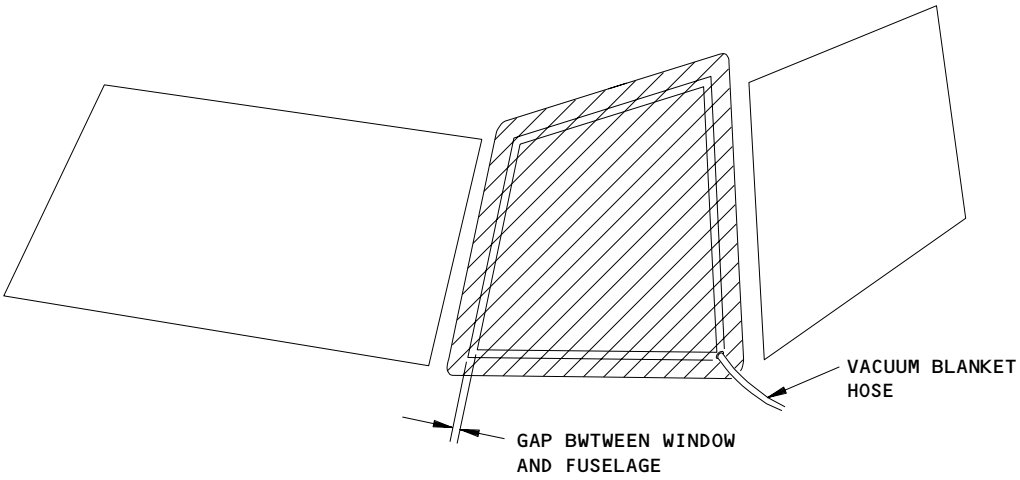
NOTE: 1. SHADE AREA REPRESENTS A NON-CRITICAL (NOT PRIMARY) VIEWING AREA AND MAY CONTAIN MANUFACTURING ANOMOLIES.

2. DELAMINATION DOES NOT CAUSE STRUCTURAL FAILURE. THE ALLOWABLE LIMIT OF DELAMINATION IN THE PRIMARY VIEWING AREA IS THE OPERATORS DISCRETION WITH VISIBILITY THE PRIMARY CONSIDERATION.

1 WINDOW MANUFACTURER DATA SHOULD BE LOCATED ON WINDOW ADJACENT TO FRAME.

Triplex and PPG Windshield Delamination Limits
Figure 603





WINDOW NO. 2 VACUUM BLANKET

A

NOTE: THE VACUUM BLANKET COVERS THE ENTIRE WINDOW AND THE GAP BETWEEN THE WINDOW AND THE FUSELAGE.

Window No. 2 Vacuum Blanket Check
Figure 604

b) In-plane acrylic cracking: A crack that grows parallel to the surface of the ply, and it starts from the edge of the pane or at a deep surface cracks. It will look equivalent to a smooth surface of fissures, or series of fissures internal to the pane. Usually found by the reflection of the light from the surfaces of the fissure.

c) Stretched Acrylic Panes: Cracks propagate at angles to the surface of stretched acrylic panes. Cracks in stretched acrylic can have a chevron or clamshell growth lines that propagate from a stress riser such as a scratch, chip, craze, or other surface damage.

2) Glass Panes: Cracks in a glass pane will always grow to an edge or adjacent crack in the window. (A line arc can be confused with a crack but one end typically stops in the center area of the window).

a) Non-Structural Glass Pane - Cracks will look equivalent to smooth fissure perpendicular to the surface and through the entire thickness of the pane. There are usually many cracks across the glass surface (spider web pattern) of the pane. Cracks will not significantly decrease visual quality.

b) Structural Glass Pane - The pane will break into many small irregularly shaped pieces, typically no larger than 0.5 in. (12.7 mm) maximum dimension. Visual quality is significantly decreased.

(b) Cracks can start from a scrath or a crazing mark (Fig. 601).

(c) Cracks can be single or dual (Fig. 601).

(d) The cracks in an outer vinyl ply (the ply between the middle structural ply and the outer ply) are caused by incorrect heat application.

(e) The cracks in the vinyl usually occur in the window corners and are within the edges of the release tape.

NOTE: Vinyl cracks are not a problem structurally.

NOTE: Only replace the windshield if your vision is limited.

(4) Scratches:

(a) A scratch is the linear removal or displacement of material from the surface of a pane.

(b) Scratches usually occur in a straight line or slight curve.

(c) The depth of a scratch is not usually greater than the width of the scratch.

1) The depth of a small scratch is 0.001 to 0.004 inch.

NOTE: On a small scratch, the material that was removed does not remain on the sides of the scratch.

2) The depth of a large scratch is 0.005 inch or more.

NOTE: On a large scratch, the material that was removed remains on the sides of the scratch.

(5) Chips:
(a) Chips are the removal of material from the surface of a glass or acrylic pane, usually from the impact with a hard object. The types of chips are as follow:
1) External Chips:
a) Shell type chips are in the surface or edge of the pane. These chips have a circular or curved shape with many fine lines or ridges that follow the outline of the edge of the chip that give it almost the same shape of a shell. The width of the chip is more than its depth.
b) V shaped chips have the shape of a sharp narrow "V". Depth of the chip is equal to or larger than the width width. V - shaped chips can cause a windshield failure.
2) Internal Chips:
a) Peel Chips - Chips that occur on the internal surface of glass panes. Chipped areas have a curved, rough grained shape, and are easily seen in reflected light. The chipped area can have small glass flakes, usually white. The view through the window will distort through the rough surface of the chip. Usually the chips start very small but can continue to grow with the continued use of the airplane.
(b) Chips usually occur at the front part of the window.
(6) Delamination:
(a) Delamination is the separation of a pane or panes from the interlayer internal to the window.
(b) Delamination can appear as a flat smooth air bubble with either a circular edge or smooth finger - like projections in the window.
(c) In reflected light, delamination at the coating surface are seen as shiny blue gold, or brown areas.
(d) In transmitted light, delamination at the coating surface are seen as brown areas.
(e) Delamination between the interlayer and the outer glass pane are usually not found until they move into the coating area.
(f) Delamination is not a safety concern except when it obstructs vision.
1) If moisture enters the delaminated area, it will become cloudy, may obstruct vision and may promote arcing.
2) Delamination at the coating surface may prevent correct operation of the window heat system.
3) Delamination and window heat may also cause cracks in the outer glass ply.

(7) In-Plane Cracking (acrylic plies only):
(a) In-plane cracking is also identified as delamination.
(b) In-plane cracking is a crack that grows parallel to the surface of the ply from an edge or crack.
(c) In-plane cracking looks like delamination but will not have the finger - like projections.
(8) Bubbles:
(a) Small isolated or irregular shaped voids in the interlayer internal to the window not at the window edge.
(b) Too much window heat can cause small bubbles in the vinyl core.
(c) Bubbles can be a result of a damaged window heat control system.
(d) Multiple bubbles together in a small group, or black or dark brown bubbles are an indication of a damaged window heat control system.
(9) Moisture Ingression:
(a) A cloudy white or yellow haze internal to the window usually around the periphery.
(b) It can follow wires internal to the window, along the bus bar and also in areas of delamination.
(c) Long term exposure to moisture can lead to electrical arcing of the heating system internal to the window.
(10) External Aerodynamic Smoother - Erosion and Cracking.
(a) External aerodynamic smoother will degrade with time because of wind, rain and UV exposure.
(b) Erosion or cracks of the aerodynamic smoother will let moiture penetrate into the window laminate.
(c) Repair and maintenance of external aerodynamic smoother is necessary to get as much window life as possible.

TASK 56-11-00-216-001

2. Flight Compartment Window No. 1 Inspection

A. General
(1) Removal of a window is only necessary for reasons such as:
(a) Heat inoperable for reasons internal to the window.
(b) Arcing in area of window bus bars.
(c) There is a decrease in the visual capacity.
(d) Cracks in any glass ply.
(e) Scratches greater than 0.002 inch in depth on the inner ply.

B. Equipment
(1) Optical Micrometer - Model 966A or Model 966A1 (or equivalent)
Monocle Industies
P.O. Box 2426
Coppell, Tx, USA 75019
Tel (972) 393-9920
Fax (972) 393-9926

C. References
(1) AMM 30-41-00/501, Flight Compartment Window Anti-Icing
(2) AMM 56-11-00/801, Flight Compartment Windows
(3) AMM 56-11-01/401, No. 1 Windshield
(4) AMM 56-11-02/401, No. 2 Window

(5) AMM 56-11-10/401, No. 3 Window
(6) SRM 56-10-02

D. Access
(1) Location Zones
211/212 Control Cabin - Section 41

E. Prepare to Inspect the No. 1 Window

S 866-042

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRIC SHOCK WHEN YOU TOUCH THE WINDOW.

(1) For the No. 1 left window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36L5 ICE/RAIN WINDOW HEAT 1L

S 866-003
(2) For the No. 1 right window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37D2, ICE/RAIN WINDOW HEAT 1R

S 866-004
(3) Make sure the WINDOW HEAT switches on the P5 panel are in the off position, and amber INOP lights are on.

F. Procedure

S 216-050
(1) Examine the No. 1 window for these types of damage:
(a) Scratches
(b) Chips
(c) Cracking
(d) Delamination

(e) Moisture Ingress
(f) Bubbles

NOTE: Refer to paragraph (1. B.) for the identification of these types of damage.

S 966-051
(2) Replace the window if the damage limits your vision through the glass.

S 966-052
(3) Replace the windshield if the nicks or scratches in the inner ply (crew shield) are more than 0.002 inch in depth.

NOTE: The inner ply (crew shield) is a structural ply made of tempered glass.

S 966-053
(4) Replace the windshield if the main glass panes have chips.

S 966-054
(5) Replace the window if the external outermost glass surface plies (erosion layer, or face ply) have chips that limit your vision through the window.

S 966-055
(6) Replace the window if there is a crack in any glass pane. (AMM 56-11-01/401).

S 966-075
(7) Replace the window if the delamination limits your vision.

NOTE: Delamination may result in arcing and glass cracking. It is recommended that windows with delamination extending more than 3.5 inches (89 mm) from the edge of the window be replaced.

S 216-093
(8) Examine the window for moisture ingress.
(a) Examine the window for a cloudy or milky white area in a delamination or around the periphery of the window. This is a sign of moisture ingress which can cause arcing in the window heat film.
1) If the moisture is found with any signs of arcing, replace the window.

2) If the delamination or the moisture limits vision, replace the window.
3) If moisture is found near bus bars, it is recommended to replace the window.

NOTE: Moisture near bus bars is an indication that electrical failure may occur.

S 216-056
(9) Examine the No. 1 Window Moisture Seal and the Aerodynamic Smoother.
(a) Repair the moisture seal if it has cracks, loose edges, deterioration, or erosion.
(b) Repair the aerodynamic smoother if it has cracks or loose edges (AMM 56-11-00/801).

S 216-057
(10) Examine the window posts and the sills for corrosion and damage.

S 216-058
(11) Examine the No. 1 window fasteners.
(a) Make sure all the fasteners are installed.

CAUTION: DO NOT TIGHTEN THE BOLTS IF THEY ARE LOOSE UNLESS YOU FIND LEAKS. IF YOU TIGHTEN THE BOLTS TOO MUCH, DAMAGE TO THE SEAL CAN OCCUR.

(b) Tighten loose fasteners 50 to 70 pound-inches (maximum torque) to stop water or air leaks.

S 216-059
(12) Examine the No. 1 Window Heating System.
(a) Look for loose or damaged window heat terminal blocks.
(b) Look for electrical arc damage in the area of the heat bus bars on the window.
(c) Replace the windshield if there are indications of arcing.

S 866-013
(13) For the No. 1 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36L5 ICE/RAIN WINDOW HEAT 1L

S 866-014
(14) For the No. 1 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the right Miscellaneous electrical equipment panel, P37:
1) 37D2, ICE/RAIN WINDOW HEAT 1R

S 716-015

(15) Make sure the window anti-icing system operates correctly (AMM 30-41-00/501).

TASK 56-11-00-216-016

3. Flight Compartment Window No. 2 and No. 3 Inspection

A. General

(1) Refer to the general paragraph to identify the types of damage.

B. Equipment

(1) Optical Micrometer - Ace Model 966A
Monocle Industries
P.O. Box 2426
Coppell, TX, USA 75019
Tel (214) 393-9920
Fax (214) 393-9926

C. References

(1) AMM 30-41-00/501, Flight Compartment Window Anti-Icing
(2) AMM 56-11-00/801, Flight Compartment Windows
(3) AMM 56-11-01/401, No. 1 Windshield
(4) AMM 56-11-02/401, No. 2 Window
(5) AMM 56-11-10/401, No. 3 Window
(6) SRM 56-10-02

D. Access

(1) Location Zones
211/212 Control Cabin - Section 41

E. Prepare for the Inspection

S 866-070

WARNING: BEFORE YOU DO MAINTENANCE ON FLIGHT COMPART MENT WINDOW NO. 2 OR NO. 3, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRIC SHOCK WHEN YOU TOUCH THE WINDOW.

(1) For the No. 2 left window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E1, WINDOW HEAT 2L

S 866-018

(2) For the No. 2 right window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H6, ICE/RAIN WINDOW HEAT 2R

S 866-019
(3) For the No. 3 left window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E2, WINDOW HEAT 3L

S 866-020
(4) For the No. 3 right window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H7, ICE/RAIN WINDOW HEAT 3R

S 866-071
(5) Make sure the WINDOW HEAT switches on P5 panel are in the off position (out position).

F. Procedure

S 966-022
(1) Use an optical micrometer to measure damaged areas in the window.

S 216-060
(2) Examine the No. 2 and No. 3 windows for this type of damage:
(a) Erosion.
(b) Scrathes.
(c) Crazing.
(d) Chips.
(e) Cracks.
(f) Moisture Ingress.

S 306-061
(3) Repair this damage if it limits your vision through the window (AMM 56-11-00/801).

S 966-062
(4) Replace the window (acrylic windows only) if the depth of the damage is more the 0.05 inch (AMM 56-11-02/401 or AMM 56-11-10/401).

NOTE: The window is structurally damaged when the depth is more than 0.05 inch.

(a) Multiply the acrylic plastic index of refraction (1.49) by the micrometer value, to calculate the depth of the damage.

S 356-072
(5) Repair (acrylic windows only) superficial scratches, if they limit your visual capacity (AMM 56-11-00/801).

S 216-063
(6) Examine the No. 2 and No. 3 window (acrylic windows only) for edge chips (Fig. 602).
  (a) Replace the window if the depth of a chip is greater than the limits shown in figure 602.
  (b) Replace the window if there is more than one chip in a cross section area less than one inch from the centerline of the bolt.

S 216-064
(7) Examine the No. 2 and No. 3 window (acrylic windows only) for in - plane cracking (delamination).
  (a) Repair in - plane cracks that are parallel to the window edge.
  (b) Repair in - plane cracks that are in the rabbet radius (Fig. 602) as specified in the component maintenance manual.

    NOTE: The in - plane cracking between the extended acrylic panes and the vinyl interlayer is not a structural problem.

S 216-074
(8) Examine No. 2 window (glass only) for delamination.
  (a) Replace the window if the damage limits your vision.

    NOTE: A 2-inch wide band around the edges of the window is specified as a non-critical vision area. Edge delamination cannot cause structural failure.

S 216-073
(9) Examine the No. 3 window for delamination.
  (a) Make sure delamination does not limit your vision.

    NOTE: No. 3 window is not a bird strike requirement window and therefore does not require replacement based upon delamination. Window replacement is based on poor visibility through window or window heat failure.

S 216-094
(10) Examine the window for moisture ingress.
  (a) Replace the window if a cloudy or milky white area can be seen in a delamination or around the periphery of the window. This is a sign of moisture ingress which can cause arcing in the heating film.

S 216-095
(11) Examine the Window Moisture Seal and the Aerodynamic Smoother.
(a) Repair the moisture seal if it has cracks, loose edges, deterioration, or erosion.

S 216-065
(12) Examine the No. 2 and No. 3 window for bubbles.

NOTE: Too much window heat can cause small bubbles in the vinyl core.

(a) Replace the window if bubbles limit your vision through the window.
1) Make sure the window heat control unit operates correctly (AMM 30-41-00/501).

S 216-066
(13) Examine the No. 2 and No. 3 windows aerodynamic smoother.
(a) Repair all the aerodynamic smoother that has cracks or has loose edges (AMM 56-11-00/801).

S 216-067
(14) Examine the No. 2 and No. 3 window posts, sills, and fasteners.
(a) Visually check the window posts and sills for corrosion, dents, cracks, and other damage.
(b) See the structural repair manual (SRM 56-10-02) for the corrosion and damage limits.

CAUTION: DO NOT TIGHTEN THE FASTENERS TOO MUCH. IF YOU MAKE THEM TOO TIGHT, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(c) Make sure the fasteners have between 50 to 70 pound - inches of torque.
(d) The No. 2 or 3 windows can be permanently bent outboard. This does not damage the window structurally. Do not remove the window for this reason.

S 216-068
(15) Examine the No. 2 and No. 3 window heat system.
(a) Do a check for loose or damaged window heat terminal blocks.
(b) Look for damage from electrical arcs in the area of the heat bus bars on the window.
(c) Replace the windshield if there are indications of arcing.

S 866-037
(16) For the No. 2 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E1, WINDOW HEAT 2L

S 866-038
(17) For the No. 2 right window, remove the DO-NOT-CLOSE tag and close the circuit breaker:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H6, ICE/RAIN WINDOW HEAT 2R

S 866-039
(18) For the No. 3 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E2, WINDOW HEAT 3L

S 866-040
(19) For the No. 3 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H7, ICE/RAIN WINDOW HEAT 3R

S 716-041
(20) Make sure the window anti-icing system operates correctly (AMM 30-41-00/501).

TASK 56-11-00-286-083

4. Leak Check of the No. 2 Window.

A. General
(1) This procedure is for the right and left No. 2 Openable Windows.

B. Equipment
(1) ST6760-6, No. 2 Window Vacuum Blanket
(2) ST6760A-1, Ultrasonic Leak Probe Tool
(3) ST9999-VBA-301, Vacuum Generator

C. References
(1) AMM 30-41-00/501, Control Cabin Window Anti-Ice System
(2) AMM 56-11-02/501, No. 2 Window

D. Access
(1) Location Zone
101 Control Cabin, Left
102 Control Cabin, Right

E. Procedure

S 866-084

WARNING: DISARM THE WINDOW HEAT SYSTEM BEFORE YOU CHECK THE WINDOWS. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Make sure the power is OFF for the window heat system.
(a) Make sure that the window heat switches are in the OFF position.

(b) Open these circuit breakers and attach the DO-NOT-CLOSE tags:
1) Panel P36
a) 36L5 ICE/RAIN WINDOW HEAT 1L
b) 36H6, ICE/RAIN WINDOW HEAT 2R
c) 36H7, ICE/RAIN WINDOW HEAT 3R
2) Panel P37
a) 37D2, ICE/RAIN WINDOW HEAT 1R
b) 37E1, WINDOW HEAT 2L
c) 37E2, WINDOW HEAT 3L

S 026-085
(2) Remove the window padding from the window:
(a) Remove the latch handle cover.
(b) Remove the covers from all sides of the window.
(c) Remove any protective tape around the window opening.
(d) Loosen the protective tape in the corners of the window.
(e) Plug the window interior lining holes in the No. 2 window frame.
(f) Plug the window fluid drain line on the airplane structure at the lower aft side of the No. 2 window.

S 846-086
(3) Prepare the vacuum blanket:
(a) Calibrate the ultrasonic leak detector:
1) Use the white noise generator to set the PASS/FAIL indication to 40 dB.
(b) Connect the vacuum generator to the vacuum bag.
(c) Connect the vacuum generator to a compressed air source.

S 486-087
(4) Install the vacuum blanket over the No. 2 window (Figure 604).
(a) Place the vacuum port over the lower aft outside corner of the window.
(b) Make sure the vacuum blanket covers the entire window and the gap between the window and the fuselage.
(c) Remove all bubbles and creases.
(d) Make sure the vacuum gauge indicates 18 to 20 inch (HG) (46 cm) of vacuum after you attach the blanket to the window.

S 276-088
(5) Do a check of the noise levels around the interior of the No. 2 window:
(a) Hold the ultrasonic leak detector approximately 2 inches (5 cm) from the window.
(b) Move the ultrasonic leak detector around the edge of the window.
(c) Use the headphones and watch the noise scale on the ultrasonic leak detector.

S 816-089

(6) If the noise levels are more than 40 dB, do the steps that follow:
  (a) Determine the exact location of the noise with a stethoscope.
  (b) Remove the vacuum blanket from the window.
  (c) Do the applicable No. 2 window adjustments (AMM 56-11-02/501).
  (d) Install the vacuum blanket again and check for leaks.

NOTE: You will have to repeat the installation of the vacuum blanket and do the check for leaks to make sure all the leaks have been corrected.

F. Put the Airplane Back to Its Usual Condition:

S 416-090

(1) Install the No. 2 window padding:
  (a) Install the covers on all sides of the window.
  (b) Install the latch handle cover.

S 866-091

(2) Make sure the power is ON for the window heat system.
  (a) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
    1) Panel P36
      a) 36L5 ICE/RAIN WINDOW HEAT 1L
      b) 36H6, ICE/RAIN WINDOW HEAT 2R
      c) 36H7, ICE/RAIN WINDOW HEAT 3R
    2) Panel P37
      a) 37D2, ICE/RAIN WINDOW HEAT 1R
      b) 37E1, WINDOW HEAT 2L
      c) 37E2, WINDOW HEAT 3L

S 716-092

(3) Do the operational test for the window heat control system (AMM 30-41-00/501).

FLIGHT COMPARTMENT WINDOWS - APPROVED REPAIRS

1. General
   A. This procedure contains these tasks:
      (1) Repair the scratched or crazed windows (No. 2 and No. 3 windows) (acrylic windows only).
      (2) Repair the chipped or eroded windows (No. 2 and No. 3 windows) (acrylic windows only).
      (3) Repair the aerodynamic sealant.
      (4) Repair the Moisture Sealant (No. 1 window).
      (5) Repair air leaks between the No. 2 window laminate assembly and the frame assembly.
      (6) Repair leaks in the bulb seal (No. 2 window).

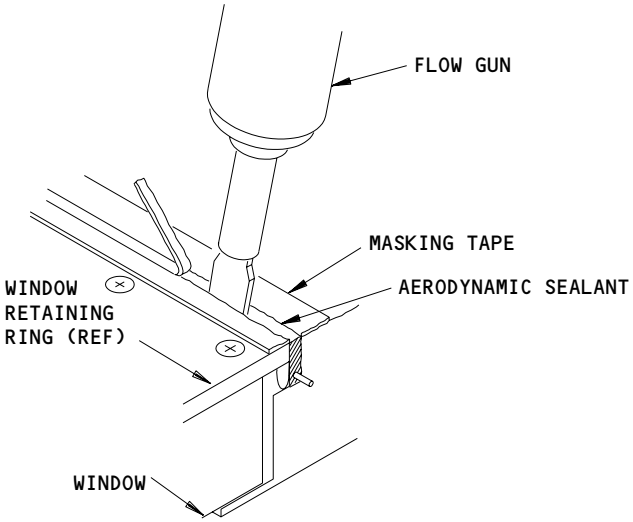
TASK 56-11-00-308-008

2. Repair Scratched or Crazed Windows (No. 2 or 3 Windows) (acrylic only)
   A. General
      (1) You can remove scratches and surface crazing from the No. 2 and No. 3 windows with an abrasive paper or polish. Refer to Table 801 to keep the correct window pane thickness. To do a check of the window surface damage, use an optical micrometer. To do a check of the window thickness during the window repair task, use ultrasonic equipment that is calibrated before use.

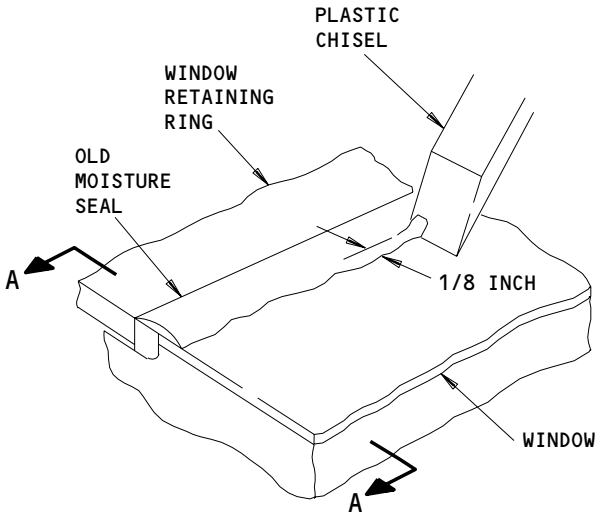
         NOTE: The minimum total thickness does not include the 0.10 inch vinyl interlayer. The repair limits for the No. 2 and No. 3 windows are controlled by a minimum thickness for each window after the repair. Repair limits for the No. 2 window are also controlled by a minimum total thickness of the two windows together after the repair.

Table 801

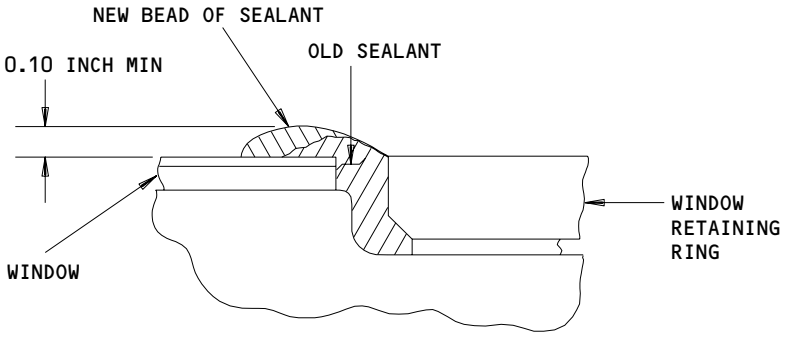
MINIMUM PANE THICKNESS	NO. 2	NO. 3
INNER PANE	0.450	0.450
OUTER PANE	0.850	0.700
INNER AND OUTER PANE TOTAL	1.300	1.15



AERODYNAMIC SEALANT REPAIR

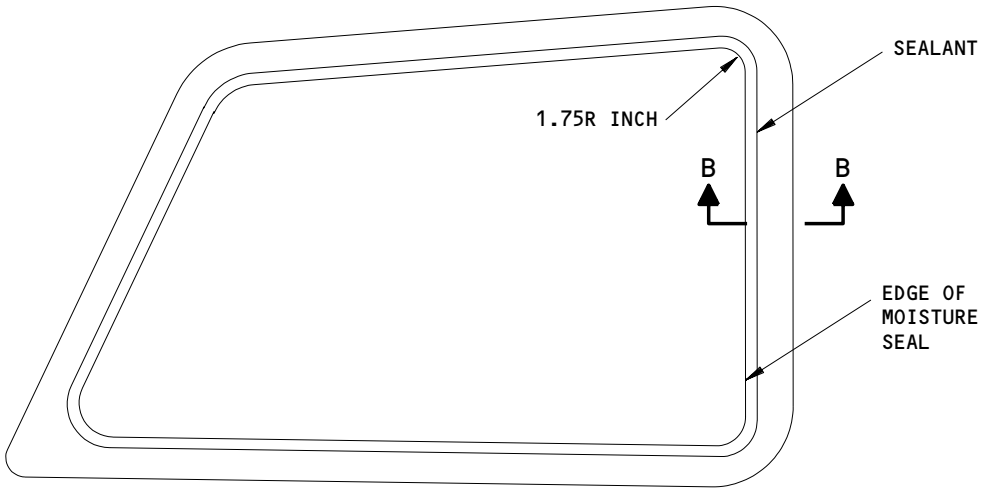


MOISTURE SEALANT REPAIR

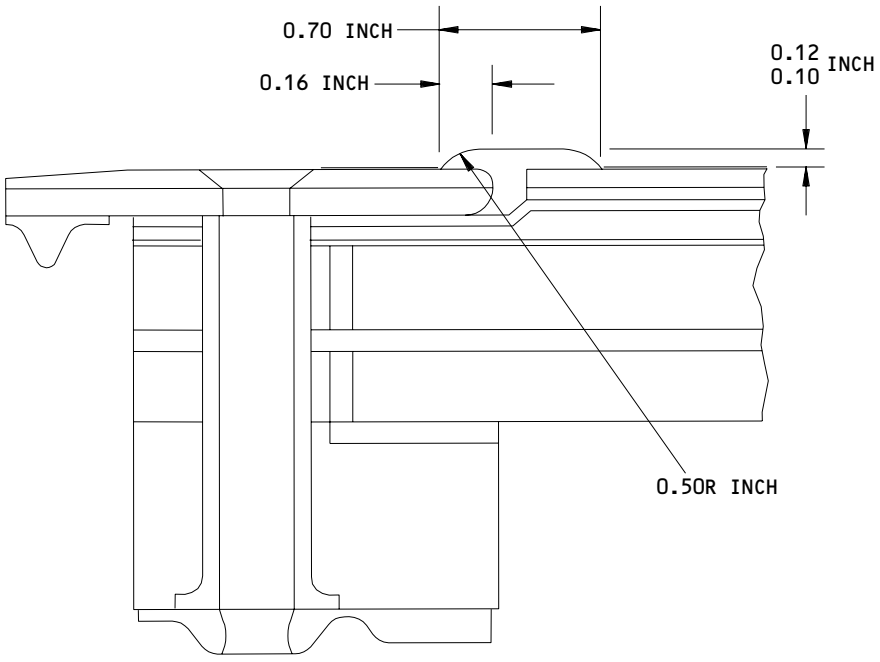


A–A

Aerodynamic Sealant and Moisture Sealant Repair
Figure 801 (Sheet 1)



NO. 1 WINDOW



B-B

Aerodynamic Sealant and Moisture Sealant Repair
Figure 801 (Sheet 2)

(2) Scratches are divided into three types: superficial, minor, and major. Superficial scratches are less than 0.001 inch in depth. This type of scratch is caused when the window is not cleaned carefully. Minor scratches are from 0.001 to 0.004 inch in depth. Major scratches are over 0.004 inch in depth.
(3) Crazing: Crazing occurs in plastic plies, not in glass plies. Crazing is a number of very fine fissures at the surface of the ply. The fissures are very fine, do not have visible width or depth and are difficult to see in dim light. When viewed in a bright light the fissures reflect the light and appear to light up.
(4) To prevent accidental damage to the windows:
(a) Put a protective cover or tape on the areas of the window that do not have scratches
(b) Use clean cotton gloves when you touch the polished window panes
(c) Make sure you use the correct materials
(d) Keep sharp objects away from the window surface.

B. Equipment
(1) Sander, Vibrating - Air Driven (with Rubber Pad) - Commercially Available
(2) Ultrasonic Equipment - commercially available
(3) Sanding Block - Rubber Block of Shore-A Durometer Hardness (Optional: Wood Block With Several Layers of Flannel) (Commercially Available)
(4) Optical Micrometer - Model 966A or Model 966A1
Monocle Industries
P.O. Box 2426
Coppell, TX, USA 75019
Tel (214) 393-9920
Fax (214) 393-9926

C. Consumable Materials
(1) G00191 Protective coating, Spraylat SC-1071
(2) G00301 Protective Tape, Gizard Protex 20V
(3) G00989 Aluminim Foil Tape, Permacel P112
(4) G01990 Canton (Cotton) Flannel Cloth, Clean and Oil-Free - Commercially Available
(5) B00106 Chamois, KK-C-300
(6) B00027 Buffing Compound, Learock No. 888

(7) B00026 Buffing Compound, Learock No. S-30
(8) B00305 Simoniz Polish
(9) B00302 Plex-T-Glow Cleaner and Polish
(10) Wet-or-Dry Sandpaper No. 600-A to 100-A - Commercially Available
(11) B00130 Isopropyl Alcohol-TT-I-735
(12) G02044 Micromesh Cloths (1600-8000 Grit) - Micromesh Kit SN2

D. References
(1) AMM 56-11-02/401 No. 2 Openable Window Removal/Installation
(2) AMM 56-11-10/401 No. 3 Window Removal/Installation

E. Access
(1) Location Zones
211/212 Control Cabin - Section 41

F. Procedure - Repair the Scratched or Crazed Windows (No. 2 and No. 3 Windows)

S 848-073
(1) Prepare the Window for Repair.

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(a) Put the window heat switches that are on the pilot's overhead panel, P5, to the OFF position.
(b) For the left No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E1, WINDOW HEAT 2L
(c) For the right No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R

(d) For the left No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E2, WINDOW HEAT 3L
(e) For the right No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H7, ICE/RAIN WINDOW HEAT 3R

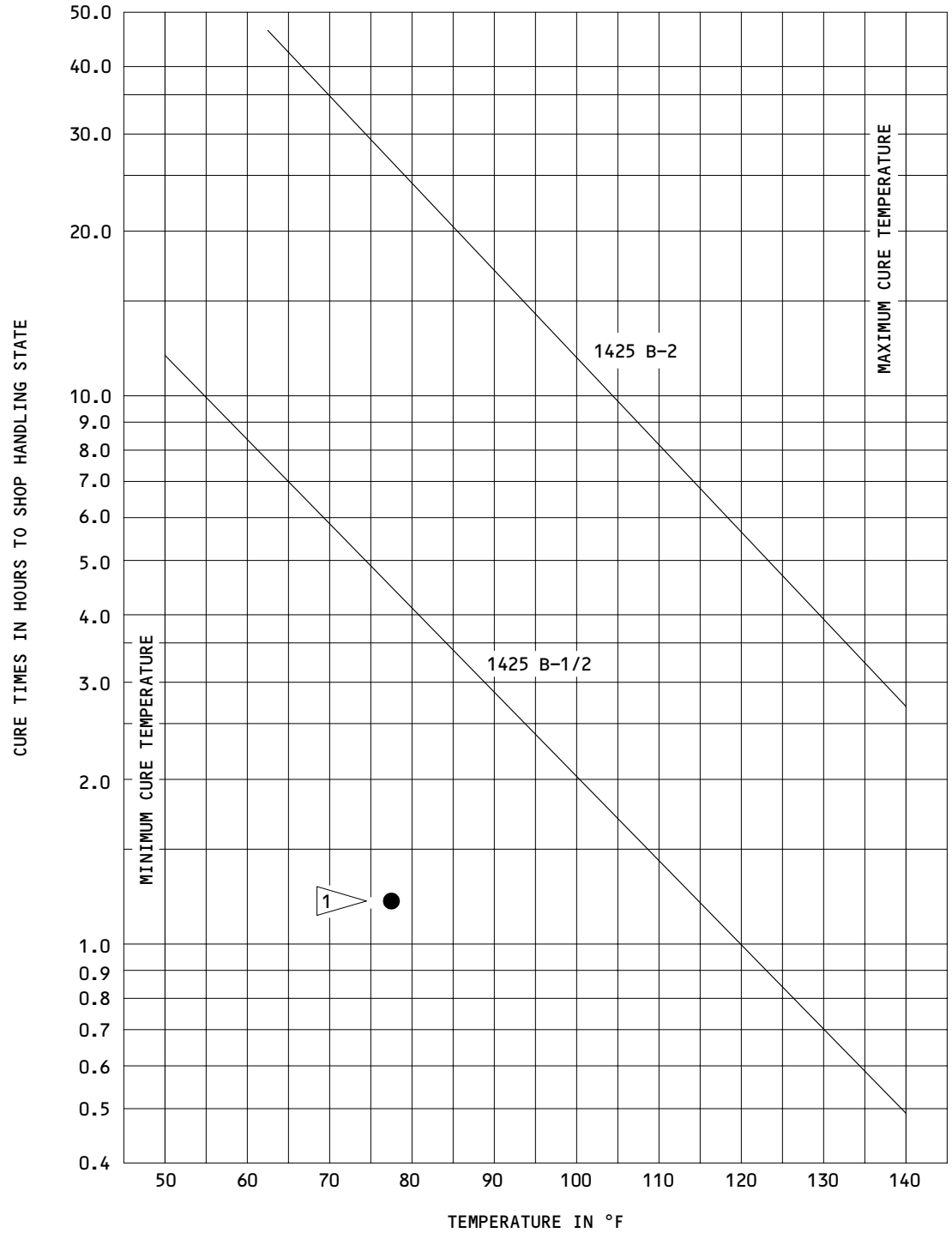
S 848-095
(2) Do the repair.
(a) Use an optical micrometer to measure the depth of the scratches or crazing.

NOTE: If the depth of the scratch or crazing is more than 0.050 inch, and the repair to the window will reduce the window thickness, refer to Table 801 for the minimum window thicknesses. The table will tell you if you can repair the window. If measurement is difficult with the optical micrometer, you can remove the window (AMM 56-11-02/402, 56-11-10/401) to do a check of the damage.

(b) Put protective tape on the window frame and seal.
(c) Use a water spray to clean the No. 2 and No. 3 windows.
(d) Remove small clamshell surface chips, scratches and surface crazing with abrasive paper or cloth. Use an abrasive paper for deep scratches and bad crazing (usually not greater than 100 grit).

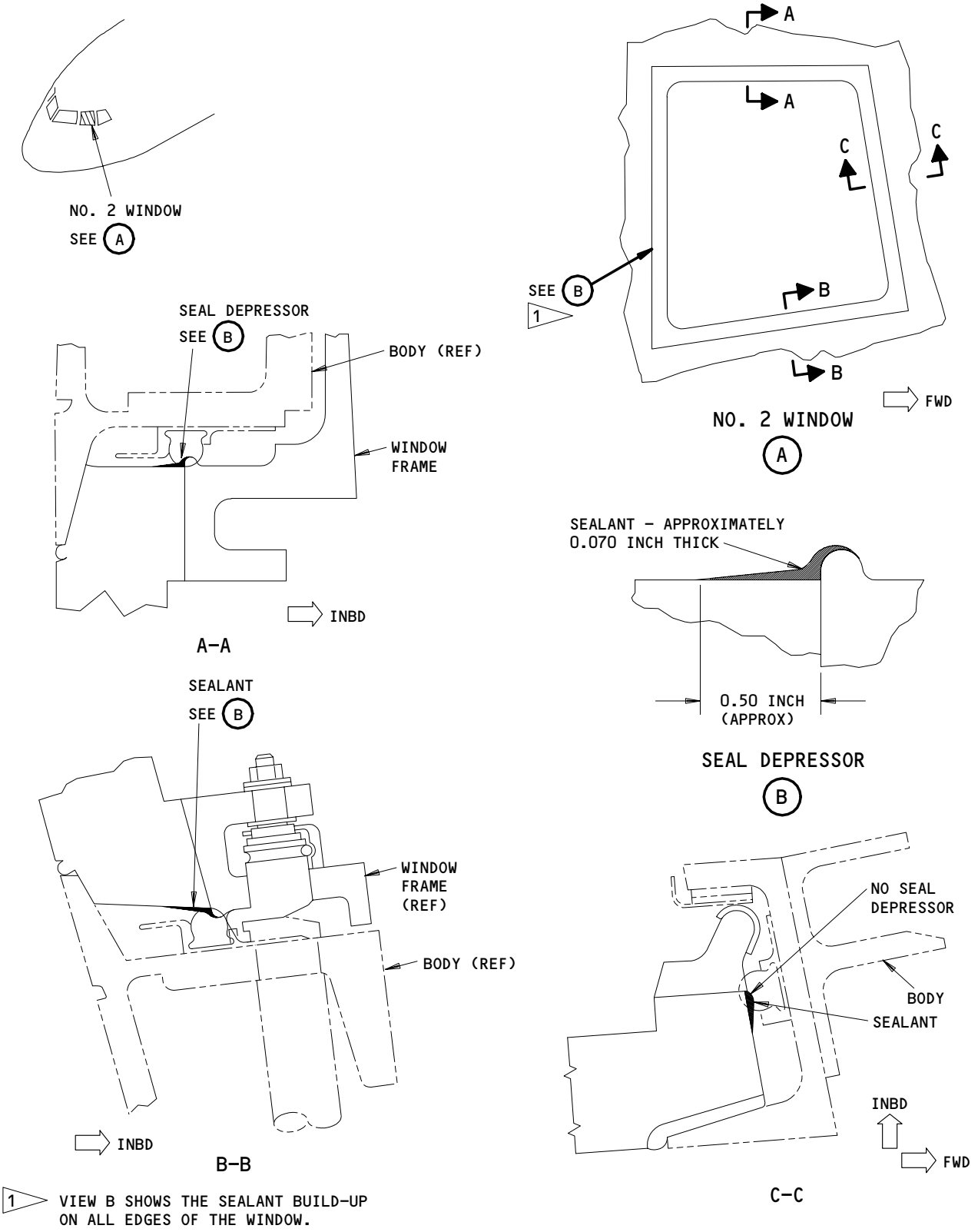
NOTE: If small repairs are needed, use a higher grit (usually above 100-grit) abrasive paper to decrease the time necessary to polish the window. Do not try to repair a local part of the surface area. This will cause visual distortion.

Use sufficient water to keep the window surface cool and to flush away grit and acrylic material removed. Use a sander that moves at approximately 800 cpm. Sand all the window surface, first in the horizontal direction then in the vertical direction. To sand with a rough grit for two to five minutes will remove approximately 0.005 inches of acrylic. Change the abrasive paper frequently. Repeat the procedure until all surface damage is removed and the surface has a constant thickness. Sand for two minutes to make sure all cracks and crazes are removed.

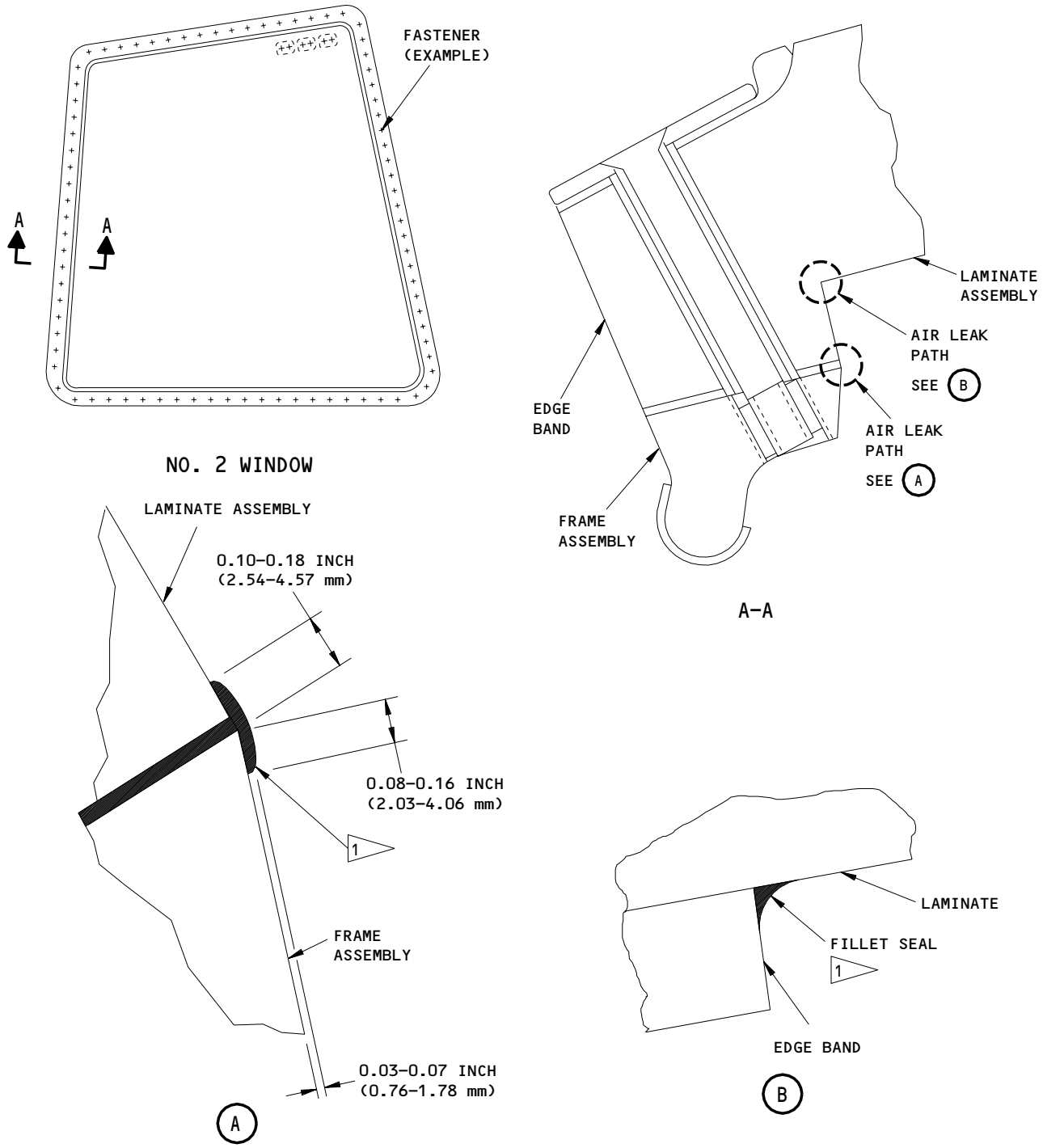


1 CURE TIME FOR PRO SEAL 860 CLASS B

Moisture Seal Repair - Curing Time
Figure 802



Bulb Seal Leak Repair
Figure 803



Window Assembly Repair – Inner Seal
Figure 804

(e) Use a vibrating sander to make the surface of the window smooth. Start with 100-grit abrasive paper. After 2 to 3 minutes change to 200-grit abrasive paper. Continue this procedure to 600-grit abrasive paper.
(f) Repeat the above step with 1600-grit micromesh cloth. Continue the procedure up to 8000-grit micromesh cloth.

NOTE: Make sure there is a continous flow of water when you rub the window surface.

(g) Use ultrasonic equipment to do a check of the window thickness.

NOTE: Before you use the ultrasonic equipment, make sure that the equipment is calibrated. To calibrate the equipment, use a "step-wedge" of known thickness made from the same material as the window you will measure.

(h) Make sure the window pane thicknesses are equal to or greater than the limits specified in Table 801.
(i) Remove the water spray.
(j) Use a clean muslin or a wool pad to polish the window with a buffing compound. If necessary, use rough and fine compounds to get a glossy finish.

NOTE: If a rotary buffer is used, the wheel surface speed must be 3200 fps for rough compounds and 4200 fps for fine compounds.

(k) Visually examine the window for optical quality.
(l) If the window is damaged, repeat the repair process.
(m) Make sure the window pane thickness is equal or greater than the limits permitted in Table 801.
(n) Apply wax to the window surface.
(o) Polish the window to a glossy finish.

