KSSU Group

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CHAPTER 56 - WINDOWS

TABLE OF CONTENTS

FAULT CODE	LOG BOOK REPORT/ CORRECTIVE ACTION
56 00 XA 00	The flight crew found a flight deck window problem that is not on the fault code diagram in the FRM. See the entry that the flight crew wrote in the log book. 1. MM 56-11-01/601, MM 56-11-02/601
56 00 01 00	Passenger window at (locate by seat number) is (describe condition: cracked, crazed, fogged, dirty, etc) (Ref Chapter 25 for fault code ram). 1. Inspect window for allowable damage limits (MM 56-21-01/601).
56 00 02 --	(01=L1, 02=L2, 03=L3, 04=L4, 05=L5, 06=R1, 07=R2, 08=R3, 09=R4, 10=R5, 11=L U/D, 12=R U/D) passenger entry door window is (describe condition: cracked, crazed, fogged, dirty, etc) (Ref Chapter 25 for fault code diagram). 1. Inspect window for allowable damage limits (MM 56-21-01/601).
56 00 03 00	Not Used.
56 00 04 __	Evidence of air leaking at (01=1L, 02=2L, 03=3L, 04=1R, 05=2R, 06=3R) window. (Describe area if possible) (Ref/Chapter 25 for fault code diagram). 1. Replace or reinstall window if pressure leak is objectionable (MM 56-11-01/401 or MM 56-11-02/401).
56 00 05 __	(01=L1, 02=2L, 03=3L, 04=1R, 05=2R, 06=3R) window has delamination (Describe size and area) (Ref Chapter 25 for fault code diagram). 1. Inspect window for allowable damage limits (MM 56-11-01/601 or MM 56-11-02/601).
56 00 06 __	(01=1L, 02=2L, 03=3L, 04=1R, 05=2R, 06=3R) window has crack (Describe) (Ref Chapter 25 for fault code diagram). 1. Inspect window for allowable damage limits (MM 56-11-01/601 or MM 56-11-02/601).
56 00 07 __	(01=1L, 02=2L, 03=3L, 04=1R, 05=2R, 06=3R) window is chipped (Describe location) (Ref Chapter 25 for fault code diagram). 1. Inspect window for allowable damage limits (MM 56-11-01/601 MM 56-11-02/601).
56 00 08 __	(01=1L, 02=2L, 03=3L, 04=1R, 05=2R, 06=3R) window is crazed (Describe location) (Ref Chapter 25 for fault code diagram). 1. Inspect window for allowable damage limits (MM 56-11-01/601 or MM 56-11-02/601).

FAULT CODE	LOG BOOK REPORT/ CORRECTIVE ACTION

56 00 09 __ (01=1L, 02=2L, 03=3L, 04=1R, 05=2R, 06=3R) window is scratched (Describe location) (Ref Chapter 25 for fault code diagram).
1. Inspect window for allowable damage limits (MM 56-11-01/601 or MM 56-11-02/601).

56 00 10 __ (01=1L, 02=2L, 03=3L, 04=1R, 05=2R, 06=3R) window has bubbles forming (Describe area) (Ref Chapter 25 for fault code diagram).
1. Inspect window for allowable damage limits (MM 56-11-01/601 or MM 56-11-02/601).

56 00 11 00 Windows need cleaning (Ref Chapter 25 for fault code diagram).
1. Clean windows (MM 12-16-03/301).

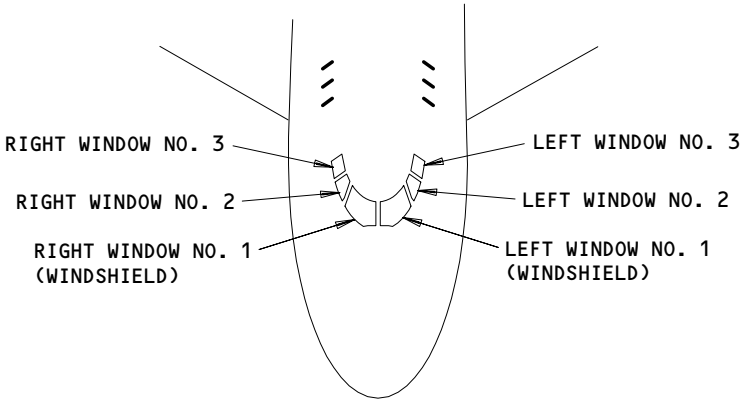
WINDOWS - DESCRIPTION AND OPERATION

1. General
   A. The windows on the airplane are grouped as follows:
      (1) Flight Compartment Windows (Ref 56-11-00/001).
      (2) Passenger Windows (Ref 56-21-00/001).
      (3) Door-Mounted Windows (Ref 56-31-00/001).
   B. All windows, except the interior compartment viewers, are designed to withstand cabin pressurization loads and are designed with fail-safe features.

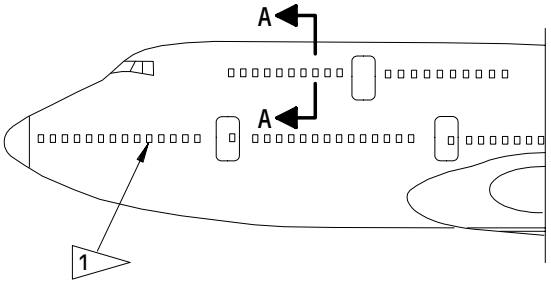
WINDOWS

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
WINDOW - NO. 1 (WINDSHIELD)	--	2	FLT COMPT	56-11-01
WINDOW - NO. 2	--	2	FLT COMPT	56-11-02
WINDOW - NO. 3	--	2	FLT COMPT	56-11-02
PANE - OUTER PASSENGER WINDOW	--	1	PASSENGER COMPARTMENT EACH WINDOW	56-21-01
PANE - MIDDLE PASSENGER WINDOW	--	1	PASSENGER COMPARTMENT EACH WINDOW	56-21-01
REVEAL - PASSENGER INNER WINDOW	--	1	PASSENGER COMPARTMENT EACH WINDOW	56-21-01
SEAL - PASSENGER WINDOW	--	1	PASSENGER COMPARTMENT EACH WINDOW	56-21-01

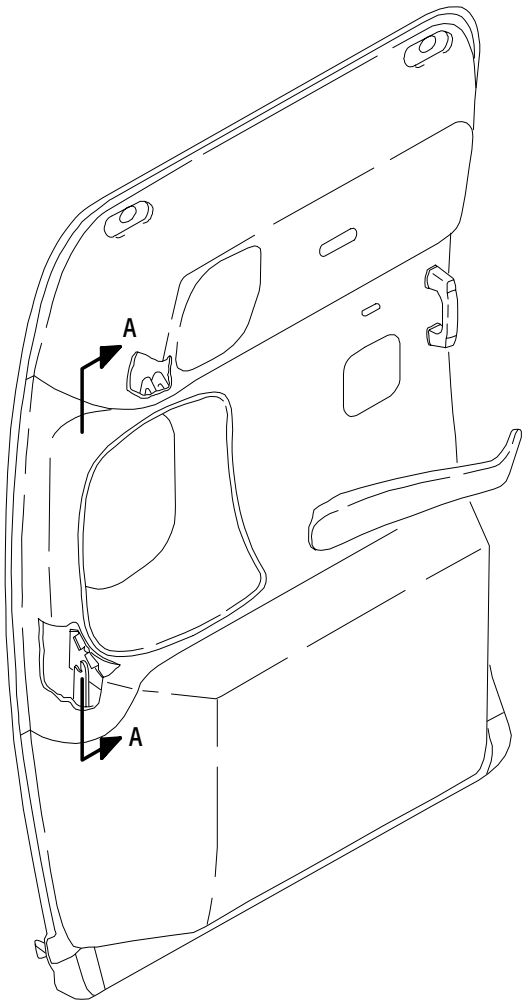
Windows - Component Index
Figure 101



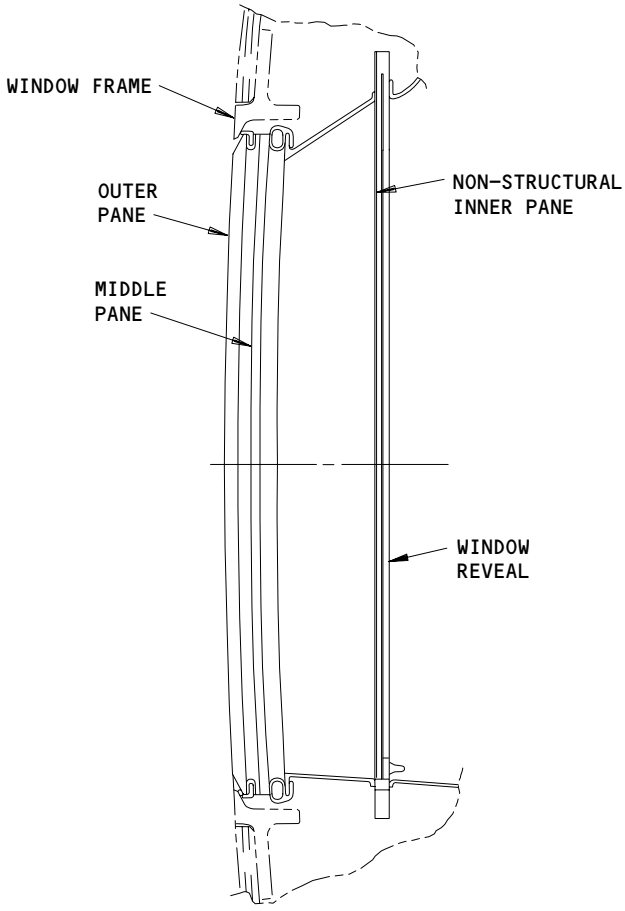
FLIGHT COMPARTMENT WINDOWS



PASSENGER WINDOWS



DOOR MOUNTED WINDOW



A-A

1 ON PASSENGER AND COMBI AIRPLANES ONLY

Windows - Component Location
Figure 102

FLIGHT COMPARTMENT WINDOWS - DESCRIPTION AND OPERATION

1. General
   A. Six windows are symmetrically located around the forward end of the flight compartment. The windows are designated right side and left side windows No. 1, 2, and 3, as shown on Fig. 1. The corresponding left and right windows are identically opposite assemblies.
   B. All flight compartment windows are of laminated construction. The No. 1 windows, which are the pilots' windshields, consist of a greater number of laminations to withstand bird impact with or without window heat.
   C. Pressure sealing is accomplished with a gasket or rubber-beaded seal molded to the windshield frame and the No. 2 and 3 window frames. An aerodynamic seal is accomplished by filling the gap between window edge and fuselage skin flush with aerodynamic smoother. This also serves as a weather seal for keeping out moisture.
2. No. 1 Windows (Fig. 2)
   A. The left No. 1 window is the captain's windshield. The right No. 1 window is the first officer's windshield. The left and right windshields are opposite assemblies and installations.
   B. Each windshield weighs approximately 150 pounds and consists of transparent layers secured between a Z-frame and mounting ring. The layer construction allows for thermal differentials and prevents crack propagation between the structural layers. The Z-frame and mounting ring attach to the fuselage structure surrounding the windshields.
   C. Two types of No. 1 windows can be installed: a five-layer soda-lime glass laminate or a five-layer tempered glass and soda-lime glass laminate. These windows are completely interchangeable regardless of manufacturer.
   D. Some airplanes have a hydrophobic coating on the No. 1 windows. The rain repellant system will be disconnected on these airplanes.
      (1) Windshields are constructed of five layers: an outer tempered glass layer, a polyvinyl butyral (PVB) interlayer, a glass structural ply, a PVB interlayer and a glass crew shield, which is a structural ply. Windshields have a bluish-green tint. Fine vertical lines may be visible. These lines, called isolation lines, are minute separations between vertical strips of conductive coating which limit coating burnout to the affected strip.
   E. The inner face of the face ply is covered with a conductive coating, which is part of the antifogging and anti-icing systems. Bus bars, embedded in the windshield layers, contact the conductive surface near the top and bottom of the windshield. Two temperature control sensors are laminated into the windshield adjacent to the conductive coating. Only one control sensor is used; one is a spare that is used only if the other fails. Wires from the bus bars and sensors extend through the windshield laminations to the terminals on the inner face.
3. No. 2 and 3 Windows (Fig. 3)
   A. The left No. 2 and 3 windows are the captain's side windows. The right No. 2 and 3 windows are the first officer's side windows. The left and right windows are opposite assemblies and installations.

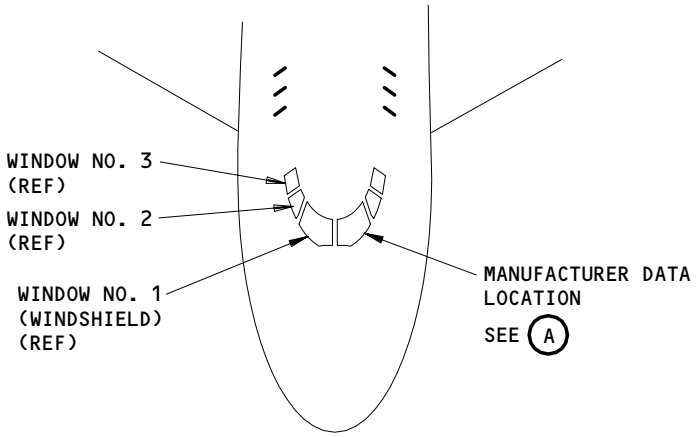
B. The side windows are designed to be installed from inside the flight deck. They act as a plug and minimizes cabin pressure leakage by compressing the side window pressure seal. When the airplane is pressurized, cabin pressure acting against a side window's surface, forces the side window against the airplane's frame, thus the side window loading acts directly against the airplane structure not through the fasteners.

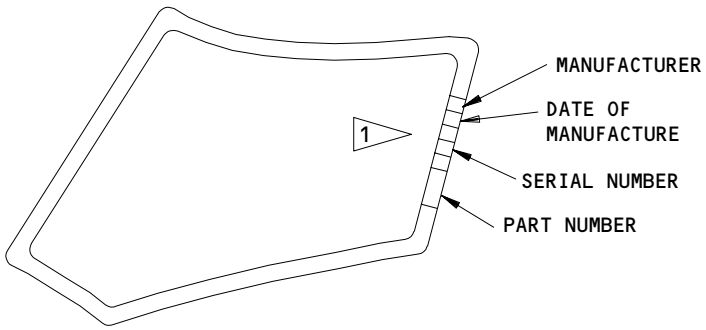
C. The No. 2 and 3 windows each consist of an inner and an outer pane with a plasticized vinyl interlayer between them. The interlayer allows for thermal differentials and prevents crack propagation between the panes (Fig. 1).

D. The windowpanes are made of tempered glass. Each pane will withstand full cabin pressure should one pane fail.

E. The outboard face of the inner glass ply is covered with a transparent electrically conductive coating for the antifogging system. Bus bars, embedded in the window layers, contact the conductive surface near the forward and aft edges of the windows. The overheat thermostat for the window is held against the inside surface of the window by a spring retainer. A control sensor is retained against the inner pane with a torsion spring. The sensor is replaceable and is provided with pigtails for electrical hook-up.

F. The glass window assemblies are secured with standard fasteners. Rubber washers are installed on the inside surface of the window assembly. Either a metal washer or bracket is installed over the washer followed by the nut. Various brackets are installed including the control thermostat mounting bracket and wire harness mounting brackets.

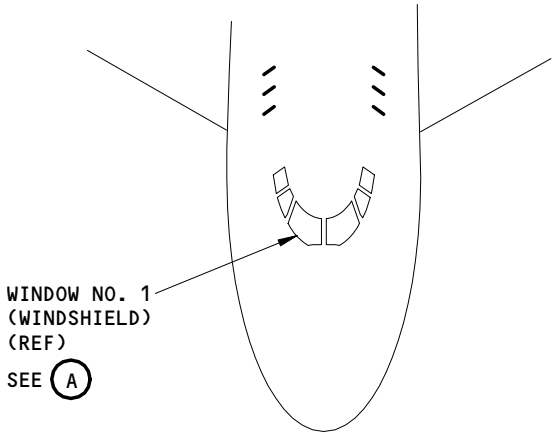


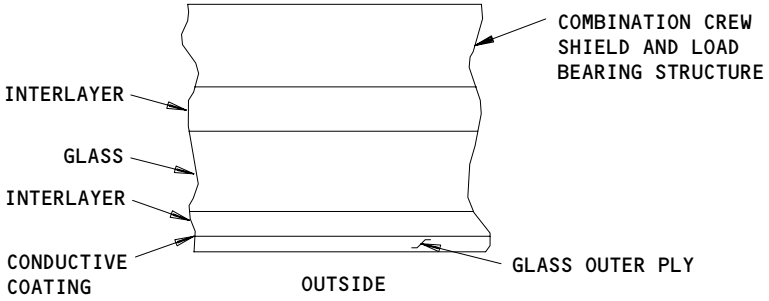


MANUFACTURER DATA LOCATION
(EXAMPLE)
A

1 MANUFACTURER DATA CAN BE LOCATED
ON WINDOW ADJACENT TO FRAME

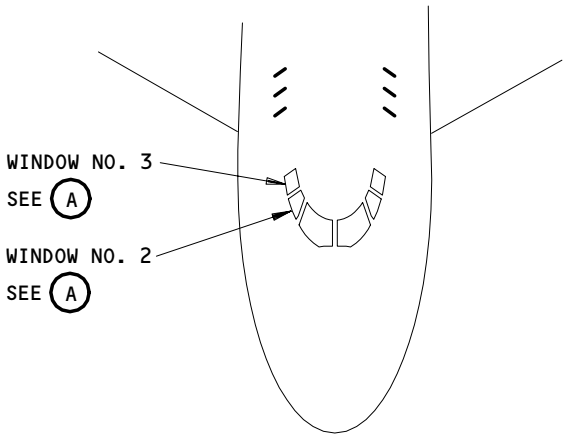
Flight Compartment Windows
Figure 1

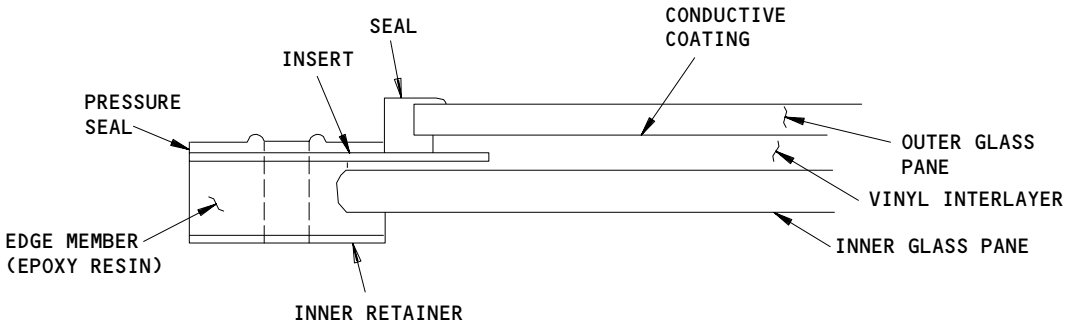




NO. 1 WINDOW
PREFIX T SERIAL NUMBER
(TRIPLEX WINDOW)
A

No. 1 Flight Compartment Window
Figure 2

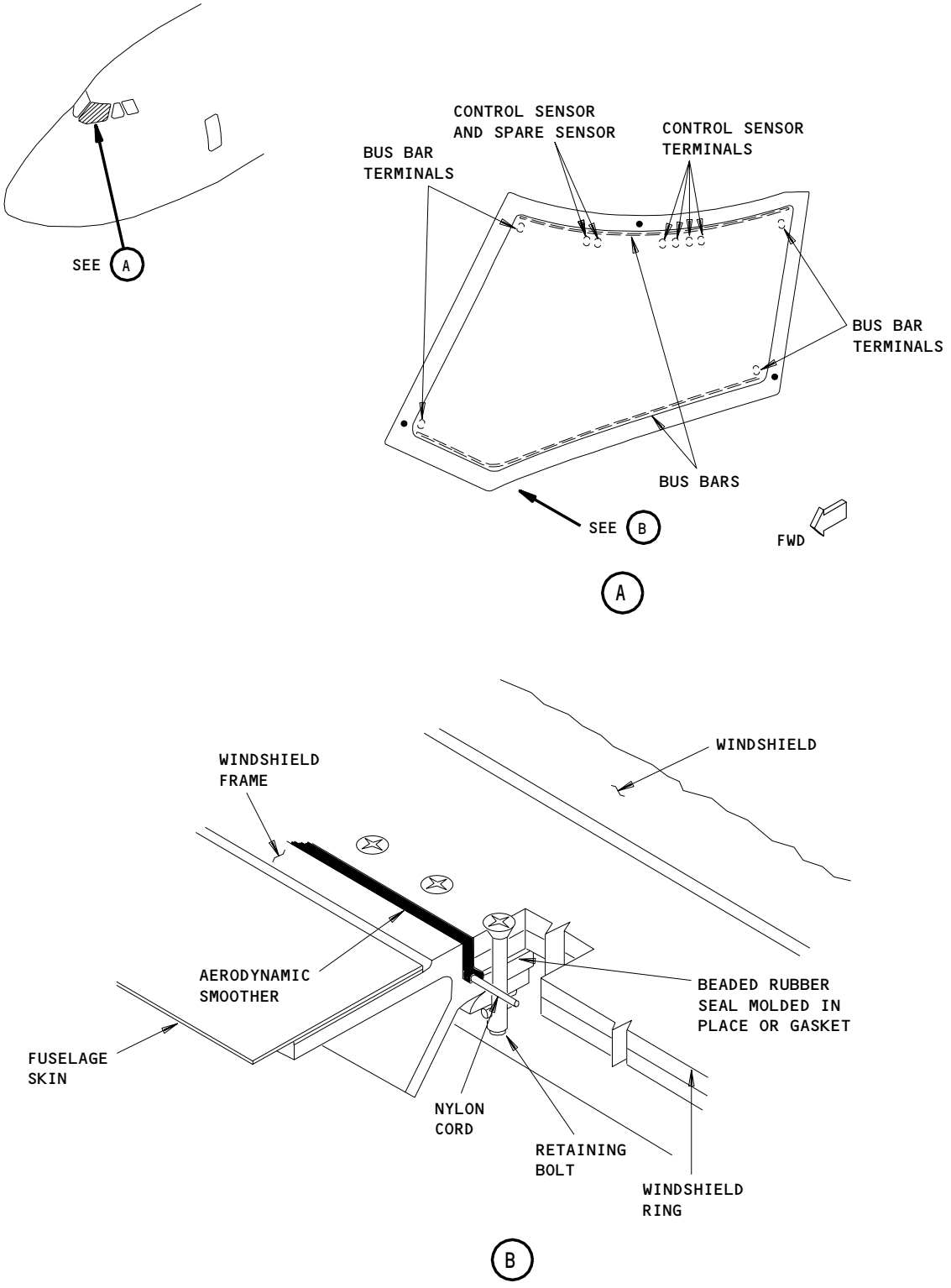




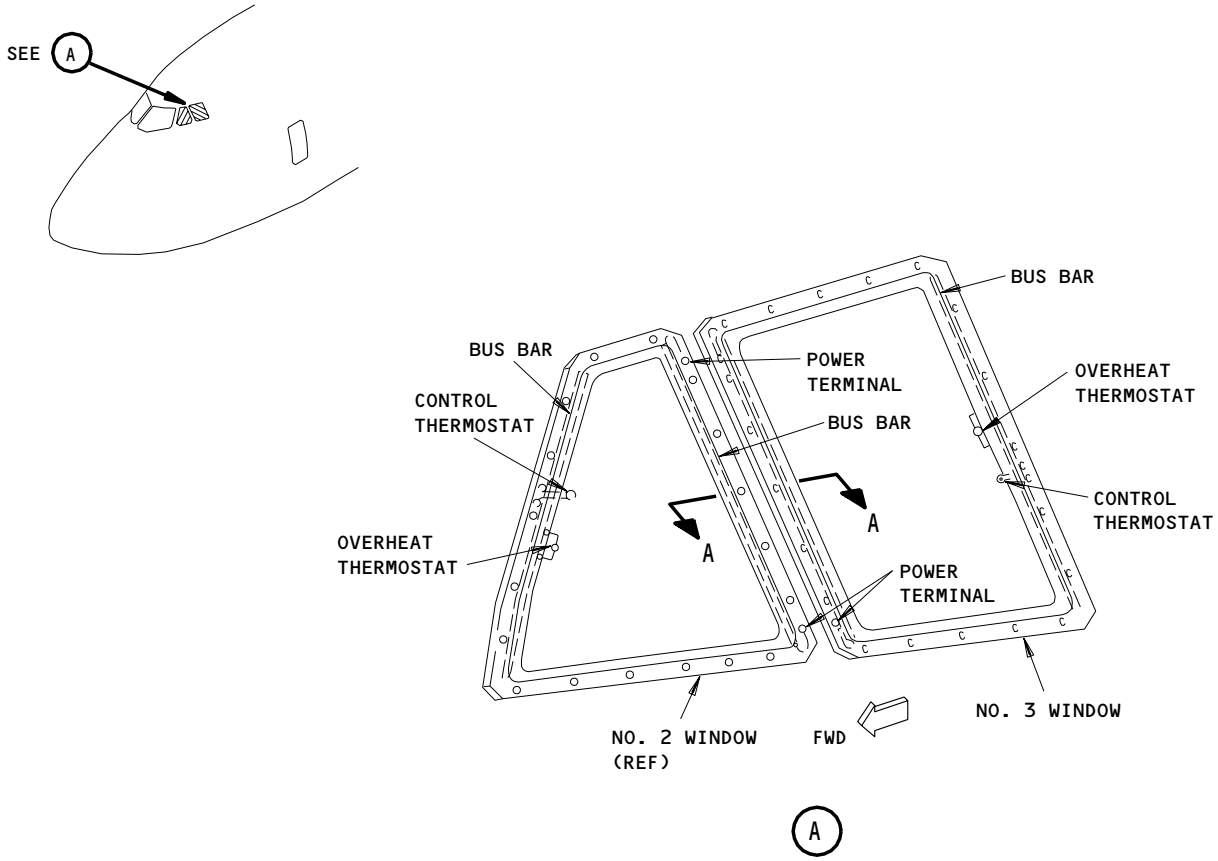
NO. 2 AND 3 WINDOW
PREFIX T SERIAL NUMBER
(TRIPLEX WINDOW)

A

No. 2 and 3 Flight Compartment Windows
Figure 3



Flight Compartment Window No. 1
Figure 4



Flight Compartment Windows No. 2 and 3
Figure 5

FLIGHT COMPARTMENT WINDOWS - REPAIRS

1. General
   A. This procedure contains the following tasks:
      (1) Repair of the aerodynamic smoother for the flight compartment windows.
      (2) Repair of the moisture seal for the No. 1 window (windshield).
      (3) Repair of the cushion seal for the No. 1 window (windshield).

