CHAPTER

56

WINDOWS

MD-80
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 56
WINDOWS

Subject/Page	Date	COC
56-EFFECTIVE PAGES		
1 thru 2	AUG 01/2016	
56-CONTENTS		
1	Feb 01/2016	
2	Feb 01/2016	
56-00-00		
1	Feb 01/2015	
2	BLANK	
56-00-00		
201	Feb 01/2015	
202	Feb 01/2015	
56-00-00		
601	Feb 01/2015	
602	Feb 01/2015	
603	Feb 01/2015	
604	Feb 01/2015	
605	Feb 01/2015	
606	Feb 01/2015	
607	Feb 01/2015	
608	Feb 01/2015	
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610	Feb 01/2015	
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612	Feb 01/2015	
613	Feb 01/2015	
614	Feb 01/2015	
615	Feb 01/2015	
616	Feb 01/2015	
617	Feb 01/2015	
618	Feb 01/2015	
619	Feb 01/2015	
620	Feb 01/2015	
621	Feb 01/2015	
622	Feb 01/2015	
56-00-00 Config 1		
701	Feb 01/2015	
702	Feb 01/2015	
56-00-00 Config 1 (cont)		
703	Feb 01/2015	
704	BLANK	
56-00-00 Config 1		
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802	Feb 01/2015	
803	Feb 01/2015	
804	Feb 01/2015	
805	Feb 01/2015	
806	Feb 01/2015	
807	Feb 01/2015	
808	Feb 01/2015	
809	Feb 01/2015	
810	Feb 01/2015	
811	Feb 01/2015	
812	Feb 01/2015	
813	Feb 01/2015	
814	Feb 01/2015	
815	Feb 01/2015	
816	Feb 01/2015	
817	Feb 01/2015	
818	Feb 01/2015	
819	Feb 01/2015	
820	Feb 01/2015	
821	Feb 01/2015	
822	Feb 01/2015	
823	Feb 01/2015	
824	Feb 01/2015	
56-10-00		
1	Feb 01/2015	
2	Feb 01/2015	
3	Feb 01/2015	
4	BLANK	
56-10-00		
201	Feb 01/2015	
202	BLANK	
56-10-01 Config 1		
201	Feb 01/2015	
202	Feb 01/2015	
203	Feb 01/2015	
204	Feb 01/2015	
205	Feb 01/2015	
206	Feb 01/2015	
207	Feb 01/2015	
208	Feb 01/2015	
209	Feb 01/2015	
210	Feb 01/2015	
211	Feb 01/2015	
212	Feb 01/2015	
213	Feb 01/2015	
214	Feb 01/2015	
215	Feb 01/2015	
216	Feb 01/2015	
56-10-01		
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602	BLANK	
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201	Feb 01/2015	
202	Feb 01/2015	
203	Feb 01/2015	
204	Feb 01/2015	
205	Feb 01/2015	
206	Feb 01/2015	
207	Feb 01/2015	
208	Feb 01/2015	
209	Feb 01/2015	
210	Feb 01/2015	
211	Feb 01/2015	
212	Feb 01/2015	
213	Feb 01/2015	
214	Feb 01/2015	
215	Feb 01/2015	
216	Feb 01/2015	

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

56-EFFECTIVE PAGES

Subject/Page	Date	COC
56-10-02 Config 1 (cont)		
217	Feb 01/2015	
218	Feb 01/2015	
219	Feb 01/2015	
220	Feb 01/2015	
56-10-03 Config 1		
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402	Feb 01/2015	
403	Feb 01/2015	
404	Feb 01/2015	
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406	BLANK	
56-10-03		
501	Feb 01/2015	
502	Feb 01/2015	
503	Feb 01/2015	
504	Feb 01/2015	
505	Feb 01/2015	
506	Feb 01/2015	
56-10-03 Config 1		
501	Feb 01/2015	
502	BLANK	
56-10-03 Config 1		
801	Feb 01/2015	
802	Feb 01/2015	
803	Feb 01/2015	
804	Feb 01/2015	
805	Feb 01/2015	
806	Feb 01/2015	
807	Feb 01/2015	
808	Feb 01/2015	
809	Feb 01/2015	
810	Feb 01/2015	
56-10-04		
201	Feb 01/2015	
202	Feb 01/2015	
203	Feb 01/2015	
56-10-04 (cont)		
204	Feb 01/2015	
205	Feb 01/2015	
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56-10-05		
201	Feb 01/2015	
202	Feb 01/2015	
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56-10-06		
401	Feb 01/2015	
402	Feb 01/2015	
403	Feb 01/2015	
404	Feb 01/2015	
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406	Feb 01/2015	
407	Feb 01/2015	
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56-20-00		
1	Feb 01/2015	
2	Feb 01/2015	
56-20-00		
201	Feb 01/2015	
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56-20-00		
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56-20-01		
201	Feb 01/2015	
202	Feb 01/2015	
56-20-02		
201	Feb 01/2015	
202	Feb 01/2015	
56-20-02 (cont)		
203	Feb 01/2015	
204	Feb 01/2016	
205	Feb 01/2016	
206	BLANK	
56-20-03		
201	Feb 01/2015	
202	Feb 01/2015	
203	Feb 01/2015	
204	Feb 01/2015	
205	Feb 01/2016	
206	Feb 01/2016	
56-30-00		
1	Feb 01/2015	
2	BLANK	
56-30-00		
201	Feb 01/2015	
202	Feb 01/2015	

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56-EFFECTIVE PAGES

MD-80
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 56
WINDOWS

56-CONTENTS

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56-CONTENTS

GENERAL - DESCRIPTION AND OPERATION

1. General

A. Three types of windows are installed on the aircraft: the flight compartment windows, the cabin windows (which includes the passenger and emergency exit hatch windows), and the service door windows.

2. Flight Compartment

A. The flight compartment center, left and right windshields are installed from the outside of the aircraft. The windshields are constructed of glass and are heated for anti-icing and defogging purposes.

B. Two sliding clearview windows, located adjacent to the left and right windshields, slide on tracks to open and close. The windows can be opened for convenience during ground operations.

The windows are heated for defogging only.

C. Two fixed windows, aft of the clearview windows, are installed on either side of the flight compartment. The fixed windows have no heating elements.

D. A fixed upper window, contoured to flight compartment ceiling, is installed directly above the left and right clearview windows.

3. Cabin

A. Cabin windows installed along each side of the fuselage consist of inner and outer panes. The two panes constructed of stretched acrylic plastic are held together as an assembly within a moulded rubber outer seal. The outer seal seals the exterior side of the outer pane and provides spacing between the inner and outer panes.

B. An acoustic pane and a self-coiling type shade (integral parts of the window trim panel) are secured to the aircraft over each cabin window.

4. Service Doors

A. Service door windows are circular in shape and consist of inner and outer panes of stretched acrylic plastic held in place by inner and outer seals of moulded rubber.

B. The window frame is recessed to allow for wide angle vision outside the aircraft without opening the door.

1. Optical Depth Micrometer

A. The optical depth micrometer is used to measure transparent material thickness, depth of crazing, depth of fractures, and depth and thickness of imbedded bubbles and inclusions.

B. The principle of operation of the depth micrometer is based on determining the distance between two focused images. For example: the surface of a transparent panel is brought into focus and a reading is taken; then the extreme depth of a scratch is brought into focus and this reading is taken. The difference between the readings represents the depth of the scratch.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following item.

NOTE: Some materials in the Equipment and Materials list may not be permitted to be used in your location. Persons in each location must make sure they are permitted to use these materials. All persons must obey all applicable federal, state, local, and provincial regulations for their location.

Table 201

Name and Number	Manufacturer
Depth Micrometer Model 966A	Monogram/Custom Craft Culver City, CA

3. Depth Micrometer Operation

A. Micrometer Operation

(1) Position micrometer firmly over scratch or defect to be measured. Select instrument base that provides greatest stability.

NOTE: The tripod base seems most effective on flat surfaces or slightly curved transparent materials.

(a) Micrometer light provided with kit will pinpoint location to be checked. Area covered is approximately .0625 inch (1.587 mm) in diameter.

(b) Area within focal plane will appear sharp, while areas above and below this plane will lack definition or be completely blank.

(c) Since micrometer does not contain prismatic correction, image is inverted in relation to object being viewed.

NOTE: It is recommended that readings be made without eyeglasses.

(d) All readings related to a particular measurement should be made by same person under similar conditions.

(e) Although two persons may not get identical readings, measurement computed from each individual's set of readings shall be within .0002 inch (.0051 mm).

B. Obtaining Readings and Computing Measurements

(1) Three scales are to be considered when making measurements.

(a) Hundred-thousandths (.1) - indicated by number on barrel which is partially concealed by sleeve.

(b) Thousandths (.001) - indicated on lower part of rotating thimble.

(c) Ten-thousandths (.0001) - indicated on vernier of non-rotating part of thimble.

(2) Depth measurement.

(a) First reading is taken of near surface, and second reading of far surface in specific area.

(b) Compute measurement by subtracting first reading from second.

(3) When measuring transparent materials for thickness, multiply reading obtained by 1.5 to allow for index of refraction.

NOTE: The index of refraction for glass and acrylic are very similar and 1.5 can be used for both materials. Bubbles inside transparent materials are air space or voids and, as such, are not subject to the 1.5 refraction index.

(4) To measure width of bubble or inclusion, proceed as follows.

(a) Install reticle eyepiece and 10X objective.

(b) Focus on widest portion of bubble or void and take reading on comparator scale within eyepiece.

(c) Standard eyepiece should be used unless width measurements are being made.

WINDOWS/WINDSHIELDS - INSPECTION/CHECK

1. General

A. This procedure contains the tasks that follow:

(1) Identification and definition of defects.

(2) Inspection of the flight deck windshields/windows for damage. The flight deck windshield/window inspection is for damage that effects the structural, visual, and operational functions of the windshield/window.

(3) Since damaged or defective windshields and windows may break in flight, it is important to use all inspection instructions.

B. Typical terms used to identify the view area of a window or windshield are as follows: (Figure 601)

(1) Clear View Area (Daylight Opening): The transparent area of the window for external vision.

(2) Critical Vision Area (Zone I): The area of primary vision through the window that does not include the Non-Critical Vision Area.

(3) Non-Critical Vision Area (Zone II): A 2.00 in. (5.08 cm) band that increases to 3.00 in. (7.62 cm) at specific points around the periphery of a windshield and a 2.00 in. (5.08 cm) band around the periphery of a window measured into the clear view window. On a windshield, the band increases to 3.00 in. (7.62 cm) at the aft upper and lower corners of the left and right windshield and at the upper left and right corners of the center windshield.

(4) Decrease Visual Quality: A reduction of vision through the clear view area, which can cause interference with the flight crew operation of the aircraft in the air or on the ground. Damage to the window can result in a decreased visual quality.

(5) Tong Marks: Simple dimples or indentations that are sometimes on the surface of the outer or inner windshield glass pane and can cause localized distortion in the clear view area. These marks are a by-product of the manufacturing procedure.

(6) Visual Quality: The property of the windshield/window that allows operation of the aircraft in the air or on the ground.

C. Many of the windshield delamination problems and arcing failures are caused when moisture gets into the weather seal around the glass edges. Deterioration of the weather seal can occur over time. This causes a space in which moisture can enter which can cause the windshield to failure.

D. Frequent inspection of the windshield weather sealant will give improved windshield service.

E. The optical depth micrometer is used to measure transparent material thickness, depth of crazing, depth of fractures, and depth and thickness of bubbles and inclusions.

F. An optical depth micrometer finds the distance between to focused images. The surface of the transparent panel is focused and an indication is recorded, then depth of the scratch is focused and this indication is recorded. The difference between the indications shows the thickness of the scratch.

G. The following text will assist in identification of defects that can develop in service. Proper consideration of defects will tend to reduce the number of panel failures in flight. Unnecessary panel replacements will also be avoided if defects are correctly evaluated.

H. A percentage of windshield delamination problems and arcing failures, with resultant glass cracking or shattering, is associated with moisture penetration at the weather seal around the glass edges. Over a period of time it is not unreasonable to expect a certain amount of erosion or loss of adhesion of any sealant. This creates a void or gap and exposes the windshield to moisture entry and possible early failure of the windshield. Periodic checking of the windshield weather sealant to determine that it is effectively sealing against moisture penetration will result in improved windshield service and fewer replacements. For center windshield sealing instructions, refer to WINDSHIELDS, SUBJECT 56-10-01 Page 201; and for side windshields, refer to SIDE WINDSHIELDS, SUBJECT 56-10-02, Page 201.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following listed items:

Table 601

Name and Number	Manufacturer
Prism T&E 56-20-3	
Glycol, Ethylene Undiluted AMS 1424 DPM 1950	
Scraper, plastic DPM 6797	

3. Check - Windows/Windshields

A. General

(1) Delamination is a separation of either one or two glass panes from the vinyl plies. Delamination occurs most frequently around the edges and in the unheated areas of the panel. Delamination will continue to become larger until the stress condition that caused it is relieved. The windshield anti-ice and defog system operation can be affected by delamination. (Figure 601)

NOTE: The longer a panel assembly is in service the higher the probability that delamination will occur.

NOTE: The strength of the panel assembly is not affected by delamination.

(a) Delamination have characteristics which divide them into six main types. More than one type can be present at the same time. The six main types of delamination are as follows:

1) Clear or Cloudy Delamination - Mostly clear, this shows a clean separation (debonding) of the vinyl layer from the glass ply. However, a cloudy appearance will result if moisture gets into the vinyl in delaminated areas.

2) Isolated clear delamination areas (island delamination) - After delamination occurs, most often clear type, a rebonding of the panel edge can occur. This will leave an island of delamination which does not rebond.

3) Rough-Edge Delamination - Has an irregular, sharp or jagged boundary. This type of delamination can cause long, finger-like projections if the separation of the vinyl and glass is not even. This causes the vinyl to pull chips out of the glass surface as it delaminates.

4) Smooth-Edge Delamination - This type of delamination has a smooth boundary. It does not have rough or jagged edges. Internal chips cannot be seen.

5) Parting Medium Delamination - Parting medium (a thin film of yellow-green plastic material) is applied in a narrow strip between the glass pane and the vinyl ply. The purpose of the parting medium is to give a flexible bond along the edges of the panel assembly. Since a low degree of adhesion is intended for this area, separation can occur.

6) Panel attachment hole in-plane separation or delamination.

B. Flight Compartment Windshield and Windows Detailed Visual Inspection

(1) Check each window or windshield for delamination with the table that follows. (Figure 601) (Figure 602) (Figure 603) (Figure 604)

Table 602

Description of Defect	Corrective Action
1. DELAMINATION	
(a) Cloudy or Opaque	
1) Cloudy or opaque delamination (continuous or isolated) extending from edge of the windshield outer glass ply inward 1 in. (25.4 mm) (maximum).	This is acceptable.
2) Cloudy or opaque delamination (continuous or isolated) extending beyond 1 in. (25.4 mm) from the edge of the windshield outer glass ply is not acceptable.	If cloudy or opaque delamination is not in limits, replace the window or windshield. WINDSHIELDS, SUBJECT 56-10-01
(b) Clear	
1) Clear delamination (continuous or isolated) extending from the edge of the windshield outer glass ply inward 2.0 in. (50.8 mm) (maximum).	The window or windshield is acceptable.
2) Clear delamination extending beyond 2.0 in. (50.8 mm) inches from the edge of the windshield outer glass ply is not acceptable; (Exception - see (3) below)	If clear delamination is not in limits, replace the window or windshield. WINDSHIELDS, SUBJECT 56-10-01
3) Clear delamination (isolated) areas with a diameter no larger than 0.75 in. (19.0 mm) (maximum).	The window or windshield is acceptable.
(c) Rough Edge Delamination	
1) Center windshield - delamination which extends 2.0 in. (50.8 mm) maximum from the edge (top, bottom, sides), 3.0 in. (76.2 mm) maximum in the left and right upper corner radius, and/or 2.0 in. (50.8 mm) maximum in the lower corner radius is acceptable.	If rough edge delamination for a center windshield is not in limits, replace the windshield. WINDSHIELDS, SUBJECT 56-10-01
2) Side windshield - delamination which extends 2.0 in. (50.8 mm) maximum from the edge (top, bottom, sides), 3.0 in. (76.2 mm) maximum in the top and bottom aft corner radius, and/or 2.0 in. (50.8 mm) maximum in the top and bottom forward corner radius is acceptable.	If rough edge delamination for a side windshield is not in limits, replace the windshield. WINDSHIELDS, SUBJECT 56-10-01
(d) Smooth-Edge Delamination	
1) Center windshield - delamination which extends 2.0 in. (50.8 mm) maximum from the edge (top, bottom, sides), 3.0 in. (76.2 mm) maximum in the left and right upper corner radius, and/or 2.0 in. (50.8 mm) maximum in the lower corner radius is acceptable.	If smooth-edge delamination for a center windshield is not in limits, replace the windshield. WINDSHIELDS, SUBJECT 56-10-01

Table 602 (Continued)

Description of Defect	Corrective Action
2) Side windshield - delamination which extends 2.0 in. (50.8 mm) maximum from the edge (top, bottom, sides), 3.0 in. (76.2 mm) maximum in the top and bottom aft corner radius, and/or 2.0 in. (50.8 mm) maximum in the top and bottom forward corner radius is acceptable.	If smooth-edge delamination for a side windshield is not in limits, replace the windshield. WINDSHIELDS, SUBJECT 56-10-01
(e) Parting Medium Delamination	
1) Center windshield - delamination which extends 2.0 in. (50.8 mm) maximum from the edge (top, bottom, sides), 3.0 in. (76.2 mm) maximum in the left and right upper corner radius, and/or 2.0 in. (50.8 mm) maximum in the lower corner radius is acceptable.	If parting medium delamination for a center windshield is not in limits, replace the windshield. WINDSHIELDS, SUBJECT 56-10-01
2) Side windshield - delamination which extends 2.0 in. (50.8 mm) maximum from the edge (top, bottom, sides), 3.0 in. (76.2 mm) maximum in the top and bottom aft corner radius, and/or 2.0 in. (50.8 mm) maximum in the top and bottom forward corner radius is acceptable.	If parting medium delamination for a side windshield is not in limits, replace the windshield. SIDE WINDSHIELDS, SUBJECT 56-10-02
(f) Panel attachment hole in-plane separation or delamination. 1) In-plane separation or delamination is permitted around the circumference of each one of the attachment holes. 2) The separation or delamination must not extend across the entire panel. 3) The separation or delamination must not be more than 1.0 in. (25.4 mm) from the edge of the attachment hole in one direction 4) All other cracks or damage must be in limits.	If attachment hole in-plane separation or delamination is not in limits, replace the window or windshield. CLEARVIEW WINDOWS, SUBJECT 56-10-03, SIDE WINDSHIELDS, SUBJECT 56-10-02, FLIGHT COMPARTMENT UPPER WINDOWS - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-04/201
(g) The visual quality of the windshield or window is decreased by delamination.	If the visual quality is decreased by delamination, replace the applicable windshield or window. WINDSHIELDS, SUBJECT 56-10-01, SIDE WINDSHIELDS, SUBJECT 56-10-02, CLEARVIEW WINDOWS, SUBJECT 56-10-03, FLIGHT COMPARTMENT UPPER WINDOWS - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-04/201
2. FRACTURED GLASS - Glass fracture can occur on any glass ply. Do an inspection of the flight compartment windshield and windows as follows:	
(a) Outer Ply - The break pattern in the outer or inner ply will be in relatively large fragments. These fragments will remain attached to the window assembly.	

Table 602 (Continued)

Description of Defect	Corrective Action
(b) Center Ply - This ply is a structural ply. If this ply should fracture the break pattern will be small fragments.	The window or windshield must be replaced if the structural ply is fractured. WINDSHIELDS, SUBJECT 56-10-01, SIDE WINDSHIELDS, SUBJECT 56-10-02, FLIGHT COMPARTMENT UPPER WINDOWS - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-04/201
(c) Inner Ply - The break pattern in the inner ply will be large fragments.	The window or windshield must be replaced if the structural ply is fractured. WINDSHIELDS, SUBJECT 56-10-01, SIDE WINDSHIELDS, SUBJECT 56-10-02, CLEARVIEW WINDOWS, SUBJECT 56-10-03, FLIGHT COMPARTMENT UPPER WINDOWS - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-04/201
3. WEATHER SEAL EROSION - Do an inspection of the flight compartment windshield and windows as follows:	
(a) Examine the weather seal for all signs of moisture penetration.	
NOTE: The weather seal prevents moisture from getting inside the glass laminate. If moisture gets in the laminate, reduced service life due to delamination and electrical heating system failure can occur.	
- The weather seal must be effectively sealing against moisture penetration.	If necessary, replace the weather seal. WINDOW, CLEARVIEW PANEL AND PRESSURE SEAL - REMOVAL/INSTALLATION, PAGEBLOCK 56-10-06/401
- The weather seal must not have cracks or breaks where moisture can penetrate.	If necessary, replace the weather seal. WINDOW, CLEARVIEW PANEL AND PRESSURE SEAL - REMOVAL/INSTALLATION, PAGEBLOCK 56-10-06/401
- The weather seal must have a secure unbroken bond completely around its edge to prevent moisture penetration.	If necessary, replace the weather seal. WINDOW, CLEARVIEW PANEL AND PRESSURE SEAL - REMOVAL/INSTALLATION, PAGEBLOCK 56-10-06/401
4. SCRATCHES - Do an inspection of the flight compartment windshield and windows for scratches as follows:	
(a) A scratch is defined as a line type defect in the surface of the glass or acrylic ply. There are three types of scratches.	
NOTE: Glass faced windshields do not need to be replaced unless visual quality is decreased.	
1) Hairline Scratch - A hairline scratch can be seen but cannot be felt with the fingernail. This type of scratch is usually caused when the window is wiped with a dry cloth.	To prevent hairline scratches, the glass must be cleaned with a mild detergent and water, and a soft brush or clean, soft cotton cloth. The glass must be dried with a clean, soft cotton cloth. Hair line scratches can be made less apparent by cleaning and waxing the window surface.
2) Light Scratch - A light scratch is less than 0.010 in. (0.254 mm) deep and can be felt the fingernail. A light scratch has few edge chips	
3) Heavy Scratch - A heavy scratch is 0.010 in. (0.254 mm) or more in depth and can be felt with the fingernail. This type of scratch can show edge chipping. Chipped edges can be best seen by reflected light.	

Table 602 (Continued)

Description of Defect	Corrective Action
4) Repair of scratches in acrylic panels must be in the specified guidelines and limitations of the repair.	
CAUTION: DO NOT TRY TO REPAIR THE CHIPS OR CRACKS IN THE GLASS. THIS WILL PREVENT DAMAGE TO THE GLASS.	
5. CHIPS OR FLAKES OF GLASS - Do an inspection of the flight compartment windshield and windows as follows:	
(a) Glass Windshields Inner Surface: These are chips or flakes of glass that occur between two vinyl bonded glass plies. Chips are usually thin and smooth, but can appear as course granulated powder on an inner surface. Chips will vary in size from granular up to 1.0 in^2 (6.5 cm^2). There are two types of chips.	
1) Glass Windshields - Inner Surface Chips are critical because this condition can result in cracking or shattering of the glass, or in the degradation of the conductive coating film. Inner surface chips are usually associated with rough-edge delamination.	
2) Glass Windshield - Outer Surface Chips - These are chipped areas in the edges or outer surfaces of a glass panel assembly	Outer surface chipped glass windshield panel should not be replaced unless visual quality is decreased.
3) Acrylic Window Inner Surface Chips - These are chips or flakes of acrylic that occur between two vinyl bonded acrylic panes. The chips are usually thin and smooth but can appear as coarse granulated powder on an inner surface. Chips will vary in size from granular up to 1.0 in^2 (6.5 cm^2).	Windows should not be replaced unless the visual quality is decreased.
a) The inner surface chipping of acrylic panels does not affect the strength of the window, but it may affect the conductive coating of the heated panels.	
b) Acrylic window outer surface chips - These are chipped areas or nicks in the edges or outer surface of an acrylic panel assembly.	Chips in the outer surface can be repaired for appearance only. CLEARVIEW WINDOWS, SUBJECT 56-10-03
CAUTION: DO NOT USE THE WINDSHIELD ANTI-ICE SYSTEM WHEN AN ANTI-ICE PANE HAS CRACKS. MAKE SURE YOU PUT THE TAG "DO NOT OPERATE" ON THE APPLICABLE ANTI-ICE SYSTEM CIRCUIT BREAKERS WHEN THEY ARE OPEN. THIS WILL HELP PREVENT ACCIDENTAL OPERATION OF THE ANTI-ICE SYSTEM AND DAMAGE TO THE EQUIPMENT.	
6. CRACKS - Do an inspection of the flight compartment windshield and windows for cracks as follows:	
- DEFINITION - Lines that are through the depth of the pane. Cracks in the glass or acrylic panes are apparent. Cracks in the vinyl layer are more difficult to identify.	

Table 602 (Continued)

Description of Defect	Corrective Action
CAUTION: WINDSHIELD MUST BE REPLACED IF MIDDLE (CORE PLY) OF GLASS IS CHIPPED OR CRACKED.	
(a) Glass Windows - If one, but not the two, outer (anti-ice pane) or inner (defog pane) glass panes are cracked, you can operate the aircraft per the Minimum Equipment List (MEL) procedures.	Replace the window or windshield at the next maintenance interval. WINDSHIELDS, SUBJECT 56-10-01, SIDE WINDSHIELDS, SUBJECT 56-10-02, CLEARVIEW WINDOWS, SUBJECT 56-10-03, FLIGHT COMPARTMENT UPPER WINDOWS - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-04/201
(b) Acrylic Windows - Acrylic window strength is affected by cracks in the pane. If an acrylic window breaks, there is a fail-safe pane, but cracked acrylic panels must be replaced before the next scheduled flight.	Replace the cracked acrylic window before or at the next flight . WINDSHIELDS, SUBJECT 56-10-01, SIDE WINDSHIELDS, SUBJECT 56-10-02, CLEARVIEW WINDOWS, SUBJECT 56-10-03, FLIGHT COMPARTMENT UPPER WINDOWS - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-04/201
1) Cracks up to 5.00 in. (127.00 mm) maximum are permissible in the forward corners of each panel assembly outer pane.	
2) Cracks up to 6.00 in. (152.40 mm) maximum are permissible in the aft corners of each panel assembly outer pane.	
3) A crack in the outer pane of the flight compartment acrylic windows between mounting holes must not be more than 5.00 in. (127.00 mm).	If more than the limit, replace the outer pane.
4) A maximum three attach holes may be encompassed by only one crack.	If more than the limit, replace the window.
NOTE: Monitor for crack growth at intervals of three months, six months, and yearly.	
5) There are more than one crack in the outer pane.	Replace the window panel.
6) The cracks in the vinyl plies do not affect the strength of the panel.	If the visual quality is decreased, replace the window.
7. BUBBLES - Do an inspection of the flight compartment windshield and windows for bubbles as follows:	
(a) Bubbles are in the vinyl interlayers and are usually caused by gasses released from the vinyl when the windows overheat. Excess heating will damage the vinyl. The bubbles can also be caused by moisture in the laminate or from too much torque applied to the fasteners.	
NOTE: The strength of the panel is not affected by bubbles.	
1) Glass Windows - The strength of the glass pane is not affected by the bubbles.	If visual quality is decreased, replace the pane.