S 848-069

(3) Put the Airplane Back to Its Usual Condition.
(a) For the No. 2 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E1, WINDOW HEAT 2L
(b) For the No. 2 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R
(c) For the No. 3 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E2, WINDOW HEAT 3L

(d) For the No. 3 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H7, ICE/RAIN WINDOW HEAT 3R

TASK 56-11-00-308-022

3. Repair Chipped or Eroded Windows (No. 2 or 3 Windows) (acrylic only)

A. Access

(1) Location Zones

211/212 Control Cabin - Section 41

B. References

(1) AMM 56-11-00/401, Flight Compartment Windows
(2) AMM 56-11-00/601, Flight Compartment Windows

C. Procedure - Repair the Chipped or Eroded Windows (No. 2 or No. 3 windows)

S 848-065

(1) Prepare the Window for Repair.

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(a) Put the window heat switches that are on the pilot's overhead panel, P5, to the OFF position.
(b) For the left No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E1, WINDOW HEAT 2L
(c) For the right No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscelllaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R
(d) For the left No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E2, WINDOW HEAT 3L
(e) For the right No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H7, ICE/RAIN WINDOW HEAT 3R

S 848-096

(2) Do the Repair.
(a) Make sure the chips do not have cracks around them.
(b) Refer to the Window Component Maintenance Manual for the the procedure to repair the window chips that are on the window bolt holes and the window surface.

(c) Use an abrasive paper to rub all clamshell chips or erosion at the window edges to a 62 RMS finish. Refer to the limits that are specified in 56-11-00/601.

S 848-075

(3) Put the Airplane Back to Its Usual Condition.

(a) For the No. 2 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the right miscellaneous electrical equipment panel, P37:

a) 37E1, WINDOW HEAT 2L

(b) For the No. 2 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the left miscellaneous electrical equipment panel, P36:

a) 36H6, ICE/RAIN WINDOW HEAT 2R

(c) For the No. 3 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the right miscellaneous electrical equipment panel, P37:

a) 37E2, WINDOW HEAT 3L

(d) For the No. 3 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the left miscellaneous electrical equipment panel, P36:

a) 36H7, ICE/RAIN WINDOW HEAT 3R

TASK 56-11-00-398-026

4. Repair the Aerodynamic Sealant (Fig. 801)

A. Consumable Materials

(1) G00270 Masking Tape - Permacel No. 76 or equivalent

(2) B00083 Aliphatic Naphtha - TT-N-95

(3) Sealing Compound

NOTE: Use one of these compounds:

(a) A00247 BMS 5-95 Class B-1/2, or Class B-2

(b) A00908 Pro Seal 860 Class B

(4) G00034 Cheesecloth, clean and lint-free

B. References

(1) AMM 51-31-01/201, Seals and Sealing

C. Access

(1) Location Zones

211/212 Control Cabin - Section 41

D. Procedure - Repair the Aerodynamic Sealant.

S 848-070

(1) Prepare the Window for Repair.

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(a) Put the window heat switches that are on the pilot's overhead panel, P5, to the OFF position.
(b) For the left No. 1 window, open this circuit breaker and attach DO-NOT-CLOSE tag:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36L5 ICE/RAIN WINDOW HEAT 1L
(c) For the right No. 1 window, open this circuit breaker and attach DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37D2, ICE/RAIN WINDOW HEAT 1R
(d) For the left No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E1, WINDOW HEAT 2L
(e) For the right No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscelllaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R
(f) For the left No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E2, WINDOW HEAT 3L
(g) For the right No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H7, ICE/RAIN WINDOW HEAT 3R

S 848-097
(2) Do the Repair.

CAUTION: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO REMOVE THE AERODYNAMIC SMOOTHER. IF YOU DO NOT OBEY THE INSTRUCTIONS, DAMAGE TO THE AIRPLANE SURFACE CAN OCCUR.

(a) Remove loose or aerodynamic sealant that has cracks (amm 51-31-01-201).

WARNING: BE CAREFUL WHEN YOU USE ALIPHATIC NAPHTHA. ALIPHATIC NAPHTHA IS A FLAMMABLE MATERIAL WHICH CAN CAUSE INJURY OR DAMAGE.

(b) Use a cheesecloth that is moist with aliphatic naptha to clean the clearance between the fuselage skin and the window.

(c) Remove the aliphatic naptha with a clean cheesecloth before it dries.

NOTE: Make sure you do not cause damage to the adjacent seal when you clean the window.

(d) Apply masking tape on the edge of the clearance that is between the fuselage skin and the window.

(e) Apply the sealing compound as follows:

NOTE: Make sure you do these steps in less than 2.5 hours.

1) Use a flow gun to apply the sealing compound into the clearance that is between the fuselage skin and the window structure.

NOTE: Use a spatula to apply the compound when the use of a flow gun is not possible.

2) Add the sealing compound slowly.

NOTE: Add a little more compound than necessary to fill the clearances.

CAUTION: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO REMOVE THE AERODYNAMIC SMOOTHER. IF YOU DO NOT OBEY THE INSTRUCTIONS, DAMAGE TO THE AIRPLANE SURFACE CAN OCCUR.

3) Remove the unwanted sealing compound until it is at the level of the outer surface of the fuselage skin and the window (AMM 51-31-01/201).

(f) Remove the masking tape from the edges of the clearance.

(g) Use a spatula to make the sealing compound smooth with the surface of the airplane.

S 848-079

(3) Put the Airplane Back to Its Usual Condition.

(a) For the No. 1 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the left miscellaneous electrical equipment panel, P36:

a) 36L5 ICE/RAIN WINDOW HEAT 1L

(b) For the No. 1 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the right miscellaneous electrical equipment panel, P37:

a) 37D2, ICE/RAIN WINDOW HEAT 1R

(c) For the No. 2 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the right miscellaneous electrical equipment panel, P37:

a) 37E1, WINDOW HEAT 2L

(d) For the No. 2 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R

(e) For the No. 3 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E2, WINDOW HEAT 3L

(f) For the No. 3 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H7, ICE/RAIN WINDOW HEAT 3R

TASK 56-11-00-398-044

5. Repair the Moisture Sealant (Fig. 801)

A. Equipment
(1) Sealant Nozzle, Duck-Bill - SEMCO NO. 8643
(2) Spatula or Flow Gun (Commercially Available)

B. Consumable Materials
(1) G00270 Masking Tape - Permacel No. 76 or equivalent
(2) B00083 Aliphatic Naphtha - TT-N-95
(3) Sealing Compound

NOTE: Use one of these compounds:

(a) A00103 PR1425 B-1/2 or B-2
(b) A00908 Pro Seal 860 Class B
(4) G00034 Cheesecloth - clean and lint-free (Commercially Available)

C. Access
(1) Location Zones
211/212 Control Cabin - Section 41

D. References
(1) AMM 51-31-01/201, Seals and Sealant
E. Procedure - Repair the moisture sealant

S 848-087
(1) Prepare the Window for Repair.

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(a) Put the window heat switches that are on the pilot's overhead panel, P5, to the OFF position.
(b) For the left No. 1 window, open this circuit breaker and attach DO-NOT-CLOSE tag:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36L5 ICE/RAIN WINDOW HEAT 1L
(c) For the right No. 1 window, open this circuit breaker and attach DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37D2, ICE/RAIN WINDOW HEAT 1R

S 848-099
(2) Remove the sealant.

CAUTION: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO REMOVE THE SEALANT. IF YOU DO NOT OBEY THE INSTRUCTIONS, DAMAGE TO THE AIRPLANE SURFACE CAN OCCUR.

(a) Remove the unwanted sealant (AMM 51-31-01/201).

NOTE: If you are not sure of the sealant's quality, remove approximately 1/8 inch of sealant from the edge.

WARNING: BE VERY CAREFUL WHEN YOU USE ALIPHATIC NAPHTHA. ALIPHATIC

NAPTHA IS FLAMMABLE. IF YOU INCORRECTLY USE THE ALIPHATIC NAPTHA, INJURY OR DAMAGE CAN OCCUR.

(b) Use a clean cheesecloth that is moist with aliphatic naptha to clean the seal and the adjacent glass surface.

(c) Remove the aliphatic naphtha with a clean cheesecloth before it dries.
(d) Apply masking tape on the glass and the window frame.
(e) Use a flow gun to apply a layer of quick dry PR 1425 B-1/2 or slow dry PR1425 B-2 sealant on the seal. Apply the sealant smoothly.

NOTE: If necessary use a sealant that dries fast, such as Pro Seal 860 Class B Sealant.

The time permitted to apply this sealant is 20 minutes. You can touch the sealant in 75 minutes when the sealant is dried at 77°F (18°C).

(f) Fill the clearances with the sealant (Figure 801).
(g) Use fingers moist with aliphatic naptha to smooth the sealant.
(h) Carefully remove the masking.
(i) Use a cheesecloth that is moist with aliphatic naphtha to remove unwanted sealant from the glass or window frame.
(j) Let the sealant dry before you touch the seal (Fig. 802).

S 848-048
(3) Put the Airplane Back to Its Usual Condition.
(a) For the No. 1 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36L5 ICE/RAIN WINDOW HEAT 1L
(b) For the No. 1 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37D2, ICE/RAIN WINDOW HEAT 1R

TASK 56-11-00-368-055
6. Repair Air Leaks Between the No. 2 Window Laminate and Frame Assembly
A. General
(1) Apply sealant to the joint around the inner window assembly. This will stop pressure leaks between the No. 2 window laminate and frame assembly.

B. Consumable Materials
(1) A00103 PR 1425 sealant
(2) B00083 Aliphatic Naptha-TT-N-95
(3) G00034 Cheesecloth - clean and lint free (commercially available)

C. Access
(1) Location Zones
211/212 Control Cabin - Section 41

D. Procedure - Repair Air Leaks Between the No. 2 Window Laminate and Frame Assembly

S 848-049
(1) Prepare the Window for Repair.

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(a) Put the window heat switches that are on the pilot's overhead panel, P5, to the OFF position.
(b) For the left No. 1 window, open this circuit breaker and attach DO-NOT-CLOSE tag:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36L5 ICE/RAIN WINDOW HEAT 1L
(c) For the right No. 1 window, open this circuit breaker, and attach a DO NOT CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37D2, ICE/RAIN WINDOW HEAT 1R
2) On the right miscellaneous electrical equipment panel, P37:
a) 37E1, WINDOW HEAT 2L
(d) For the right No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscelllaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R

(e) For the left No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E2, WINDOW HEAT 3L
2) For the right No. 3 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
3) On the left miscellaneous electrical equipment panel, P36:
a) 36H7, ICE/RAIN WINDOW HEAT 3R

S 848-100
(2) Do the repair.

CAUTION: BE VERY CAREFUL WHEN YOU USE ALIPHATIC NAPTHA. ALIPHATIC NAPTHA IS FLAMMABLE. IF YOU INCORRECTLY USE THE ALIPHATIC NAPTHA, INJURY OR DAMAGE CAN OCCUR.

(a) Use a clean cheesecloth that is moist with aliphatic naptha to clean the area around the window assembly.
(b) Use a clean dry cheesecloth to remove the aliphatic naptha before it dries.
(c) Apply the sealant around the window assembly inner area.

NOTE: Make sure that you apply the sealant around the window perimeter.

(d) Look for gaps between the laminate edge band and the laminate assembly (acrylic windows only), and between the laminate band edge and aluminum frame assembly (Fig. 804).
1) If gaps are found, apply sealant to the affected area(s).
(e) Let the sealant dry.

S 848-052
(3) Put the Airplane Back to Its Usual Condition.
(a) For the No. 1 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36L5 ICE/RAIN WINDOW HEAT 1L
(b) For the No. 1 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37D2, ICE/RAIN WINDOW HEAT 1R
(c) For the No. 2 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E1, WINDOW HEAT 2L
(d) For the No. 2 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R

(e) For the No. 3 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E2, WINDOW HEAT 3L
(f) For the No. 3 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
1) On the left miscellaneous electrical equipment panel, P36:
a) 36H7, ICE/RAIN WINDOW HEAT 3R

TASK 56-11-00-368-059

7. Repair the Bulb Seal Leak (No. 2 Window)

A. General
(1) Use this procedure only when the window rigging adjustment will not correct the pressure seal leak.

B. Consumable Materials
(1) A00908 Pro Seal 860, Class B

C. Access
(1) Location Zones
211/212 Control Cabin - Section 41

D. Procedure - Repair the Bulb Seal Leak

S 848-062
(1) Prepare the Window for Repair.

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(a) Put the window heat switches that are on the pilot's overhead panel, P5, to the OFF position.
(b) For the left No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the right miscellaneous electrical equipment panel, P37:
a) 37E1, WINDOW HEAT 2L
(c) For the right No. 2 window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
1) On the left miscelllaneous electrical equipment panel, P36:
a) 36H6, ICE/RAIN WINDOW HEAT 2R

S 848-101
(2) Do the repair.
(a) Open the No. 2 window to get access to the leak location.

(b) Use abrasive paper to remove the teflon paint at the location of the leak.

(c) Apply the sealant to the window edge between the outside face of the Bulb Seal and the Seal Retainer (Fig. 803).

NOTE: The thickness of the sealant must be approximately 0.07 inch thick.

(d) Let the sealant dry for two hours before you close the window.

S 848-063

(3) Put the Airplane Back to Its Usual Condition

(a) For the No. 2 left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the right miscellaneous electrical equipment panel, P37:

a) 37E1, WINDOW HEAT 2L

(b) For the No. 2 right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:

1) On the left miscellaneous electrical equipment panel, P36:

a) 36H6, ICE/RAIN WINDOW HEAT 2R

NO. 1 WINDOW - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) Removal of the No. 1 windows.
      (2) Installation of the No. 1 windows.

   TASK 56-11-01-004-039

2. Remove the No. 1 Window (Fig. 401)
   A. Equipment
      (1) Windshield Handling Sling - A56001-2, part of Sling Set A56001-15
      (2) Crane (300-pound lift capacity)
      (3) Spatula or flow gun
   B. Consumable Materials
      (1) G00295 Masking tape
      (2) G00139 Protective Tape - Gizard Protex 20V
   C. References
      (1) AMM 56-11-00/601, Flight Compartment Windows
      (2) AMM 56-14-01/601, Control Cabin Structure - Inspection/check
   D. Access
      (1) Location Zones
          211/212 Control Cabin

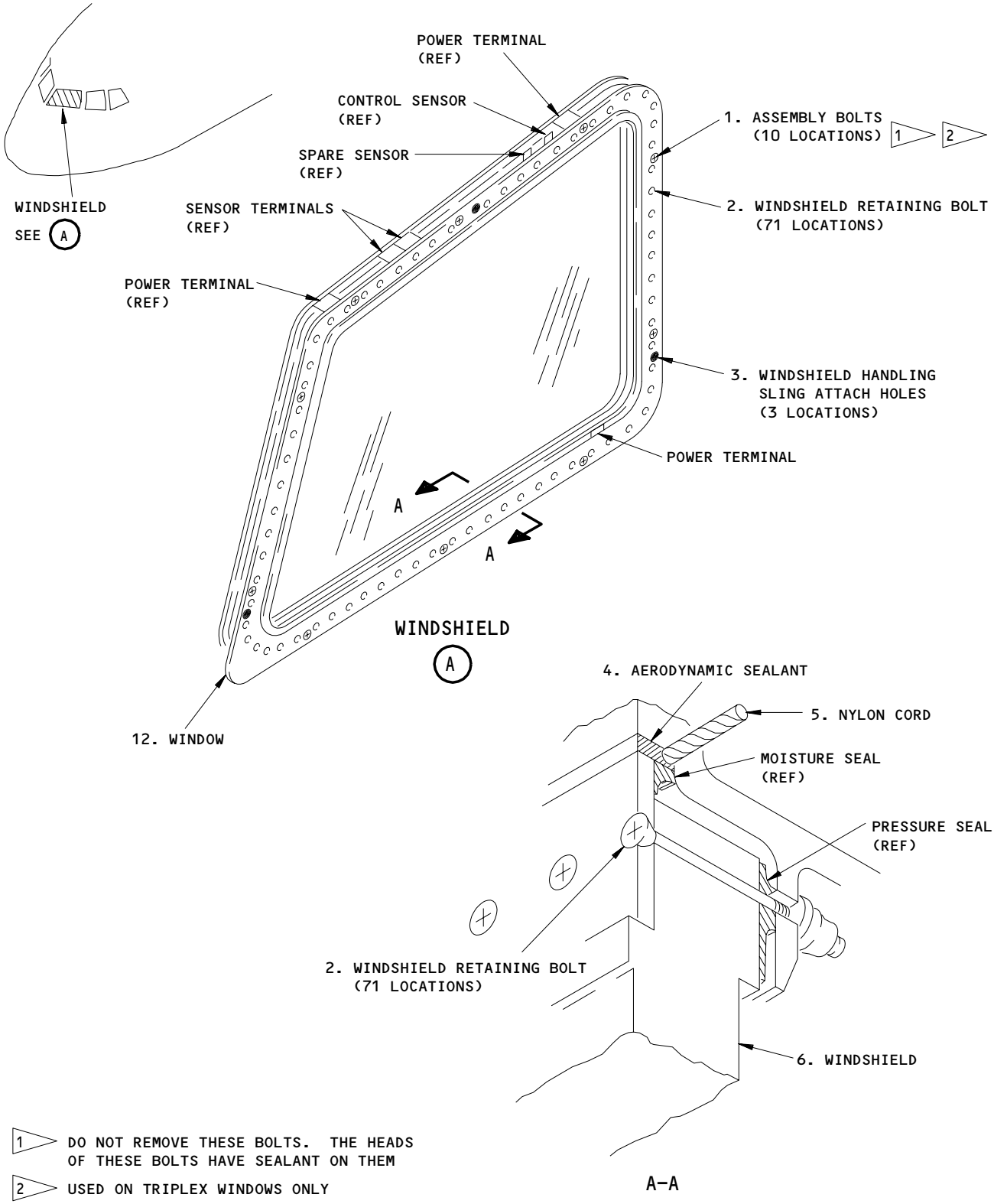
   E. Procedure - Remove the Number 1 Window

      S 864-041

      WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENENCE, YOU CAN GET AN ELECTRICAL SHOCK.

      (1) Put all the window heat switches on the pilot's overhead panel, P5, in the OFF position.

      S 864-002
      (2) For the left window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
          (a) On the left miscellaneous electrical equipment panel, P36:
              1) 36L5 ICE/RAIN WINDOW HEAT 1L



No. 1 Window Installation
Figure 401

(b) On the PNL ASSY-CIRCUIT BREAKER, P011-03:
1) T013, WSHLD WIPER L

S 864-003
(3) For the right window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37D2, ICE/RAIN WINDOW HEAT 1R
(b) On the PNL ASSY-CIRCUIT BREAKER, P011-06:
1) T022, WSHLD WIPER R

S 024-009

CAUTION: HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(4) Disconnect the electrical wires from the power terminal.

S 034-051
(5) Disconnect the electrical wires from the temperature sensor.

S 954-007
(6) Install a protective paper cover on the sides of the window.

S 954-042
(7) Do not attach tape to the glass or plastic surfaces.

S 034-008
(8) Carefully remove the aerodynamic sealant from the clearance at the inboard upper corner of the window.

S 034-009
(9) Pull the outboard end of the cord out of the clearance.

S 034-043
(10) Fold the cord and slowly remove from around the window.

S 034-010
(11) Remove the hole plugs for the window handling sling.

S 034-007

CAUTION: DO NOT REMOVE THE 10 ASSEMBLY BOLTS (TRIPLEX WINDOWS ONLY) (FIG. 401). DAMAGE TO THE WINDOW CAN OCCUR IF YOU REMOVE THE ASSEMBLY BOLTS.

(12) Loosen the retaining bolts (2).

S 024-012
(13) Remove most of the retaining bolts (2), but not those at the middle of each side. These bolts will hold the window in position until the sling is installed (non-triplex windows).

S 494-013
(14) Attach the window handling sling to the window.

S 494-044
(15) Tighten the bolts for the sling to 5-20 in-lbs (0.6-2.3 N-m) (Fig. 403).

S 024-014
(16) Remove the remaining retaining bolts (2).

S 024-015
(17) Remove the window (7).

S 094-016
(18) Remove the sling from the window (12).

S 424-045
(19) Install the attach hole plugs.

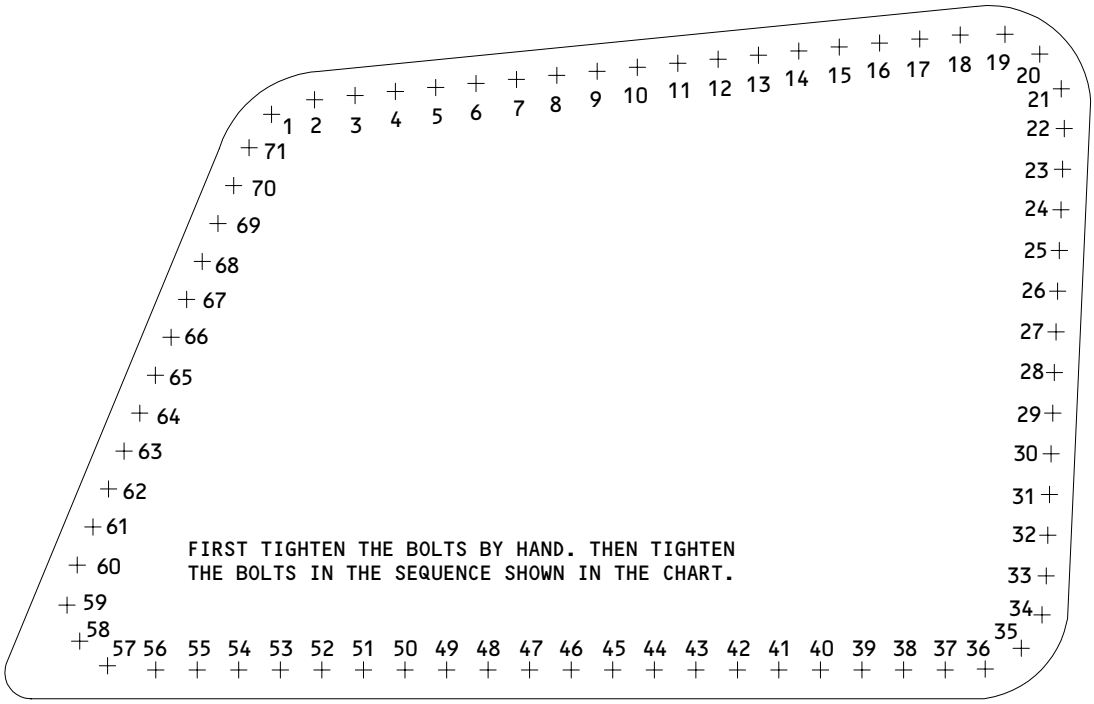
S 214-145
(20) Do a control cabin structure - inspection/check (AMM 53-14-01/601).

TASK 56-11-01-404-017

3. Install the No. 1 Window (Fig. 401)

A. Equipment
(1) Windshield Handling Sling - A56001-2, part of Sling Set A56001-15
(2) Crane (300-pound lift capacity)
(3) Spatula or flow gun

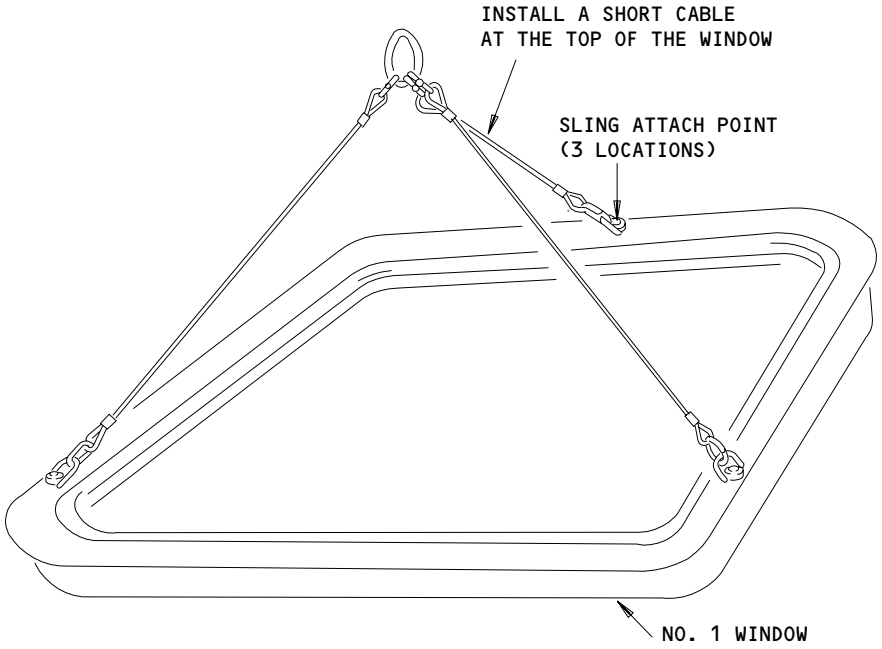
B. Consumable Materials
(1) G00039 Nylon Cord - MIL-C-5040, Type 1A
(2) G00139 Protective Tape - Gizard Protex 20 V
(3) C00308 Corrosion Preventive Compound - MIL-C-11796, Class 1
(4) G00508 (Alternative) Corrosion Preventive Compound - MIL-C-11796, Class 3
(5) A00247 Sealant - BMS 5-95, Class B-1/2 or B-2
(6) A00103 (Alternative) PR1425 Sealant.
(7) A00706 (Alternative) PR 1826, Class B-1/2 and Class B-1/4 (with primer) (dark grey).
(8) A00708 (Alternative) PR 1828, Class B-1/2 and B-1/4 (white).
(9) B00083 Aliphatic Naptha - TT-N-95A
(10) G00034 Clean Cheesecloth
(11) G00295 Masking Tape



LEFT NO. 1 WINDOW SHOWN
RIGHT NO. 1 WINDOW OPPOSITE

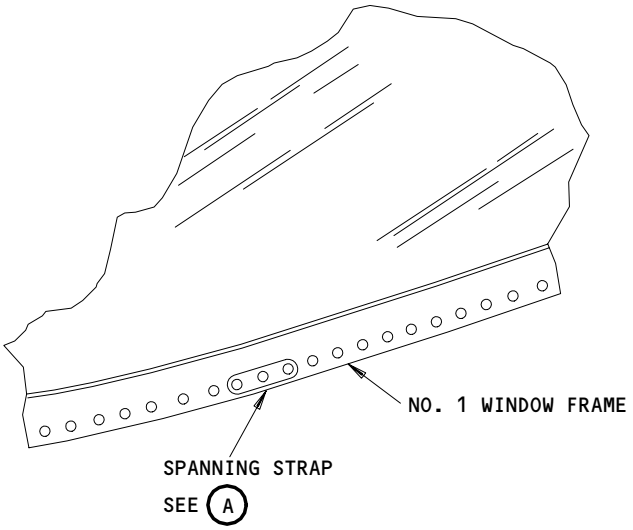
STEP NO.	BOLT NUMBER SEQUENCE	STEP NO.	BOLT NUMBER SEQUENCE	STEP NO.	BOLT NUMBER SEQUENCE
1	10	25	39	49	64
2	47	26	4	50	27
3	65	27	21	51	46
4	28	28	58	52	9
5	2	29	30	53	55
6	37	30	67	54	18
7	19	31	12	55	36
8	56	32	49	56	1
9	69	33	22	57	48
10	33	34	59	58	11
11	51	35	5	59	66
12	14	36	41	60	29
13	60	37	13	61	3
14	23	38	50	62	38
15	42	39	68	63	20
16	6	40	32	64	57
17	54	41	7	65	31
18	17	42	43	66	62
19	35	43	61	67	40
20	71	44	24	68	16
21	45	45	70	69	53
22	8	46	34	70	25
23	26	47	52	71	44
24	63	48	15		

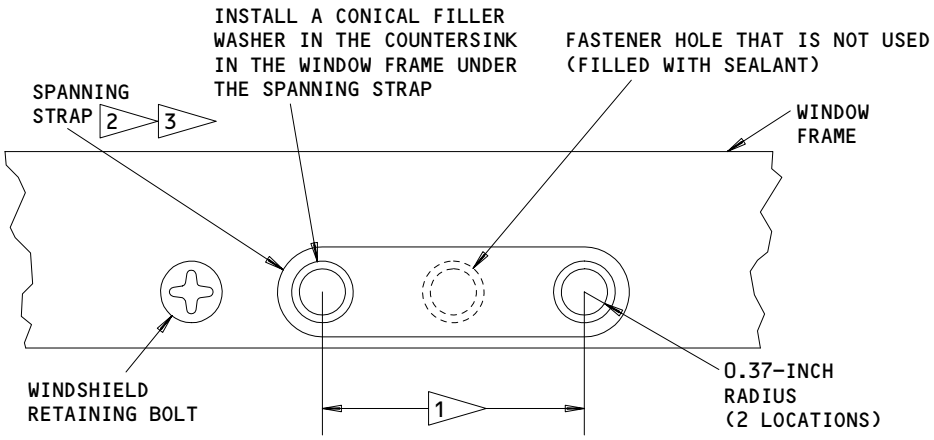
Window Fastener Installation
Figure 402



WINDOW HANDLING SLING - A56001-2

No. 1 Window Handling Sling
Figure 403





SPANNING STRAP

A

1 THIS DIMENSION IS NOT ALWAYS THE SAME FOR ALL LOCATIONS.

2 MAKE THE SPANNING STRAP FROM 0.040-INCH THICK 2024-T3/T4 ALUMINUM ALLOY 0.75-INCH WIDE. DRILL AND COUNTERSINK FOR TWO 100° COUNTERSUNK HEAD BACB30NN4K39 BOLTS.

OPTIONAL: DIMPLE THE SPANNING STRAP FOR 100 DEGREE COUNTERSUNK HEAD BACB30NN4K39 BOLT AND OMIT THE CONICAL FILLER WASHER.

3 REMOVE SHARP EDGES TO PREVENT DAMAGE TO THE WINDSHIELD WIPER BLADE AND FOR AERODYNAMIC SMOOTHNESS.

Spanning Strap Fabrication
Figure 404

(12) G00291 Pressure sensitive aluminum backed adhesive tape Scotch 3M 425 or 427.

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	12	NO. 1 WINDOW	56-11-01	01	15LH,20RH

D. References
(1) AMM 30-41-00/501, Flight Compartment Window Anti-Icing
(2) AMM 30-42-00/501, Windshield Wiper System
(3) AMM 51-31-01/201, Seals and Sealing
(4) AMM 56-11-00/601, Flight Compartment Windows - Inspection/Check

E. Access
(1) Location Zones
211/212 Control Cabin

F. Procedure

S 764-056
(1) Perform a continuity check at the sensors to ensure there is not a open circuit.

S 214-029
(2) Do a visual check of the windshield post and sill for cracks and corrosion (AMM 56-11-00/601).

S 434-018
(3) Install new nutplates in all the positions where the nutplate is gone or damaged.

S 954-019
(4) Use tape to apply a protective paper cover to the window surfaces.

S 954-046
(5) Do not attach tape to the glass or plastic surfaces.

S 094-020
(6) Remove the attach hole plugs from the sling attach holes.

S 494-021
(7) Attach the sling to the window frame.

S 494-022
(8) Tighten the bolts for the sling to 5-20 in-lbs (0.6-2.3 N-m) (Fig. 403).

S 114-023
(9) Clean the faying surfaces of the rubber pressure seal, window frame and window center post with a cheesecloth moist with naphtha.

S 114-047
(10) Use a clean cheesecloth to dry the area.

S 114-048
(11) Repeat these steps until the surfaces are fully clean.

S 424-024
(12) Put the window (7) in position.

S 424-025
(13) Install the retaining bolts (2) firmly, do not fully tighten, into positions 10, 47, 65, and 28.

NOTE: This will help align the window.

S 424-027
(14) Install the remaining retaining bolts (2) firmly, do not fully tighten.

NOTE: A maximum of eleven retaining bolts (2) can be kept out. A minimum of three bolts must be installed between each location with no bolt installed. At locations with no bolts installed, replace the nutplates and bolts at the next window change.

S 344-028
(15) If you cannot install a retaining bolt (2), do these steps:
(a) Fill the bolt hole with sealant.
(b) Make and install a spanning strap on top of this bolt hole as shown (Fig. 404).

S 424-026

CAUTION: DO NOT APPLY TOO MUCH TORQUE TO THE BOLTS (2). TOO MUCH TORQUE COULD CAUSE DAMAGE TO THE NUTS AND NUTPLATE RETAINERS.

(16) Tighten the bolts (2) to 50-70 pound-inches in the sequence shown (Fig. 402).

NOTE: You must tighten the bolts (2) three times. First, at window (7) installation. Instructions for the other tightenings are given in following steps. This is necessary to prevent window noise and leaks because of seal movement.

The airplane may be flown between this and the final bolt tightening exercise.

It is possible to apply the aerodynamic sealant after the first torque if necessary.

S 434-038

(17) Tighten the retaining bolts (2) a second time. This should occur during the time frame of 3 - 72 hours after completion of the first tightening. Follow the sequence shown (Fig. 402).

NOTE: The airplane may be flown during this seventy-two hour time frame.

S 424-036

(18) Tighten the bolts (2) one more time (the third time), beginning more than three and less than 72 hours after the completion of the second time. Obey the sequence shown (Fig. 402). Tighten to 50 to 70 pound-inches.

S 224-028

(19) Make sure the window is smooth or less than 0.03 inch out of the external surface or 0.08 inch in from the internal surface.

S 094-029

(20) Remove the sling.

S 374-030

(21) Apply a layer of corrosion preventive compound to the plugs.

S 424-049

(22) Install the plugs in the sling attach holes with a flushness tolerance of 0.01 inch of the window frame.

S 954-031
(23) Apply masking tape to the two sides of the clearance between the window ledge and the window frame.

S 414-032
(24) Install the nylon cord into the clearance around the window.
(a) Make sure the nylon cord is tightly installed in the bottom of the clearance.

S 424-076

CAUTION: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO APPLY THE AERODYNAMIC SMOOTHER. IF YOU DO NOT OBEY THE INSTRUCTIONS, DAMAGE TO THE AIRPLANE SURFACE CAN OCCUR.

(25) Apply the aerodynamic sealant (AMM 51-31-01/201).
(a) If you must dispatch the airplane before the sealant is fully cured, do the steps that follow:
1) Install the Pressure sensitive aluminum backed adhesive tape on the top of the sealant.
2) Remove the tape when the sealant is fully cured.

S 424-008

CAUTION: HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(26) Connect the electrical wires to the power terminals.
(a) Tighten the screws to 25-30 pound-inches.

S 394-053
(27) Apply a sufficient amount of RTV162 or equivalent non-corrosive sealant to the terminal screws.

S 434-035
(28) Connect the electrical wires to the sensor terminals.
(a) Tighten the screws to 12-15 pound-inches.

S 434-055
(29) Make sure the protective covers are installed on all windshield terminal electrical connectors. Wipe off any excess sealant.

S 864-005
(30) For the left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36L5 ICE/RAIN WINDOW HEAT 1L

(b) On the PNL ASSY-CIRCUIT BREAKER, P011-03:
(c) T013, WSHLD WIPER L

S 864-004
(31) For the right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37D2, ICE/RAIN WINDOW HEAT 1R
(b) On the PNL ASSY-CIRCUIT BREAKER, P011-06:
1) T022, WSHLD WIPER R

S 724-036
(32) Do the window heating system check (AMM 30-41-00/501).

S 724-037
(33) Do the windshield wiper operation check (AMM 30-42-00/501).

NO. 2 OPENABLE WINDOW - REMOVAL/INSTALLATION

1. General
   A. This procedure contains the following tasks:
      (1) Removal of the No. 2 window.
      (2) Installation of the No. 2 window.
   B. The removal and the installation of the left and right No. 2 windows are equivalent.

TASK 56-11-02-004-001

2. Remove the No. 2 Window (Fig. 401)
   A. References
      (1) AMM 56-11-00/601, Flight Compartment Windows
      (2) AMM 56-14-01/601, Control Cabin Structure - Inspection/check
   B. Access
      (1) Location Zones
          211/212 Control Cabin (Left and Right)

   C. Procedure - Prepare for Removal

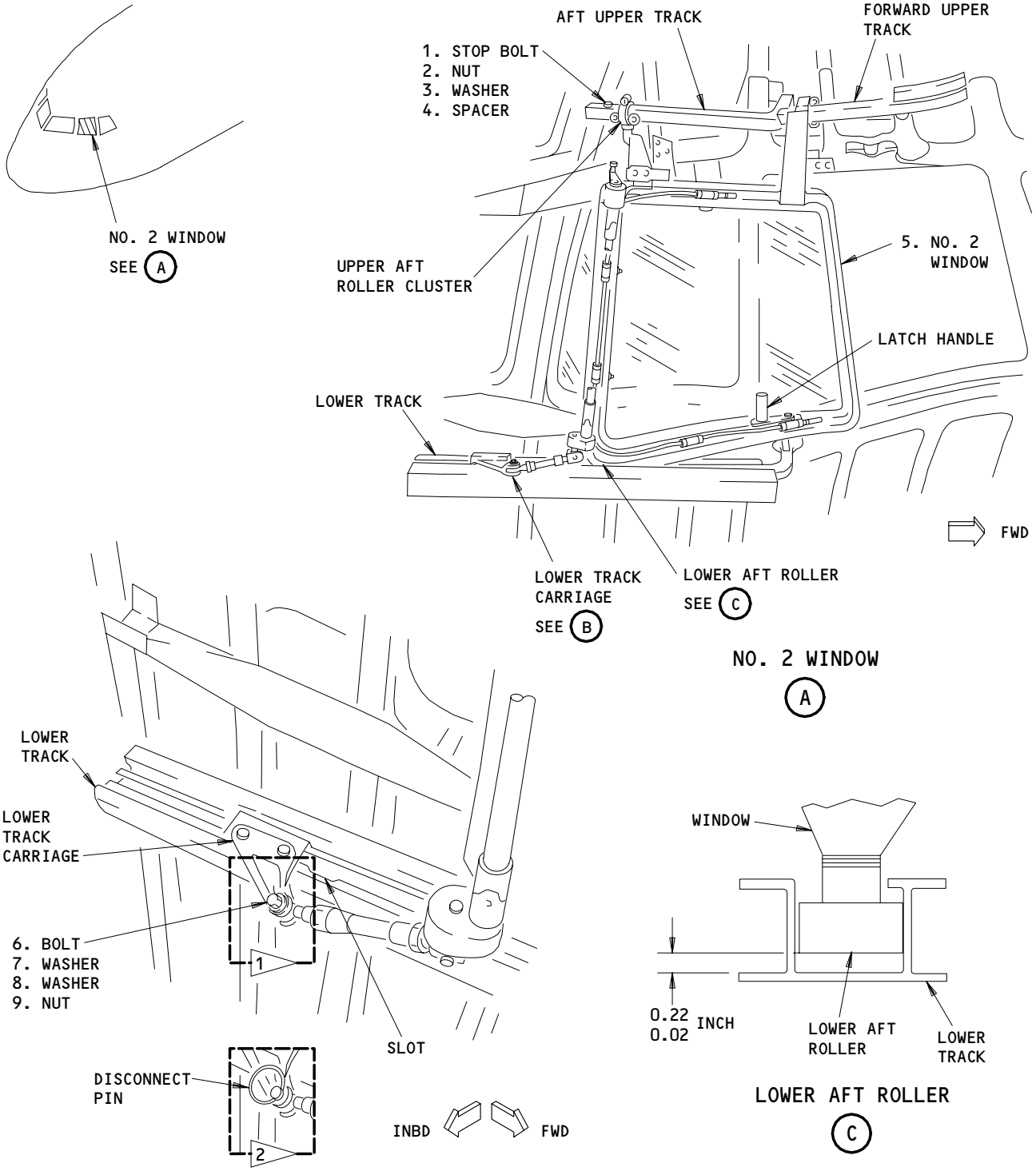
      S 844-002
      (1) Put all the window heat switches on the pilot's overhead panel, P5 in the OFF position.

      S 864-076
      (2) AIRPLANES WITH ELECTRICALLY POWERED FLIGHT COMPARTMENT SEATS; Do these steps:

      WARNING: REMOVE ELECTRICAL POWER FROM THE FLIGHT COMPARTMENT SEATS. ACCIDENTAL ELECTRICAL OPERATION OF THE FLIGHT COMPARTMENT SEAT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (a) Open these circuit breakers, and attach DO-NOT-CLOSE tags:
          1) On the main power distribution panel, P6:
             a) 6H15 or 6J15, CAPT SEAT

      S 864-004
      (3) For the right No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
          (a) On the left miscellaneous electrical equipment panel, P36:
              1) 36H6, ICE/RAIN WINDOW HEAT 2R



No. 2 Openable Window Installation
Figure 401

2) 36H7, ICE/RAIN WINDOW HEAT 3R
(b) On the right miscellaneous electrical equipment panel, P37:
1) 37D2, ICE/RAIN WINDOW HEAT 1R

S 864-006
(4) For the left No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E1, WINDOW HEAT 2L
2) 37E2, WINDOW HEAT 3L
(b) On the left miscellaneous electrical equipment panel, P36:
1) 36L5 ICE/RAIN WINDOW HEAT 1L

D. Procedure - Remove the No. 2 Window

S 024-059

CAUTION: HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(1) For the left No. 2 window:
(a) Disconnect the power connector on the top left of the window.
(b) Disconnect the electrical wires from the power terminal.
(c) Disconnect the electrical wires from the temperature sensor.

S 024-084

CAUTION: HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(2) For the right No. 2 window:
(a) Disconnect the electrical wires from the power terminal.
(b) Disconnect the electrical wires from the temperature sensor.

S 014-050
(3) Remove the window padding from the window (5) as follows:
(a) Remove the latch handle cover.
(b) Remove the lower cover.
(c) Remove the top cover.
(d) Remove the forward cover.
(e) Remove the aft cover.

S 844-009
(4) Partially open the window (5).

S 034-023
(5) Remove the bolt (6) or disconnect pin.

S 034-024
(6) Remove the stop bolt (1), nut (2), washer (3), and spacer (4) from the aft upper track.

S 024-060

WARNING: HOLD THE WINDOW DURING THE REMOVAL SEQUENCE. THE WINDOW IS VERY HEAVY. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IS POSSIBLE IF YOU DROP THE WINDOW.

(7) Move the window (5) aft and away from the upper roller brackets.

S 024-061
(8) Move the window (5) until the roller on the lower aft corner of the window (5) aligns with a slot in the lower track.

S 034-068

CAUTION: DO NOT REMOVE THE TWO BOLTS FROM THE ROLLER BRACKET AT THE WINDOW. THERE ARE SHIMS BETWEEN THE BRACKET AND THE WINDOW. IF YOU REPLACE THE SHIMS INCORRECTLY OR IF YOU USE DIFFERENT SHIMS, THEN YOU WILL NOT BE ABLE TO RIG THE WINDOW CORRECTLY.

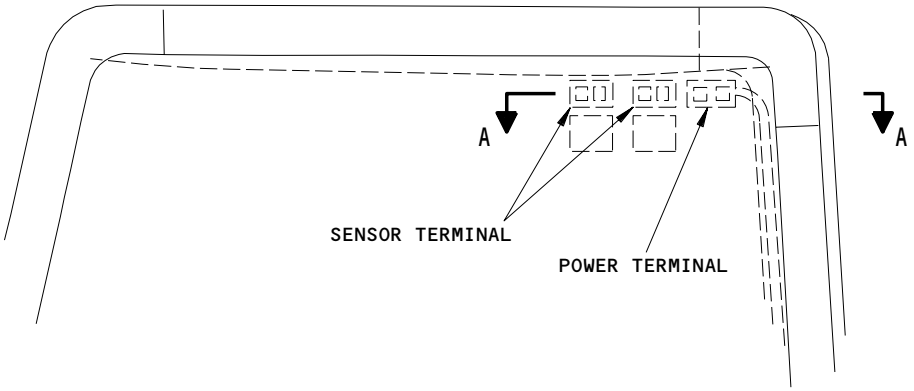
(9) Do the steps that follow to remove the upper aft roller cluster:

NOTE: It is necessary to remove the upper aft roller cluster because it catches on the aft wall.

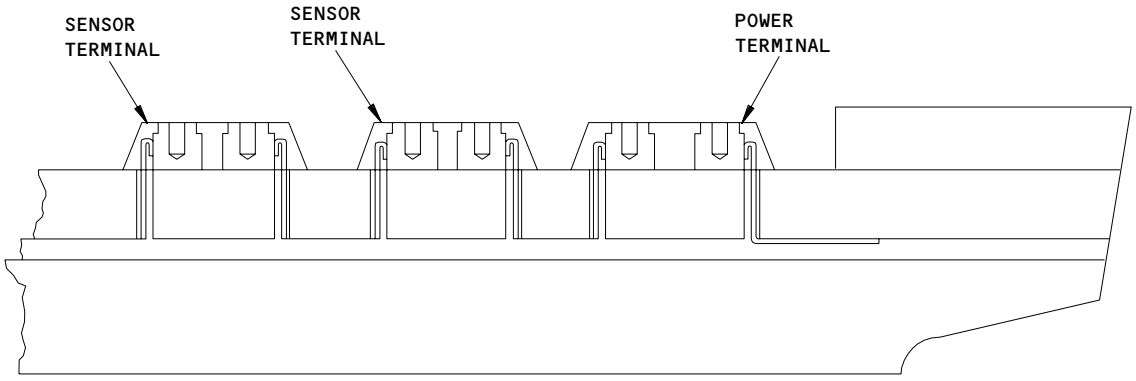
(a) Remove the lockwire.
(b) Hold the window (5) while you remove the nut, washers, and bolt.
(c) Remove the roller cluster.

S 024-025
(10) Lift the window (5) away from the lower track and remove.

S 214-086
(11) Do a control cabin structure - inspection/check (AMM 53-14-01/601).



RIGHT NO. 2 OPENABLE WINDOW



A-A

NO. 2 OPENABLE WINDOW TERMINALS

No. 2 Openable Window Terminals

TASK 56-11-02-404-026

3. Install the No. 2 Window (Fig. 401)

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Bolt	56-11-02	05	22
	2	Nut			37
	3	Washer			32
	4	Spacer			52
	5	Window (Left)		10	120
	5	Window (Right)			125
	6	Bolt			85
	7	Washer			90
	8	Washer			95
	9	Nut			100

B. References

(1) AMM 30-41-00/501, Flight Compartment Window Anti-Icing
(2) AMM 56-11-02/501, No. 2 Openable Window
(3) AMM 56-11-00/601, Flight Compartment Windows

C. Access

(1) Location Zones
211/212 Control Cabin

D. Procedure - Install the No. 2 Window

S 214-051
(1) Do a visual check of the window post and sill for cracks and corrosion (AMM 56-11-00/601).