TASK 56-11-00-308-001

2. Repair the Aerodynamic Smoother for the Flight Compartment Windows (Fig. 801)
   A. Standard Tools and Equipment
      (1) Spatula
      (2) Flow Gun
   B. Consumable Materials
      (1) G00294 Tape - Masking, Permacel No. 76
      (2) B00083 Solvent - Aliphatic Naphtha, TT-N-95
      (3) A00474 Sealant - Aerodynamic Smoother, Silicone, Dow Corning DC 93-006
      (4) A00055 Primer - Silicone, RTV 1200, S-2260 Dow Corning Corporation
      (5) G00033 Cheesecloth - Woven, Surewipe, (clean and lint-free)
   C. Prepare for the Repair of the Aerodynamic Smoother.

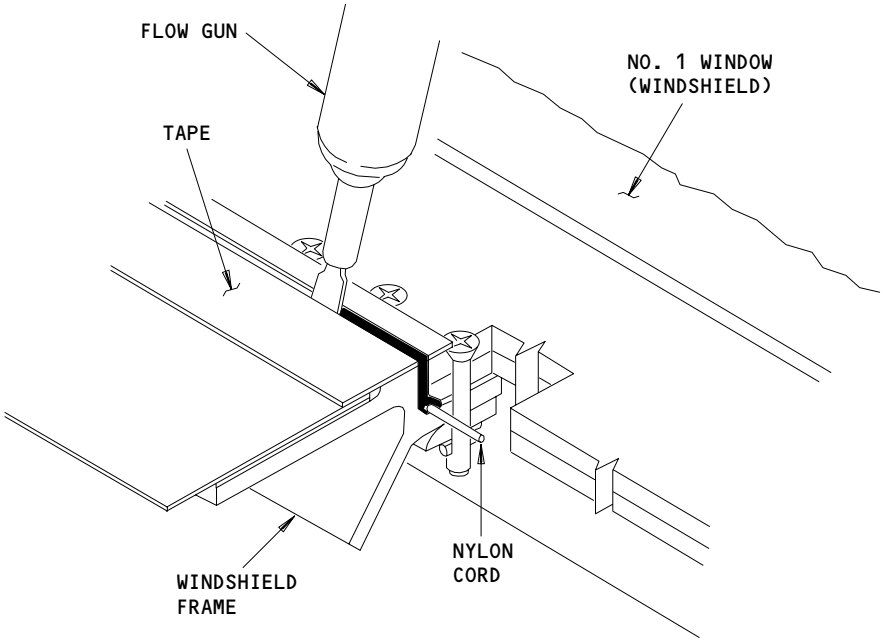
S 868-002

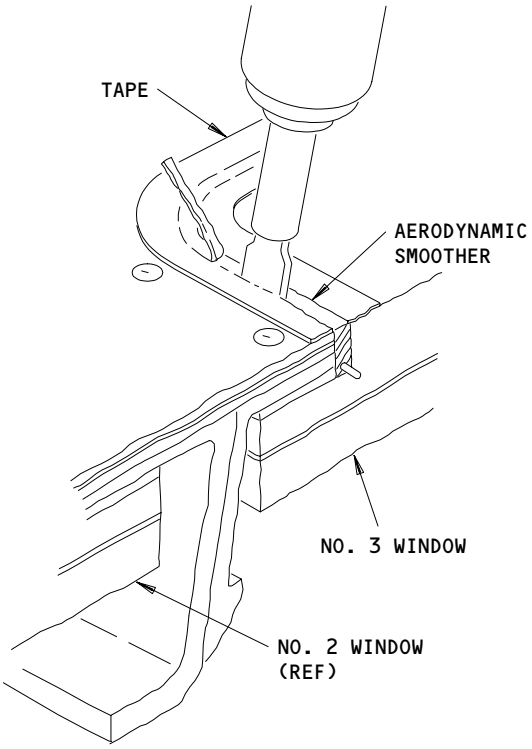
WARNING: OPEN THE CIRCUIT BREAKERS AND TURN OFF THE WINDOW HEAT SWITCHES BEFORE YOU DO WORK ON THE FLIGHT COMPARTMENT WINDOWS. A FAILURE TO OPEN THE CIRCUIT BREAKERS AND TURN OFF THE WINDOW HEAT SWITCHES CAN CAUSE AN ELECTRICAL SHOCK TO PERSONS.

(1) Put the window heat switches in the OFF position.

S 868-003

(2) Open these circuit breakers and attach DO-NOT-CLOSE tags:
   (a) P6 Main Power Distribution Panel
      1) 6B17 WINDOW HEAT 1R
      2) 6B34 WINDOW HEAT 1L
      3) 6E28 WINDOW HEAT 2L & 3R PWR
      4) 6E30 WINDOW HEAT 2R & 3L PWR
   (b) P180 DC Power Distribution Panel
      1) 180H12 WDO HEAT CONT 1R
      2) 180H26 WDO HEAT CONT 1L





Aerodynamic Smoother Repair
Figure 801

S 148-004
(3) Remove the loose or cracked aerodynamic smoother.

S 118-005

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

CAUTION: DO NOT LET THE SOLVENTS TOUCH PLASTICS, CONTROL CABLES, LUBRICATED AREAS, DECALS, OR PAINTS. IF THE SOLVENTS TOUCH THESE AREAS, DAMAGE CAN OCCUR.

(4) Clean the distance between the window frame and the window with aliphatic naphtha.

NOTE: Use a clean cheesecloth to apply the aliphatic naphtha and a clean cloth to rub it off. Do not let it dry on the surfaces.

S 118-032
(5) Clean this distance again until the surfaces are free of the remaining film.

NOTE: You must be careful not to cause damage to the adjacent seal.

D. Repair the Aerodynamic Smoother.

S 958-006
(1) Put the tape around the areas adjacent to the aerodynamic smoother.
(a) Put the tape above the clearance between the window and frame to prevent contamination before you fill it with the nylon cord (Fig. 801).
(b) Remove the tape that is immediately above this clearance with a sharp knife.

(c) Make sure the tape stays on the edges.

S 398-007

(2) Apply the aerodynamic smoother (Fig. 801).
(a) Apply a thin layer of silicone primer to the surfaces of this clearance.
(b) Let the primer dry a minimum of one hour at 70 degrees F.
(c) Apply a layer of silicone primer to one nylon cord (No. 2 or 3 window) or two cords (No. 1 window) and let it dry for 30 minutes.

NOTE: You must complete the steps that follow to put the cords in the correct locations in 2.5 hours.

(d) For the No. 1 window,
put the cord(s) in the correct location(s) (Fig. 801).
1) Fill the full length of the distance between the right and left windshield with one short cord.
2) Install the other cord with a sufficient length to wind around the three remaining sides of the windshield.
(e) For the No. 2 and 3 windows,
put the cord in the correct location (Fig. 801).
1) Put the cord in the clearance around the window.
2) Push the cord with a thin hand tool.
3) Make a overlap with the two ends 0.5 to 1.0 inch in length in the upper aft corner.
4) Make sure you push the cord tightly against the frame at all points around the window.
5) Slowly put the aerodynamic smoother in the clearance with a flow gun. Apply more of the aerodynamic smoother than is necessary so you can smooth the edges.

NOTE: You can use a spatula when you can not apply it with a flow gun.

6) Use your fingers to make the aerodynamic smoother a continuous surface with the outer surface of the skin and window.
7) Remove the tape from the edges of the clearance. You can smooth the aerodynamic smoother at the edges of the clearance with a tool. Do not rub the skin or window.

E. Put the Airplane Back to its Usual Condition

S 868-008

(1) Close these circuit breakers and remove the DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B17 WINDOW HEAT 1R
2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR

(b) P18O DC Power Distribution Panel
1) 18OH12 WDO HEAT CONT 1R
2) 18OH26 WDO HEAT CONT 1L

TASK 56-11-00-308-009

3. Repair the Moisture Seal for the No. 1 Window (Fig. 8O2)

A. Standard Tools and Equipment
(1) Spatula or Flow Gun
(2) Duck Bill Nozzle - Semco No. 8643

B. Consumable Materials
(1) GOOO33 Cheesecloth - Woven, Surewipe, clean and lint-free
(2) BOO185 Alcohol - Isopropyl, TT-I-735
(3) BOOO83 Solvent - Aliphatic Naphtha, TT-N-95
(4) GOO294 Tape - Masking, Permacel No. 76
(5) AOO1O3 Sealant - Polysulfide, PR1425, Products Research and Chemical Corporation
(6) AOO9O8 Sealant - Pro Seal 86O, Class B, for low cure rate
(7) AOO247 Sealant - Polysulfide, BMS 5-95 or Pro Seal 86O, Class B
(8) AOO474 Smoother - Aerodynamic, Silicone Sealant, Dow Corning DC 93-OO6

C. Prepare for the Repair of the Moisture Seal

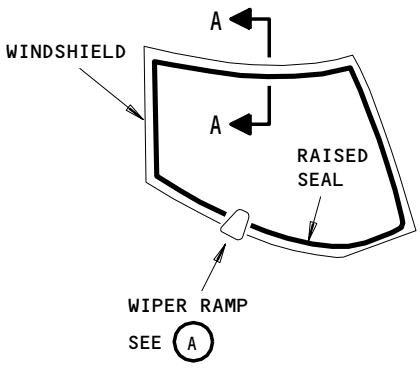
S 868-O3O

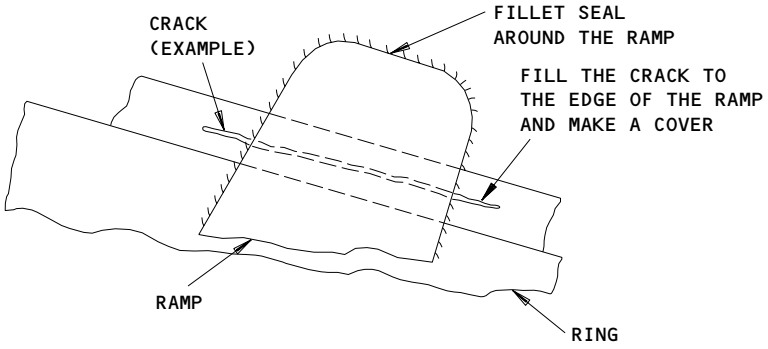
WARNING: OPEN THE CIRCUIT BREAKERS AND TURN OFF THE WINDOW HEAT SWITCHES BEFORE YOU DO WORK ON THE FLIGHT COMPARTMENT WINDOWS. A FAILURE TO OPEN THE CIRCUIT BREAKERS AND TURN OFF THE WINDOW HEAT SWITCHES CAN CAUSE AN ELECTRICAL SHOCK TO PERSONS.

(1) Put the window heat switches in the OFF position.

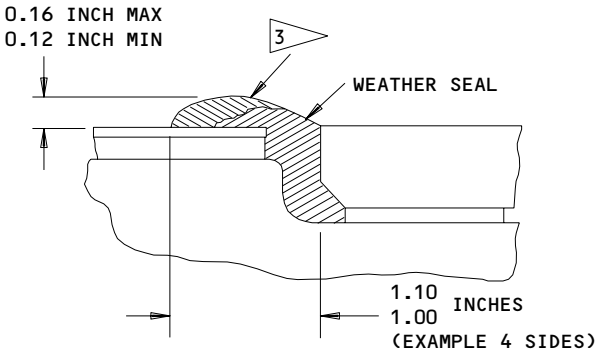
S 868-O11

(2) Open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B34 WINDOW HEAT 1L
2) 6B17 WINDOW HEAT 1R

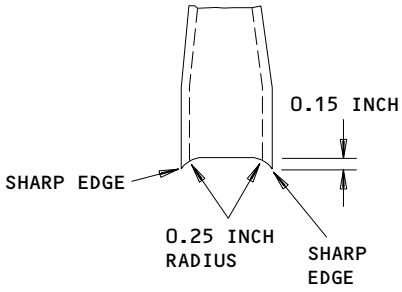




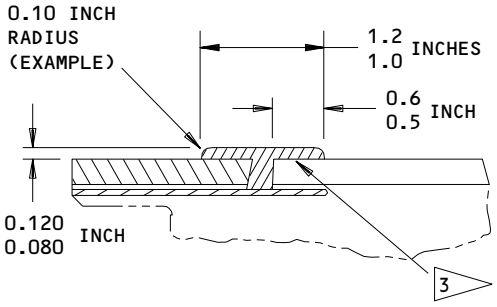
WIPER RAMP
A



A-A 1
(ROTATED)



CONTOURED DUCK-BILL
NOZZLE



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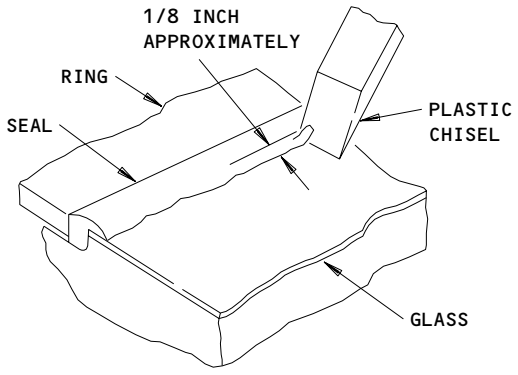
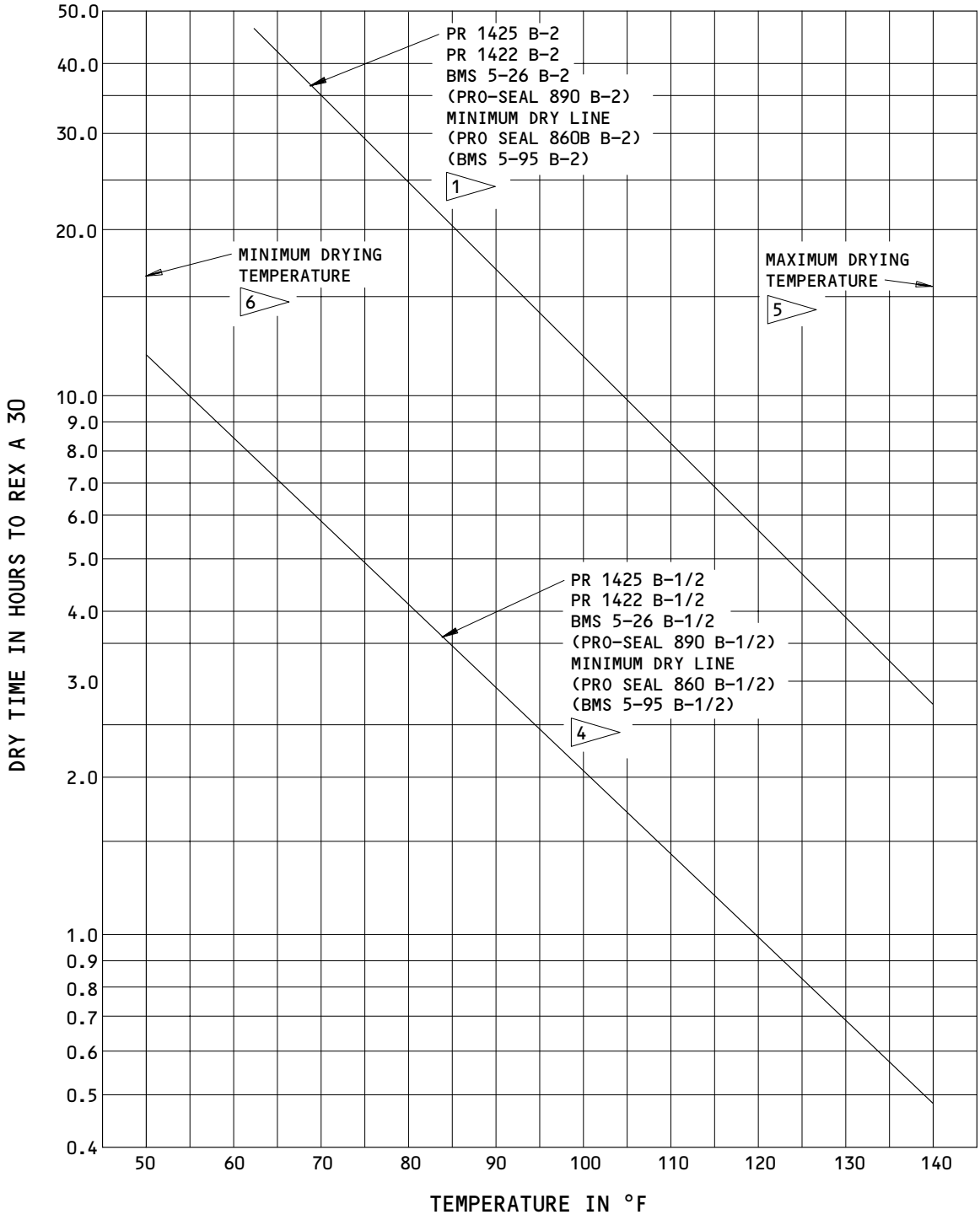
(ROTATED)



1 TRIPLEX WINDSHIELD
2 PPG WINDSHIELD
3 A NEW LAYER OF PR1425, PRO SEAL 860 CLASS B, OR BMS 5-95

Moisture Seal Repair
Figure 802 (Sheet 1)



4 FOR SHOP HANDLING AND FLY AWAY
5 DO NOT DRY SEALANT ABOVE 140°F
6 DO NOT DRY SEALANT BELOW 50°F

Moisture Seal Repair
Figure 802 (Sheet 2)

3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P180 DC Power Distribution Panel
1) 180H12 WDO HEAT CONT 1R
2) 180H26 WDO HEAT CONT 1L

S 358-012
(3) Do these steps to make a sealant removal tool:
(a) Cut a strip of hard plastic, 0.75 X 6.0 inch
(b) Cut one end to make a chisel type tool.

S 398-013
(4) Cut the contour in the duck-bill nozzle (Fig. 802).

D. Repair the Damaged Moisture Seal

S 218-014
(1) Examine the seal that is on the windshield.

S 358-015
(2) Remove the unwanted sealant with the sealant removal tool.

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

S 358-016
(3) Cut a groove between the seal and frame to a depth of the index tip on the contoured plastic sheet.

S 118-033

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

CAUTION: DO NOT LET THE SOLVENTS TOUCH PLASTICS, CONTROL CABLES, LUBRICATED AREAS, DECALS, OR PAINTS. IF THE SOLVENTS TOUCH THESE AREAS, DAMAGE CAN OCCUR.

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

S 958-018
(5) Apply the tape on the glass and the window frame.

S 398-019
(6) Use a flow gun with the duck-bill nozzle or spatula to apply a layer of PR1425 sealant on the seal. Apply the sealant smoothly.

NOTE: Pro seal 860 class B or BMS 5-95 may be used instead of PR 1425.

S 398-020
(7) Fill the clearance with the sealant as shown in Figure 802.

S 358-034
(8) Use a spatula to make the sealant smooth.

S 958-021
(9) Carefully remove the tape.

S 118-022
(10) Use a cheesecloth that is moist with aliphatic naphtha to remove the unwanted sealant from the glass or window frame.

S 398-023
(11) Let the sealant dry before you touch the seal.

S 218-024
(12) Examine the seal for cracks on the two sides of the wiper ramp.

S 398-025
(13) If the seal has cracks, put the sealant, PR1425, in the cracks.

S 358-035
(14) Use your fingers that are wet with aliphatic naptha to make the sealant smooth.

S 948-036
(15) Carefully remove the tape.

S 948-037
(16) Use a cheesecloth that is moist with aliphatic naphtha to remove the unwanted sealant from the glass or window frame.

S 398-026
(17) After the sealant dries, cut the edge of the ring with a knife.

S 398-027
(18) Put a bead of silicone sealant around the wiper ramp (Fig. 802).

E. Put the Airplane Back to its Usual Condition

S 868-028
(1) Close these circuit breakers and remove DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B17 WINDOW HEAT 1R
2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P18O DC Power Distribution Panel
1) 18OH12 WDO HEAT CONT 1R

2) 18OH26 WDO HEAT CONT 1L

TASK 56-11-00-308-038

4. Repair the Cushion Seal for the No. 1 Window

A. General

(1) The cushion seal prevents too much clamp-up during the assembly and can come out of its installed position during the operation.

B. Procedure

S 358-029

CAUTION: BE CAREFUL WHEN YOU CUT THE CUSHION SEAL. IF YOU ARE NOT CAREFUL, DAMAGE TO THE SURFACE OF THE WINDSHIELD CAN OCCUR.

(1) Cut the part of the cushion seal that comes out if it is necessary to make the installation look better.

FLIGHT COMPARTMENT NO. 1 WINDOW (WINDSHIELD) - REMOVAL/INSTALLATION

1. General
   A. This procedure contains two tasks. The first task is the removal of the right and left No. 1 windows. The second task is the installation of the right and left No. 1 windows.
   B. This procedure refers to the No. 1 window as the windshield.

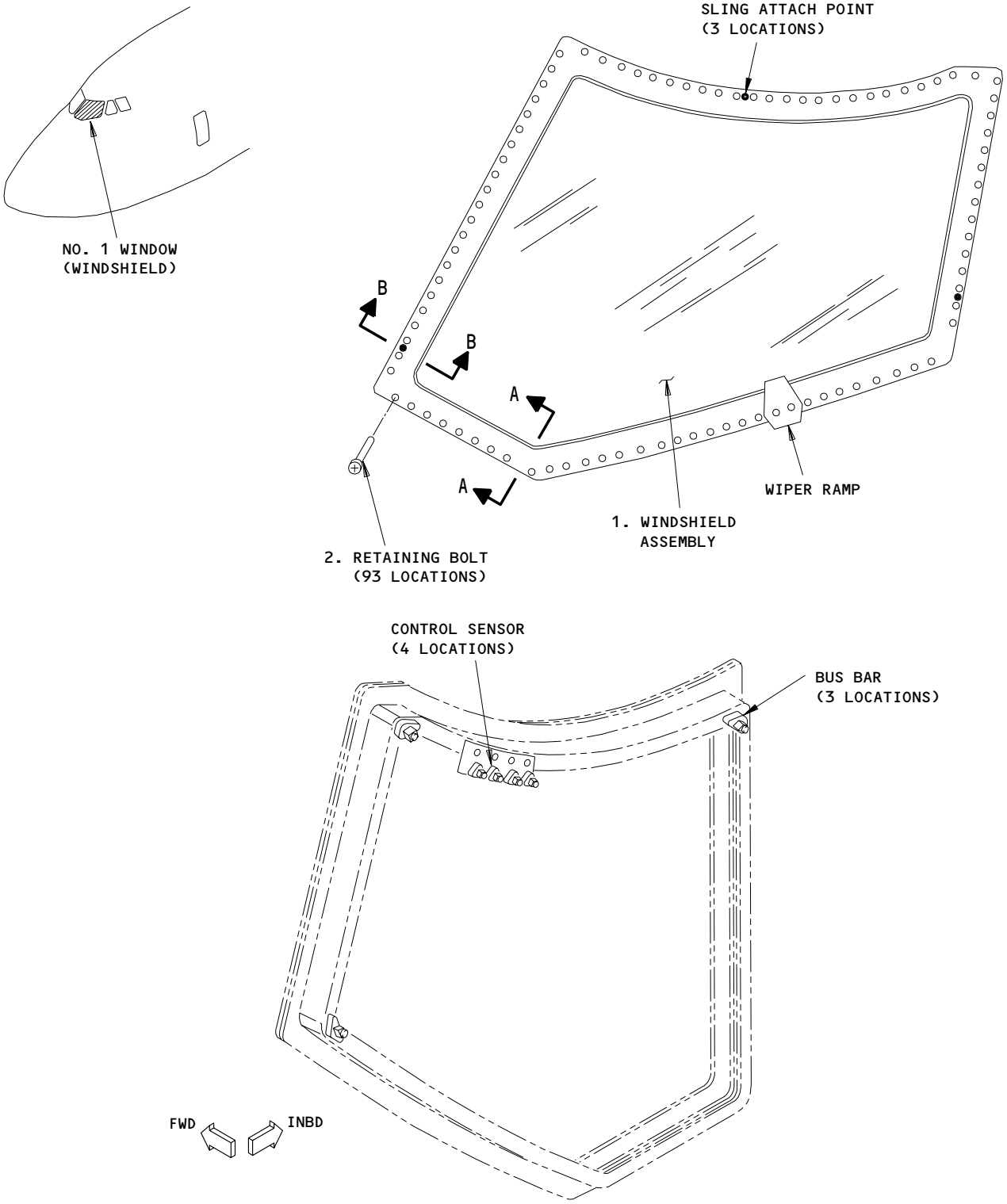
TASK 56-11-01-004-001

2. Remove the Windshield (Fig. 401)
   A. Special Tools and Equipment
      (1) 20HME65B07630, Windshield Handling Sling
   B. Standard Tools and Equipment
      (1) Crane equipped with 40-foot boom and capable of lifting 500 pounds
      (2) Mobile mechanical lift (capable of extending to a height of 35 feet) or overhead crane capable of lifting 500 pounds
      (3) Three 5/16-inch T-bolts with 5/16-18UNC thread (CL-2-CP clamping pins without collar, Carr Lanes Manufacturing Company, 4200 Krause Court, St. Louis, Missouri 63119)
   C. Consumable Materials
      (1) G00139 Tape - Protective, Gizard Protex 20V
      (2) G00294 Tape - Masking, Permacel No. 76
   D. References
      (1) AIPC 56-11-01, Fig. 1
   E. Access
      (1) Location Zone
          221 Flight Deck, Left
          222 Flight Deck, Right

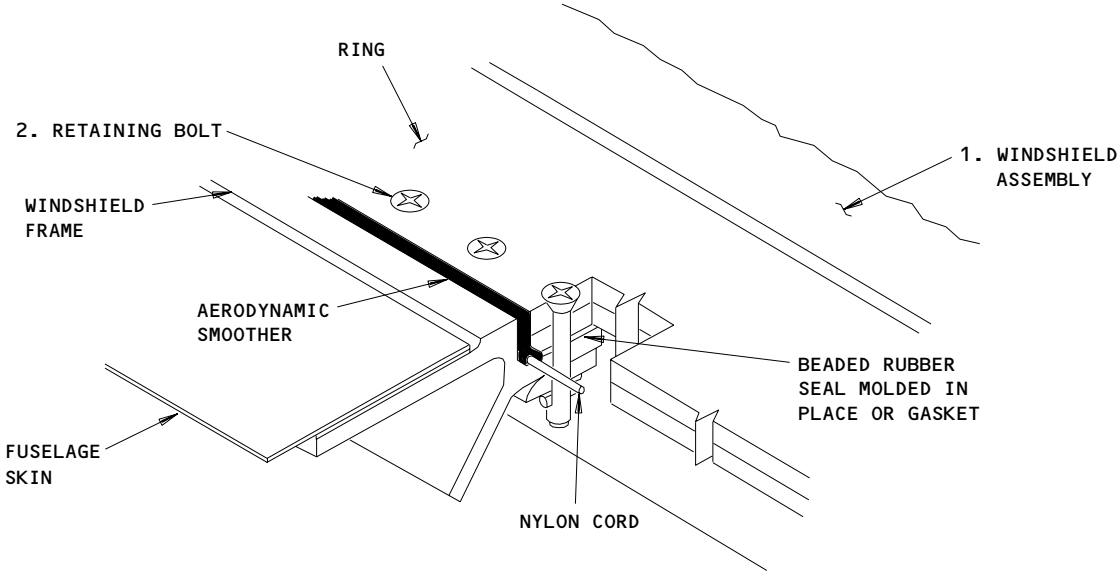
   F. Prepare for the Removal of the Windshield

      S 864-073
      (1) Put the window heat switches in the OFF position.