Table 602 (Continued)

Description of Defect	Corrective Action
2) Acrylic Windows - The strength of the acrylic panel is not affected by the bubbles.	If visual quality is decreased, replace the window.
8. ARCING - Do an inspection of the flight compartment windshield and windows for arcing as follows:	
(a) Arcing is caused by electrical current jumping across burned/charred spots in the conductive coating. The burned/charred spots can be seen along the edges of the panel near the bus bar. Arcing can be caused by an overheated window/windshield or overvoltage. This damage usually occurs between the bus bar and the window frame. Moisture is usually the cause of arcing, but electrical potential differences in the conductive coating can cause arcing also.	If visual quality is decreased, replace the window.
NOTE: Continued arcing of the heating film can result in glass fracture.	
9. CRAZING - Do an inspection of the flight compartment windshield and windows for crazing as follows:	
WARNING: MAKE SURE YOU REMOVE FROM SERVICE ALL WINDOWS THAT HAVE SEVERE STRESS CRAZING. USE THE APPLICABLE REPAIR PROCEDURE TO REMOVE THE CRAZING. SEVERE CRAZING CAN DECREASE VISIBILITY.	
(a) Crazing occurs in acrylic material and sometimes can not easily be seen. Crazing is a number of small cracks that are not completely through the depth of the pane.	
NOTE: The strength of the panel is not affected by crazing unless it progresses to a severe degree. The window assembly will not fail if the secondary pane stays intact.	
1) Crazing can be caused by contact with non-approved fluids such as: glycol, gasoline, alcohol, benzene, hexane, xylene, acetone, carbon tetrachloride, fire extinguishing agents, and lacquer thinner.	If the visual quality is decreased, replace the window. Crazing in acrylic windows can be repaired for appearance only in the specified limits.
2) Crazing can occur with normal pressurization cycles and aging.	If the visual quality is decreased, replace the window. Crazing in acrylic windows can be repaired for appearance only in the specified limits.
NOTE: Aged acrylic windows are windows which have been in service more than 15 years.	
3) Crazing can also result from improper maintenance, exposure to airborne contaminants or pollutants, and stresses at attachments.	If the visual quality is decreased, replace the window. Crazing in acrylic windows can be repaired for appearance only in the specified limits.
10. ETCHING - Do an inspection of the flight compartment windshield and windows as follows:	
(a) Surface imperfection which can occur on acrylic windows immediately after damage by a non approved fluid. This damage is apparent by the distortion of vision in the affected areas.	

Table 602 (Continued)

Description of Defect	Corrective Action
1) The window is acceptable if the inner pane is still intact, but chemical damage can weaken the strength of the pane.	The window must be replaced if vision is seriously decreased after chemical damage of the pane has occurred.
11. EROSION - Do an inspection of the flight compartment windshield and windows as follows:	
(a) The outboard exposed edges of acrylic clearview, eyebrow and aft fixed window material can be worn away by wind borne abrasive particles. Erosion of this type is not of structural significant as long as it is not more than the minimum thickness values for the applicable window.	
1) Acrylic window edge erosion can be left as is or the surface can be smoothed for appearance only.	If necessary, smooth the surface of the window.
2) Make sure that the pane has the minimum thickness.	If the pane does not have the minimum thickness, replace the pane.
3) Erosion is acceptable (with or without rework to smooth surface) that extends 1.5 in. (38.1 mm) from the centerline of attach holes inboard that does not affect the necessary view area of the applicable window (dimension A).	If the erosion is beyond the 1.5 in. (38.1 mm) from the centerline attach holes inboard, replace the pane.
12. DISCOLORATION - Do an inspection of the flight compartment windshield and windows as follows:	
(a) Discoloration is the change or differences in the hue or color due to variations in the manufacturing process.	
NOTE: The strength of the panel assembly is not affected by discoloration.	
1) Discoloration can also be a change for the worse due to one or more of the following conditions:	
a) Heat Film to Bus Bar Arcing - This may occur due to the thickness difference between the bus bar and the heating film. This may cause a darkening of the inner edge of the bus bar due to arcing. The breakdown of this junction is a slow process and is usually caused by moisture.	
b) Localized Hot spot - These occur where arcing occurs between the bus bar and conductive heating film or within the film. This may cause a darkening (black or brown) discoloration along the inner edge of the bus bar or inner layer due to overheating.	
c) Polysulfide Bleed - This is the result of a chemical reaction between the polysulfide moisture seal and the urethane interlayer. This appears as a light amber to golden brown discoloration. this begins at the outer edge and progresses inward.	
NOTE: This type of discoloration has no affect on the operation of the windshield heating system.	

Table 602 (Continued)

Description of Defect	Corrective Action
13. DISTORTION - Do an inspection of the flight compartment windshield and windows for distortion as follows:	
(a) As moving objects are seen through the window, their motion and shape will change irregularly. Curved windows have more distortion than the flat windows.	The window panels must be replaced if the vision is seriously decreased.
(b) Distortion can result from mistakes in the manufacturing process.	The window panels must be replaced if the vision is seriously decreased.
1) Distortion does not affect the strength of the panel if no other damage is apparent.	
14. RAIN WATER - If rain water comes in control cabin from around the clear view window with the window closed, do the inspection as follows:	
(a) Open the applicable clear view window.	
(b) Examine the seal on the clear view window for cuts, nicks, tears or gouges.	If necessary, repair the seal assembly. WINDOW, CLEARVIEW PANEL AND PRESSURE SEAL - REMOVAL/INSTALLATION, PAGEBLOCK 56-10-06/401
	If necessary, replace the seal assembly.
(c) With the clear view window open, make sure that the epocast shim is fully against the fuselage skin, and is not cracked, chipped, gouged, or has depressions that can cause leaks of water or air when the aircraft is not pressurized.	If necessary, repair or replace the epocast. CLEARVIEW WINDOWS, SUBJECT 56-10-03
NOTE: The epocast is a cast in place shim of sealant material bonded to the fuselage skin around the window opening. The surface of the epocast and window seal complete the seal when the window is closed.	
(d) Examine the seal on the clear view window for proper compression when the window is fully closed.	Do a compression check.
NOTE: An out of rig condition can cause the window to droop inboard when an aircraft is not pressurized. This can cause leaks.	
15. VINYL SEPARATION - Do an inspection of the flight compartment windshield and windows for vinyl separation as follows:	
(a) Separation of vinyl layers around sensors look like cracks. These are not cracks, but cuts made to deep in the vinyl layer of the windshield when the sensor package was installed during the assembly of the panel.	
1) The strength of the panel is not affected by this condition.	Any amount of separation is acceptable if visual quality is not decreased.
16. VISUAL QUALITY - GENERAL	If the visual quality is decreased, replace the windshield/window.
17. CRACKS: VINYL INTERLAYER	

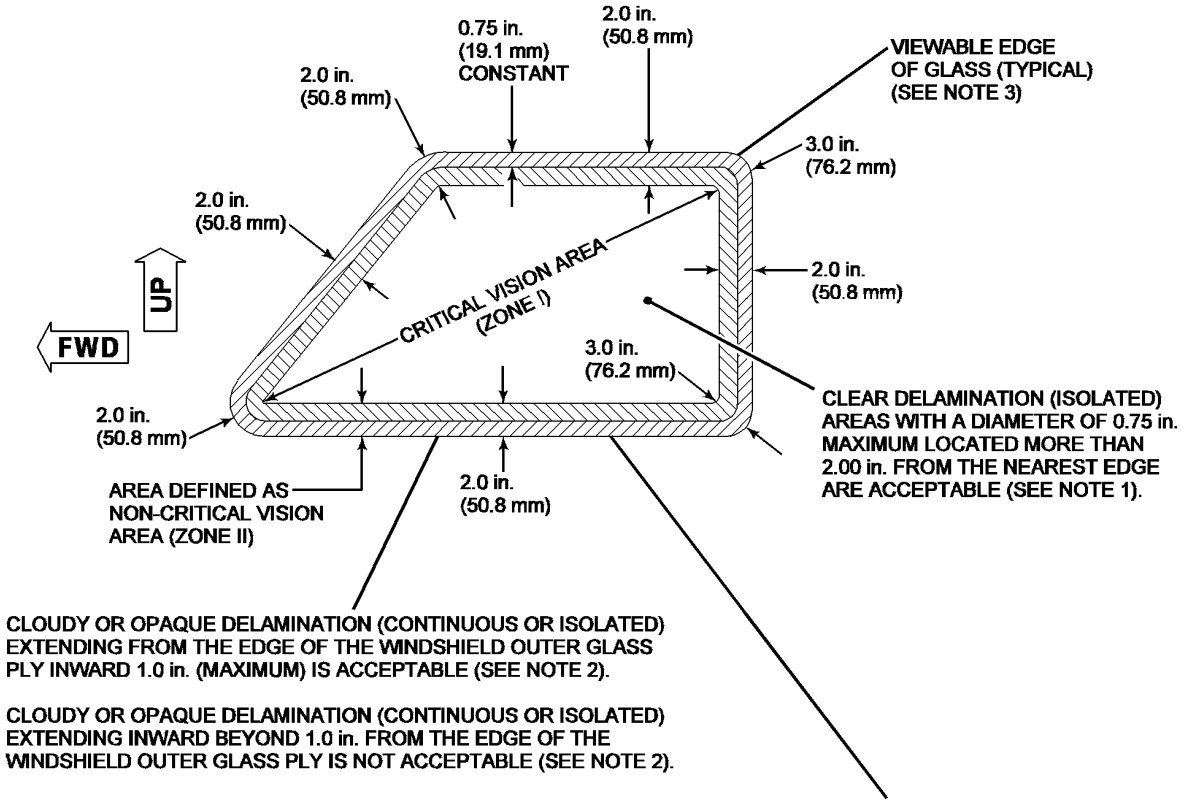
Table 602 (Continued)

Description of Defect	Corrective Action
Cracks that can occur in the vinyl interlayer around the perimeter of the front glass windshield(s), and usually follow the edges of internal features, for example, the metal inserts, bolt holes or slip planes. The cracks are usually thick or broken lines running perpendicular to the windshield planes. It is possible in some extreme conditions to see the vinyl interlayer as stretched or separated from the metal insert. (Figure 606)	Immediate replacement of the windshield(s) is NOT required unless the defect creates a noticeable objection to vision as determined by the flight crew. If the defect is found: (a) Schedule replacement of the windshield(s) at the next opportunity when replacement part(s) are available, NOT TO EXCEED 30 calendar days from the date of the finding, and (b) provide Boeing with details (i.e., pictures of the defect) for our records.

(2) Pane minimum thickness after rework is outlined in the following table.

Table 603 MINIMUM THICKNESS AFTER REWORK

PANE	ORIGINAL THICKNESS INCHES (mm)	MINIMUM THICKNESS AFTER REWORK INCHES (mm)
Outer - Aft Fixed Window, Flight Compartment	Measured at Center 0.675(±0.050) (17.15(±1.27) mm)	0.575 (14.60 mm)
	Measured at Edge 0.488 (nominal) (12.40 mm)	0.478 (12.14 mm)
Inner - Aft Fixed Window, Flight Compartment	Measured at Center 0.575(±0.040) (14.60(±1.02) mm)	0.440 (11.18 mm)
Outer - Cabin	Measured at Center 0.400 (+0.040 -0.00) (10.16 (+1.02 -0.00) mm)	0.310 (7.87 mm)
	Measured at Edge 0.195 - 0.225 (4.95 - 5.72 mm)	0.160 (4.06 mm)
Inner - Cabin (3912038-1/-501/-505)	Measured at Center 0.250(±0.030) (6.35(±0.76) mm)	0.160 (4.06 mm)
Inner - Cabin (3912038-503/-507)	Measured at Center 0.200 (+0.010 -0.020) (5.08 (+0.25 -0.51) mm)	0.160 (4.06 mm)
Outer - Emergency Exit	Measured at Center 0.400 (+0.040 -0.000) (10.16 (+1.02 -0.00) mm)	0.310 (7.87 mm)
	Measured at Edge 0.195 - 0.225 (4.95 - 5.72 mm)	0.160 (4.06 mm)
Inner - Emergency Exit	Measured at Center 0.200 (+0.010 -0.020) (5.08 (+0.25 -0.51) mm)	0.160 (4.06 mm)
Outer-Service and Entrance Door	Measured at Center 0.400(±0.030) (10.16(±0.76) mm)	0.310 (7.87 mm)
Inner-Service and Entrance Door	Measured at Center 0.250(±0.030) (6.35(±0.76) mm)	0.180 (4.57 mm)
NOTE: Rework of glass viewing windows is not recommended!		



NOTE 1:
DUE TO SELF HEALING CAPABILITY OF GLASS AND VINYL LAMINATE COMBINATION IT MAY NOT BE POSSIBLE TO VERIFY REPORTED CLEAR DELAMINATION DURING GROUND INSPECTION. IN THIS CASE AN ADDITIONAL FLIGHT, OR FLIGHTS, IS PERMITTED FOR PURPOSE OF CONFIRMING DISCREPANCY.

NOTE 2:
EDGE OF GLASS IS SURFACE OF OUTER GLASS PLY WHICH CONTACTS RUBBER EDGE BUMPER OR WHICH IS VIEWABLE TO FLIGHT CREW.

NOTE 3:
VIEWABLE EDGE DEFINES BOUNDARY OF CLEAR VIEW AREA. (DAYLIGHT OPENING)

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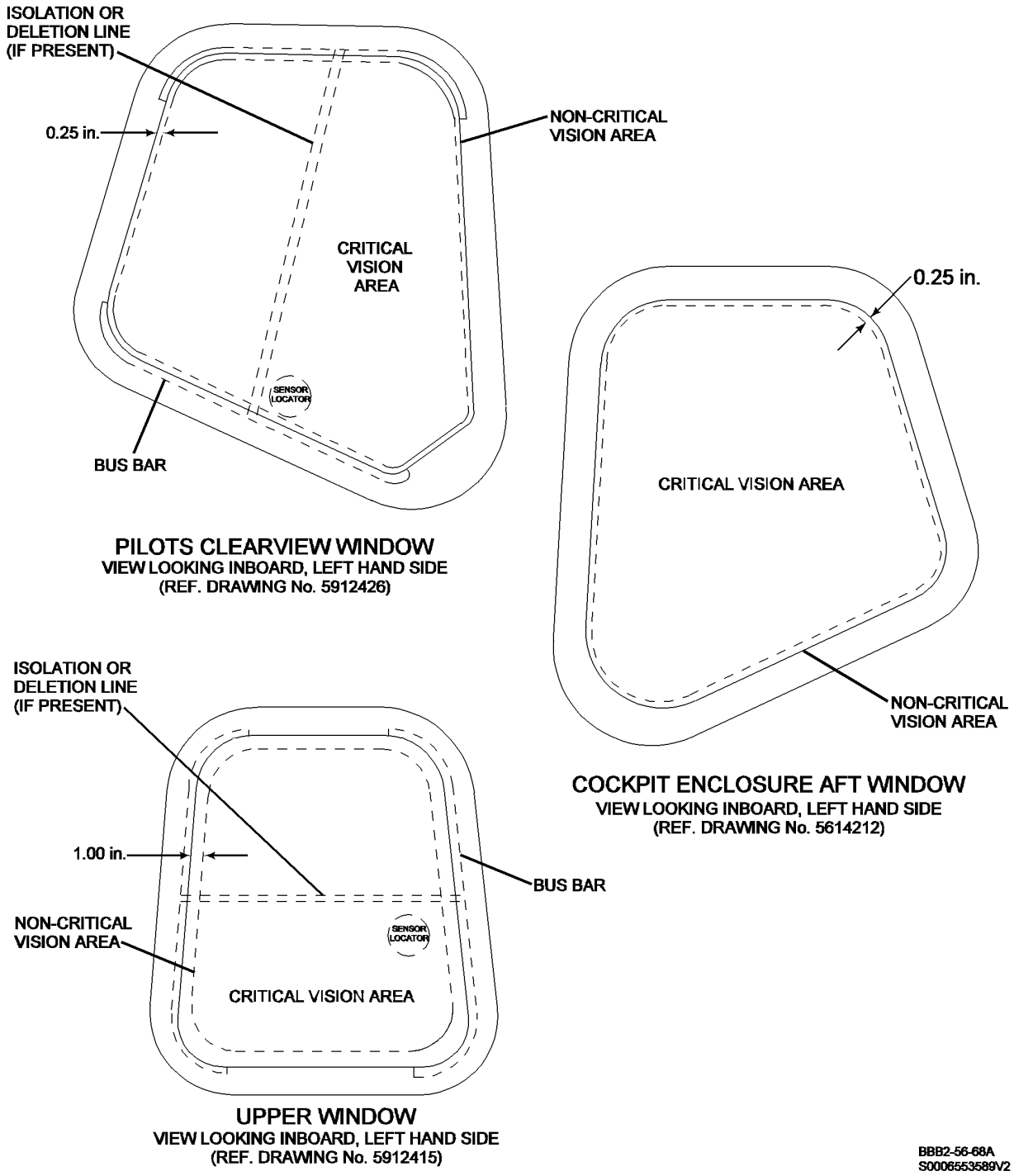
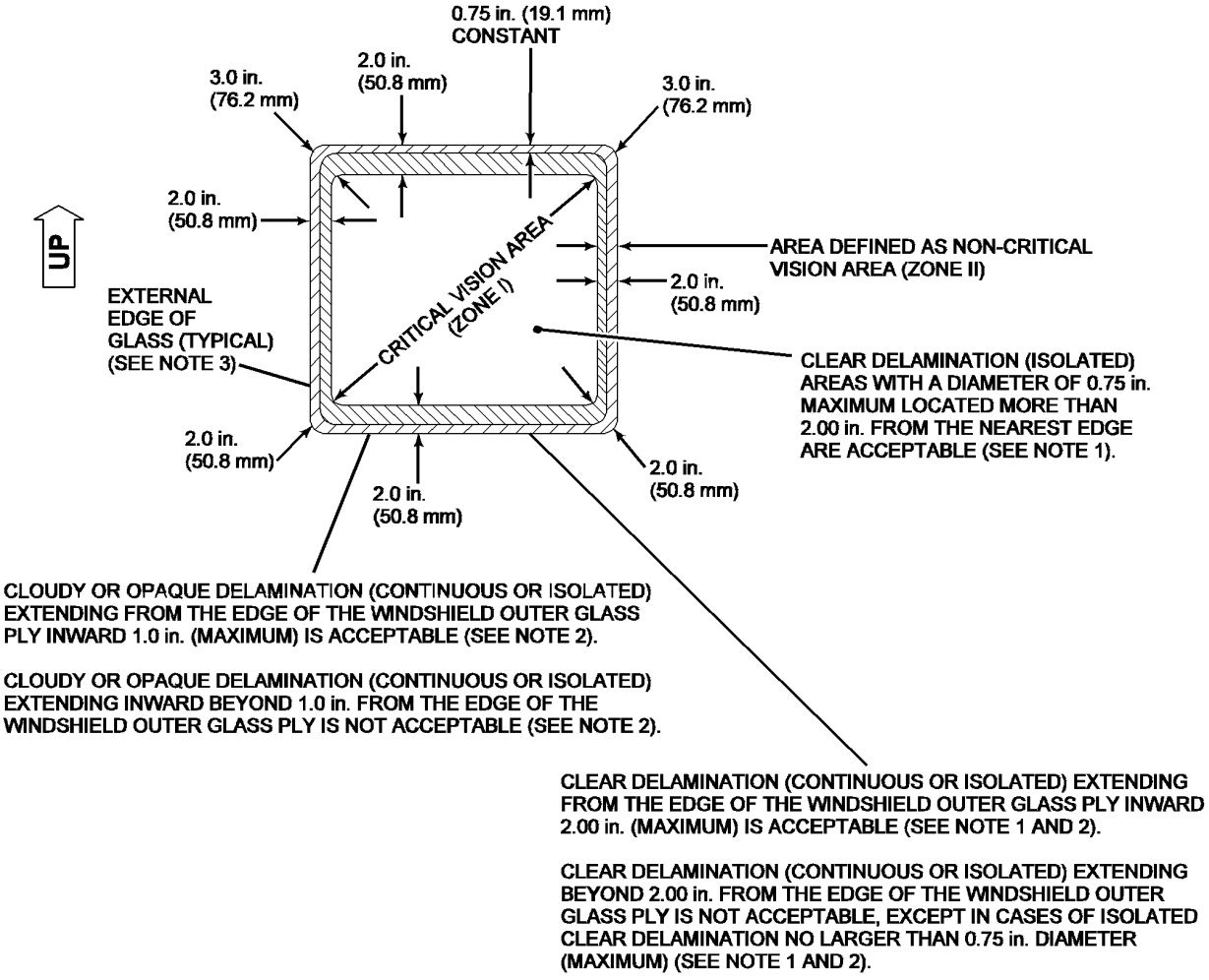
Windshield/Window Defect Zone Limits
Figure 601/56-00-00-990-801 (Sheet 1 of 7)



Windshield/Window Defect Zone Limits
Figure 601/56-00-00-990-801 (Sheet 2 of 7)



NOTE 1:
DUE TO SELF HEALING CAPABILITY OF GLASS AND VINYL LAMINATE COMBINATION IT MAY NOT BE POSSIBLE TO VERIFY REPORTED CLEAR DELAMINATION DURING GROUND INSPECTION. IN THIS CASE AN ADDITIONAL FLIGHT, OR FLIGHTS, IS PERMITTED FOR PURPOSE OF CONFIRMING DISCREPANCY.

NOTE 2:
EDGE OF GLASS IS SURFACE OF OUTER GLASS PLY WHICH CONTACTS RUBBER EDGE BUMPER OR WHICH IS VIEWABLE TO FLIGHT CREW.

NOTE 3:
VIEWABLE EDGE DEFINES BOUNDARY OF CLEAR VIEW AREA. (DAYLIGHT OPENING)

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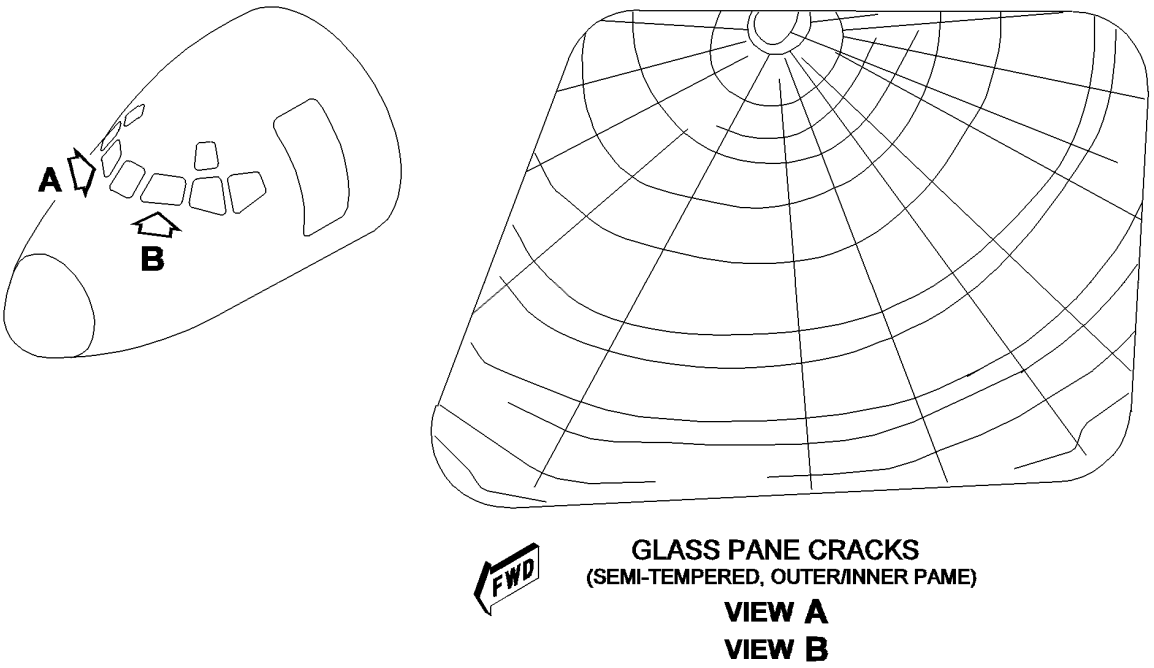
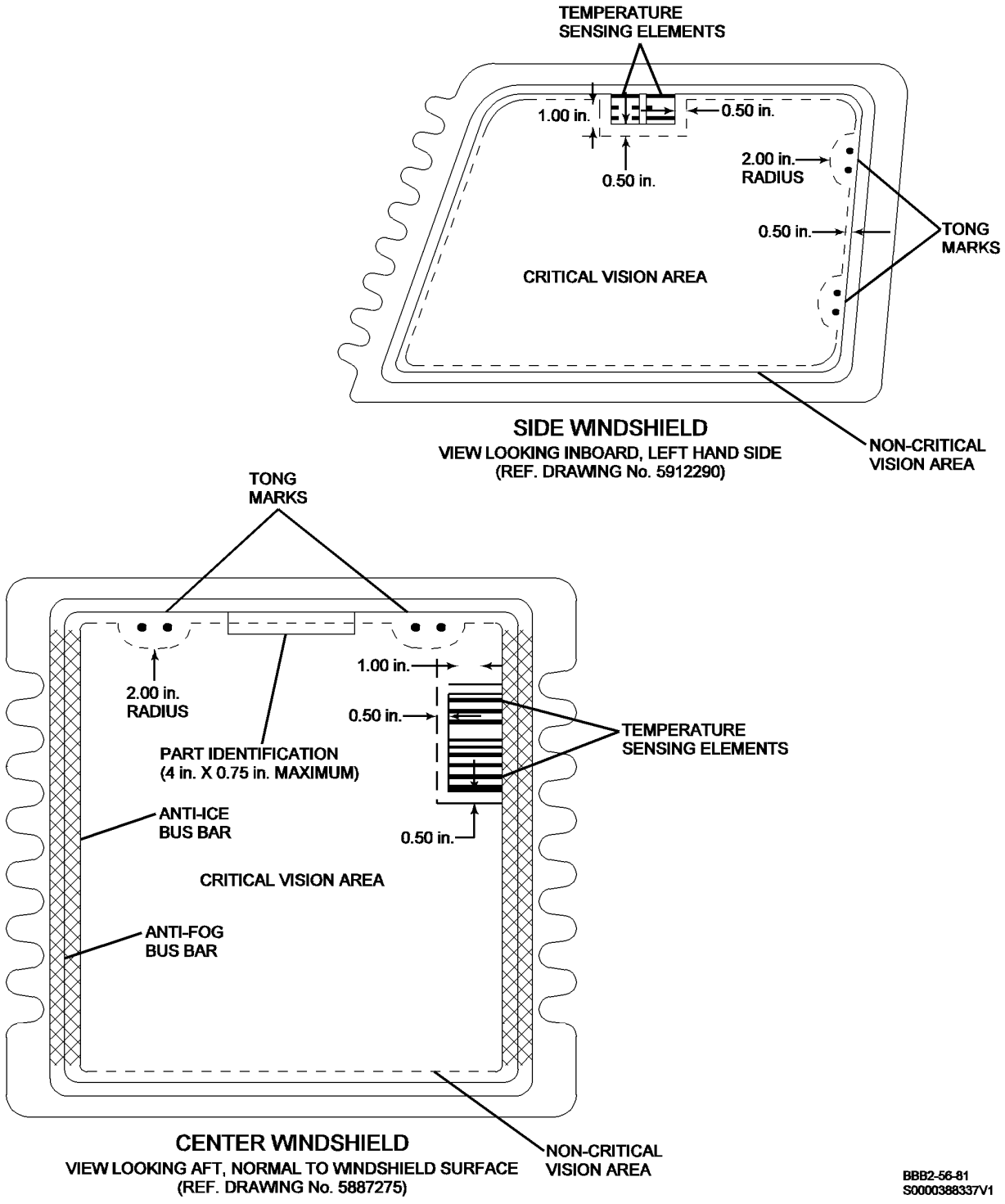
S0000388334V2