S 764-080
(2) Perform a continuity check at the sensors to ensure there is not an open circuit.

S 434-027
(3) Move the carriage to the aft end of the lower track.

S 214-028
(4) Turn the latch handle aft to the window unlatched position.
(a) Make sure the handle clicks into position.

S 424-062

WARNING: HOLD THE WINDOW DURING THE INSTALLATION SEQUENCE. THE WINDOW IS VERY HEAVY. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT IS POSSIBLE IF THE WINDOW FALLS.

(5) Engage the lower aft roller into the slot on the lower aft track while you hold the weight of the window inboard at the top.

NOTE: Keep the upper forward roller as close to the upper forward track as possible.

S 424-030

(6) Move the window (5) forward and engage the upper forward roller in the upper forward track.

S 424-031

(7) Hold the upper aft part of the window inboard while you move the window forward.

S 434-053

(8) Install the upper aft roller cluster in the upper aft track.

S 824-054

(9) Adjust the lower aft roller until the lower aft end of the window clears the full length of the lower aft track.

S 434-045

(10) Move the window (5) forward until you can install the bolt (6) or disconnect pin.

(a) AIRPLANES WITH BOLT AND NUT ON LOWER TRACK CARRIAGE;
Do these steps:
1) Install the bolt (6), nut (9), and washer (7) under the head of the bolt.
2) Install a washer (8) under the nut.

(b) AIRPLANES WITH A DISCONNECT PIN ON THE LOWER TRACK CARRIAGE;
Do this step:
1) Install the disconnect pin.

S 434-046

(11) Install a stop bolt (1), nut (2), washer (3), and spacer (4) in the aft upper track.

S 864-047
(12) Close and latch the window, if possible.

NOTE: Do not put force on the window to close or latch the window. If you cannot close or latch the window, adjust the window (AMM 56-11-02/501).

S 434-069

CAUTION: HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(13) For the left No. 2 window:
(a) Connect the electrical wires to the power terminal.
1) Tighten the screws to 25-30 pound-inches.
(b) Connect the electrical wires to the temperature sensor.
1) Tighten the screws to 12-15 pound-inches.
(c) Connect the power connector to the top left corner of the window.

S 434-085

CAUTION: HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(14) For the right No. 2 window:
(a) Connect the electrical wires to the power terminal.
1) Tighten the screws to 25-30 pound-inches.
(b) Connect the electrical wires to the temperature sensor.
1) Tighten the screws to 12-15 pound-inches.

S 864-050
(15) For the right No. 2 window, remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H6, ICE/RAIN WINDOW HEAT 2R

2) 36H7, ICE/RAIN WINDOW HEAT 3R
(b) On the right miscellaneous electrical equipment panel, P37:
1) 37D2, ICE/RAIN WINDOW HEAT 1R

S 864-052
(16) For the left No. 2 window, remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E1, WINDOW HEAT 2L
2) 37E2, WINDOW HEAT 3L
(b) On the left miscellaneous electrical equipment panel, P36:
1) 36L5 ICE/RAIN WINDOW HEAT 1L

S 214-054
(17) Do a check of the window heating system (AMM 30-41-00/501).

S 824-055
(18) Adjust the window (5), (AMM 56-11-02/501).

S 714-056
(19) Do a test of the window latching system to make sure the force needed to operate the latch handle is correct (AMM 56-11-02/501).

S 414-049
(20) Install the window padding to the window (5) as follows:
(a) Install the aft cover.
(b) Install the forward cover.
(c) Install the top cover.
(d) Install the lower cover.
(e) Install the latch handle cover.

S 864-077
(21) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS; Remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) On the P6 panel:
1) 6H15 or 6J15, F/E SEAT
2) 6J21, F/O SEAT

NO. 2 OPENABLE WINDOW - ADJUSTMENT/TEST

1. General
   A. This procedure has these tasks:
      (1) No. 2 Window adjustments.

          NOTE: Major No. 2 window adjustments should only be performed by personnel knowledgeable with the No. 2 window.

      (2) Operational Test of the No. 2 Window.

   TASK 56-11-02-825-122

2. No. 2 Window Adjustments

   A. General
      (1) This task has these parts:
          (a) Guide Roller Adjustment - Top of the Window
          (b) Vertical Adjustment - At the Forward Side of the window.
          (c) Vertical Adjustments - Aft Side of the Window
          (d) Inboard/Outboard Adjustments - Bottom Aft Corner of the Window
          (e) Inboard/Outboard Adjustments - Top Aft Corner of the Window
          (f) Latch Handle Force Adjustment.
          (g) Window Crank Position Adjustment.
   B. Consumable Materials
      (1) A00374 Loctite
      (2) C00468 Primer - BMS10-11, type 1
   C. References
      (1) AMM 56-11-02/401, No. 2 Window Removal/Installation
      (2) AMM 56-11-02/601, No. 2 Window Inspection/Check
   D. Access
      (1) Location Zones
          211 Control Cabin, Left
          212 Control Cabin, Right

   E. Prepare to adjust the window.

      S 865-207
      (1) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS; Do these steps:

          WARNING: MAKE SURE YOU DISCONNECT THE CIRCUIT BREAKER FOR THE FLIGHT COMPARTMENT SEAT. FAILURE TO DISCONNECT THE CIRCUIT BREAKER CAN RESULT IN ACCIDENTAL FLIGHT COMPARTMENT SEAT OPERATION WHICH CAN CAUSE INJURY AND DAMAGE.

          (a) Open these circuit breakers and attach DO-NOT-CLOSE tags:
              1) On the main power distribution panel, P6:
                 a) 6H15 or 6J15, CAPT SEAT

b) 6J21, F/O SEAT

S 865-153

(2) Put all the window heat switches on the pilot's overhead panel, P5 in the OFF position.

S 865-124

WARNING: THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(3) For the right No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H2 or 36H6, ICE/RAIN WINDOW HEAT 2R
2) 36H1 or 36H7, ICE/RAIN WINDOW HEAT 3R
(b) On the right miscellaneous electrical equipment panel, P37:
1) 37F1 or 37F4 or 37D2, ICE/RAIN WINDOW HEAT 1R

S 865-125

(4) For the left No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E1 or 37H7, WINDOW HEAT 2L
2) 37E2 or 37H6, WINDOW HEAT 3L
(b) On the left miscellaneous electrical equipment panel, P36:
1) 36H4 or 36L5, ICE/RAIN WINDOW HEAT 1L

S 865-126

(5) Open the window.

S 015-143

(6) Remove the window lining to get access to the window components.

F. Guide Roller adjustment - Top of Window (Fig. 502)

S 825-186

WARNING: THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Adjust the guide roller, as follows:
   (a) Open the window.
   (b) Loosen the two fasteners that attach the guide roller bracket to the window until you can move the bracket over the serrations.
   (c) Close the window and hold it in the correct position with the drive handle.
   (d) Move the guide roller bracket over its serrations until the roller lightly touches the aft inside part of the clevis.

      NOTE: If it is necessary, guide rollers can be adjusted to lightly pull the window assembly forward.

   (e) Tighten the two fasteners.

G. Vertical Window Adjustment - Forward Side of the Window (Fig. 503)

S 825-190

WARNING: THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Adjust the upper forward roller bracket, as follows:
   (a) Open the window.
   (b) Loosen the four fasteners on the upper forward roller bracket until you can move the bracket over the serrations.

      NOTE: Make a mark across the bracket and the serrated plate with a pencil before loosening the fasteners. This will give you a reference of how much you move the window up or down.

(c) Use a support to hold the window.
(d) Move the track up or down along the serrations.

NOTE: One serration is 0.036 inch.

(e) Tighten the four fasteners.

H. Vertical Window Adjustments - Aft Side of the Window (Fig. 504):
Windows with Type I roller clusters.

S 825-191

WARNING: THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Adjust the Type I roller cluster as follows:
(a) Remove the roller cluster bolt.
(b) Add or remove washer(s) between the roller cluster bracket assy and the window bracket monoball as needed to move the window up or down (Fig. 504 view A).

NOTE: Adding washers will move the window down. Removing washers will move the window up. The total amount of washers allowed is 8 or 0.128 inch (3.25 mm) maximum.

S 425-204
(2) Install the roller cluster bolt as follows:
(a) Apply BMS10-11 primer to the roller cluster bolt.
(b) Apply locktite compound to the roller cluster bolt threads.
(c) Install roller the cluster bolt and torque 60 to 90 pound-inches.

S 825-241
(3) If additional movement is required, adjust the brackets on the upper track as follows:

NOTE: These adjustments may be required on windows with Type II roller clusters if there is not sufficient adjustment available in the roller cluster.
This adjustment will change the roller clearance at one point along the lower aft track.

(a) Determine which bracket you will adjust:
1) The forward bracket changes the lower aft track roller and crank roller clearances with the window in the closed position.

2) The middle bracket changes the lower aft track roller clearance when the window is open 10 to 15 inches.
3) The aft bracket changes the lower aft track roller clearance when the window is fully open.

(b) If you adjust the aft two brackets, close the window.
(c) If you adjust the forward bracket, do these steps:
1) Open the window.
2) Loosen the bolts on the middle bracket to permit full adjustment of the forward bracket.

(d) Loosen the two fasteners on the bracket until you can move the bracket along the serrations.

NOTE: Make a mark across the bracket and the serrated plate with a pencil before loosening the fasteners. This will give you a reference of how much you move the window up or down.

(e) Move the track up or down along the serrations.

NOTE: One serration is 0.036 inch.

(f) Tighten the two fasteners.

I. Vertical Adjustments - Aft Side of the Window (Fig. 504), Windows with Type II Roller Clusters.

S 825-240
(1) Adjust the Type II roller cluster as follows:

NOTE: This adjustment will change the clearance along the full length of the lower aft track.

(a) Open the window.
(b) Remove the lockwire.
(c) Loosen the top nut until you can disengage the locking device.
(d) Disengage the locking device.
(e) Turn the adjustment bolt to move the window vertically.
1) Turn the bolt clockwise to move the window up.
2) Turn the bolt counterclockwise to move the window down.
(f) Engage the locking device.
(g) Tighten the top unit.
(h) Install the lockwire.

J. Inboard/Outboard Adjustment - Top Aft Corner of the Window (Fig. 506)

S 825-188

WARNING: THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Adjust the cam block, as follows:

NOTE: The cam block should make a pop sound when the window is opened. The window should be adjusted to make the pop sound as low as possible.

(a) Remove the three fasteners that attach the cam block to the fuselage.
(b) Add or remove 0.030 inch washers on the bolts between the dripshield and the cam block.

NOTE: The same number of shim washers must be at each of the three fastener locations. You must not have more than 0.25 inch of washers total.

(c) Install the three fasteners.
(d) Operate the window to make sure the crank roller only touches the inner cam surface.
1) If the crank roller hits the entry lip and rolls inboard of the cam block, do these steps:
a) Remove the retaining ring.
b) Lift the crank roller.
c) Turn the crank inboard 18 degrees (one gear tooth).
d) Install the retaining ring.
2) AIRPLANES WITH TWO INDEX HOLES IN THE CRANK ASSEMBLY (POST-SB 56-A0010 OR PRR B12901-58S);
If it is necessary, adjust the crank roller by a smaller increment.
a) Make a mark of the crank and its position to the window assembly.

NOTE: This mark is to help install the crank in the same position.

b) Remove the retaining ring.

c) Remove the crank from the gearbox.
d) Remove the retaining ring from the crank.
e) Remove the crank pin.
f) Turn the crank 81 degrees from the position of the gear and sleeve of the crank/roller assembly.

NOTE: This is to align the secondary hole of the crank with the holes in the gear and gearbox.

g) Install the crank pin.
h) Install the retaining ring on the crank.
i) Install the crank in the gearbox with the roller approximately 9 degrees inboard from its previous position.
j) Install the retaining ring.

3) AIRPLANES WITH FWD-AFT ADJUSTABLE CAM BLOCK;
Make sure that the crank roller is over-center in the cam block.
4) Make sure that the link arm is over-center when the window is fully closed.
a) Make sure that the link arm is over-center a minimum of 2 degrees.

K. Inboard/Outboard Adjustment - Bottom Aft Corner of the Window (Fig. 505)

S 825-217
(1) Adjust the link arm length, as follows:

NOTE: The object of this adjustment is to get a minimum closing force while still maintaining less than a 5 pound latching force. Do not disassemble the link arm.

(a) Open the window.

NOTE: This adjustment will change the clearance along the full length of the lower aft track.

(b) Loosen the jamnut at the base of the rod end on the link arm.
(c) Close the window and check the latch system for free operation (AMM 56-11-04/401)
(d) Use a wrench on the piston to turn the piston and change the length of the link arm.

NOTE: One full turn changes the length 0.042 inch (1.06 mm).

(e) If resistance is felt:
1) Turn the piston clockwise to increase the length.

NOTE: Increasing the piston length moves the window outboard.

2) Make small adjustments and check for resistance in the latch system.
3) Continue to check and adjust the window until the latch handle force is 5 lbs (22.2 N) or less.

(f) If no resistance is felt:
1) Turn the piston counterclockwise to decrease the length.

NOTE: Decreasing the piston length moves the window inboard.

2) Make small adjustments and check for resistance in the latch system (Fig. 508).
3) When resistance is felt, turn the piston clockwise the minimum amount until the latch handle force is 5 lbs (22.2 N) or less.

(g) Tighten the jamnut on the link arm to 60 - 95 pound-inches (6.78-10.73 Nm).
(h) Tighten the top unit.
(i) Make sure that the link arm is over-center when the window is fully closed.
1) Make sure that the link arm is over-center a minimum of 2 degrees.
(j) Make sure that the crank roller is fully forward in the forward contact point in the cam block.
(k) AIRPLANES WITH TWO INDEX HOLES IN THE CRANK ASSEMBLY (POST-SB 56-A0010 OR PRR B12901-58S);
If it is necessary, repeat the adjust for the crank roller.
(l) Install the lockwire.
(m) Close the window and check the latch system for free operation (AMM 56-11-04/401).

L. Guide Roller Adjustment (Fig. 502).

S 865-225
(1) Close the window.

S 835-226
(2) Move the guide roller bracket over its serrations until the roller lightly touches the aft inside part of the clevis.

NOTE: If it is necessary, guide rollers can be adjusted to lightly pull the window assembly forward.

S 835-227
(3) Tighten the two fasteners.

M. Latch Handle Force Adjustment

S 725-218
(1) Check for proper operation of the latch handle (AMM 56-11-02/601).

S 825-219
(2) If operation is not correct, repeat Inboard/Outboard Adjustment - Bottom Aft Corner of the Window to correct latch handle operation.

N. Window Crank Position (Fig. 507)

S 825-134
(1) Adjust the crank handle direction, as follows:
(a) Use your notes from (AMM 56-11-02/601) to decide the adjustment needed.
(b) Close and latch the window.
(c) Continue to turn the crank in the window closed direction to overide the crank clutch.

NOTE: A 0.25 turn of the latch handle because of spring back is permitted.

(d) Turn the handle until it points forward and slightly above the horizontal centerline.

O. Rig the Window

S 865-220
(1) Open the window.

S 035-242
(2) Remove the window lining to get access to the widow components.

S 825-243
(3) Loosen or remove the guide roller.

S 825-244
(4) Do the Inboard/Outboard adjustment - Upper Aft corner of the window.

S 825-245
(5) Do the Inboard/Outboard adjustment - Lower Aft corner of the window.

S 825-221
(6) Measure the window clearances (AMM 56-11-02/601).

S 825-222
(7) Adjust the gaps at the back of the window.
(a) Adjust the front of the window (Fig. 503) up or the back of the window (Fig. 504) down to reduce the gap at the top of the window.
(b) Adjust the front of the window (Fig. 503) down or the back of the window (Fig. 504) to reduce the gap at the botom of the window.

S 835-223
(8) Align the Window Vertically.
(a) Adjust both the front of the window (Fig. 503) and the rear of the window (Fig. 504) up equal amounts to raise the window.
(b) Adjust both the front of the window (Fig. 503) and the rear of the window (Fig. 504) down equal amounts to lower the window.

S 865-224
(9) Repeat gap adjustments at the back of the window until the gaps are within limits.
(AMM 56-11-02/601).

S 825-246
(10) Reinstall the guide roller.

P. Link Arm and Crank Roller Position (Fig. 505, Fig. 506).

S 215-248
(1) Make sure that the link arm position is over center
(a) Do the No.2 window adjustment steps again until the link arm is over-center.

S 215-249
(2) Make sure that the crank roller is fully forward in the forward contact point in the cam block.
(a) Do the No.2 window adjustment steps again until the crank roller is fully forward in the forward contact point.

Q. Put the Airplane Back to its Usual Condition

S 865-161
(1) For the right No. 2 window, remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H2 or 36H6, ICE/RAIN WINDOW HEAT 2R
2) 36H1 or 36H7, ICE/RAIN WINDOW HEAT 3R
(b) On the right miscellaneous electrical equipment panel, P37:
1) 37F1 or 37F4 or 37D2, ICE/RAIN WINDOW HEAT 1R

S 865-162
(2) For the left No. 2 window, remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) 37E1 or 37H7, WINDOW HEAT 2L
(b) 37E2 or 37H6, WINDOW HEAT 3L

S 865-192
(3) On the left miscellaneous electrical equipment panel, P36:
(a) 36H4 or 36L5, ICE/RAIN WINDOW HEAT 1L

S 865-163
(4) Move all of the window heat switches on the pilot's overhead panel, P5 to the ON position.

S 025-164
(5) Remove the grease or primer from the latch cams and the latch studs if it is necessary.

S 425-165
(6) Install the interior window lining.

S 425-166
(7) Install the window padding to the window, as follows:

NOTE: You must install the window padding to hold the window terminals in their correct position.

(a) Install the covers on all sides of the window.
(b) Install the latch handle cover.

S 715-167
(8) Make sure the window heat system operates correctly.

S 865-208
(9) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS; Do these steps:
(a) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
1) On the main power distribution panel, P6:
a) 6H15 or 6J15, CAPT SEAT
b) 6J21, F/O SEAT

TASK 56-11-02-715-145
3. No. 2 Openable Window - Operational Test

A. Equipment
(1) Spring Scale, 0-10 pounds
(2) Spring Scale, 0-50 pounds
B. Access
(1) Location Zones
211 Flight Compartment, Left
212 Flight Compartment, Right

C. Prepare for the Procedure

S 865-211
(1) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS; Do these steps:

WARNING: MAKE SURE YOU DISCONNECT THE CIRCUIT BREAKER FOR THE FLIGHT COMPARTMENT SEAT. FAILURE TO DISCONNECT THE CIRCUIT BREAKER CAN RESULT IN ACCIDENTAL FLIGHT COMPARTMENT SEAT OPERATION WHICH CAN CAUSE INJURY AND DAMAGE.

(a) Open these circuit breakers and attach DO-NOT-CLOSE tags:
1) On the main power distribution panel, P6:
a) 6H15 or 6J15, CAPT SEAT
b) 6J21, F/O SEAT

S 865-181

(2) Put all the window heat switches on the pilot's overhead panel, P5 in the OFF position.

S 865-206

WARNING: THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(3) For the right No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H2 or 36H6, ICE/RAIN WINDOW HEAT 2R
2) 36H1 or 36H7, ICE/RAIN WINDOW HEAT 3R
(b) On the right miscellaneous electrical equipment panel, P37:
1) 37F1 or 37F4 or 37D2, ICE/RAIN WINDOW HEAT 1R

S 865-183

(4) For the left No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E1 or 37H7, WINDOW HEAT 2L
2) 37E2 or 37H6, WINDOW HEAT 3L
(b) On the left miscellaneous electrical equipment panel, P36:
1) 36H4 or 36L5, ICE/RAIN WINDOW HEAT 1L

S 015-184

(5) Open the window.

S 015-185

(6) Remove the window lining to get access to the window components.

D. Latch System Test (Fig. 508)

S 865-146

(1) Close and latch the window.

S 865-147

(2) Make sure the window is closed, latched, and locked:
   (a) The placard, WINDOW NOT CLOSED, on the inner side of the window must not be visible.
   (b) The latch handle must be fully forward and not in the position indicated by the UNLOCK arrow.
   (c) The bright yellow color on the lock button at the top of the handle must not be visible.

S 715-148

(3) Do this check of the lock button with the handle in the LOCK position, as follows:
   (a) Push and release the lock button on the top of the latch handle.
   (b) Make sure the button quickly moves up.
   (c) Try to move the latch handle without the lock button pushed.
   (d) Make sure the handle is firmly in position and does not move out of its position.

      NOTE: The first officer No. 2 window on freighter airplanes will move. This is a safety feature to allow use of the external emergency window opening handle.

   (e) Push and hold the lock button on the latch handle.
   (f) Turn the latch handle to the other position.

      NOTE: Release the lock button as you turn the latch handle.

   (g) Do these steps again in the UNLOCK position.

S 725-146

(4) Do a check of the latch force, as follows:
   (a) Attach the 0-10 pound spring scale to the latch handle.
   (b) Measure the force necessary to move the latch from the LOCK to the UNLOCK position.
   (c) Measure the force necessary to move the latch from the UNLOCK to the LOCK position.
   (d) Make sure the force to move the handle in the two directions is less than 5 pounds.
   (e) Make sure the latch moves smoothly.
   (f) Make sure the force to move the latch is approximately the same when the window is in the open position.

      NOTE: Hold the latch hook up to allow movement of the latch handle with the window in the open position.

S 715-147

(5) Make sure the latch handle grip rotates easily and smoothly about its axis.

E. Window Test

S 725-148

(1) Do a test of the Window in the closed position, as follows:
  (a) Close the window.
  (b) Move the latch handle to the LOCK position.
    1) Make sure the knob on the window crank is forward of and slightly above the horizontal centerline of the crank.
  (c) Move the latch handle to the UNLOCK position.
    1) Make sure the window stays closed without movement after you release the latch handle.

S 715-149

(2) Do a test of the Window as it opens, as follows:
  (a) Turn the window crank to open the window.

    NOTE: Some windows may continue to move towards the open position without aid from the window crank. This is because of the friction difference between the windows. This condition is satisfactory.

    1) Make sure you hear a pop when the crank roller leaves the cam block detent.
    2) Make sure the window moves inboard.
    3) Make sure the lower forward roller does not touch the forward lip of the guide track (Fig. 503 B).

S 725-150

(3) Do a test of the window crank forces, as follows:
  (a) Attach a 0-50 pound spring scale to the window crank.
  (b) Alternately, attach a torque wrench to the window crank shaft.
  (c) Measure the force necessary to move the window to the fully open position.
  (d) Measure the force necessary to move the window to the fully closed position.

    NOTE: The crank loads will increase as the window closes.

    1) Make sure the window moves smoothly with no sudden changes in the crank load.
    2) If you use the spring scale, make sure the crank load is not more than 30 pounds.
    3) If you use the torque wrench, make sure the crank torque is not more than 98 pound-inches.

S 715-151

(4) Do a test of the window crank, as follows:
  (a) Move the window to the fully closed position and hold the crank.
  (b) Make sure the crank movement after you release the crank is less than half of a turn.

(c) Make sure the crank knob turns freely about its axis.
(d) Move the latch handle to the LOCK position.
(e) Make sure you cannot read the WINDOW NOT CLOSED decal located on the lower window frame.
(f) Make sure the window lining is smooth with the frame.

F. Put the Airplane Back to its Usual Condition

S 865-170
(1) For the right No. 2 window, remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H2 or 36H6, ICE/RAIN WINDOW HEAT 2R
2) 36H1 or 36H7, ICE/RAIN WINDOW HEAT 3R
(b) On the right miscellaneous electrical equipment panel, P37:
1) 37F1 or 37F4 or 37D2, ICE/RAIN WINDOW HEAT 1R

S 865-171
(2) For the left No. 2 window, remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E1 or 37H7, WINDOW HEAT 2L
2) 37E2 or 37H6, WINDOW HEAT 3L
(b) On the left miscellaneous electrical equipment panel, P36:
1) 36H4 or 36L5, ICE/RAIN WINDOW HEAT 1L

S 865-172
(3) Move all of the window heat switches on the pilot's overhead panel, P5 to the ON position.

S 025-173
(4) Remove the grease or primer from the latch cams and the latch studs if it is necessary.

S 425-174
(5) Install the interior window lining.

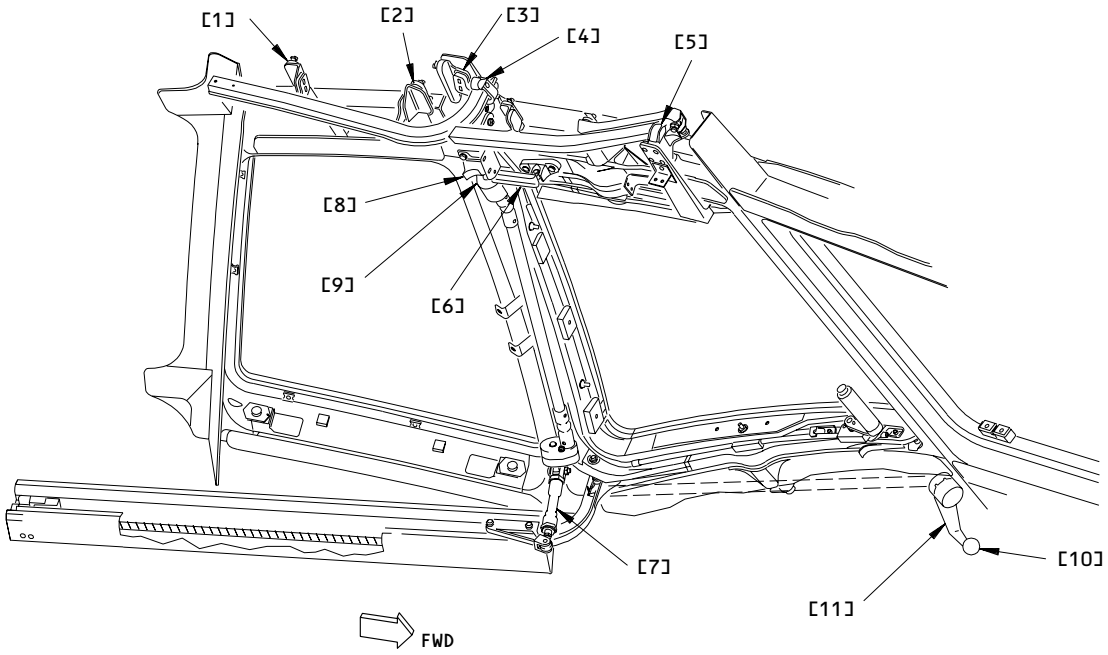
S 425-175
(6) Install the window padding to the window, as follows:

NOTE: You must install the window padding to hold the window sensor terminals in their correct position.

(a) Install the covers on all sides of the window.
(b) Install the latch handle cover.

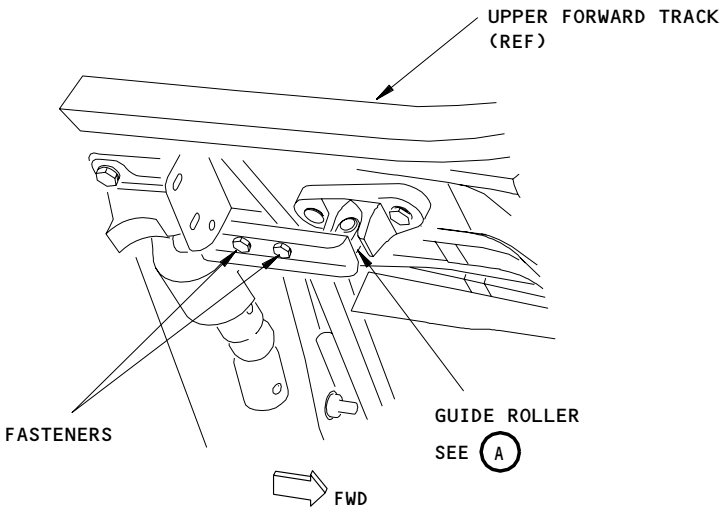
S 715-176
(7) Make sure the window heat system operates correctly.

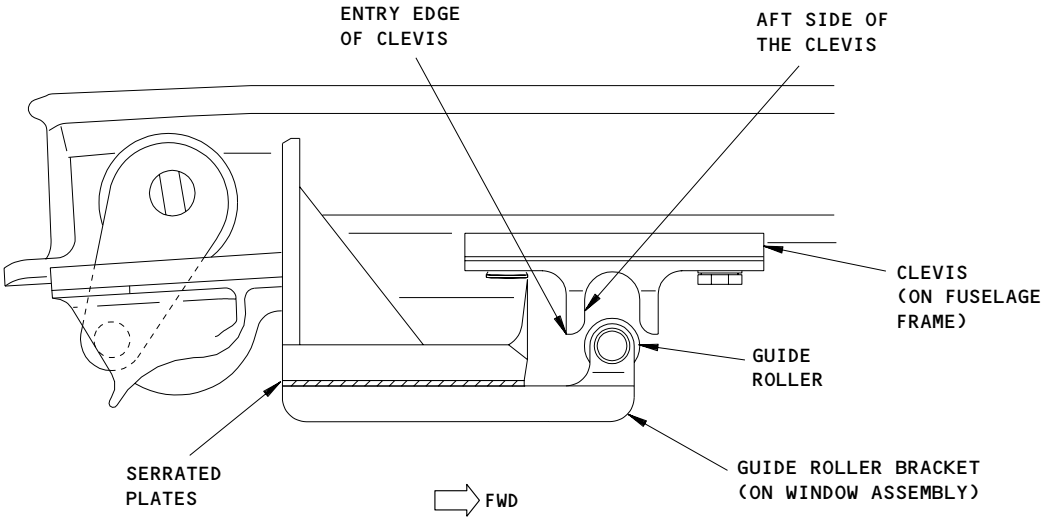
S 865-212
(8) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS;
Do these steps:
(a) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
1) On the main power distribution panel, P6:
a) 6H15 or 6J15, CAPT SEAT
b) 6J21, F/O SEAT



[X]	COMPONENT	ADJUSTMENT	FIGURE
[1]	AFT SUPPORT BRACKET	VERTICAL ADJUSTMENT (AFT SIDE OF THE WINDOW)	504
[2]	MIDDLE SUPPORT BRACKET		
[3]	FORWARD SUPPORT BRACKET		
[4]	AFT ROLLER CLUSTER		
[5]	FORWARD ROLLER CLUSTER	VERTICAL ADJUSTMENT (FORWARD SIDE OF THE WINDOW)	503
[6]	GUIDE ROLLER	GUIDE ROLLER	502
[7]	LINK ARM	INBOARD/OUTBOARD ADJUSTMENT (BOTTOM AFT CORNER OF THE WINDOW)	505
[8]	CAM BLOCK	TOP EDGE OF WINDOW	505
[9]	CRANK ROLLER	INBOARD/OUTBOARD ADJUSTMENT (TOP AFT CORNER OF THE WINDOW)	506
[10]	DRIVE HANDLE KNOB	HANDLE	507
[11]	DRIVE HANDLE		

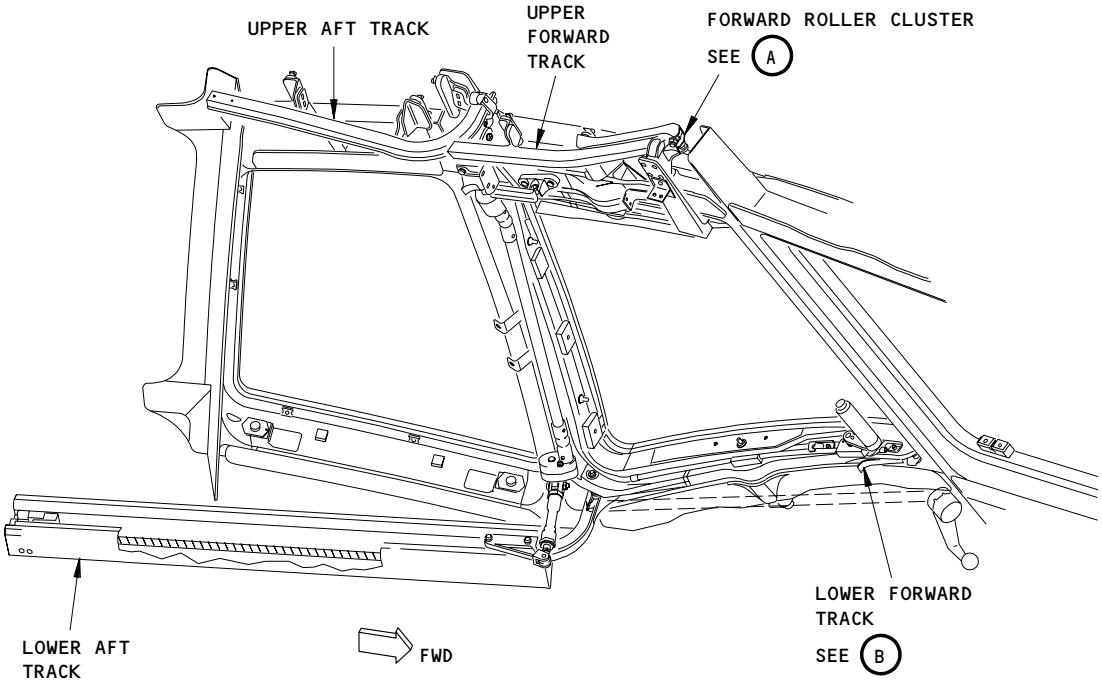
No. 2 Window Adjustments
Figure 501



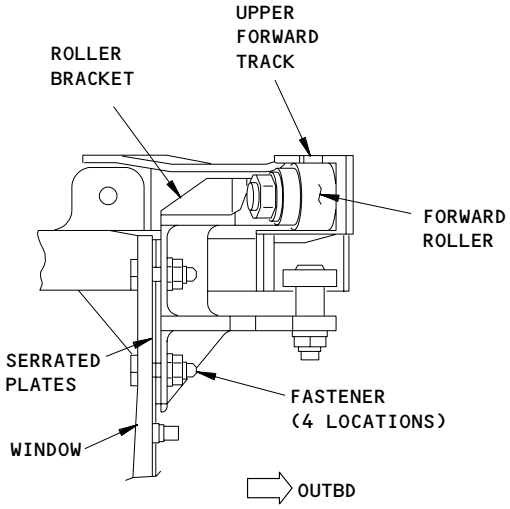


GUIDE ROLLER
A

Forward/Aft Adjustment (Top Half of the Window)
Figure 502

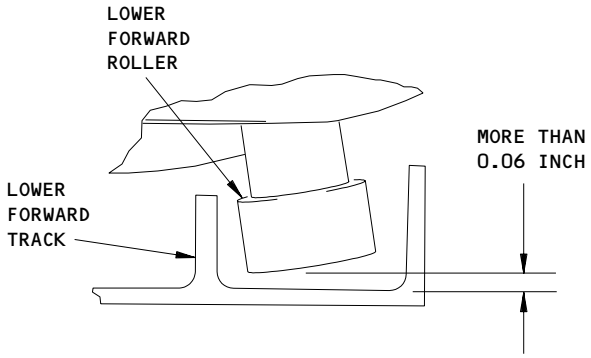


NO. 2 WINDOW



FORWARD ROLLER CLUSTER

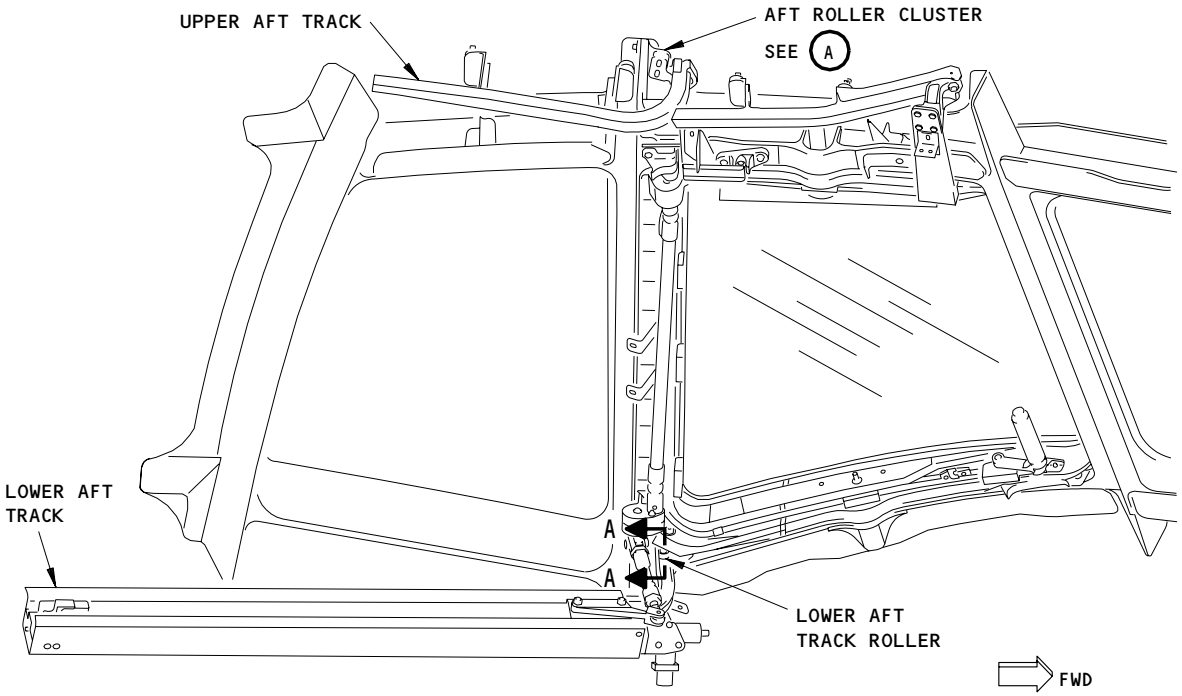
A



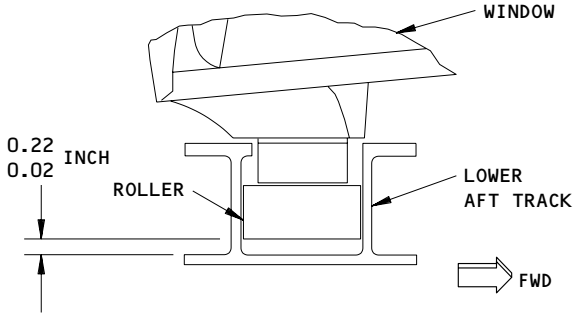
LOWER FORWARD TRACK
(NECESSARY CONDITION)

B

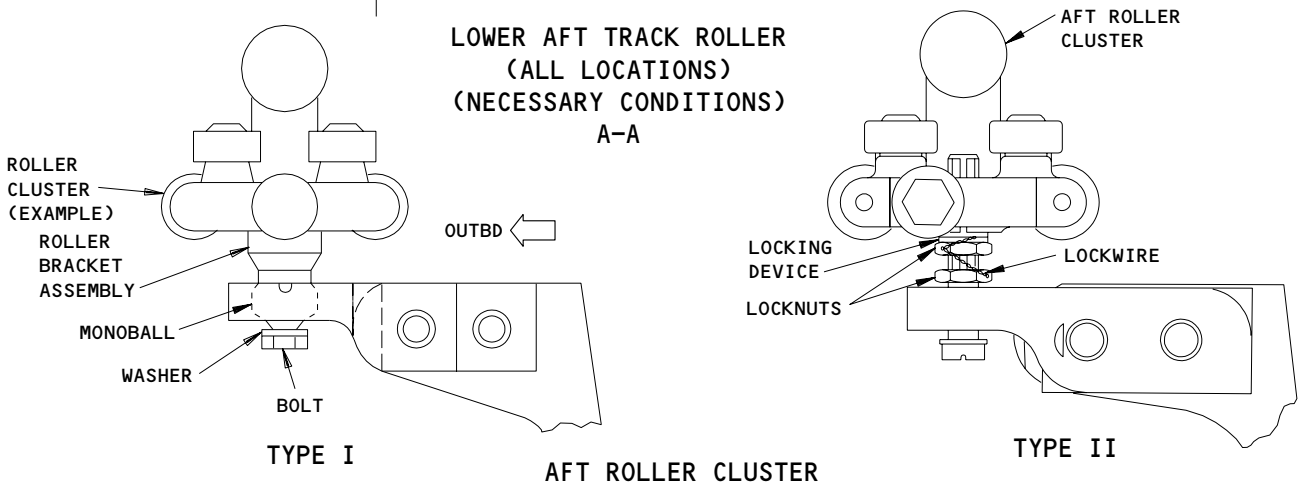
Vertical Adjustment (Forward Side of the Window)
Figure 503



AFT ROLLER CLUSTER



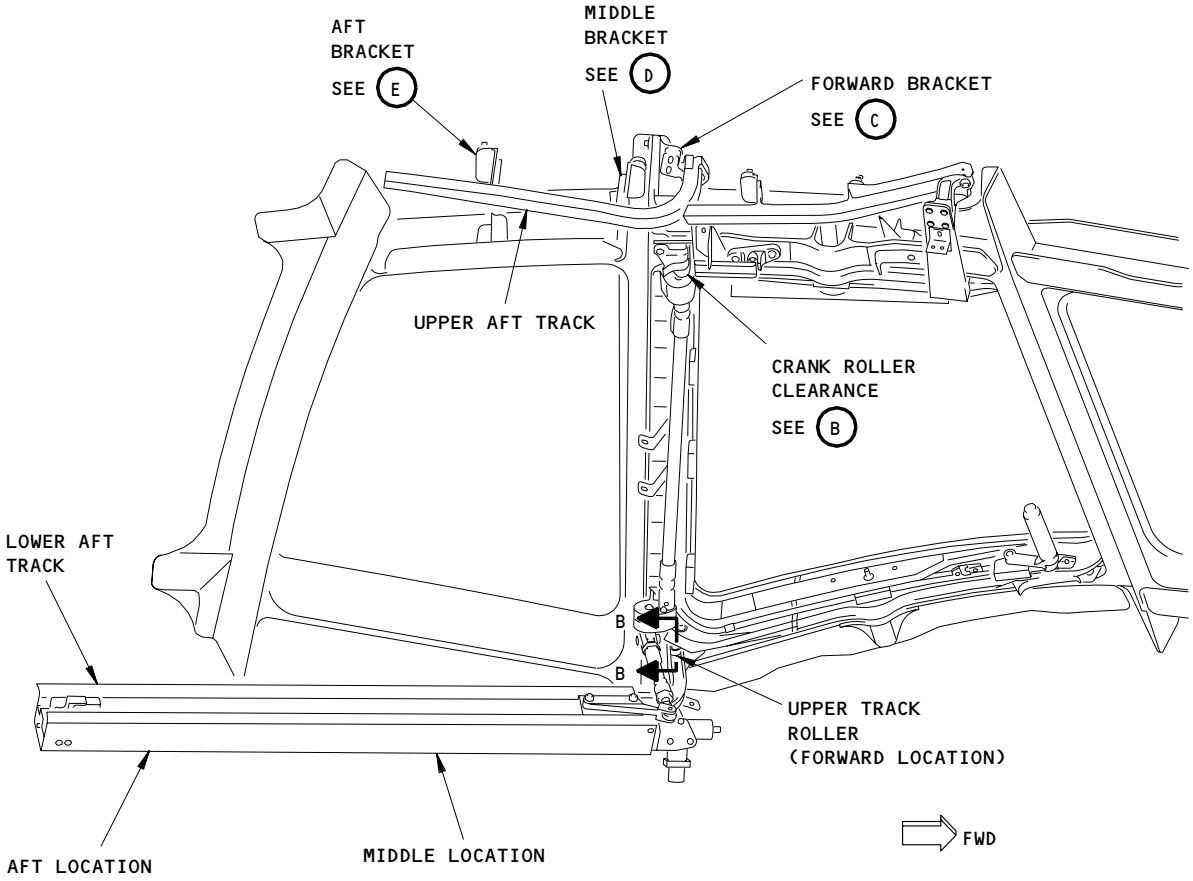
LOWER AFT TRACK ROLLER
(ALL LOCATIONS)
(NECESSARY CONDITIONS)
A-A



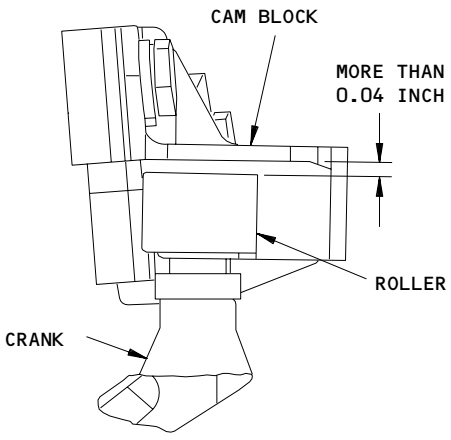
AFT ROLLER CLUSTER

A

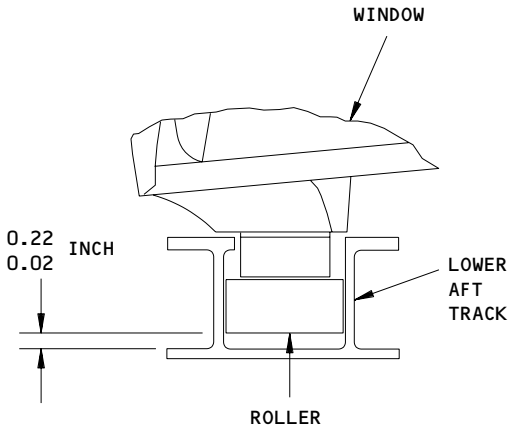
Vertical Adjustment (Aft Side of the Window)
Figure 504 (Sheet 1)