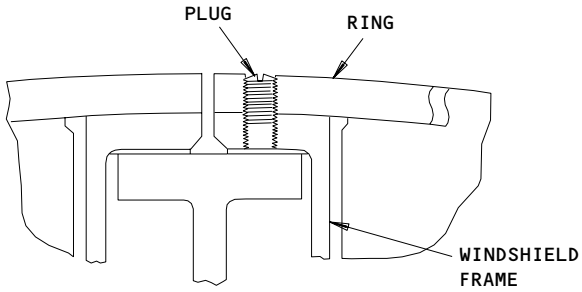
      S 864-003
      (2) Open these circuit breakers and attach DO-NOT-CLOSE tags:
          (a) P6 Main Power Distribution Panel
              1) 6B17 WINDOW HEAT 1R



No. 1 Window (Windshield) Installation
Figure 401 (Sheet 1)



A-A



SLING ATTACHMENT POINT
(3 LOCATIONS)
B-B

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

2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR

(b) P7 Overhead Circuit Breaker Panel
1) 7E1 WINDSHIELD WIPER L
2) 7E25 WINDSHIELD WIPER R

(c) P180 DC Power Distribution Panel
1) 180H12 WDO HEAT CONT 1R
2) 180H26 WDO HEAT CONT 1L

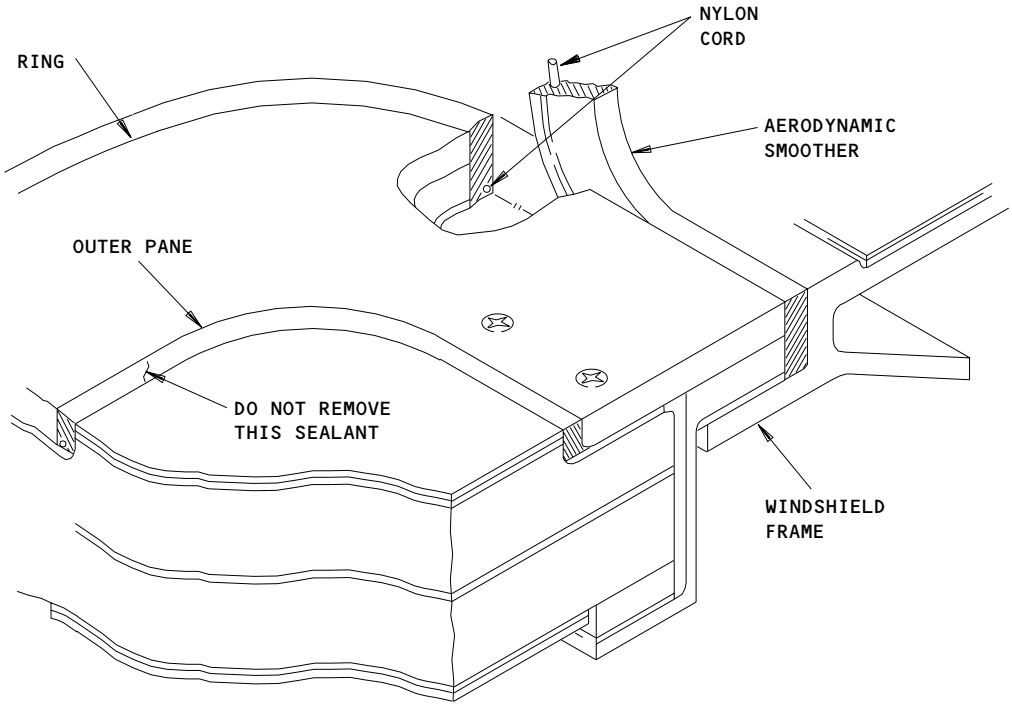
S 434-109

(3) Apply the protective paper on the inner and the outer surfaces of the window.

S 024-067

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

(4) Disconnect the electrical wires from the bus bars and the control sensor.



Aerodynamic Smoother Removal
Figure 402

G. Remove the Windshield.

S 014-006

(1) Remove the hole plugs for the window handling sling from the windshield (Fig. 401).

S 024-042

(2) Remove applicable bolts (2) to install the sling. (Fig. 401).

S 024-009

(3) Attach the sling to the windshield (Fig. 403).

S 494-043

(4) Tighten the bolts until the pressure seal is broken (approximately 20-30 pound-inches).

S 094-010

(5) Remove the remaining bolts (2).

S 024-013

(6) Remove the windshield (1) from the frame and hold it in a position above the frame.

H. On triplex windshields, remove the short jumper wire on the lower outboard side of the windshield:

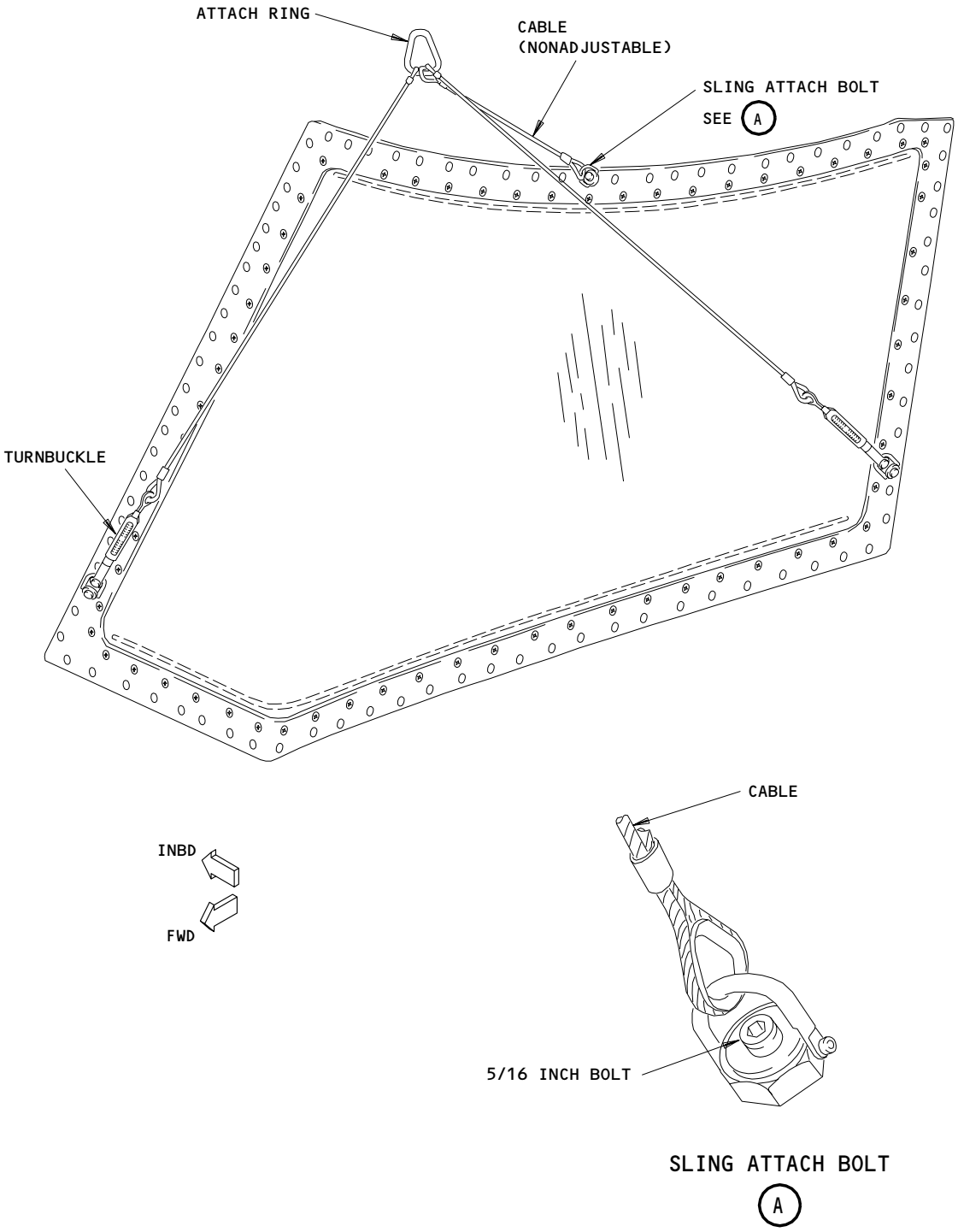
S 014-105

CAUTION: MAKE SURE SLING ATTACHMENT IS SECURE AND WINDOW REMAINS IN A STATIONARY POSITION. DAMAGE CAN OCCUR TO THE WIRING DUE TO SUDDEN MOVEMENTS OF THE WINDOW. REMOVE ANY AND ALL ELECTRICAL CONNECTIONS WITHOUT CAUSING SUDDEN MOVEMENT OF WINDOW.

(1) Remove the cap over the terminal connector.

S 024-097

(2) Remove the screw and washer that attaches the terminal connector to the terminal block.



Windshield Handling Sling Installation
Figure 403

S 024-098
(3) Remove the terminal connector from the jumper wire.

S 024-099
(4) Remove the jumper wire from the terminal block on the lower outboard edge of the windshield.

S 034-101
(5) Carefully remove the aerodynamic smoother from the clearance at inboard upper corner of the windshield (Fig. 402).

S 034-102
(6) Pull the outboard end of the nylon cord out of the clearance.

S 034-103
(7) Fold the nylon cord and slowly remove it from around the window.

TASK 56-11-01-404-016

3. Install the Windshield (Fig. 401)
   A. Special Tools and Equipment
      (1) 20HME65B07630, Windshield Handling Sling
   B. Standard Tools and Equipment
      (1) Crane equipped with 40-foot boom and capable of lifting 500 pounds
      (2) Mobile mechanical lift (capable of extending to a height of 35 feet) or overhead crane capable of lifting 500 pounds
      (3) Spatula or flow gun
   C. Consumable Materials
      (1) G00139 Tape - Protective, Gizard Protex 20V
      (2) G00294 Tape - Masking, Permacel No. 76
      (3) G02186 Tape - silicone foam insulation seal, Form III, Grade B
      (4) C00308 Compound - Corrosion Preventive, MIL-C-11796, Class 3
      (5) B00083 Solvent - Aliphatic Naphtha, TT-N-95
      (6) G00039 Cord - Nylon, MIL-C-5040, Type 1A or
      (7) G00040 Cord (optional) - Nylon, V-T-295, Type 1, Class 2, Size No. 9
      (8) A00055 Primer - Silicone, RTV 1200, S-2260, Dow Corning
      (9) A00247 Sealant - BMS 5-95, (aerodynamic smoother) or

(10) A00474 Sealant - Rubber Silicone, DC 93006, (aerodynamic smoother)(optional)
(11) A00707(Alternative) PR 1826, Class B-1/2 and Class B-1/4 (with primer) (dark grey).
(12) A00707 (Alternative) PR1828, Class B-1/2 and B-1/4 (white).
(13) A00955 Sealant - BMS 5-26, class B (used to fill hole of missing bolt)

D. Parts

AMM			AIPC		
FIG	ITEM	NOMENCLATURE	SUBJECT	FIG	ITEM
401	1	Windshield Assembly (Pilot, Left)	56-11-01	01	150
	1	Windshield Assembly (Co-pilot, Right)			155
	2	Bolt			160

E. References
(1) 25-13-01/401, Pilots' Lightshield Assembly
(2) 30-41-00/501, Flight Compartment Window Anti-Icing System
(3) 30-42-00/501, Windshield Wiper System
(4) WDM 30-41-11
(5) SSM 30-41-01

F. Access
(1) Location Zone
221 Flight Deck, Left
222 Flight Deck, Right

G. Prepare for the Installation of the Windshield .

S 024-089
(1) Remove the pilot assist handle.

S 424-091
(2) Install washers as required to replace material thickness of the handle support bracket.

S 424-092
(3) Install collars on the hi-loks.

S 864-072
(4) Put the window heat switches in the OFF position.

S 864-018
(5) Open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B17 WINDOW HEAT 1R
2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR

4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P18O DC Power Distribution Panel
1) 18OH12 WDO HEAT CONT 1R
2) 18OH26 WDO HEAT CONT 1L

S 014-019
(6) Remove the lightshield assembly (Ref 25-13-01/401).

S 214-020
(7) Install new nutplates in all the positions where the nutplates are gone or damaged.

S 954-049
(8) Remove the protective paper cover from the two windshield surfaces.

S 014-022
(9) Remove the hole plugs from the sling attach points on the windshield.

S 494-048
(10) Attach the sling to the windshield (Fig. 403).

S 494-050
(11) Tighten the bolts at each sling attach point to 20-30 pound-inches (Fig. 403).

S 114-051
(12) Clean the mating surfaces of the pressure seal, frame, and center post with a cheesecloth that is moist with the aliphatic naphtha.

S 114-052
(13) Dry the areas with a clean cheesecloth.

S 114-053
(14) Do the two steps to clean the pressure seal, frame, and center post until the surfaces are fully clean.

S 424-104
(15) On triplex windshields,
install the short jumper wire on the lower outboard side of the windshield:

CAUTION: MAKE SURE SLING ATTACHMENT IS SECURE AND WINDOW REMAINS IN A STATIONARY POSITION. DAMAGE CAN OCCUR TO THE WIRING DUE TO SUDDEN MOVEMENTS OF THE WINDOW. CONNECT ANY AND ALL ELECTRICAL CONNECTIONS WITHOUT CAUSING SUDDEN MOVEMENT OF WINDOW.

(a) Put the jumper wire over the terminal block on the lower outboard edge of the windshield.
(b) Put the terminal connector from the airplane power wire over the jumper wire.
1) Make sure the jumper wire and terminal connector are aligned with the screw hole in the terminal block.
(c) Install the screw and washer to attach the terminal connector to the terminal block.
(d) Install the cap over the terminal connector.

H. Install the Windshield

S 214-078
(1) Do a visual check of the window post and sill for cracks and corrosion.

S 424-054
(2) Put the windshield (1) in the correct position.

S 394-077
(3) Apply sufficient sealant (BMS 5-95) on all surfaces and countersinks under the head of the bolts (2).

NOTE: You must apply the sealant immediately before you install the bolts. When you install the bolts, there must be a continuous extrusion of the sealant around the bolt heads.

S 424-057
(4) Install the bolts (2) firmly, but do not fully tighten, in the positions 65 to 63 and 13 to 15 (Fig. 404)

NOTE: This will help align the window.

S 424-056
(5) Install the remaining bolts (2). Install the bolts (2) firmly, but do not fully tighten.

NOTE: There must be a minimum of three bolts (2) installed between each bolt that is missing. There can be a maximum number of 15 bolts missing. At the locations where the bolts (2) have been kept out, replace the nutplates and the bolts (2) during the next windshield change procedure.

S 344-055

(6) If you can not install a bolt (2) in a location, do these steps:
(a) Fill the bolt hole with sealant.
(b) Make a spanning strap on the top of this bolt hole (Fig. 406).
(c) Install the spanning strap.

S 214-058

(7) Make sure the inner edge of the wiper ramp touches the glass tightly.

S 224-059

(8) Make sure the clearance between the glass and the wiper ramp at the other edges is 0.03 inch or less.

S 434-060

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

(9) Tighten the bolts (2) to 50-70 pound-inches in the sequence shown (Fig. 404).

S 424-108

(10) Make sure 1 to 3 threads of the bolt show on the backside of the nutplate.

NOTE: If less than 1 thread shows through the backside of the nutplate, install the next size longer bolt. If more than 3 threads show through the backside of the nutplate, install the next size shorter bolt.

S 394-087

(11) Clean off all the sealant from the bolt heads.

S 224-032

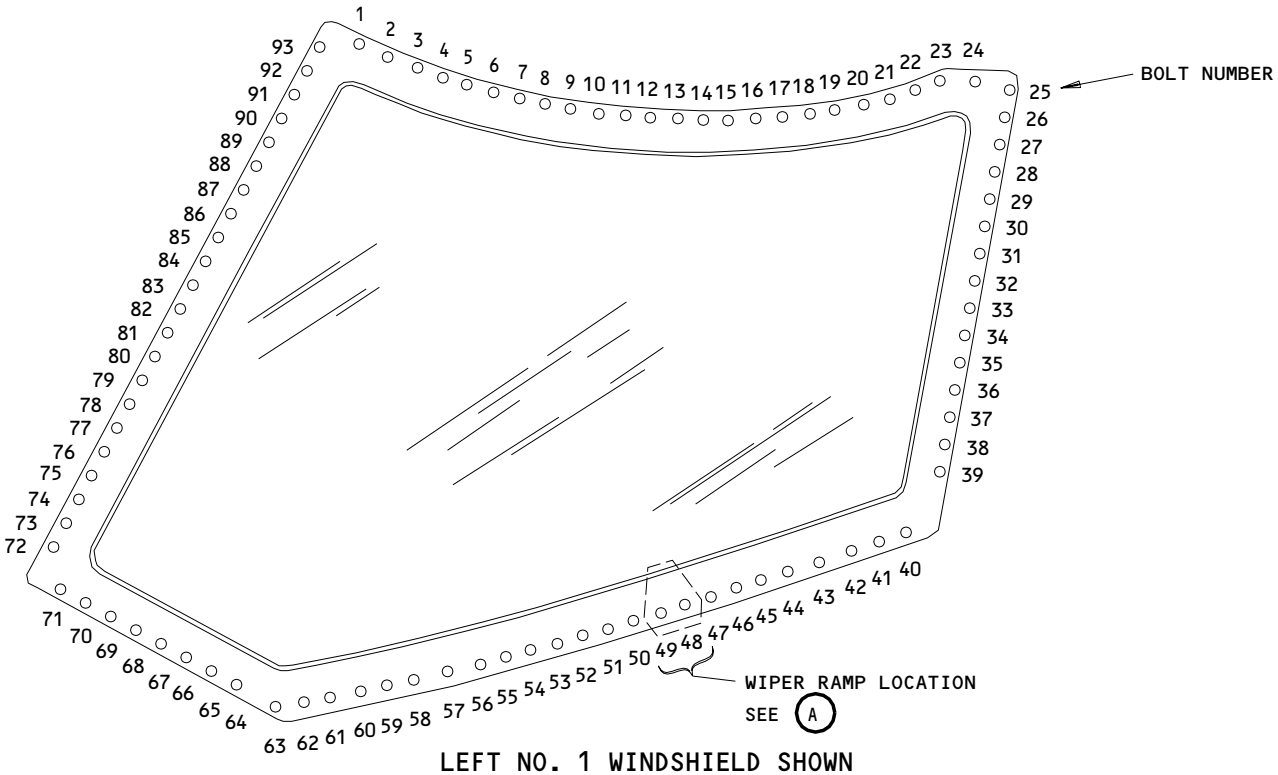
(12) Make sure the windshield is smooth or comes out from the external surface less than 0.03 inch or in from the internal surface less than 0.08.

S 094-034

(13) Remove the sling.