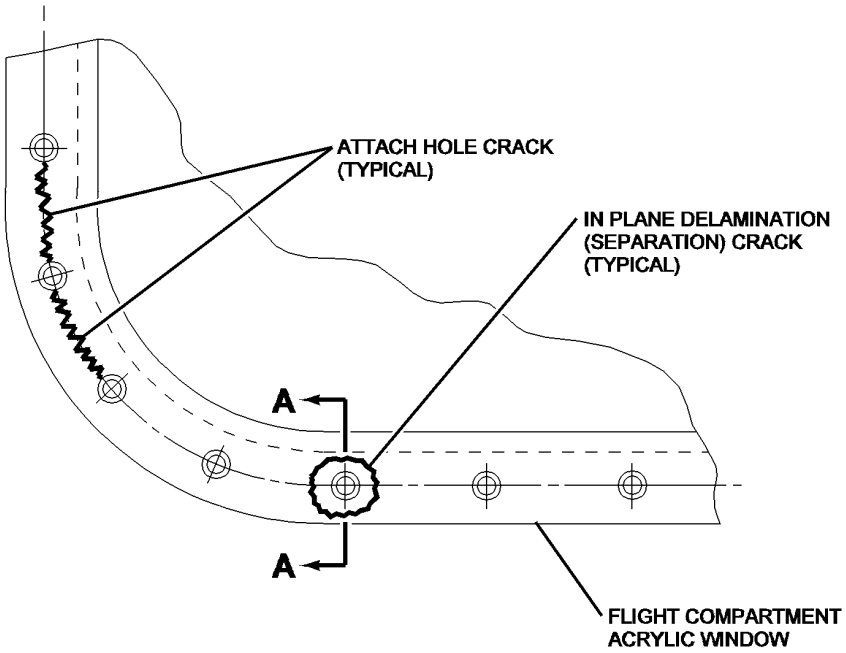
Windshield/Window Defect Zone Limits
Figure 601/56-00-00-990-801 (Sheet 3 of 7)

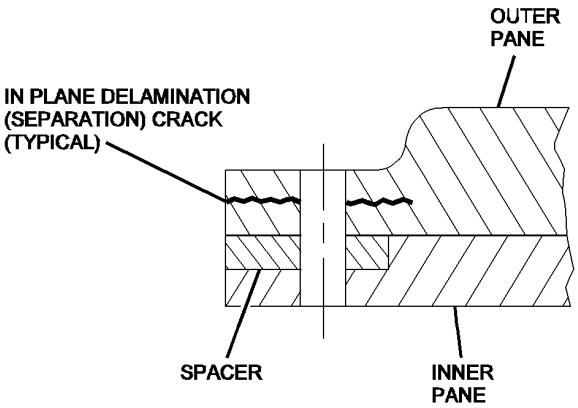


Windshield/Window Defect Zone Limits
Figure 601/56-00-00-990-801 (Sheet 4 of 7)



Windshield/Window Defect Zone Limits
Figure 601/56-00-00-990-801 (Sheet 5 of 7)





VIEW A-A

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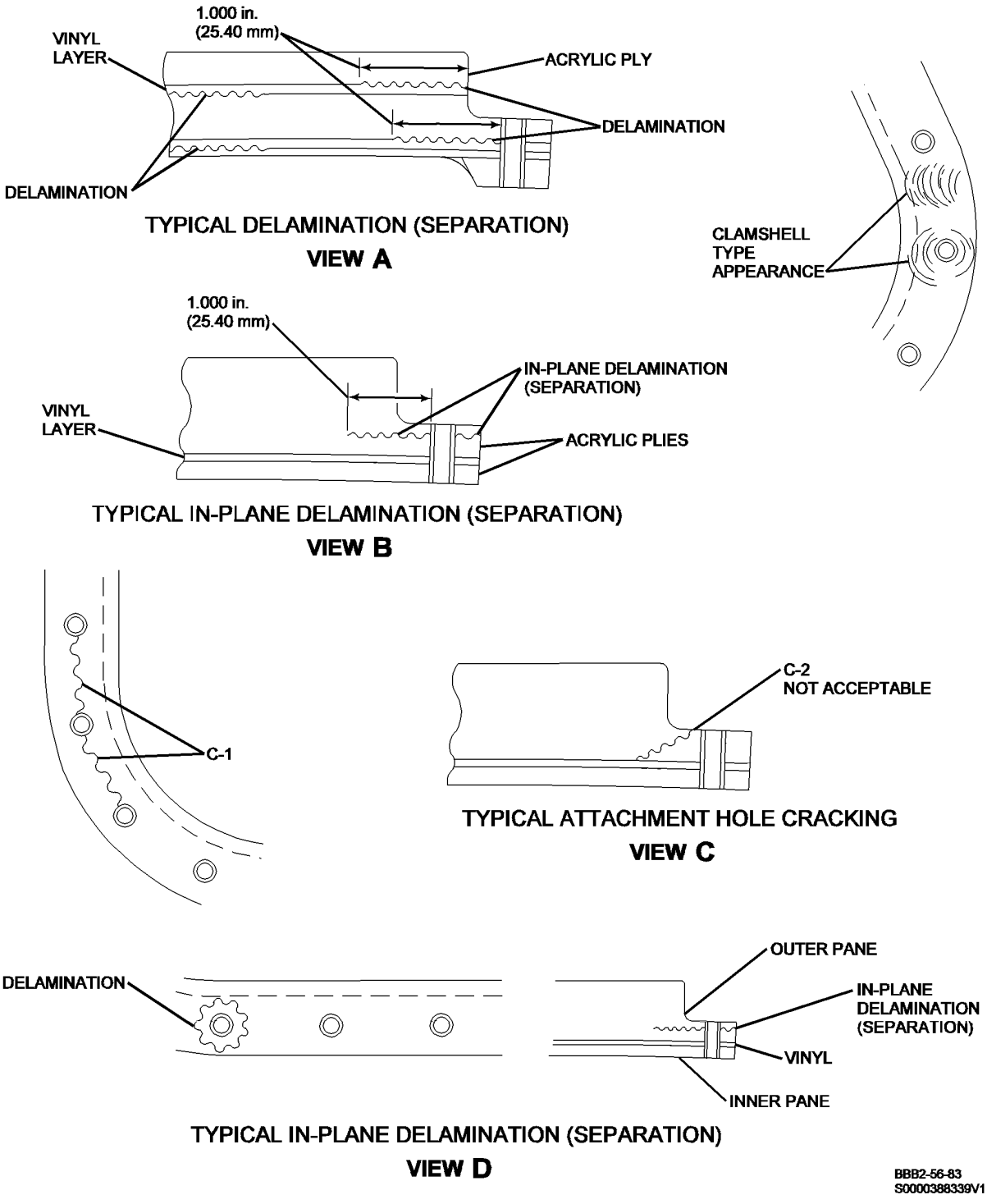
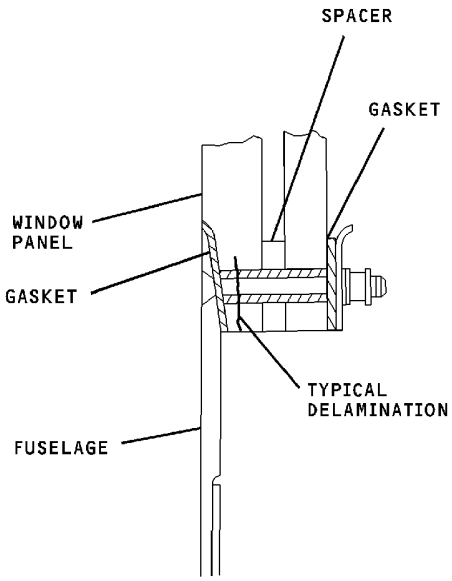
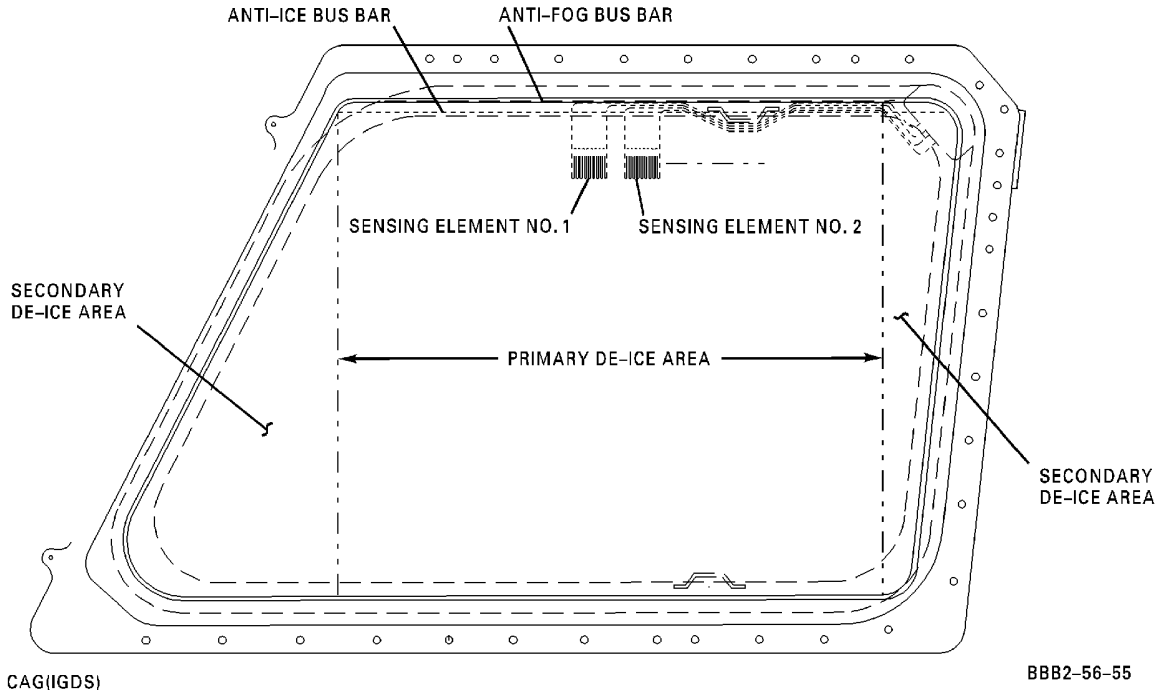
Windshield/Window Defect Zone Limits
Figure 601/56-00-00-990-801 (Sheet 6 of 7)



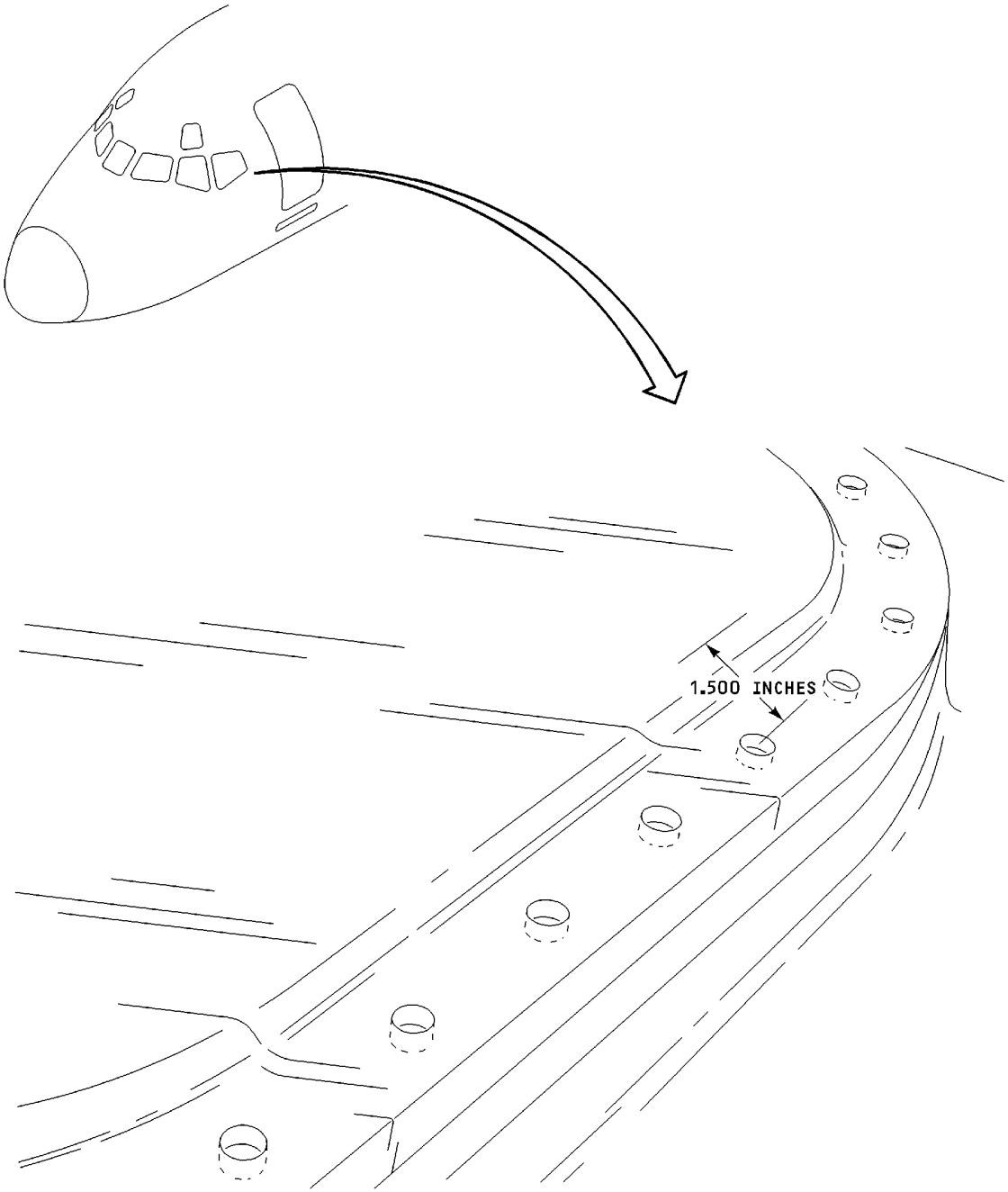
Windshield/Window Defect Zone Limits
Figure 601/56-00-00-990-801 (Sheet 7 of 7)



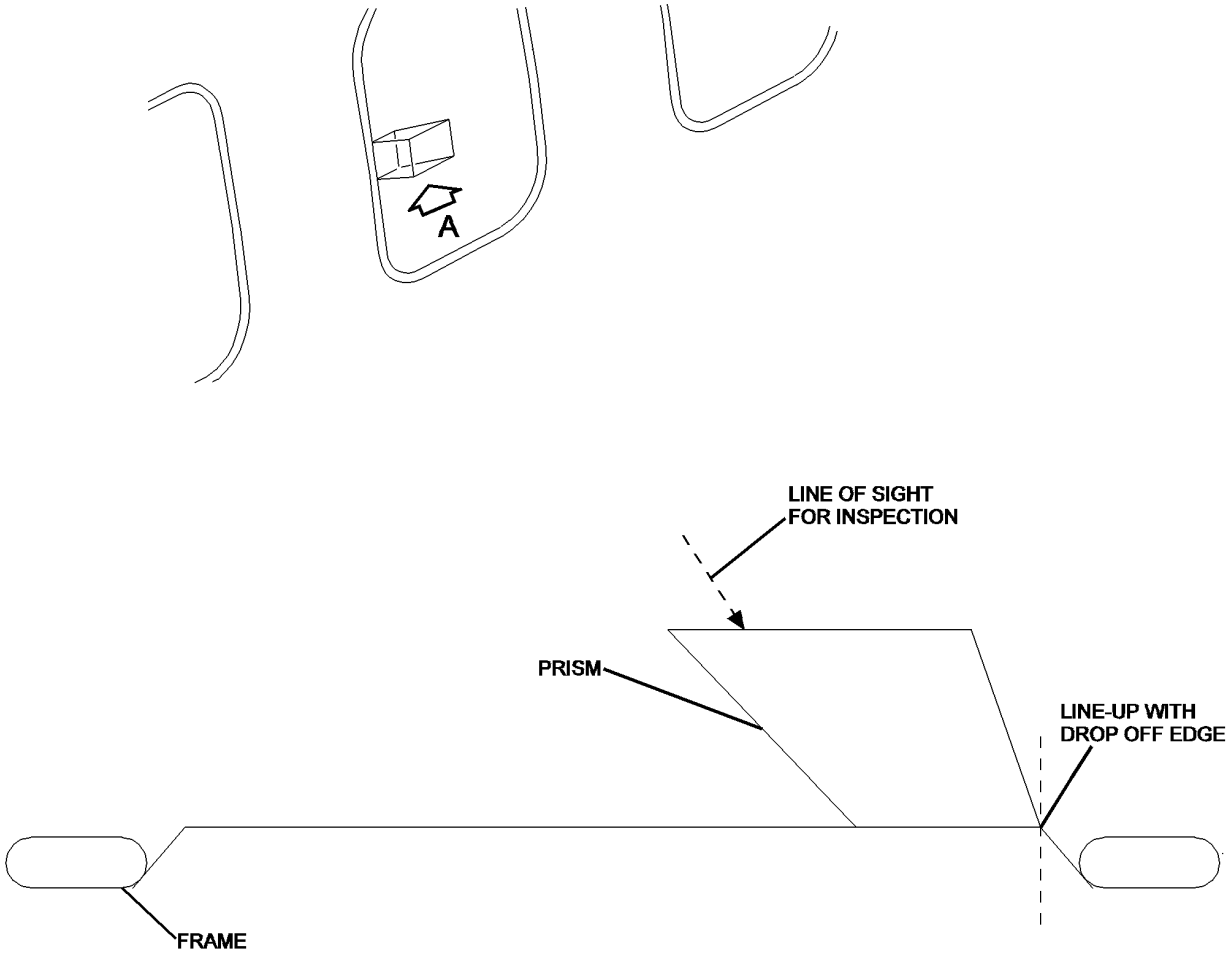
Mounting Hole Delamination of Clearview Upper (Eyebrow) and Aft Windows
Figure 602/56-00-00-990-802



Side Windshield - Primary and Secondary De-Ice Areas
Figure 603/56-00-00-990-803



Erosion - Acrylic Window Edge
Figure 604/56-00-00-990-804



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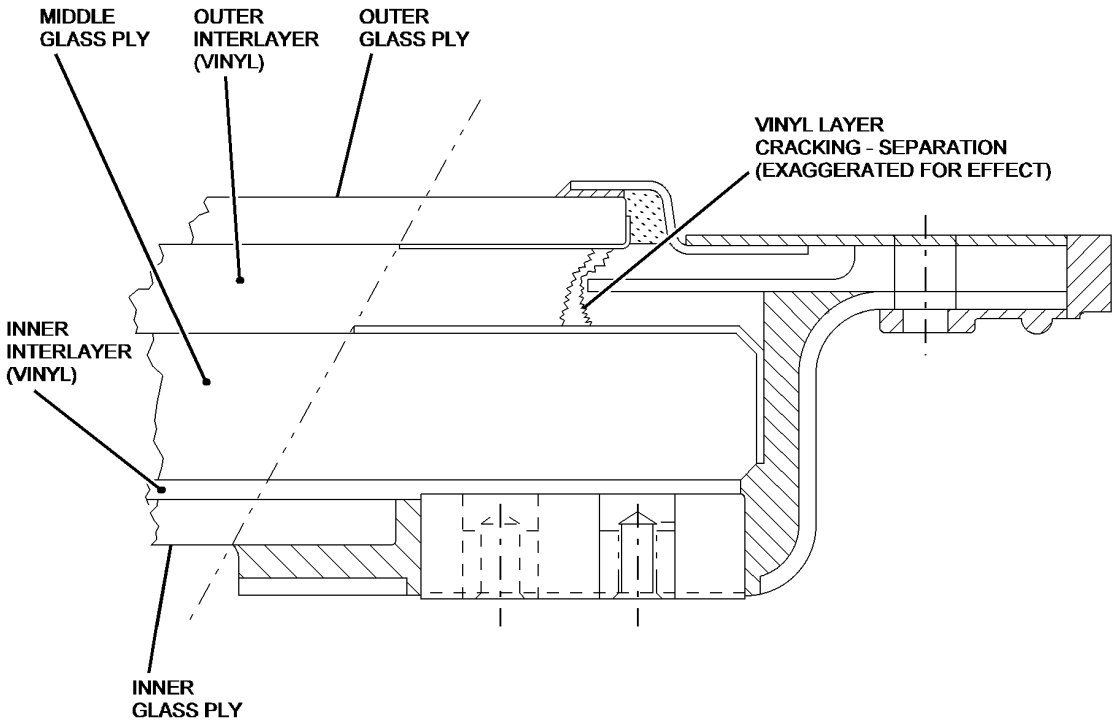
Cabin and Door Window Inspection
Figure 605/56-00-00-990-823



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Windshield - Cross Section
Figure 606/56-00-00-990-827

WINDOWS - CLEANING/PAINTING

1. General

A. The cleaning procedures for flight and passenger compartment windows are identical except as noted.

CAUTION: TO PREVENT SCRATCHING OF PANE SURFACES, ONLY OPTICAL POLISH, CEROX SR-XII, SHOULD BE USED TO CLEAN ACRYLIC WINDOWS.

B. Optical polish, (CEROX SR-XII), Bon Ami (non-chlorinated) or Leeder 275-G (Rain Repellent Removal Pads), may be used to remove hardened rain repellent residue from flight compartment glass windshields.

2. Equipment and Materials

WARNING: ITEMS INDICATED BY ASTERISK ARE FLAMMABLE; EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE.

CAUTION: BON AMI OR LEEDER 275-G MAY BE USED AS ALTERNATE METHODS TO REMOVE HARDENED RAIN REPELLENT RESIDUE FROM GLASS WINDOWS. TO PREVENT SCRATCHING OF PANE SURFACE, DO NOT USE BON AMI OR LEEDER 275-G ON ACRYLIC WINDOWS.

NOTE: Equivalent substitutes may be used instead of the following items.

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 701

Name and Number	Manufacturer
*Aliphatic naphtha DPM 5629	Commercially available
Cotton flannel cloth	Commercially available
Rymple cloth 301	Kendle Co., Textile Div.
Optical polish (Rubbing compound) CEROX SR-XII DPM 5741	Anomet Inc. Compton, CA
Kerosene DPM 531	Commercially available
Bon Ami (Non-chlorinated) DPM 903	Commercially available
Leeder 275-G (Rain repellent removal pads)	Ardox Inc. La Mirada, CA
Anti-Static Cleaner (Novus 1)	Advanced Materials Co. Costa Mesa, CA

3. Cleaning Windows

A. Flight Compartment Only

WARNING: THE WINDOW HEAT SYSTEM POWER MUST BE OFF WHEN YOU CLEAN THE WINDOWS. THIS WILL HELP TO PREVENT ELECTRICAL SHOCK INJURY TO PERSONNEL.

(1) Make sure that the following switches on the overhead panel are in the OFF position and attach DO-NOT-OPERATE tags.

(a) WINDSHIELD ANTI-ICE

(b) WINDSHIELD ANTI-FOG

(2) Clean windows as outlined in Paragraph 3.B..

(3) Remove the DO-NOT-OPERATE tags.

B. Flight Compartment and Passenger Compartment

CAUTION: AVOID EXCESSIVE RUBBING OR CARELESS HANDLING OF STRETCHED ACRYLIC MATERIAL TO PREVENT DISTORTION.

CAUTION: AVOID VIGOROUS RUBBING IN LOCAL AREAS DURING POLISHING. HEAT GENERATED BY RUBBING COULD CAUSE PREMATURE SURFACE CRAZING.

(1) Remove loose dust and grit with clean, compressed air.

Table 702 Materials And Procedures To Remove Contaminates From Windows

CONTAMINATES	MATERIALS AND PROCEDURES	CAUTIONS AND NOTES
PAINT OVERSPRAY RAIN REPELLENT	CERIUM OXIDE (CEROX SR-X11) PLASTIC CLEANER/WAX	USE RYMPLE CLOTH OR OUTING FLANNEL FOR ALL WIPING
TAPES AND GUMMED ADHESIVES	ALIPHATIC NAPHTHA/MECHANICAL SCRAPER (WOOD OR ACRYLIC) PLASTIC CLEANER/WAX	NAPHTHA IS EXTREMELY FLAMMABLE AND HIGHLY VOLATILE
CURED TAPES AND ADHESIVE SYSTEMS	OVERNIGHT SOAK IN ALIPHATIC NAPHTHA/6000 OR 8000 GRIT CUSHIONED ABRASIVE/CERIUM OXIDE/WAX	PLACE CLEAN CLOTH OVER MOISTENED AREA TO RETARD EVAPORATION
OIL, GREASE, AND HYDRAULIC FLUIDS	50-PERCENT MIXTURE OF ALIPHATIC NAPHTHA AND KERSONE/ RINSE SOAP WATER/POLISH WITH PLASTIC CLEANER	MIXTURE HAS LOW FLASH POINT. USE ONLY ON EXTERIOR APPLICATIONS
ACRYLIC MASKING OR PROTECTIVE PAPER (OLD)	KEROSENE/DIESEL/MECHANICAL SCRAPER (WOOD OR ACRYLIC) RINSE SOAP/WATER, POLISH WITH PLASTIC CLEANER	USE CLOTH TO RETARD EVAPORATION - FLAMMABLE - EXTERIOR APPLICATION ONLY
SPRAYLAT (CURED)	SPRAYLAT STRIPPER SC-1055A	
INSECT REMOVAL FROM WINDSHIELDS	A SOLUTION OF IPA/ETHANOL/ WETTING AGENT AND WATER	FLAMMABLE - USE FOR EXTERIOR APPLICATION ONLY

WARNING: ALIPHATIC NAPHTHA IS AN AGENT THAT IS POISONOUS, FLAMMABLE, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN ALIPHATIC NAPHTHA IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ALIPHATIC NAPHTHA IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: KEROSENE IS AN AGENT THAT IS FLAMMABLE, EXPLOSIVE, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN KEROSENE IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET KEROSENE IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: OPTICAL POLISHING & RUBBING COMPOUND IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN OPTICAL POLISHING & RUBBING COMPOUND IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THESE HAZARDOUS AGENTS.

CAUTION: ALIPHATIC NAPHTHA AND KEROSENE HAVE LOW FLASH POINT AND SHOULD ONLY BE USED ON EXTERIOR SURFACES.

(2) Remove oil, grease, paint or residual gum adhesive from windows and windshield wiper blades using cotton flannel cloth or Rymple cloth 301 wet with mixture of equal parts of aliphatic naphtha and kerosene.

WINDOWS - APPROVED REPAIRS

1. General

A. Rework of acrylic panels, flight compartment clearview, upper and aft windows, does not extend the structural life of the panel. Rework is permissible to remove scratches and crazing in order to improve visibility or appearance.

CAUTION: DO NOT REPAIR ACRYLIC WINDOWS THAT CONTAIN SCRATCH AND CRAZE RESISTANT COATINGS. ATTEMPTS TO REPAIR WINDOWS WILL DAMAGE COATED SURFACE.

B. Rework of glass panels, flight compartment center and side windshields, is not recommended without specific Douglas approval.

NOTE: Approved repair for coated acrylic windows may only be performed by a Douglas approved repair station.