UPPER AFT TRACK

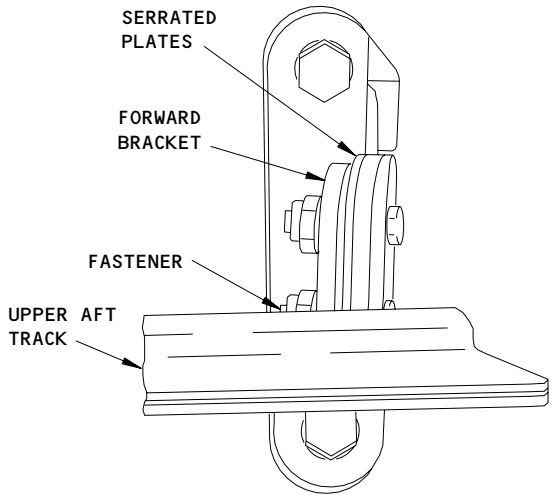


CRANK ROLLER CLEARANCE
(NECESSARY CONDITION)
B



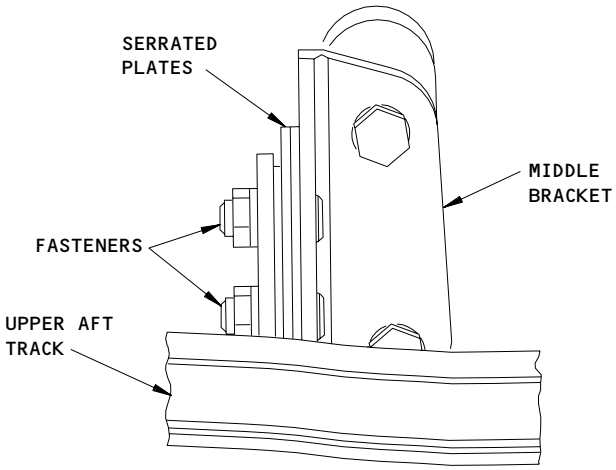
LOWER AFT TRACK ROLLER
(FORWARD, MIDDLE, AND AFT LOCATIONS)
(NECESSARY CONDITION)
B-B

Vertical Adjustment (Aft Side of the Window)
Figure 504 (Sheet 2)



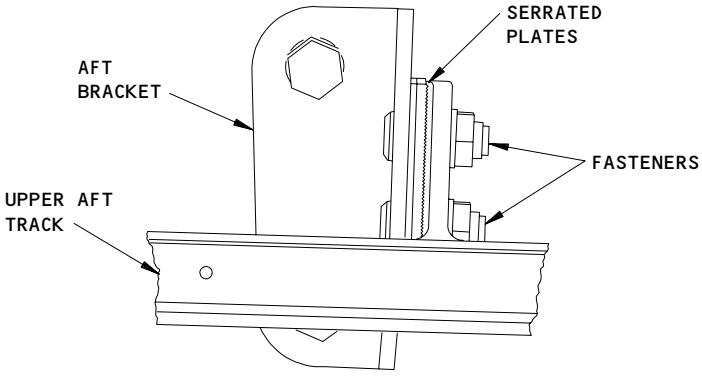
FORWARD BRACKET

C



MIDDLE BRACKET

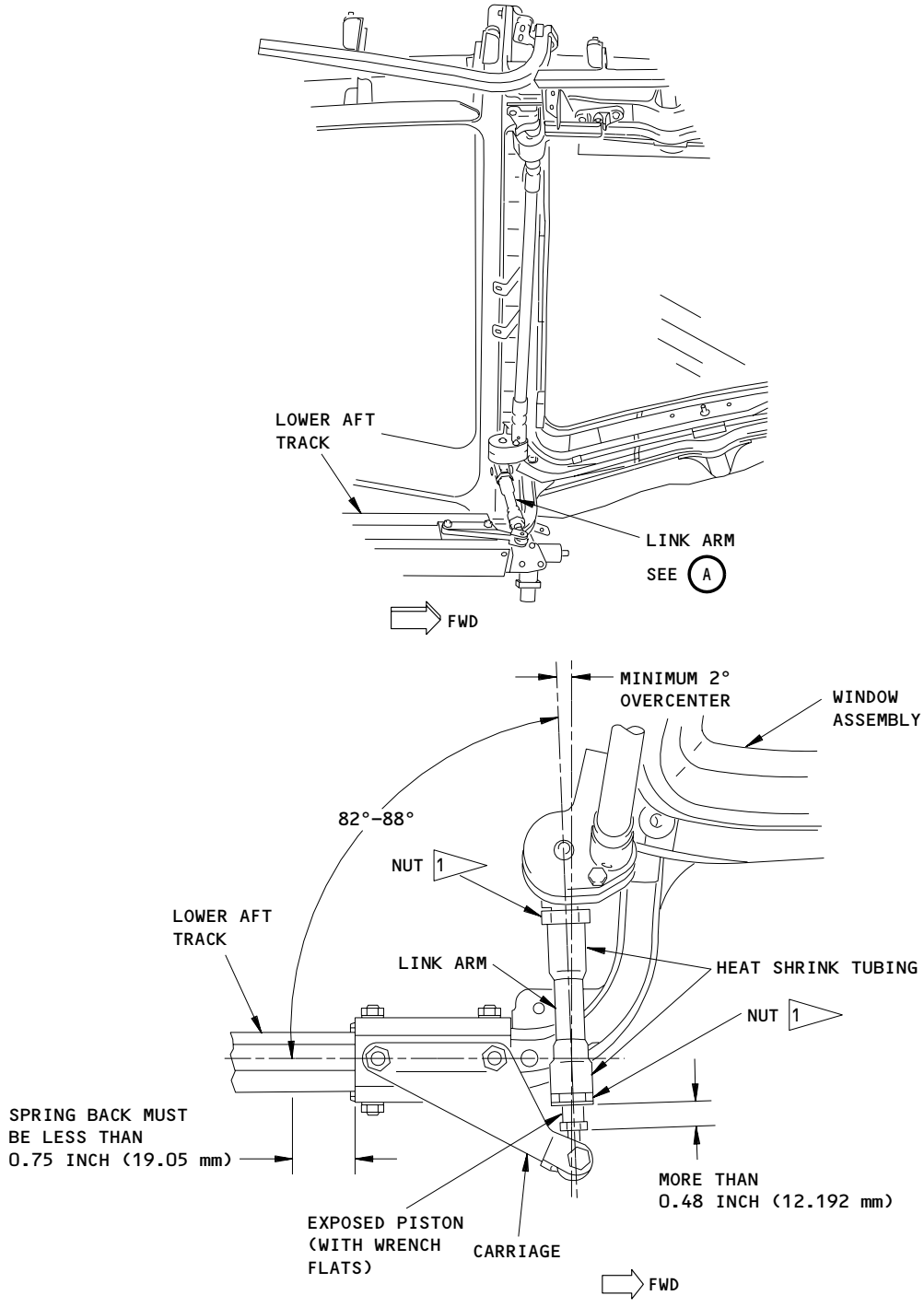
D



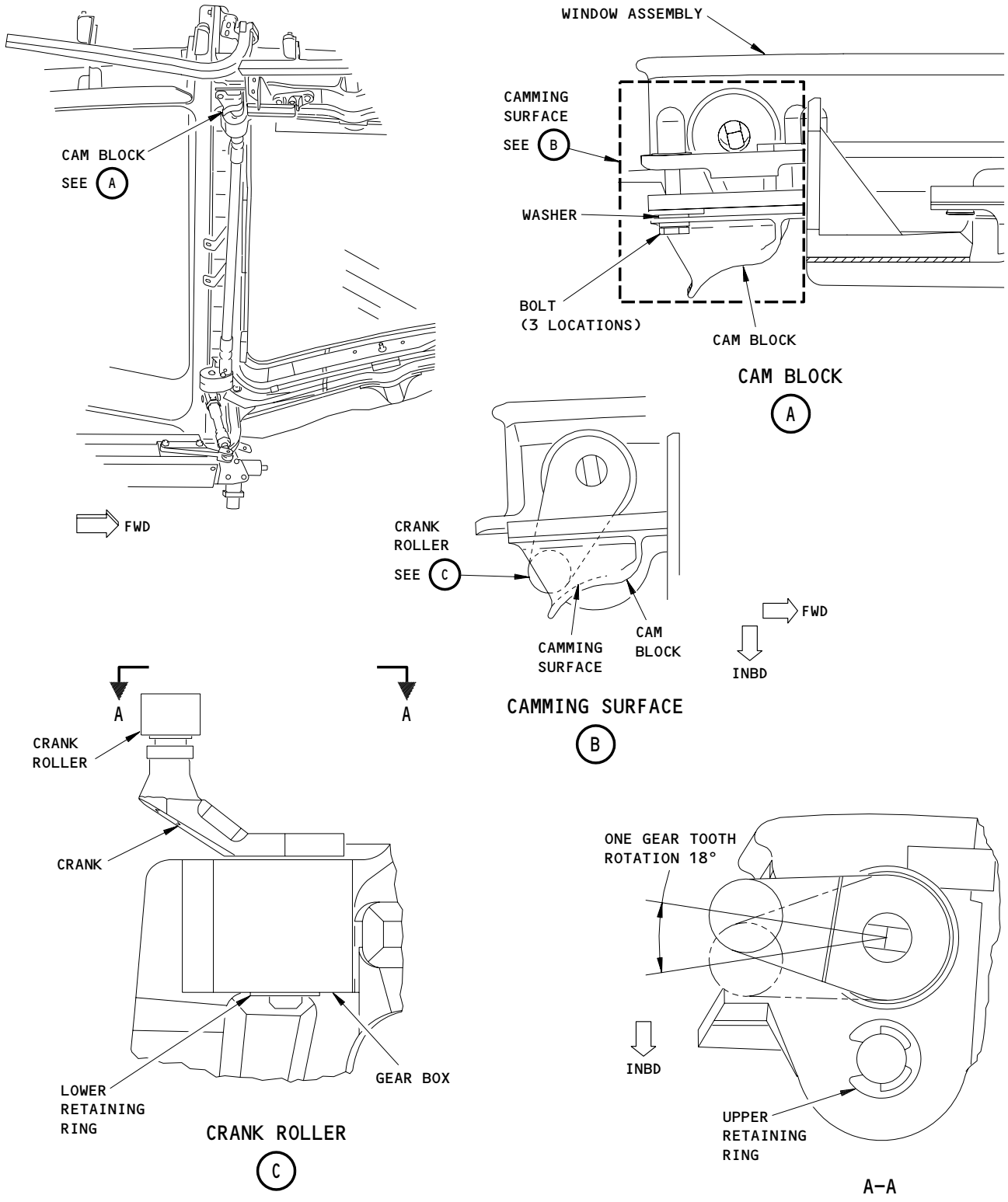
AFT BRACKET

E

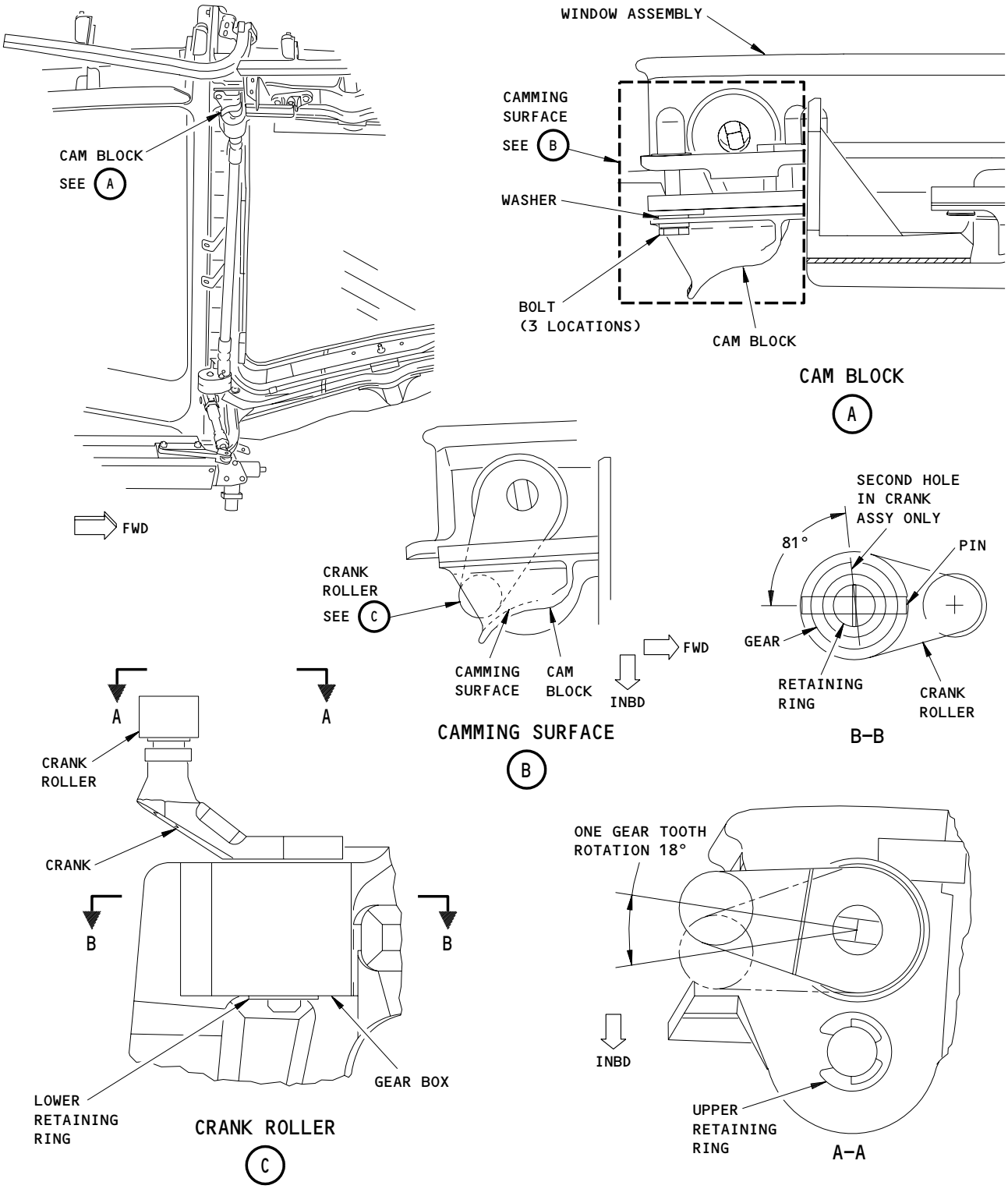
Vertical Adjustment (Aft Side of the Window)
Figure 504 (Sheet 3)



Inboard/Outboard Adjustment (Bottom Aft Corner of the Window)
Figure 505



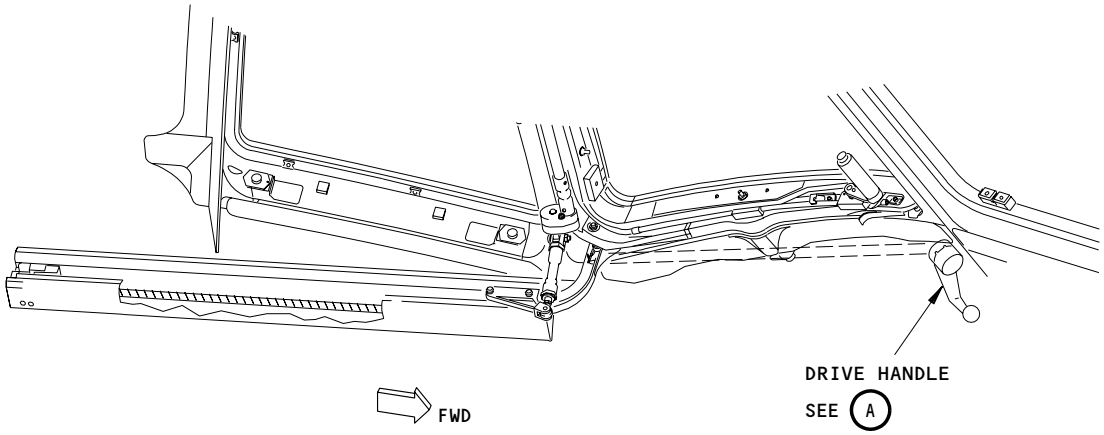
Inboard/Outboard Adjustment (Top Aft Corner of the Window)
Figure 506 (Sheet 1)

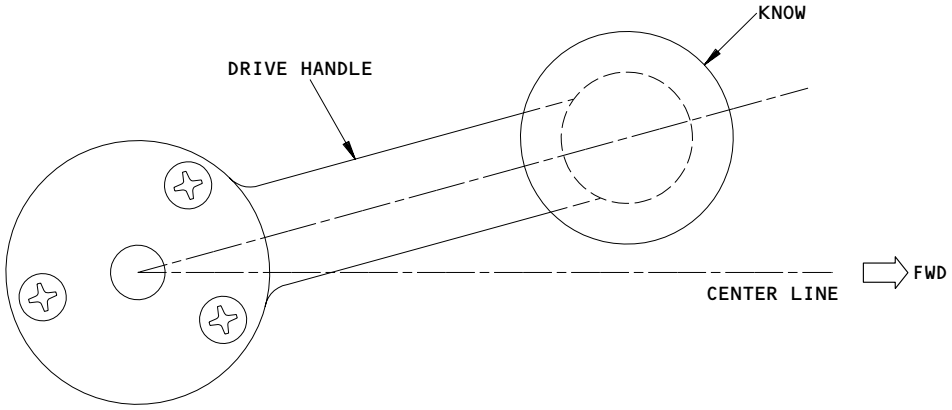


Inboard/Outboard Adjustment (Top Aft Corner of the Window)
Figure 506 (Sheet 2)

EFFECTIVITY
AIRPLANES WITH TWO INDEX HOLES IN THE CRANK ASSEMBLY

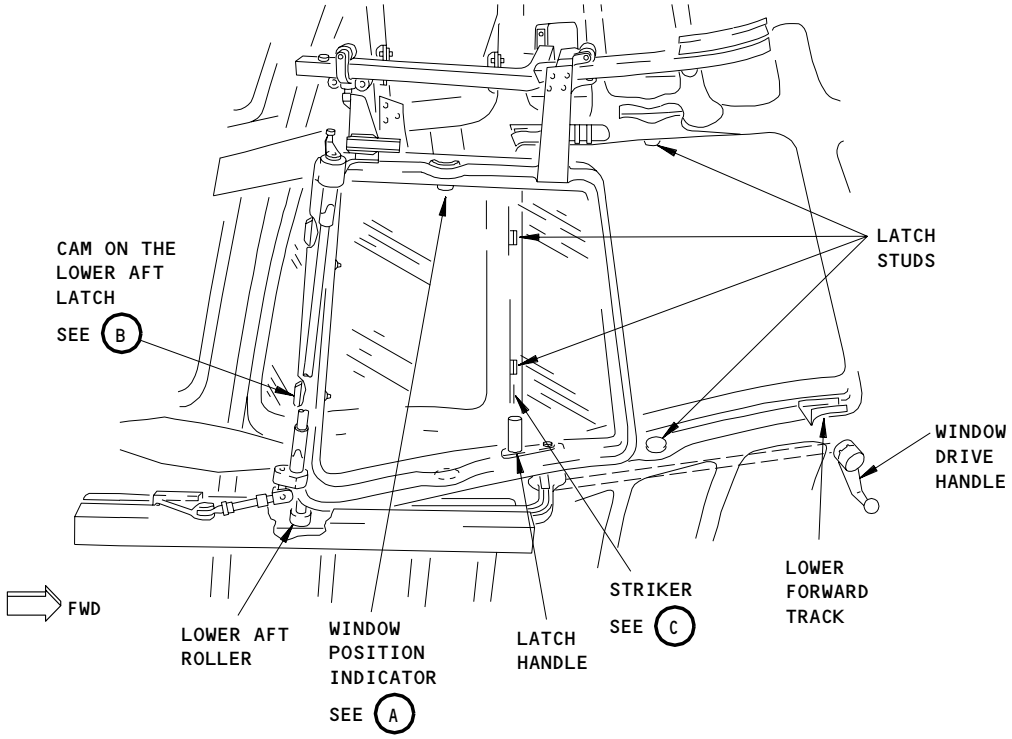
1459198

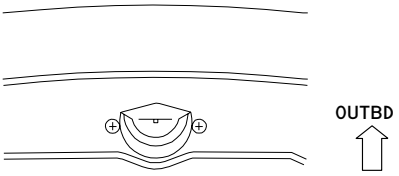




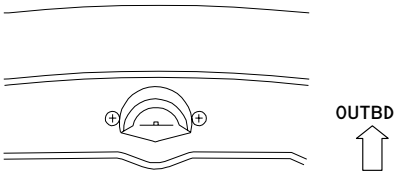
DRIVE HANDLE
A

Drive Handle Adjustment
Figure 507

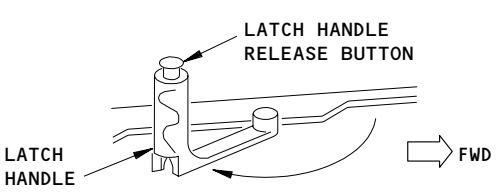




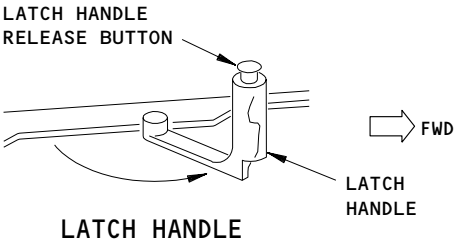
LATCHING CAM
(OPEN)



LATCHING CAM
(CLOSE)



LATCH HANDLE
(OPEN)

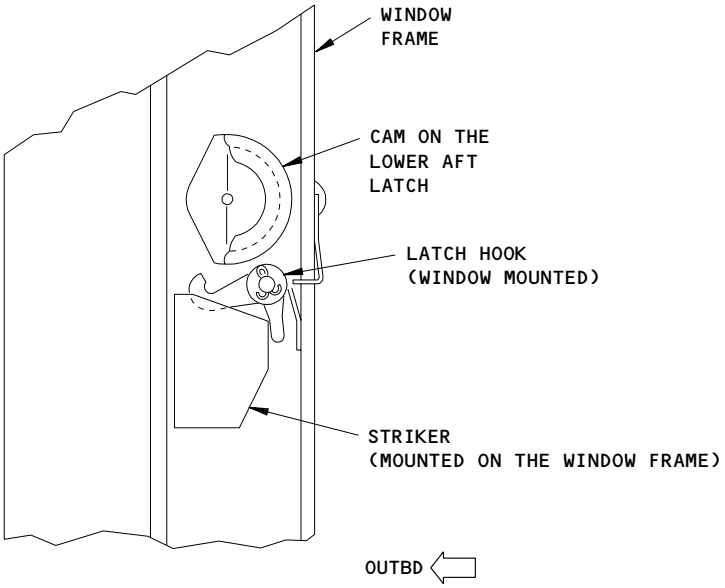


LATCH HANDLE
(CLOSE)

WINDOW POSITION INDICATOR
LATCH SYSTEM TEST

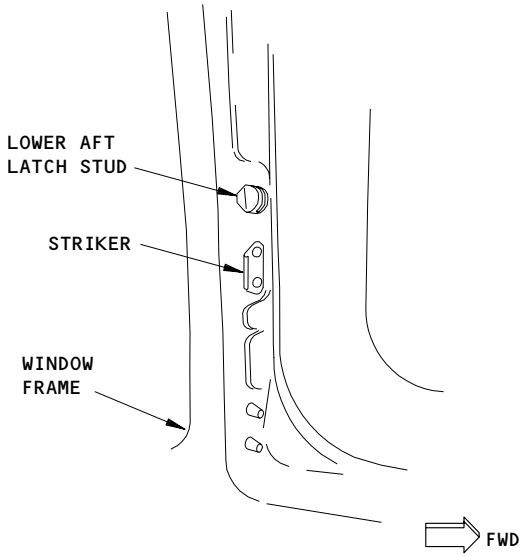
(A)

Latch System Test
Figure 508 (Sheet 1)



CAM ON THE LOWER AFT LATCH
(VIEW IN THE FORWARD DIRECTION)

B



STRIKER

C

Latch System Test
Figure 508 (Sheet 2)

NO. 2 OPENABLE WINDOW - INSPECTION/CHECK

1. General
   A. This procedure has these tasks:
      (1) A check of the No. 2 openable window.
      (2) An operational check of the No. 2 openable window.
      (3) A Pry Check.
      (4) A Scuff Mark Check.

   TASK 56-11-02-706-001

2. No. 2 Window Check

   A. General
      (1) This task provides checks of the window at these positions:
         (a) Position #1 - Window moving along the lower aft track-motion of the open window.
         (b) Position #2 - Window moving to the closed and sealed position.
         (c) Position #3 - Window closed, latched, and locked.
      (2) The check at position #3 is the most important, it checks squareness of the window in the frame.
         (a) A window that is square in the frame when it is closed will likely have low latching forces and good seal compression.

   B. Consumable Materials
      (1) C00259 Primer - BMS10-11
      (2) C00308 Dark Grease - CPC 3 (Corrosion Preventive Compound Class 3), MIL-C-11796B Class III

   C. Access
      (1) Locations Zones
         211 Flight Compartment, Left
         212 Flight Comparmtent, Right

   D. Prepare To Check The Window

      S 866-050
      (1) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS; Do the following:
         (a) Open these circuit breakers and attach DO-NOT-CLOSE tags:
            1) On the main power distribution panel, P6:
               a) 6H15 or 6J15, CAPT SEAT

b) 6J21, F/O SEAT

S 866-004

WARNING: THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(2) Put all the window heat switches on the pilot's overhead panel, P5 in the OFF position.

S 866-051

(3) For the right No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
   (a) On the left miscellaneous electrical equipment panel, P36:
      1) 36H2 or 36H6, ICE/RAIN WINDOW HEAT 2R
      2) 36H1 or 36H7, ICE/RAIN WINDOW HEAT 3R
   (b) On the right miscellaneous electrical equipment panel, P37:
      1) 37F1 or 37F4 or 37D2, ICE/RAIN WINDOW HEAT 1R

S 866-005

(4) For the left No. 2 window, open these circuit breakers and attach DO-NOT-CLOSE tags:
   (a) On the right miscellaneous electrical equipment panel, P37:
      1) 37E1 or 37H7, WINDOW HEAT 2L
      2) 37E2 or 37H6, WINDOW HEAT 3L
   (b) On the left miscellaneous electrical equipment panel, P36:
      1) 36H4 or 36L5, ICE/RAIN WINDOW HEAT 1L

S 026-006

(5) Open the window.

S 026-007

(6) Remove the window covers.
   (a) Remove the latch handle cover.
   (b) Remove the covers from all sides of the window.

E. Window Check at Position #1: Window Movement Along the Lower Aft Track

S 716-008

(1) Make sure the window can move along the track as follows:
   (a) Open the window fully.
   (b) Use the crank to move the window along the lower aft track until the window almost closes.

S 716-009

(2) Do a check of these clearances:

NOTE: You can feel a binding condition through the drive handle when there is not smooth operation of the window.

(a) Clearance between the window frame and the lower aft track.
1) The window frame must clear the lower aft track at all times.

(b) Clearance between the crank roller and the cam block.
1) The crank roller must be more than 0.04 inch below the top of the cam block.
2) The lower aft track roller must be 0.02 to 0.22 inch from the bottom of the lower aft track at all times.

(c) Clearance between the forward guide roller and its lower forward track.
1) The lower forward roller must engage the lower forward track.
2) The lower forward roller must be more than 0.06 inch from the bottom of the lower forward track.

S 976-052

(3) If the window will not move to the almost closed position, adjust the window vertically (AMM 56-11-02/501).

NOTE: You can make these adjustments with the window in the closed and locked position.

F. Window Check At Position #2: Window Movement to the Closed and Sealed Position.

S 716-011

(1) Do a check of the movement of these components as the window closes:
(a) The forward/aft guide roller must not hit the entry edge of the clevis.

(b) The crank roller must only touch the inner cam surface.
1) If the crank roller hits the entry lip and rolls inboard of the cam block, adjust the cam roller (AMM 56-11-02/501) Inboard/Outboard Adjustment - Lower Half of the Window.

S 716-012

(2) Do a check of these conditions when the window is fully closed:
(a) The carriage must not spring back more than 0.75 inch.
(b) The guide roller must not hit the entry edge of the clevis.
(c) The guide roller must touch the aft side of the clevis.
(d) The exposed piston length when the link arm is fully compressed must be more than 0.48 inch.
(e) The crank roller must only touch the inner surface of the cam block.
(f) The torque to operate the drive handle must be less than 98 pound-inches.

S 716-013

(3) Make sure you can latch the window:
(a) Close the window with the crank, but do not move the latch handle out of the unlatched position

NOTE: Latch indicator at top of window should show OPEN.

(b) Push the latch button on top of the latch handle, and rotate the handle forward to the latched position.
1) Make sure the operating force is not more than 5 pounds at any position of the handle.
(c) Rotate latch the handle aft to the unlatch position and open the window.
1) Make sure no scuff marks show on the upper edges or surfaces of any of the four latch studs.
(d) If the window will not latch, adjust the window to reduce the interference between the cams and the studs. Refer to the Pry Check or the Scuff Check to find the correct direction to adjust the window.

TASK 56-11-02-706-015

3. The Pry Check

A. General

(1) This method uses a pry action at five different positions on the window. This action releases the window crank handle loads while the window moves into the closed position. This action also releases the latch handle loads after the window is in the closed position.

B. Procedure

S 026-036

CAUTION: LIMIT FORCE ON PRY TOOL TO 50 POUNDS MAXIMUM. HANDLE PRY TOOL WITH CARE TO GUARD AGAINST SCARRING THE SURROUNDING STRUCTURE.

(1) Use a rounded pry tool to pry at each of the five positions shown. Operate the latch handle from the open to the locked position (Fig. 601).

S 976-037

(2) Make a note which pry positions make the latch operation easier.

NOTE: You must adjust the window in the direction of the pry force that allows easier operation.

S 866-038

(3) Open and close the window three times to position the window into a stable position.

NOTE: You must adjust the window in the direction of the pry force that allows easier operation.

S 826-039
(4) If the pry positions along the lower sill make the latch operation easier, the window needs upward vertical adjustment (AMM 56-11-02/501) .

S 826-040
(5) If the pry positions along the aft side of the window make latching easier, the window needs forward adjustment (AMM 56-11-02/501).

S 826-042
(6) If the latch handle operation is easier when the entire window is pushed outboard by hand, the window needs outbaord adjustment (AMM 56-11-02/501).

S 826-041
(7) If the pry positions along the upper sill make latching easier, the window needs downward vertical adjustment (AMM 56-11-02/501).

S 826-043
(8) If a combination of pry positions on different sides improved latch handle performance, an angular adjustment may be required (AMM 56-11-02/501).

TASK 56-11-02-706-028
4. Scuff Mark Check

A. Prepare for the Check, as follows:

S 026-029
(1) Open the window.

S 646-030
(2) Apply a thin coat of primer (or dark grease) to the studs.

B. Do the Check as follows:

S 426-031
(1) Close and latch the window.

S 026-032
(2) Open the window.

S 976-033
(3) Make a note of the scuff marks on the studs.

S 826-034
(4) Primer (or dark grease) on studs will show contact points caused by cam/stud misalignment, and aid adjustment of window. The location and severity of scuff marks on studs will indicate the adjustments necessary for proper cam/stud clearance.

S 826-035
(5) Do the window adjustments that will move the latch cams away from the scuff marks on the studs.

C. Window Check At Position #3 (Table 601)

S 866-026
(1) Put the window in the correct position as follows:
(a) Open and close the window three times to let the window move into a stable position.
(b) Latch the window.
(c) Lock the window.

S 866-027
(2) Find the actual condition of the window as follows:
(a) Measure the exterior window clearance.
(b) Measure the latch handle forces, as follows:
1) Do the latch check in the No. 2 window - Operational Check.

NOTE: A smooth operating latch does not completely indicate proper rig.

2) If the latch force is too high, do the Pry Check or the Scuff Mark Check to determine the necessary adjustment direction.

(c) Do a check of the window crank, as follows:
1) Close, latch, and lock the window.
2) With your hands on the window crank knob, see if the crank handle points aft within 15 degrees.
3) Make sure the crank knob turns freely around its own axis.

S 716-025
(3) Compare these conditions to Table 601 and make the necessary adjustments.

Necessary Conditions - Position #3
Closed, Latched, and Locked
Table 601

NECESSARY CONDITION	ADJUSTMENT NAME
The force to operate the latch handle must be 5 pounds or less.	Do the Pry Test or the Scuff Mark Test to find the correct direction to adjust the window.
The clearances around the window inside the airplane must be within the tolerances shown in Fig. 602	Vertical Adjustment Forward/ Aft Adjustment
The drive handle must be less than 15 degrees from the horizontal centerline.	Drive Handle Adjustment

TASK 56-11-02-706-024
5. No. 2 Openable Window - Operational Check

A. Equipment
(1) Spring Scale, 0-10 pounds

(2) Spring Scale, 0-50 pounds

B. Access

(1) Location Zones

211 Flight Comparmtent, Left

212 Flight Compartment, Right

C. Latch System Check (Fig. 603)

S 426-021

(1) Close and latch the window.

S 716-022

(2) Make sure the window is closed, latched and locked:

(a) The placard, WINDOW NOT CLOSED, on the inner side of the window must not be visible.

(b) The latch handle must be fully forward and not in the position indicated by the UNLOCK arrow.

(c) The bright yellow color on the lock button at the top of the handle must not be visible.

S 716-023

(3) Do this check of the lock button with the handle in the LOCK position, as follows:

(a) Push and release the lock button on the top of the latch handle.

(b) Make sure the button quickly moves up.

(c) Try to move the latch handle without depressing the lock button.

(d) Make sure the handle is firmly in position and does not move out of its position.

NOTE: The first officer No. 2 window on freighter airplanes will move. This is a safety feature to allow use of the external emergency window opening handle.

(e) Push and hold the lock button on the latch handle.

(f) Turn the latch handle to the other position.

NOTE: Release the lock button as you turn the latch handle.

(g) Do these steps again in the UNLOCK position.

S 716-020

(4) Do a check of the latch force:

(a) Attach the 0-10 pound spring scale to the latch handle.

(b) Measure the force necessary to move the latch handle from the LOCK to the UNLOCK position.

(c) Measure the force necessary to move the latch handle from the UNLOCK to the LOCK position.

(d) Make sure the force to move the Latch handle in the two directions is less than 5 pounds.
(e) Make sure the latch handle moves smoothly.
(f) Make sure the force to move the latch handle is approximately the same when the window is in the open position.

NOTE: Hold the latch hook to allow you to move the latch handle with the window in the open position.

S 716-019
(5) Make sure the latch handle grip rotates easily and smoothly about its axis.

D. Window Check

S 206-046
(1) Do a check of the window in the closed position, as follows:
(a) Close the window.
(b) Move the latch handle to the LOCK position.
1) Make sure the knob on the window crank is forward and slightly above the horizontal centerline of the crank.
(c) Move the latch handle to the UNLOCK position.
1) Make sure the window stays closed without movement after you release the latch handle.

S 716-017
(2) Do a check of the window as it opens, as follows:
(a) Turn the window crank to open the window.

NOTE: Some windows may continue to move towards the open position without aid from the window crank. This is because of the friction difference between the windows and is satisfactory.

1) Make sure you hear a pop when the crank roller leaves the cam block detent.
2) Make sure the window moves inboard.

3) Make sure the lower forward roller does not touch the forward lip of the guide track.

S 716-018

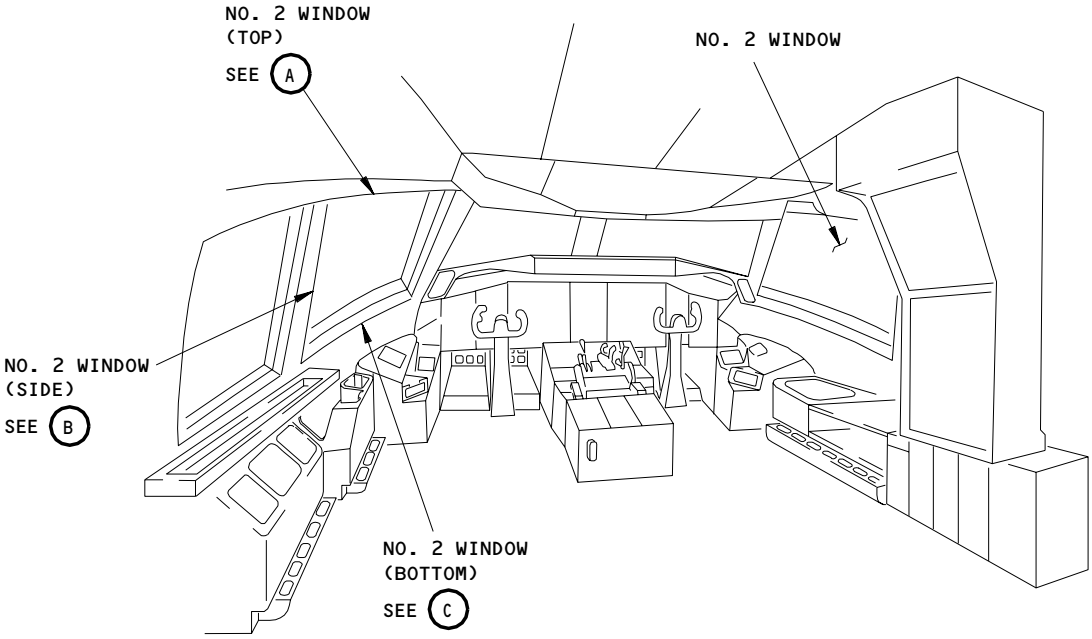
(3) Do a check of the window crank forces, as follows:
(a) Attach a 0-50 pound spring scale to the window crank.
(b) Alternately, attach a torque wrench to the window crank shaft.
(c) Measure the force necessary to move the window to the fully open position.
(d) Measure the force necessary to move the window to the fully closed position.

NOTE: The crank loads will increase as the window closes.

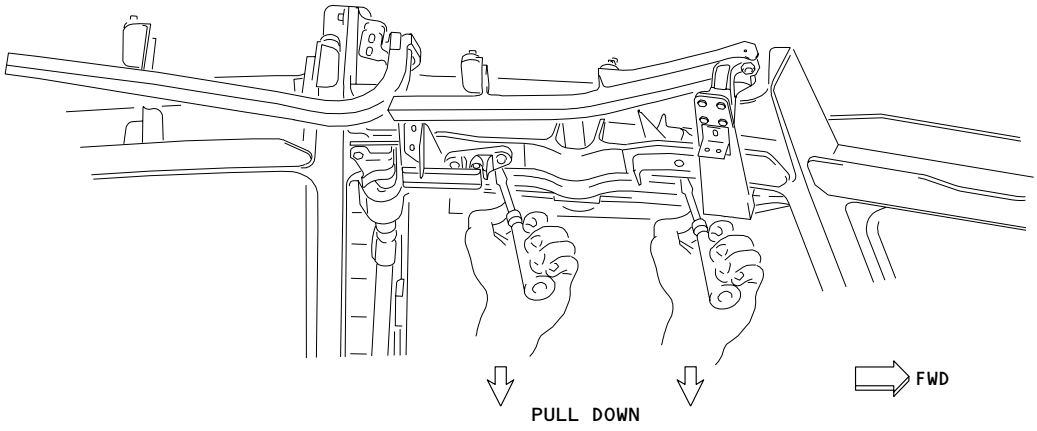
1) Make sure the window moves smoothly with no sudden changes in the crank load.
2) If you use the spring scale, make sure the crank load is not more than 30 pounds.
3) If you use the torque wrench, make sure the crank torque is not more than 98 pound-inches.

S 716-016

(4) Do a check of the window cranks, as follows:
(a) Move the window to the fully closed position and hold the crank.
(b) Make sure the crank movement after you release the crank is less than half of a turn.
(c) Make sure the crank knob turns freely about its axis.
(d) Move the latch handle to the LOCK position.
(e) Make sure you cannot read the WINDOW NOT CLOSED decal located on the lower window frame.
(f) Make sure the window lining is smooth with the frame.



FLIGHT COMPARTMENT
(TYPICAL)

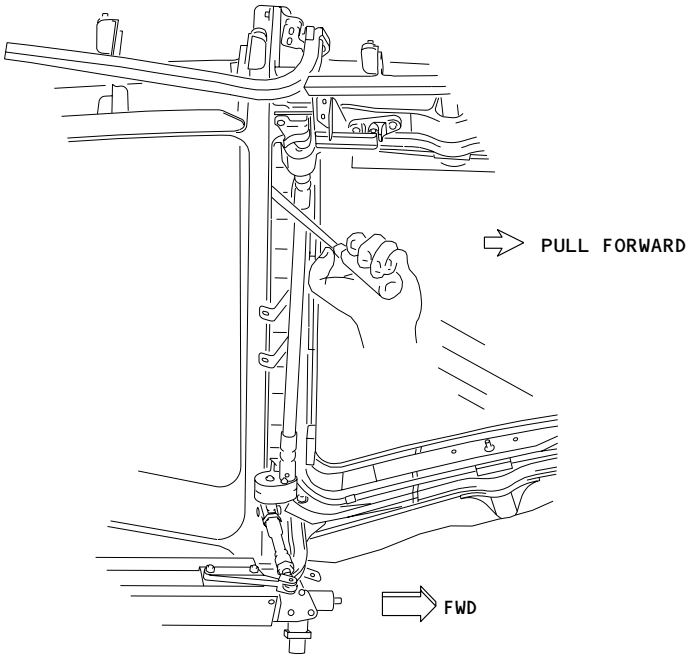


TOP PRY POINTS 1 2
A

1 DO THE PRY TEST WITH THE WINDOW CLOSED. DO NOT APPLY MORE THAN 50 POUNDS OF FORCE TO THE PRY TOOL.

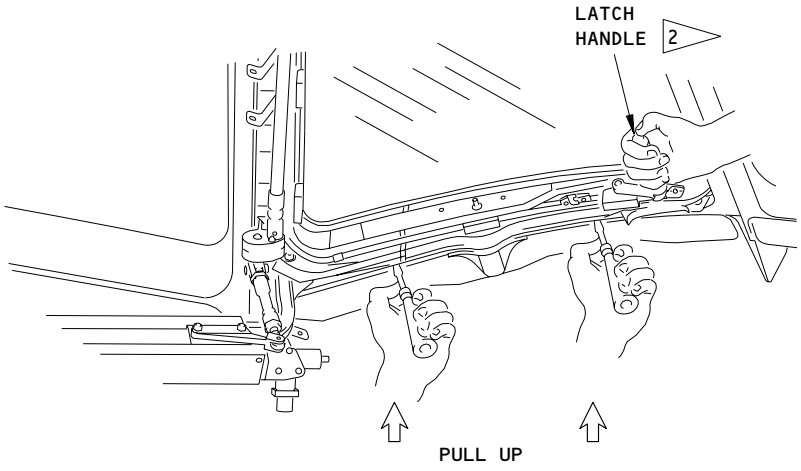
2 OPERATE THE LATCH HANDLE TO DO A CHECK OF THE HANDLE FORCE WHILE YOU APPLY FORCE AT EACH PRY POINT.