S 374-061

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

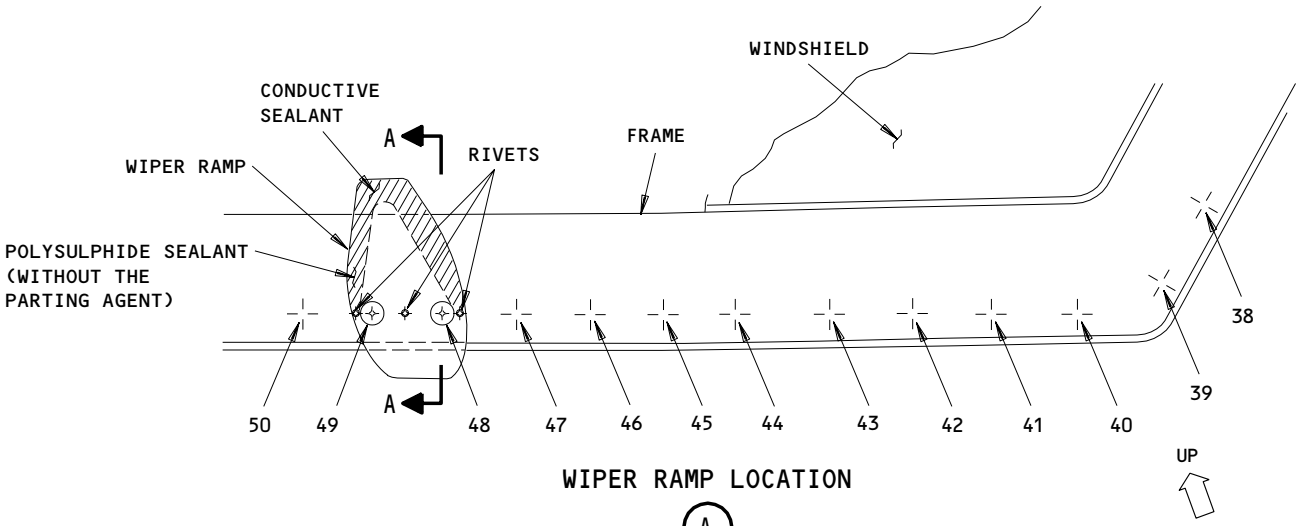


LEFT NO. 1 WINDSHIELD SHOWN
RIGHT NO.1 WINDSHIELD OPPOSITE

STEP NO.	BOLT NUMBER SEQUENCE FOR THE INITIAL INSTALLATION	BOLT NUMBER SEQUENCE FOR THE FINAL TORQUE
1	65 TO 63	12 TO 10
2	13 TO 15	55 TO 57
3	62 TO 60	9 TO 7
4	16 TO 18	58 TO 60
5	59 TO 57	6 TO 4
6	19 TO 21	61 TO 63
7	56,55	3 TO 1
8	22 TO 24	64,65
9	93 TO 91	22 TO 24
10	33 TO 35	66 TO 68
11	90 TO 88	25 TO 27
12	36,37	69 TO 71
13	87 TO 85	83 TO 85
14	38,39	33 TO 35
15	84,83	86 TO 88
16	72 TO 74	36,37

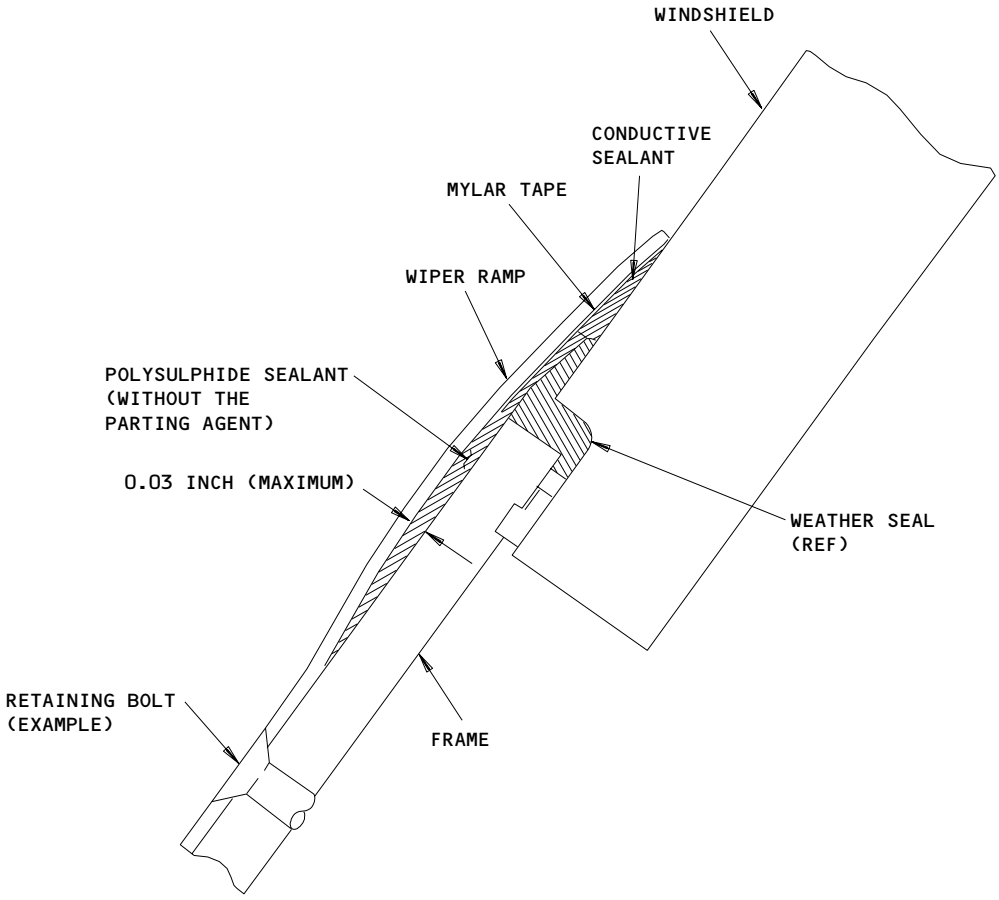
STEP NO.	BOLT NUMBER SEQUENCE FOR THE INITIAL INSTALLATION	BOLT NUMBER SEQUENCE FOR THE FINAL TORQUE
17	25 TO 27	89 TO 91
18	75 TO 77	38,39
19	28 TO 30	92,93
20	78 TO 80	72 TO 75
21	31,32	28 TO 30
22	81,82	76 TO 79
23	54 TO 52	31,32
24	12 TO 10	80 TO 82
25	51 TO 49	54 TO 51
26	9 TO 7	21 TO 19
27	48 TO 46	50 TO 47
28	6 TO 4	18 TO 16
29	45 TO 43	46 TO 43
30	3 TO 1	15 TO 13
31	42 TO 40	42 TO 40
32	66 TO 71	

Windshield Fastener Installation
Figure 404 (Sheet 1)



WIPER RAMP LOCATION

A



A-A

Windshield Fastener Installation
Figure 404 (Sheet 2)

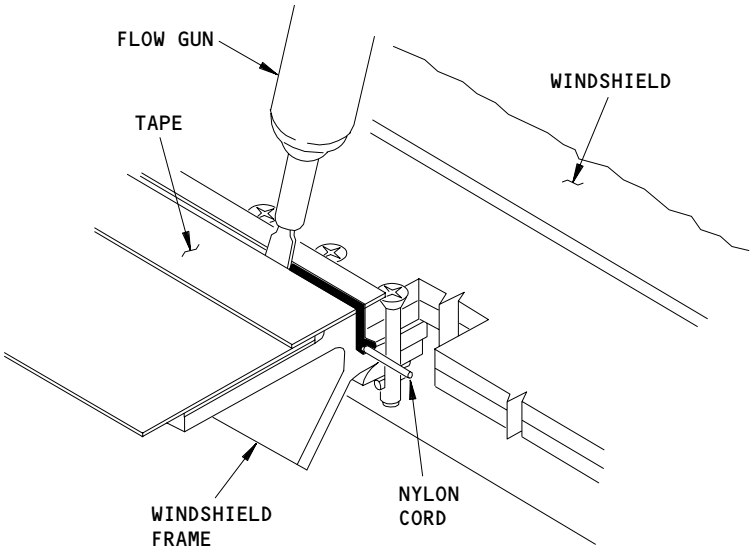
S 414-062

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

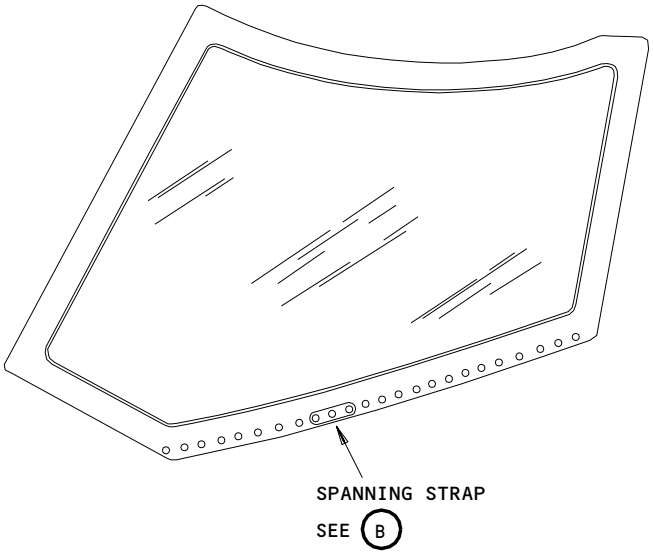
I. Apply the Aerodynamic Smoother

S 954-036

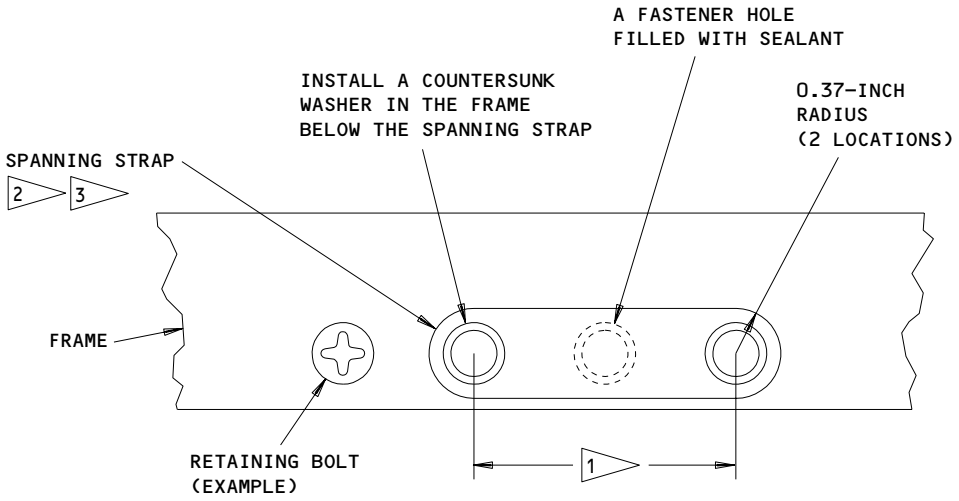
(1) Apply tape to the two sides of the clearance between the windshield ledge and the frame.



Aerodynamic Smoother Application
Figure 405



NO. 1 WINDOW
(WINDSHIELD)



SPANNING STRAP
A

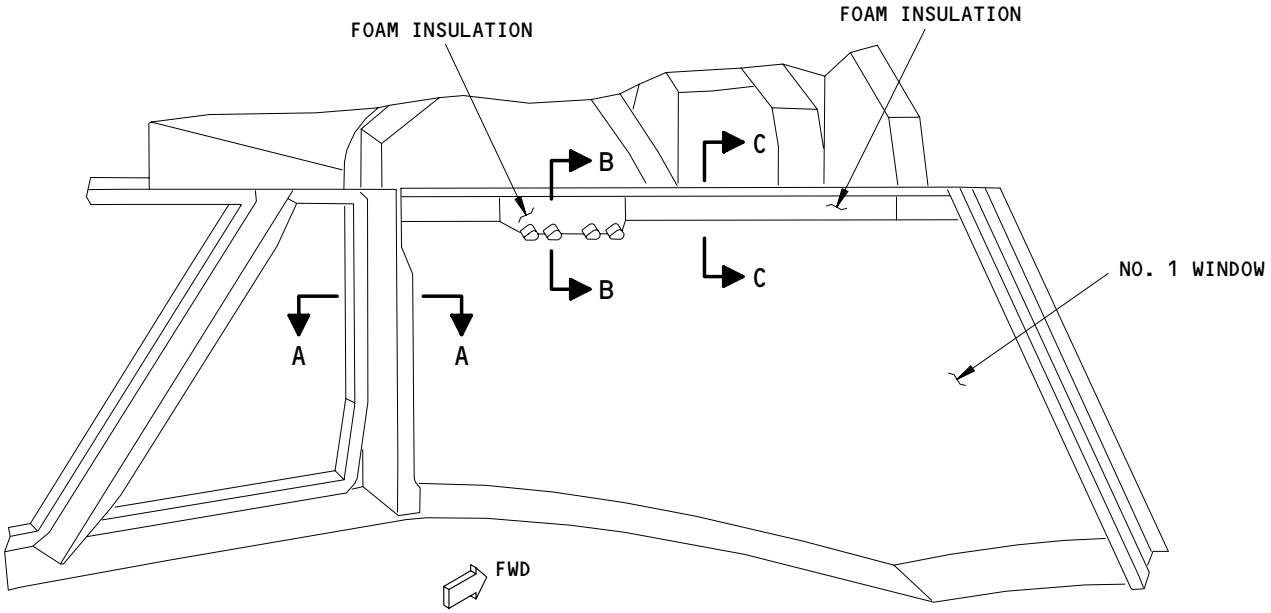
1 THIS DIMENSION CAN CHANGE FOR EACH LOCATION

2 MAKE THE SPANNING STRAP FROM 0.040-INCH THICK 2024 T3/T4 ALUMINUM ALLOY APPROXIMATELY 0.75-INCH WIDE. DRILL AND COUNTERSINK (2 LOCATIONS) FOR TWO 100° COUNTERSUNK HEAD BACB30NN4C19 BOLTS

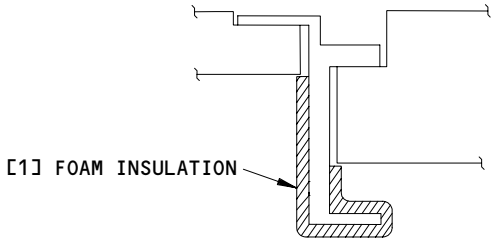
3 SMOOTH THE EDGES TO PREVENT DAMAGE TO THE WIPER BLADE AND THE AERODYNAMIC SMOOTHER

Spanning Strap Fabrication
Figure 406

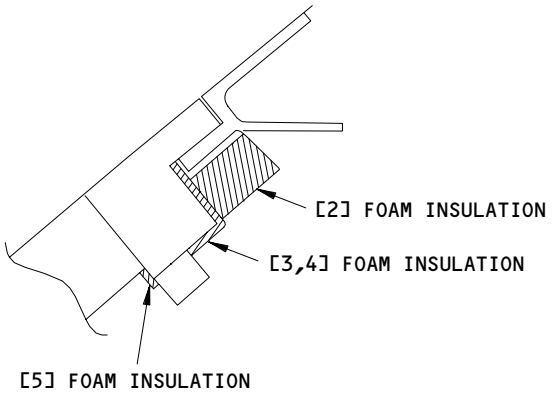
281566



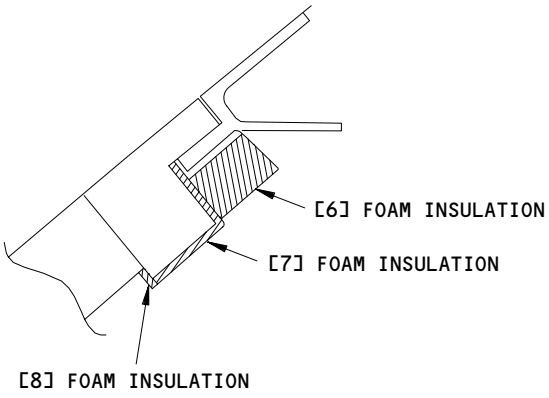
WINDOW STRUCTURE
(LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE)



A-A



B-B



C-C

Installation of Foam Insulation on Window Structure
Figure 407

S 434-063
(2) Install the nylon cord into the clearance around the window.

S 214-064
(3) Make sure the nylon cord is tightly installed in the bottom of the clearance.

S 394-037
(4) Do the steps that follow to apply the aerodynamic smoother:
(a) Put the mixed aerodynamic sealant into the clearance. Apply it slowly to make sure the clearance is fully filled.
(b) Remove the unwanted aerodynamic sealant until it is smooth with the external surface of the window and frame.
(c) Remove the tape and the protective paper from the windshield.
(d) Make it smooth at the edges of the clearance.

S 424-085
(5) AIRPLANES POST-SB 21-2347;
Install the foam insulation on the No. 1 window structure:
(a) Clean the inside of the No. 1 window structure with Aliphatic Naphtha solvent.
(b) Trim the foam insulation as follows:
1) Trim the foam insulation to clear the forward and aft electrical terminals.

2) Make sure the foam insulation does not touch the forward and aft electrical terminals.
3) Trim the foam insulation to clear the airplane structure as necessary.
(c) Install the foam insulation on the the No. 1 window structure.

NOTE: If the foam insulation will not attach to the structure, attach the foam as shown in the Standard Overhaul Practices Manual SOPM 20-50-12, Type 79.

J. Put the Airplane Back to its Usual Condition

S 414-038
(1) Install the lightshield assembly (Ref 25-13-01/401).

S 864-068

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

(2) Connect the electrical wires to the bus bars. Tighten the fasteners with a maximum torque of 25-30 pound-inches.

S 864-075
(3) Connect the electrical wires to the control sensor. Tighten the fasteners with a maximum torque of 12-15 pound-inches.

S 864-039
(4) Close these circuit breakers and remove the DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B17 WINDOW HEAT 1R
2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P7 Overhead Circuit Breaker Panel
1) 7E1 WINDSHIELD WIPER L
2) 7E25 WINDSHIELD WIPER R
(c) P18O DC Power Distribution Panel
1) 18OH12 WDO HEAT CONT 1R
2) 18OH26 WDO HEAT CONT 1L

S 734-040
(5) Do a check of the windshield heater system (Ref 30-41-00/501).

S 714-069
(6) Do the operation check for the windshield wiper (Ref 30-42-00/501).

FLIGHT COMPARTMENT NO. 1 WINDOW (WINDSHIELD) - INSPECTION/CHECK

1. General
   A. This procedure contains the following tasks:
      (1) Inspection of the No. 1 window (windshield) for damage.
      (2) Inspection of the No. 1 window (windshield) for proper installation.
   B. The damage to be examined are cracks, chips, delamination, heater failure, and seal leakage.
   C. The installation check is to make sure all fasteners are correctly installed and tightened and the heater operates correctly.
   D. The visual and structural qualities are very important. You must replace the windshield that has structural damage or that decreases the visual capacity.
   E. You must replace the windshield that does not increase the temperature correctly when you apply heat.
   F. AIRPLANES WITH TRIPLEX WINDSHIELDS;
      the inner layer of the tempered glass (crew shield) is the structural layer. You must replace the windshield if the nicks or scratches are more that 0.002 inch in depth or the windshield damage prevents your visual capacity (Fig. 601).

      NOTE: When the airplane is pressurized, the glass layers usually move forward. If there is deterioration of the polysulphide sealant, clearances will show as the glass moves away from the inner frame. This does not cause a decrease in the structural capacity nor is it necessary to replace the windshields.

   G. You must remove a window if you find these conditions:
      (1) The windows do not become warm when you apply heat.
      (2) The Triplex windows have cracks or chips in the inner glass/crew shield.
      (3) Cracks in the outer glass layer limit visual capacity.
      (4) Cracks in the vinyl layer limit visual capacity.
      (5) Delaminations limit visual capacity.
      (6) Bad pressure leaks.

(7) A decrease in the visual quality.

TASK 56-11-01-206-001

2. Examine the No. 1 Window (Windshield) for Damage (Fig. 601)

A. Standard Tools and Equipment

(1) Optical Micrometer - Model 966A1
Monocle industries
P.O. Box 2426
Coppell, Tx. U.S.A. 75019
Tel (972) 393-9920
Fax (972) 393-9926

B. References

(1) AMM 30-41-00/501, Flight Compartment Windows Anti-Icing System
(2) AMM 30-42-01/401, Windshield Wiper Blade
(3) AMM 30-42-02/401, Windshield Wiper Arm
(4) AMM 56-11-00/801, Flight Compartment Windows
(5) AMM 56-11-01/401, Flight Compartment No. 1 Window (Windshield)

C. Access

(1) Location Zone
221 Flight Compartment, Left - Flight Compartment Windows
222 Flight Compartment, Right - Flight Compartment Windows

D. Procedure - Examine the Windshield for Damage

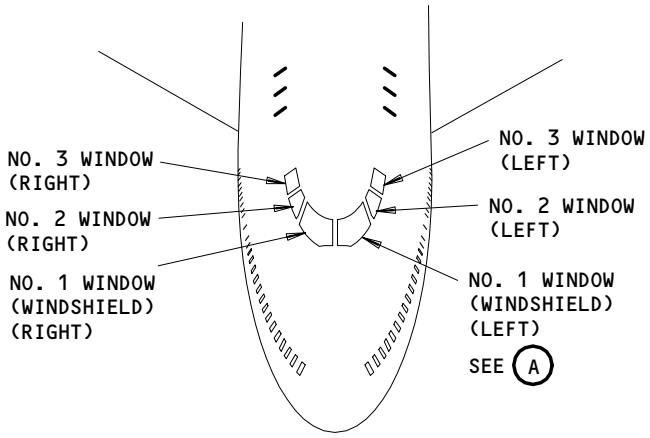
S 866-002

WARNING: DO NOT TOUCH THE WINDSHIELD UNLESS THE CIRCUIT BREAKERS ARE OPEN AND THE WINDOW HEAT SWITCHES ARE OFF. FAILURE TO DO THIS CAN CAUSE ELECTRICAL SHOCK.

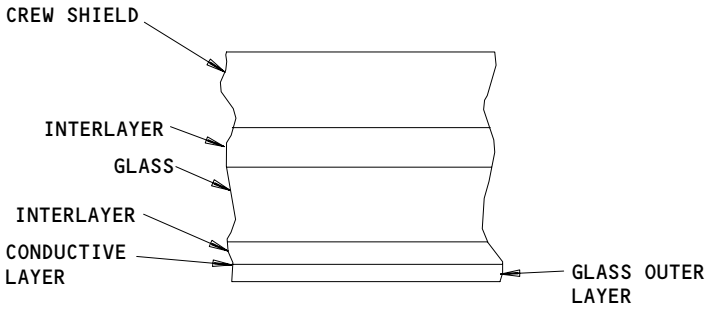
(1) Put the window heat switches in the OFF positions.

S 866-003

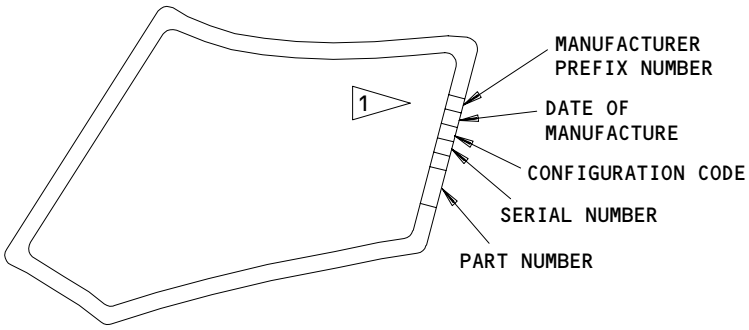
(2) Open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B34 WINDOW HEAT 1L
2) 6B17 WINDOW HEAT 1R
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P180 DC Power Distribution Panel
1) 180H12 WDO HEAT CONT 1R
2) 180H26 WDO HEAT CONT 1L



CROSS SECTIONS



NO. 1 WINDOW
PREFIX T SERIAL NUMBER
(TRIPLEX WINDOW)



NO. 1 WINDOW
(WINDSHIELD)
A

1 THE MANUFACTURERS' DATA IS ON THE WINDOW ADJACENT TO THE FRAME

No. 1 Window (Windshield)
Figure 601

S 216-004

(3) Examine the windshield for chips in the glass layers (outer and crew shield).

NOTE: A chip occurs when there is removal of material from the surface of the window pane not along a line. The chip in the window pane can have a circular shape or a "V" shape. The circular chips do not usually decrease the structural qualities of the glass. The "V" shape chips rarely occur in the chemically tempered glass; however, these chips can cause a windshield failure.

Chips in the glass surface layers are a cause for removal if they decrease the visual quality of the windshield.

Chips in the main glass layers are a cause for removal.

(a) Replace the windshield if the chips decrease the visual quality or if they are on the main glass layer (AMM 56-11-01/401).

S 216-005

(4) Examine the windshield for delamination.

NOTE: Delamination is the separation of the glass or acrylic layers from the interlayer. Examine the window at an angle. The delamination is seen as a shiny, flat bubble. The delaminations are usually smooth, although the visual quality can decrease. The delamination is usually around the edges of the windows.

The delaminations do not cause the structural capacity of the windshield to decrease. It is not necessary to remove the windshield unless it decreases the visual quality.

(a) Replace the windshield if the delamination decreases the visual quality (AMM 56-11-01/401).

S 216-006
(5) Examine the windshield for bubbles.

NOTE: The small bubbles in the vinyl layer are not delaminations nor are they structurally dangerous. The bubbles can be an indication that there is a problem with the heater control system. Do a check of the heater control system for that window (AMM 30-41-00/501).

(a) Replace the windshield if the bubbles decrease the visual quality (AMM 56-11-01/401).

S 216-007
(6) Examine the moisture seal for deterioration and cracks.
(a) Repair the moisture seal if necessary (AMM 56-11-00/801).

S 216-008
(7) Examine the windshield for a loose or cracked aerodynamic smoother.
(a) Repair the aerodynamic smoother if necessary (AMM 56-11-00/801).

S 866-009
(8) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) P6 Main Power Distribution Panel
1) 6B34 WINDOW HEAT 1L
2) 6B17 WINDOW HEAT 1R
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P180 DC Power Distribution Panel
1) 180H12 WDO HEAT CONT 1R
2) 180H26 WDO HEAT CONT 1L

TASK 56-11-01-216-010

3. Examine the No. 1 Window (Windshield) for the Correct Installation

A. References
(1) AMM 30-41-00/501, Flight Compartment Window Anti-Icing System
(2) AMM 30-42-00/501, Windshield Wiper System
(3) AMM 56-11-01/401, Flight Compartment No. 1 Window (Windshield)

B. Access
(1) Location Zone
221 Flight Compartment, Left - Flight Compartment Windows
222 Flight Compartment, Right - Flight Compartment Windows

C. Procedure - Examine the Windshield Installation

S 216-011

(1) Examine the windshield installation for loose fasteners or fasteners that are not in the window frame.

NOTE: The loose fasteners can cause water leakage.

(a) Tighten the loose fasteners from 50 to 70 pound-inches (AMM 56-11-01/401).

S 716-012

(2) Examine the window heater system for the correct operation (AMM 30-41-00/501).

S 736-013

(3) Examine the windshield wipers for the correct operation (AMM 30-42-00/501).

NO. 2 AND 3 WINDOWS - REMOVAL/INSTALLATION

1. General
   A. This procedure contains the following tasks:
      (1) Removal of the No. 2 and 3 windows.
      (2) Installation of the No. 2 and 3 windows.