C. The following text outlines procedures for removing small scratches and crazing from uncoated acrylic windows.

D. Refer to Table 802 and Table 803 for minimum thickness requirements of acrylic panel after rework.

E. Refer to Paragraph 3. and Paragraph 4. for refurbishing procedures.

F. Refer to Figure 802 for allowable chips in cabin window outer pane.

G. See Paragraph 3.E. for allowable surface and edge cracks.

H. See Paragraph 6.A. for inspection of Flight Compartment Acrylic Windows.

I. See Paragraph 7. for Repair of Main Windshield Outboard Moisture Seal.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following items.

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 801

Name and Number	Manufacturer
Cotton flannel cloth	Commercially available
Rymple cloth 301	Kendle Co., Textile Div.
Simoniz Wax DPM 590	Simoniz Wax Co. Los Angeles, CA
Carborundum paper, 320, 400, and 600	Minnesota Mining & Manufacturing Co. St. Paul, MN
Naphtha, aliphatic DPM 5629	
Optical polish (Rubbing compound) CEROX SR-X11 DPM 5741	Anomet Inc. Compton, CA

Table 801 (Continued)

Name and Number	Manufacturer
Micro-mesh 1500, 1800, 2400, 3200, 3600, 6000, 8000, 12,000	Micro-Mesh (Cushioned Abrasives) Micro-Surface Finishing Products Inc., Wilton, IA
Window cleaner Anomet #471 DPM 6011	Anomet Inc. Compton, CA
Plastic filler PS-18 or PS-30	Cadillac Plastic & Chemical Co. North Hollywood, CA
Plastic filler Weld-On 40 DPM 6363	Industrial Polychemical Service (IPS) Gardena, CA
Solvent, P-D-680 DPM 518	
Masking tape	
Pocket rule 6 inch (152.4 mm)	
Plastic spatula	
Razor blades (single edge, safety)	
Methyl Ethyl Ketone (MEK) DPM 535	
Felt block	
Cheese cloth or gauze pad	
Pumice or cerium oxide	
De-ionized water	
Isopropyl alcohol DPM 530	
Cotton cloths (diapers)	
Paper towels - soft texture	
Products research PR-1425 B 1/2 semkit	
Products research PR-142 Primer /cleaner	
SEMCO nylon nozzle 1/16 inch (1.6 mm) orfice	
Moisture seal forming tool (wooden tongue depressor)	
Rubber gloves (powder free/undusted)	
Masking tape 1 inch (25 mm)	
Gauze pads	
Cellulose sponge	
Safety glasses	

3. Approved Repairs for Acrylic Windows

CAUTION: DO NOT REPAIR ACRYLIC WINDOWS THAT CONTAIN SCRATCH AND CRAZE RESISTANT COATINGS. ATTEMPTS TO REPAIR WINDOWS WILL DAMAGE COATED SURFACE.

A. Remove Scratches and Crazing from Uncoated Acrylic Windows

NOTE: Approved repair for coated acrylic windows may only be performed by a Douglas approved repair station.

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) For flight compartment windshields and windows, open and tag following circuit breakers:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Wrap carborundum paper around smooth rubber or wooden block, (initial sanding should be with No. 320 paper, follow with No. 400 paper, No. 500 paper, and finish with 600 paper).

NOTE: Wet or dry carborundum paper should be soaked in water before using. Water should be used while sanding to prevent clogging.

(3) Lightly sand, using circular or alternating direction motion perpendicular to scratch. Progressively enlarge work area to avoid distortion.

(4) Clean sanded area. (GENERAL, SUBJECT 56-00-00, Page 701)

B. Polish Acrylic Windows

WARNING: OPTICAL POLISHING & RUBBING COMPOUND IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN OPTICAL POLISHING & RUBBING COMPOUND IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(WARNING PRECEDES)

CAUTION: DO NOT REPAIR ACRYLIC WINDOWS THAT CONTAIN SCRATCH AND CRAZE RESISTANT COATINGS. ATTEMPTS TO REPAIR WINDOWS WILL DAMAGE COATED SURFACE.

CAUTION: AVOID EXCESSIVE RUBBING OR CARELESS HANDLING OF STRETCHED ACRYLIC MATERIAL TO PREVENT DISTORTION.

CAUTION: AVOID VIGOROUS RUBBING IN LOCAL AREAS DURING POLISHING. HEAT GENERATED BY RUBBING COULD CAUSE PREMATURE SURFACE CRAZING.

(1) Hand polish all light scratches with optical polish, (CEROX SR-X11), applied to clean cotton flannel cloth. Rub lightly with motion perpendicular to scratch.

NOTE: Approved repair for coated acrylic windows may only be performed by a Douglas approved repair station.

(2) Clean window. (GENERAL, SUBJECT 56-00-00, Page 701)

WARNING: AUTOMOBILE WAX IS AN AGENT THAT IS AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN AUTOMOBILE WAX IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET AUTOMOBILE WAX IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(3) Apply Simoniz wax with clean cloth using circular motion.

(4) Remove the safety tags and close these circuit breakers:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

C. Acrylic Window Edge Chips

CAUTION: DO NOT REPAIR ACRYLIC WINDOWS THAT CONTAIN SCRATCH AND CRAZE RESISTANT COATINGS. ATTEMPTS TO REPAIR WINDOWS WILL DAMAGE COATED SURFACE.

(1) Refer to Figure 802 for allowable chips in cabin window outer pane.

NOTE: Approved repair for coated acrylic windows may only be performed by a Douglas approved repair station.

(2) Edge chips on acrylic windows can be repaired, for appearance only, by filling chips with plastic filler as follows:

WARNING: ALIPHATIC NAPHTHA IS AN AGENT THAT IS POISONOUS, FLAMMABLE, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN ALIPHATIC NAPHTHA IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ALIPHATIC NAPHTHA IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: KEROSENE IS AN AGENT THAT IS FLAMMABLE, EXPLOSIVE, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN KEROSENE IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET KEROSENE IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: P-D-680 TYPE 1 SOLVENT IS AN AGENT THAT IS FLAMMABLE AND POISONOUS. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN P-D-680 TYPE 1 SOLVENT IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET P-D-680 TYPE 1 SOLVENT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

(WARNING PRECEDES)

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THESE HAZARDOUS AGENTS.

(a) Clean/prepare area to be filled using cotton flannel cloth or Rymple cloth (No. 301) wet with mixture of equal parts of (Aliphatic Naptha and kerosene) or with (P-D-680) solvent.

(b) Mix plastic filler per manufacturer's instructions.

NOTE: Normal work life of resin is approximately 30 minutes.

(c) Lightly abrade area to be filled, if accessible.

(d) Fill chip(s) completely with plastic filler.

(e) Smooth resin to contour of window pane. Remove excess resin.

(f) Allow filler to cure. Ninety percent cure can be obtained in 1 to 2 hours. Complete cure requires approximately 24 hours.

(g) Sand filler flush to contour of window pane ((±0.015 inch), 0.38 mm).

(3) Chips in load carrying edge of outer pane may be repaired by using Paragraph 3.C.(2) procedure, if within following limits:

(a) 2.000 inches (50.80 mm) long, maximum

(b) 0.656 inch (16.66 mm) wide, maximum

(c) Edge thickness remaining - 0.031 inch (0.79 mm) or greater

Table 802 Pane Minimum Thickness After Rework

PANE	ORIGINAL THICKNESS INCHES (mm)	MINIMUM THICKNESS AFTER REWORK INCHES (mm)
Outer - Aft Fixed Window, Flight Compartment	Measured at Center 0.675(±0.050) (17.15(±1.27) mm)	0.575 (14.60 mm)
	Measured at Edge 0.488 (nominal) (12.40 mm)	0.478 (12.14 mm)
Inner - Aft Fixed Window, Flight Compartment	Measured at Center 0.575(±0.040) (14.60(±1.02) mm)	0.440 (11.18 mm)
Outer - Cabin	Measured at Center 0.400 (+0.040 -0.000) (10.16 (+1.02 -0.00) mm)	0.310 (7.87 mm)
	Measured at Edge 0.195 - 0.225 (4.95 - 5.72 mm)	0.160 (4.06 mm)

Table 802 Pane Minimum Thickness After Rework (Continued)

PANE	ORIGINAL THICKNESS INCHES (mm)	MINIMUM THICKNESS AFTER REWORK INCHES (mm)
Inner - Cabin (3912038-1/-501/-505)	Measured at Center 0.250(±0.030) (6.35(±0.76) mm)	0.160 (4.06 mm)
Inner - Cabin (3912038-503/-507)	Measured at Center 0.200 (+0.010 -0.020) (5.08 (+0.25 -0.51) mm)	0.160 (4.06 mm)
Outer - Emergency Exit	Measured at Center 0.400 (+0.040 -0.000) (10.16 (+1.02 -0.00) mm)	0.310 (7.87 mm)
	Measured at Edge 0.195 - 0.225 (4.95 - 5.72 mm)	0.160 (4.06 mm)
Inner - Emergency Exit	Measured at Center 0.200 (+0.010 -0.020) (5.08 (+0.25 -0.51) mm)	0.160 (4.06 mm)
Outer-Service and Entrance Door	Measured at Center 0.400(±0.030) (10.16(±0.76) mm)	0.310 (7.87 mm)
Inner-Service and Entrance Door	Measured at Center 0.250(±0.030) (6.35(±0.76) mm)	0.180 (4.57 mm)
NOTE: Rework of glass viewing windows is not recommended!		

Table 803 Panel Assembly Minimum Thickness After Rework

PANEL ASSEMBLY/COCKPIT PANE	ORIGINAL THICKNESS INCHES (mm)	MINIMUM THICKNESS AFTER REWORK INCHES (mm)
Upper (Eyebrow) Assembly	Measured at Center 1.187 (30.15 mm)	
Outer Pane	Measured at Center 0.750(±0.075) (19.05(±1.90) mm)	0.600 (15.24 mm)
	Measured at Edge 0.563(±0.075) (14.30(±1.90) mm)	0.478 (12.14 mm)
Inner Pane	Measured at Center 0.187(±0.020) (4.75(±0.51) mm)	0.147 (3.73 mm)

Table 803 Panel Assembly Minimum Thickness After Rework (Continued)

PANEL ASSEMBLY/COCKPIT PANE	ORIGINAL THICKNESS INCHES (mm)	MINIMUM THICKNESS AFTER REWORK INCHES (mm)
Clearview Window Assembly	Measured at Center 1.000(±0.110) (25.40(±2.79) mm)	
Outer Pane	Measured at Center 0.750(±0.075) (19.05(±1.90) mm)	0.600 (15.24 mm)
	Measured at Edge 0.402(±0.075) (10.21(±1.90) mm)	0.317 (8.05 mm)
Inner Pane	Measured at Center 0.125(±0.020) (3.18(±0.51) mm)	0.085 (2.16 mm)

Table 804 Edge Radius (Cutback) Rework

PANE	EDGE CUTBACK ORIGINAL DIMENSION INCHES (mm)	MINIMUM CUTBACK ALLOWABLE INCHES (mm)
Outer Pane - Clearview	Measured from Edge 1.438 (36.53 mm)	1.484 (37.69 mm)
Outer Pane - Aft Fixed	Measured from Edge 1.188 (30.18 mm)	1.234 (31.34 mm)
Outer Pane - Eyebrow	Measured from Edge 1.188 (30.18 mm)	1.234 (31.34 mm)
Outer Pane - Cabin (3912039-1)	Measured from Edge 0.625(±0.010) (15.88(±0.25) mm)	0.675 (17.15 mm)
Outer Pane - Cabin (3912039-501)	Measured from Edge 0.685(±0.010) (17.40(±0.25) mm)	0.720 (18.29 mm)

D. Effect of Rework on Aircraft Drag and Fuel Burn

(1) Rework of cabin window outer pane to new minimum thickness of 0.310 inch (7.87 mm) will result in increased aircraft drag because of increased window deflection during cabin pressurization.

(2) This drag penalty could result in a potential fuel burn increase. Significance of fuel increase would be determined by number of windows reworked.

E. Surface of acrylic outer window pane should be checked periodically for evidence of crazing and fissures. If outer window pane crazing or cracks exceed limits, adjustments may be accomplished. (Table 805, Figure 804 and Figure 805) (Paragraph 4.)

F. Surface of acrylic inner window pane should be checked periodically for evidence of chips. Refer to Figure 803, for allowable chip depth.

Table 805 Allowable Surface Cracks - Cabin Outer Pane

Pane Thickness Inches (mm)	Crack Depth Inches (mm)
0.340-0.440 (8.64-11.18 mm)	0.030 (0.76 mm)
0.335 (8.51 mm)	0.025 (0.64 mm)
0.330 (8.38 mm)	0.020 (0.51 mm)
0.325 (8.26 mm)	0.015 (0.38 mm)
0.320 (8.13 mm)	0.010 (0.25 mm)
0.315 (8.00 mm)	0.005 (0.13 mm)
0.310 (7.87 mm)	No Cracks

G. Flight Compartment (Acrylic) Window In-Pane Cracking Limits

CAUTION: DO NOT REPAIR ACRYLIC WINDOWS THAT CONTAIN SCRATCH AND CRAZE RESISTANT COATINGS. ATTEMPTS TO REPAIR WINDOWS WILL DAMAGE COATED SURFACE.

(1) Cracks up to and including 5.000 inches (127.00 mm) maximum are permissible in forward corners of each panel outer pane. Cracks up to and including 6.000 inches (152.40 mm) maximum are permissible in aft corners of each panel outer pane.

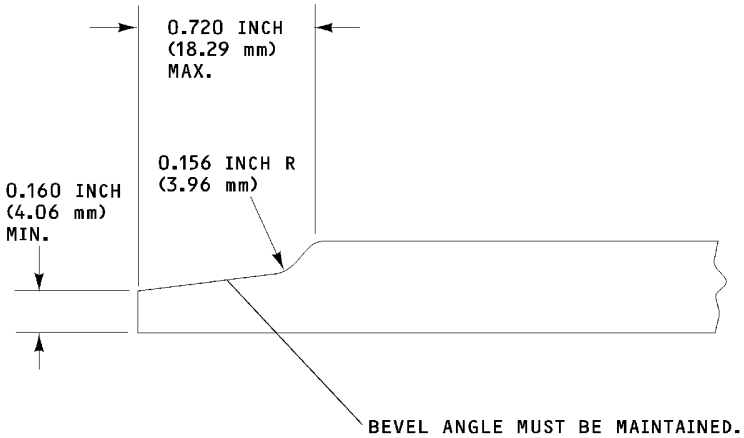
NOTE: Approved repair for coated acrylic windows may only be performed by a Douglas approved repair station.

(2) A maximum of 3 attach holes may be encompassed by any one crack.

(3) Check for crack growth or additional attach hole involvement at intervals of 3 months, 6 months, 1 year, and yearly thereafter.

(4) Monitor torque value when installing windows to ensure panels are not overtightened.

(5) Appearance of second crack in outer pane of panel would be cause for removal and replacement of panel.



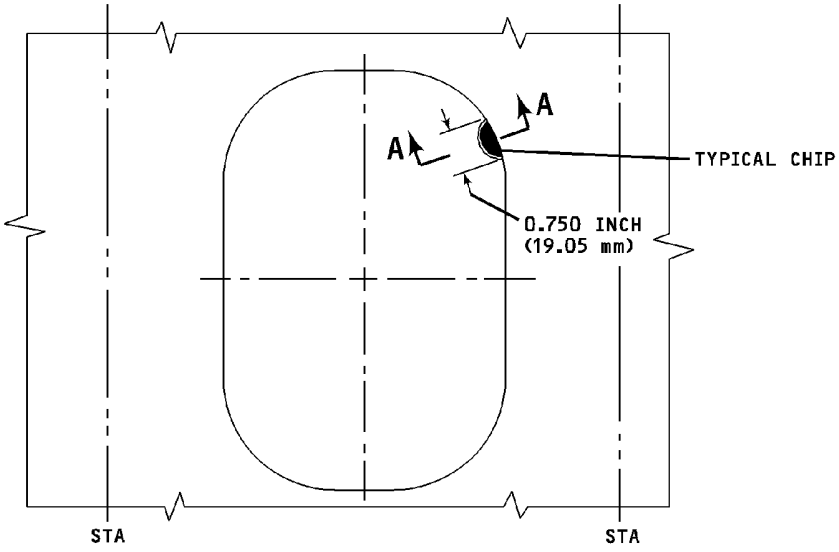
NOTE:

RECOMMEND NO REWORK BE DONE IN THIS
AREA UNLESS THERE IS DAMAGE.
IF REWORK IS NECESSARY, DO NOT POLISH.
SURFACE SHOULD HAVE "FROSTED" APPEARANCE.

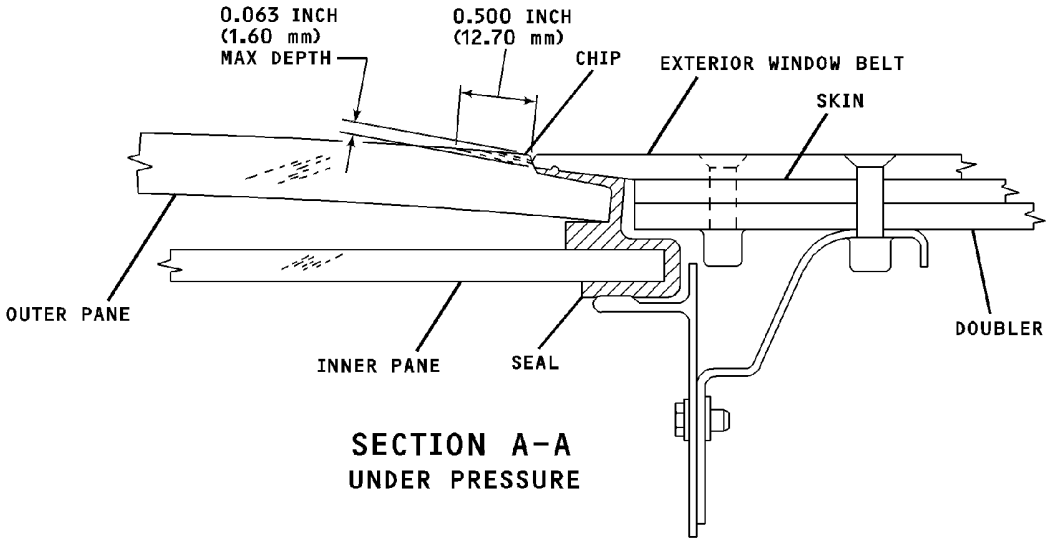
CAG(IGDS)

BBB2-56-28B

Outer Cabin Window Beveled Edge Rework Limits
Figure 801/56-00-00-990-805



TYPICAL CABIN WINDOW
VIEW LOOKING INBOARD



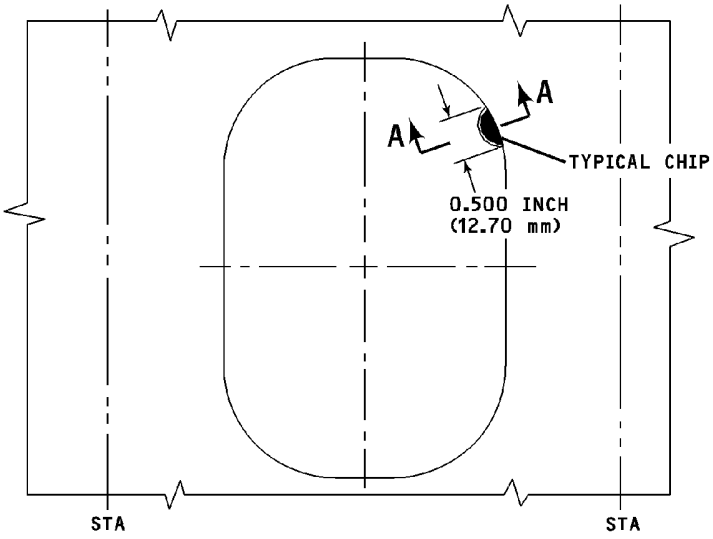
SECTION A-A
UNDER PRESSURE

NOTES:

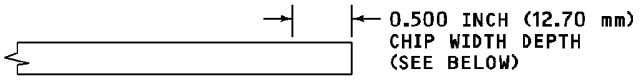
1. ANY NUMBER OF CHIPS ALLOWED AROUND PERIPHERY. CHIP SIZE SHOWN IS AN EXAMPLE: THE WIDTH AND LENGTH MAY EXCEED THESE DIMENSIONS, BUT THE DEPTH SHOULD NOT EXCEED 0.063 INCH (1.60 mm), (REF. FIGURES 801, 801A AND 802) FOR MINIMUM THICKNESS.
2. REF. PARAGRAPHS 3 AND 4 FOR REWORK INSTRUCTIONS.
3. AFTER REWORK, BREAK ALL SHARP EDGES.

CAG(IGDS) BBB2-56-32A

Allowable Chips in Cabin Window Outer Pane
Figure 802/56-00-00-990-806



TYPICAL INNER CABIN WINDOW
VIEW LOOKING INBOARD



SECTION A-A

PANE THICKNESS (INCHES)	ALLOWABLE CHIP DEPTH (INCHES)
0.160 (4.06 mm)	NO CHIPS ALLOWED
0.165 (4.19 mm)	0.005 (0.13 mm)
0.170 (4.32 mm)	0.010 (0.25 mm)
0.175 (4.44 mm)	0.015 (0.38 mm)
0.180 (4.57 mm)	0.020 (0.51 mm)
0.185 (4.70 mm)	0.025 (0.64 mm)
0.190 (4.83 mm)	0.030 (0.76 mm)

1. MAXIMUM DEPTH FOR ALLOWABLE CHIPS IS 0.030 INCH (0.76 mm).
2. MAXIMUM NUMBER OF CHIPS PER. PANE ALLOWED IS (2) TWO.
3. MULTIPLE CHIPS SHOULD NOT BE ADJACENT.

NOTE:

REPAIR USING (PS-30/PS-18/WELD-ON 40) PLASTIC FILLER, DOES NOT RETURN ORIGINAL STRENGTH TO ACRYLIC. REPAIR IS COSMETIC ONLY.

CAG(IGDS)

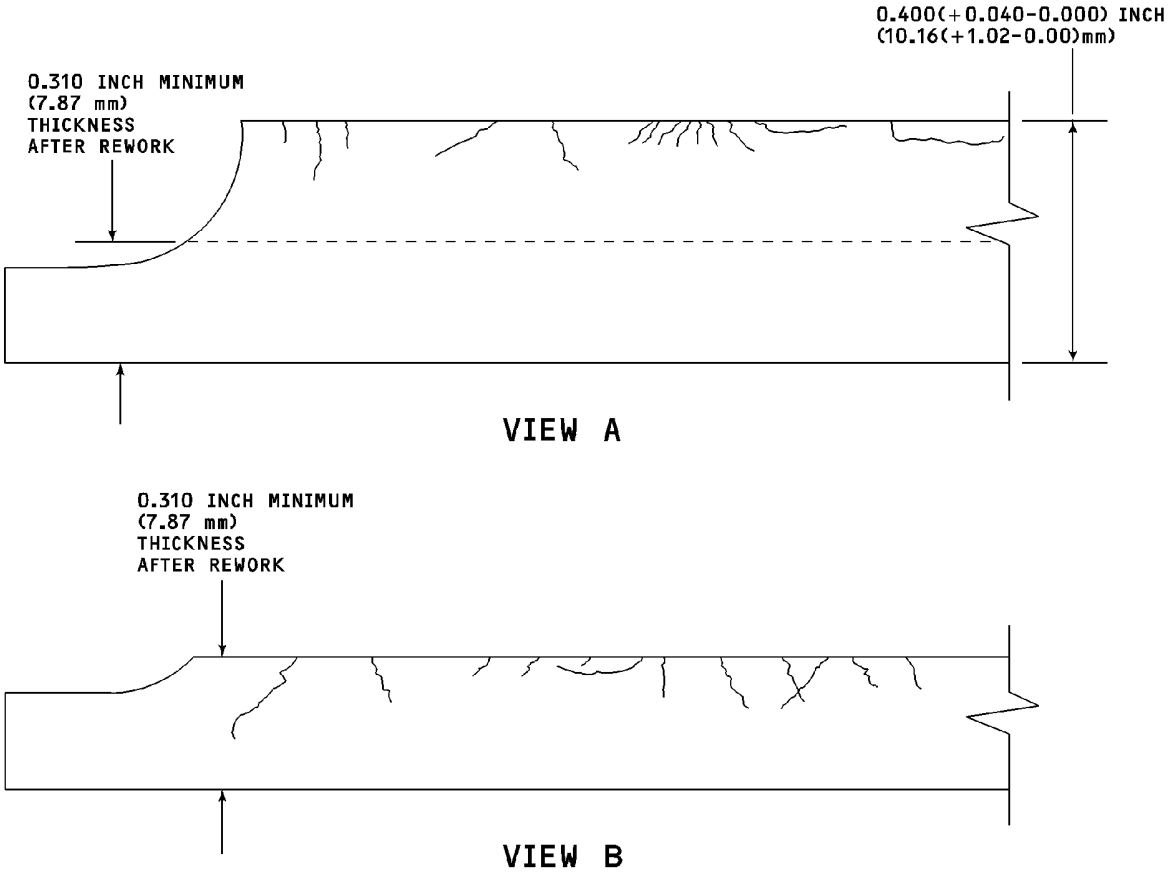
BBB2-56-56B

Allowable Chips in Cabin Window - Inner Pane
Figure 803/56-00-00-990-807

NOTES:

VIEW A: CRACKS MAY BE ACCEPTABLE AS DETERMINED BY DEPTH AND THICKNESS OF PANE

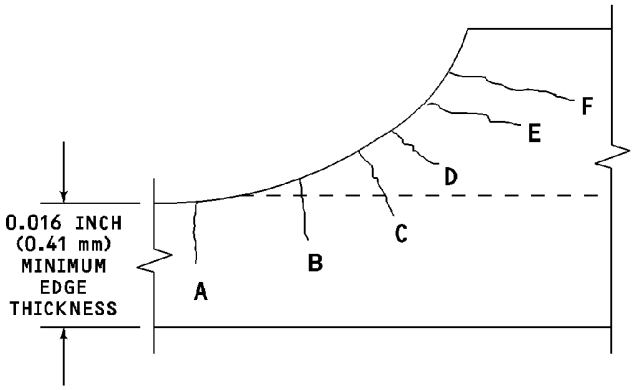
VIEW B: PANE SHOULD BE REJECTED BECAUSE CRACKS EXCEED ALLOWABLES



CAG(IGDS)

BBB2-56-57A

Typical Surface Cracking - Cabin Outer Pane
Figure 804/56-00-00-990-808



NOTES:

CRACKS IDENTIFIED AS A,B, AND C ARE UNACCEPTABLE BECAUSE THE MINIMUM THICKNESS HAS BEEN EXCEEDED.

CRACKS IDENTIFIED AS D,E, AND F MAY BE ACCEPTABLE DEPENDING ON THICKNESS OF PART AND DEPTH OF CRACKS.

CAG(IGDS)

BBB2-56-58B

Typical Edge Cracking - Cabin Outer Pane
Figure 805/56-00-00-990-809

4. **Hand Sanding Procedure for Acrylic Windows**

CAUTION: DO NOT REPAIR ACRYLIC WINDOWS THAT CONTAIN SCRATCH AND CRAZE RESISTANT COATINGS. ATTEMPTS TO REPAIR WINDOWS WILL DAMAGE COATED SURFACE.

NOTE: Approved repair for coated acrylic windows may only be performed by a Douglas approved repair station.