Pry Check for the No. 2 Window
Figure 601 (Sheet 1)



SIDE PRY POINTS 1 2

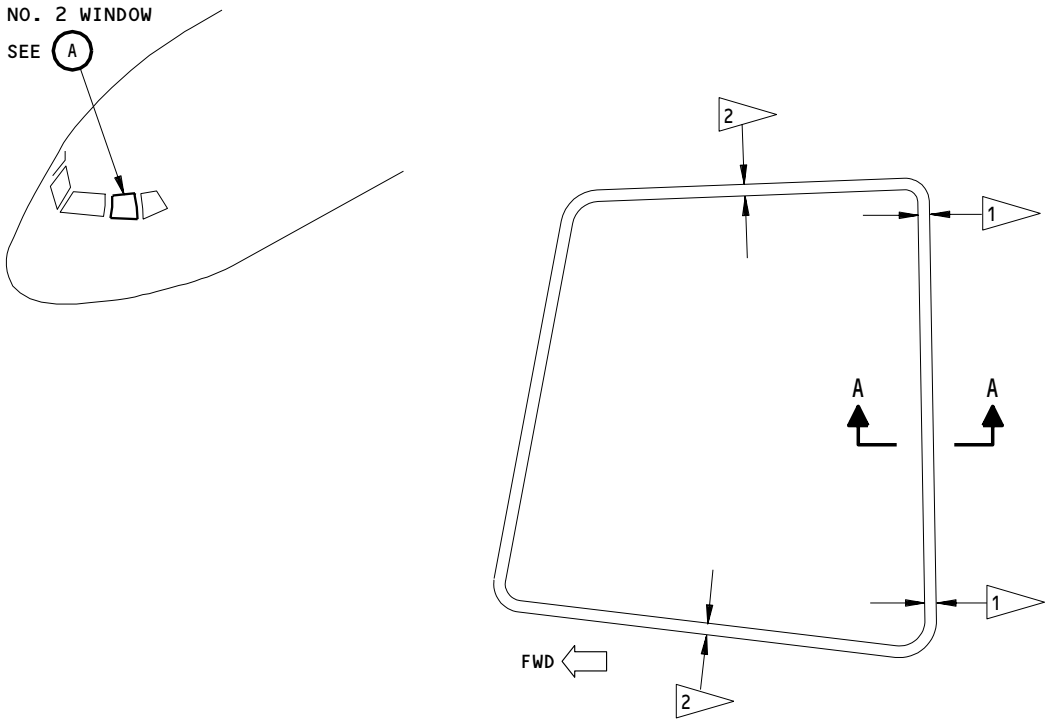
B



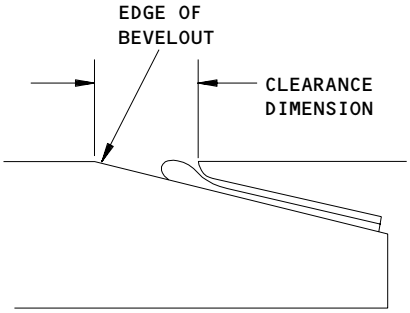
BOTTOM PRY POINTS 1 2

C

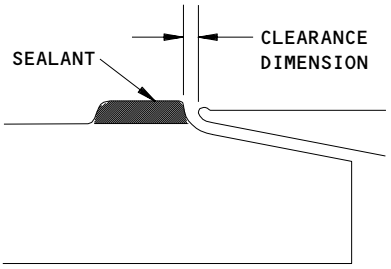
Pry Check for the No. 2 Window
Figure 601 (Sheet 2)



CLEARANCES TOLERANCES
NO. 2 WINDOW
A



CLEARANCE DIMENSION
(ACRYLIC WINDOWS)
A-A

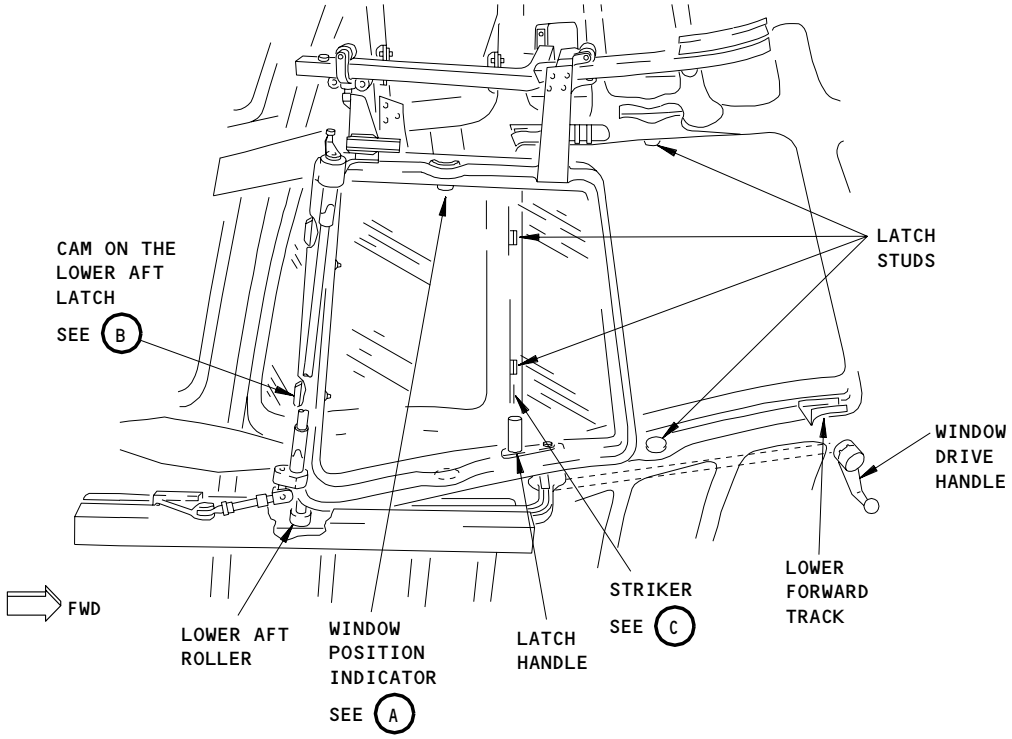


CLEARANCE DIMENSION
(GLASS WINDOWS)
A-A

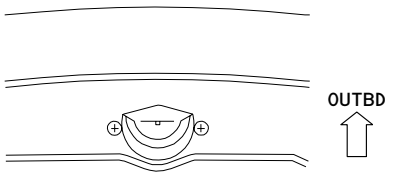
1 THE CLEARANCES ON THE UPPER AND LOWER AFT EDGE OF THE WINDOW MUST BE WITHIN 0.02 INCH (0.508 mm) OF EACH OTHER

2 THE CLEARANCES AT THE TOP AND BOTTOM OF THE WINDOW MUST BE WITHIN 0.04 INCH (1.016 mm) OF EACH OTHER

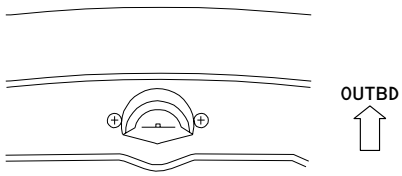
Exterior Window Clearance
Figure 602



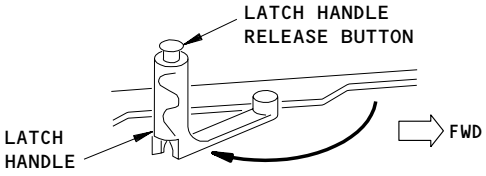
NO. 2 WINDOW



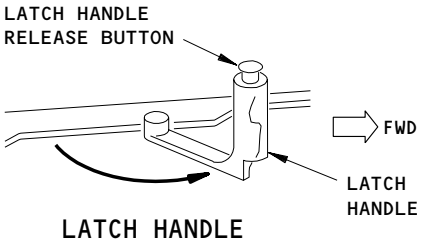
LATCHING CAM
(OPEN)



LATCHING CAM
(CLOSE)



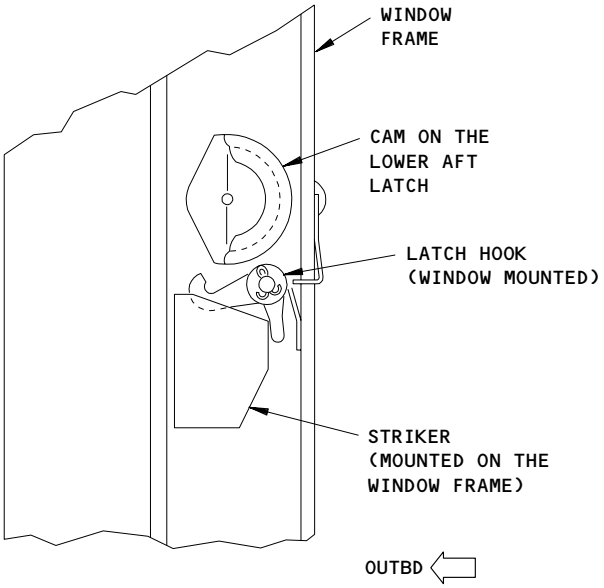
LATCH HANDLE
(OPEN)



LATCH HANDLE
(CLOSE)

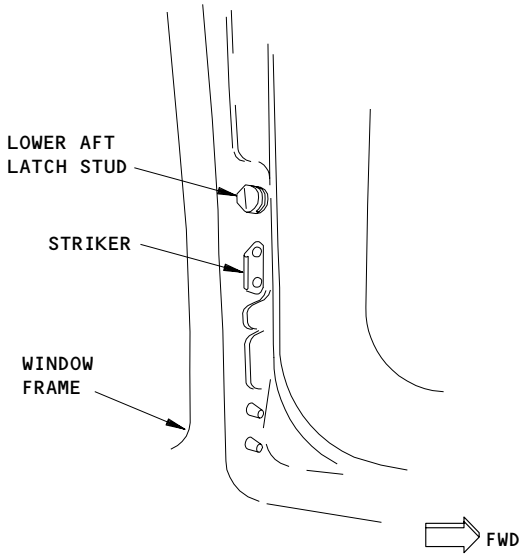
WINDOW POSITION INDICATOR
LATCH SYSTEM TEST
A

Latch System Check
Figure 603 (Sheet 1)



CAM ON THE LOWER AFT LATCH
(VIEW IN THE FORWARD DIRECTION)

B



STRIKER

C

Latch System Check
Figure 603 (Sheet 2)

NO. 2 WINDOW OPERATING MECHANISM - REMOVAL/INSTALLATION

1. General
   A. This procedure has the following tasks:
      (1) Remove the No. 2 Window Operating Mechanism.
      (2) Remove the No. 2 Window Gearboxes.
      (3) Install the No. 2 Window Operating Mechanism.
      (4) Install the No. 2 Window Gearboxes.
   B. When you replace the gearboxes, you must drill the input and output shafts of the window mechanism gearboxes.

TASK 56-11-04-004-003

2. Remove the Operating Mechanism
   A. Access
      (1) Location Zones
          211/212 Control Cabin

   B. Prepare for the Removal

      S 044-079
      (1) AIRPLANES WITH ELECTRICALLY POWER FLIGHT COMPARTMENT SEATS;
      Do the following:

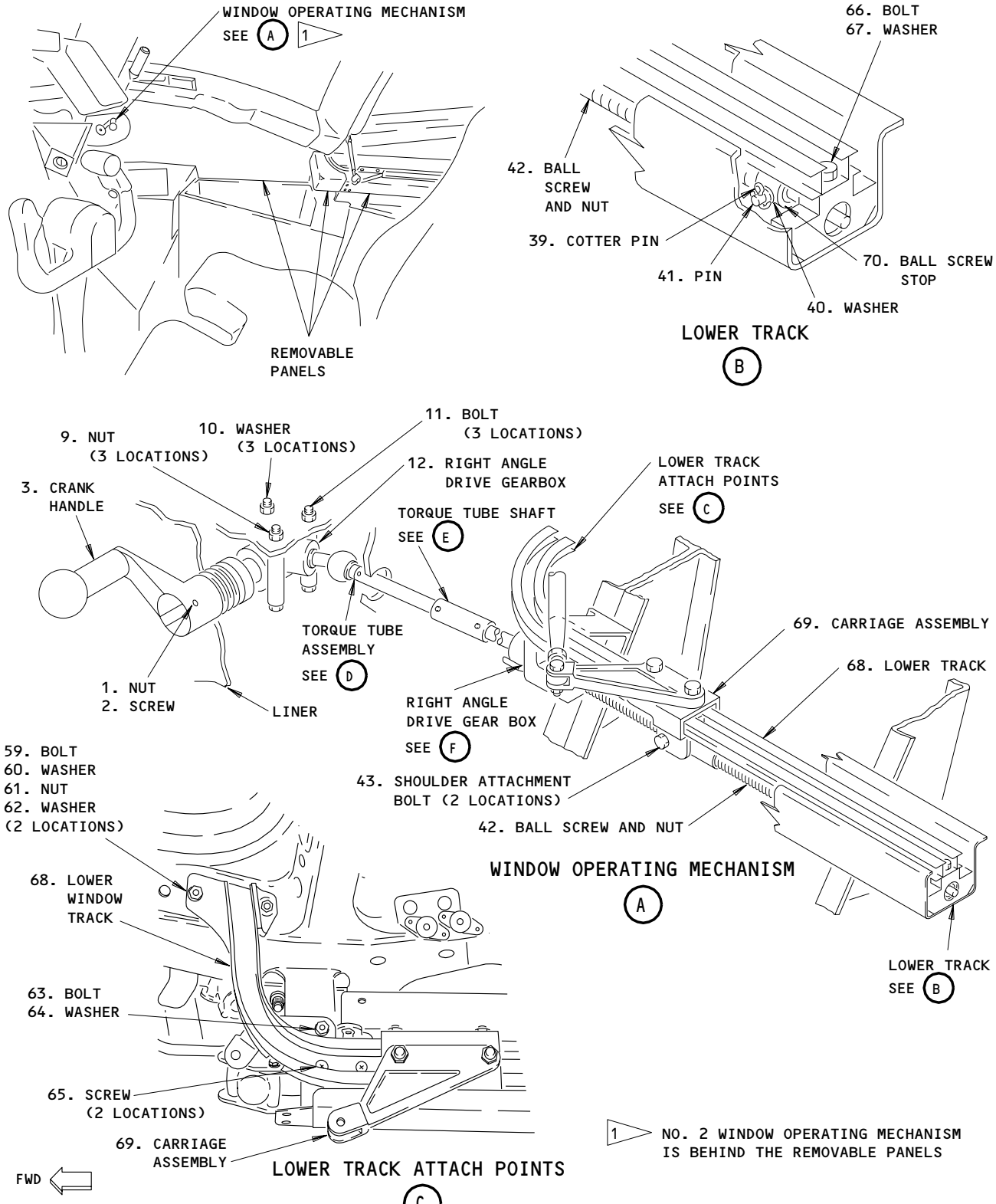
      WARNING: REMOVE ELECTRICAL POWER FROM THE FLIGHT COMPARTMENT SEATS. ACCIDENTAL ELECTRICAL OPERATION OF THE FLIGHT COMPARTMENT SEAT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

      (a) Open these circuit breakers and attach DO-NOT-CLOSE tags:
          1) On the main power distribution panel, P6:
             a) 6H15 or 6J15, CAPT SEAT
             b) 6J21, F/O SEAT

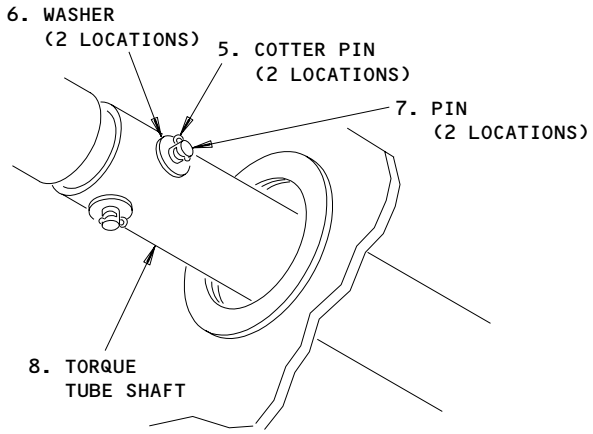
      S 034-002
      (2) Remove the lower sill window lining as follows (Fig. 401 and Fig. 402):

      NOTE: There are four panels to remove to get access to the operating mechanism. Remove the aft gasper air support first, the forward gasper air support second, the mid liner third, and the closure outboard for the lower track assembly last.

      (a) Loosen the clamp that attaches to the gasper air outlet ducts.

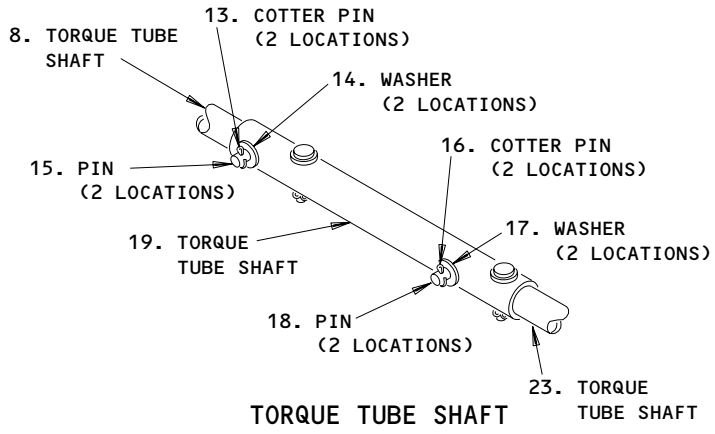


No. 2 Window Operating Mechanism
Figure 401 (Sheet 1)



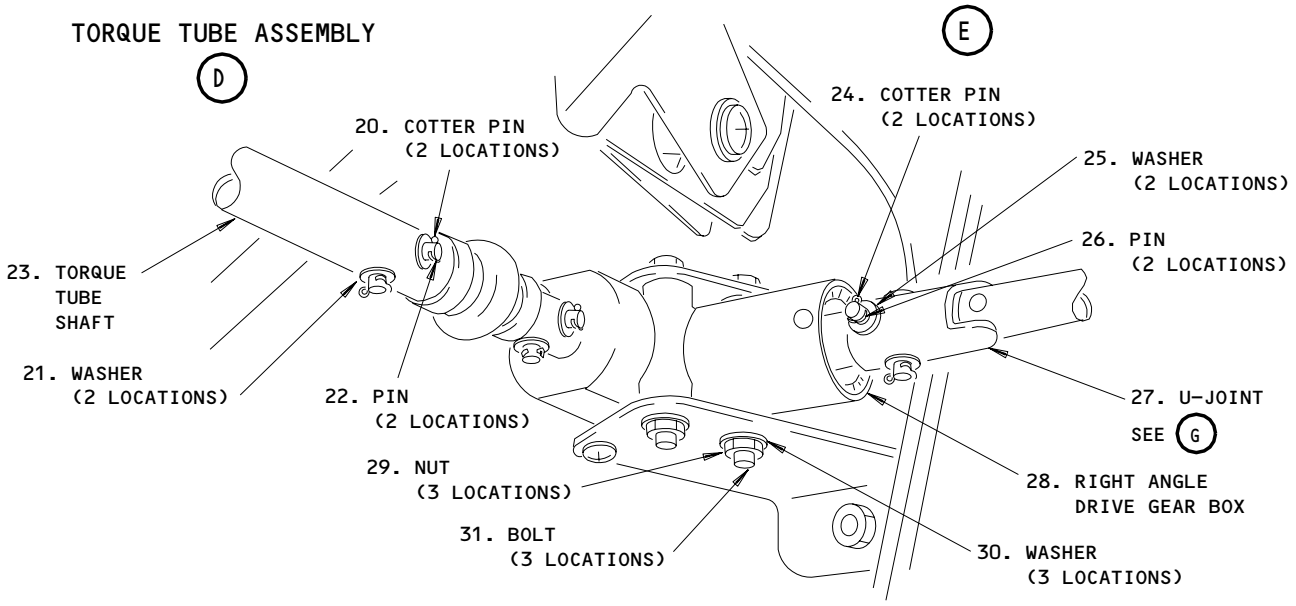
TORQUE TUBE ASSEMBLY

D



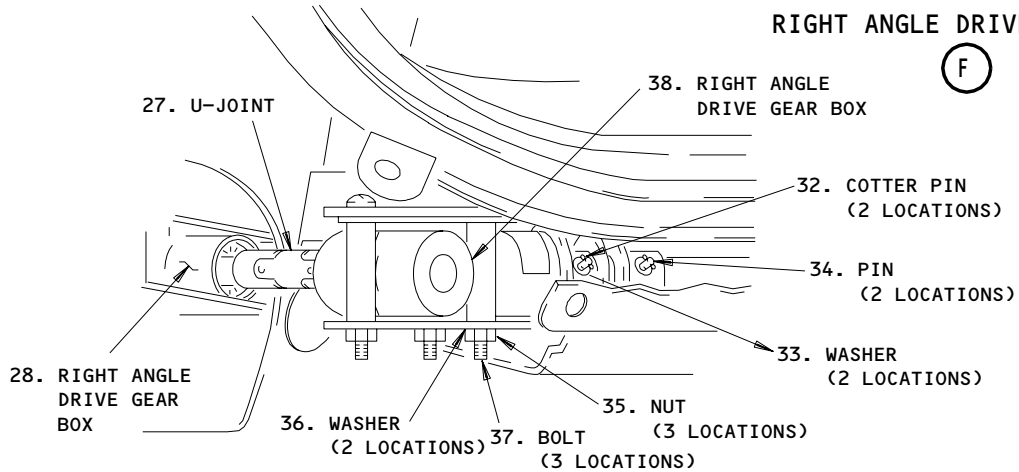
TORQUE TUBE SHAFT

E



RIGHT ANGLE DRIVE GEAR BOX

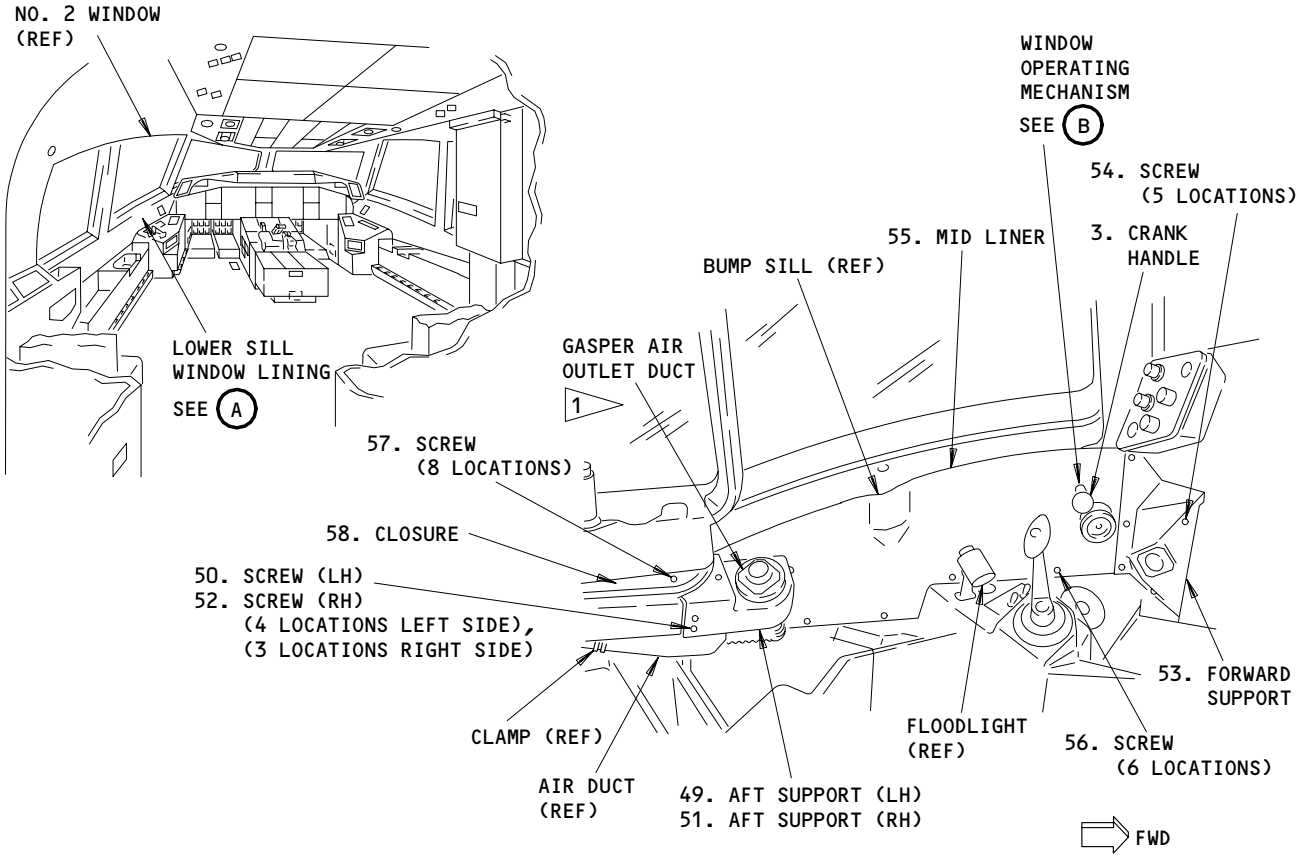
F



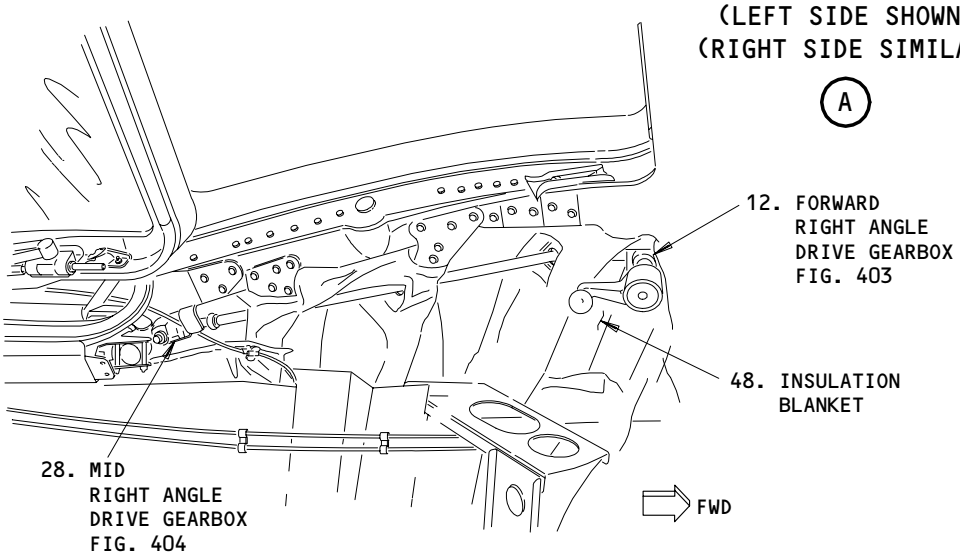
U-JOINT

G

No. 2 Window Operating Mechanism
Figure 401 (Sheet 2)



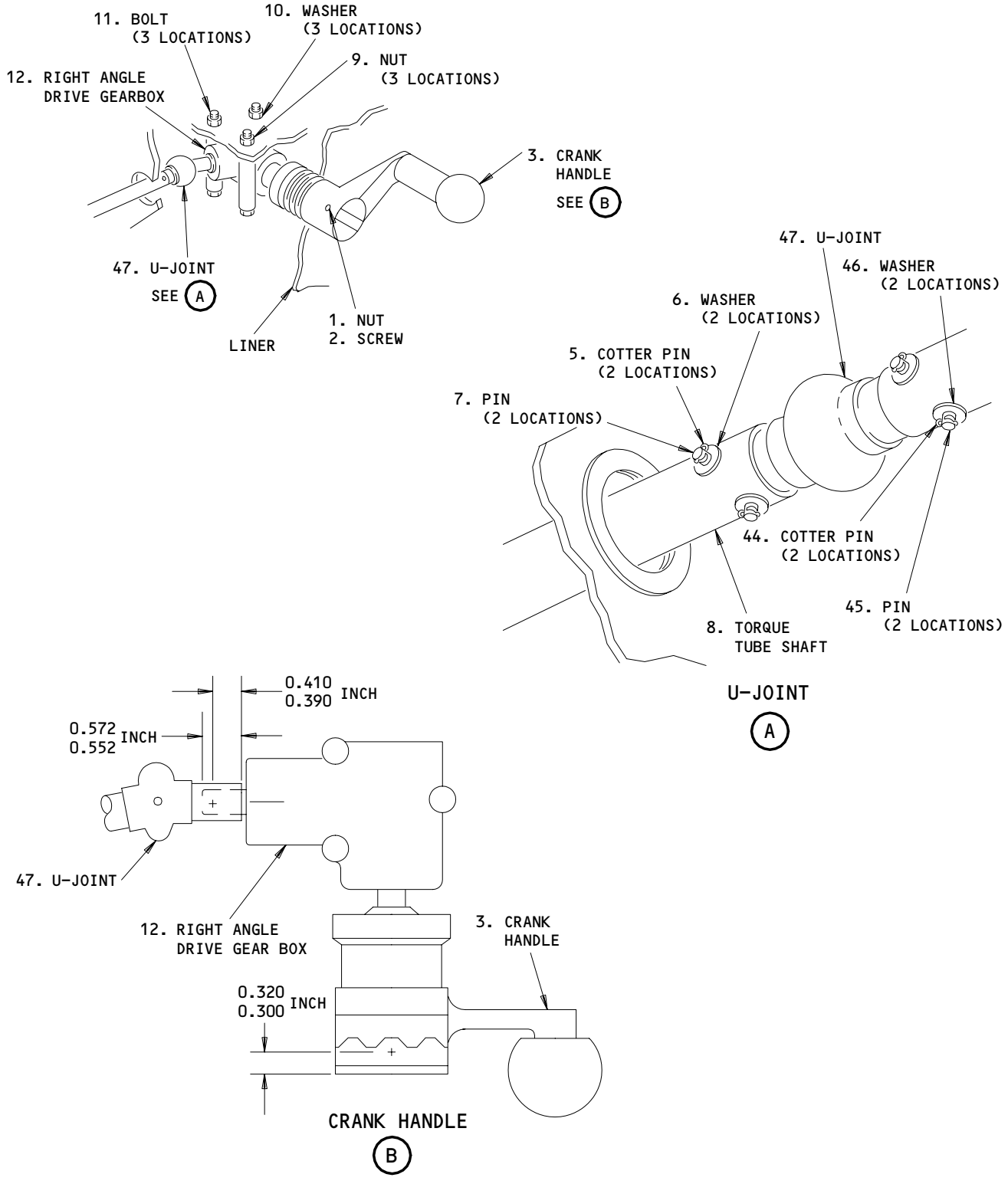
LOWER SILL WINDOW LINING
(LEFT SIDE SHOWN)
(RIGHT SIDE SIMILAR)
A



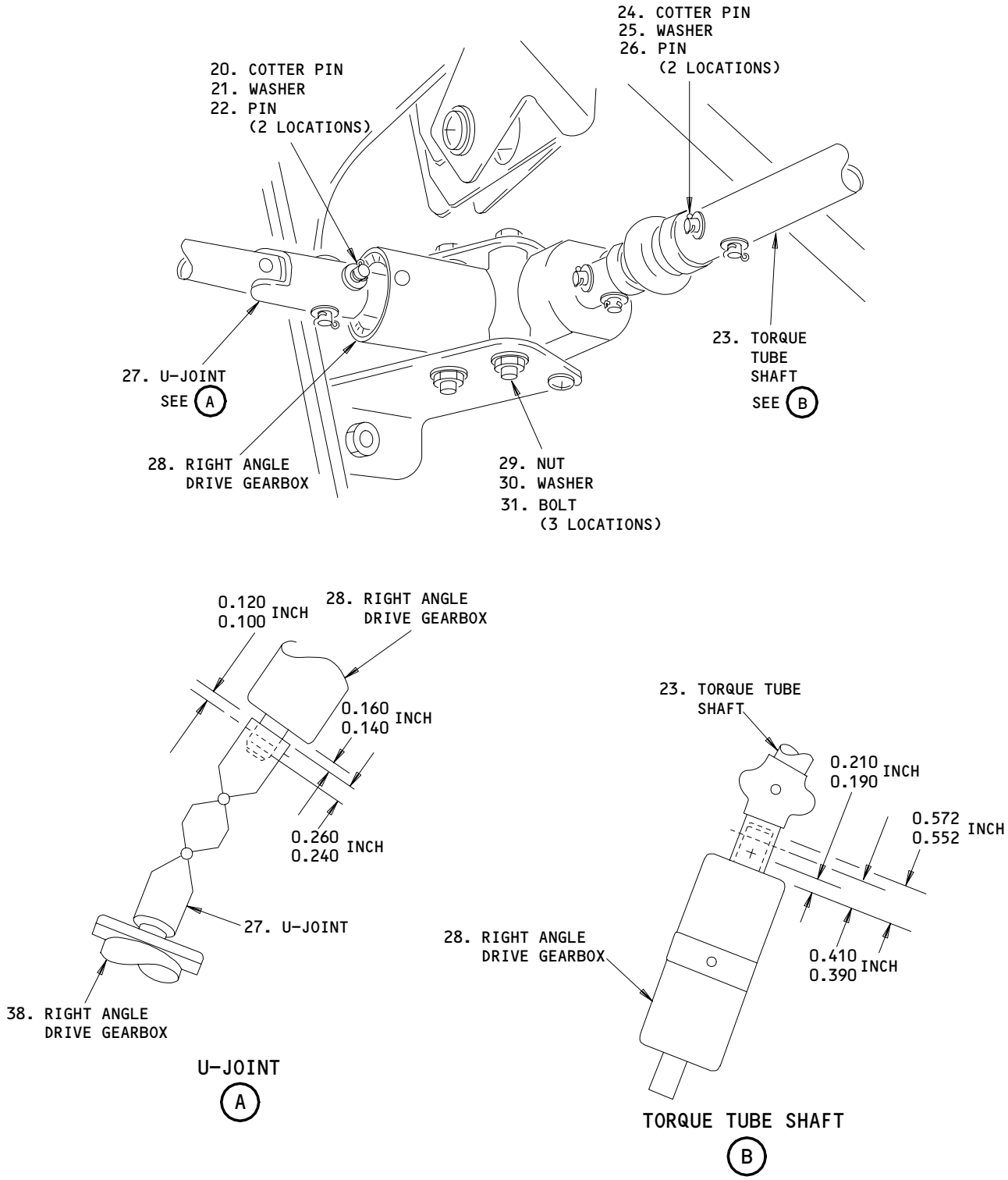
WINDOW OPERATING MECHANISM
(VIEW SHOWN WITH LINERS REMOVED)
B

1 GASPER AIR OUTLET DUCT ON LEFT SIDE ONLY

No. 2 Window Gearbox Mechanism
Figure 402



Forward Right Angle Drive Gearbox
Figure 403



Mid Right Angle Drive Gearbox
Figure 404

(b) Remove the four screws (50) from the aft gasper air support (49) and remove the support.

NOTE: The right side aft support does not have a gasper air outlet.

(c) Remove the three screws (52) from the aft support (51) and remove the support.
(d) Remove the five screws (54) from the forward gasper air support (53).
(e) Remove the nut (1) and screw (2) from the crank handle (3). Remove the crank handle (3).
(f) Remove the floodlight to get access to the mid liner (55).
(g) Remove the six screws (56) from the mid liner (55). Remove the liner.
(h) Remove the eight screws (57) that attach the closure (58) to the lining assembly. Remove the closure (58).

C. Procedure - Remove the operating mechanism (Fig. 401)

S 244-101
(1) To remove the operating mechanism, do the steps that follow.

S 034-004
(2) Remove the cotter pins (5), washers (6), and pins (7). Disconnect the torque tube shaft (8).

S 034-005
(3) Remove the nuts (9), washers (10), and bolts (11). Remove the right angle drive gearbox (12).

S 034-006
(4) Remove the cotter pins (13), washers (14), and pins (15). Remove the torque tube shaft (8).

S 034-007
(5) Remove the cotter pins (16), washers (17), and pins (18). Remove the torque tube shaft (19).

S 034-008
(6) Remove the cotter pins (20), washers (21), and pins (22). Remove the torque tube shaft (23).

S 034-009
(7) Remove the cotter pins (24), washers (25), and pins (26).

S 034-010
(8) Remove the nuts (29), washers (30), and bolts (31).

S 034-011
(9) Disconnect the U-joint (27) from the right angle drive gearbox (28). Remove the right angle drive gearbox (28).

S 034-012
(10) Remove the two bolts (59), washers (60, 62), and nuts (61) that attach the lower window track to the window sill.

S 034-013
(11) Remove the bolt (63) and washer (64) that attach the lower window track to the bracket assembly.

S 034-014
(12) Remove the two screws (65) in the recess of the lower window track.

S 034-015
(13) Remove the bolt (66) and washer (67) in the recess of the lower window track.

S 204-064
(14) AIRPLANES WITH THE "WEDGE-SHAPED" NYLON STOP ASSEMBLY;
Examine the condition of the stop assembly.
(a) Look for signs of wear.
(b) If the nylon stop shows signs of wear, replace with a rubber stop assembly.

S 204-065
(15) AIRPLANES WITH A RUBBER BLOCK STOP ASSEMBLY;
Examine the condition of the stop assembly.
(a) Look for signs of wear as follows in the rubber stop:
1) Hardening
2) Cracks
3) Tears
4) Any other damage

S 424-066
(16) If the rubber stop shows any damage as indicated, replace the stop assembly.

S 824-016
(17) Make sure the carriage assembly (69) is in the full open position. Move the lower window track (68) forward approximately 6 to 8 inches until the track is clear of the carriage assembly.

S 034-017
(18) Remove the lower window track (68).

S 034-018
(19) Remove the cotter pins (32), washers (33), and pins (34).

S 034-019
(20) Remove the nuts (35), washers (36), and bolts (37). Remove the right angle drive gearbox (38).

S 034-020
(21) Remove the cotter pin (39), washer (40), pin (41) and ballscrew stop (70) to release the aft end of the ball screw and the nut (42).

S 034-021
(22) Remove the ball screw and nut (42) with the carriage assembly (69) that is attached to the ball screw.

S 034-022
(23) Remove the shoulder attachment bolts (43) from the ball screw (42). Remove the carriage assembly (69).

TASK 56-11-04-004-023
3. Remove the Window Operating Gearboxes (Fig. 402)
A. Access
(1) Location Zones
211/212 Control Cabin

B. Procedure - Remove the Window Operating Gearboxes (Fig. 402)

S 024-024
(1) Remove the window crank handle gearbox (12) as follows (Fig. 402):
(a) Remove the cotter pins (44), washers (46), and pins (45). Disconnect the U-joint (47) from the gearbox (12).

NOTE: Remove the blanket insulation (48) as necessary to get access to the U-joint at the gearbox output shaft.

(b) Remove the nuts (9), washers (10), and bolts (11). Remove the right angle gearbox (12).

S 024-025
(2) Remove the window operating gearbox (28) as follows:
(a) Remove the pins (26) and the U-joint (27).
(b) Remove the pins (22) and the torque tube shaft (23).
(c) Remove the bolts (31). Remove the right angle gearbox (28).

TASK 56-11-04-404-026
4. Install the Operating Mechanism (Fig. 401)
A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Nut	56-11-04	01	15
	2	Screw			10
	3	Crank Handle Assembly			600
	5	Cotter Pin			57
	6	Washer			55
	7	Pin			435
	8	Torque Tube Shaft			60
	9	Nut			40
	10	Washer			35
	11	Bolt			30
	12	Right Angle Drive Gearbox			25
	13	Cotter Pin			57
	14	Washer			55
	15	Pin			430
	16	Cotter Pin			57
	17	Washer			55
	18	Pin			430
	19	Torque Tube Shaft			65
	20	Cotter Pin			57
	21	Washer			55
	22	Pin			50
	23	Torque Tube Shaft			70
	24	Cotter Pin			57
	25	Washer			55
	26	Pin			50
	27	U-Joint			95
	28	Right Angle Drive Gearbox			90
	29	Nut			85
	30	Washer			80
	31	Bolt			75
	32	Cotter Pin			57
	33	Washer			55
	34	Pin			50
	35	Nut			115
	36	Washer			110
	37	Bolt			100
	38	Right Angle Drive Gearbox			475
	39	Cotter Pin			57
	40	Washer			55
	41	Pin			430
	42	Ball Screw and Nut			445
	43	Shoulder Attachment Bolt			355

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
	59	Bolt			520
	59	Bolt			525
	60	Washer			540
	60	Washer			555
	61	Nut			560
	61	Nut			565
	62	Washer			540
	62	Washer			550
	63	Bolt			515
	64	Washer			545
	65	Screw			505
	65	Screw			510
	66	Bolt			305
	67	Washer			310
	68	Lower Track (Left)			680
	68	Lower Track (Right)			685
	69	Carriage Assembly (Left)			365
	69	Carriage Assembly (Right)			370
	70	Ball Screw Stop			440
	70	Ball Screw Stop *[1]			441
402	48	Blanket Assy (Left)	25-15-02	01	405
	48	Blanket Assy (Right)			455
	49	Aft Gasper Air Support (Left)	53-11-82	01	5
	50	Screw (Left)			15
403	44	Cotter Pin			57
	45	Pin			435
	46	Washer			55
	47	U-Joint			485
	51	Aft Support (Right)			205
	52	Screw (Right)			210
	53	Forward Support (Left)			35
	53	Forward Gasper Air Support (Right)			235
	54	Screw (Left)			40
	54	Screw (Right)			240
	55	Mid Liner (Left)	56-11-51	01	30
	55	Mid Liner (Right)			35
	56	Screw			40
	57	Screw			220
	58	Closure (Left)			210
	58	Closure (Right)			215

*[1] NOT ON ALL AIRPLANES

B. Access
(1) Location Zones
211/212 Control Cabin

C. Procedure - Install the Operating Mechanism

S 434-027
(1) Install the carriage assembly (69) on the ball screw. Install the shoulder attachment bolts (43).

S 434-028
(2) Install the ball screw and nut (42) and carriage assembly (69) in the channel assembly.

S 434-029
(3) Install the ballscrew stop (70) pin (41), washer (40), and cotter pin (39).

S 434-030
(4) Install the right angle drive gearbox (38). Install the bolts (37), washers (36), and nuts (35).

S 434-031
(5) Install the pins (34), washers (33), and cotter pins (32).

S 434-032
(6) With the carriage assembly (69) in the full open position, move the lower track (68) into position.

S 424-067
(7) Replace the nylon stop assembly and install a new rubber stop assembly.

S 424-068
(8) AIRPLANES WITH THE RUBBER BLOCK STOP ASSEMBLY;
Replace the block stop assembly and install a new rubber stop assembly.

S 434-033
(9) Install the rubber block stop, the bolt (66) and washer (67) in the recess of the lower window track.

S 434-034
(10) Install the two screws (65) in the recess of the lower window track.

S 434-035
(11) Install the bolt (63) and washer (64) that attach the lower window track to the bracket assembly.

S 434-036
(12) Install the two bolts (59), washers under bolt (60, 62), and nuts (61) that attach the lower window track to the window sill.

S 424-037
(13) Install the right angle drive gearbox (28). Connect the U-joint (27) to the gearbox (28).

S 434-038
(14) Install the bolts (31), washers (30), and nuts (29).

S 434-039
(15) Install the pins (26), washers (25), and cotter pins (24).

S 434-040
(16) Install the torque tube shaft (23), pins (22), washers (21), and cotter pins (20).

S 434-041
(17) Install the torque tube shaft (19), pins (18), washers (17), and cotter pins (16).

S 434-042
(18) Install the torque tube shaft (8), pins (15), washers (14), and cotter pins (13).

S 434-043
(19) Install the right angle drive gearbox (12), bolts (11), washers (10), and nuts (9).

S 434-044
(20) Install the pins (7), washers (6), and cotter pins (5).

TASK 56-11-04-404-045

5. Install the Window Operating Gearboxes (Fig. 402)

A. Equipment
(1) Variable Speed Drill (commercially available)
(2) Titanium or Carbide Drill Bits (0.125- to 0.129-inch and 0.164- to 0.168-inch sizes) (commercially available)

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Nut	56-11-04	01	15
	2	Screw			10
	3	Crank Handle Assembly			600
	5	Cotter Pin			57
	6	Washer			55
	7	Pin			435
	8	Torque Tube Shaft			60
	9	Nut			40
	10	Washer			35
	11	Bolt			30
	12	Right Angle Drive Gear Box			25
	13	Cotter Pin			57
	14	Washer			55
	15	Pin			430
	16	Cotter Pin			57
	17	Washer			55
	18	Pin			430
	19	Torque Tube Shaft			65
	20	Cotter Pin			57
	21	Washer			55
	22	Pin			50
	23	Torque Tube Shaft			70
	24	Cotter Pin			57
	25	Washer			55
	26	Pin			50
	27	U-Joint			95
	28	Right Angle Drive Gear Box			90
	29	Nut			85
	30	Washer			80
	31	Bolt			75
	32	Cotter Pin			57
	33	Washer			55
	34	Pin			50
	35	Nut			115
	36	Washer			110
	37	Bolt			100
	38	Right Angle Drive Gearbox			475
	39	Cotter Pin			57
	40	Washer			55
	41	Pin			430

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
	42	Ball Screw and Nut			445
	43	Shoulder Attachment Bolt			355
403	44	Cotter Pin			57
	45	Pin			435
	46	Washer			55
	47	U-Joint			485
402	48	Blanket Assy (Left)	25-15-02	01	405
	48	Blanket Assy (Right)			455
	49	Aft Gasper Air Support (Left)	53-11-82	01	5
	50	Screw (Left)			15
	51	Aft Support (Right)			205
	52	Screw (Right)			210
	53	Forward Support (Left)			35
	53	Forward Gasper Air Support (Right)			235
	54	Screw (Left)			40
	54	Screw (Right)			240
	55	Mid Liner (Left)	56-11-51	01	30
	55	Mid Liner (Right)			35
	56	Screw			40
	57	Screw			220
	58	Closure (Left)			210
	58	Closure (Right)			215
401	59	Bolt			520
	59	Bolt			525
	60	Washer			540
	60	Washer			555
	61	Nut			560
	61	Nut			565
	62	Washer			540
	62	Washer			550
	63	Bolt			515
	64	Washer			545
	65	Screw			505
	65	Screw			510
	66	Bolt			305
	67	Washer			310
	68	Lower Track (Left)	56-11-04	01	680
	68	Lower Track (Right)			685
	69	Carriage Assembly (Left)			365
	69	Carriage Assembly (Right)			370

C. Access
(1) Location Zones
211/212 Control Cabin

D. Procedure - Install the Gearbox on the Window Crank Handle.

S 424-046
(1) Install the window crank handle gearbox (12) as follows:
(a) Install the right angle drive gearbox (12) bolts (11), washers (10), and nuts (9).
(b) If a new right angle drive gearbox (12) is installed, continue as follows:
1) Install the U-joint (47) on the right angle drive gearbox (12) (Fig. 403).
2) Make a mark with a sharp instrument to locate where the hole is to be drilled in the gearbox output shaft.
3) Align the crank handle (3) on the gearbox input shaft as shown (Fig. 403). Make a mark with a sharp instrument to locate where the hole is to be drilled in the gearbox input shaft.
4) Remove the window crank handle (3).
5) Remove the U-joint (47) from the gearbox (12).
6) Remove the bolts (11), washers (10), and nuts (9). Remove the gearbox (12).
7) Install the gearbox (12) in a bench vise. Drill 0.125-0.129-inch hole through the gearbox output shaft, at the location marked.
8) Drill a 0.164-0.168-inch hole, at the location marked where the window crank handle (3) connects to the gearbox input shaft.
9) Remove the gearbox (12) from the bench vise.
(c) Install the U-joint (47) on the gearbox output shaft. Install the pins (45), washers (46), and cotter pins (44).
(d) Install the right angle drive gearbox (12), bolts (11), washers (10), and nuts (9).
(e) If the insulation blanket (48) was removed to get access to the U-joint at the gearbox output shaft, install the blankets.

S 424-047
(2) Install the window operating gearbox (28) as follows:
(a) Install the torque tube shaft (23) and the U-joint (27) on the right angle drive gearbox (28).
(b) Put the right angle drive gearbox (28) into position. Install the bolts (31), washers (30), and nuts (29).
(c) If a new right angle drive gearbox (28) is to be installed, perform these steps (Fig. 404):
1) Align the gearbox (28), torque tube shaft (23) and U-joint (27) as shown (Fig. 404). Make a mark with a sharp instrument to locate where the hole is to be drilled in the gearbox input and output shafts.

2) Remove the torque tube shaft (23) and U-joint (27) from the gearbox (28).
3) Remove the bolts (31). Remove the gearbox (28).
4) Install the gearbox (28) in a bench vise and drill 0.125-0.129-inch holes through gearbox input and output shafts at the location marked.
5) Remove the gearbox (28) from the bench vise.
6) Install the torque tube shaft (23) on the gearbox input shaft.
7) Install the U-joint (27) on the gearbox output shaft.
8) Install the right angle drive gearbox (28), bolts (31), washers (30) and nuts (29).

(d) Install the pins (22), washers (21) and cotter pins (20) to connect the torque tube shaft (23) to gearbox input shaft.
(e) Install the pins (26), washers (25) and cotter pins (24) to connect the U-joint (27) to gearbox output shaft.

TASK 56-11-04-804-048

6. Put the Airplane Back to Its Usual Condition

A. Access

(1) Location Zones

211/212 Control Cabin

B. Procedure - Install the Lower Sill Window Lining.

S 864-074

(1) Do the steps that follow for the right hand No. 2 window:

S 844-049

(2) To install the mid liner (55) continue as follows:
(a) Align the mid liner (55) with the bump sill structure and center the hole with the window crank shaft.
(b) Install the six screws (56) to attach the mid liner (55).
(c) Install the floodlight in the floodlight holder.
(d) Install the crank handle (3), screw (2), and nut (1).

NOTE: The screw is necessary for the crank clutch to operate. The crank clutch is internal to the window operating crank and prevents over-rotation of the window mechanisms from the operating crank.

S 844-050

(3) Install the five screws (54) to attach the forward gasper air support (53).

S 844-051

(4) Install the three screws (52) to attach the right side aft support (51).

S 844-052
(5) To install the left side aft gasper air support (49) continue as follows:
(a) Install the four screws (50) to attach the aft gasper air support (49).
(b) Join the gasper air outlet ducts and tighten the clamp.