   TASK 56-11-02-004-001

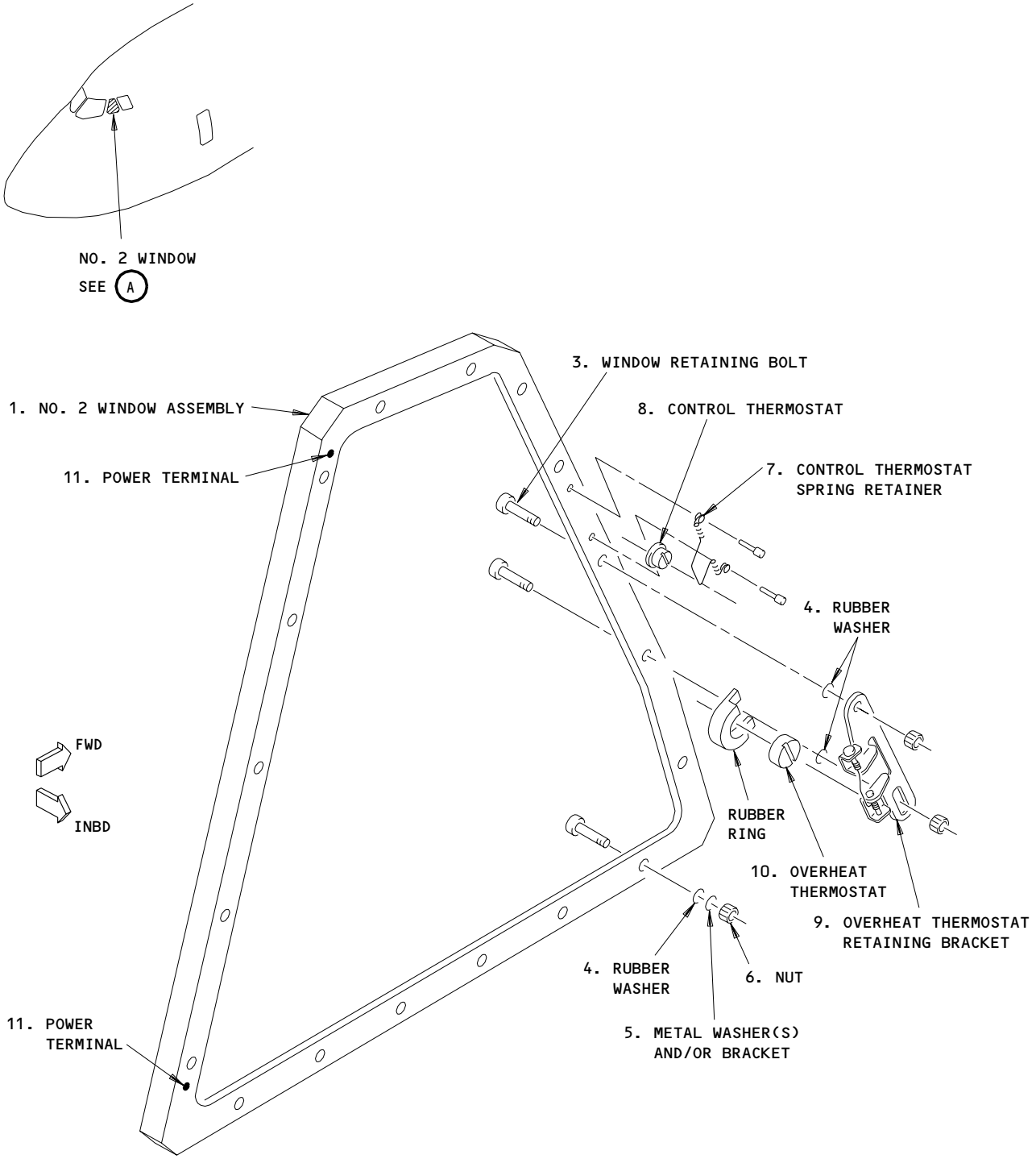
2. No. 2 and 3 Windows Removal (Fig. 401)
   A. General
      (1) The removal procedures for the right and the left No. 2 and 3 windows are the same. To remove the No. 3 window you must remove a part of the vertical sidewall lining.
   B. Consumable Materials
      (1) G00139 Tape - Protective, Gizard Protex 20V
      (2) G00191 Maskant - Spraylat SC-1071, (protective spray coating)
      (3) G00294 Tape - Masking, Permacel No. 76
   C. References
      (1) AMM 25-15-02/401, Crash Pads
      (2) AMM 30-41-06/401, Control and Overheat Thermostats
   D. Access
      (1) Location Zone
          221 Flight Compartment, No. 2 and 3 Left Side Windows
          222 Flight Compartment, No. 2 and 3 Right Side Windows

   E. Prepare for the Removal.

      S 864-002

      WARNING: BE CAREFUL WHEN YOU DO MAINTENANCE ON THE FLIGHT COMPARTMENT WINDOWS. YOU MUST OPEN THE CIRCUIT BREAKERS AND THE WINDOW HEAT SWITCHES. FAILURE TO DO THIS CAN CAUSE AN ELECTRICAL SHOCK TO PERSONS THAT TOUCH THE WINDOW SURFACES, THE ELECTRICAL TERMINALS AND THE LEADS.

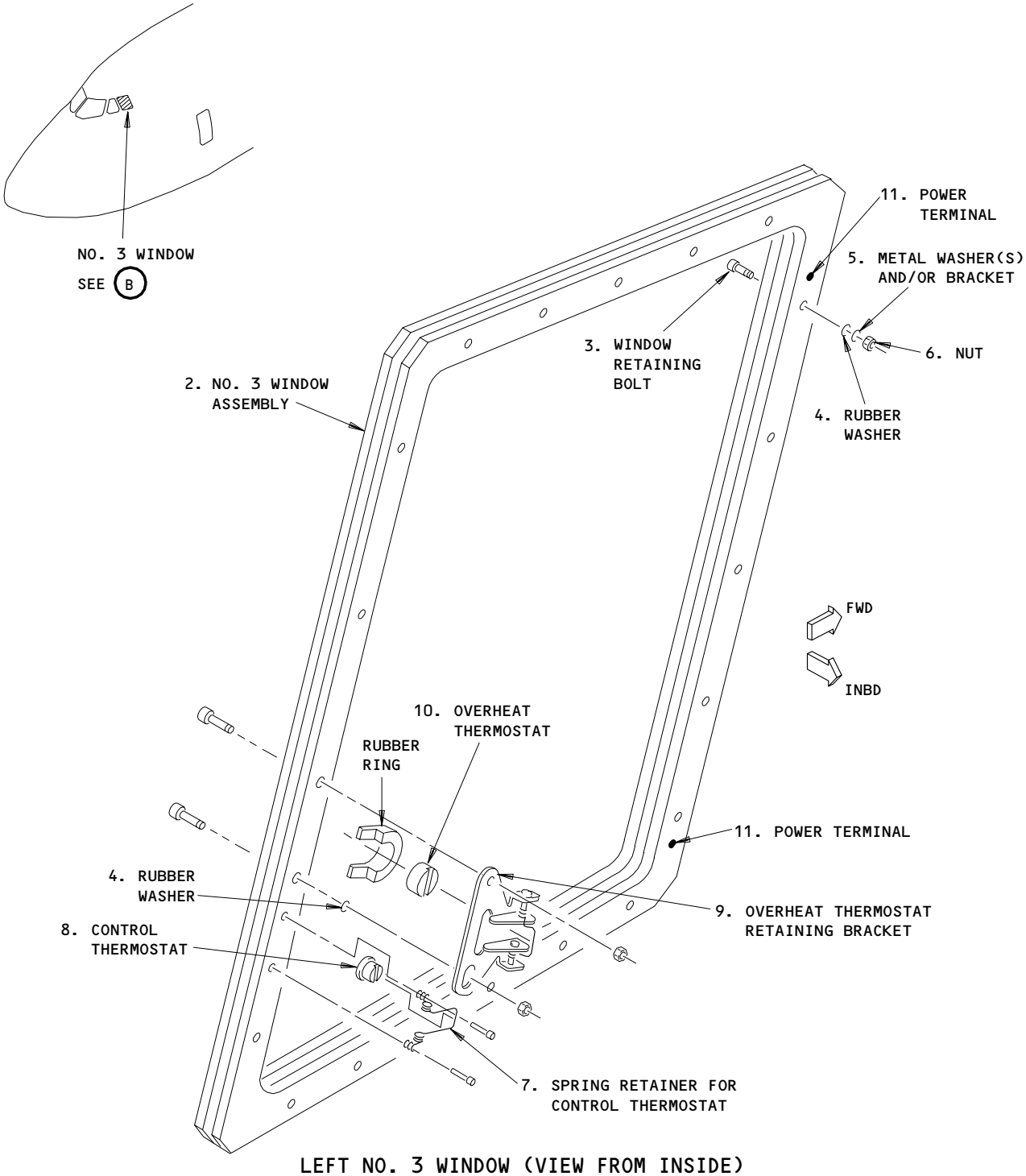
      (1) Put the window heat switches in the OFF position.



LEFT NO. 2 WINDOW (VIEW FROM INSIDE)

(A)

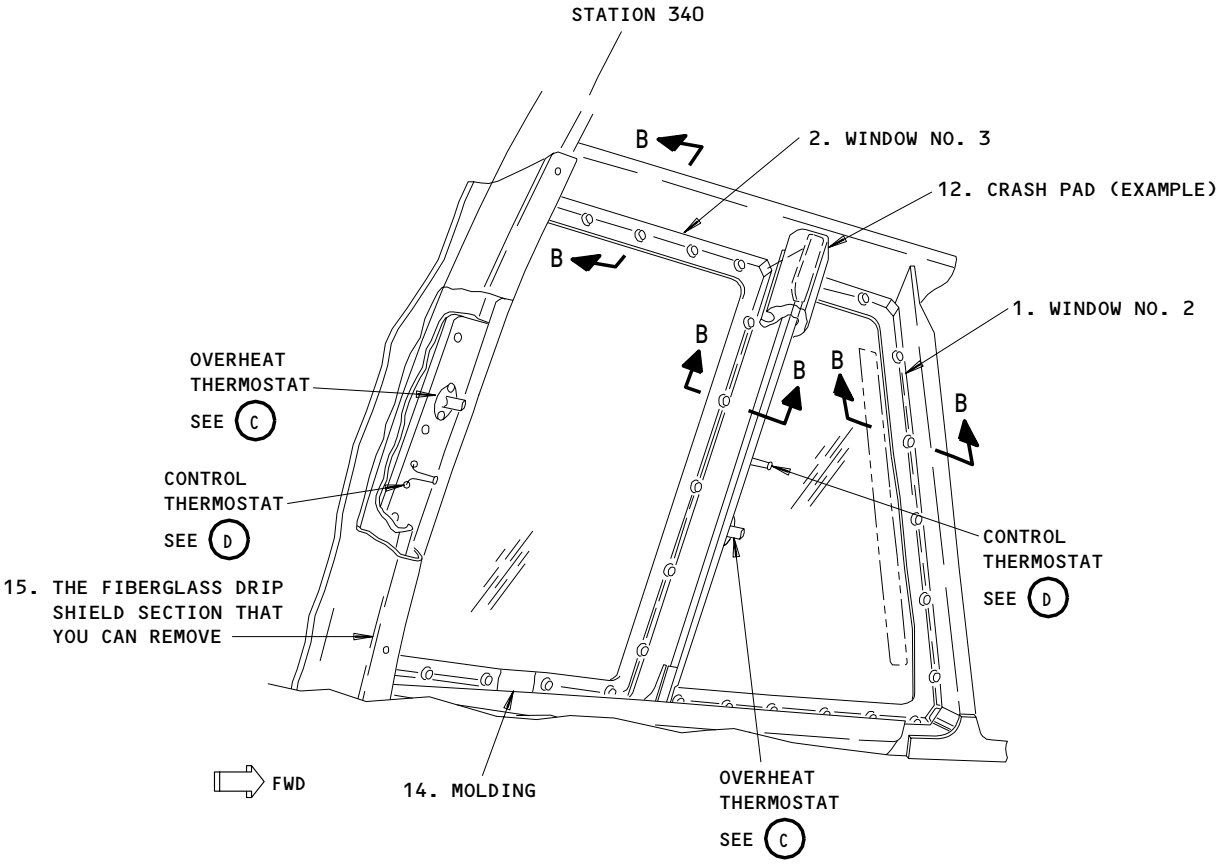
No. 2 and 3 Window Installation
Figure 401 (Sheet 1)

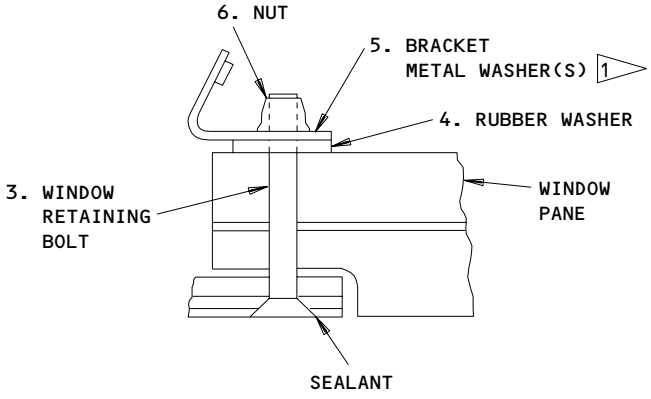


LEFT NO. 3 WINDOW (VIEW FROM INSIDE)

B

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

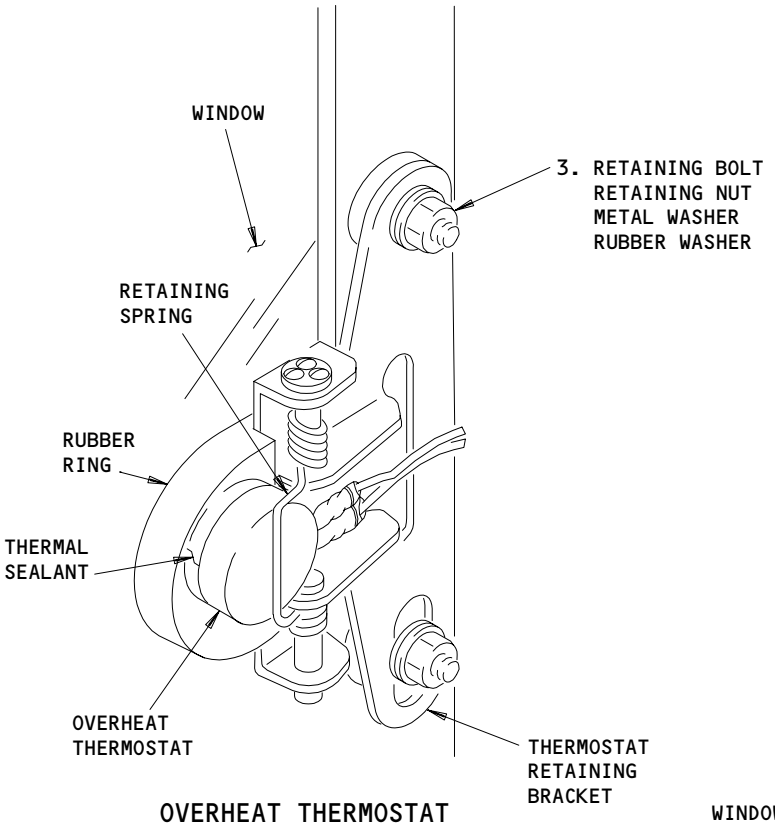




NO. 2 AND 3 WINDOWS
BOLT INSTALLATION
B-B

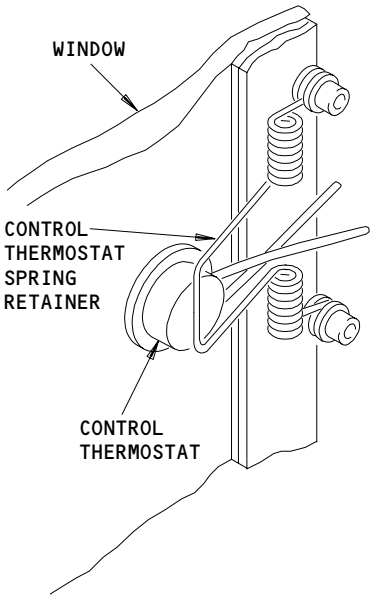
1 YOU CAN INSTALL ONE OR MORE WASHERS TO KEEP THE SAME GRIP LENGTH.

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



OVERHEAT THERMOSTAT
(EXAMPLE NO. 2 AND 3 WINDOWS)

C

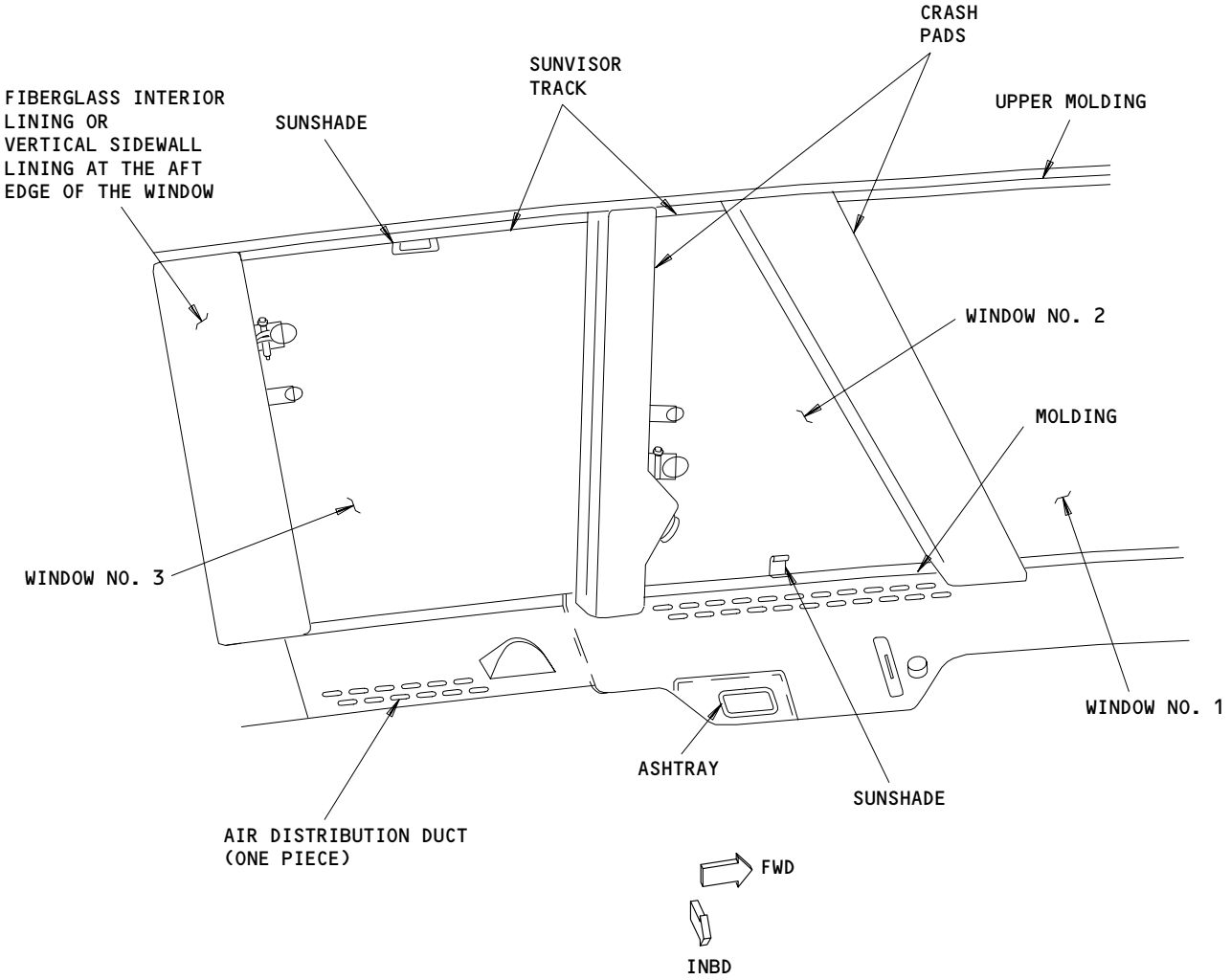


CONTROL THERMOSTAT
(EXAMPLE NO. 2 AND 3 WINDOWS)

D

Window No. 2 and 3 Installation
Figure 401 (Sheet 4)

296336



NOTE: UNDERNEATH THE VERTICAL SIDEWALL LINING
IS THE FIBERGLASS DRIPSHIELD.

Window No. 2 and 3 Installation
Figure 401 (Sheet 5)

S 864-003
(2) Open these circuit breakers and attach DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B17 WINDOW HEAT 1R
2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P180 DC Power Distribution Panel
1) 180H12 WDO HEAT CONT 1R
2) 180H26 WDO HEAT CONT 1L

S 954-004
(3) Install the protective tape or the spray coating on the inner and the outer surfaces of the window.

S 014-067
(4) Remove the crash pads on both windows (AMM 25-15-02/401).

S 014-068
(5) Remove the visor track (sunvisor) (AMM 25-13-03/401).

S 014-069
(6) Remove the No. 3 window sunshade.

S 014-070
(7) Remove the upper molding commom to aft No. 1, 2 and 3 windows.

S 014-071
(8) Remove the lower air duct.

S 014-059
(9) For No. 2 window, do the following:
(a) Remove No. 2 sunshade/molding if necessary.
(b) Disconnect the two power leads from the terminals (11) at the aft edge of the window.

S 014-060

(10) For No. 3 window, do these steps:
  (a) Remove the vertical section of the fiberglass interior lining at the aft edge of the window (STA 340 bulkhead) from approximately WL 340 to 363.
  (b) Remove the fasteners.
  (c) Remove the sealant on the aft edge of No. 3 window.
  (d) Remove the vertical section of the fiberglass dripshield (15) at the aft edge of the window (STA 340 bulkhead) from approximately WL 340 to 363.
  (e) Disconnect the two power leads from the terminals (11) at the forward edge of the window.

S 034-045

(11) Remove the control thermostat (8) and the spring retainer (7) for the thermostat (AMM 30-41-06/401).
  (a) Disconnect the leads.
  (b) Remove the control thermostat.
  (c) Remove the fasteners that hold the spring retainer assembly, and remove the spring retainer assembly.

S 034-014

(12) Remove the overheat thermostat (10) and the retaining spring assembly (AMM 30-41-06/401).
  (a) Disconnect the leads.
  (b) Remove the overheat thermostat.
  (c) Remove the two window bolts that hold the spring retainer assembly, and remove the spring retainer assembly.

F. Remove the Window.

S 034-015

CAUTION: PULL THE NYLON CORD SLOWLY. IF YOU PULL THE CORD FAST, YOU CAN BREAK THE CORD.

(1) Break the aerodynamic seal (Fig. 402).

S 034-046
(2) Remove the aerodynamic smoother from the cord in the top aft corner.

S 034-047
(3) Pull the cord slowly and continuously out until you remove the cord and the smoother.

S 034-016
(4) Remove the nuts (6), the rubber washers (4), the washers and/or brackets (5), and the bolts (3) from the window (Fig. 401).

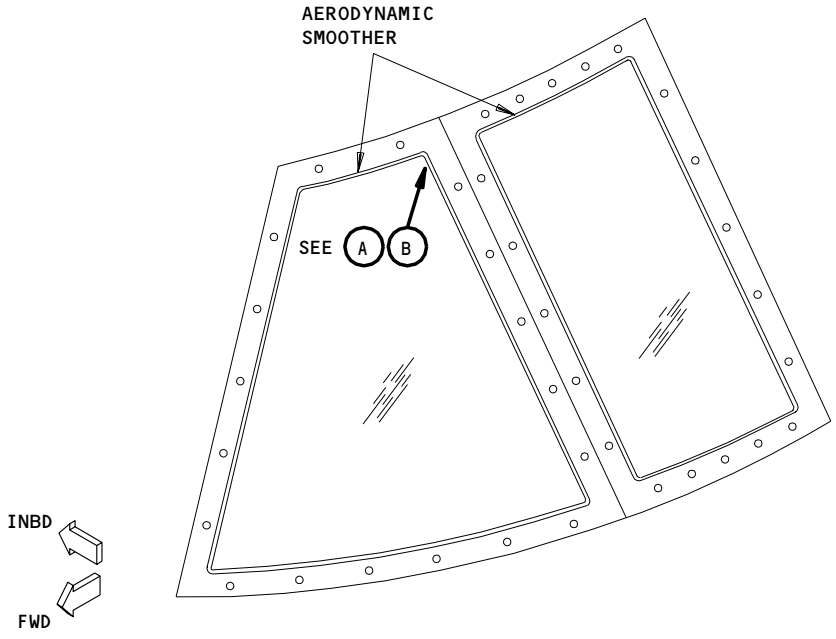
NOTE: Make a record of the locations of the wire support brackets and the metal washers.

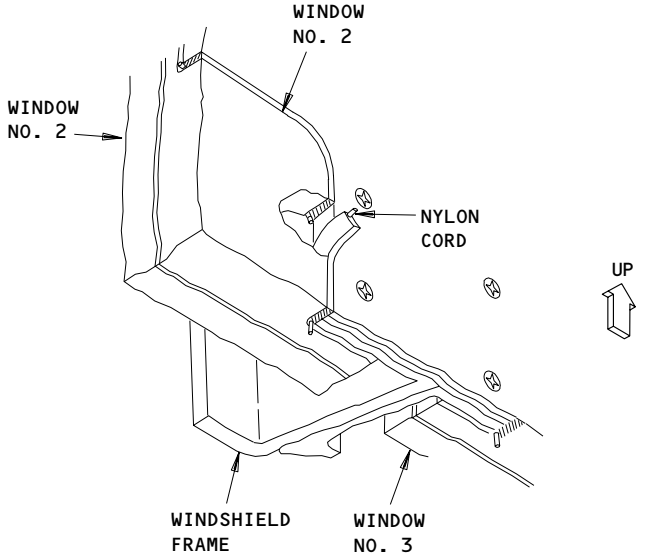
S 024-048
(5) Apply hand pressure to the outer side of the window to break the pressure seal.

NOTE: Always apply hand pressure to the largest area possible. Tap the window with a rubber mallet and nonmetallic block if it is difficult to remove. Do not permit the window to fall free when you break the pressure seal. Support the window from the inside to prevent damage to the adjacent structure and the window.

S 024-066
(6) Carefully remove the window from the window frame.