NOTE: Although it is not generally recommended, in some instances, the use of a series of sandpapers for the removal of severe damage (deep scratches, crazing) is necessary. Micro-mesh, being a polishing system, does not aggressively remove much surface material. To reduce time and material costs, sandpapers may be used within the limits described on Table 806. For example; regardless of the severity of damage, sandpaper no coarser than 320 wet or dry should be used on 0.375 inch (9.52 mm) acrylic. Table 806 takes into account the "ripple effect" created by coarser sandpapers and the heat dissipation values of the acrylic.

Table 806 Sand Paper and Micro-Mesh List

Acrylic Thickness	Sandpaper Grit
Over 0.500 inch (12.70 mm)	100 open coat -then use
0.500 inch (12.70 mm)	240 wet or dry -then use
0.375 inch (9.52 mm)	320 wet or dry -then use
0.313 inch (7.95 mm)	400 wet or dry -then use
0.250 inch (6.35 mm)	600 wet or dry -then use
0.188 inch (4.78 mm) 0.125 inch (3.18 mm)	1500 micro-mesh or 1800 micro-mesh or 2400 micro-mesh and balance of series

NOTE: Any sandpaper mentioned (except 600 wet or dry) should be followed by the use of all grits below it. For example; 320 wet or dry used on 0.375 inch (9.52 mm) must be followed by the use of 400 grit and 600 grit. Micro-mesh 1500, 1800 and 2400 will effectively remove a 600 grit pattern, although each will take progressively longer.
A few micro-mesh kits contain sandpaper in small quantities. Sandpaper is included only as a sample of the type to use, as it is impractical to supply sufficient amounts for an extensive restoral.

A. Determine Type and Extent of Damage

(1) Hairline Scratches - Very light scratches or hazing, usually caused by improper cleaning methods.

(2) Minor Scratches - Readily detected by fingernail.

(3) Deep Scratches - Easily felt by fingertip.

(4) Fractures, Chipping, Very Deep Scratches - Complete restoration is seldom possible in this category and is not recommended where damage is in a critical vision area.

(5) Crazing - Pattern or network of tiny fissures in surface material.

B. After extent of damage has been estimated, proceed as follows:

(1) Hairline Scratches - Start with Paragraph 4.D.(5), 3600 micro-mesh. Eliminate Paragraph 4.D.(1) thru Paragraph 4.D.(4).

(2) Minor Scratches - Start with Paragraph 4.D.(3), 2400 micro-mesh. Eliminate Paragraph 4.D.(1) and Paragraph 4.D.(2).

(3) Deep Scratches - Accomplish Paragraph 4.D.(1) thru Paragraph 4.D.(11). (See NOTE, Hand Sanding Procedure)

(4) Fractures, Chipping, Very Deep Scratches - When in non-critical vision area, restore to transparency by accomplishing Paragraph 4.D.(1) thru Paragraph 4.D.(11).

(5) Crazing - Start with Paragraph 4.D.(3); 2400 micro-mesh.

NOTE: If estimated damage is not readily removed with the step selected, proceed immediately to the preceding step.

C. Preliminary Instructions

(1) Most of restoral time is actually spent in removing original damage. Take time and make certain this step is adequate as quality of completed job depends on it.

(2) While using sandpaper or micro-mesh, use a straightline sanding motion, never circular. Alternate at right angles periodically to cross sanding pattern.

(3) When using sandpaper, do not bear down, firm pressure is sufficient. Gradually lighten pressure of strokes as completion of each step approaches. This will speed up completion of next step.

(4) If using micro-mesh dry, slap it frequently with hand to free abraded particles. Micro-mesh is designed to unload easily and keeping it clear will speed restoration procedure.

(5) If micro-mesh is to be used wet, soak each mesh in water for 10 minutes before using. This will add to cushioning effect and produce a softer, more easily removed pattern.

(6) Make certain that surface and all crevices around workpiece are cleaned between steps. One small piece of foreign matter picked up during next step could scratch entire surface.

(7) Do not wear out one of meshes by trying to make it remove too much material on first step. If estimated damage is not readily removed, proceed immediately to next coarser mesh.

(8) Work an area slightly larger with each step. Failure to do so might leave section not completely restored. Working one small area on highly curved section could create flat spot and cause distortion.

(9) When visual inspection reveals no remaining damage, it is recommended that an additional 0.002 to 0.005 inch (0.05 to 0.13 mm) of material be removed to ensure that all imperfections have been removed.

D. Micro-mesh Procedure

CAUTION: READ ALL INSTRUCTIONS BEFORE STARTING RESTORAL PROCEDURE. TIMES GIVEN ARE ONLY APPROXIMATE. ALTERNATE WORKING AT RIGHT ANGLES TO CROSS PATTERN, ALWAYS USING STRAIGHTLINE MOTION.

(1) Use 1500 micro-mesh around form block for approximately 3 minutes per square foot (929.03 cm^2). If this is first step, continue working until damage has been removed. If sandpaper has been previously used, continue working until sandpaper pattern has been removed. Clean surface thoroughly.

(2) Use 1800 micro-mesh around form block for approximately 3 minutes per square foot (929.03 cm^2). Work an area slightly larger than in previous step, if used. Clean surface thoroughly.

(3) Use 2400 micro-mesh around form block for approximately 3 minutes per square foot (929.03 cm^2). Work an area slightly larger than in previous step, if used. Clean surface thoroughly.

(4) Use 3200 micro-mesh around form block for approximately 2 minutes per square foot (929.03 cm^2). Work an area slightly larger than in previous step, if used. Clean surface thoroughly.

(5) Use 3600 micro-mesh around form block for approximately 2 minutes per square foot (929.03 cm^2). Work an area slightly larger than in previous step, if used. Clean surface thoroughly.

(6) Use 4000 micro-mesh around form block for approximately 2 minutes per square foot (929.03 cm^2). Work an area slightly larger than in previous step, if used. Clean surface thoroughly.

(7) Use 6000 micro-mesh around form block for approximately 2 minutes per square foot (929.03 cm^2). Work an area slightly larger than in previous step. Clean surface thoroughly.

(8) Use 8000 micro-mesh around form block for approximately 1-1/2 minutes per square foot (929.03 cm^2). Work an area slightly larger than in previous step. Clean surface thoroughly.

(9) Use 12,000 micro-mesh around form block for approximately 1-1/2 minutes per square foot (929.03 cm^2).

(10) Apply very thin film of anti-static cleaner/wax. Buff dry with Rymple cloth or outing flannel cloth. Anti-static cleaner must be used to remove abraded particles held to surface by static.

(11) Check visually for imperfections. If any damage is visible, perform whatever steps are necessary to eliminate damage.

NOTE: Micro-mesh kits are available from manufacturer depending on operator's needs. Each operator should examine their requirements and relay that information to Micro-Mesh in order to obtain proper kit or kits.

Information concerning micro-mesh can be obtained by contacting:

Micro-Mesh (Cushioned Abrasive)

Micro-Surface Finishing Products, Inc.

Box 818

Wilton, IA 52778 U.S.A.

Telephone: (319) 732-3240

5. Moisture Removal Procedure For Acrylic Cabin Window Panes

A. Moisture Removal Procedure

(1) Check and record condition of panes.

(2) Place panes in oven at 120°F(±5°F) (49°C) under vacuum of 25-30 in. HG for 24 hours.

NOTE: Vacuum is used to pull moisture from chamber.

(3) Increase temperature to 160°F(±5°F) (71°C) for additional 24 hours, while maintaining vacuum.

(4) Allow panes to cool slowly to room temperature, while still under vacuum.

(5) Check panes for evidence of crazing, optical distortions and other defects after dry out.

CAUTION: DO NOT REPAIR ACRYLIC WINDOWS THAT CONTAIN SCRATCH AND CRAZE RESISTANT COATINGS. ATTEMPTS TO REPAIR WINDOWS WILL DAMAGE COATED SURFACE.

(6) If required, clean/polish panes.

NOTE: Approved repair for coated acrylic windows may only be performed by a Douglas approved repair station.

6. Acrylic Window Inspection

A. Do an inspection to determine the type and extent of damage as follows:

(1) Hairline Scratches - Very light scratches or hazing, usually caused by improper cleaning methods.

(2) Minor Scratches - Readily detected by fingernail.

(3) Deep Scratches - Easily felt by fingertip.

(4) Fractures, Chipping, Very Deep Scratches - Complete restoration is seldom possible in this category and is not recommended where damage is in a critical vision area.

(5) Crazing - Pattern or network of tiny fissures in surface material.

(6) Flight Compartment (Acrylic) Window In-Pane Cracking Limits:

(a) Cracks up to and including 5.000 in. (127.00 mm) maximum are permissible in forward corners of each panel assembly outer pane. Cracks up to and including 6.000 in. (152.40 mm) maximum are permissible in aft corners of each panel assembly outer pane.

(b) A maximum of 3 attach holes may be encompassed by any one crack.

(c) Inspection for crack growth or additional attach hole involvement at intervals of 3 months, 6 months, 1 year, and yearly thereafter.

(d) Monitor torque value when installing windows to ensure panels are not overtightened.

(e) Appearance of a second crack in outer pane of panel assembly would be cause for removal and replacement of panel assembly.

(7) Delamination Guidelines (Figure 806)

(a) Typical Delamination - Occurs at the boundary between the acrylic outer or inner panes and the vinyl separator layer of the laminate. (see View A)

(b) In Plane Separation - Occurs within the acrylic pane (outer or inner) pane itself. (see View B)

(8) Cracking (Figure 806)

(a) Cracks are permissible if following conditions are not exceeded: (see View C)

1) Length of any hole does not exceed 5.000 in. (127.00 mm). (see View C-1)

2) Any one crack does not extend entirely through thickness of pane. (see View C-1)

3) One crack can encompass a maximum of three attachment holes. (see View C-2)

CAUTION: MAKE SURE TO USE CORRECT TORQUE VALUES WHEN INSTALLING WINDOW ATTACHMENTS (DO NOT OVER TORQUE) TO ENSURE PANELS ARE NOT DAMAGED. WHEN TIGHTENING, MAKE SURE TO BACK OFF ALL ATTACHMENTS BEFORE RE-TORQUING TO THE CORRECT VALUES.

(9) Panel Attachment Hole In-Plane Separation or Delamination. (Figure 806)

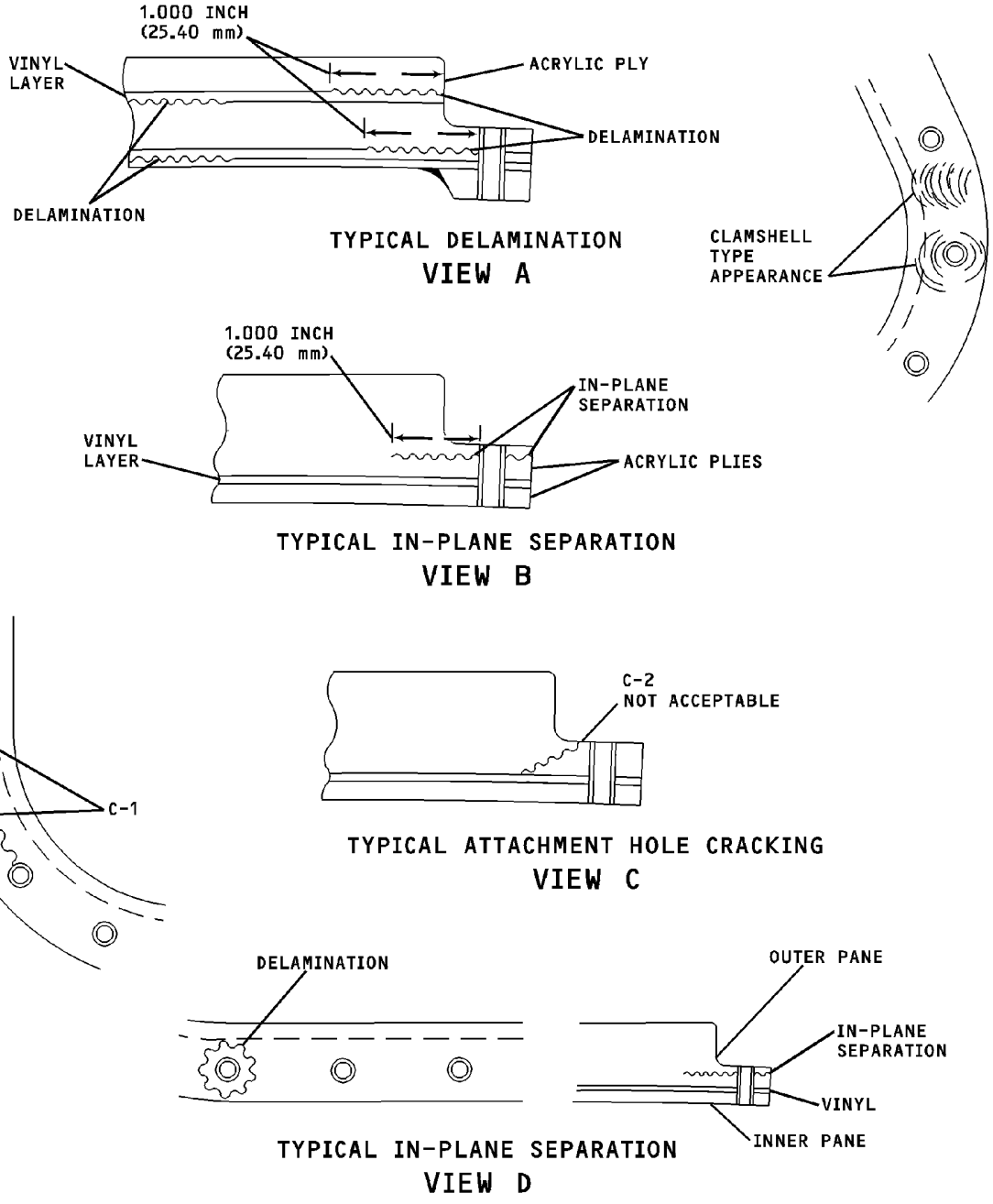
(a) In-plane separation or delamination is permitted around the circumference of each one of the attachment holes.

(b) The separation or delamination should not extend across the entire panel.

(c) The separation or delamination should not be more than 1.0 in. (25.4 mm) from the edge of the attachment hole in any direction.

(d) Any cracks or damage should be within acceptable limits.

1) See (Figure 802) for allowable edge chips in acrylic window outer pane area.



Flight Compartment Acrylic Windows - Inspection
Figure 806/56-00-00-990-810

7. Main Windshield Outboard Moisture Seal - Repair

A. Outboard moisture seal repair procedure is for installed main windshields with outboard Z-retainer moisture seal.

B. This repair procedure is applicable to installed windshields that have not been previously repaired with silicone based products/sealants. Silicone based sealants, if applied, will contaminate bonding surfaces and inhibit or prevent adhesion of PR-1425 B 1/2. Also, if a silicone based rain repellent material has been applied to outer glass surface, adhesion of sealant material will be impaired. If there is any doubt that outer surface of glass has been contaminated at any time by silicone based product, perform glass surface preparation and cleaning procedure. (Paragraph 7.C.)

C. Perform glass surface preparation and cleaning as follows:

(1) Mask off outer glass surface of window leaving a maximum of 0.500 inch (12.7 mm) area from inside edge of metal Z-retainer all around the weather seal.

(a) Mask remaining area of glass (daylight opening) to protect glass surface during repair operation.

(2) Carefully slide a thin, plastic spatula or scale under outboard Z-retainer to determine extent of moisture seal (PR-1425) erosion.

WARNING: ISOPROPYL ALCOHOL IS AN AGENT THAT IS FLAMMABLE, EXPLOSIVE, AND POISONOUS. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN ISOPROPYL ALCOHOL IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ISOPROPYL ALCOHOL IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIERS MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(3) Clear any debonded/eroded sealant from glass and Z-retainer with a new razor blade using isopropyl alcohol as a wetting agent.

(a) Change razor blades often to prevent scratching the glass.

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- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ISOPROPYL ALCOHOL IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIERS MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

WARNING: METHYL ETHYL KETONE (MEK) IS HIGHLY FLAMMABLE AND SHOULD NOT BE USED IN AIRCRAFT OR AROUND OPEN FLAME. MEK SHOULD BE USED IN WELL-VENTED AREA. WHEN USING MEK, PROTECTIVE CLOTHING AND EYE PROTECTION SHOULD BE WORN.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIERS MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(4) Degrease work area with a suitable solvent (Methyl Ethyl Ketone (MEK)) utilizing a progressive cleaning procedure by cleaning a small area at a time followed by isopropyl alcohol rinse to remove solvent residue then dry with a clean cloth.

(a) Discard soiled cloths regularly to prevent redeposit of contaminants.

(5) Soak a block of clean felt or gauze pad with water. Use a slurry of pumice or cerium oxide and water to polish exposed glass surface by hand until observing a water break-free surface.

NOTE: A water-break free surface is when the water completely “wets” or “sheets” over glass surface with no sign of drawing up or receding into droplets showing dry areas in between. Achieving the water-break free surface is critical to insure adhesion of sealant to outer glass surface.

(a) Continue polishing/cleaning until water-break free surface is obtained.

(6) After a water-break free surface is obtained, clean entire area with an 80% isopropyl alcohol 20% de-ionized water solution and wipe dry with a lint free cloth or towel. Allow cleaned area to dry thoroughly.

(7) Apply 1 inch masking tape 0.125 inch (3.2 mm) from inside edge of Z-retainer into the daylight opening of the windshield to define the location of moisture seal on glass surface(Figure 807).

(8) Apply 1 inch masking tape 0.125 inch (3.2 mm) to surface of outboard Z-retainer, aligning edge of tape with inside edge of Z-retainer.

(9) After thoroughly cleaning area to be repaired, apply new sealant per moisture seal repair for windshields with outboard Z-retainer moisture seal. (Paragraph 7.D.)

D. Perform moisture seal repair for windshields with outboard Z-retainer moisture seal as follows:

(1) Apply 1 inch masking tape to outer glass surface, 0.125 inch (3.2 mm) from inside edge of outboard metal Z-retainer all around to outline area of glass to be cleaned.

(2) Apply 1 inch masking tape to outboard surface of Z-retainer aligning tape to inside edge of retainer.

(3) Mask remaining area of glass (daylight opening/vision area) to protect outer glass during moisture seal repair procedure.

(4) Exercise care not to touch or contaminate previously cleaned work area.

WARNING: ISOPROPYL ALCOHOL IS AN AGENT THAT IS FLAMMABLE, EXPLOSIVE, AND POISONOUS. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN ISOPROPYL ALCOHOL IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ISOPROPYL ALCOHOL IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIERS MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(a) It is advisable to again clean the seal repair area with a solution of 80% isopropyl alcohol and 20% de-ionized water if any contact occurs before application of new sealant.

(b) Dry cleaned area with lint free cloth or towel.

(5) Apply PR-142 Primer/Cleaner to glass surface to be bonded immediately after cleaning operation to prevent dust particles and other airborne contaminants from settling on cleaned surfaces.

NOTE: Any contaminant on the surface can adversely affect the adhesion of the sealant to the substrate.

(6) Using a gauze pad, apply a thin coat (enough to cover area to be bonded without running or dripping) of PR-142 Primer/Cleaner to surface of glass and remaining exposed sealant/weather seal.

(a) Allow PR-142 Primer/Cleaner to air dry a minimum of 30 minutes.

(7) Thoroughly mix one PR-1425 B 1/2 Semkit per manufacturer instructions.

NOTE: Complete mixing is essential. Be sure to follow mixing instructions provided with the PR-1425 B 1/2 Semkit. Wear safety glasses and gloves while mixing.

(a) Mix PR-1425 B 1/2 Semkit for a minimum of 5 minutes.

(b) Working time for sealant is 30 minutes.

(8) Insert PR-1425 B 1/2 Semkit cartridge into pneumatic sealant gun and attach nylon nozzle.

(a) Apply PR-1425 B 1/2 to cleaned and primed surfaces around entire periphery of windshield. Angle nozzle of sealant gun so that PR-1425 B 1/2 is applied uniformly underneath edge of Z-retainer and forms a fillet between edge of Z-retainer and glass surface.

(b) Apply PR-1425 B 1/2 slowly to prevent formation of air bubbles in sealant.

(9) Form outboard moisture seal by pulling forming tool (wooden tongue depressor) around inside edge of Z-retainer.

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- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ISOPROPYL ALCOHOL IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIERS MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(10) Remove 1 inch masking tape immediately after forming moisture seal and smooth surface of wet sealant by rubbing surface lightly and briskly with a cellulose sponge saturated with water or 100% isopropyl alcohol. You must use only light pressure for this step.

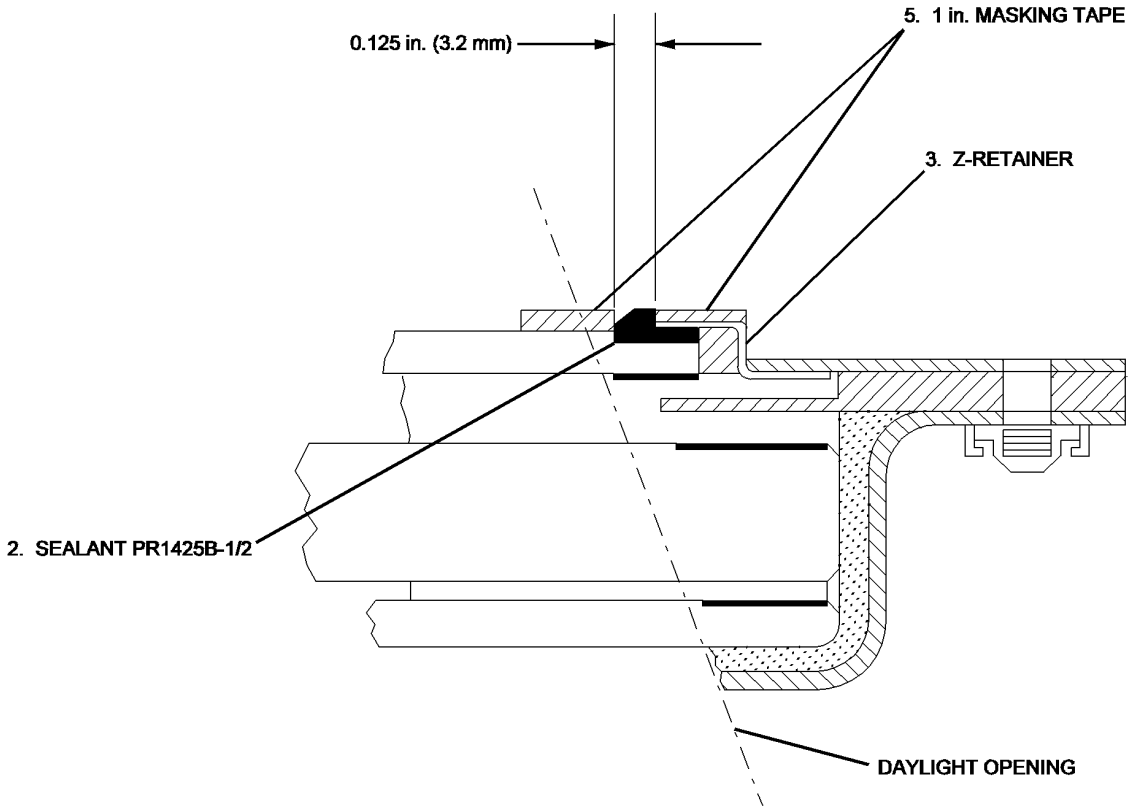
(11) Allow sealant to cure.

NOTE: Temperature and relative humidity affects cure rate of PR-1425 B 1/2. Refer to manufacturer data sheet for details.

(a) Tack free cure time for PR-1425 B 1/2 is accomplished at room temperature (75° F, 50% RH) in 8 hours.

(b) Full cure is reached in 24 hours.

(12) After PR-1425 B 1/2 has cured, inspect for voids and repair as necessary.



CENTER
WINDSHIELD CROSS SECTION

BBB2-56-78
S0000262996V1

Center Windshield Cross Section
Figure 807/56-00-00-990-824

FLIGHT COMPARTMENT - DESCRIPTION AND OPERATION

1. General

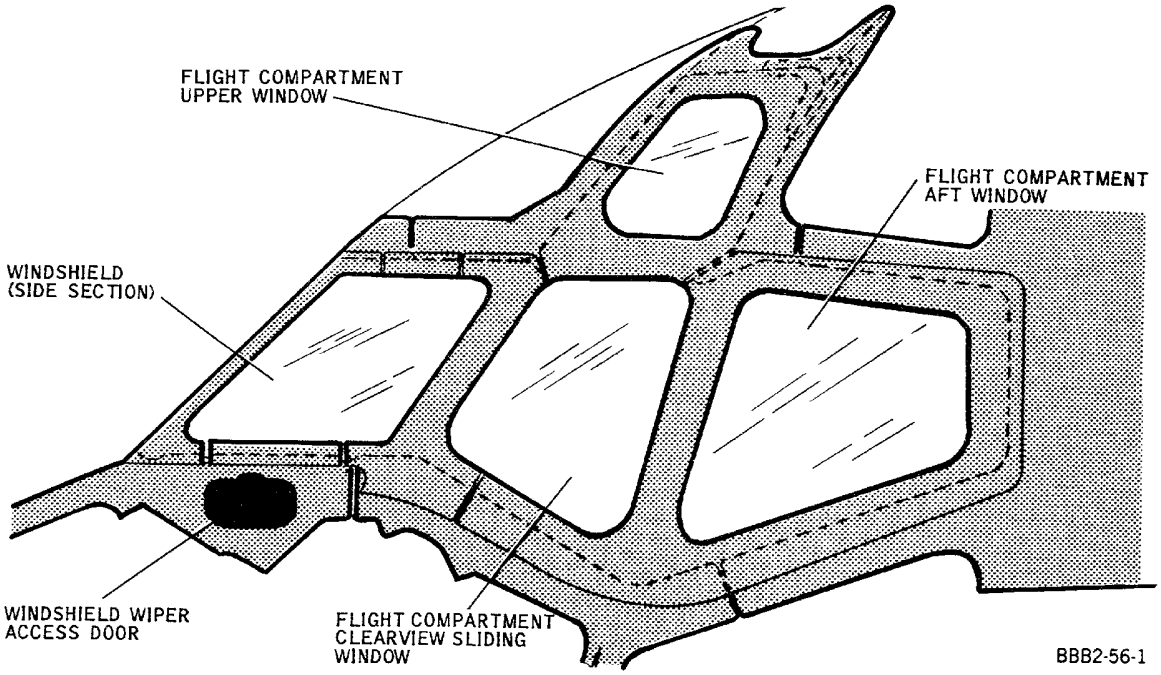
A. The flight compartment contains four different types of windows: a center windshield and two side windshields, a clearview window on either side, an aft window on either side, and two upper windows immediately above the clearview windows.

2. Windshields

A. Description

(1) The center and side windshields are individual panels which are installed on the aircraft from outside the flight compartment. Each windshield consists of a glass-vinyl laminate, an insert and a pan. The glass-vinyl laminate consists of inner and outer panes of 3/16-inch (4.76 mm) semitempered glass and a center pane of 5/8-inch (15.88 mm) fully tempered glass which is separated from the inner glass pane by an 0.080-inch (2.03 mm) layer of vinyl, and from the outer glass pane by a 0.360-inch (9.14 mm) layer of vinyl. The insert is laminated in the windshield, within the 0.360-inch (9.14 mm) vinyl, next to the outer glass pane. The laminate is bonded to the pan with sealant to form an integral unit.