S 844-053
(6) Install the eight screws (57) that attach the closure of the lower track to the lining assembly.

S 824-075
(7) With the window in the fully closed position, the window crank handle knob must be forward and above the crank horizontal centerline. If the crank handle is not correctly aligned, use sufficient force to align the window crank handle knob.

S 864-080
(8) AIRPLANES WITH ELECTRICALLY POWERED FLIGHT COMPARTMENT SEATS; Do the following:
(a) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
1) On the main power distribution panel, P6:
a) 6H15 or 6J15, CAPT SEAT
b) 6J21, F/O SEAT

NO. 3 WINDOW - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these tasks:
      (1) Remove the No. 3 window.
      (2) Install the No. 3 window.
   B. Use this procedure for the left or the right No. 3 window.

TASK 56-11-10-004-001

2. Remove the No. 3 Window
   A. Equipment

      (1) Windshield Handling Sling - A56001-3, from Sling Set A56001-15
      (2) Crane (150-pound lift capacity)
   B. Reference
      (1) AMM 56-11-00/601, Flight Compartment Windows
      (2) AMM 53-14-01/601, Control Cabin Structure - Inspection/check
   C. Access
      (1) Location Zones
          211/212 Control Cabin

   D. Procedure

      S 864-002
      (1) Put all the window heat switches on the pilot's overhead panel, P5, in the OFF position.

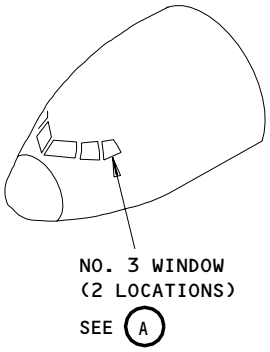
      S 864-003
      (2) For the right window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
          (a) On the left miscellaneous electrical equipment panel, P36:
              1) 36H1 or 36H7, ICE/RAIN WINDOW HEAT 3R

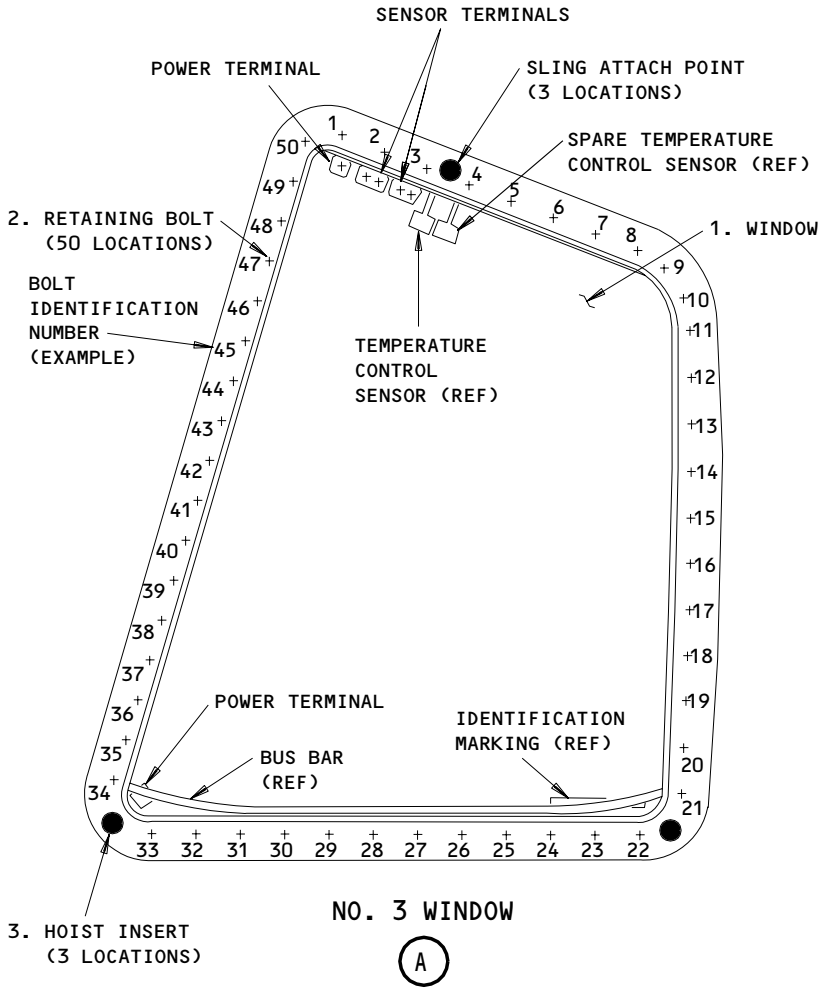
      S 864-004
      (3) For the left window, open this circuit breaker and attach a DO-NOT-CLOSE tag:
          (a) On the right miscellaneous electrical equipment panel, P37:
              1) 37E2 or 37H6, WINDOW HEAT 3L

      S 024-005

      CAUTION: YOU MUST HOLD THE TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. IF YOU DO NOT HOLD THE TERMINAL BLOCKS, DAMAGE TO THE WINDOW AND TO THE TERMINAL BLOCKS CAN OCCUR.

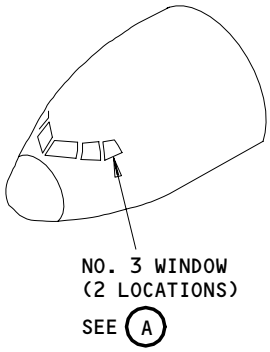
      (4) Hold the terminal block and loosen the screws to disconnect the wires from the power and sensor terminals (Fig. 401).

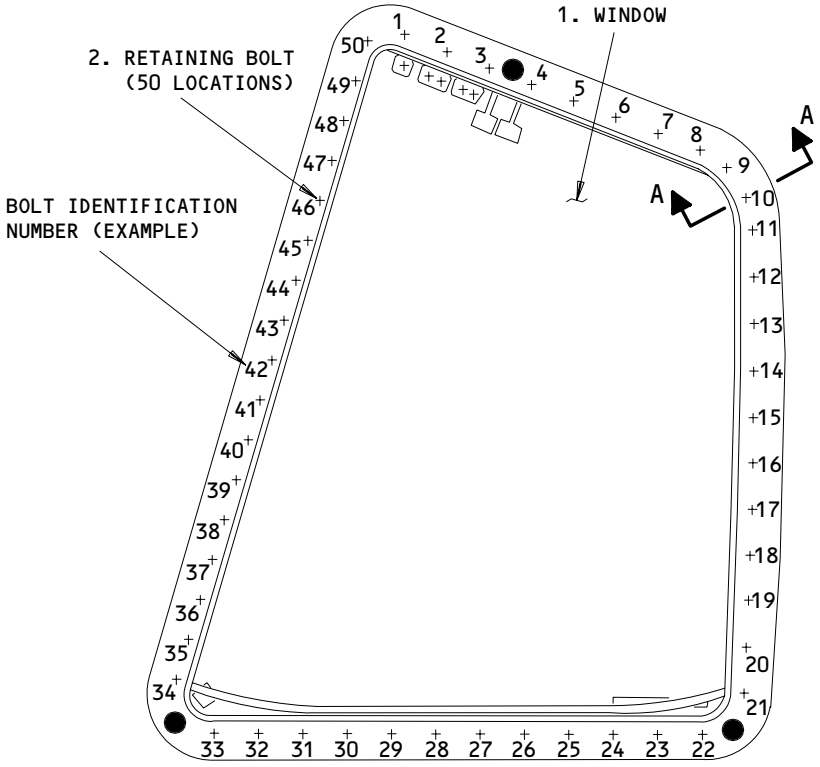




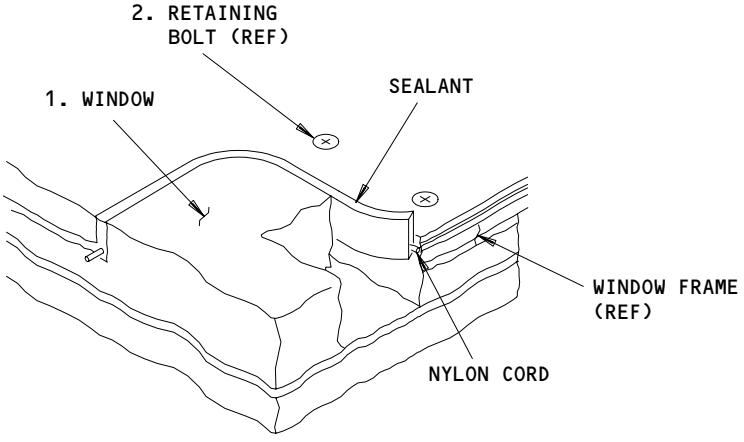
RETAINING BOLT TORQUE SEQUENCE			
STEP NO.	BOLT NO.	STEP NO.	BOLT NO.
1	5	26	6
2	27	27	28
3	43	28	42
4	15	29	16
5	41	30	38
6	7	31	4
7	29	32	26
8	45	33	46
9	17	34	18
10	39	35	36
11	3	36	2
12	25	37	24
13	37	38	48
14	13	39	20
15	47	40	34
16	9	41	8
17	31	42	30
18	49	43	12
19	19	44	32
20	35	45	50
21	1	46	22
22	23	47	10
23	44	48	33
24	11	49	14
25	40	50	21

No. 3 Window
Figure 401



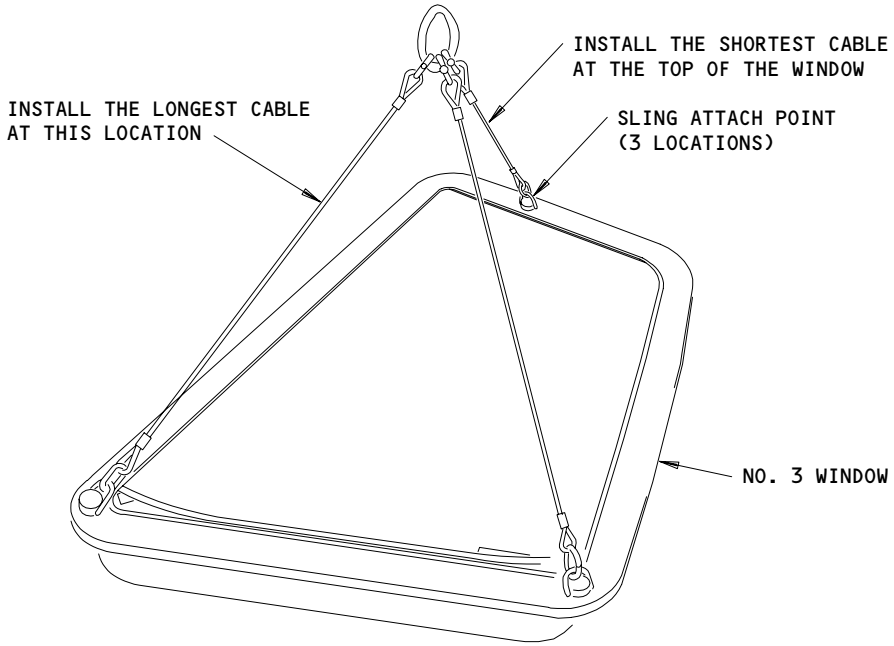


NO. 3 WINDOW
(A)



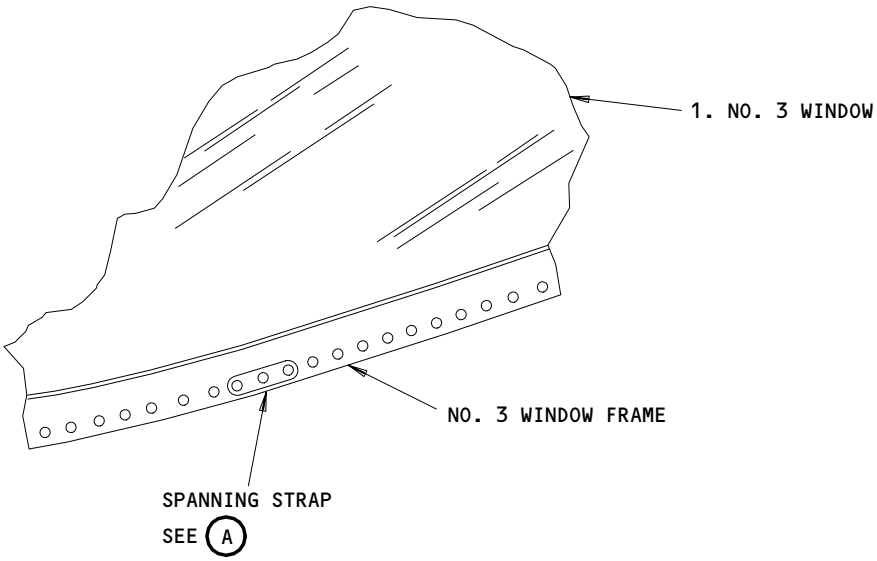
(EXAMPLE)
A-A

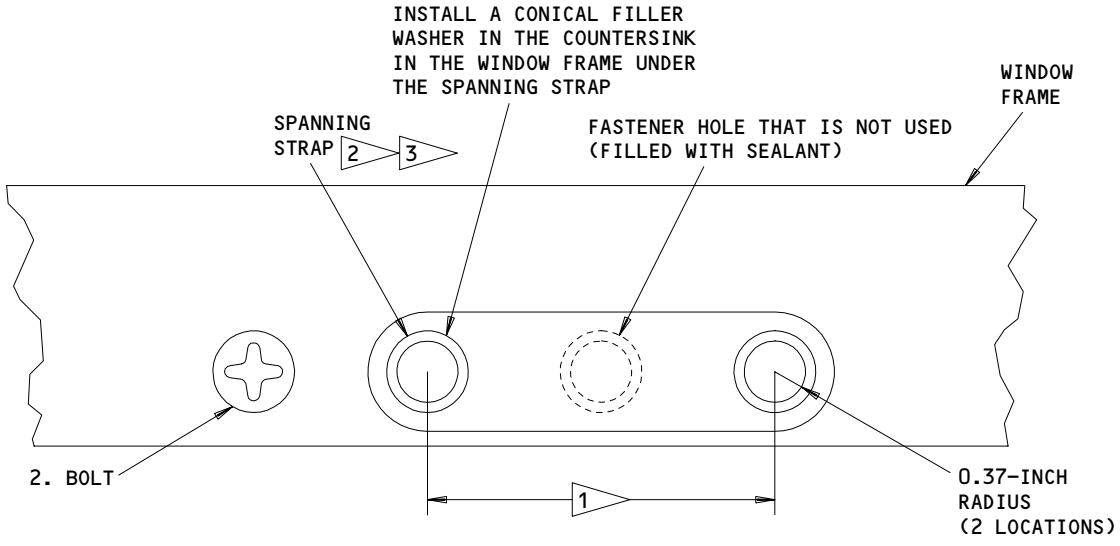
Sealant Removal
Figure 402



WINDOW HANDLING SLING - A56001-3

No. 3 Window Handling Sling
Figure 403





SPANNING STRAP
(A)

1 THIS DIMENSION IS NOT ALWAYS THE SAME FOR ALL LOCATIONS.

2 MAKE THE SPANNING STRAP FROM 0.040-INCH THICK 2024-T3/T4 ALUMINUM ALLOY 0.75-INCH WIDE. DRILL AND COUNTERSINK FOR TWO 100° COUNTERSUNK HEAD BACB30NN4K36 BOLTS.

OPTIONAL: DIMPLE THE SPANNING STRAP FOR 100 DEGREE COUNTERSUNK HEAD BACB30NN4K36 BOLT AND OMIT THE CONICAL FILLER WASHER.

3 REMOVE SHARP EDGES FOR AERODYNAMIC SMOOTHNESS.

Spanning Strap Fabrication
Figure 404

S 494-006
(5) Apply masking tape or a protective cover to the edge of the window.
(a) Do not attach tape to the glass or plastic surfaces.

S 034-007
(6) Carefully remove the sealant from the upper aft corner of the window to get access to the nylon cord (Fig. 402).

S 024-008
(7) Slowly remove the nylon cord from the clearance.

S 034-011
(8) Fold the nylon cord.

S 034-009
(9) Loosen the bolts (2).

S 034-010
(10) Remove all of the bolts (2), except one, near the middle of each side of the window.

NOTE: These four bolts (2) will hold the window until the window handling sling is connected.

S 494-011
(11) Remove the inserts (3) for the sling attachment points.

S 494-042
(12) Attach the window handling sling to the window (Fig. 403).

S 494-012
(13) Tighten the sling attachment bolts to 20-30 pound-inches.

S 034-014
(14) Remove the four remaining bolts (2).

S 024-015
(15) Remove the window from the window frame.

S 094-016
(16) Remove the window handling sling from the window.

S 494-017
(17) Install the inserts (3) at the sling attachment points.

S 224-039
(18) Examine the window posts and sills for corrosion and damage (AMM 56-11-00/601).

S 224-040
(19) Do a check for the loose or damaged fasteners in the window frame.

S 214-063
(20) Do a control cabin structure - inspection/check (AMM 53-14-01/601).

TASK 56-11-10-404-018

3. Install the No. 3 Window

A. Equipment
(1) Windshield Handling Sling - A56001-3, from Sling Set A56001-15
(2) Crane - 150 pound capacity
(3) Spatula or flow gun

B. Consumable Materials
(1) G00139 Protective Tape - Gizard Protex 20V
(2) G00191 Protective Coating - Spraylat SC-1071
(3) G00034 Clean Cheesecloth
(4) B00083 Aliphatic Naphtha - TT-N-95
(5) G00039 Nylon Cord - MIL-C-5040, Type 1A
(6) A00247 Sealing Compound - BMS 5-95 Class B-1/2 or B-2
(7) A00103 (Alternative) PR1425 Sealant.
(8) A00706 (Alternative) PR 1826, Class B-1/2 and Class B-1/4 (with primer)(dark grey).
(9) A00708 (Alternative) PR 1828, Class B-1/2 and B-1/4 (white).
(10) C00308 Corrosion Preventive Compound - MIL-C-11796, Class 1
(11) G00508 (Alternative) Corrosion Preventive Compound - MIL-C-11796, Class 3

(12) G00270 Masking Tape
(13) G00291 Pressure sensitive aluminum backed adhesive tape Scotch 3M 425 or 427.

C. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	No. 3 Window	56-11-10	01B	15 20
	3	Insert - hoist			30

D. References
(1) AMM 30-41-00/501, Flight Compartment Window Anti-Icing
(2) AMM 51-31-01/201, Seals and Sealing
(3) AMM 56-11-00/601, Flight Compartment Windows - Inspection/Check

E. Access
(1) Location Zones
211/212 Control Cabin

F. Procedure

S 764-046
(1) Perform a continuity check at the sensors to ensure there is not an open circuit.

S 214-016
(2) Do a visual check of the window post and sill for cracks and corrosion (AMM 56-11-00/601).

S 094-019
(3) Remove the inserts (3) from the sling attachment points.

S 494-020
(4) Attach the windshield handling sling to the window (Fig. 403).

S 114-021
(5) Clean the faying surfaces of the window frame, window edge and pressure seal with a cheesecloth moist with aliphatic naphtha.

S 114-022
(6) Dry the area with a clean cheesecloth before the aliphatic naptha dries.

S 984-023
(7) Lift the window into position with the sling and crane.

S 424-024
(8) Install the bolts (2) into positions 5, 15, 27, and 43 to align the window (Fig. 401).
(a) Install these bolts (2) firmly, but do not fully tighten.

S 424-043
(9) Install the remaining retaining bolts firmly, do not fully tighten.

NOTE: A maximum of eleven retaining bolts can be kept out. A minimum of three bolts must be installed between each location with no bolt installed. At locations with no bolt installed, replace the nutplate and bolt at the next window change.

S 434-013

CAUTION: DO NOT APPLY TOO MUCH TORQUE TO THE BOLTS (2). TOO MUCH TORQUE COULD CAUSE DAMAGE TO THE NUTS AND THE NUTPLATE RETAINERS.

(10) Tighten the bolts (2) to 50-70 pound-inches in the sequence shown (Fig. 401).

NOTE: You must tighten the bolts (2) three times. First, at window (1) installation. Instructions for the other tightenings are given in following steps. This is necessary to prevent window noise and leaks because of seal movement.

You can fly the airplane between each time you tighten the bolts.

(a) The allowed mismatch between the OML of skin and the outer surface of the window is +/-0.13 inch (3.3 mm) except in the vicinity of the skin lap.

S 344-012
(11) If you cannot install a bolt (2) in a location, do these steps:
(a) Fill the bolt hole with sealant.
(b) Make and install a spanning strap on top of this bolt hole as shown (Fig. 404).

S 094-026
(12) Remove the window handling sling from the window.

S 624-027
(13) Apply the corrosion preventive compound to the sling attachment point holes and to the inserts (3).

S 414-028
(14) Install the inserts (3) in the sling attach holes with a flushness tolerance of 0.01 inch of the window frame.

S 164-029
(15) Remove the unwanted compound with a clean cheesecloth.

S 954-030
(16) Apply masking tape over the two sides of the clearance between the window edge and window frame.

S 424-031
(17) Install the nylon cord into the clearance around the window.
(a) Make sure the cord is on the bottom of the clearance.

S 424-061

CAUTION: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO APPLY THE AERODYNAMIC SMOOTHER. IF YOU DO NOT OBEY THE INSTRUCTIONS, DAMAGE TO THE AIRPLANE SURFACE CAN OCCUR.

(18) Apply the aerodynamic sealant (AMM 51-31-01/201).

NOTE: The function of the sealant is to make sure there is good aerodynamic flow.

(a) If you must dispatch the airplane before the sealant is fully cured, do the steps that follow:
1) Install the pressure sensitive aluminum backed adhesive tape on the top of the sealant.
2) Remove the tape when the sealant is fully cured.

S 434-034

CAUTION: HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. IF YOU DO NOT HOLD THE TERMINAL BLOCKS, DAMAGE TO THE TERMINAL BLOCKS CAN OCCUR WHEN YOU LOOSEN OR TIGHTEN THE SCREWS.

(19) Connect the wires to the power terminals.
(a) Tighten the screws to 25-30 pound-inches.

S 434-038
(20) Connect the wires to the sensor terminals.
(a) Tighten the screws to 12-15 pound-inches.

S 864-035

(21) For the right window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the left miscellaneous electrical equipment panel, P36:
1) 36H1 or 36H7, ICE/RAIN WINDOW HEAT 3R

S 864-036

(22) For the left window, remove the DO-NOT-CLOSE tag and close this circuit breaker:
(a) On the right miscellaneous electrical equipment panel, P37:
1) 37E2 or 37H6, WINDOW HEAT 3L

S 714-037

(23) Do the window heat system check (AMM 30-41-00/501).

S 434-014

CAUTION: DO NOT APPLY TOO MUCH TORQUE TO THE BOLTS (2). TOO MUCH TORQUE COULD CAUSE DAMAGE TO THE NUTS AND THE NUTPLATE RETAINERS.

(24) Tighten the bolts (2) to 50-70 pound-inches a second time, 3 hours to 72 hours after the first time. You must tighten the bolts in the sequence shown (Fig. 401).

NOTE: You can fly the airplane during the time period between the torquings.

S 434-015

CAUTION: DO NOT APPLY TOO MUCH TORQUE TO THE BOLTS (2). TOO MUCH TORQUE COULD CAUSE DAMAGE TO THE NUTS AND THE NUTPLATE RETAINERS.

(25) Tighten the bolts (2) to 50-70 pound-inches a third time, 3 hours to 72 hours after the second time. You must tighten the bolts (2) in the sequence shown (Fig. 401).

NO. 2 WINDOW SEAL - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks.
      (1) Remove the No. 2 window seal.
      (2) Install the No. 2 window seal.

   TASK 56-11-11-004-001

2. Remove the No. 2 Window Seal (Fig. 401)
   A. References
      (1) IPC 56-11-02, Fig. 1
   B. Access
      (1) Location Zones
          211/212 Control Cabin

   C. Procedure - Remove the No. 2 Window Seal

      S 864-034
      (1) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS; Do the following:

      WARNING: DO THE DEACTIVATION PROCEDURE FOR THE FLIGHT COMPARTMENT SEATS. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR IF THE SEAT MOVES ACCIDENTALLY.

      (a) Open these circuit breakers and attach DO-NOT-CLOSE tags:
          1) On the main power distribution panel, P6:
             a) 6H15 or 6J15, CAPT SEAT
             b) 6J21, F/O SEAT

      S 014-003
      (2) Open the No. 2 window as far as possible.

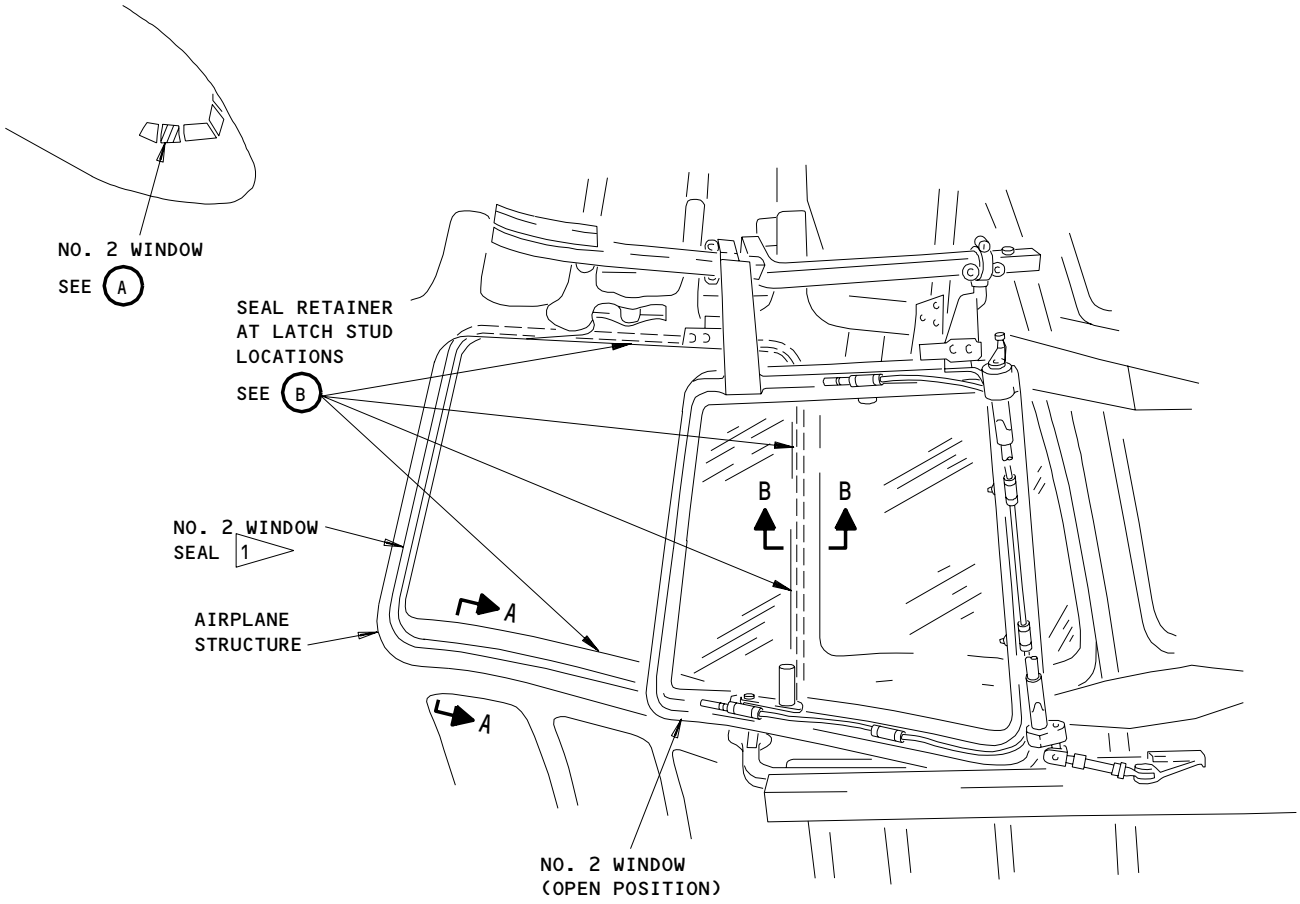
      S 024-052

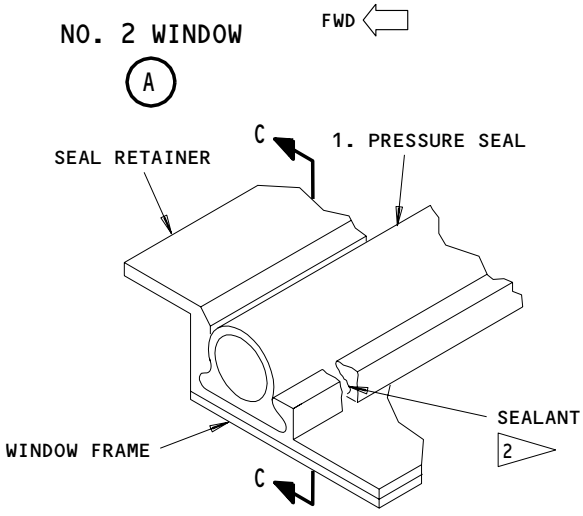
      CAUTION: MAKE SURE YOU DO NOT DAMAGE THE ADJACENT STRUCTURE.

      (3) Carefully pull the seal from the seal retainer:

      NOTE: Leaks can occur if the bulb seal retainer is damamged.

      (a) Carefully cut across the bulb area of the seal.
      (b) Use this opening as a finger hold to pull the seal from the retainer.



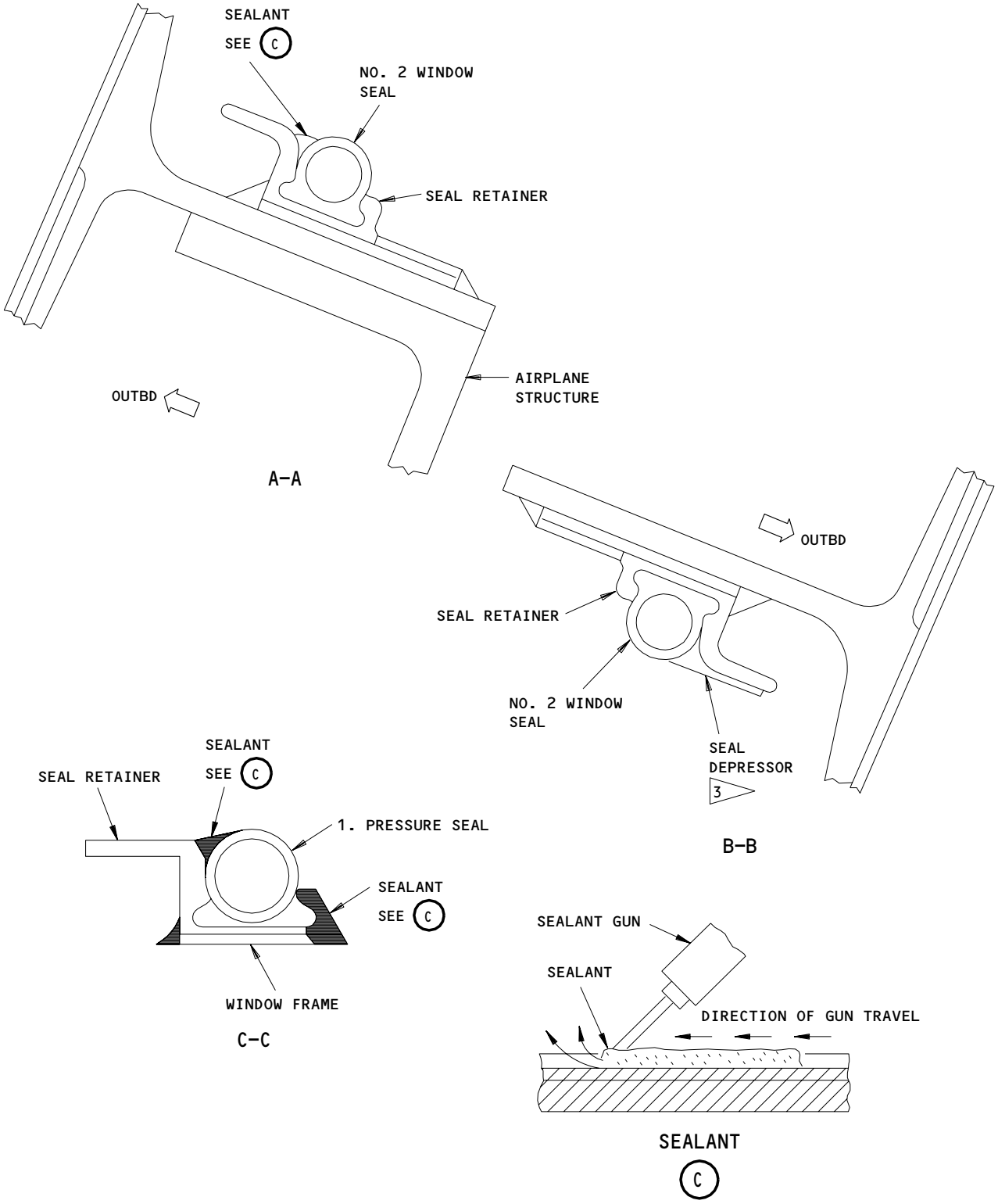


1 THE RIGHT SEAL IS SHOWN, THE LEFT SEAL IS OPPOSITE

2 THE EDGE OF THE SEAL RETAINER IS TRIMMED AWAY AT THE LATCH STUD LOCATIONS.

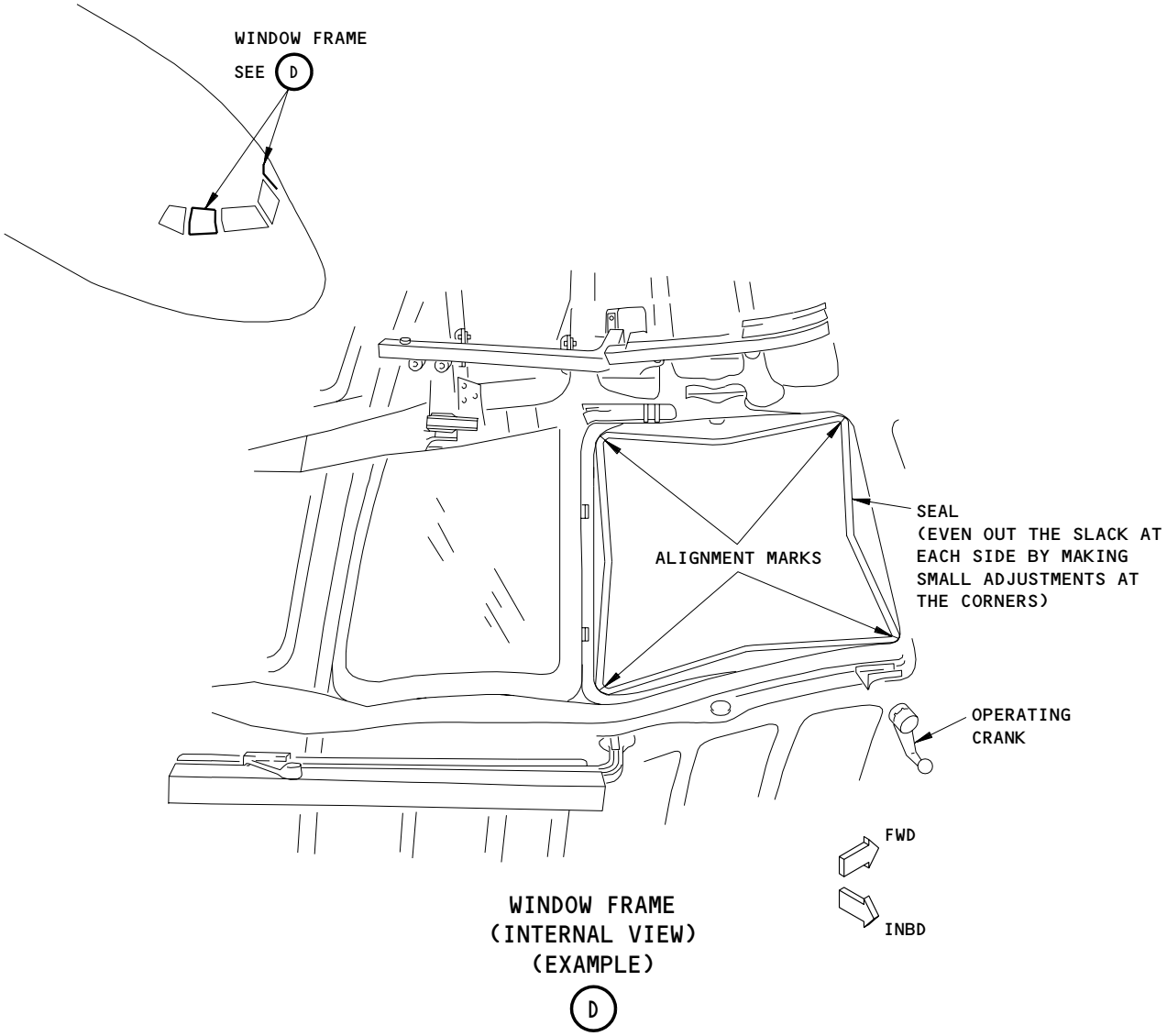
SEAL RETAINER AT LATCH STUD LOCATIONS
B

No. 2 Window Seal Installation
Figure 401 (Sheet 1)



3 THE SEAL DEPRESSOR IS ON THE AFT SIDE OF THE WINDOW ONLY (NOT ON ALL AIRPLANES)

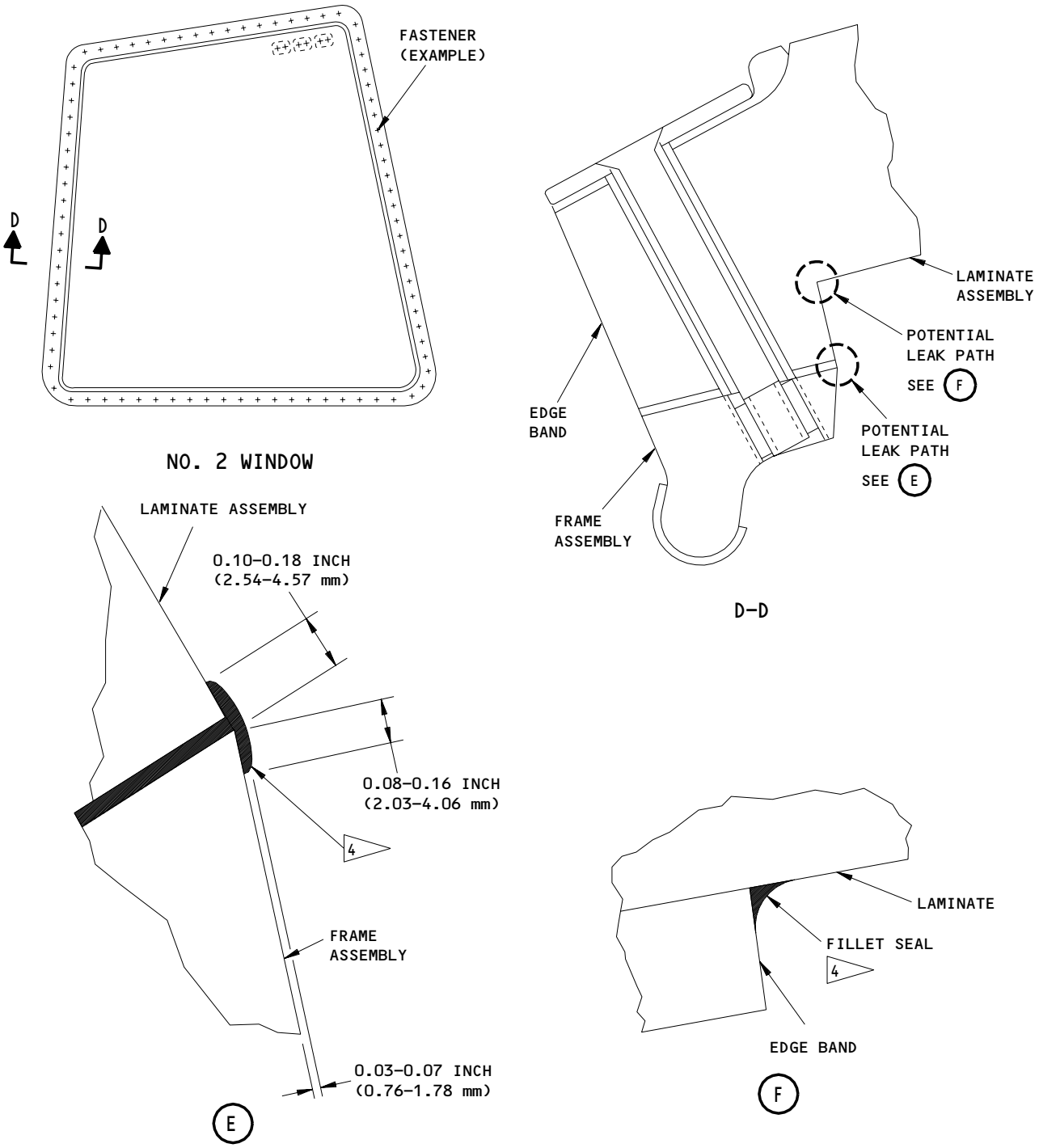
No. 2 Window Seal Installation
Figure 401 (Sheet 2)



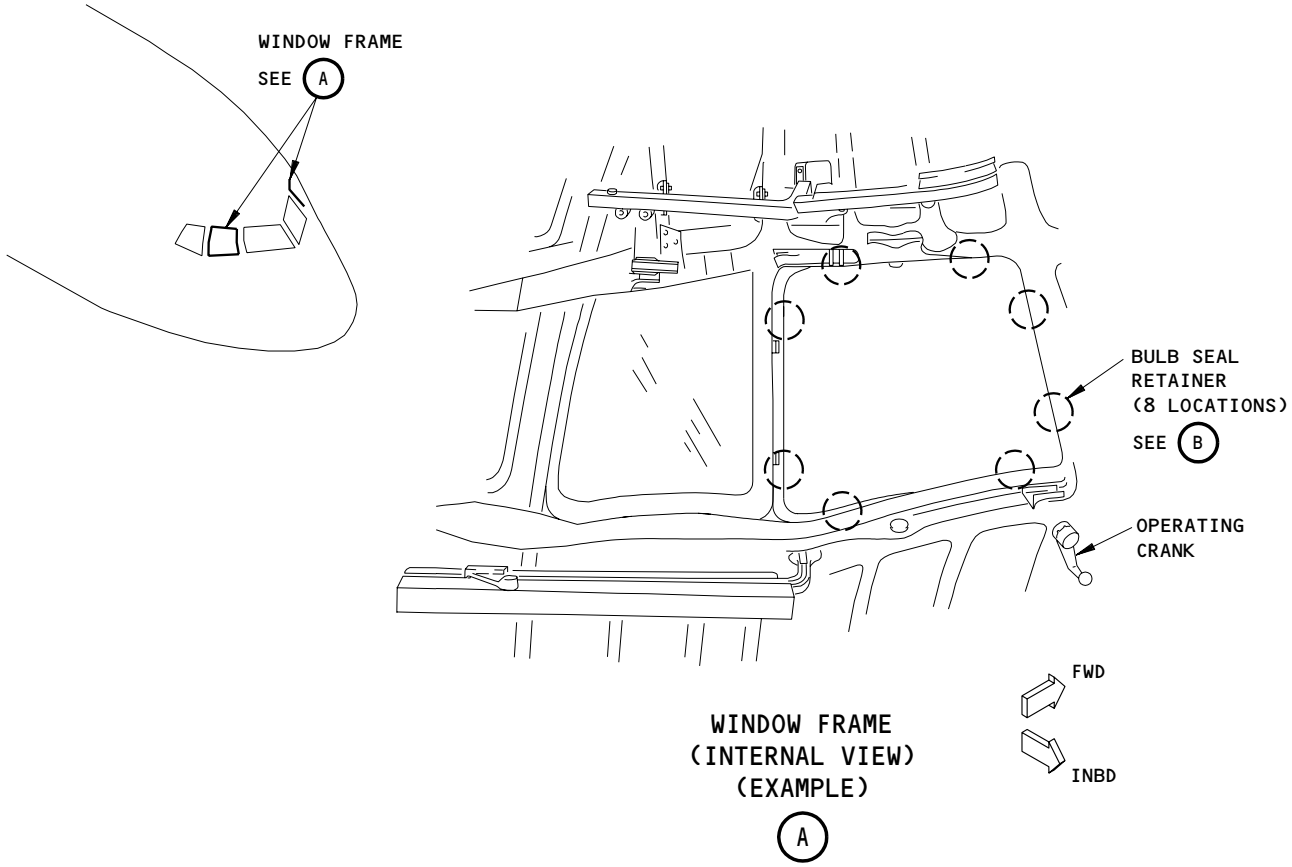
WINDOW FRAME
(INTERNAL VIEW)
(EXAMPLE)
D

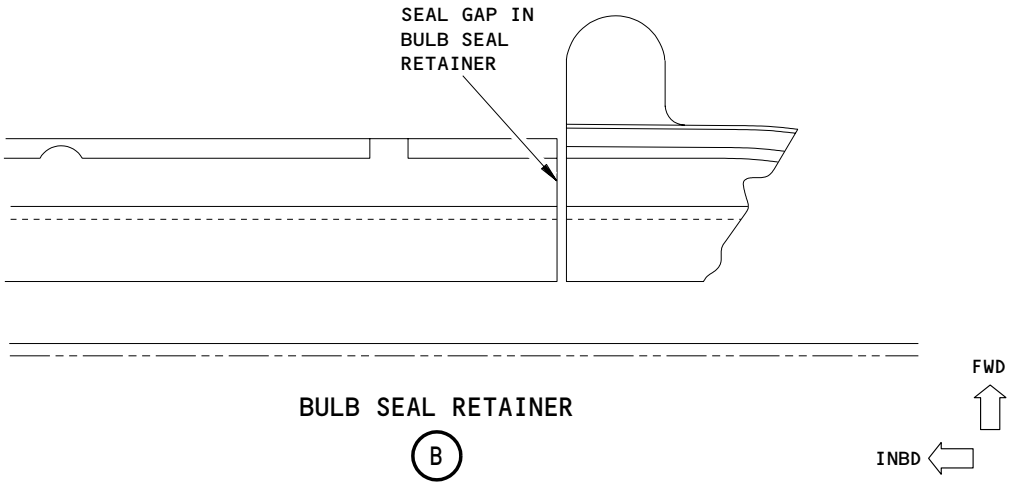
1. THE BULB SEAL WAS DESIGNED WITH EXCESS MATERIAL IN ORDER TO ACHIEVE AN INTERFERENCE FIT WITH THE SEAL RETAINER. DO NOT CUT AND SPLICE THE SEAL IN ORDER TO INSTALL. THIS WILL DESTROY THE SEAL.
2. REMOVE THE OLD SEAL AND THOROUGHLY CLEAN THE RETAINER TRACK. MAKE SURE THAT THERE IS NO SEALANT INSIDE THE TRACK.
3. POSITION THE NEW SEAL WITH THE BREATHER HOLES FACING INBOARD.
4. INSTALL THE CORNERS OF THE SEAL WITH THE ALIGNMENT MARKS CENTERED AT EACH CORNER OF THE WINDOW FRAME.
5. EVEN OUT THE SLACK AT EACH SIDE BY SLIDING THE CORNERS OF THE SEAL.
6. LIGHTLY MARK THE WINDOW FRAME WHERE THE SEAL ALIGNMENT MARKS ARE LOCATED. THIS WILL HELP TO INDICATE ANY MOVEMENT OF THE SEAL CORNERS DURING INSTALLATION. RE-ADJUST IF NECESSARY.
7. INSTALL THE SIDES BY WORKING FROM THE CORNERS AND PROCEED TOWARDS THE MIDDLE.