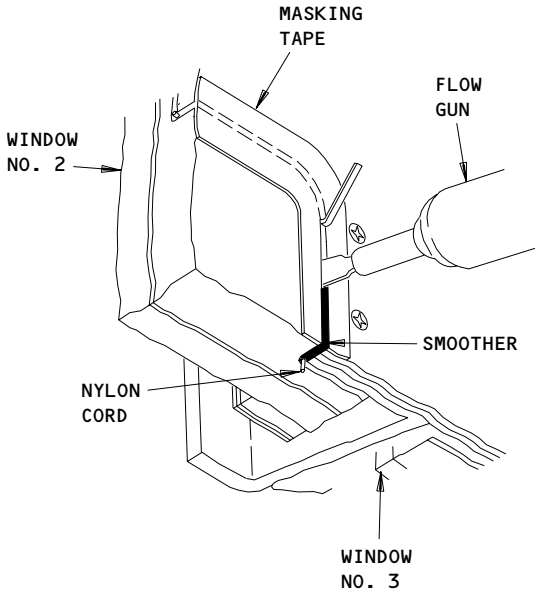
NOTE: If during replacement of the No. 2 window, an interference fit is found between window being removed and four fasteners through upper aft post structure (No. 3 post), remove and reinstall fasteners, reversing the direction of the head. Always fit and remove windows as squarely as possible, with great care. Bolt holes in windows are easily damaged by impact with stud bolt or retaining nuts.





REMOVAL OF THE AERODYNAMIC SMOOTHER

A



INSTALLATION OF THE AERODYNAMIC SMOOTHER

B

Aerodynamic Smoother
Figure 402

S 024-049

(7) For the removal of the No. 2 window, turn the window inboard around the aft edge to be clear of the aft windowpost.

S 024-050

(8) For the removal of the No. 3 window, remove the forward edge of the window first.

TASK 56-11-02-404-018

3. Window Installation

A. General

(1) The installation procedures for the right and the left No. 2 and 3 windows are the same. For the installation of the left No. 3 window, you must install a part of the sidewall lining.

B. Standard Tools and Equipment

(1) Spatula or Flow Gun

C. Consumable Materials

(1) G00139 Tape - Protective, Gizard Protex 20V
(2) G00191 Maskant - Spraylat SC-1071, (protective spray coating)
(3) B00083 Solvent - Aliphatic Naphtha, TT-N-95
(4) G00033 Cheesecloth - Woven, Surewipe (clean and lint-free)
(5) A00247 Sealant - BMS 5-95, Class B
(6) G00294 Tape - Masking Permacel No. 76
(7) C00580 Primer - Silicone, Dow Corning 1200 Red Silicone Primer
(8) G00039 Cord - Nylon, MIL-C-5040, Type 1A (preferred)
(9) G00040 Cord - Nylon, V-T-295, Type 1 Class 2, Size No. 9 (optional)
(10) A00091 Sealant - Silicone Rubber, Dow Corning 93006, (aerodynamic smoother)
(11) A00091 Sealant (Optional) - Silicone Rubber, Pro Seal 860 Class B, (aerodynamic smoother)
(12) A00546 Sealant - Thermal, Wakefield No. 120 (preferred)
(13) A00062 Sealant - Thermal, Dow Corning DC340(optional)

D. Parts

AMM		NOMENCLATURE	AIPC		
FIG	ITEM		SUBJECT	FIG	ITEM
401	1	Window (Left side), (No. 2)	56-11-02	02	45
	1	Window (Right side), (No. 2)		02	50
	2	Window (Left side), (No. 3)		03	45
	2	Window (Right side), (No. 3)		03	50
	3	Bolt (Window Retaining)		02, 03	25
	4	Washer (Rubber)		02, 03	35
	5	Washer (Metal)		02, 03	30
	6	Nut		02, 03	40

E. References
(1) AMM 25-13-03/401, Pilot's Sunvisor
(2) AMM 25-15-02/401, Crash Pads
(3) AMM 30-41-00/501, Flight Compartment Windows Anti-Icing System
(4) AMM 30-41-06/401, Control and Overheat Thermostats
(5) AMM 33-15-00/501, Flight Compartment Auxiliary Lights
(6) WDM 30-41-21

F. Access
(1) Location Zone
221 Flight Compartment No. 2 and 3 Left Side Windows
222 Flight Compartment No. 2 and 3 Right Side Windows

G. Prepare the Window for Installation.

S 954-019
(1) Install the protective tape or the spray coating on the inner and the outer surfaces of the window (if not installed already).

S 864-020

WARNING: BE CAREFUL WHEN YOU DO MAINTENANCE ON THE FLIGHT COMPARTMENT WINDOWS. YOU MUST OPEN THE CIRCUIT BREAKERS AND THE WINDOW HEAT SWITCHES. FAILURE TO DO THIS CAN CAUSE AN ELECTRICAL SHOCK TO PERSONS THAT TOUCH THE WINDOW SURFACES, THE ELECTRICAL TERMINALS AND THE LEADS.

(2) Put the window heat switches in the OFF position.

S 864-021
(3) Open these circuit breakers and install DO-NOT-CLOSE tags:
(a) P6 Main Power Distribution Panel
1) 6B17 WINDOW HEAT 1R
2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR

(b) P18O DC Power Distribution Panel
1) 18OH12 WDO HEAT CONT 1R
2) 18OH26 WDO HEAT CONT 1L

S 144-022
(4) Remove all the aerodynamic smoother from the window frame and the window.

S 114-023

WARNING: BE VERY CAREFUL WHEN YOU USE THE ALIPHATIC NAPHTHA. ALIPHATIC NAPHTHA IS FLAMMABLE AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Clean these surfaces with the aliphatic naphtha:

NOTE: Use a clean cheesecloth to apply aliphatic naphtha and a clean cheesecloth to remove it. Do not permit the aliphatic naphtha to dry on the surfaces. Clean the surfaces until there is no remaining film. Be careful to not cause damage, or change the shape of the mating surfaces.

(a) The areas where you will apply aerodynamic smoother.
(b) The beaded, molded pressure seal.
(c) The window frame.
(d) The aerodynamic seal.
(e) The fuselage window frame.

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

S 214-051
(1) Do a visual check of the window post and the sill for cracks and corrosion.

S 424-024
(2) Put the window in the position for installation.

S 434-025

(3) Install the window fasteners.

(a) Install the window retaining bolts (3) with the sealant adjacent to the bolt head.

(b) Install a rubber washer (4) on each bolt.

(c) Install a metal washer (5) and/or brackets (5) on each bolt.

NOTE: It is possible you will have to install more metal washers to keep the same bolt grip length.

(d) Install the overheat thermostat bracket (9) at the nearest possible location adjacent to the window hot spot.

NOTE: Do not install metal washers at these locations. Aluminum washers may be added in order to maintain grip length. The hot spot is different on each window. There is a red disk laminated in the window plies at the location of the hot spot. On the No. 2 window, the hot spot is approximately 1.3 inches from the forward edge. On the No. 3 window, the hot spot is approximately 1.3 inches from the aft edge.

(e) Install the nuts (6) loosely.

S 824-026

(4) Align the window in the frame until there is an equal clearance around the window between the window and the frame.

S 424-052

(5) Tighten the window fasteners.

(a) Tighten each nut (6) until it is snug.

NOTE: The nut is snug when the rubber washer (4) will not turn freely.

(b) Apply one full 360 degree ± 30 degree wrench turn to each of the bolts (3).

NOTE: Follow the sequence to tighten the bolts as shown in Fig. 403.

CAUTION: DO NOT TIGHTEN THE WINDOW BOLTS MORE THAN TWO FULL TURNS (720 DEGREES ± 60 DEGREES). IF YOU TIGHTEN THE BOLTS TOO MUCH, IT CAN CAUSE THE DELAMINATION OF THE WINDOW.

(c) Apply one more 360 degree ± 30 degree wrench turn to each bolt (3) to complete the window bolt installation.

NOTE: Window must be aligned to 0.03 inch outboard of the skin and 0.08 inch inboard of the skin.

I. Apply the Aerodynamic Smoother.

S 954-028

(1) Apply the masking tape adjacent to the areas where you will apply the aerodynamic smoother.

S 394-029

(2) Apply the aerodynamic smoother:
(a) Apply a thin brush layer of the silicone primer to the bottom and the sides of the area.
(b) Permit the primer to dry for a minimum of 1 hour at 70°F.
(c) Brush a layer of the silicone primer on a clean, dry nylon cord and permit the primer to dry for 30 minutes.
(d) Install the cord in the groove.

NOTE: The ends of the cord must make an overlap of 0.5 to 1.0 inch when installed around the window.

(e) Push the cord into the groove with a thin blunt hand tool and make an overlap with the two ends in the top aft corner.
(f) Make sure the ends of the cord is correctly against the frame at all points on the cord.
(g) Apply the aerodynamic smoother as shown in Fig. 402.

NOTE: You must complete the steps that follow in 2.5 hours.

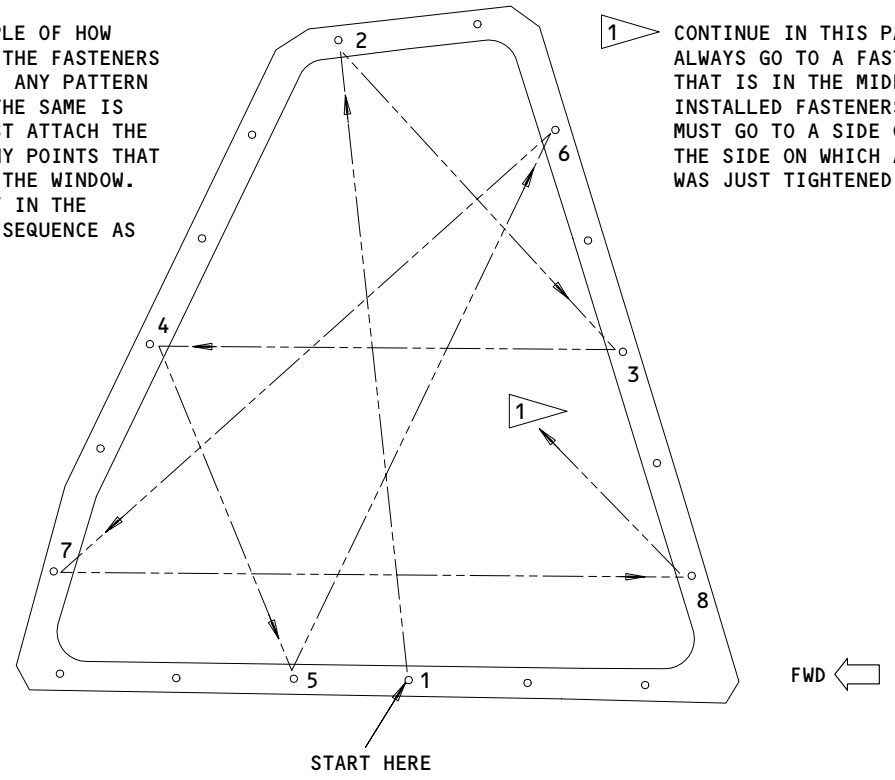
1) Use a flow gun to add the mixed aerodynamic smoother to the area.

NOTE: You must add the smoother slowly to the area. If you do not fill the area fully, the smoother will shrink too much.

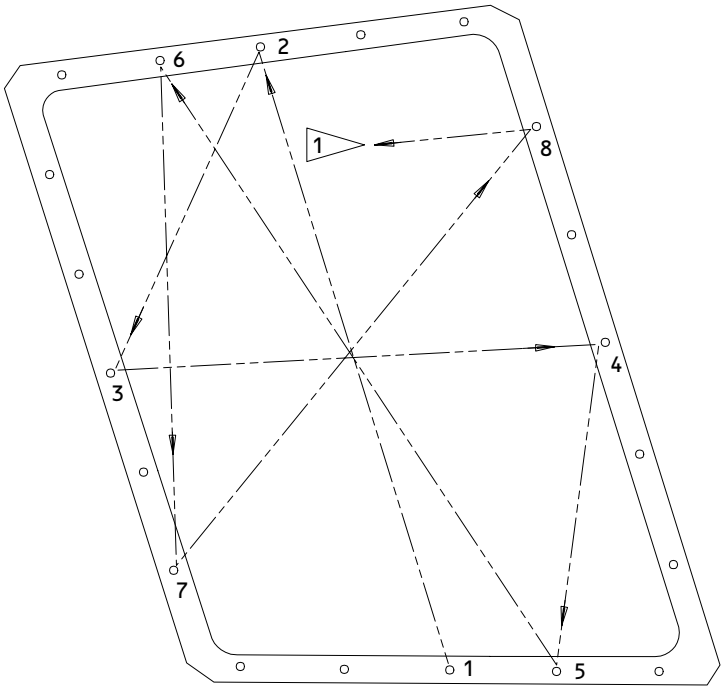
You can use a spatula when you cannot use a flow gun.

NOTE: THIS IS AN EXAMPLE OF HOW YOU CAN TIGHTEN THE FASTENERS FOR THE WINDOW. ANY PATTERN THAT IS ALMOST THE SAME IS PERMITTED. FIRST ATTACH THE WINDOW AT AS MANY POINTS THAT ARE OPPOSITE ON THE WINDOW. DO THIS AS EARLY IN THE FASTENER TORQUE SEQUENCE AS POSSIBLE.

1 CONTINUE IN THIS PATTERN. ALWAYS GO TO A FASTENER THAT IS IN THE MIDDLE OF TWO INSTALLED FASTENERS. YOU MUST GO TO A SIDE OTHER THAN THE SIDE ON WHICH A FASTENER WAS JUST TIGHTENED.



NO. 2 WINDOW



NO. 3 WINDOW

Example Window Fastener Torque Sequence
Figure 403

2) Use water to make the extra aerodynamic smoother smooth with the outer surface of the skin and the window.
3) Remove the masking tape from the edges of the area and remove the protective cover from the outer side of the window.

NOTE: If aerodynamic smoother is not sufficiently cured (at least 30 durometer), the airplane can be dispatched by applying pressure sensitive aluminum tape such as 3M 425, or 428A, B, or C, or Y9162. Remove the tape as soon as possible after the minimum cure time.

4) If the aerodynamic smoother lifts up at the edges of the area, you can make it smooth with a tool.

J. Put the Airplane to Its Initial Condition (Fig. 401)

S 414-030

(1) Install the wire support brackets removed from the bottom of No. 3 window.

S 434-031

CAUTION: MAKE SURE THE CODES OF THE LEADS AGREE WITH THE TERMINAL (WDM 30-41-21). INCORRECT CONNECTIONS CAN CAUSE DAMAGE TO THE WINDOW CIRCUITS AND THE WINDOW.

(2) Connect the two power leads to terminals (11) at the aft edge of the No. 2 window or the forward edge of the No. 3 window.

S 434-032

(3) Install the control thermostat (AMM 30-41-06/401).
(a) Install the spring retainer (7) for the control thermostat.
(b) Connect the wires to the thermostat (8).
(c) Lift the spring retainer (7) and put the thermostat (8) below the spring on the window pane.

(d) Lower the spring on top of the thermostat.

S 434-033

(4) Install the overheat thermostat (AMM 30-41-06/401).
   (a) Connect the thermostat (10) to the electrical connector.
   (b) Apply a thin layer of the thermal sealant to the window surface area at the thermostat (10) location.
   (c) Lift the spring and hold the thermostat (10) against the window pane.
   (d) Lower the spring on top of the thermostat.
   (e) Make sure the sealant is even below thermostat (10).
   (f) If there is too much sealant around the thermostat, remove it.

S 414-063

(5) For No. 3 window, do the following:
   (a) Install the vertical section of the fiberglass dripshield (15) at the aft edge of the window (STA 340 bulkhead) from approximately WL 340 to 363.
   (b) Apply sealant to the area that is common to the aft edge of No. 3 window, (i.e. to the edge of the dripshield section).
   (c) Install the fasteners.
   (d) Install the vertical section of the fibergalss interior lining at the aft edge of the window (STA 340 bulkhead) from appromimately WL 340 to 363.

S 414-061

(6) For No. 2 window, Install No. 2 sunshade/molding (if removed).

S 414-072

(7) Install the lower duct.

S 414-073

(8) Install the upper molding common to the aft No. 1, 2, and 3 windows.

S 414-074

(9) Install No. 3 window sunshade.

S 414-075
(10) Install the visor track (sunvisor) (AMM 25-13-03/401)

S 414-076
(11) Install the crash pads on both windows (AMM 25-15-02/401).

S 954-041
(12) Remove the protective tape or the spray coating from the inner surface of the window.

S 864-042
(13) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) P6 Main Power Distribution Panel
1) 6B17 WINDOW HEAT 1R
2) 6B34 WINDOW HEAT 1L
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR
(b) P180 DC Power Distribution Panel
1) 180H12 WDO HEAT CONT 1R
2) 180H26 WINDOW HEAT CONT 1L

S 734-043
(14) Do a check of the window heat system (AMM 30-41-00/501).

FLIGHT COMPARTMENT NO. 2 AND 3 WINDOWS - INSPECTION/CHECK

1. General
   A. This procedure has one task. This task is to do an inspection of the flight compartment No. 2 and 3 windows for damage.
   B. The window inspection includes the inspection for these defects:

      - Scratches
      - Cracks
      - Chips
      - Delamination
      - Bubbles
      - Defective window heat
      - Deterioration of the moisture seals and/or aerodynamic smoother.

   C. The visual and the structural quality of the window heat for the windows is very important. You must replace the windows that have structural damage or that decreases visual capacity. You must also replace the windows that do not warm correctly when you apply heat.
   D. If there is small damage in the border area it will not usually change the window safety or operation of the window.
   E. You must remove a window if you find these conditions:
      (1) Windows that do not warm correctly when you apply heat.
      (2) Cracks or chips in the inner glass ply.
      (3) Cracks in the outer glass ply.
      (4) Cracks in the vinyl ply that prevent vision through the window.
      (5) Scratches more than 0.002 inch in depth.
      (6) Delaminations limit visual capacity.
      (7) Bad pressure leaks.
      (8) A decrease in the visual quality.

   TASK 56-11-02-206-001
2. Flight Compartment No. 2 and 3 Windows Inspection
   A. References
      (1) AMM 30-41-00/501, Flight Compartment Window Anti-Icing System
      (2) AMM 56-11-00/801, Flight Compartment Windows
      (3) AMM 56-11-02/401, Flight Compartment No. 2 and 3 Windows
   B. Access
      (1) Location Zones
          221 Flight Compartment, Left Flight Compartment Windows
          222 Flight Compartment, Right Flight Compartment Windows
   C. Prepare for Inspection

S 866-002

WARNING: DO NOT TOUCH THE WINDSHIELD UNLESS THE CIRCUIT BREAKERS ARE OPEN AND THE WINDOW HEAT SWITCHES ARE OFF. FAILURE TO DO THIS CAN CAUSE AN ELECTRICAL SHOCK.

(1) Put the window heat switches in the OFF position.

S 866-003

(2) Open the circuit breakers that follow and attach DO-NOT-CLOSE tags:
  (a) P6 Main Power Distribution Panel
    1) 6B34 WINDOW HEAT 1L
    2) 6B17 WINDOW HEAT 1R
    3) 6E28 WINDOW HEAT 2L & 3R PWR
    4) 6E30 WINDOW HEAT 2R & 3L PWR
  (b) P180 DC Power Distribution Panel
    1) 180H12 WDO HEAT CONT 1R
    2) 180H26 WDO HEAT CONT 1L

D. Procedure - Examine the windows

S 216-004

(1) Examine the Triplex windows for scratches:

NOTE: The tempered glass inner ply (crew shield) is load bearing and must be replaced if nicks or scratches exceed 0.002 inches in depth or visibility is impaired.

(a) Make sure there are no scratches more than 0.002 inch in depth.

S 216-013

(2) Examine the PPG windows for scratches.

NOTE: The tempered glass inner ply is a non-load bearing and may be nicked, scratched, or have other damage provided visibility is not impaired.

S 216-011

(3) Examine the windows for cracks:

(a) Replace the windows if you find cracks which extend from the edge of the metal insert to the inner crew shield (AMM 56-11-02/401).

NOTE: The area in question will appear gray or brown, the window should be replaced prior to further flight.

(b) Replace the window if the pilot's vision is no longer acceptable or if the following conditions are satisfied (AMM 56-11-02/401):

1) Condition begins from the edges of the outer glass ply, is visible from the outside of the airplane (or from the inside only if it extends past the insert) and appears initially whitish and turns yellow, breaking up the interlayer with opaque edges on the interlayer segments.

NOTE: The condition is Urethane aging and airplane may continue service until replacement window is available or pilot's vision is no longer acceptable.

2) There are no cracks or other signs of distress at the inner (toward the middle of the window) edges of the insert.

S 216-014

(4) Examine the windows for chips.

NOTE: Chips are flakes or layers of glass broken from surface. Chips have a rough or grained appearance and are readily detectable. There are two types of chips: conchoidal and V-shaped. Conchoidal chips are usually circular or curved in shape with many fine striations that follow the outline of the outer edge. These chips are not normally detrimental to the structural integrity of the glass. V-shaped chips have a sharp narrow "V" shape which appears to propagate toward interior of glass. These chips occur only rarely in chemically tempered glass; however, such V-shaped chips may initiate a future window failure.

(a) Replace the window if the chips are in the main glass layers of the window (AMM 56-11-02/401).

S 216-005
(5) Examine the windows for delamination.

NOTE: Delamination is a separation of the glass or acrylic layers from the vinyl interlayer. Delaminations can be seen if the window is examined at an angle in light that does not shine directly on the window. The delamination is seen as a shiny, flat bubble. They usually looks smooth, although there can be some distortion around the perimeter.

Do not confuse a delamination with the layers which are not aligned with each other. The interlayer is not bonded to the clear plastic tape around the edges of the window.

Delaminations at the coating surface are seen as shiny blue, gold, or brown areas with reflected light. Delaminations at the coating surface are seen as brownish areas with transmitted light.

Delaminations do not cause structural failure of the window assembly. Remove a window with delamination if it limits your visual capacity. Delaminations at the coating surface can cause the anti-icing system not to operate. The outer glass ply can crack if the anti-icing system does not operate correctly.

S 216-006
(6) Examine the window for bubbles.

NOTE: The small bubbles in the vinyl core are not a delamination and are not structurally dangerous.

(a) Replace the window if the visual capacity is limited (AMM 56-11-02/401).
(b) Make sure the control system of the window heat operates correctly (AMM 30-41-00/501).

S 216-007
(7) Examine the moisture seal for deterioration and cracks.
(a) Repair the seal if it is necessary (AMM 56-11-00/801).

S 216-008
(8) Examine the window for the loose or cracked aerodynamic smoother.
(a) Repair the smoother if it is necessary (AMM 56-11-00/801).

S 866-009
(9) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
(a) P6 Main Power Distribution Panel
1) 6B34 WINDOW HEAT 1L

2) 6B17 WINDOW HEAT 1R
3) 6E28 WINDOW HEAT 2L & 3R PWR
4) 6E30 WINDOW HEAT 2R & 3L PWR

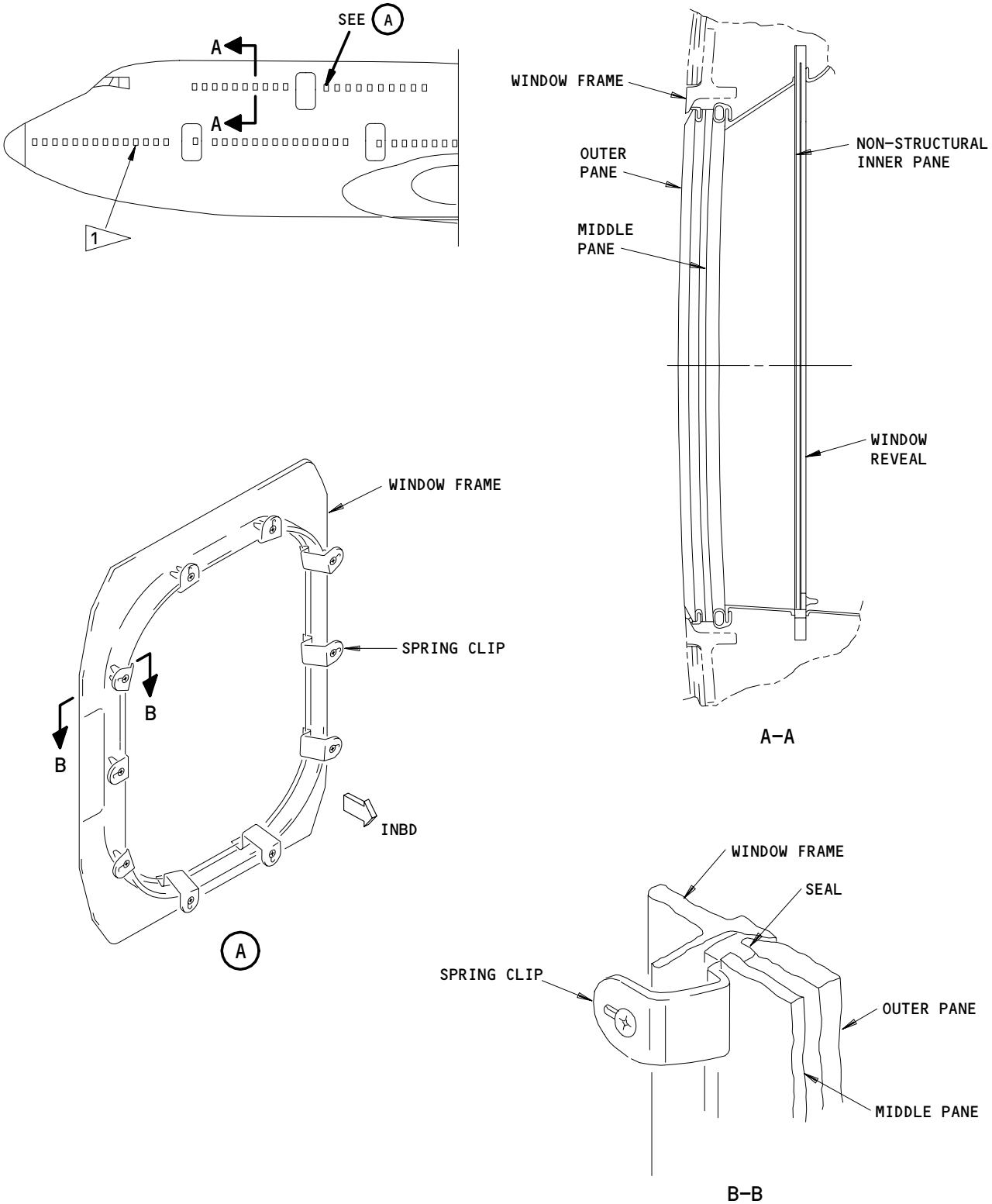
(b) P180 DC Power Distribution Panel
1) 180H12 WDO HEAT CONT 1R
2) 180H26 WDO HEAT CONT 1L

S 736-010

(10) Do a test of the window heating system to make sure it operates correctly (AMM 30-41-00/501).