(2) The vinyl interlayer provides greater flexing stress and impact strength to the laminate. The inside surface of the outer pane has a thin, transparent electrically conductive film of a metallic oxide for anti-icing. The inside surface of the inner pane has the electrically conductive film for defogging. Current passing through the metallic coating heats the vinyl for greater impact resistance. The electrically generated heating of the anti-icing pane is controlled by a sensor unit imbedded in the vinyl inter-layer. A second sensor is also imbedded in the vinyl inter-layer to act as a spare should the first one fail. An external sensor, located on the cockpit interior surface, controls the amount of heat for defogging. A single switch energizes the windshield heating and defogging system.



Flight Compartment Windows -- Profile View
Figure 1/56-10-00-990-801

3. Sliding Clearview Windows

A. Description

(1) Two clearview windows are located aft of the windshield side sections and below the fixed upper windows on the right and left sides of the aircraft. When the aircraft is unpressurized, these windows can be opened; thus; the name clearview.

(2) The clearview window is a laminated panel consisting of two panes of stretched acrylic plastic, separated by a layer of vinyl. The panel is constructed with an outer pane, 3/4 inch (19.05 mm) thick, a vinyl layer 1/8 inch (3.18 mm) thick, and inner pane, 1/8 inch (3.18 mm) thick. The windows are laminated to provide a fail-safe construction and for electrical resistance heating. A thin, transparent, electrically conductive film of a metallic oxide is on the inside surface of the inner pane. Electric current passing through the metallic coating defogs the window and heats the vinyl to improve the plasticity for greater impact resistance. An external sensor, located on the cockpit interior surface, controls the amount of heat for defogging.

(3) An overcenter positive locking mechanism is actuated by moving a single handle at the forward bottom edge of each window. An aft pull on the handle disengages the overcenter lock. An inboard pull moves the window inboard. Another aft pull on the handle allows the window to slide along on tracks at the top and bottom edges of the window to an open locked position. A silicone rubber pressure seal around the edges of the window contacts the adjacent structure when the window is closed and locked.

4. Fixed Windows

A. Description

(1) Upper Windows - The upper windows, located immediately above the clearview windows, provide approximately 30 degrees of upward vision in level flight, and improved lateral vision to the horizon during left and right turns.

(a) The upper window is a laminated panel consisting of two panes of stretched acrylic, separated by a layer of vinyl. The panel is constructed with the outer pane 3/4 inch (19.05 mm) thick, a vinyl layer 1/4 inch (6.35 mm) thick, and an inner pane 3/16 inch (4.76 mm) thick. The vinyl interlayer provides greater flexing stress and impact strength to the panel. A thin, trans-parent, electrically conductive film of a metallic oxide is on the inside surface of the inner pane. Electric current passing through the metallic coated pane defogs the window and heats the vinyl to improve the plasticity for greater impact resistance. An external sensor, located on the cockpit interior surface, controls the amount of heat for defogging.

(2) Aft Windows - The aft windows are located aft of the sliding clearview windows. These windows consist of two panes of acrylic plastic separated by a spacer to provide an air space. Both panes are contoured, stretched acrylic with the outer pane 11/16 inch (15.88 mm) thick and the inner pane 17/32 inch (14.29 mm) thick. A continuous 1-inch (24.40 mm) wide spacer made from hypalon separates the panes. Each pane is designed to withstand maximum cabin pressure loads. The windows are bolted to a machined aluminum alloy doubler which is riveted to the flight compartment structure. These windows provide downward and aft vision.

FLIGHT COMPARTMENT - MAINTENANCE PRACTICES

1. General

A. The center and two side windshields are heated for impact protection, anti-icing, and antifogging; the clearview and upper windows are heated for antifogging only.

B. Heating and antifogging tests of affected panels are identical and should be conducted inside a hangar or in a shaded area. Allow the panels to cool completely between tests. A slight variation in panel surface temperature can be expected in various areas of the panel.

C. For complete coverage of the heating and antifog system, refer to WINDOWS AND WINDSHIELD ANTI-ICING/ANTIFOGGING - DESCRIPTION AND OPERATION, PAGEBLOCK 30-41-00/001.

NOTE: The heating system is adjusted to maintain an operating temperature of 110°F (43.3°C).

D. All flight compartment windshields and windows, excluding the clearview windows, are non-adjustable. Each windshield or window is rigidly mounted to the sill structure and retained in place by retainers and attaching bolts peculiar to that installation. The attaching bolts vary in length and diameter; therefore, extreme care must be exercised, during any maintenance procedure, to use the prescribed parts.

2. Adjustment/Test Flight Compartment Heating and Anti-fog System

A. Test Windshield Anti-icing

(1) Make sure that these circuit breakers are closed:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE

(2) Place WINDSHIELD switch on forward overhead switch panel to ON position.

(3) Feel outside surface of windshield. Windshield should feel warm to touch.

(4) Place WINDSHIELD switch in OFF position.

(5) Feel outside surface of windshield. Windshield should begin to cool.

B. Test Windshield and Window Anti-fog System

(1) Make sure that these circuit breakers are closed:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Place WINDSHIELD switch on forward overhead switch panel to ON position.

(3) Feel inside surface of windshield or window. Panel should feel warm to touch.

(4) Place WINDSHIELD switch in OFF position.

(5) Feel inside surface of windshield or window. Panel should begin to cool.

FLIGHT COMPARTMENT CENTER WINDSHIELD - MAINTENANCE PRACTICES

1. General

A. The windshield is removed from outside the flight compartment.

B. This maintenance practice provides instructions for removing and installing the center windshield. For removal/installation of the anti-fog thermal switch, refer to WINDOWS AND WINDSHIELD ANTI-FOG THERMAL SWITCH - MAINTENANCE PRACTICES, PAGEBLOCK 30-41-01/201.

C. When a windshield is changed because of an overheat condition, it is essential the electrical system be functionally checked. (WINDOWS AND WINDSHIELD ANTI-ICING/ANTIFOGGING, SUBJECT 30-41-00, Page 201)

D. Attaching bolts for the center windshield retainers are of different lengths. The location of the bolts should be recorded when removed to facilitate installation.

E. Removal of aluminum speed tape discovered on the cockpit enclosure sill structure during removal/installation of the windshield is not recommended. This tape was installed during production to ensure post-to-post flatness and improve windshield sealing capability.

F. Windshield shear stress is alleviated through the use of parting medium (slip plane). Tape is the most commonly used parting medium. Parting medium tape can appear as several different phenomena. The appearance of these phenomena does not indicate a problem. (Figure 206)

(1) The surface of the tape may appear as a delamination and have a shiny surface.

(2) The tape may have wrinkles which appear as cracks.

NOTE: The wrinkled tape appearance should not be confused with actual glass fractures.

(3) Tape adhesive may be separated which may appear as a white or translucent area.

2. Equipment and Materials

WARNING: ITEM INDICATED BY AN ASTERISK IS FLAMMABLE: EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE.

NOTE: Equivalent substitutes may be used instead of the following items.

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 201

Name and Number	Manufacturer
Sealant, PR-1422 B 1/2 PR-1828 DPM 2292-2	Products Research & Chemical Corp. Burbank, Calif.
Optical polish, (Rubbing compound) CEROX SR-XII DPM 5741	Anomet Inc. Compton, Calif.
Protective paper, PROTEX-20V	Mask-Off Co. Monrovia, Calif.

Table 201 (Continued)

Name and Number	Manufacturer
Scotchcal tape, 639	Minnesota Mining & Mfg. Co. St. Paul, MN
Silicone sealant (with catalyst) 93-006-1 DPM 5697	Dow Corning Corp. Midland, Mich.
*Isopropyl alcohol, MIL-F-5566 DPM 530	Commercially available
Alignment pins	Commercially available
Masking tape, Permacel P-703A	Permacel Tape Corp.
Tape, aluminum No. 425	Minnesota Mining & Mfg. Co. St. Paul, MN
Torque wrench (0-100 inch pounds (0-11.3 N·m) range)	

3. **Removal/Installation Flight Compartment Center Windshield**

A. Remove Center Windshield (Figure 201)

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Open these circuit breakers and install safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Install protective paper, PROTEX-20V, on both sides of wind-shield panel and outside of adjacent panels.

(3) Remove interior insulation. (FLIGHT COMPARTMENT LINING AND INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-11-00/201)

(4) Remove two screws from upper edge of windshield panel, and install two windshield alignment pins. (Figure 201)

NOTE: Alignment pins can be made from AN-4 bolts with the heads cut off and slot cut in shank of bolts.

(5) Remove retainers as follows:

CAUTION: EXERCISE CARE TO PROTECT EDGE SEALING OF ADJACENT WINDSHIELDS.

(a) Using sharp blade, follow edge of retainer and cut sealant loose from retainer and structure.

(b) Remove retainers.

NOTE: The windshield attaching screws are of different sizes and lengths, and should be recorded when removed to facilitate installation. (Figure 202)

(c) Using plastic scraper, remove sealant from surface and edges of retainers.

(6) Remove seal between scalloped edges of center and side windshields.

(7) Slide windshield forward on alignment pins far enough to gain access to screws securing electrical terminal blocks to windshield and remove blocks.

CAUTION: WINDSHIELD PANEL WEIGHS APPROXIMATELY 45 POUNDS (20.41 KG).

(8) Remove windshield by carefully sliding it forward on alignment pins.

B. Install Center Windshield (Figure 201 and Figure 203)

NOTE: The Z-channel windshield uses a metal "Z" strip as an alternative for the silicone edge bumper on the outer perimeter of the glass. When the "Z" strip is used, it is not required to seal the gap between the metal "Z" and the windshield retainer. (Figure 203 (Sheet 3))

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Make sure that these circuit breakers are open and have safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Check nutplates and gang nut channels attached to sill structure for missing, damaged, or loose nuts.

(3) Check that sealant on windshield sill structure is not damaged.

WARNING: LOW VISCOSITY POLYSULFIDE SEALANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN LOW VISCOSITY POLYSULFIDE SEALANT IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET LOW VISCOSITY POLYSULFIDE SEALANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(a) Use sealant, PR-1422 B 1/2, to repair any damaged sealant.

(b) If windshield is to be installed before cure time of sealant, apply one layer of aluminum tape, No. 425, over sealant.

WARNING: WHITE PETROLATUM IS AN AGENT THAT IS AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN WHITE PETROLATUM IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT BREATHE THE MIST.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(4) Apply vaseline to seal bonded to windshield pan where seal will contact structure.

(5) Position windshield on alignment pins.

CAUTION: TERMINAL BLOCKS MUST BE FREE OF ANY MOISTURE OR FOREIGN MATERIAL TO PREVENT FALSE READING OF SENSOR ELEMENTS AND CONSEQUENT OVERHEATING OF PANEL AND REJECTION OF WINDSHIELD.

(6) Install anti-icing and anti-fogging terminal blocks on windshield as follows: (Figure 201)

NOTE: Position windshield approximately 1-inch (25.4 mm) from sill when installing terminal blocks.

(a) Check terminal blocks for moisture and foreign material.

WARNING: ISOPROPYL ALCOHOL IS AN AGENT THAT IS FLAMMABLE, EXPLOSIVE, POISONOUS, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN ISOPROPYL ALCOHOL IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ISOPROPYL ALCOHOL IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(b) Clean terminal blocks and connectors with isopropyl alcohol, (MIL-F-5566), and clean lint-free cloth. Allow terminal blocks and connectors to dry approximately 15 minutes.

(c) Check that O-ring seals in terminal blocks lie in a flat plane and are smooth with no tears, nicks, or gouges.

CAUTION: MAKE CERTAIN THAT TERMINAL BLOCK ATTACHING SCREWS DO NOT BOTTOM OUT IN WINDSHIELD.

(d) Install terminal blocks on windshield. Use NAS1096-2-9 screws.

(e) Torque connectors on terminal block using the table in the (GENERAL INSTALLATIONS HARDWARE - MAINTENANCE PRACTICES, SWPM 20-20-03).

(f) Install protective cover on terminal blocks.

(7) Slide windshield into position on alignment pins, making certain that seal bonded to windshield pan is in proper contact and jammed against windshield sill. (Figure 203)

WARNING: SILICONE SEALANT IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN SILICONE SEALANT IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

(WARNING PRECEDES)

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

CAUTION: EXERCISE EXTREME CAUTION WHEN INSTALLING RETAINERS TO PREVENT DAMAGE TO BUMPER ON WINDSHIELD PANEL.

(8) Place upper and lower retainers in position and install attaching bolts. Apply silicone sealant, 93-006-1, under heads of bolts. Torque bolts to 20-25 inch-pounds (2.26- 2.83 N·m). Seal gap between retainers and bumper on windshield panel outer glass ply edge with silicone sealant. Refer to Figure 204 for bolt torquing sequence and Figure 202 for attaching bolts.

(9) Install seals in gaps between scalloped edges of center and side windshield panels, trim any excess length of seals at lower ends. Start installation of seals at top of panels. If gaps are not completely filled by seals, fill gaps with silicone sealant (Dow Corning 93-006-1 or equivalent).

NOTE: Silicone sealant, 93-006-1, will not adhere to PR-1422 B 1/2 sealant applied to windshield sill structure.

CAUTION: EXERCISE EXTREME CAUTION WHEN INSTALLING RETAINERS TO PREVENT DAMAGE TO BUMPER ON WINDSHIELD PANEL.

(10) Place side retainers in position and install attaching bolts. Apply silicone sealant, 93-006-1, under heads of bolts. Torque bolts to 20-25 inch-pounds (2.26-2.83 N·m). Seal gap between retainers and bumper on windshield panel outer glass ply edge with silicone sealant (Dow Corning 93-006-1 or equivalent). Refer to Figure 204 for bolt torquing sequence and Figure 202 for attaching bolts.

CAUTION: TO PREVENT POSSIBLE DAMAGE TO SEAL, RETORQUE EACH BOLT ONE TIME ONLY DURING INITIAL INSTALLATION. PERIODIC RETORQUING NOT REQUIRED NOR ACCEPTABLE.

(11) Torque all retainer bolts to 40-50 inch-pounds (4.52- 5.65 N·m). Refer to Figure 204 for bolt torquing sequence.

NOTE: If nut plates for retainer attach bolts are inadvertently pushed or damaged, blind bolts can be installed. Install blind bolt (BB351-6) for NAS333 bolts, and blind bolt (BB351-8) for NAS334 bolts. Maximum installation of blind bolts is one of five with no adjacent blind bolts.

WARNING: LOW VISCOSITY POLYSULFIDE SEALANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN LOW VISCOSITY POLYSULFIDE SEALANT IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET LOW VISCOSITY POLYSULFIDE SEALANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(12) Seal gap between retainers and sill structure and retainer butt joints with sealant, PR-1422 B 1/2.

(a) When dispatching aircraft before cure time of sealant, strip of 1-inch (25.4 mm) wide pressure sensitive tape, Scotchcal No. 639, should be applied over gap. Tape may be removed 12 hours after sealant has been applied. (Figure 205)

WARNING: SILICONE SEALANT IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN SILICONE SEALANT IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

CAUTION: USE OF POLYSULFIDE BASE SEALANT PR 1422 OR EQUIVALENT FOR THESE GAPS IS NOT RECOMMENDED. POLYSULFIDE CAN INGRESS INTO WINDSHIELD OUTER PLY EDGE RESULTING IN DRYING OUT AND CRACKING OF INTERLAYER. THIS CAN LEAD TO MOISTURE INGRESS, DELAMINATION AND ARCING FAILURE OF PANEL.

(13) Seal gap(s) between retainers and bumper on windshield panel outer glass ply edge with silicone sealant (Dow Corning 93-006-1 or equivalent).

(14) Install interior insulation. (FLIGHT COMPARTMENT LINING AND INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-11-00/201)

(15) Remove protective paper from windshield panel.

(16) Using white outing flannel moistened with detergent and water, clean windshield panel.

WARNING: OPTICAL POLISHING & RUBBING COMPOUND IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN OPTICAL POLISHING & RUBBING COMPOUND IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

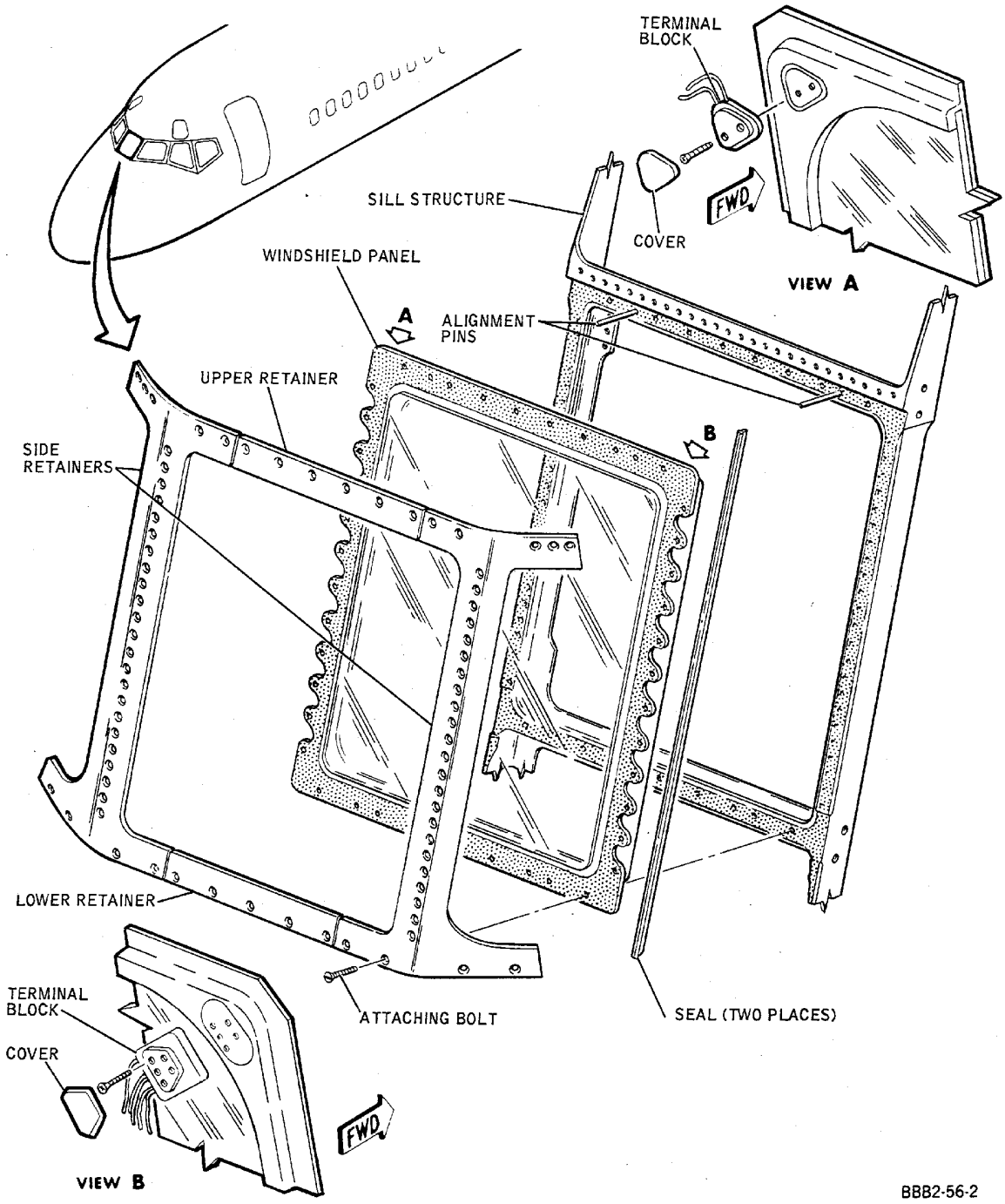
(17) Remove paint overspray, hardened rain repellant and light scratches with optical polish, (CEROX SR-XII). Wipe off excess with cloth wipers followed by a water-detergent rinse.

(18) Remove the safety tags and close these circuit breakers:

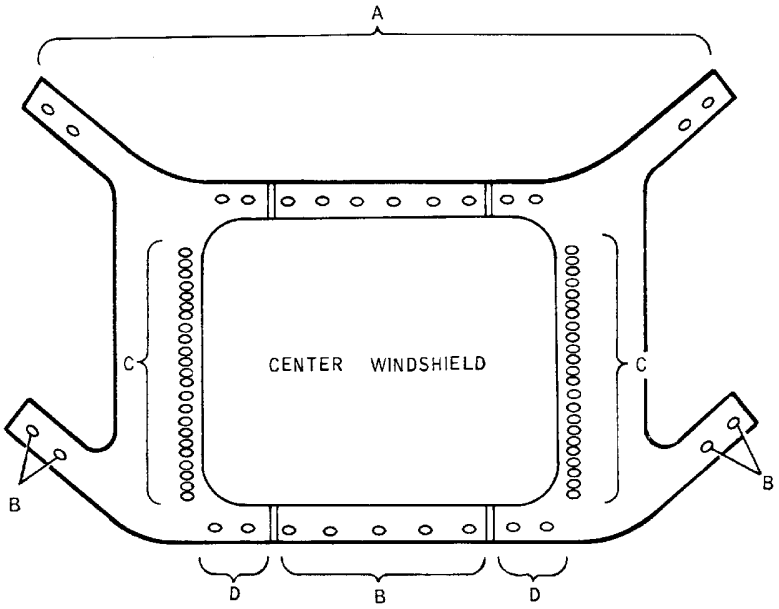
LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(19) Perform operational check of windshield anti-ice and antifog systems. (FLIGHT COMPARTMENT - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-00/201)



Center Windshield -- Removal
Figure 201/56-10-01-990-801



NOTE:

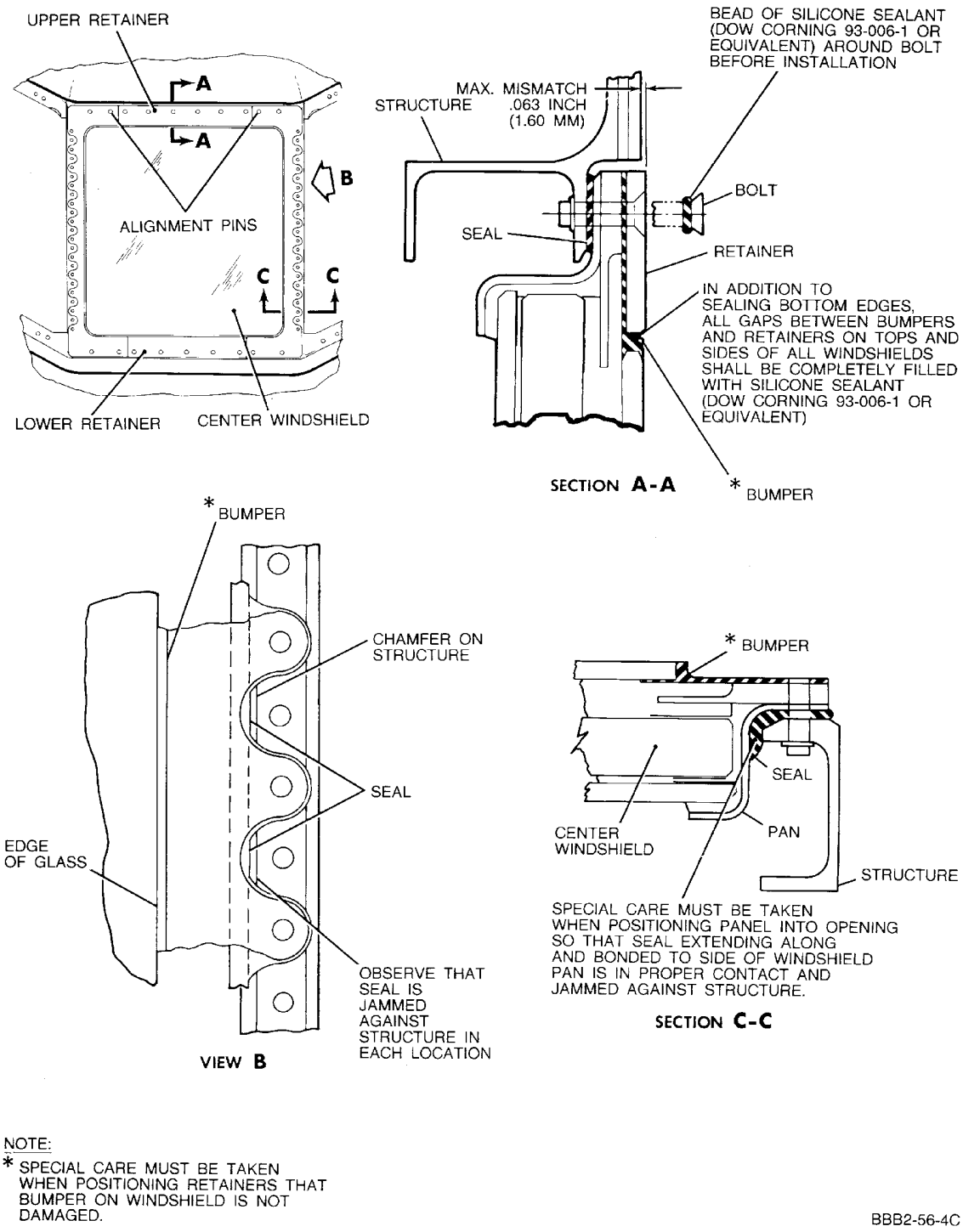
BOLTS OF ONE INCREMENT SHORTER OR LONGER THAN THOSE LISTED MAY BE SUBSTITUTED. MAKE CAREFUL SELECTION TO INSURE NUT DOES NOT BOTTOM OUT ON UNTHREADED BOLT SHANK.