No. 2 Window Seal Installation
Figure 401 (Sheet 3)



No. 2 Window Seal Installation
Figure 401 (Sheet 4)





Bulb Seal Retainer
Figure 402

(c) Discard the used bulb seal.

NOTE: The bulb seal is used for one installation only.

TASK 56-11-11-404-006

3. Install the No. 2 Window Seal (Fig. 401)

A. Equipment
(1) ST1742C-A Window Seal Installation Tool
(2) ST1066-1 Air Seal Rubber Roller Tool

B. Consumable Materials
(1) A50067 Sealant - General Electric RTV 102
(2) A01049 Sealant - Dow Corning Q3-6093
(3) A02315 Sealant - Low Density, Synthetic Rubber. 2 Part, BMS5-142
(4) A50057 Adhesive - Silicone Rubber RTV157, BAC5010 Type 60
(5) A00161 Adhesive - Epoxy-Amine, BMS5-25 type II Grade 1
(6) A50126 Primer - Adhesive Bonding, DC-1204
(7) Solvent Series 92 (AMM 20-30-92/201)

C. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Seal (Pressure Seal)	56-11-02	01	135 140

D. Access
(1) Location Zones
211/212 Control Cabin

(2) ST1742C-A Window Seal Installation Tool

E. Procedure - Install the No. 2 Window Seal

S 014-029
(1) Open the No. 2 window to the fully open position.

S 424-030
(2) Remove old sealant using non-metallic scrapers:

NOTE: It is necessary that the area is as clean as possible. Areas that are not cleaned to the maximum possible conditions can become leaks.

(a) Make sure that all the sealant is removed.

(b) Remove old sealant, grease, oil, dirt and all unwanted material from the seal retainer and adjacent area.

NOTE: Use MEK, MPK, isopropyl alcohol, or ethyl alcohol and clean cheesecloth to remove all contaminates and sealant from the seal retainer and the adjacent area.

NOTE: Make sure all slots and recesses have been cleaned.

1) Make sure all slots and recesses have been cleaned and that all old sealant has been removed.

(c) Do the steps again to clean until the window is as clean as possible.

NOTE: This is necessary to prevent window leaks.

S 394-053

(3) Make sure that the bulb seal retainer is sealed with a fillet seal to the fuselage structure (Fig. 401):

(a) If it is necessary, use sealant adhesive, A00161 to make a fillet seal between the fuselage structure and the bulb seal retainer.

(b) Install the seal in the bulb seal retainer:

1) Install the inboard lip of the seal first.

S 414-054

CAUTION: DO NOT INSTALL THE WINDOW SEAL WITH A SCREWDRIVER OR OTHER SHARP TOOL DAMAGE TO THE WINDOW SEAL CAN OCCUR IF A SHARP TOOL IS USED TO INSTALL THE WINDOW SEAL.

(4) Install the seal, as follows:

CAUTION: DO NOT GET SEALANT IN THE BULB SEAL BREATHER HOLES. IF THE BREATHER HOLES HAVE SEALANT IN THEM, DAMAGE TO THE WINDOW BULB SEAL CAN OCCUR.

(a) Lightly mark the seal at breather hole locations.

NOTE: This will allow the holes to be located if they are covered with sealant.

(b) Fill all gaps between the seal retainer segments with sealant, AO2315 (Figure 401). Apply additional sealant if required to smooth the steps between seal retainer segments. Do this task: Non-Removable Faying (Mated) Surface Seal Application, TASK 51-31-01-392-013.

NOTE: Primer DC-1204 can help to make the bond of the sealant stronger.

(c) Allow a minimum of 1 hour for the sealant to set prior to installation of the seal.

(d) Install the seal with breather holes inboard.

1) Push the seal into the bulb seal retainer at the center of the top of the window opening.

NOTE: Boeing roller seal installation tools, ST1742C-A ST1066-1 are recommended for installation of the seal.

a) Then push the outboard lip in the track with the seal installation tool.

2) Push the seal into the bulb seal retainer at the center of the bottom of the window opening.

3) Push the seal into the bulb seal retainer at the center of the sides of the window opening.

4) Push the seal into the bulb seal retainer at the corners of the window opening.

(e) Even out the slack at each side by sliding the corners of the seal.

(f) Lightly mark the window frame where the seal alignment marks are located at each corner of the frame.

NOTE: These marks on the window frame will indicate any movement of the seal corners during installation.

(g) Push the seal into the retainer, starting from the corners.

NOTE: Install the inboard lip of the seal first. Then push the outboard lip in the track with the seal installation tool.

1) Install approximately 4 in. (102 mm) of seal at a time. Install both sides of each corner and complete all 4 corners before installing the next 4 in. (102 mm). Continue moving from corner to corner until the seal is completely installed.

2) Make sure the seal is not kinked, wrinkled or otherwise damaged particularly in the crown area. Seals have a solid foam insert in the bulb seal common to the corner marks. Make sure the foam inserts are in the corner region by feeling for changesin the flexibility of the seal.

(h) Install the sides of the seal by working from the corners and proceeding towards the middle.
(i) If the last side to be installed has to much slack, carefully remove that side and the side adjacent to it.

NOTE: Be carefull not to stretch the seal when removing it from the adjacent side.

(j) Position the last corner to be installed so that the slack is even at the last two sides and attempt to install again.

NOTE: Make sure the seal is not kinked, wrinkled or otherwise damaged particularily in the crown area. Some seals have a solid foam insert in the bulb seal common to the corner marks. Make sure the foam inserts are in the corner region by feeling for changes in seal flexibility.

S 114-056
(5) Lightly clean the seal with a small amount of solvent, B00148.

S 214-011
(6) Make sure the seal (1) is correctly installed.

S 034-059

CAUTION: DO NOT GET SEALANT IN THE BULB SEAL BREATHER HOLES. IF THE BREATHER HOLES HAVE SEALANT IN THEM, DAMAGE TO THE WINDOW BULB SEAL CAN OCCUR. MAKE SURE YOU DO NOT DAMAGE THE ADJACENT STRUCTURE.

(7) Fillet seal around the edge of the window seal where the bulb seal and touches the outer portion of the seal retainer. To apply this seal, do this task: Non-Removable Faying (Mated) Surface Seal Application, TASK 51-31-01-392-013.

NOTE: A pneumatic seal installation tool (sealant gun) should be used to install the fillet seal. This will make the installation easier and provide a better quality seal.

NOTE: Use adhesive, A50057, RTV 102 adhesive, A50067, or Dow Corning Q3-6093 sealant, A01049, or sealant, A02315.

NOTE: You must apply the the sealant correctly for a good pressure seal installation. You can cause air bubbles under the sealant if you pull the sealant gun when you apply the sealant. You should push the sealant gun when you apply the sealant. Apply sealant above 50 degrees Fahrenheit and above 40 percent humidity. Under these conditions, the sealant will be sufficiently set in a minimum of 4 hours. Do not close the window until the sealant is fully set.

(a) Do not close the window until the sealant has cured fully.

NOTE: It is critical to make sure the sealant is installed correctly and allowed to cure.

S 394-060

CAUTION: DO NOT GET SEALANT IN THE BULB SEAL BREATHER HOLES. IF THE BREATHER HOLES HAVE SEALANT IN THEM, DAMAGE TO THE WINDOW BULB SEAL CAN OCCUR. MAKE SURE YOU DO NOT DAMAGE THE ADJACENT STRUCTURE.

(8) Apply a fillet seal between the inboard and outboard sides of the bulb seal to the full periphery. Apply the pressure seal at the four latch stud locations (Figure 401).

NOTE: Use adhesive, A50057, RTV 102 adhesive, A50067, or Dow Corning Q3-6093 sealant, A01049, or sealant, A02315.

NOTE: You must apply the sealant correctly for a good pressure seal installation. You can cause air bubbles under the sealant if you pull the sealant gun when you apply the sealant. You should push the sealant gun when you apply the sealant. Apply sealant above 50 degrees Fahrenheit and above 40 percent humidity. Under these conditions, the sealant will be fully set in a minimum of 4 hours. Do not close the window until the sealant is fully set.

(a) Allow a minimum of 4 hours for the sealant to set before closing the window.

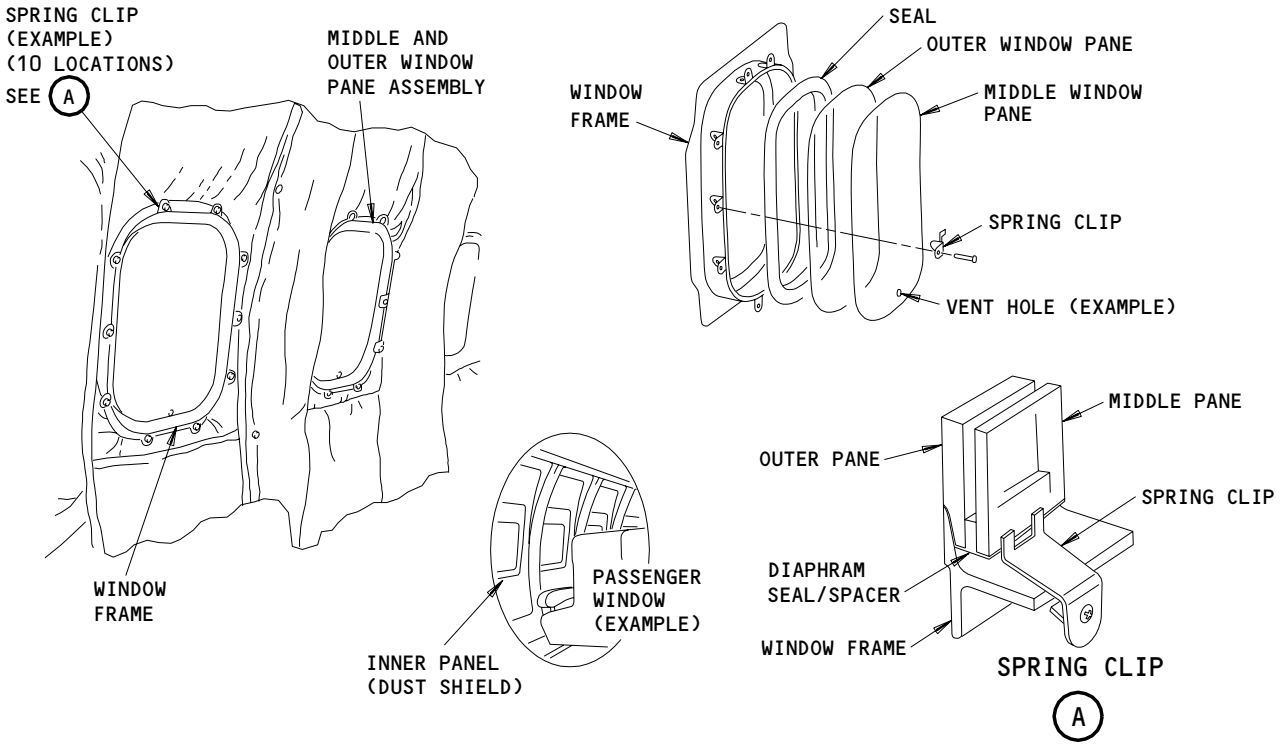
S 214-061
(9) Examine the breather holes to ensure they are not blocked with sealant.

S 434-033
(10) Close the No. 2 window when the sealant has dried.

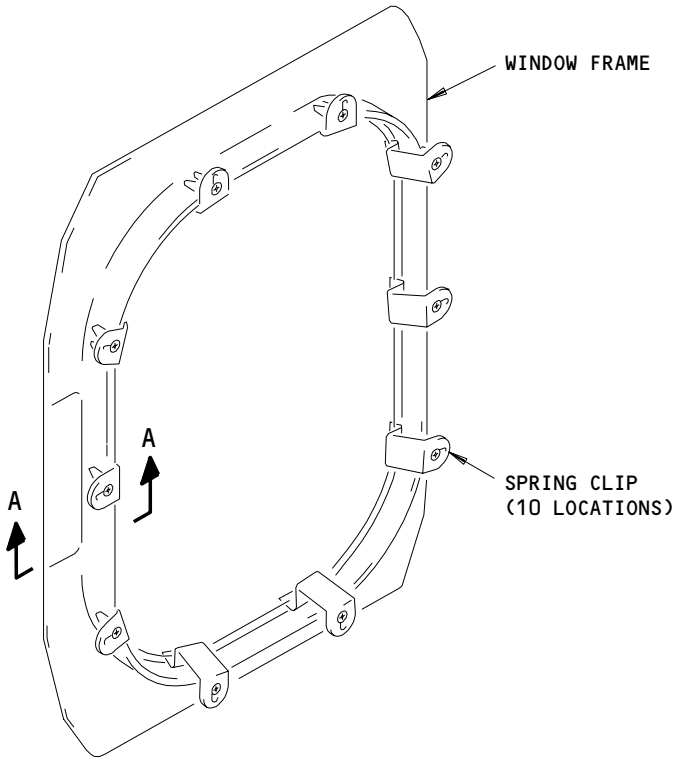
S 864-035
(11) AIRPLANES WITH ELECTRICALLY OPERATED FLIGHT COMPARTMENT SEATS; Do the following:
(a) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
1) On the main power distribution panel, P6:
a) 6H15 or 6J15, CAPT SEAT
b) 6J21, F/O SEAT

PASSENGER COMPARTMENT WINDOWS - DESCRIPTION AND OPERATION

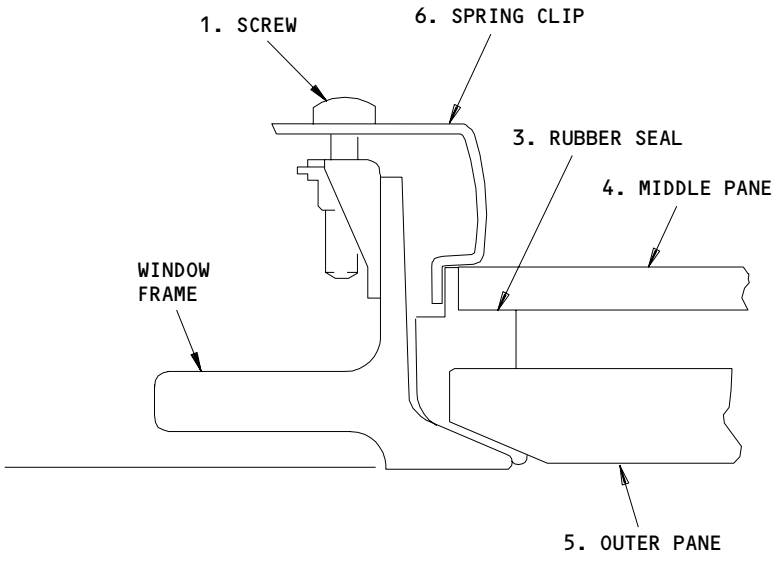
1. General
   A. The following is a description of the passenger windows and their component details.
2. Passenger Compartment Windows (Fig. 1)
   A. The passenger compartment windows including the window for the overwing exit hatch consist of an acrylic inner pane (dust shield); a molded acrylic middle pane; and a stretched acrylic outer pane. The first two passenger windows on each side of the airplane have compound curvature to match the fuselage frame. The middle and outer pane can each withstand full cabin pressure. The inner pane is nonstructural and is a part of the interior sidewall panel. The middle and outer panes are sealed to the window frames in a single, shaped ethylene propylene seal. Spring clips fasten the middle and outer panes and the seal to the window frame which is part of the fuselage structure. The outer pane has a beveled edge to fit the window frame. The middle pane has vent holes near the bottom to maintain cabin pressure between the middle and outer panes.



Passenger Cabin Windows
Figure 1

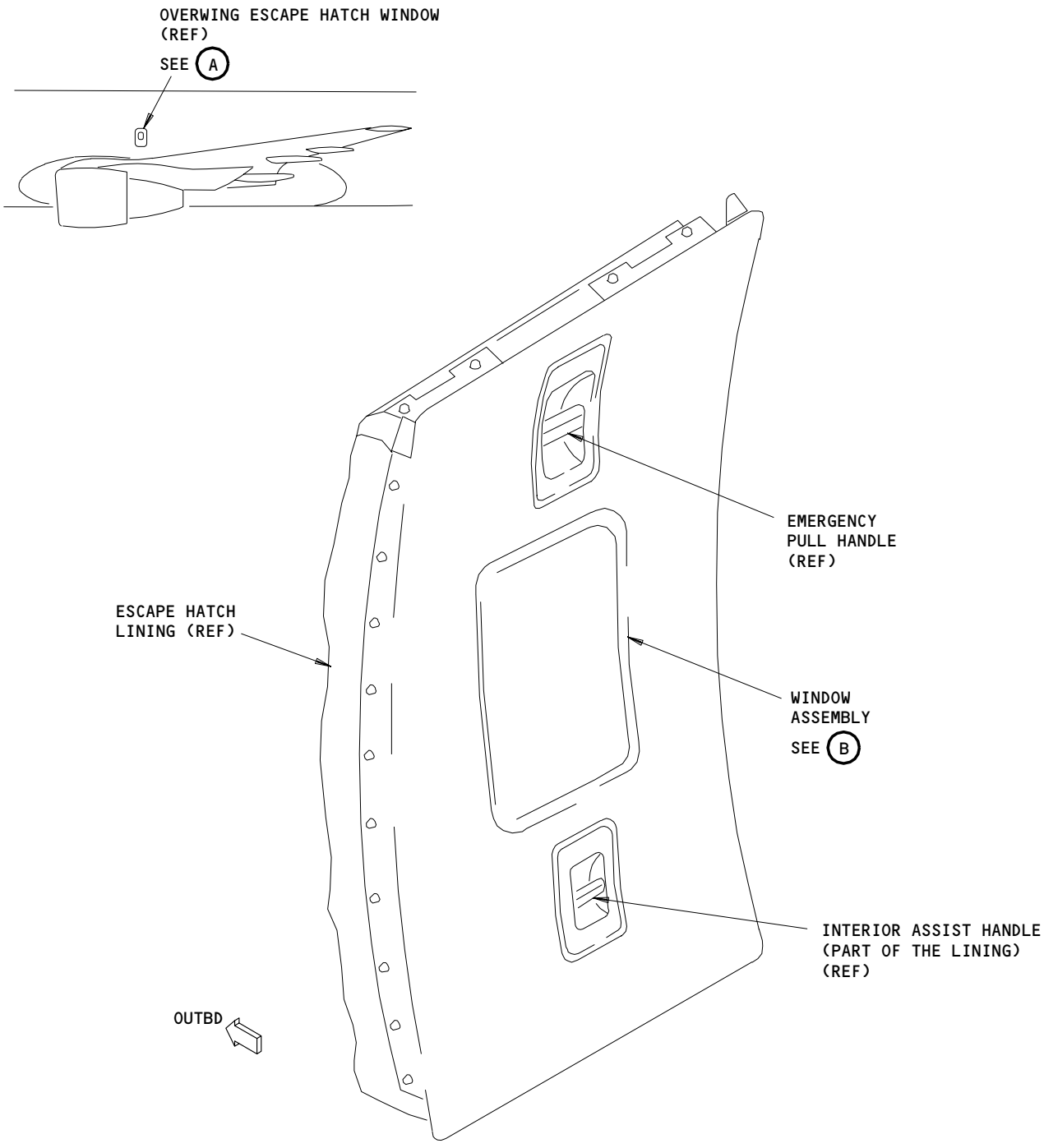


PASSENGER WINDOW



A-A

Passenger Window
Figure 401

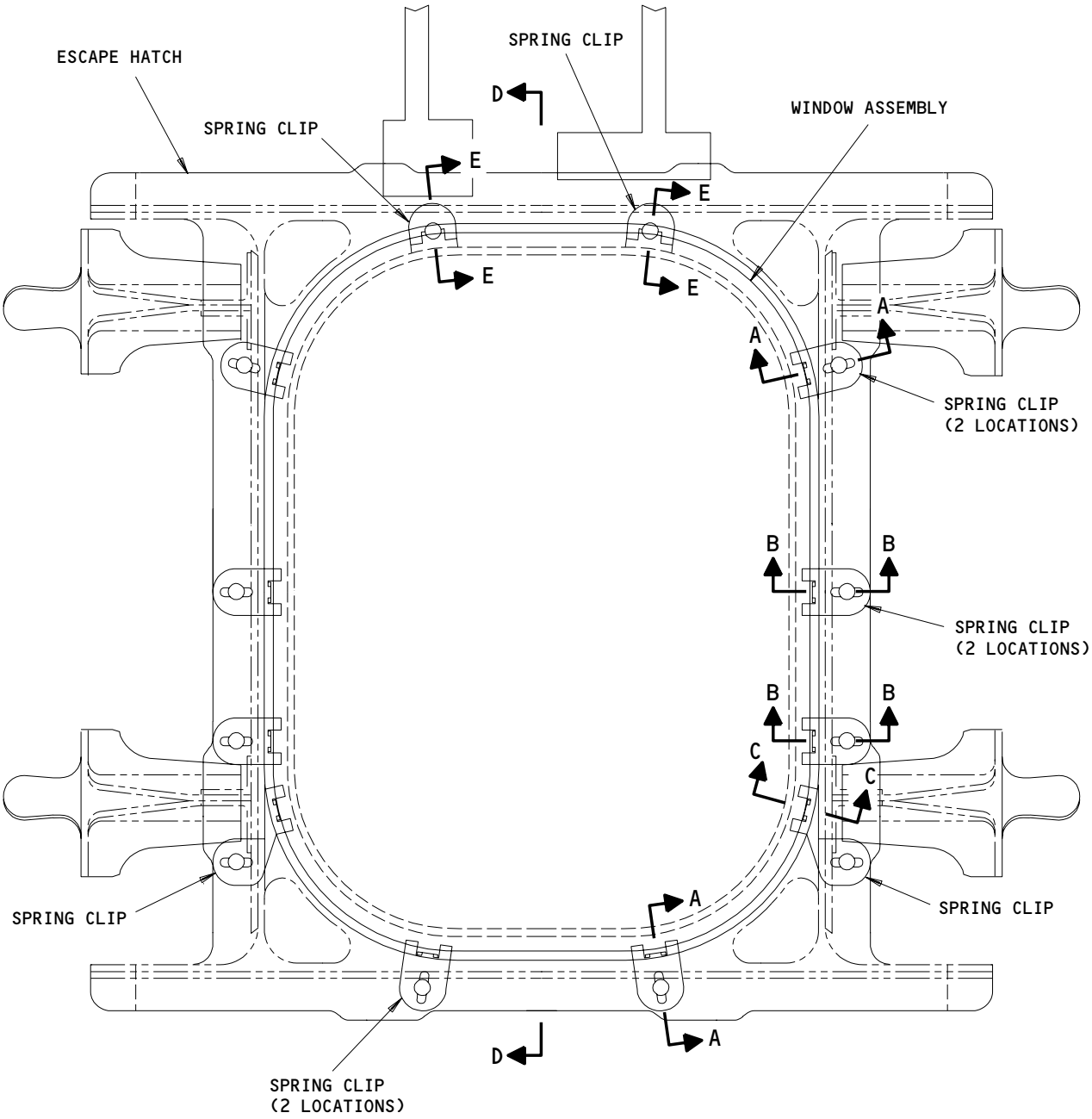


OVERWING EMERGENCY EXIT HATCH WINDOW

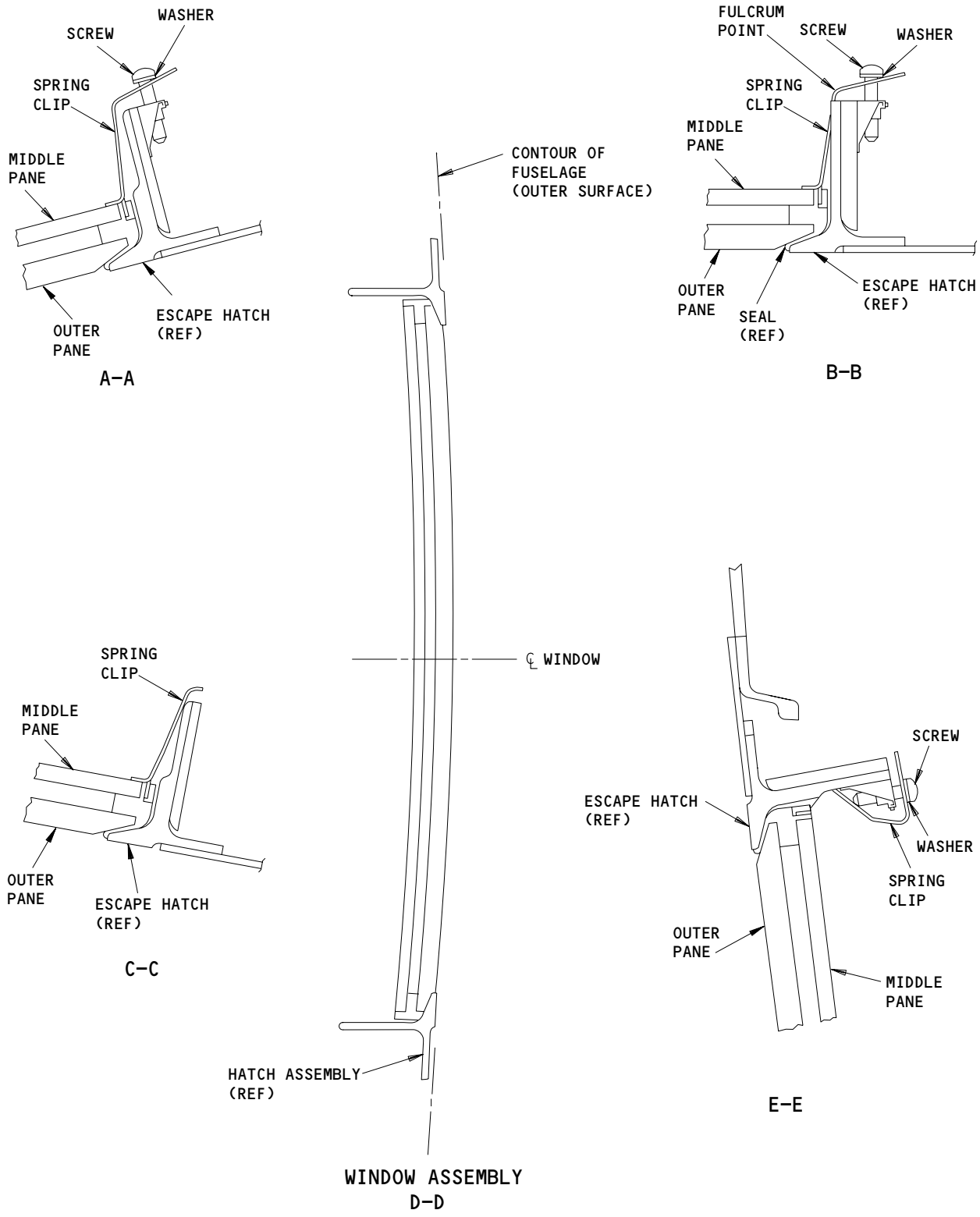
A

Overwing Escape Hatch Window Removal/Installation
Figure 402 (Sheet 1)

B52691



Overwing Escape Hatch Window Removal/Installation
Figure 402 (Sheet 2)



Overwing Escape Hatch Window Removal/Installation
Figure 402 (Sheet 3)

PASSENGER/OVERWING ESCAPE HATCH WINDOW - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these tasks:
      (1) The removal of the passenger window.
      (2) The installation of the passenger window.
      (3) This procedure also includes instructions to remove and install the window for the overwing escape hatch.
   B. You can replace the window reveal with the sidewall panels installed. For easier access, the sidewall panels are removed to replace the passenger windows. Usually, it is necessary to remove a row of seats to remove a sidewall panel.

TASK 56-21-01-004-029

2. Remove the Passenger Window (Fig. 401)
   A. References
      (1) AMM 25-65-00/201, Off-Wing Escape System
      (2) AMM 52-21-01/201, Overwing Escape Hatch
      (3) AMM 52-21-02/201, Overwing Escape Hatch Lining
      (4) AMM 25-21-01/401, Sidewall Panels
      (5) AMM 25-25-01/201, Passenger Seats
      (6) IPC 56-21-01
   B. Access
      (1) Location Zone
          200 Upper Half of Fuselage

   C. Prepare for Removal

      S 034-002
      (1) Do the steps that follow to remove the passenger window in the overwing escape hatch:

          NOTE: Cause for removal of the hatch window would be scratches, crazing or damage to the window that would prevent you from viewing outside through the hatch door (AMM 56-21-01/601).

          WARNING: MAKE SURE THE OFF-WING ESCAPE SYSTEM IS DISCONNECTED. ACCIDENTAL OPERATION OF THE ESCAPE SLIDE CAN CAUSE INJURY TO PERSONS OF DAMAGE TO THE EQUIPMENT.

          (a) Disconnect the off-wing escape system (AMM 25-65-00/201).
          (b) Remove the overwing escape hatch (AMM 52-21-01/201).
          (c) Remove the lining around the overwing escape hatch (AMM 52-21-02/201).

S 014-069
(2) AIRPLANES WITH TOP HOLED REVEALS;
Remove the window reveal assembly.
(a) Pull the window shade down.
(b) Loosen the internal screws through the holes in the top of the shade with an allen wrench.

NOTE: These holes have small plugs in them.

(c) Lift the window reveal up and out.

S 014-068
(3) AIRPLANES WITH BOTTOM HOLED REVEALS;
Remove the window reveal assembly.
(a) Pull the shade up.
(b) Put a circular tool (diamter 0.06 in. (1.52 mm) into the hole at the bottom of the reveal.
(c) Push down and at the same time pull inboard until the lower latch disengages.
(d) Remove the tool.
(e) Pull the shade down.
(f) Turn the bottom of the reveal inboard.
(g) Pull the reveal down and at the same time inboard to remove the reveal from the sidewall panel.

S 024-005
(4) If necessary, remove the passenger seats (AMM 25-25-01/201).

S 024-006
(5) Remove the sidewall panels, if necessary, to provide maximum access to the passenger window (AMM 25-21-01/401).

D. Procedure - Remove the Passenger Window

S 974-033
(1) Before you remove the hatch window, make a record of the location of spring clips so you install them in the same location where you removed them (Fig 402).

S 034-037
(2) Remove the screw (1), washers and the spring clips (6).

S 024-035

CAUTION: BE CAREFUL WHEN YOU REMOVE THE HATCH WINDOW FROM THE FRAME. THE TWO WINDOW PANES ARE HELD TOGETHER BY ONLY A RUBBER SEAL AROUND THE WINDOW PERIMETER. HOLD THE WINDOW ASSEMBLY FIRMLY TOGETHER WHEN YOU REMOVE IT FROM THE WINDOW FRAME. YOU CAN CAUSE DAMAGE TO THE WINDOW IF YOU ARE NOT CAREFUL.

(3) Remove the outer pane (5), the seal (3), and the middle pane (4) as one unit.

S 024-009

(4) If necessary, remove the seals (3) from the panes.

S 954-010

(5) Put a protective coating or tape on the window pane if you are to use the window again.

S 844-011

(6) Make a mark of the window location to make sure the window is installed correctly.

TASK 56-21-01-404-031

3. Install the Passenger Window (Fig. 401)

A. Consumable Materials

(1)	G00191	Protective Coating - Spraylat SC-107
(2)	G00139	Protective Tape - Gizard Protex 20N
(3)	G00034	Clean Cheesecloth (Ref 20-30-07)
(4)	G00083	Aliphatic Naphtha - TT-N-95
(5)	G01989	Castile Soap
(6)	D00399	Lubricant Silicone Spray or equivalent

B. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	AR	Window Assembly	56-21-01	01	1

C. References
(1) AMM 25-25-01/201, Passenger Seats
(2) AMM 25-21-01/401, Sidewall Panels
(3) AMM 25-65-00/201, Off-Wing Escape System
(4) AMM 52-21-01/201, Overwing Escape Hatch
(5) AMM 56-21-01/601, Passenger Windows

D. Access
(1) Location Zone
200 Upper Half of Fuselage

E. Procedure - Install the Passenger Window

S 034-012
(1) Remove the protective coating or the protective tape.

S 214-013
(2) Before you install the window panes, examine the panes and compare there condition with the allowable damage limits in AMM 56-21-01/601.

NOTE: Do not install the window pane if the window cannot be repaired to the allowable damage limits. Do not install the window if the damage is more than the allowable damage limit.

S 114-014
(3) Clean the two surfaces of the window frame with aliphatic naphtha. Apply the aliphatic naphtha with a clean, oil-free cloth.

S 144-015
(4) Remove the aliphatic naptha with a clean cheesecloth before the aliphatic naptha becomes dry.

S 144-016
(5) Clean the panes.
(a) Apply an antistatic agent (optional) (AMM 12-16-03/301).

S 434-017
(6) Assemble the outer pane (5), the seal (3), and the middle pane (4).

S 214-015
(7) Make sure the serial number of the outer pane (5) is at the top, and the breather hole in the middle pane (4) is at the bottom.

S 794-018
(8) Apply a soap and water solution to the edge of the seal.

S 644-041
(9) Before you install the hatch window into the hatch door, spray the silicone lubricant around the window frame to make it easier to install the window panes.

NOTE: You can apply the soap solution to the window frame if the silicone spray is not available.

S 424-016

CAUTION: MAKE SURE THE CORRECT WINDOW IS USED. AN INCORRECT WINDOW MAY CAUSE THE WINDOW SEAL TO HAVE A LEAK.

(10) Install the window unit in the window frame as follows:
(a) Put the window assembly into the frame.
(b) Make sure the window is correctly aligned in the center of the frame.

S 434-039
(11) Install the spring clip (6). Loosely install the screws (1) and washers.

S 434-043
(12) Tighten the screw (1) until the clip face (2) adjacent to the screw (1) is 0 to 6 degrees in relation to the window pane (Fig. 401).

NOTE: The 0 to 6 degrees is the angle between the window pane (the vertical) and the face of the clip.

NOTE: If you tighten the screw too much, the foot of the clip will bend away from the window pane. In addition, the seal that interfaces with the middle pane changes from a frosted to a solid color indicating full contact.

(a) Tighten each screw until the foot of the clip that touches the window pane is flat against the pane. If you tighten the screw too much, the foot of the clip will bend away from the window pane.

S 434-034
(13) To get the best installation for the overwing exit hatch window, do as follows:
(a) Use the window frame as a fulcrum point on the spring clip (Fig 402, View B-B). When the clip feet begin to lift, the window installation is the best it can be.
(b) Make sure that 1 or more threads come out from the nutplate.

S 434-023
(14) Tighten the spring clip screws (1) as follows:

NOTE: Tighten each screw until the foot of the clip that touches the window pane is flat against the pane. If you tighten the screw too much the foot of the clip will bend away from the window pane.

(a) Upper aft
(b) Lower forward
(c) Lower aft
(d) Upper forward
(e) Aft lower
(f) Forward lower
(g) Aft upper
(h) Forward upper
(i) Forward middle
(j) Aft middle

S 214-024
(15) Make sure the faying suface between the middle pane and the window seal shows as a continuous black color band. If the color is not a continous black band, adjust the spring clip screws, where necessary, to increase the pressure on the rubber seal.

S 434-025
(16) If the sidewall panels were removed for access to the window, install the sidewall panels (AMM 25-21-01/401).

S 434-026
(17) If necessary, install the passenger seats (AMM 25-25-01/201).

S 424-028
(18) AIRPLANES WITH TOP HOLED REVEALS;
To install the window reveal, do the steps that follow:
(a) Pull the window shade down.
(b) Put the bayonets on the bottom inside of the window reveal into the slots in the bottom support brackets of the window.
(c) Push down on the window reveal, and move the window reveal into the window opening.
(d) With an allen wrench put in the holes in the top of the window shade, tighten the screws.
(e) Push around the edge of the window reveal to correctly install it.

S 414-070
(19) AIRPLANES WITH BOTTOM HOLED REVEALS;
To install the window reveal, do the steps that follow:
(a) Pull the window shade down.
(b) Put the reveal assembly into the sidewall panel hole until the spacer is through the hole.
(c) Turn the reveal and at the same time lift up until:
1) The top of the reveal engages the support tabs.
2) The inner reveal edge is against the edge of the sidewall panel hole.
(d) Push the lower part of the reveal outboard until it attaches into its position with the catch mechanism.
(e) If it is necessary, adjust the catch mechanism:
1) Adjust the force of the catch mechanism to tighten the window reveal to the sidewall panel.

F. Put the Airplane Back To Its Usual Position

S 434-032
(1) Connect the off-wing escape system (AMM 25-65-00/201).

S 434-029
(2) Install the overwing escape hatch lining (AMM 52-21-02/201).

S 434-030
(3) Install the overwing escape hatch (AMM 52-21-01/201).

S 714-031
(4) Make sure the overwing escape hatch operates correctly (AMM 52-21-01/201).

PASSENGER WINDOWS - INSPECTION/CHECK

1. General
   A. This procedure has one task. This task is to inspect the passenger windows.

      NOTE: The windows for the overwing escape hatches are also considered to be passenger windows.

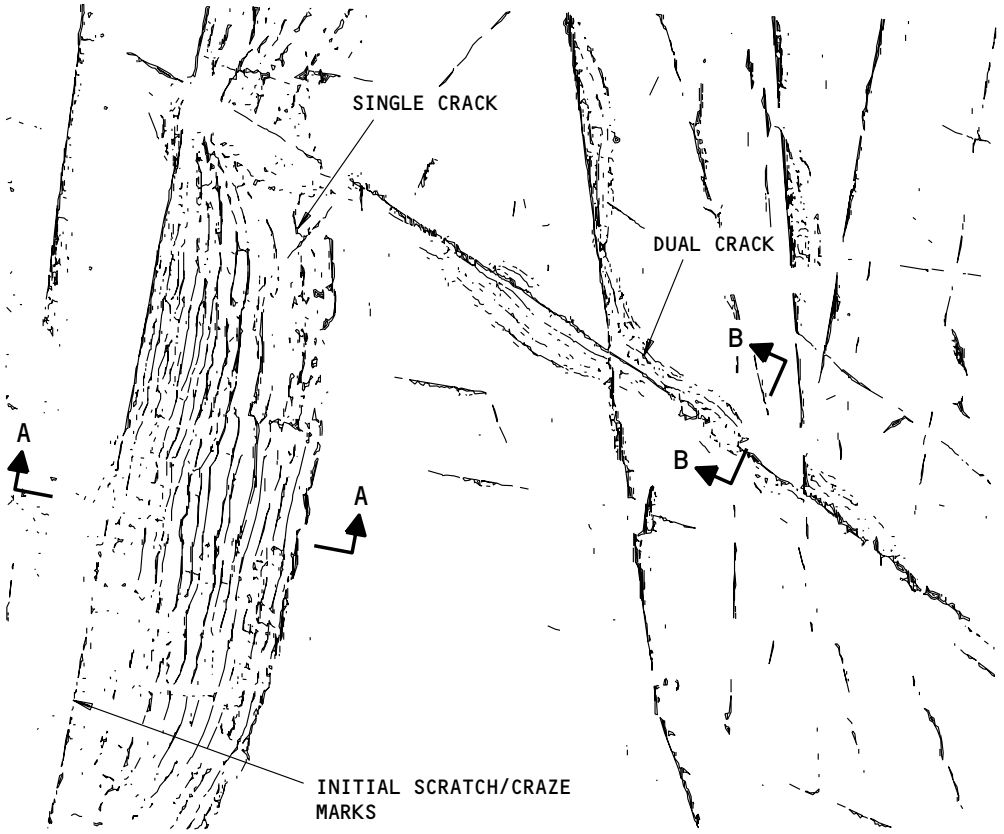
TASK 56-21-01-206-001

2. Examine the Window Panes (Fig. 601, Fig. 602)
   A. General
      (1) If the window is damaged as specified in this procedure, remove the window and replace or repair the damaged components.

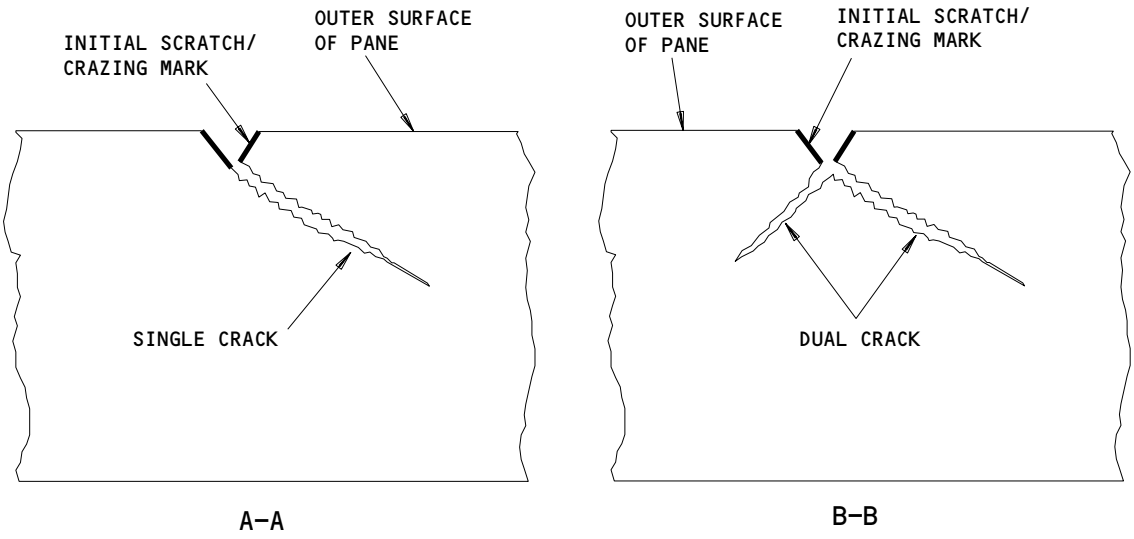
          NOTE: The window sidewall panels and reveals must be removed before you can perform some of the measurements and inspections in the procedure (AMM 25-21-01/401, AMM 25-21-02/401 and AMM 56-21-01/401).

          CAUTION: APPLICATION OF PAINT OR OTHER UNAPPROVED OR NON-TRANSPARENT MATERIAL TO THE ACRYLIC PASSENGER WINDOW PANES IS PROHIBITED. SOLVENT IN PAINT WILL CAUSE STRUCTURAL DAMAGE TO THE ACRYLIC AND THE PAINT WILL PREVENT DAMAGE DETECTION.

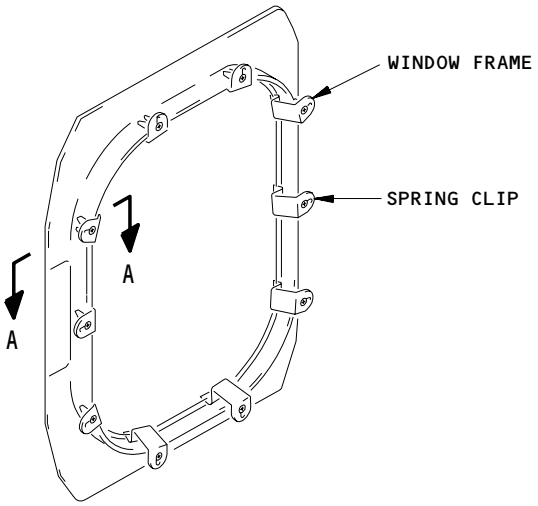
      (2) Crack:
          (a) A crack is not a complete break but it has width when you look parallel to the face of the crack. A crack can occur at any angle to the surface of the prismatic pane. The direction of the crack depends on the direction of the applied force. The stress from a scratch or a craze can cause a crack to occur.
      (3) Crazing:
          (a) A crazed prismatic pane has a number of very thin cracks which are 90 degrees to the surface of the prismatic pane. Because the cracks are very thin, it is not easy to see the crazing. When you look at the prismatic pane at different angles, you can see the crazing by its reflection on the smooth surface of the prismatic pane.
      (4) In-plane Cracking (delamination)
          (a) In-plane cracking can be a smooth fissure, or group of fissures that can occur along the surface of the pane. In-plane cracks can occur in acrylic. The cracks start at the edges of the pane or in the center of the pane. You can best find the cracks with a reflection of light from the smooth surfaces of the fissure.