PASSENGER WINDOWS - DESCRIPTION AND OPERATION

1. General (Fig. 1)
   A. Passenger windows are located between the fuselage frames in those areas of the airplane where passenger seating is provided. The passenger windows consist of outer, middle, and non-structural inner panes. They are designed to preclude fogging and frosting by means of multiple pane construction with intervening cavities essentially isolated from cabin interior air.
2. Windows
   A. The non-structural inner pane (dust shield) is mounted between the outer windowpane and the non-structural inner window reveals just outboard of the window shade channel. The window reveal assembly (inner and outer reveals, window reveal seal, inner panel and window shade) is mounted in a pan that is part of the sidewall panel. The window reveal assembly is removable for access to the middle and outer window panes (Ref 25-21-05/201). The outer and middle windowpanes are each capable of taking the full cabin pressurization load. Fail-safe structure is ensured by the middle pane which is designed for 1.5 times the normal operating pressure at 70°F. The outer pane is stretched acrylic plastic for improved resistance to crazing. The middle pane is modified acrylic plastic. The non-structural inner pane is a flat sheet of SE-3 acrylic with a scratch resistant coating on inboard surface.
   B. The passenger windows are designed as plug-type windows subject only to the pressure acting on them. The outer and middle panes are secured to the window frame with 10 spring clips. In addition to the spring clips, the forward four windows on each side also have 12 retainer fittings to make them resistant to bird strikes. The window retainer fitting surface contacting the windowpane is coated with a nylon fluidized bedcoating or optional teflon finish to prevent fretting. The outer pane of stretched acrylic plastic, 0.35 inch thick, is rectangular in shape with rounded corners and a beveled outer edge to fit the window frame. The pane is curved to fair with the fuselage contour. The middle pane of modified acrylic plastic sheet, 0.22 inch thick, is similarly shaped but with an unbeveled edge which is seated on the inboard face of the seal/spacer ring. A small breather hole is located near the bottom of the middle pane.
3. Seal
   A. A seal/spacer ring positions both the middle and outer panes in the window frame and seals the outer windowpane to the window frame. It is a molded ethylene propylene seal with staggered beads and an integral masking feature. The middle pane is mounted on the inboard face of the seal/spacer ring. The window retaining clips secure the window in the window frame, compressing the ring to fit tightly against all members to form a pressure seal.



1 ON PASSENGER AND COMBI AIRPLANES ONLY

Passenger Windows
Figure 1

PASSENGER WINDOW - REMOVAL/INSTALLATION

1. General
   A. This procedure contains these tasks:
      (1) Removal of passenger windows.
      (2) Installation of passenger windows.
   B. The data that follows applies to all the passenger windows and plugs, and all the entry door windows.

TASK 56-21-01-004-001

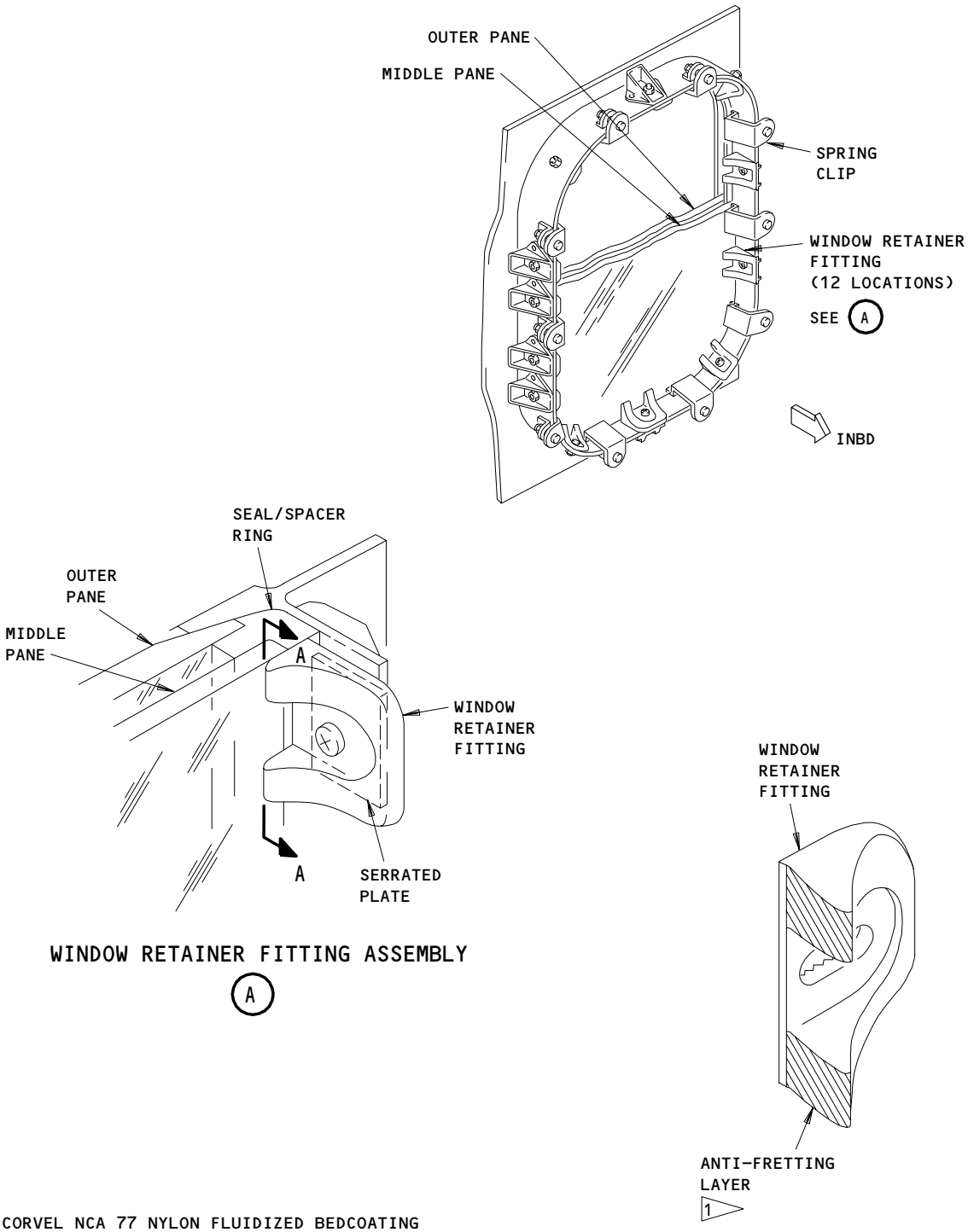
2. Passenger Window Removal (Fig. 401)
   A. Consumable Materials
      (1) G00191 Maskant - Spraylat SC 1071, protective spray coating
      (2) G00301 Tape - Protective, Gizard Protex 20V
   B. References
      (1) AMM 25-21-05/201, Sidewall Panel Inner Window and Shade
   C. Access
      (1) Location Zones

211	Passenger Cabin Nose to First Door, Left
212	Passenger Cabin Nose to First Door, Right
223	Fwd Upper Deck Passenger Cabin, Left
224	Fwd Upper Deck Passenger Cabin, Right
225	Aft Upper Deck Passenger Cabin, Left
226	Aft Upper Deck Passenger Cabin, Right
231	Passenger Cabin First to Second Door, Left
232	Passenger Cabin First to Second Door, Right
241	Passenger Cabin Second to Third Door, Left
242	Passenger Cabin Second to Third Door, Right
251	Passenger Cabin Third to Fourth Door, Left
252	Passenger Cabin Third to Fourth Door, Right
261	Passenger Cabin Fourth Door to Sta 2040, Left
262	Passenger Cabin Fourth Door to Sta 2040, Right
271	Passenger Cabin Sta 2040 to Sta 2360, Left
272	Passenger Cabin Sta 2040 to Sta 2360, Right

   D. Prepare for the Removal

      S 014-002
      (1) Remove the non-structural inner pane of the sidewall panel and the shade (AMM 25-21-05/201).

      NOTE: The main deck passenger windows have a removable reveal. You do not have to remove the sidewall panel to get access to the main deck windows.



WINDOW RETAINER FITTING ASSEMBLY

A

1 CORVEL NCA 77 NYLON FLUIDIZED BEDCOATING 0.08 INCH THICK IS APPLIED OVER THE CORVEL NC PRIMER. THE OPTIONAL MATERIAL IS THE ABRASION RESISTANT TEFLON FINISH REFER TO 51-24-04.

Passenger Window Retainer Fitting Installation
Figure 401

S 954-003
(2) Apply the protective tape or the spray coating to the window pane areas that you can get access to.

E. Remove the Window.

S 034-004
(1) Remove the twelve window retainer fittings, if you remove one or more of the first four windows of either side (Fig. 401).

S 214-005
(2) Examine the antifretting coating on the retainer fitting for worn areas.
(a) Apply the antifretting coating to the worn areas of the fitting if it is necessary.

S 034-006
(3) Remove the clip adjusting screws first (Fig. 402).

S 034-007
(4) Remove the ten window retaining spring clips.

S 024-008
(5) Remove the outer pane, the seal/spacer ring and the middle pane together.

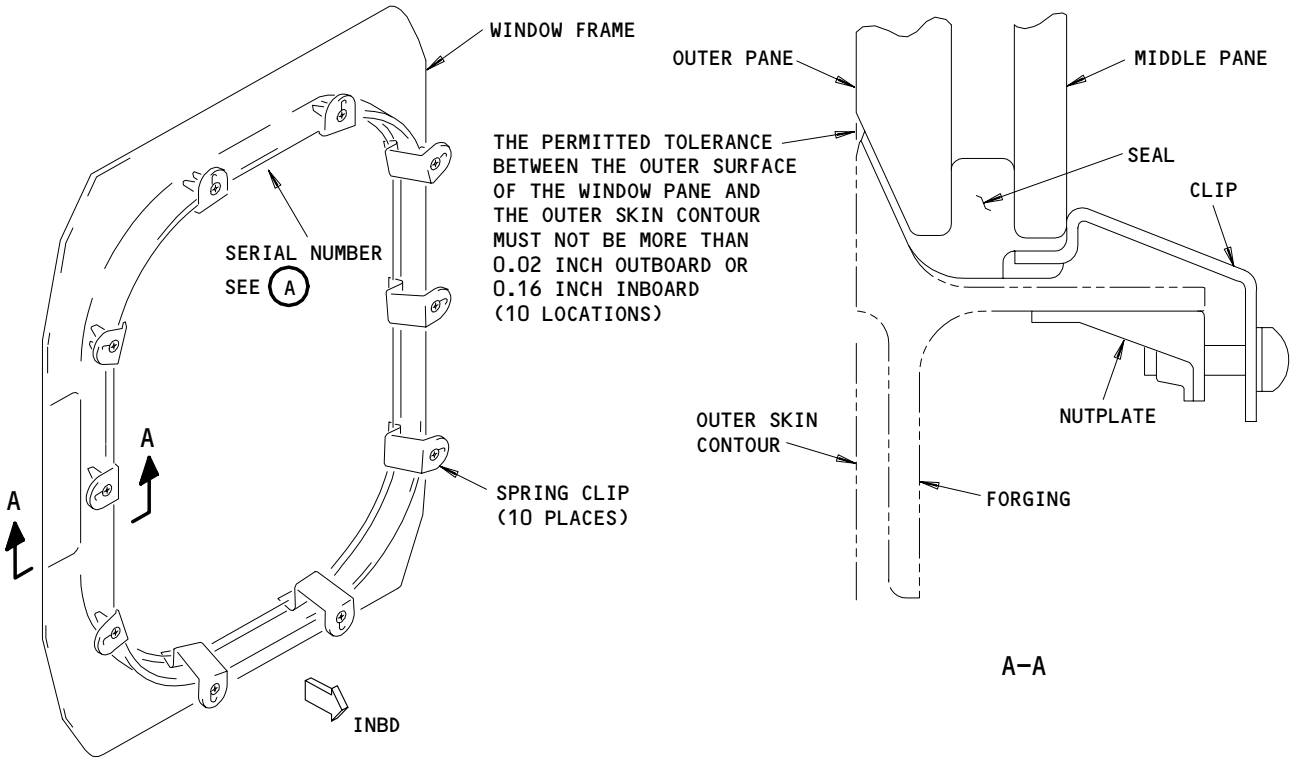
S 034-009
(6) Remove the seal/spacer from the panes if it is torn or damaged.

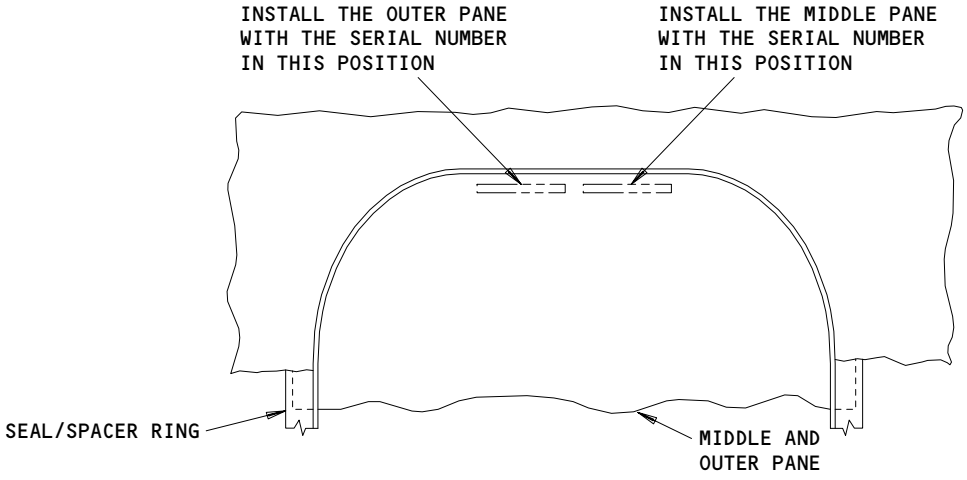
NOTE: You must first apply a protective tape or a protective coating to the surfaces of the glass that do not have protection.

TASK 56-21-01-404-010

3. Passenger Window Installation (Fig. 401).

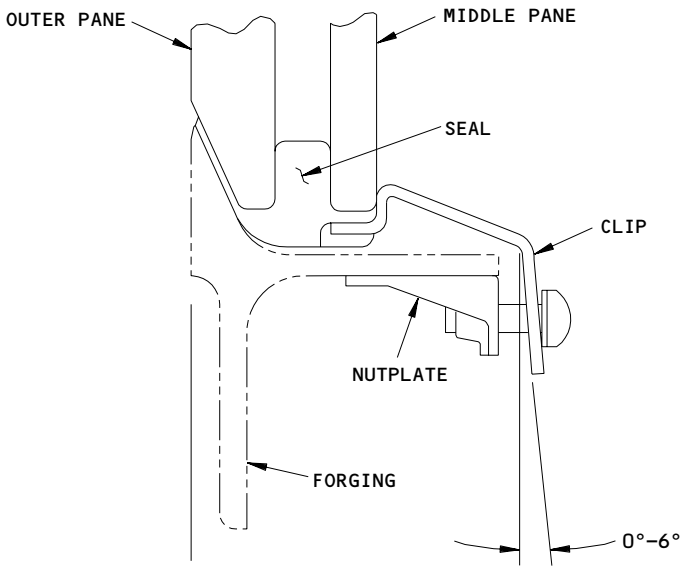
A. Consumable Materials
(1) G00191 Maskant - Spraylat SC 1071, protective spray coating
(2) G00301 Tape - Protective, Gizard Protex 20V
(3) B00083 Solvent - Aliphatic Naphtha, TT-N-95
(4) G00033 Cheesecloth - Woven BMS 15-5 Shurwipe
(5) C00000 Coating - Antifretting Corvel NCA 77 Nylon Fluidized Bed with Corvel NC Primer





OUTSIDE VIEW OF SERIAL NUMBERS
(A)

Passenger Windows Installation
Figure 402 (Sheet 1)



B-B

Passenger Windows Installation
Figure 402 (Sheet 2)

(6) G01989 Soap - Castile
(7) G00073 Antistatic - (Windows), Activol 1390M
(8) G01990 Cotton - Flannel, cloth
(9) B00106 Chamois - KK-C-300 oiltan leather

B. References
(1) AMM 12-16-04/301, Passenger Windows
(2) AMM 12-25-01/301, Exterior Cleaning
(3) AMM 25-00-00/701, Equipment/Furnishings
(4) AMM 25-21-05/201, Sidewall Panel Inner Window and Shade
(5) AMM 56-21-01/601, Passenger Windows

C. Access
(1) Location Zones

211	Passenger Cabin Nose to First Door, Left
212	Passenger Cabin Nose to First Door, Right
223	Fwd Upper Deck Passenger Cabin, Left
224	Fwd Upper Deck Passenger Cabin, Right
225	Aft Upper Deck Passenger Cabin, Left
226	Aft Upper Deck Passenger Cabin, Right
231	Passenger Cabin First to Second Door, Left
232	Passenger Cabin First to Second Door, Right
241	Passenger Cabin Second to Third Door, Left
242	Passenger Cabin Second to Third Door, Right
251	Passenger Cabin Third to Fourth Door, Left
252	Passenger Cabin Third to Fourth Door, Right
261	Passenger Cabin Fourth Door to Sta 2040, Left
262	Passenger Cabin Fourth Door to Sta 2040, Right
271	Passenger Cabin Sta 2040 to Sta 2360, Left
272	Passenger Cabin Sta 2040 to Sta 2360, Right

D. Prepare for the Installation (Fig. 402)

S 214-011
(1) If you install the used panes, make sure they are within the serviceable limits (AMM 56-21-01/601).
(a) Examine the middle pane for scratches, spall chips, or V-shaped chips.

CAUTION: DO NOT PRESSURIZE THE AIRPLANE WITH SCRATCHES 0.005 INCH OR DEEPER, SURFACE CHIPS, OR V-SHAPED EDGE CHIPS. IF YOU PRESSURIZE THE AIRPLANE IN THIS CONDITION, YOU CAN CAUSE DAMAGE TO THE AIRPLANE.

(b) Replace the middle pane that has any scratch 0.005 inch or deeper or any spall chips or V-shaped chips.

S 114-012
(2) Clean the mating surfaces of the window frame.

WARNING: SOLVENTS ARE POISONOUS AND CAN BE FLAMMABLE. DO NOT BREATH THE FUMES AND MIST. USE THEM IN OPEN AREAS. MAKE SURE APPROVED RESPIRATORY PROTECTION IS AVAILABLE. DO NOT GET IN EYES. PREVENT CONTACT WITH SKIN AND CLOTHING. USE PROTECTIVE EQUIPMENT WHEN IT IS NECESSARY. KEEP THE FLAMMABLE MATERIALS AWAY FROM SOURCES OF IGNITION.

CAUTION: DO NOT LET SOLVENTS TOUCH THE PLASTICS, CONTROL CABLES, LUBRICATED AREAS, DECALS, PAINTS, OR MARKINGS. THE SOLVENTS CAN CAUSE DAMAGE TO EQUIPMENT.

(a) If you replace the seal/spacer, clean the mating surfaces of the window frame with the cheesecloth and aliphatic naphtha.
(b) Before the aliphatic naphtha dries, wipe it up completely with a clean, oil and lint-free cheesecloth.
(c) Clean the mating surfaces with the aliphatic naphtha until they are clean.

S 954-013
(3) Remove the protective covers from the outer and the middle panes.

S 224-014
(4) Examine the pane for cracks or signs of cracks (AMM 56-21-01/601).

S 214-015
(5) Examine the middle pane for scratches, spall or V-shaped chips.

CAUTION: DO NOT PRESSURIZE THE AIRPLANE WITH SCRATCHES 0.005 INCH OR DEEPER, SURFACE CHIPS, OR V-SHAPED EDGE CHIPS ON THE WINDOWS. IF YOU PRESSURIZE THE AIRPLANE IN THIS CONDITION, YOU CAN CAUSE DAMAGE TO THE AIRPLANE.

(a) Replace the middle pane that has any scratch 0.005 inch or deeper or any spall chips or V-shaped chips.

S 614-016
(6) Clean the open surfaces of each pane (AMM 12-16-04/301).
(a) Apply the antistatic agent to the open surfaces of each pane (optional) (AMM 12-16-04/301).

S 114-017
(7) Clean around the window openings that you can get to between the outer pane and the non-structural inner pane.

E. Install the window.

S 434-027
(1) Assemble the window in this configuration:
  (a) The serial number on the outer pane is at the top.
  (b) The breather hole on the middle pane is on the bottom.
  (c) The serial number on the middle pane is opposite that of the outer pane.

S 434-025
(2) Apply a mixture of castile soap and water to the area around the seal.

S 424-026
(3) Put the window assembly in the frame.

NOTE: If you use the same seal you removed, make sure it has not slipped in along the edge of the window frame cutout during the installation.

S 434-020
(4) Install the window retaining spring clips.

S 864-028
(5) Turn down the fasteners until the clip face adjacent to the fastener is 0 to 6 degrees in relation to the window pane (Fig. 402).

NOTE: The 0 to 6 degrees is the angle between the window pane (the vertical) and the face of the clip common to screw head.

NOTE: The seal that interfaces with the middle pane will change from a frosted to a solid color indicating full contact.

S 434-021
(6) On the first four windows of the left or the right side, install the window retainer fittings (Fig. 401).
  (a) Use hand pressure only to hold the retainer tightly against the pane with the serrations disengaged.
  (b) Tighten the bolts in the range of 50 to 70 pound-inches while you hold the fitting with hand pressure (spring clips should be installed).

S 224-022
(7) Make sure that the outer surface of the window pane or the plug aligns with the outer skin contour (Fig. 402).

F. Put the Airplane to Its Usual Condition (Fig. 402)

S 414-023

(1) Install the non-structural inner pane of the sidewall panel and the shade (AMM 25-21-05/201).

S 114-024

(2) Clean the outer pane.

CAUTION: DO NOT RUB THE SURFACE WITH A DRY CLOTH. IT CAN CAUSE SCRATCHES AND AN ELECTROSTATIC CHARGE WHICH CAN ALSO CAUSE DUST PARTICLES TO ATTACH TO THE WINDOW SURFACE.

(a) Clean the outer pane surface with warm water and castile soap.
(b) Apply soap solution with a clean, cotton, flannel cloth to the pane surface.
(c) Dry the window with a clean, moist chamois.

PASSENGER WINDOWS - INSPECTION/CHECK

1. General
   A. This procedure contains one task. The task is to examine the passenger windows for damage.
   B. This section applies to all the fuselage passenger windows, the fuselage plugs, and all the entry door windows.
   C. The check is for the window crazing, cracking, chipping, scratches and in-plane cracking.

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.

   D. Remove the window and replace the component if the damage is more than the approved limits (AMM 56-21-01/401).
   E. The definitions of the types of damage are as follows:
      (1) Crazing: Small fissures which frequently start from small scratches in the face of the window. The small cracks are not easy to find on a wet window or a window with wax on it. The small cracks look like white or cloudy scratches. You can see the small cracks in good light or when the sun is in the back of the window.
      (2) Crack: A fissure you can see the width when you look along the faces of the fissure. A crack can extend at all angles to the surface of a plastic pane. The angle is set by the direction of the driving force. Cracks in stretched acrylic can have chevron or clamshell growth lines (Fig. 601).
      (3) Scratch: The removal or displacement of material from the surface of a pane along a line. The ratio of the depth to the width is usually small.
      (4) Chips:
         (a) The Spall (shell type) chips have circular or curved edges. They have many small hairlines or ridges that follow the outline of the outer edge. They get smaller toward the center or deepest point of chip, similar to a clamshell.
         (b) Vee shaped chips have a sharp narrow V shape and look like they go to the interior of the plastic.
      (5) In-plane cracking: A smooth surfaced fissure, or series of fissures, along the pane surfaces. In-plane cracking can occur in stretched acrylic. It starts at the edges of the pane or at deep penetrations of the window. It is usually found by the reflection of light from the smooth surfaces of the fissure.