SCREW SIZE AND QUANTITY REQUIRED TO INSTALL CENTER WINDSHIELD

CODE	NAS SIZE	LENGTH	QUANTITY
A	334	10	14
B	334	11	9
C	333	11	46
D	334	11-5	4

BBB2-56-3A

Center Windshield -- Attaching Bolts
Figure 202/56-10-01-990-802

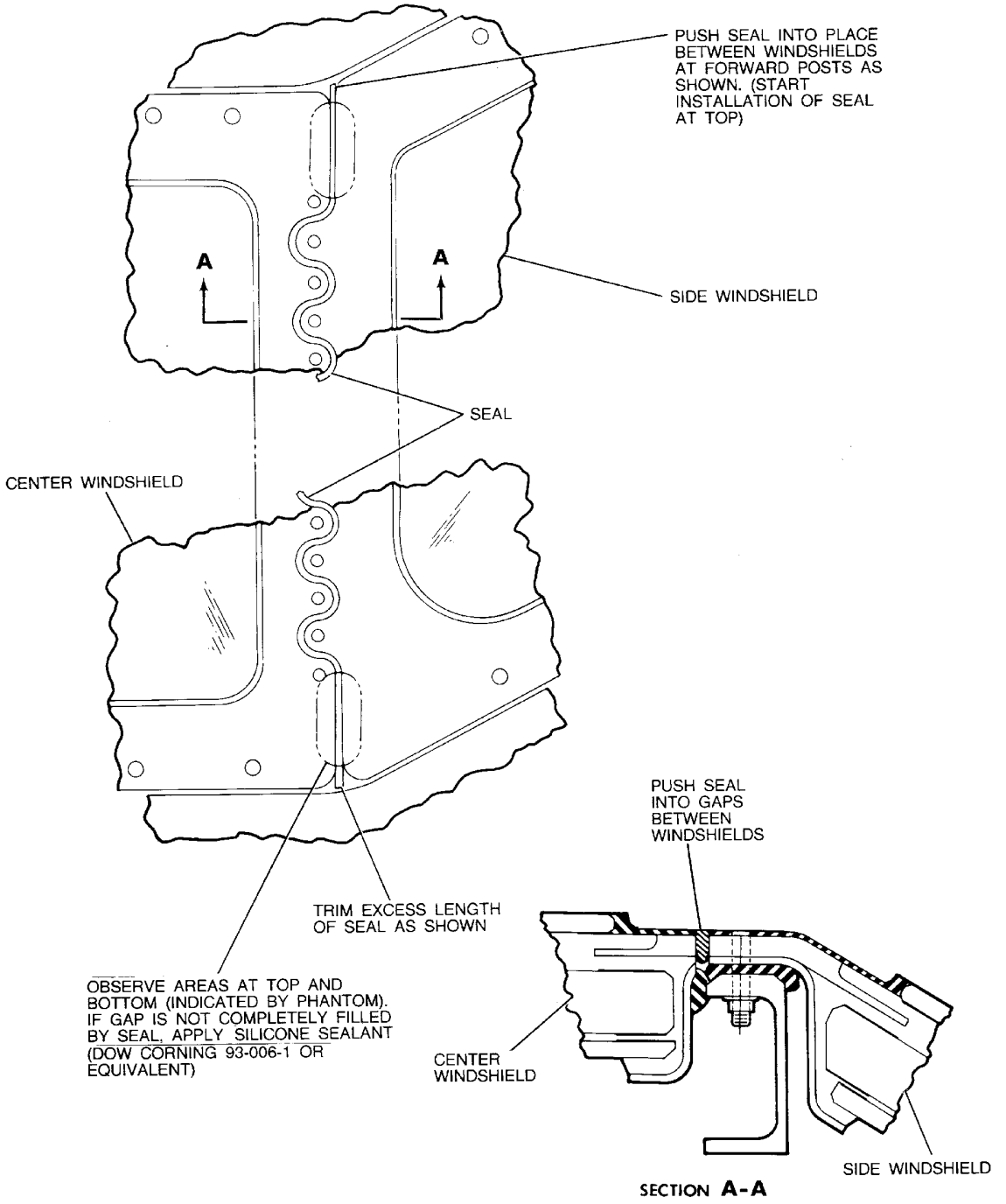


NOTE:

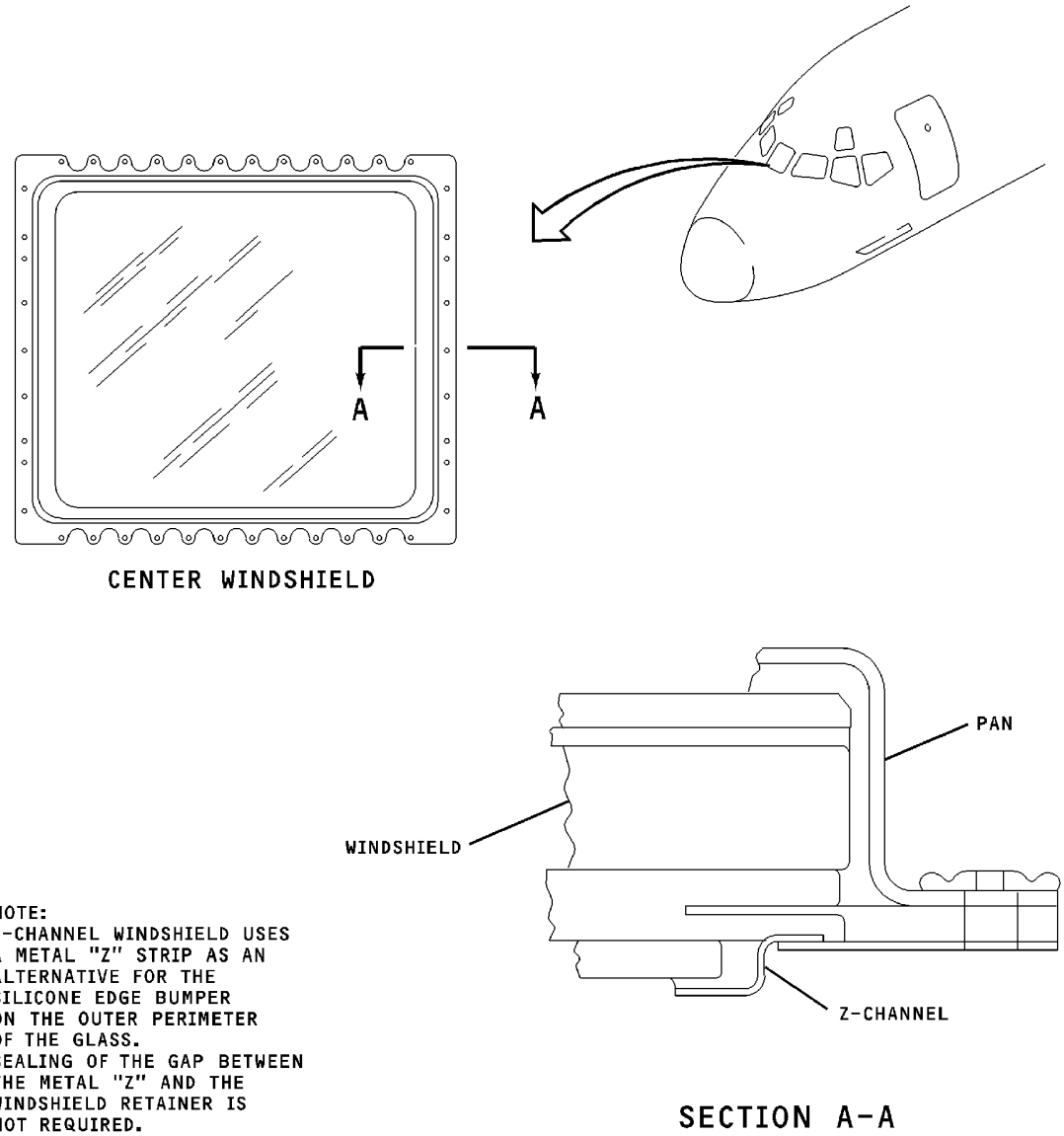
* SPECIAL CARE MUST BE TAKEN WHEN POSITIONING RETAINERS THAT BUMPER ON WINDSHIELD IS NOT DAMAGED.

BBB2-56-4C

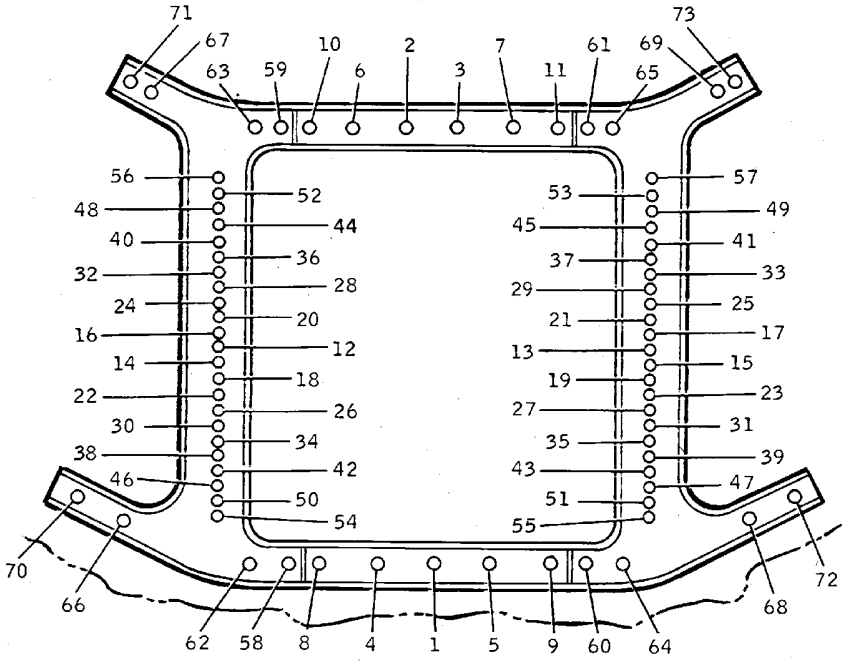
Center Windshield -- Installation
Figure 203/56-10-01-990-803 (Sheet 1 of 3)



Center Windshield -- Installation
Figure 203/56-10-01-990-803 (Sheet 2 of 3)



Center Windshield -- Installation
Figure 203/56-10-01-990-803 (Sheet 3 of 3)

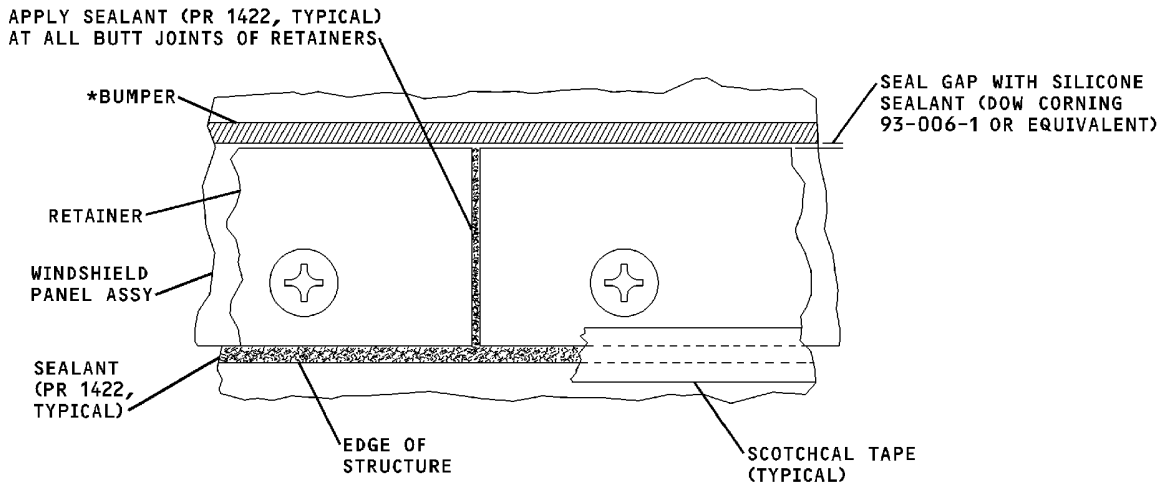


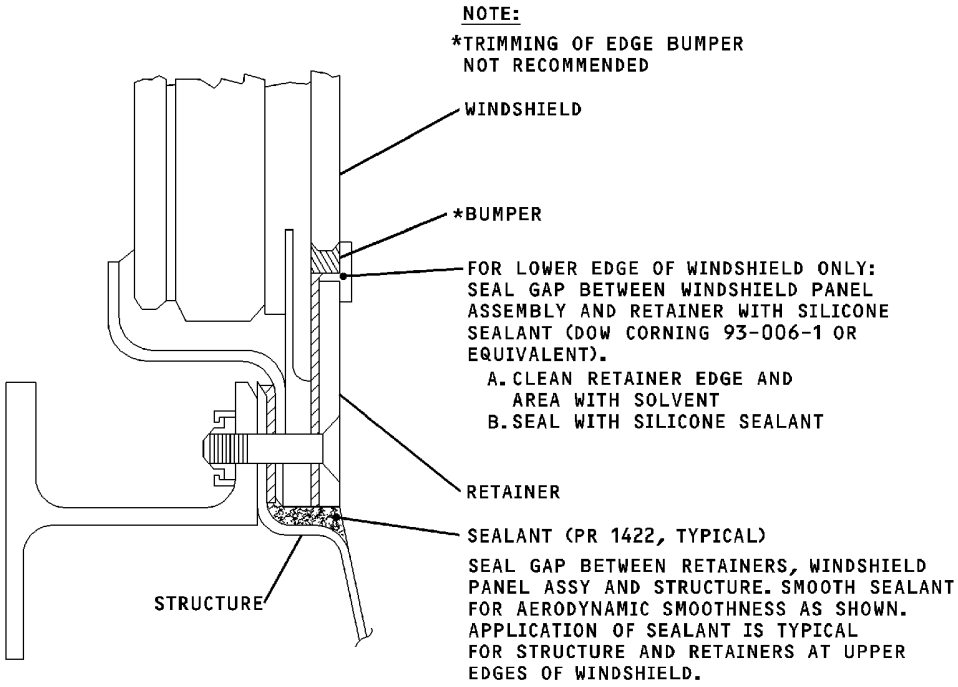
BOLT TORQUING INSTRUCTIONS

1. TORQUE BOLTS 1 THRU 11 TO 20-25 INCH POUNDS (2.26-2.83 N·m)
2. TORQUE BOLTS 12 THRU 73 TO 20-25 INCH POUNDS (2.26-2.83 N·m)
3. RETORQUE BOLTS 1 THRU 11 TO 40-50 INCH POUNDS (4.52-5.65 N·m)
4. RETORQUE BOLTS 12 THRU 73 TO 40-50 INCH POUNDS (4.52-5.65 N·m)

BBB2-56-6A

Center Windshield -- Bolt Torquing Sequence
Figure 204/56-10-01-990-804

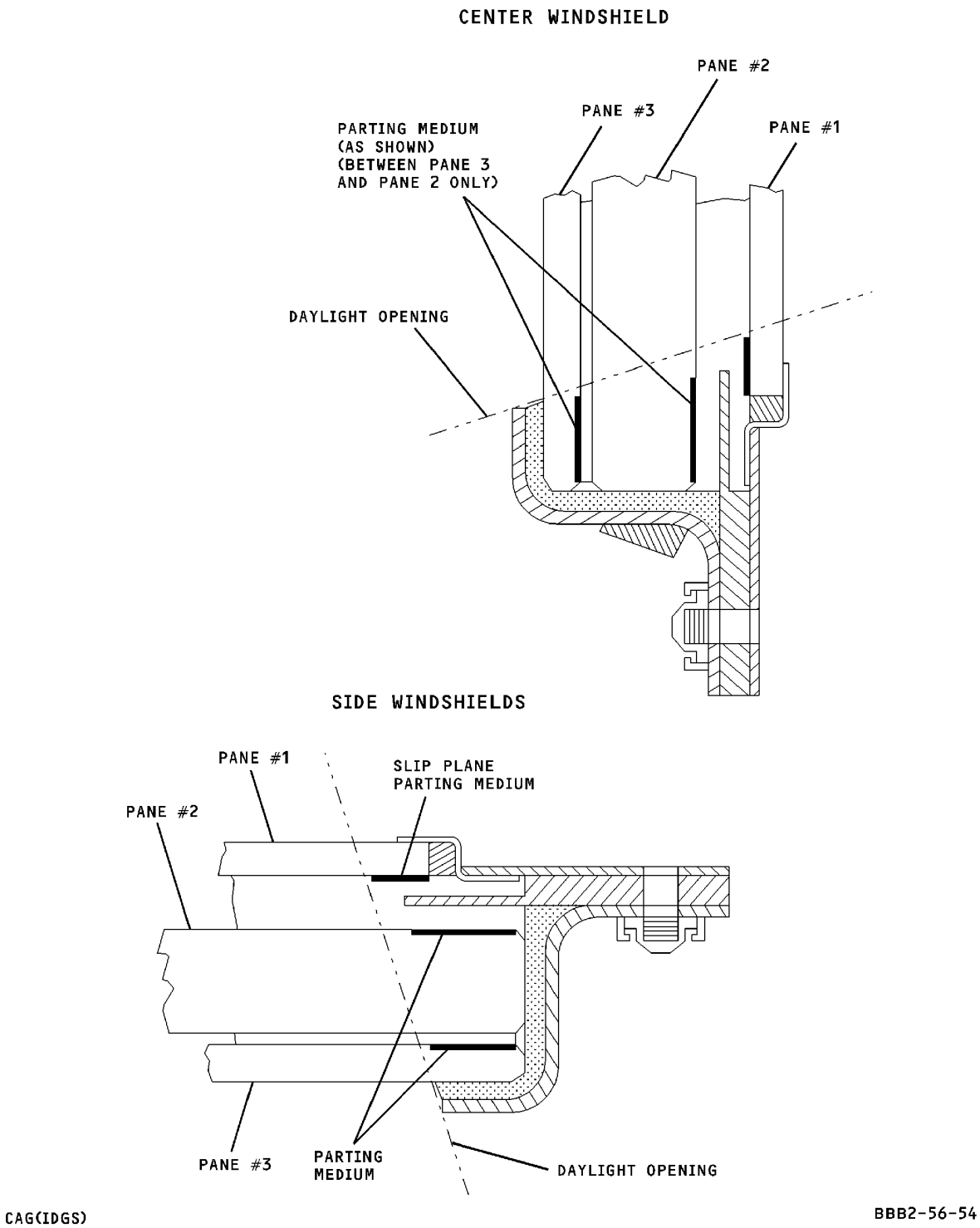




CAG(IGDS)

BBB2-56-7C

Windshield Sealing
Figure 205/56-10-01-990-805



Windshield Part Medium
Figure 206/56-10-01-990-806

FLIGHT COMPARTMENT LEFT, CENTER, AND RIGHT WINDSHIELD - INSPECTION/CHECK

1. General

A. This procedure contains MSG-3 task card data.

TASK 56-10-01-211-801

2. Detailed Inspection of the Left, Center, and Right Windshield

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
56-00-00 P/B 601	WINDOWS/WINDSHIELDS - INSPECTION/CHECK

B. Do a Detailed Inspection of the Left, Center, and Right Windshield

SUBTASK 56-10-01-211-001

(1) Inspect windshield for damage that effects the structural, visual, and operational functions of the windshield.

(2) For damage limitations, refer to WINDOWS/WINDSHIELDS - INSPECTION/CHECK, PAGEBLOCK 56-00-00/601.

——— END OF TASK ———

FLIGHT COMPARTMENT SIDE WINDSHIELDS - MAINTENANCE PRACTICES

1. General

A. Removal and installation procedures for the right and left windshields are identical. The windshield is removed from outside the aircraft.

B. This maintenance practice provides instructions for removing and installing the left and right windshields. For removal/installation of the anti-fog thermal switch, refer to WINDOWS AND WINDSHIELD ANTI-FOG THERMAL SWITCH - MAINTENANCE PRACTICES, PAGEBLOCK 30-41-01/201.

C. When a windshield is changed because of an overheat condition, it is essential that the electrical system be functionally checked. (WINDOWS AND WINDSHIELD ANTI-ICING/ANTIFOGGING, SUBJECT 30-41-00, Page 201)

D. Windshield wiper units are mounted below the side windshield panels in the nose section of the aircraft. (WINDSHIELD WIPER UNIT - MAINTENANCE PRACTICES, PAGEBLOCK 30-42-01/201)

E. Attaching bolts for the side windshield retainers are of different lengths. The location of the bolts should be recorded when removed to facilitate installation.

F. Removal of aluminum speed tape discovered on the cockpit enclosure sill structure during removal/installation of the windshield is not recommended. This tape was installed during production to ensure post-to-post flatness and improve windshield sealing capability.

G. Windshield shear stress is alleviated through the use of parting medium (slip plane). Tape is the most commonly used parting medium. Parting medium tape can appear as several different phenomena. The appearance of these phenomena does not indicate a problem. (Figure 206)

(1) The surface of the tape may appear as a delamination and have a shiny surface.

(2) The tape may have wrinkles which appear as cracks.

NOTE: The wrinkled tape appearance should not be confused with actual glass fractures.

(3) Tape adhesive may be separated which may appear as a white or translucent area.

2. Equipment and Materials

WARNING: ITEMS INDICATED WITH AN ASTERISK ARE FLAMMABLE: EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE.

NOTE: Equivalent substitutes may be used instead of the following items.

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 201

Name and Number	Manufacturer
Optical polish, (Rubbing compound) CEROX SR-XII DPM 5741	Anomet Inc. Compton, Calif.
Scotchcal tape, 639	Minnesota Mining & Mfg. Co. St. Paul, MN

Table 201 (Continued)

Name and Number	Manufacturer
Silicone sealant, (with catalyst) 93-006-1 DPM 5697	Dow Corning Corp. Midland, Michigan
*Isopropyl alcohol, MIL-F-5566 DPM 530	Commercially available
Sealant, PR-1425 B-2	Products Research & Chemical Corp. Burbank, Calif.
Aluminum tape, No. 425	Minnesota Mining & Mfg.
Alignment pins	Commercially available
Solvent, handwipe cleaner DPM 6380-1	
Masking tape Permacel, P-703A	Permacel Tape Corp.
Protective paper, PROTEX ROV	Mask-Off Co. Monrovia, Calif.
Torque Wrench (0-100 inch pounds (0-11.3 N·m) range)	

3. **Removal/Installation Flight Compartment Side Windshield**

A. Remove Side Windshield (Figure 201)

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Open these circuit breakers and install safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

LOWER EPC, ICE PROTECTION LEFT DC BUS

Row	Col	Number	Name
M	25	B1-176	LEFT WINDSHIELD WIPER

LOWER EPC, ICE PROTECTION RIGHT DC BUS

Row	Col	Number	Name
N	25	B1-177	RIGHT WINDSHIELD WIPER

CAUTION: HANDLE WINDSHIELD PANEL WITH EXTREME CARE. GLASS IS EXTREMELY NOTCH SENSITIVE. DAMAGE MIGHT BE CAUSE FOR REJECTION.

(2) Make certain windshield wiper arm is out of way.

(3) Install protective paper, PROTEX 20V, on both sides of windshield panel and outside of adjacent panels.

NOTE: The following procedure cuts the cast-in-place shim. This shim is installed in such a manner as to provide a flat surface for the clearview window to seat against. Refer to CLEARVIEW WINDOWS, SUBJECT 56-10-03, Page 401, to check seal.

(4) Open adjacent clearview window.

CAUTION: EXERCISE CARE NOT TO CUT METAL SHIM SPLICES LOCATED AT UPPER AND LOWER BUTT JOINTS.

(a) Using sharp blade, cut between windshield aft post retainer and PR-1422 cast-in-place shim.

(b) Loosen outer surface of cast shim from inner surface of retainer.

NOTE: Cast-in-place shim should now be loose from aft retainer yet relatively intact.

(5) Remove two bolts from upper edge of windshield panel, and install two windshield alignment pins.

NOTE: Alignment pins can be made from AN-4 bolts with heads cut off and slot cut in shank of bolts.

(6) Remove interior trim.

(7) Remove side, upper, and lower retainers, and loosen aft retainer as follows:

CAUTION: EXERCISE CARE TO PROTECT EDGE SEALING OF ADJACENT WINDSHIELD AND CAST-IN-PLACE SHIM ON AFT RETAINER. ON SOME AIRCRAFT "Z" CHANNEL MAY BE INSTALLED RATHER THAN RETAINERS AND BUMPERS.

(a) Using sharp blade, follow edge of retainer and cut sealant loose from retainer and structure.

NOTE: The windshield attaching bolts are of different sizes and lengths, and should be recorded when removed to facilitate installation. (Figure 203)

(b) Remove side, upper, and lower retainers, and remove all bolts in aft retainer except bolts (61), (62), (64), and (68). (Figure 204)

(c) Loosen, but do not remove, bolts (61), (62), (64), and (68) making certain not to damage cast-in-place shim that is adhered to retainer.

(d) Using a plastic scraper, remove sealant from surface and edges of retainers.

NOTE: If cast-in-place shim is not damaged and adhesive is not broken from aft retainer, shim will not have to be repaired and resealed, which will result in fewer clearview window leaks.

(8) Remove seal between scalloped edges of center and side windshields.

(9) Slide windshield forward on alignment pins far enough to gain access to screws securing electrical terminal block to windshield and remove block.

CAUTION: WINDSHIELD PANEL WEIGHS APPROXIMATELY 42 POUNDS (19.07 KG).

(10) Remove windshield by carefully sliding forward on alignment pins.

NOTE: The alignment pins must be removed before the windshield can be removed on aircraft with rain repellant tube at lower edge of windshield.

B. Install Side Windshield (Figure 202)

NOTE: The Z-channel windshield uses a metal "Z" strip as an alternative for the silicone edge bumper on the outer perimeter of the glass. When the "Z" strip is used, it is not required to seal the gap between the metal "Z" and the windshield retainer. (Figure 202 (Sheet 3))

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Make sure that these circuit breakers are open and have safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Check nutplates and gang nut channels attached to sill structure for missing, damaged, or loose nuts.

(3) Check that sealant on windshield sill structure is not damaged.

WARNING: LOW VISCOSITY POLYSULFIDE SEALANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN LOW VISCOSITY POLYSULFIDE SEALANT IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET LOW VISCOSITY POLYSULFIDE SEALANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: SILICONE SEALANT IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN SILICONE SEALANT IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THESE HAZARDOUS AGENTS.

(a) Use sealant, PR-1425 B-2 or Dow Corning 93-006-1, to repair any damaged sealant.

(b) If windshield is to be installed before cure time of sealant, apply one layer of aluminum tape, No. 425, over sealant.

WARNING: WHITE PETROLATUM IS AN AGENT THAT IS AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN WHITE PETROLATUM IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT BREATHE THE MIST.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(4) Apply vaseline to seal bonded to windshield pan where seal will contact structure.

(5) Place forward edge of windshield in position on sill and rotate aft edge into sill. Install windshield alignment pins to hold windshield in position.

(6) Install anti-icing and anti-fogging terminal block on wind-shield as follows:

NOTE: For accessibility, position aft edge of windshield approximately 1-inch (25.4 mm) from sill when installing terminal block.

CAUTION: TERMINAL BLOCK MUST BE FREE OF ANY MOISTURE OR FOREIGN MATERIAL TO PREVENT FALSE READING OF SENSOR ELEMENTS AND CONSEQUENT OVERHEATING OF PANEL AND REJECTION OF WINDSHIELD.

(a) Check terminal block for moisture and foreign material.

WARNING: ISOPROPYL ALCOHOL IS AN AGENT THAT IS FLAMMABLE, EXPLOSIVE, POISONOUS, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN ISOPROPYL ALCOHOL IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ISOPROPYL ALCOHOL IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

(WARNING PRECEDES)

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(b) Clean terminal block and connector with isopropyl alcohol, (MIL-F-5566), and clean lint-free cloth. Allow terminal block and connector to dry approximately 15 minutes.

(c) Check that O-ring seals in terminal block lie in a flat plane and are smooth with no tears, nicks, or gouges.

CAUTION: MAKE CERTAIN THAT TERMINAL BLOCK ATTACHING SCREWS DO NOT BOTTOM OUT IN WINDSHIELD.

(d) Install terminal block on windshield. Use NAS1096-2-9 screws.

(e) Torque connectors on terminal block using the table in the (GENERAL INSTALLATIONS HARDWARE - MAINTENANCE PRACTICES, SWPM 20-20-03).

(f) Install protective cover on terminal block.

(7) Slide windshield into position, making certain that seal bonded to windshield pan is in proper contact and jammed against windshield frame.

WARNING: SILICONE SEALANT IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN SILICONE SEALANT IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

CAUTION: EXTREME CARE MUST BE EXERCISED WHEN INSTALLING RETAINERS TO PREVENT DAMAGE TO BUMPER ON WINDSHIELD PANEL.

(8) Place upper and lower retainers in position and install attaching bolts. Apply silicone sealant, 93-006-1, under heads of bolts. Torque bolts to 20-25 inch-pounds (2.26- 2.83 N·m). Seal gap between retainers and bumper on windshield panel outer glass ply edge with silicone sealant (Dow Corning 93-006-1 or equivalent). Refer to Figure 204 for bolt torquing sequence and Figure 203 for attaching bolts.

(9) Install seal in gap between scalloped edges of center and side windshield panels, trim any excess length of seal at lower end. Start installation of seal at top of panel. If gap is not completely filled by seal, fill gap with silicone sealant (Dow Corning 93-006-1 or equivalent).