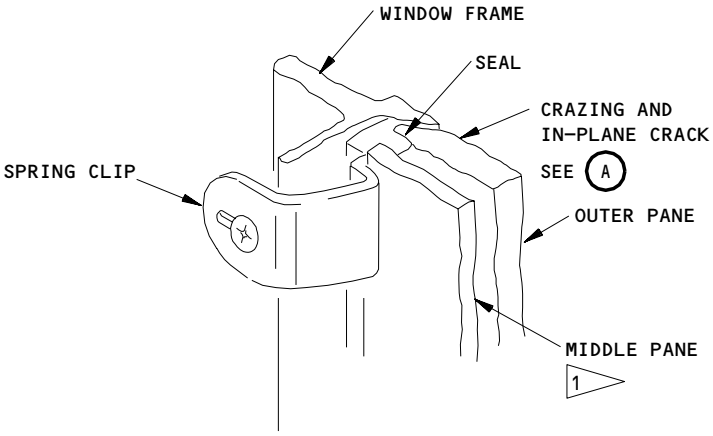
WINDOW SURFACE



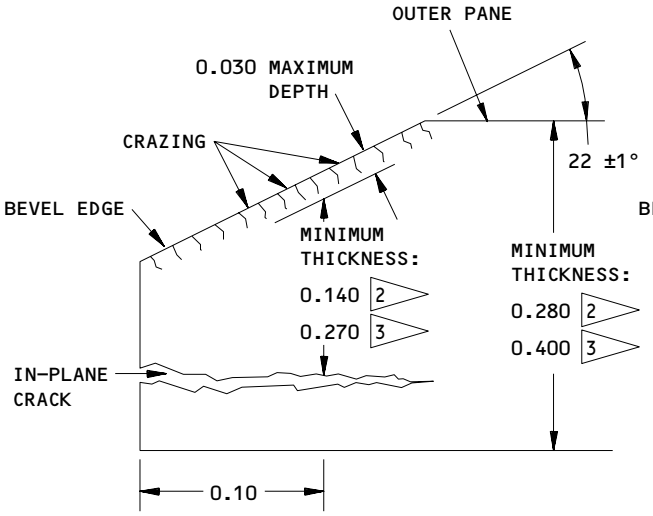
Outer Window Pane Surface Damage
Figure 601



PASSENGER WINDOW
(EXAMPLE)

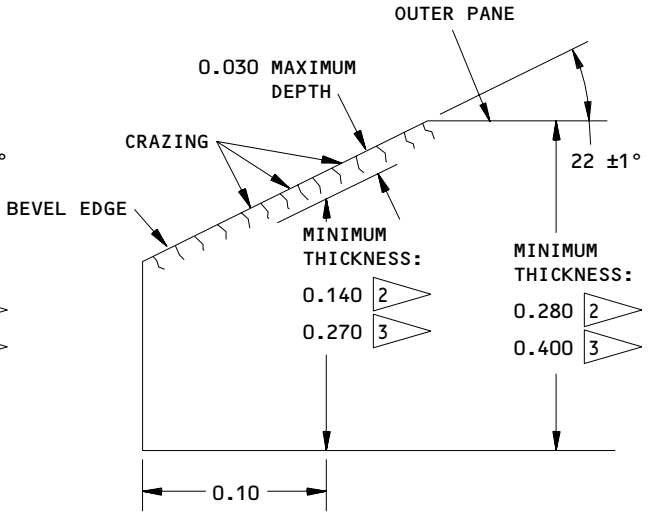


A–A



CRAZING AND IN–PLANE CRACK

A



CRAZING ONLY

A

NOTE: ALL DIMENSIONS ARE IN INCHES.

1 REPLACE THE MIDDLE PANE IF THERE ARE CRACKS OR CRAZING.

2 PANES WITH NOMINAL THICKNESS OF 0.35 INCH (8.9 mm): 140T2413 OR 140T2423.

3 PANES WITH NOMINAL THICKNESS OF 0.49 INCH (12.5 mm): 140T2414.

Passenger Window Inspection
Figure 602

313346

(5) Scratch:
(a) A scratch occurs when there is removal of material from the surface of the prismatic pane along a line. Scratches are divided into three types: superficial, minor, and major. Superficial scratches are less than 0.001 inch in depth. This type of scratch is caused when the window is not cleaned carefully. Minor scratches are from 0.001 to 0.004 inch in depth. Major scratches are greater than 0.004 inch in depth.
(6) Chips:
(a) A chip occurs when there is removal of material from the surface of the prismatic pane not along a line. The chip in the prismatic pane can have a circular shape or a "V" shape.

B. Equipment
(1) Optical Micrometer - Ace Model 966A
Monocle Industries
P.O. Box 2426
Coppell, Tx U.S.A. 75019
Tel (214) 393-9920
Fax (214) 393-9926

C. References
(1) AMM 12-16-03/301, Passenger Windows
(2) AMM 56-21-01/401, Passenger Windows
(3) AMM 56-21-01/801, Passenger Windows

D. Access
(1) Location Zone
200 Upper Half of the Fuselage

E. Procedure - Examine the Panes for Cracks

S 966-014

WARNING: IF THERE IS A CRACK IN THE MIDDLE PANE, REPLACE IT IMMEDIATELY. CORRECT PRESSURIZATION OF THE FUSELAGE IS CRITICAL. A CRACK IN THE WINDOW PANE CAUSES INCORRECT PRESSURIZATION OF THE FUSELAGE.

(1) Replace all cracked middle panes immediately (AMM 56-21-01/401).

NOTE: Middle pane cracks that start from the vent hole and are 0.062 inch or less in length do not need to be replaced.

The minimum allowable thickness of the middle pane is 0.180 inch. It is only necessary to measure the thickness before installing a new or overhauled middle pane.

S 966-003
(2) Replace the outer pane (AMM 56-21-01/401) if the depth of the crack is more than 0.05 inch.

S 966-004
(3) Replace the outer pane (AMM 56-21-01/401) if the depth of the crack causes the pane thickness, after rework, to be less than the minimum thickness shown in Fig. 601.

NOTE: The cracks in the outer pane can start from scratches or crazing (Fig. 601).

S 226-005
(4) The depth of a crack is measured with an optical micrometer. To get a correct measurement, multiply the micrometer reading by the index of refraction (1.49) for the acrylic plastic.

NOTE: You can use other accurate methods to find the crack depth for this procedure.

F. Procedure - Examine the Windows for Crazing

S 966-023
(1) Replace all crazed middle pane immediately (AMM 56-21-01/401).

S 966-007
(2) Replace the outer pane if the depth of the crazing on the bevel edge is larger than the maximum depth shown in Fig. 602 (AMM 56-21-01/401).

NOTE: The maximum depth of the crazing on the bevel edge is permitted. If there is in-plane cracking between the the crack and the crazed bottom on the bevel edge, make sure you keep a minimum thickness of the uncracked and the uncrazed material at all points 0.10 inches from the outer edge as shown in Fig. 602.

G. Procedure - Examine the Windows for Chips and In-Plane Cracks (Delamination)

S 966-008
(1) Replace the outer pane when you can see the edge in-plane cracking with the window installed (AMM 56-21-01/401).

S 966-009
(2) Replace the outer pane if the in-plane cracking is larger than 0.55 inch from the edge of the removed pane (AMM 56-21-01/401).

S 966-010
(3) The in-plane cracking of the outer pane at all locations other than its edges, frequently has chips as well. Replace the outer pane if the in-plane cracking or chips is larger than these limits:
(a) The maximum chip depth is 0.05 inch.

(b) The maximum size of in-plane cracking is 0.40-inch diameter.
(c) The minimum distance between defects is two times the maximum damage diameter.

H. Procedure - Examine the Windows for Scratches.

S 216-017
(1) Examine the windows for scratches.

NOTE: The minor scratches in the outboard surface of the outer pane and inboard surface of the inner pane are made less visible by waxing (AMM 12-16-03/301).

S 356-011
(2) Repair any minor or major scratches from the windows (AMM 56-21-01/801).

I. Procedure - Examine the Windows for Deterioration.

S 216-018
(1) Examine the windows for deterioration.

NOTE: Chips or deterioration can occur at the forward edge of the window. This is structurally satisfactory, but you can repair the damage.

S 356-019
(2) Repair the windows with deterioration if applicable (AMM 56-21-01/801).

J. Procedure - Examine the Window for Concavity

S 216-020
(1) Examine the window for concavity.

NOTE: "Concavity" is out of the contour of the window panes. The outer pane bends inward and the middle (cast acrylic) pane bends outward. A window that is bent is structurally satisfactory even if the middle and outer panes touch when the airplane is not pressurized.

S 356-021
(2) Repair a window that is bent.

NOTE: You can remove a window from the airplane and dry it.

K. Procedure - Examine the Windows for Visual Distortion

S 966-012

(1) Replace the windows that have very bad visual distortion, or window thickness that is not constant (AMM 56-21-01/401).

NOTE: High temperatures can cause the windows to be bent or not easy to see through.

L. Procedure - Examine the Windows for Leaks Between the Middle and the Outer Panes

S 966-022

(1) Replace the seals if these signs of leaks show on the window (AMM 56-21-01/401):
   (a) Fog and concavity show on the window.

   NOTE: If multiple adjacent windows near doors contain light amounts of fog, the seal replacement is not necessary. This can be caused by excessive humidity due to high density seating, changes in climate or location. Light fogging can be eliminated by running air conditioning packs at High Temperature to evaporate excessive moisture.

   Single windows with light amounts of fog may be caused by seal leaks and should be replaced.
   (b) Brown stains show near the seal or in the vent hole in the middle pane.
   (c) Water or ice between the middle and outer panes that is at or above the level of the middle pane vent hole.
   (d) Seals that are out of place, rolled back, or damaged.

PASSENGER WINDOWS - APPROVED REPAIRS

1. General
   A. This procedure has one task. This task is the repair of the external surface of the outer passenger window.

      NOTE: The windows for the overwing emergency exit hatches are also considered to be passenger windows.

   B. This task includes repairs that you can do with the windows installed in the airplane.
   C. The damage limits are given in 56-21-01/601, Passenger Windows - Inspection/Check.
   D. Use clean cotton gloves when you touch the windows to prevent more damage.
   E. Use only approved materials.
   F. Do not damage the window surface with finger rings or other sharp objects.

   TASK 56-21-01-308-001

2. Repair the Outer Pane External Surface
   A. Equipment
      (1) Optical Micrometer - Ace Model 966A
          Monocle Industries
          P.O. Box 2426
          Coppell, Tx U.S.A. 75019
          Tel (214) 393-9920
          Fax (214) 393-9926
      (2) Sander, Vibrating - Air Driven
          (with rubber pad) (Commercially Available)
      (3) Sanding Block - Rubber Block of Shore-A
          Durometer 35 Hardness (Optional: Wood Block
          with Several Layers of Flannel)
          (Commercially Available)
   B. Consumable Materials
      (1) Protective Coating - Spraylat SC-1071 (Ref 20-30-07)
      (2) G00117 Aluminum Foil Tape - Permacel P112
      (3) G00301 Protective Tape - Gizard Protex 20V
      (4) G01990 Canton (cotton) flannel cloth, clean and oil free
      (5) B00106 Chamois - KK-C-300
      (6) B00027 Buffing Compound - Learock No. 888
      (7) B00026 Buffing Compound - Learock No. S-30
      (8) B00702 Dustless Acrylic Window Cleaner
      (9) B00302 Plex-I-Glow Cleaner and Polish
      (10) Wilco Scratch Removing Compound No. 35
      (11) Wet-or-Dry Sandpaper No. 600-A to 100-A
      (12) A00925 Micromesh Cloths 1600 thru 8000 grit -
          Kit SN2

C. References
(1) 12-16-03/301, Passenger Windows
(2) 56-21-01/401, Passenger Windows
(3) 56-21-01/601, Passenger Windows

D. Access
(1) Location Zone
200 Upper Half of Fuselage

E. Procedure

S 228-002
(1) Use an optical micrometer to measure the window thickness. Obey the minimum thickness limits on the passenger windows. (Ref 56-21-01/601).

S 218-003
(2) Examine the condition of the seal. Replace the window if there are signs of condensation or seal damage (Ref 56-21-01/401).

S 958-004
(3) Apply protective tape to the window frame and the seal.

S 168-005
(4) Apply water spray, and remove loose dirt with your bare hand.

S 358-006
(5) Remove the window damage as follows:
(a) Remove minor clamshell surface chips, scratches and surface crazing with abrasive paper or cloth. Use 60-100 grit abrasive paper for deep scratches and bad crazing.

NOTE: If a minor repair is necessary, use a finer abrasive paper to reduce the time to polish the window. Do not attempt to repair only a local past of the surface area. This will cause visual distortion.

(b) Use sufficient water to keep the window surface cool and to flush away the grit and acrylic material removed.
(c) Rub with an abrasive paper in the horizontal direction. Rub the whole window surface.
(d) Rub with an abrasive paper in the vertical direction. Rub the whole window surface.

NOTE: If you rub with a rough grit abrasive paper for 2 to 5 minutes you will remove approximately 0.005 inches of acrylic. Change the abrasive paper frequently.

(e) Do the procedure until all the surface damage is removed and the window has a constant thickness.
(f) Rub with an abrasive paper for 2 minutes to make sure all the cracks and crazes are fully removed.

(g) Polish the window with graduations of abrasive materials. Use 100 - 600 grit paper and micromesh cloths of 1600 - 8000 grit. Continue each step until the polish marks are removed (normally 2 - 3 minutes). First move the sander horizontally to polish the window surface. Next, move the sander vertically across the window surface. Make sure the water flow is continuous.

S 228-007

(6) Measure the window thickness dimensions (Ref 56-21-01/601).

S 168-008

(7) Remove the water spray.

S 148-009

(8) Polish the window with buffing compound and a clean muslin or wool pad. If necessary, use coarse and fine compounds to get a glossy finish. If a rotary buffer is used, keep the wheel surface speed at 3200 feet-per-minute for rough compound and 4200 feet-per-minute for fine compound.

S 218-010

(9) Do a check of the window visually for optical quality. If the window is damaged, do the repair process again. Make sure the window pane thickness is greater than the limits permitted (Ref 56-21-01/601).

S 958-013

(10) Apply a protective coating or tape to the window.

S 428-012

(11) Install the window if necessary (Ref 56-21-01/401).

ENTRY/SERVICE DOOR VIEWPORT - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these tasks:
      (1) The removal of the viewport on the entry service door.
      (2) The installation of the viewport on the entry service door.
   B. The entry/service door viewport has three components: the outer pane, the window prism, and the heated window.

TASK 56-31-01-004-001

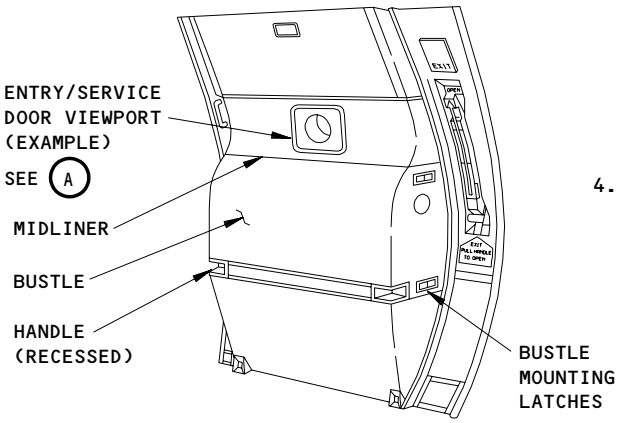
2. Remove the Entry/Service Door Viewport (Fig. 401)
   A. Consumable Materials
      (1) B00106 Chamois - KK-C-300
      (2) Castile Soap
      (3) Distilled or Demineralized Water
      (4) G00301 Tape - Protective Gizzard Protex 20V
      (5) G00034 Cheesecloth - New, Clean, Dry, Lint Free
      (6) Sealing Compounds

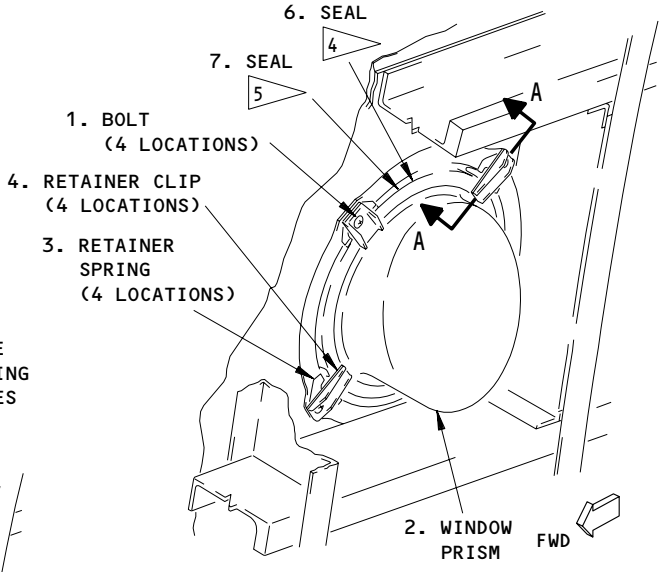
          NOTE: Use one of these:

          (a) A00247 BMS 5-95, Class B-1/2, or Class B-2
          (b) A00908 Aerodynamic Smoother - Pro Seal 860 Class B
      (7) B00083 Aliphatic Naphtha - TT-N-95A
      (8) A00303 Pressure Sealant - RTV 174
      (9) A00267 Pressure Sealant - DC 93-006
      (10) B00129 Alcohol - TT-I-735 Isopropyl
      (11) Shim Material - BACS40R aluminum
   B. References
      (1) IPC 56-31-01, Fig. 1
   C. Access
      (1) Location Zones
          200 - Upper Half of the Fuselage

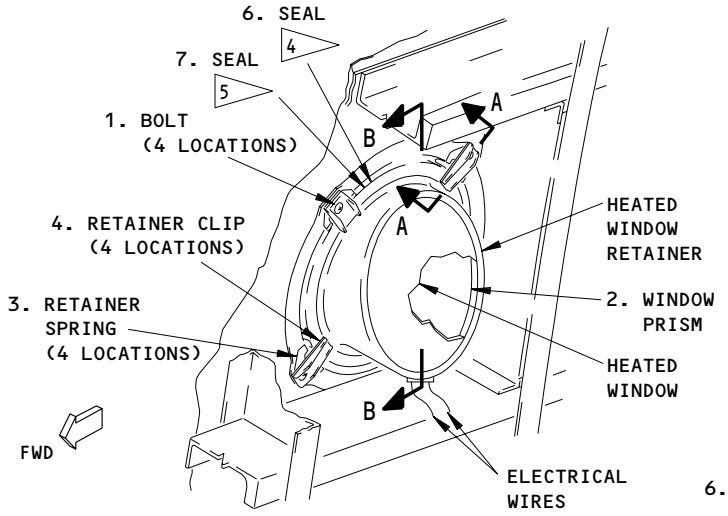
   D. Procedure - Remove the Viewport from the Entry/Service Door

      S 864-166
      (1) Open this circuit breaker on the overhead circuit breaker panel, P11, and attach DO-NOT-CLOSE tag:
          (a) 11U32, DOOR WINDOW HEATER

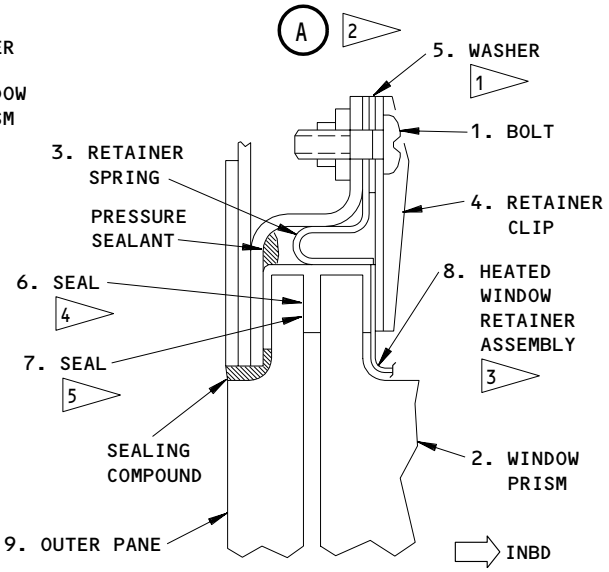




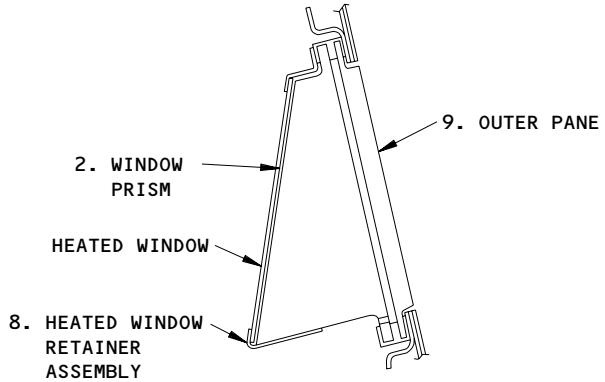
ENTRY/SERVICE DOOR VIEWPORT
(EXAMPLE)



ENTRY/SERVICE DOOR VIEWPORT
(EXAMPLE)
(A) 3



A–A



HEATED WINDOW AND RETAINER ASSEMBLY
B–B 3

1 ADD THIN WASHERS AS NECESSARY TO GET 0.03–0.07 INCH (0.76–1.77 mm) BETWEEN THE CLIP AND THE SPRING. MAKE SURE RETAINER CLIP PUTS SUFFICIENT FORCE TO KEEP THE WINDOW PRISM IN POSITION. MAKE SURE THE RETAINER CLIP KEEPS ITS PROPERTY AS A SPRING AND DOES NOT PUT TOO MUCH FORCE ON THE WINDOW PRISM.

2 AIRPLANES WITHOUT ELECTRICALLY HEATED WINDOW

3 AIRPLANES WITH ELECTRICALLY HEATED WINDOW

4 AIRPLANES WITHOUT SL 56–5A

5 AIRPLANES WITH SL 56–5A

Entry/Service Door Viewport
Figure 401

S 014-015
(2) Open the latch to remove the bustle.

S 034-016
(3) Remove the window midliner and the window reveal.

S 024-162
(4) Cut the electrical wires for the heated window at the splices.

NOTE: If you are changing the prism outer pane only, you do not have to do this step.

S 024-030
(5) Remove the bolts (1), washers (5), retainer clips (4), and the retainer spring (3).

S 024-042
(6) Remove the heated window and the retainer assembly (8).

S 024-122
(7) Remove the window prism (2), the outer pane (9), and the viewport seal (7).

S 034-044
(8) Remove the sealing compound and the pressure sealant from the structure.

S 034-045
(9) Remove the viewport seal from the prism and the outer pane, if you will change the viewport seal.

S 494-046
(10) If you will use the prism or the outer pane again, apply the protective tape to the two surfaces.

TASK 56-31-01-404-047

3. Install the Entry/Service Door Viewport (Fig. 401)

A. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Bolt	56-31-01	01	10
	2	Prism			30 35
	3	Spring (Retainer Spring)			25
	4	Clip (Retainer Clip)			20
	5	Washer			15
	9	Outer Pane			40

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	7	Seal *[2]	56-31-01	01	47 50 57
	8	Window Assembly (Heated Window & Retainer Assembly) *[3]	56-31-01	01	60 65

*[2] AIRPLANES WITH SL 56-6A.
*[3] SB 56-3.

B. Access

(1) Location Zones
200 - Upper Half of the Fuselage

C. Procedure - Install the Viewport on the Entry/Service Door

S 114-048
(1) Clean the window frame with the aliphatic naphtha.

S 114-049
(2) Before the aliphatic naphtha dries, remove it with a clean cheesecloth.

S 094-050
(3) Remove the protective covering from the inner surface of the outer pane and from the outer surface of the prism.

S 114-051
(4) Clean the inner surface of the outer pane and the outer surface of the prism with warm water and castile soap. Apply a soap solution to the window with a soft, clean cloth.

S 114-052
(5) Remove the soap with distilled or demineralized water.

S 114-053
(6) Dry the window surfaces with a clean, moist chamois.

S 224-054
(7) Examine the curve in the outer pane. Put a straight edge across the surface of the pane and above the dot.

S 224-055
(8) Make sure the clearance between the window and the straight edge is 0.03-0.05 inch at the center of the pane.

S 224-056
(9) Turn the straight edge 90 degrees. The pane must be flat in this axis.

S 224-057
(10) If the clearance is less than 0.03 inch in the axis of the dot, usually the pane is too flat.

NOTE: It is also possible that the dot is not in the correct location. Measure the clearance again along a different axes with the straight edge.

S 224-058
(11) Measure the clearance again along a different axes with the straight edge. Make a new dot if the correct curvature axis is found.

NOTE: If the pane is too flat, install a new pane.

S 434-059
(12) Install the outer pane (9) in the channel of the viewport seal that has the narrow flange.

NOTE: The viewport seal has two channels: one for the outer pane, and one for the window prism. The flanges adjacent to these two channels are not the same width.
Install the outer panel adjacent to the flange with the largest width. Install the window prism adjacent to the flange with the small width.

S 434-060
(13) Install the window prism (2) in the channel of the viewport seal that has the wider flange. Align the dot on the outer pane with the hole at the bottom of the prism flange.

S 424-061
(14) Install the assembled viewport in the frame. Make sure the dot and hole are at the bottom center of the hole in the door skin.

S 224-062
(15) Make sure the outer pane is in the center of the hole in the door skin, ±0.03 inches.

S 424-075
(16) Install the heated window and the retainer assembly (8).

S 424-076
(17) Install the retainer springs (3), retainer clips (4), washers (5), and the bolts (1).

S 824-077
(18) Align the retainer assembly as follows:
(a) Hold the assembled windows and the seal tightly against the door window frame.
(b) Make sure the clearance between the retainer clip and the retainer spring is between 0.03-0.07 inch.

S 824-114
(19) Install the washers (5), if it is necessary, to get the 0.03-0.07-inch clearance.
(a) If there is no clearance, install the bolt to hold the retainer clip in its position.
(b) Examine for a clearance between the retainer clip and the window seal.

S 824-079
(20) Install the necessary shims between the retainer clip and window seal.

NOTE: Make shims from the BACS40R aluminum to 0.5 x 0.75 inch.

S 354-080
(21) Bond the shim to the retainer clip.

S 394-081
(22) Fill the area all around the outer side of the external clearance with the sealing compound.

S 394-082
(23) Add a fillet of the pressure sealant as shown all around the outer side of the viewport seal.

S 094-083
(24) Remove the protective cover from the surfaces of the viewport that you can see.

S 114-084
(25) Clean the surfaces of the viewport that you can see.

S 434-085
(26) Install the window midliner and the window reveal.

S 424-098
(27) Connect the wires for the heated window.

S 434-099
(28) Install the bustle.

S 864-112
(29) Remove the DO-NOT-CLOSE tag and close this circuit breaker on the P11 panel:
(a) 11U32, DOOR WINDOW HEATER

S 714-113
(30) Make sure the heated windows operate correctly.

DOOR VIEWPORT WINDOWS - INSPECTION/CHECK

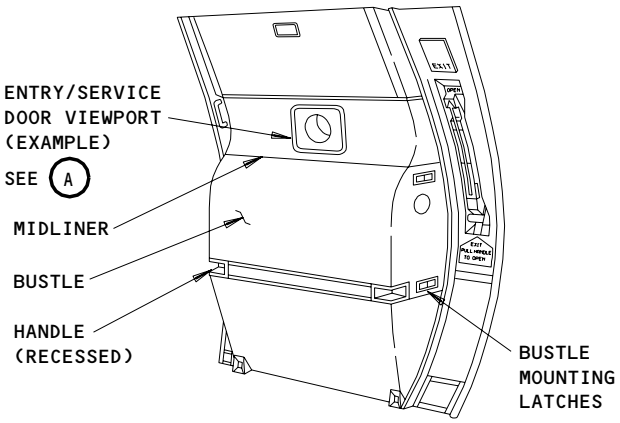
1. General
   A. This procedure contains one task. The task is to examine the viewport windows on the entry/service doors for repair.
   B. The entry/service door viewport has three windows; the outer pane, the window prism, and the heated window.
   C. The damage as described below applies to all Service/Entry door window components: the outer pane, the window prism and the heated window. If the windows are damaged as specified in this procedure, remove the windows and replace or repair the damaged components.
   D. Crack:
      (1) If you look parallel to the face of a crack, you can see that the crack has a width. The direction of the force causes the cracks to go at angles to the surface of the viewport windows. A scratch or craze on the viewport windows can cause the crack to increase.
   E. Crazing:
      (1) A craze on the viewport windowpane has a number of very thin cracks which are 90 degrees to the surface of a viewport window. Because the cracks are very thin, it is not easy to see the crazing. When you look at a viewport window from a different angle, you can see the crazing by its reflection on the smooth surface of the viewport window.
   F. Scratch:
      (1) A scratch occurs when there is removal of material from the surface of a viewport window along a line. The depth of a scratch is usually not larger than the width of the scratch.
   G. Chips:
      (1) A chips occurs when there is removal of material from the surface of a viewport window along a line. This chip in a viewport window can have a circular shape or a "V" shape.

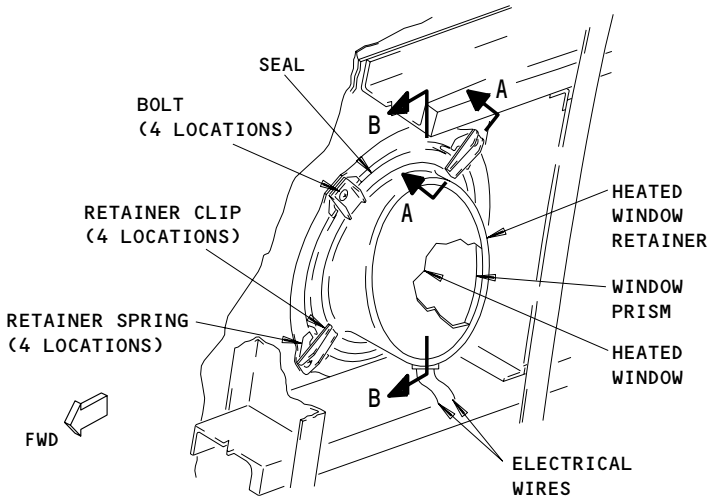
TASK 56-31-01-206-016

2. Examine the Entry/Service Door Viewport Windows
   A. References
      (1) AMM 56-31-01/401, Entry/Service Door Viewport
      (2) AMM 56-31-01/801, Entry/Service Door Viewport
   B. Access
      (1) Location Zones
          830/840 Upper Half of Fuselage (Left/Right)

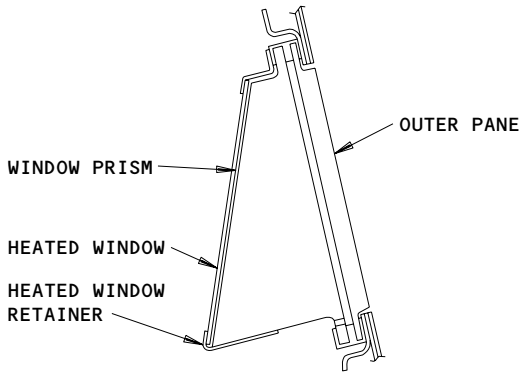
   C. Procedure - Examine the Entry/Service Door Window Outer Pane

      S 216-007
      (1) Examine the outer pane for cracks.

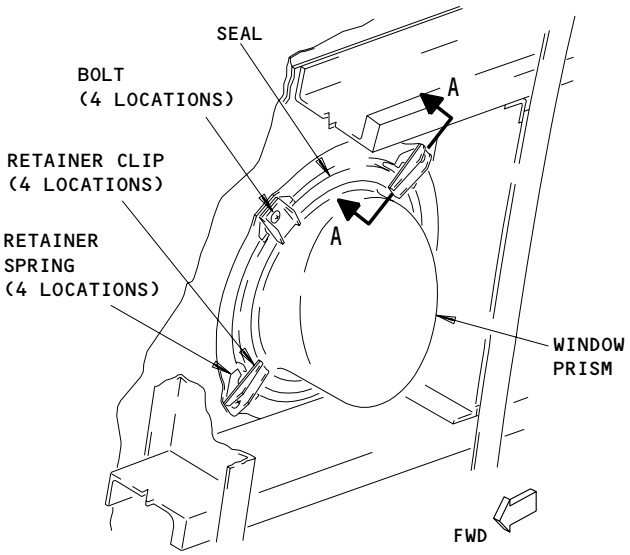




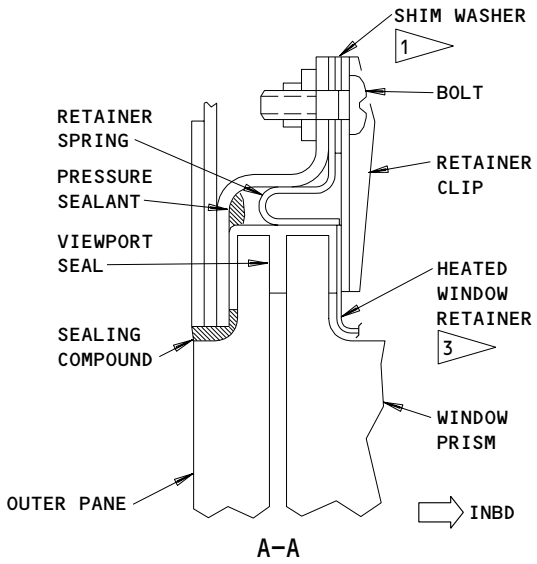
ENTRY/SERVICE DOOR VIEWPORT
(EXAMPLE)
A 3



HEATED WINDOW AND RETAINER ASSEMBLY
B-B 3



ENTRY/SERVICE DOOR VIEWPORT
(EXAMPLE)
A 2



A-A

1 ADD THIN WASHERS AS NECESSARY TO GET 0.03 TO 0.07 INCH BETWEEN THE CLIP AND THE SPRING. MAKE SURE RETAINER CLIP PUTS SUFFICIENT FORCE TO KEEP THE WINDOW PRISM IN POSITION. MAKE SURE THE RETAINER CLIP KEEPS ITS PROPERTY AS A SPRING AND DOES NOT PUT TOO MUCH FORCE ON THE WINDOW PRISM.

2 AIRPLANES WITHOUT ELECTRICALLY HEATED WINDOW

3 AIRPLANES WITH ELECTRICALLY HEATED WINDOW

Entry/Service Door Viewport
Figure 601

S 966-002

WARNING: REPLACE A CRACKED OUTER PANE IMMEDIATELY. A CRACKED OUTER PANE CAN FAIL AND CAUSE THE FUSELAGE PRESSURE TO DECREASE.

(2) Replace a cracked outer pane immediately (AMM 56-31-01/401).

S 216-003

(3) Examine the outer pane for crazing.

NOTE: If the crazing affects your ability to see out of the window, repair or replace the window.

S 216-005

(4) Examine the outer pane for scratches and chips.

S 346-006

(5) Remove scratches and chips from the outer pane (AMM 56-31-01/801).

S 216-009

(6) Examine the outer pane for the correct curve.

S 966-010

(7) Replace the outer pane if the curve is not correct (AMM 56-31-01/401).

D. Procedure - Examine the Entry/Service Door Window Prisms

S 216-019

(1) Examine the window prism for cracks.

S 966-020

WARNING: REPLACE A CRACKED WINDOW PRISM IMMEDIATELY. A CRACKED WINDOW PRISM CAN FAIL AND CAUSE THE FUSELAGE PRESSURE TO DECREASE.

(2) Replace a cracked window prism immediately (AMM 56-31-01/401).

S 216-021
(3) Examine the window prism for crazing.

S 966-018
(4) Some crazing of the prismatic pane is permitted. If the crazing decreases the visual capacity of the area where the escape slide would be in an emergency, repair or replace the prismatic pane (AMM 56-31-01/401).

S 216-022
(5) Examine the window prisms for scratches and chips.

S 346-023
(6) Remove scratches and chips from the window prism (AMM 56-31-01/801).

S 216-014
(7) Examine the heated window for these conditions:
(a) scratches
(b) cracks
(c) chips
(d) damaged rubber seals
(e) damaged electrical connections
(f) electrical arcs

S 966-015
(8) Replace the heated window, if it is necessary (AMM 56-31-01/401).

NOTE: The heated window is too thin to repair.

E. Procedure - Examine the Entry/Service Door Windows for Seal Leaks

NOTE: Condensation between the outer pane and the window prism is caused by the cabin pressurized air leakage past the viewport seal. If the viewport seal was installed incorrectly, condensation can occur.

S 216-000
(1) Examine the window prism for brown stains around the outer edges.

NOTE: Brown stains are signs of air leakage.

S 216-011
(2) Examine the seal for damage.

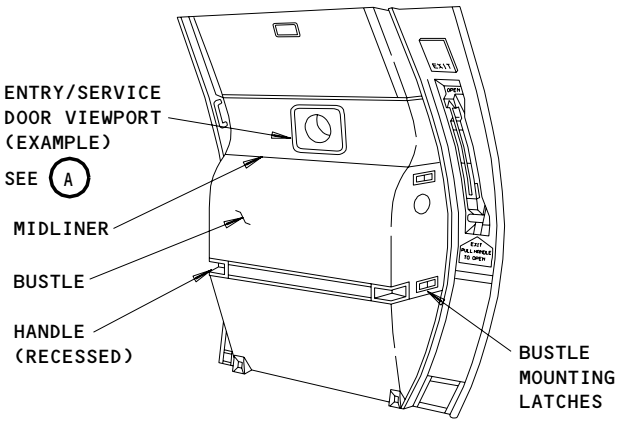
S 966-012
(3) Replace the damage seal, if it is necessary (AMM 56-31-01/401).

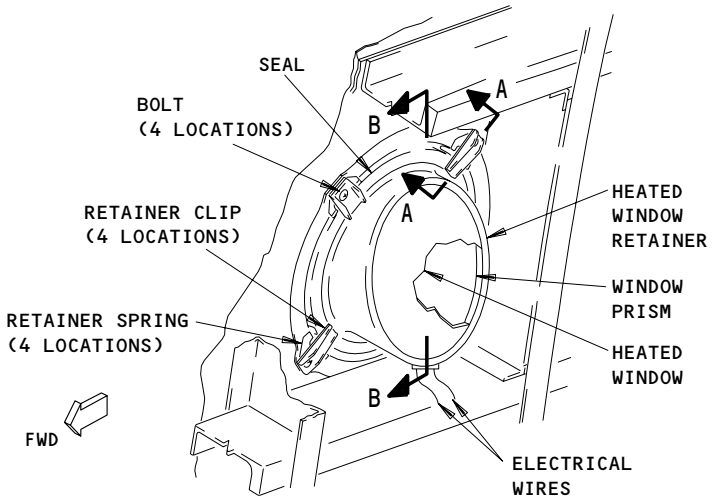
DOOR VIEWPORT WINDOWS - APPROVED REPAIRS

1. General
   A. This procedure contains one task. The task is the repair of the entry/service door viewport windows.
   B. The entry/service door viewport has three windows: the outer pane, the window prism, and the heated window.

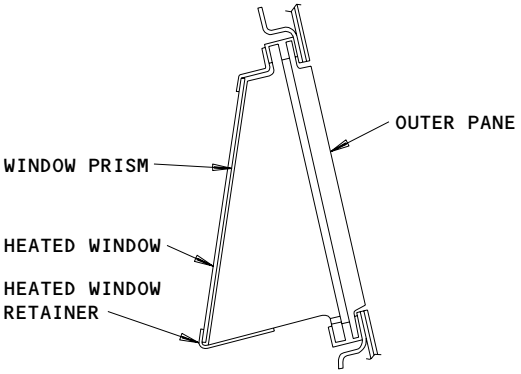
TASK 56-31-01-308-025

2. Repair the Entry/Service Door Viewport Windows
   A. Equipment
      (1) Sander, Vibrating - Air Drive (with rubber pads, Commercially available)
      (2) Sanding Block - Rubber Block of Shore - A Scale, Durometer 35 Hardness (Optional: Wood block with several layers of flannel, commercially available)
   B. Consumable Materials
      (1) G00191 Protective Finish - Spraylat SC-1071
      (2) G00301 Protective Tape - Gizard Protex 20V
      (3) G01990 Canton (cotton) Flannel Cloth, clean and oil free
      (4) Buffing Compound:
         (a) B00027 Learock No. 808
         (b) B00026 Learock No. 5-30
      (5) Window Cleaner:
         (a) B00702 Dustless Acrylic Window Cleaner
         (b) B00302 Plex-I-Glow Cleaner and Polish
         (c) B00712 Micro-Gloss Cleaner
      (6) G02124 Abrasive Paper - 100 thru 600-grit
      (7) A00925 Micromesh Cloths 1600 thru 8000-grit, Kit SN2
      (8) Polish:
         (a) B00303 Mirror Glaze Polish, MGH-10
         (b) B00304 Mirror Glaze Polish, MGH-17
      (9) Clean Cotton Gloves - Commercially available
      (10) Wax - Commercially available
      (11) Abrasive Compound
   C. References
      (1) AMM 12-16-03/301, Passenger Windows
      (2) AMM 56-31-01/401, Entry/Service Door Viewport - Removal/Installation
      (3) AMM 56-31-02/601, Entry/Service Door Viewport Inspection/Check
   D. Access
      (1) Location Zones
         830/840 Upper Half of Fuselage (Left/Right)

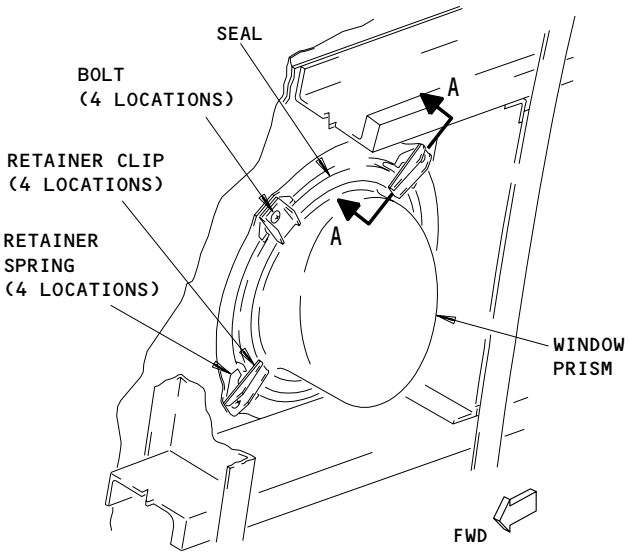




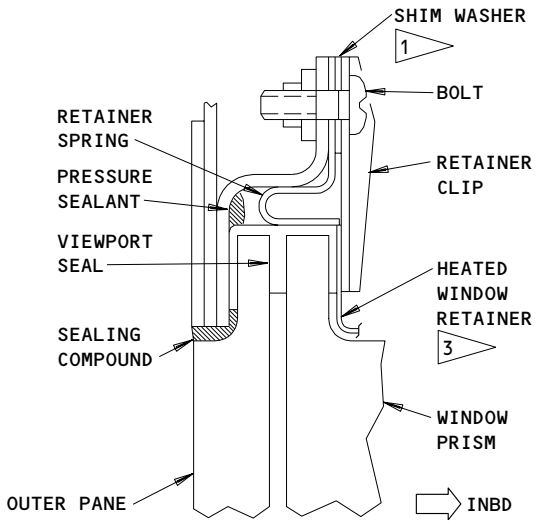
ENTRY/SERVICE DOOR VIEWPORT
(EXAMPLE)
A 3



HEATED WINDOW AND RETAINER ASSEMBLY
B-B 3



ENTRY/SERVICE DOOR VIEWPORT
(EXAMPLE)
A 2



A-A

1 ADD THIN WASHERS AS NECESSARY TO GET 0.03 TO 0.07 INCH BETWEEN THE CLIP AND THE SPRING. MAKE SURE RETAINER CLIP PUTS SUFFICIENT FORCE TO KEEP THE WINDOW PRISM IN POSITION. MAKE SURE THE RETAINER CLIP KEEPS ITS PROPERTY AS A SPRING AND DOES NOT PUT TOO MUCH FORCE ON THE WINDOW PRISM.

2 AIRPLANES WITHOUT ELECTRICALLY HEATED WINDOW

3 AIRPLANES WITH ELECTRICALLY HEATED WINDOW

Entry/Service Door Viewport
Figure 801

E. Procedure - Repair the Entry/Service Door Viewport Windows

S 218-011

(1) Examine the viewport windows for damage (AMM 56-31-01/601).

S 028-012

CAUTION: MAKE SURE YOU DO NOT SCRATCH THE VIEWPORT WINDOWS WHEN YOU REMOVE THEM. USE CLEAN COTTON GLOVES WHEN YOU TOUCH THE VIEWPORT WINDOWS. DAMAGE TO THE VIEWPORT WINDOWS CAN OCCUR IF YOU ARE NOT CAREFUL.

(2) If damage is found on the viewport windows, remove the entry/service door viewport and its components (AMM 56-31-01/401).

S 218-013

(3) Examine the condition of the seals. Replace the seals if moisture or damage is found.

F. Procedure - Repair the Entry/Service Door Viewport Prism

S 218-014

(1) Examine the window prism for damage (AMM 56-31-01/601).

S 358-038

(2) Do the steps that follow to repair the window prism:

CAUTION: DO NOT TRY TO REPAIR THE SURFACE DAMAGE ON A LOCAL AREA OF THE WINDOW PRISM. MAKE SURE YOU REPAIR THE FULL SURFACE OF THE WINDOW PRISM TO PREVENT OPTICAL DISTORTION.

KEEP THE SURFACE OF THE WINDOW PRISM COOL. APPLY A SUFFICIENT QUANTITY OF WATER WHEN YOU RUB OR POLISH THE SURFACE. THE HEAT THAT OCCURS WHEN YOU RUB OR POLISH THE SURFACE CAN CAUSE DAMAGE TO THE WINDOW PRISM.

(a) Rub the surface of the window prism with 100-grit abrasive paper.

NOTE: You can use a vibrating sander (at approximately 800 cpm).

The remaining mounting flange thickness should be no less than 0.37 INCH.

(b) Rub the surface again until all of the surface damage is removed. Change the abrasive paper frequently.

(c) Use a vibrating sander to make the surface smooth as follows:

1) To start use 100-grit abrasive paper on the vibrating sander.

2) After two to three minutes change to 200-grit abrasive paper.
3) Continue to make the surface smooth. Do these steps again and increase the grit of the abrasive paper until you use 600-grit abrasive paper.
4) Use the vibrating sander again with 1600-grit micromesh cloth.
5) Do these steps again and increase the grit of the micromesh cloth until you use 8000-grit micromesh cloth.

(d) Remove all unwanted material and water from the surface of the window prism.
(e) Use a canton flannel cloth to polish the surface of the window prism with a buffing compound. If it is necessary, use an abrasive compound to get a glossy finish.

S 218-017
(3) Examine the window prism for optical quality.

NOTE: If the window prism does not have a satisfactory optical quality, replace the window prism.

S 348-018
(4) Polish the window prism with wax and apply the protective finish or protective tape.

G. Procedure - Repair the Heated Window Assembly

S 228-037
(1) Examine the heated window assembly for these conditions (AMM 56-31-01/601):
(a) scratches
(b) cracks
(c) chips
(d) crazes
(e) damaged rubber seals

(f) damaged electrical connection (AMM 56-31-01/401)
(g) electrical arcs.

S 828-040
(2) If you find damage, replace the heated window assembly.

NOTE: The heated window is too thin to repair.

S 168-020
(3) Use the window cleaner to clean the heated window.

S 348-021
(4) Polish the heated window with the wax and apply the protective finish or protective tape.

S 428-019
(5) Install the entry/service door viewport windows and its components (AMM 56-31-01/401).