TASK 56-21-01-206-001

2. Examine the Passenger Windows

A. Standard Tools and Equipment

(1) Optical Micrometer - Model 966A1
Monocle industries
P.O. Box 2426
Coppell, Tx. U.S.A. 75019
Tel (214) 393-9920
Fax (214) 393-9926

B. References

(1) AMM 12-16-04/301, Passenger Windows
(2) AMM 56-21-01/401, Passenger Windows
(3) AMM 56-21-01/801, Passenger Windows
(4) OHM 56-21-41

C. Access

(1) Location Zones

211	Passenger Cabin Nose to First Door, Left
212	Passenger Cabin Nose to First Door, Right
223	Fwd Upper Deck Passenger Cabin, Left
224	Fwd Upper Deck Passenger Cabin, Right
225	Aft Upper Deck Passenger Cabin, Left
226	Aft Upper Deck Passenger Cabin, Right
231	Passenger Cabin First to Second Door, Left
232	Passenger Cabin First to Second Door, Right
241	Passenger Cabin Second to Third Door, Left
242	Passenger Cabin Second to Third Door, Right
251	Passenger Cabin Third to Fourth Door, Left
252	Passenger Cabin Third to Fourth Door, Right
261	Passenger Cabin Fourth Door to Sta 2040, Left
262	Passenger Cabin Fourth Door to Sta 2040, Right
271	Passenger Cabin Sta 2040 to Sta 2360, Left
272	Passenger Cabin Sta 2040 to Sta 2360, Right

D. Procedure

S 216-002

(1) Examine the windowpanes for cracks and crazing.

CAUTION: DO NOT PRESSURIZE THE AIRPLANE WITH A CRACKED OR CRAZED MIDDLE PANE. PRESSURIZATION OF THE FUSELAGE WITH THE MIDDLE PANE CRACKED OR CRAZED IS DANGEROUS BECAUSE THE FAIL-SAFE PROPERTY IS REMOVED.

(a) Replace the middle panes that have cracks or are crazed (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.

You can repair the middle pane if the minimum thickness after the repair is 0.180 inch (OHM 56-21-41).

(b) Replace the outer pane if the depth of any single crack or craze is 0.05 inch or larger (AMM 56-21-01/401).

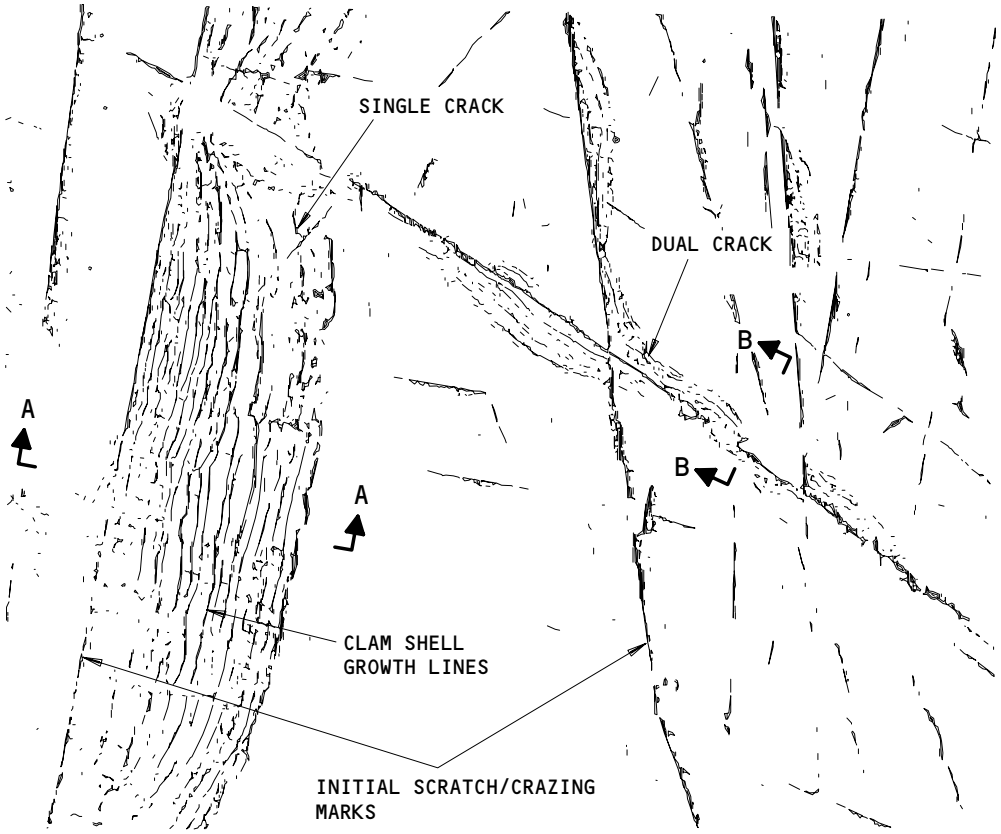
NOTE: An accurate depth of the crack is measured with an optical micrometer. To get the correct dimension, multiply the acrylic plastic index of refraction (1.49) by the micrometer value. All accurate procedures to measure the crack depth are permitted.

(c) Replace the outer pane if the pane thickness after repair will be less than 0.280 inch (AMM 56-21-01/401).

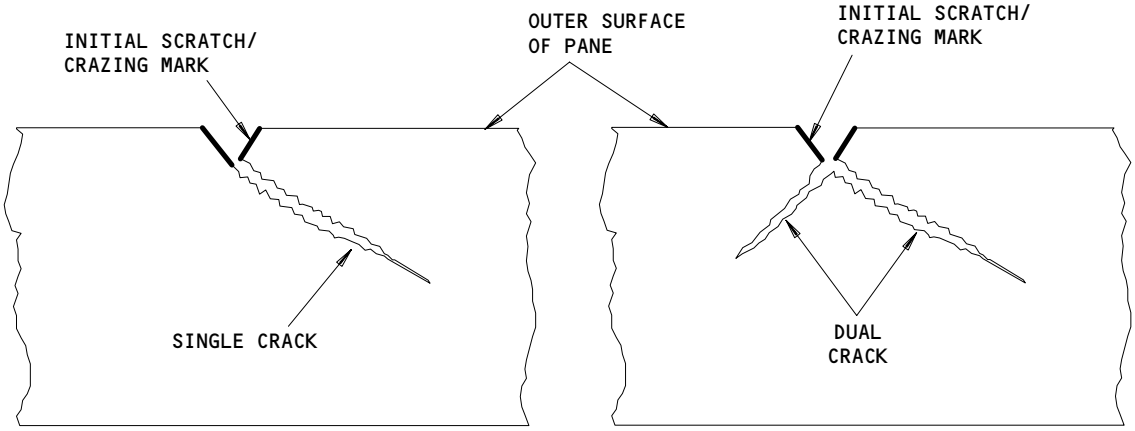
NOTE: You can repair the outer pane if the minimum thickness after the repair procedure is 0.280 inch. Cracks start in the outer pane from scratches and/or crazing (Fig. 601).

(d) Replace the outer pane if the depth of a crack or craze is more than 0.03 inch on the bevel edge (AMM 56-21-01/401).

NOTE: A 0.03 inch maximum depth of a crack or a craze on the bevel edge is permitted. A minimum 0.170 inch thickness of uncracked and uncrazed material must exist at all points, 0.30 inches or more from the outer edge. With in-plane edge cracking, 0.170 inch applies to the material between the in-plane cracks and the bottom of the bevel edge cracks and/or crazes (Fig. 602).



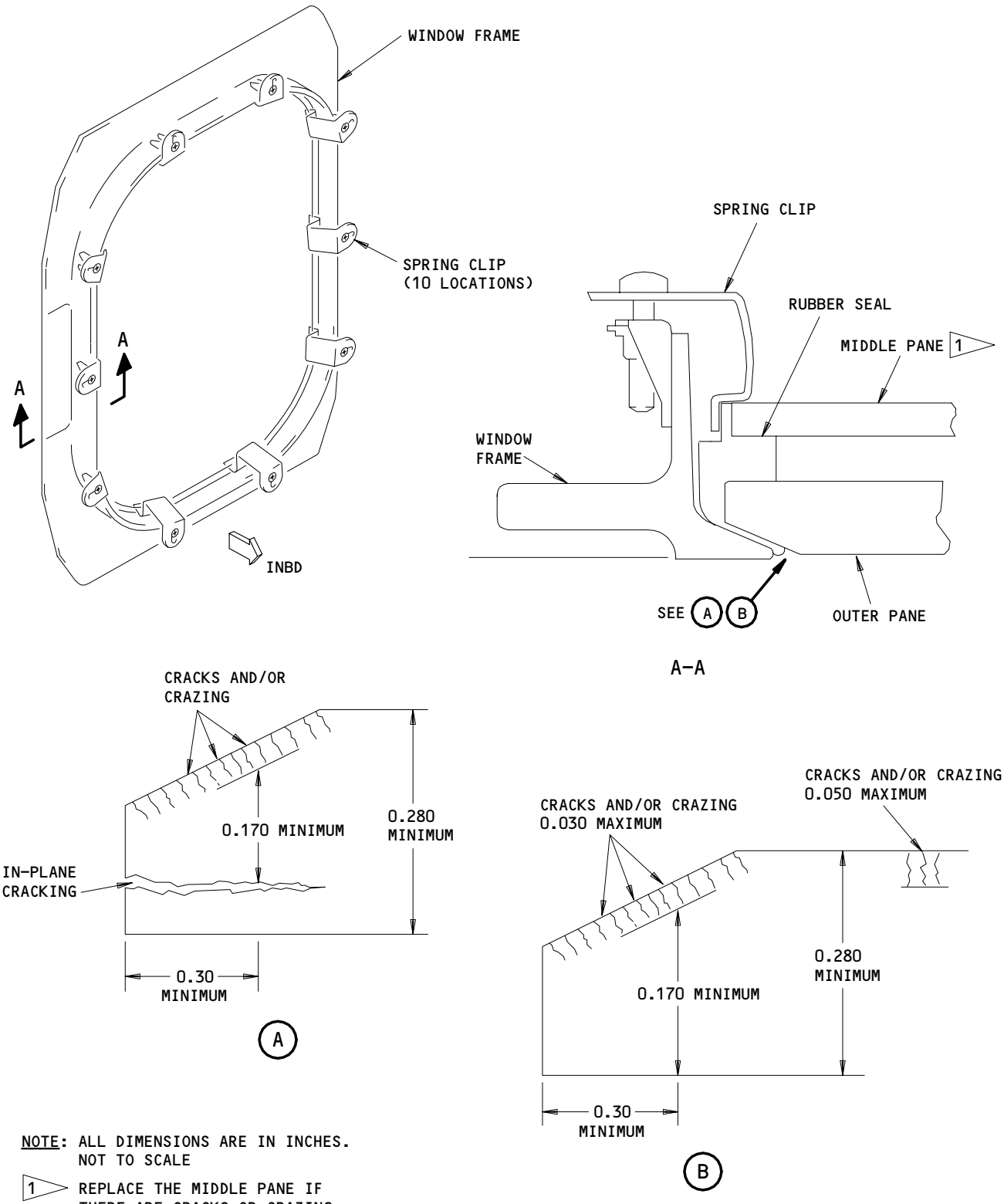
VIEW OF WINDOW SURFACE



A-A B-B

NOTE: THESE SECTIONS AND ILLUSTRATIONS ARE MADE LARGER TO SHOW THE CRACK DEVELOPMENT MORE CLEARLY.

Window Surface Crack Development - Example
(Outer Pane Stretched Acrylic)
Figure 601



NOTE: ALL DIMENSIONS ARE IN INCHES.
NOT TO SCALE

1 REPLACE THE MIDDLE PANE IF THERE ARE CRACKS OR CRAZING.

Passenger Window Inspection (Outer Pane Crazing)
Figure 602

S 216-003

(2) Examine the window panes for erosion.

(a) Erosion or chipping of the window forward edge can occur on windows in the nose area.

NOTE: Structurally, this is permitted. If the appearance is not satisfactory, you can repair the window to remove the rough areas (AMM 56-21-01/801).

S 216-004

(3) Examine the window panes for in-plane cracks.

(a) Replace the outer pane when you can see the edge of an in-plane crack with the window installed (AMM 56-21-01/401).

NOTE: A part should not be installed if the in-plane crack has more than 0.55 inch maximum extension from the edge. This also applies when the pane is removed for a different cause and in-plane cracks are seen after the removal.

(b) Replace the pane if the chips have a maximum depth of more than 0.05 inch (AMM 56-21-01/401).

NOTE: In-plane cracks of the outer pane, at any other location than the edges, usually occur with chips. The distance between defects is not very important.

S 216-005

(4) Examine the window panes for scratches.

(a) Remove the scratches from the surfaces of the panes with the procedures and limits of Passenger Compartment Windows (AMM 56-21-01/801).

(b) Replace the pane if the scratches have a depth greater than 0.05 inches.

S 216-006

(5) Examine the window panes for chips.

(a) Replace the pane if the chips are more than a depth of 0.05 inch.

S 216-007

(6) Examine the window panes to see if they are concave.

(a) When a window is concave, the outer pane bows in and the middle pane bows out.

NOTE: The replacement of the window is not necessary when the window is concave.

1) The correct clearance between the two panes is 0.27 inch.
2) Put a straightedge across the small width of the outboard surface of the outer pane.
3) If there is a clearance between the straightedge and the center of the pane, the window is concave.

NOTE: Windows which often fog are usually concave.

4) Do a check of the seals for leakage into the window cavity between the outer and middle pane.

NOTE: Some signs of a seal leak are as follows:

a) Windows that fog or are concave.

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, outside in the area of the seal or inside near the vent hole in the middle pane.
c) Seals which have moved or rolled back.

5) Replace seals which have leaks (AMM 56-21-01/401).
6) Make sure that serviceable seals are correctly installed.

(b) Replace a window that limits your vision, distorts or changes in thickness even in small isolated areas (AMM 56-21-01/401).

1) Do a check for a not smooth surface contour and reduced optical quality.

NOTE: High temperature such as from a photo flood lamp can change the contour or the optical quality.

S 356-009

(7) Dry the window panes to cause a decrease in a concave shape.

NOTE: The windows are put to their approximate initial contour by the removal of the moisture. To dry the window, put it in air that is at room temperature. The time to dry changes because of the window shape and the local humidity. The window panes usually do not go fully to their initial contour.

PASSENGER WINDOWS - REPAIRS

1. General
   A. This task contains steps to repair passenger windows that have damage.
   B. This task applies to all the fuselage passenger windows and the fuselage plugs, and all the entry door windows.
   C. You can grind and polish the windows to remove the damage in the windows.
   D. Do the steps in this task while the windows are installed on the airplane. If you remove the windows to repair them, refer to the Overhaul Manual.
   E. You can remove the chips or the scratches in the passenger windows with sandpaper, polishing, or buffing. (AMM 56-21-01/601) for the damage conditions.
   F. Be careful when you touch the window panes to prevent more damage. Do not use materials that are not approved. Be careful not to cause scratches to the surface of the window with finger rings or other sharp objects.

TASK 56-21-01-308-010

2. Outer Pane External Surface Repair
   A. Special Tools and Equipment
      (1) Optical Micrometer - Model 966A1
          Monocle Industries
          P.O. Box 2426
          Coppell, Tx. U.S.A. 75010
          Tel (214) 393-9920
          Fax (214) 393-9926
   B. Standard Tools and Equipment
      (1) Sanding Block - Rubber block of Shore-A Scale Durometer 35 Hardness (Optional: Wood Block with Several Layers of Flannel) (Commercially Available)
      (2) Sander, Vibrating - Air Driven (with rubber pad) (Commercially Available)
   C. Consumable Materials
      (1) G00191 Maskant - Spraylat SC-1071
      (2) G00000 Tape - Aluminum Foil, Permacel P112
      (3) G00301 Tape - Protective Gizzard Protex 20V
      (4) G01990 Cotton - Flannel cloth, clean and oil free
      (5) B00106 Chamois - KK-C-300 oiltan leather

(6) B00027 Compound - Buffing, Learock No. 888
(7) B00026 Compound - Buffing, Learock No. S-30
(8) B00302 Polish - Plex-I-Glow
(9) G02044 Abrasive - Micromesh cloth 1600, 8000 grit
(10) G02167 Sandpaper - Scotchbrite, wet/dry paper C, 100 to 600 grit
(11) B00710 Meguiars Mirror Glaze - MGH-17
(12) B00712 Micro Gloss Mirror - Cleaner

D. References
(1) AMM 12-16-04/301, Passenger Windows
(2) AMM 56-21-01/401, Passenger Windows
(3) AMM 56-21-01/601, Passenger Windows

E. Access
(1) Location Zones

211	Passenger Cabin Nose to First Door, Left
212	Passenger Cabin Nose to First Door, Right
223	Fwd Upper Deck Passenger Cabin, Left
224	Fwd Upper Deck Passenger Cabin, Right
225	Aft Upper Deck Passenger Cabin, Left
226	Aft Upper Deck Passenger Cabin, Right
231	Passenger Cabin First to Second Door, Left
232	Passenger Cabin First to Second Door, Right
241	Passenger Cabin Second to Third Door, Left
242	Passenger Cabin Second to Third Door, Right
251	Passenger Cabin Third to Fourth Door, Left
252	Passenger Cabin Third to Fourth Door, Right
261	Passenger Cabin Fourth Door to Sta 2040, Left
262	Passenger Cabin Fourth Door to Sta 2040, Right
271	Passenger Cabin Sta 2040 to Sta 2360, Left
272	Passenger Cabin Sta 2040 to Sta 2360, Right

F. Prepare for the Outer Pane External Surface Repair.

S 228-011
(1) Use the optical micrometer to find if the window thickness will permit a repair.

NOTE: The minimum outer pane thickness after repair must not be less than 0.280 inch for all outer windows in the fuselage.

S 218-012
(2) Make sure there is no damage to the seal.

S 028-006
(3) If the window is not clear or there is seal damage, replace the window (AMM 56-21-01/401).

S 958-014
(4) Apply the tape to prevent damage to the window frame and the seal.

S 178-015
(5) Remove loose dirt with your bare hand and a spray of water.

NOTE: You must use your bare hand to find large abrasives quickly and remove them before they become embedded in the window surface.

G. Outer Pane External Surface Repair

S 128-007
(1) Remove small clamshell surface chips, scratches, or other surface crazing.

NOTE: Use an abrasive paper or cloth applicable to the initial condition of the window (usually not coarser than 100 grit for gouges, deep scratches and bad crazing). If the damage is not too bad, start with a fine abrasive to decrease the subsequent polish time. Use much water to keep the window surface cool and to flush away the grit and the acrylic material removed. You can use a vibrating sander (approximately 8000 cpm). First sand the all the window in the horizontal direction, and then sand all the window in the vertical direction. If you sand with course grit for one to two minutes, you will remove approximately 0.005 inch of acrylic from the window.

(a) Use sufficient water to keep the window surface cool and to flush away the grit and the acrylic material you remove.
(b) Change the abrasive paper frequently and flush with the water.
(c) Continue the repair until you remove all the surface damage and the surface looks uniform.
(d) After you remove the damage, continue for approximately one more minute to make sure you remove all the crazing and the cracks.

S 128-021
(2) Polish the window with subsequently more abrasive materials.

NOTE: Use 100 - 600 grit paper and micromesh cloths of 1600 - 8000.

S 128-022
(3) Continue each step until you remove the marks from the step before (approximately 2-3 minutes).

NOTE: Go between the horizontal and vertical direction with the vibrating sander and make sure there is a continuous flow of water.

S 228-023
(4) Make sure the window dimensions are satisfactory.

NOTE: The minimum window thickness must not be less than 0.280 inch after you repair it.

S 168-024
(5) Remove the water spray.

S 118-015
(6) Polish the window with the buffing compound and a clean muslin or a wool pad.

NOTE: If it is necessary, use a coarse and fine compounds to get a glossy finish. If you use a buffer that turns, the speed of the wheel must be 3200 rpm for a coarse compound and 4200 rpm for a fine compound.

S 218-026
(7) Make sure that optical quality of the window is satisfactory.

S 118-034
(8) If the optical quality is not good, continue to repair the window.

NOTE: The minimum window thickness must not be less than 0.280 inch after the repair.

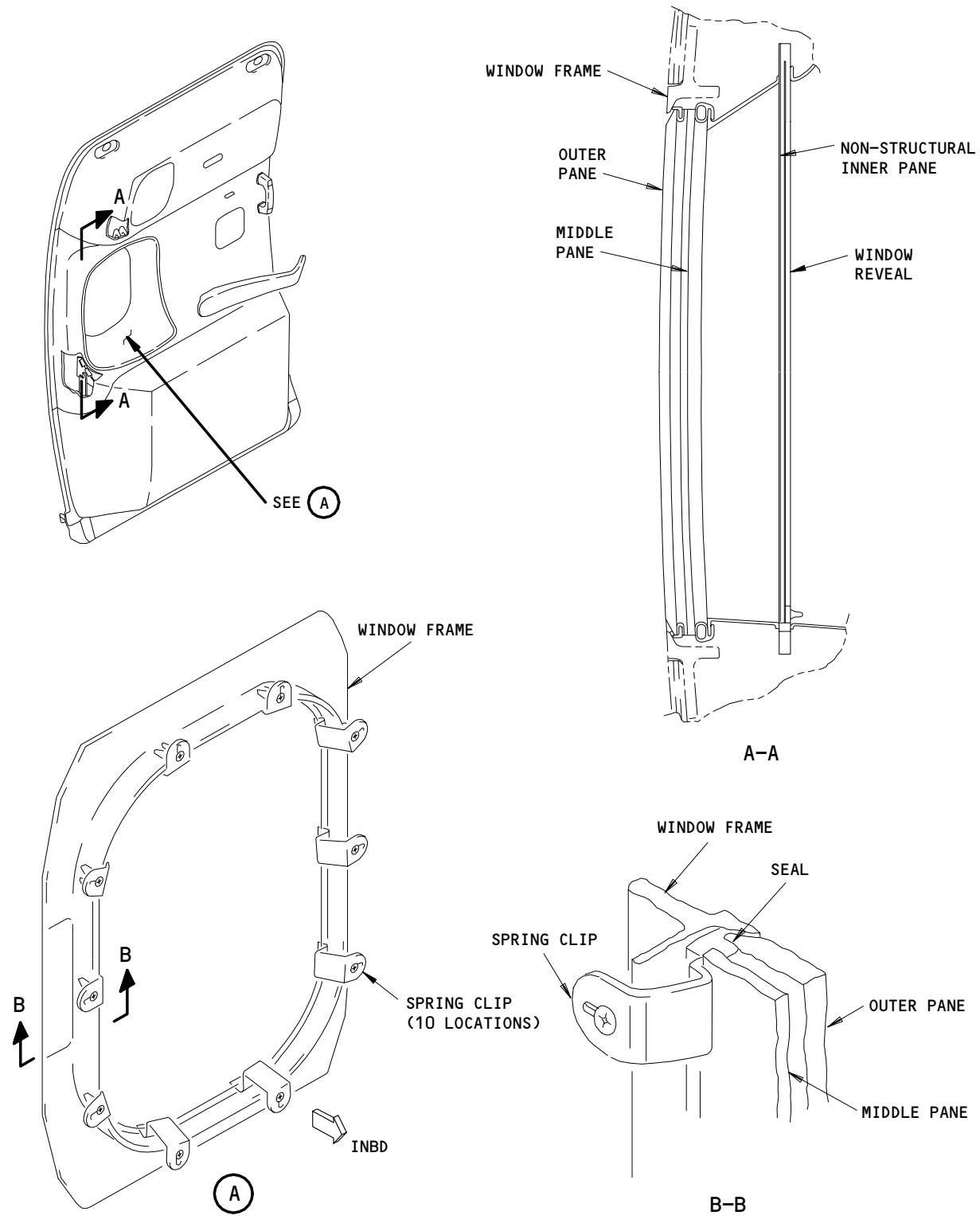
To repair the bevel edge or the seal plane, refer to the overhaul manual.

(a) The minimum thickness of the middle window pane is 0.180 inch.
(b) The maximum depth of the damage in the inner pane (dust cover) is 0.03 inch.

NOTE: To remove the damage, polish the full surface that persons look through.

DOOR-MOUNTED WINDOWS - DESCRIPTION AND OPERATION

1. General
   A. All entry doors for passenger and crew have windows. Each main entry door has a rectangular window approximately 10.2 by 14.2 inches and is located near the aft edge of the door.
   B. All entry door windows are identical to passenger fuselage mounted windows.
      (1) For servicing of the entry door mounted windows refer to 12-16-04/301.
      (2) For removal/installation of entry door mounted windows refer to 56-21-01/401.
      (3) For inspection/check of entry door mounted windows refer to 56-21-01/601.
      (4) For on airplane repair of entry door mounted windows refer to 56-21-01/801.
2. Main Entry Door Windows (Fig. 1)
   A. The main entry door windows consist of outer, middle, and non-structural inner panes. The non-sturctural inner pane is and is mounted in the door lining. The outer and middle panes are each capable of withstanding the full cabin pressurization load. Fail-safe structure is ensured by the middle pane which is designed for 1.5 times the normal operating pressure at 70°F. The middle and outer panes are acrylic structural panes formed to improve resistance to crazing. The non-structural inner pane (or dust cover) is a flat sheet of polycarbonate.
   B. The main entry door windows are plug-type windows subject only to the pressure acting on them. The outer and middle panes are secured to the window frame with spring clips. A seal/spacer ring separates the panes. The outer pane of stretched acrylic plastic, 0.35 inch thick, is rectangular in shape with rounded corners and a beveled outer edge to fit the window frame. The pane is curved to fair with the fuselage contour. The middle pane of modified acrylic plastic sheet, 0.22 inch thick is similarly shaped but with an unbeveled edge which is seated on the inboard face of the seal/spacer ring. A small breather hole is located near the bottom of the middle pane.
   C. The seal/spacer ring positions both the middle and outer panes in the window frame and seals the outer pane to the window frame. The middle pane is mounted on the inboard face of the seal/spacer ring. The spring clips, securing the window in the window frame, compress the ring tightly against all members to form a pressure seal.
   D. Main entry door windows are designed to preclude fogging and frosting by means of multiple pane construction with intervening cavities isolated from cabin interior air.



Main Entry Door Windows
Figure 1