WARNING: LOW VISCOSITY POLYSULFIDE SEALANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN LOW VISCOSITY POLYSULFIDE SEALANT IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET LOW VISCOSITY POLYSULFIDE SEALANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

CAUTION: EXTREME CARE MUST BE EXERCISED WHEN INSTALLING RETAINERS TO PREVENT DAMAGE TO BUMPER ON WINDSHIELD PANEL.

(10) Place side retainers in position and install attaching bolts. Apply silicone sealant, 93-006-1, under heads of bolts. Torque bolts to 20-25 inch-pounds (2.26-2.83 N·m). Seal gap between retainers and bumper on windshield panel outer glass ply edge with silicone sealant (Dow Corning 93-006-1 or equivalent). Refer to Figure 204 for bolt torquing sequence and Figure 203 for attaching bolts.

NOTE: Apply a faying surface seal of sealant (PR 1422 B-2) to exposed surface of clearview window cast-in-place shim prior to installing aft retainer in position.

CAUTION: TO PREVENT POSSIBLE DAMAGE TO SEAL, RETORQUE EACH BOLT ONE TIME ONLY DURING INITIAL INSTALLATION. PERIODIC RETORQUING NOT REQUIRED NOR ACCEPTABLE.

(11) Retorque all retainer bolts to 40-50 inch-pounds (4.52-5.65 N·m). Refer to Figure 204 for bolt torquing sequence.

NOTE: If nut plates for retainer attach bolts are inadvertently pushed out or damaged, blind bolts can be installed. Install blind bolt (BB351-6) for NAS333 bolts, and blind bolt (BB351-8) for NAS334 bolts. Maximum installation of blind bolts is one of five with no adjacent blind bolts.

WARNING: HANDWIPE CLEANER IS AN AGENT THAT IS FLAMMABLE, A SENSITIZER, AN ASPHYXIANT, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN HANDWIPE CLEANER IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET HANDWIPE CLEANER IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: LOW VISCOSITY POLYSULFIDE SEALANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN LOW VISCOSITY POLYSULFIDE SEALANT IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET LOW VISCOSITY POLYSULFIDE SEALANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THESE HAZARDOUS AGENTS.

CAUTION: DO NOT USE SEALANTS IN COMBINATION, SEALANT PR-1422 B 1/2 WILL NOT ADHERE TO 93-006-1 SEALANT.

(12) Seal windshield retainers as follows:

(a) Clean butt joints, cut in retainer at clearview window, with (handwipe cleaner) solvent. Apply one layer of aluminum tape, No. 425, over gaps. Seal gaps with sealant, PR-1422 B 1/2. (Figure 201)

NOTE: If the cast-in-place shim is not bonded to the retainers in the area of the butt joints, lift the edges carefully and apply a thin coat (0.005-inch (0.127 mm) thickness maximum) of sealant, PR-1422 B-2, to separated areas.

(b) Apply continuous bead of sealant, PR-1422 B 1/2, between retainer, deflector, and clearview window sill.

(c) Seal gaps between side windshield retainers and structure and butt gaps between retainers with sealant, PR-1422 B 1/2. Fair sealant with structure.

NOTE: When dispatching aircraft before cure time of sealant, a strip of 1-inch (25.4 mm) wide pressure sensitive tape, No. 639, should be applied over sealant. Tape may be removed approximately 12 hours after sealant has been applied. (Figure 205)

NOTE: As an alternate, aluminum tape, No. 425, or equivalent may be used to cover wet sealant when dispatching the aircraft.

WARNING: SILICONE SEALANT IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN SILICONE SEALANT IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

CAUTION: USE OF POLYSULFIDE BASE SEALANT PR 1422 OR EQUIVALENT FOR THESE GAPS IS NOT RECOMMENDED. POLYSULFIDE CAN INGRESS INTO WINDSHIELD OUTER PLY EDGE RESULTING IN DRYING OUT AND CRACKING OF INTERLAYER. THIS CAN LEAD TO MOISTURE INGRESS, DELAMINATION AND ARCING FAILURE OF PANEL.

(13) Seal gap(s) between retainers and bumper on windshield panel outer glass ply edge with silicone sealant (Dow Corning 93-006-1 or equivalent).

(14) Install interior trim.

(15) Remove protective paper from windshield panel.

(16) Using white outing flannel moistened with detergent and water clean windshield panel.

WARNING: OPTICAL POLISHING & RUBBING COMPOUND IS AN AGENT THAT IS A LOW HAZARD. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN OPTICAL POLISHING & RUBBING COMPOUND IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(17) Remove paint overspray, hardened rain repellant and light scratches with optical polish, CEROX SR-XII. Wipe off excess with cloth wipers followed by a water-detergent rinse.

(18) Remove the safety tags and close these circuit breakers:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	24	B1-332	LEFT WINDSHIELD ANTI-ICE
X	25	B1-333	CENTER WINDSHIELD ANTI-ICE
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	24	B1-334	RIGHT WINDSHIELD ANTI-ICE
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

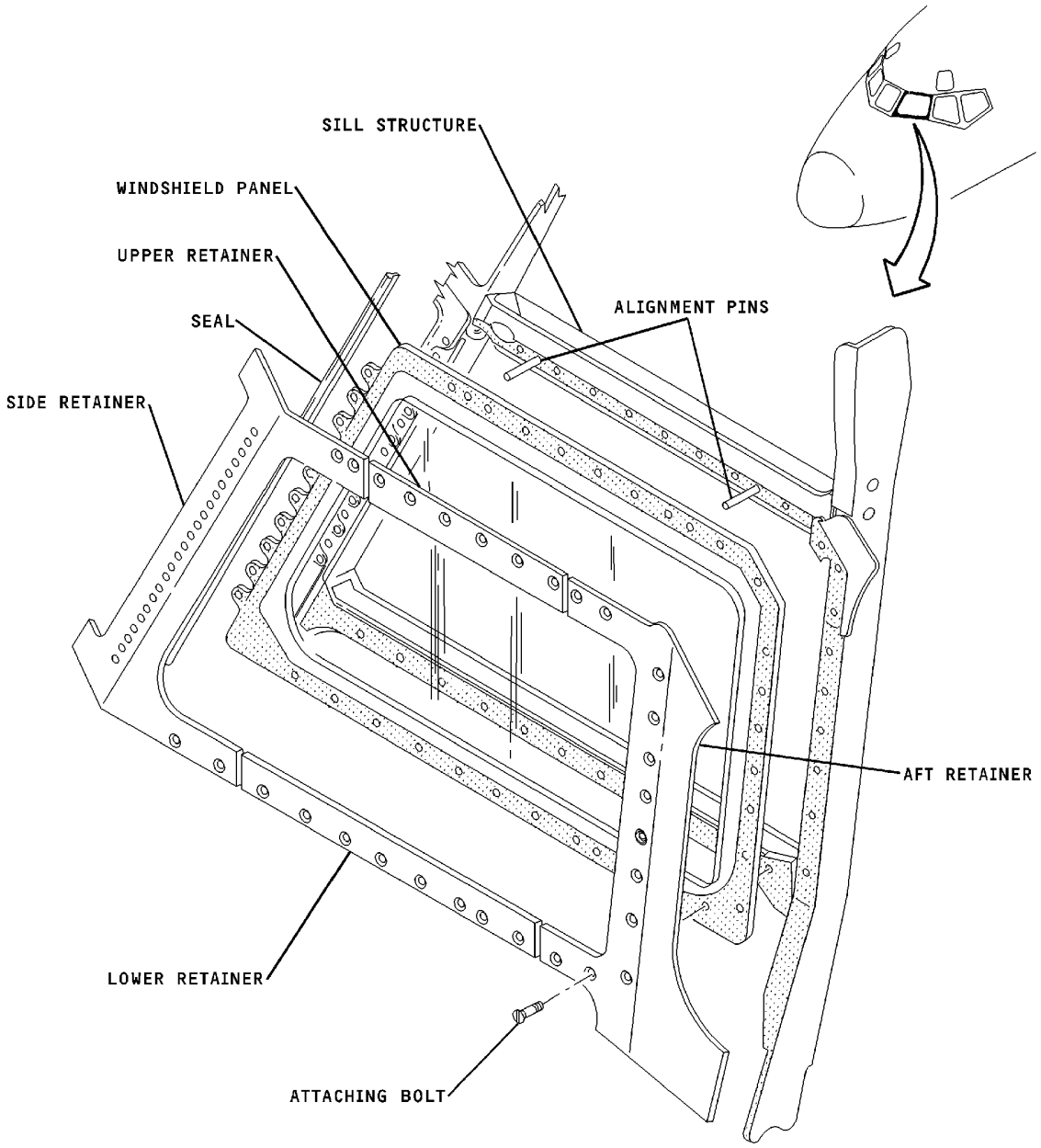
LOWER EPC, ICE PROTECTION LEFT DC BUS

Row	Col	Number	Name
M	25	B1-176	LEFT WINDSHIELD WIPER

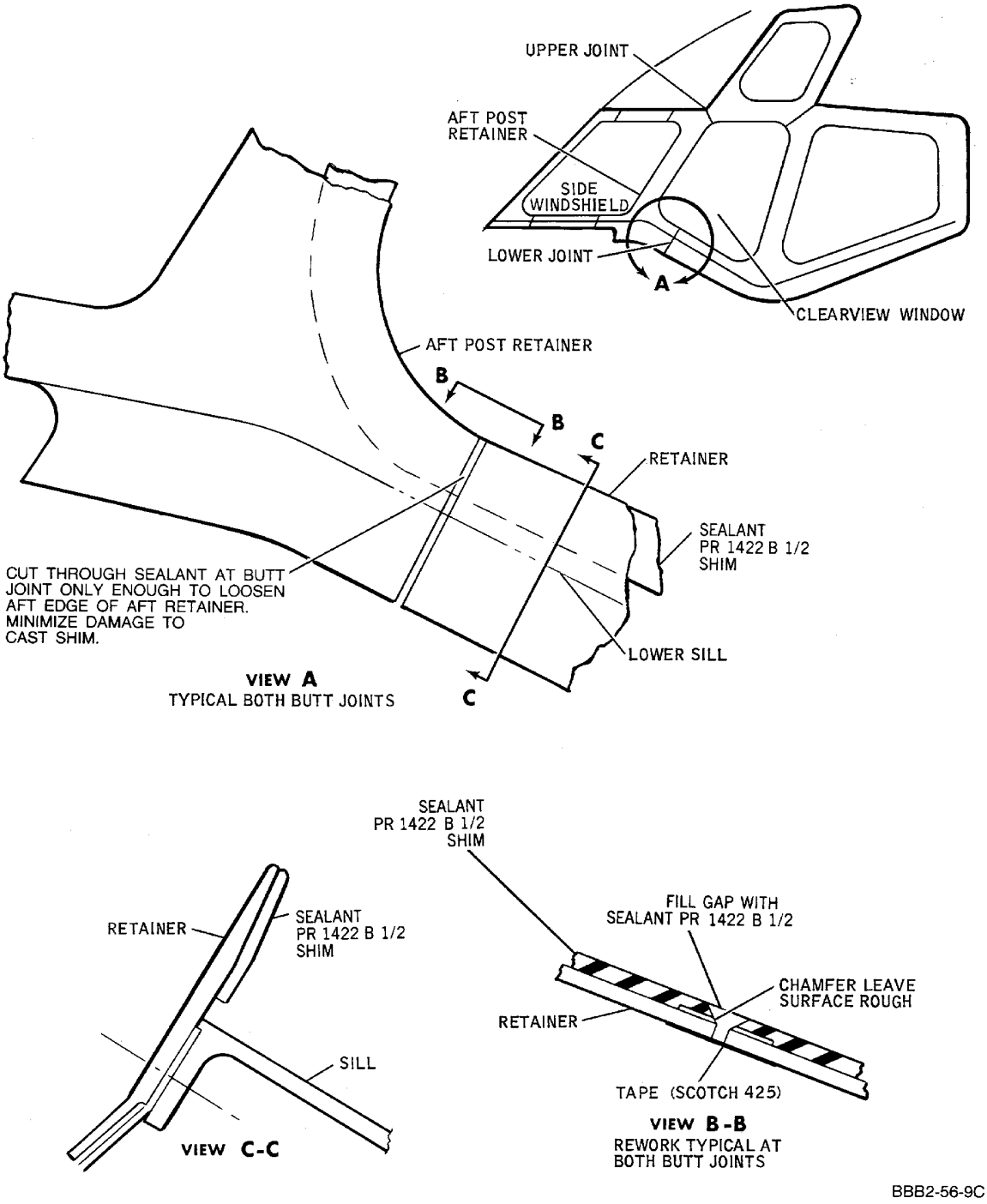
LOWER EPC, ICE PROTECTION RIGHT DC BUS

Row	Col	Number	Name
N	25	B1-177	RIGHT WINDSHIELD WIPER

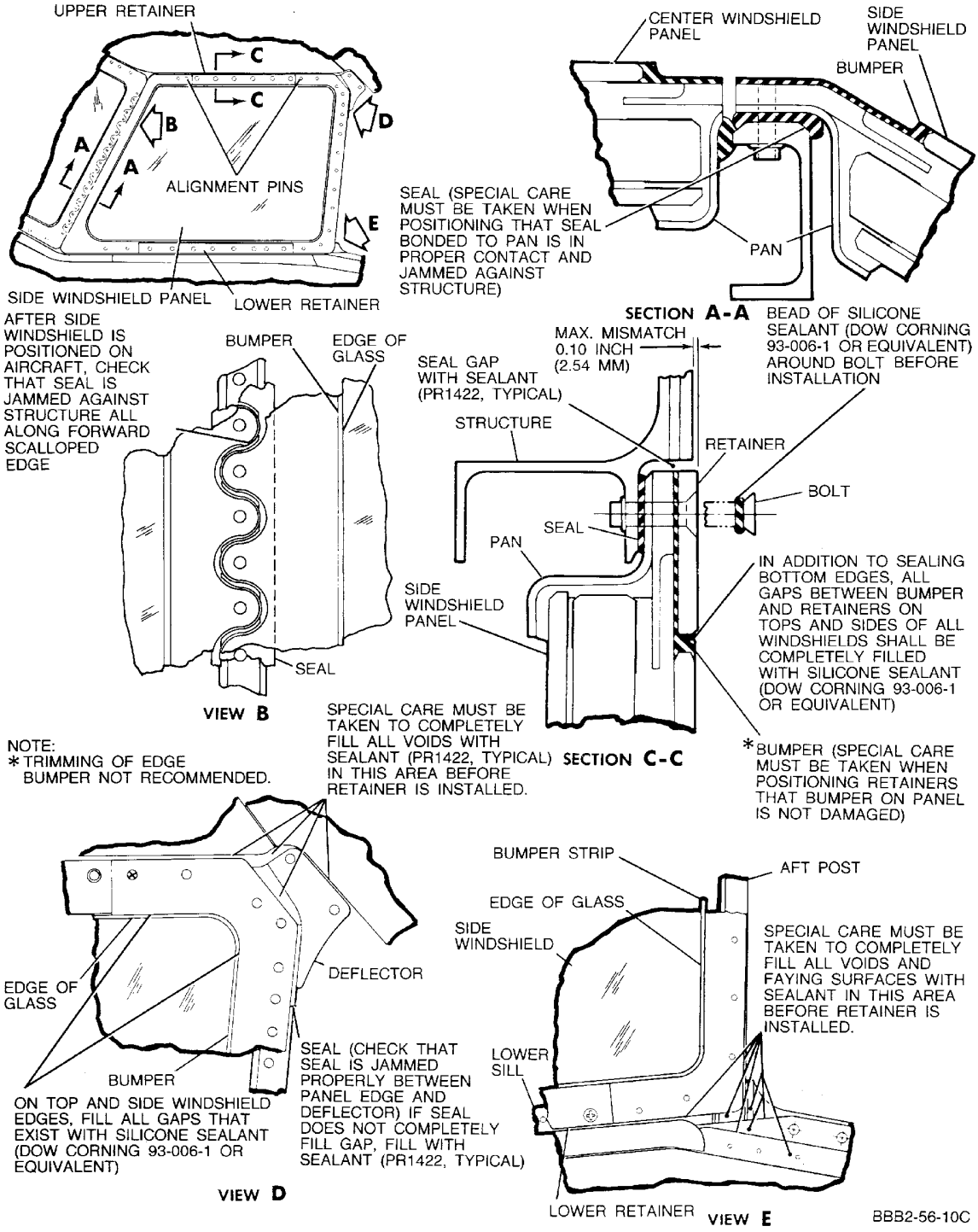
(19) Perform operational check of windshield anti-icing and anti-fogging systems. (FLIGHT COMPARTMENT - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-00/201)



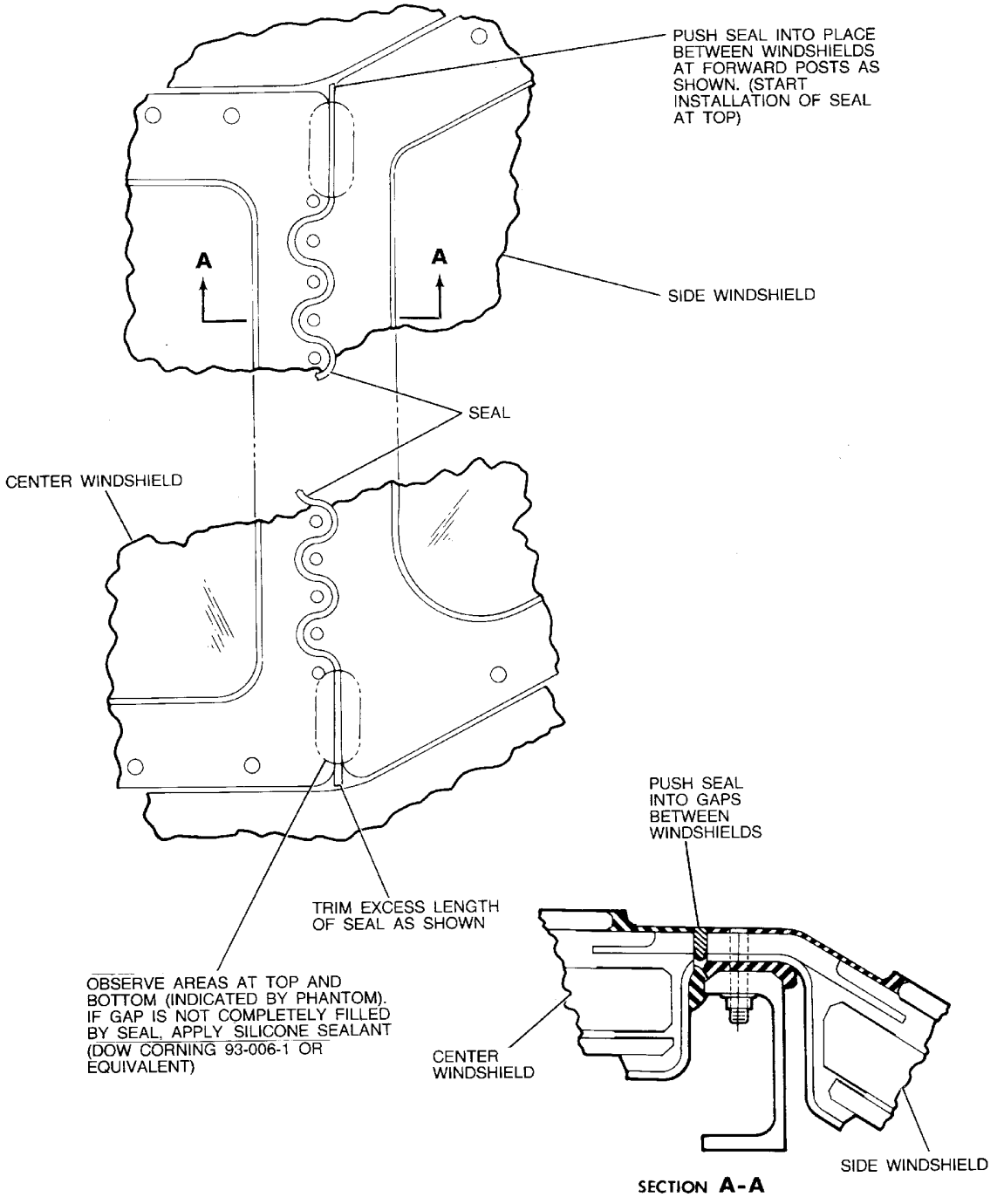
Side Windshield -- Removal
Figure 201/56-10-02-990-801 (Sheet 1 of 2)



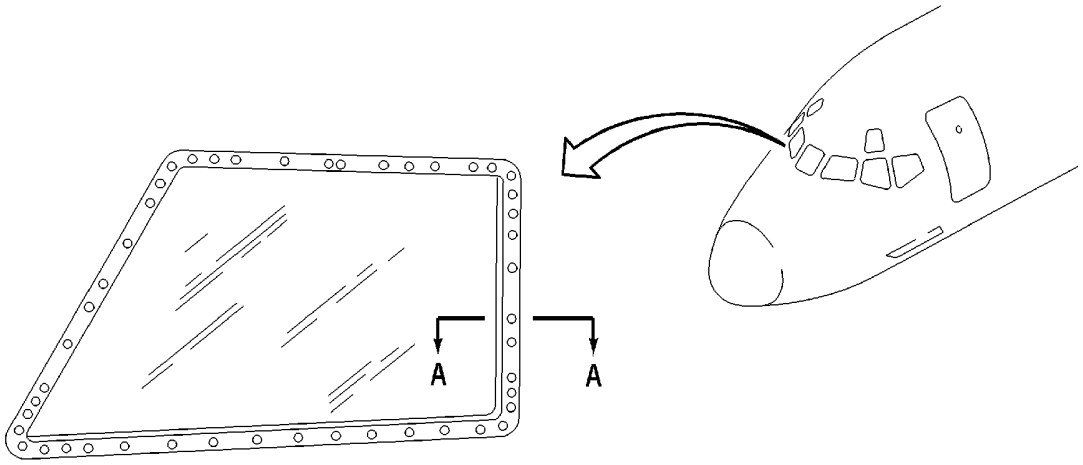
Side Windshield -- Removal
Figure 201/56-10-02-990-801 (Sheet 2 of 2)



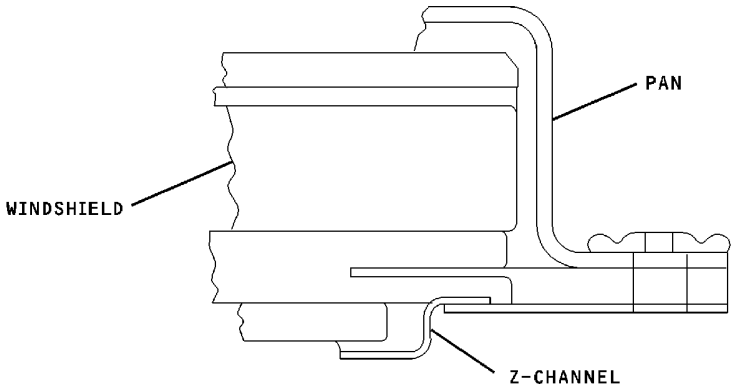
Side Windshield -- Installation
Figure 202/56-10-02-990-802 (Sheet 1 of 3)



Side Windshield -- Installation
Figure 202/56-10-02-990-802 (Sheet 2 of 3)



SIDE WINDSHIELD



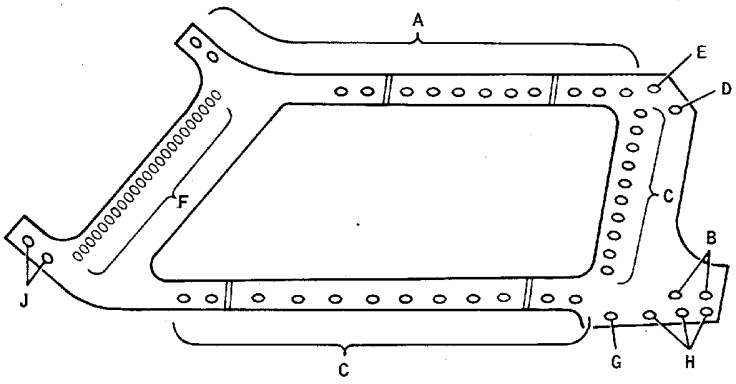
NOTE:
Z-CHANNEL WINDSHIELD USES A METAL "Z" STRIP AS AN ALTERNATIVE FOR THE SILICONE EDGE BUMPER ON THE OUTER PERIMETER OF THE GLASS. SEALING OF THE GAP BETWEEN THE METAL "Z" AND THE WINDSHIELD RETAINER IS NOT REQUIRED.

SECTION A-A

CAG(IGDS)

BBB2-56-64

Side Windshield -- Installation
Figure 202/56-10-02-990-802 (Sheet 3 of 3)



LEFT SIDE SHOWN

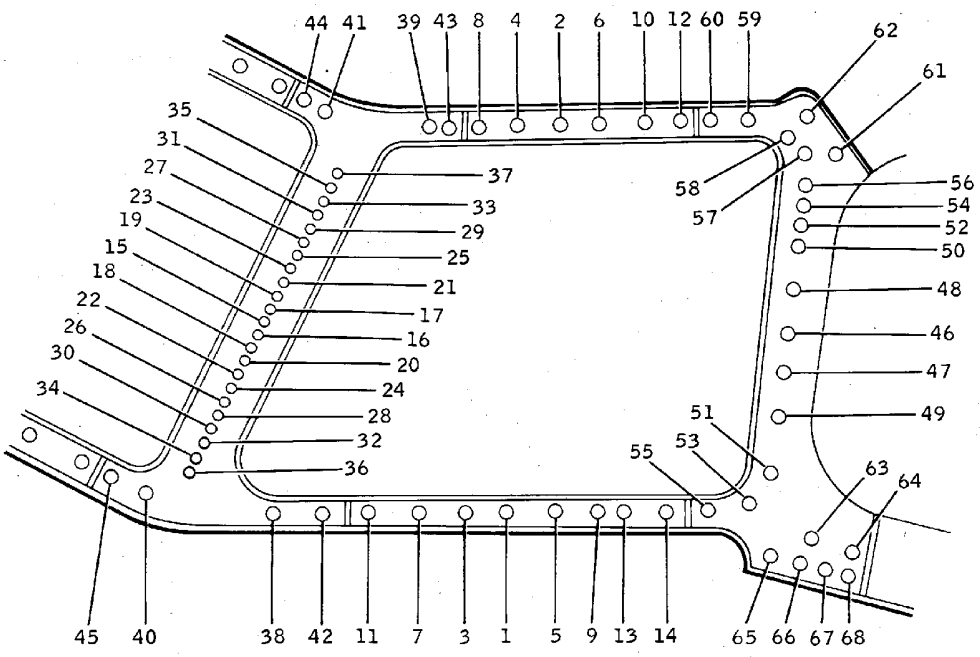
NOTE:
BOLTS OF ONE INCREMENT SHORTER OR LONGER THAN THOSE LISTED MAY BE SUBSTITUTED. MAKE CAREFUL SELECTION TO INSURE NUT DOES NOT BOTTOM OUT ON UNTHREADED BOLT SHANK.

SCREW SIZE AND QUANTITY REQUIRED TO INSTALL SIDE WINDSHIELD

CODE	NAS SIZE	LENGTH	QUANTITY
A	334	10	13
B	334	7	2
C	334	11	22
D	334	5	1
E	334	30	1
F	333	11	23
G	333	10	1
H	333	5	3
J	334	11-5	2

BBB2-56-11

Side Windshield -- Attaching Bolts
Figure 203/56-10-02-990-803

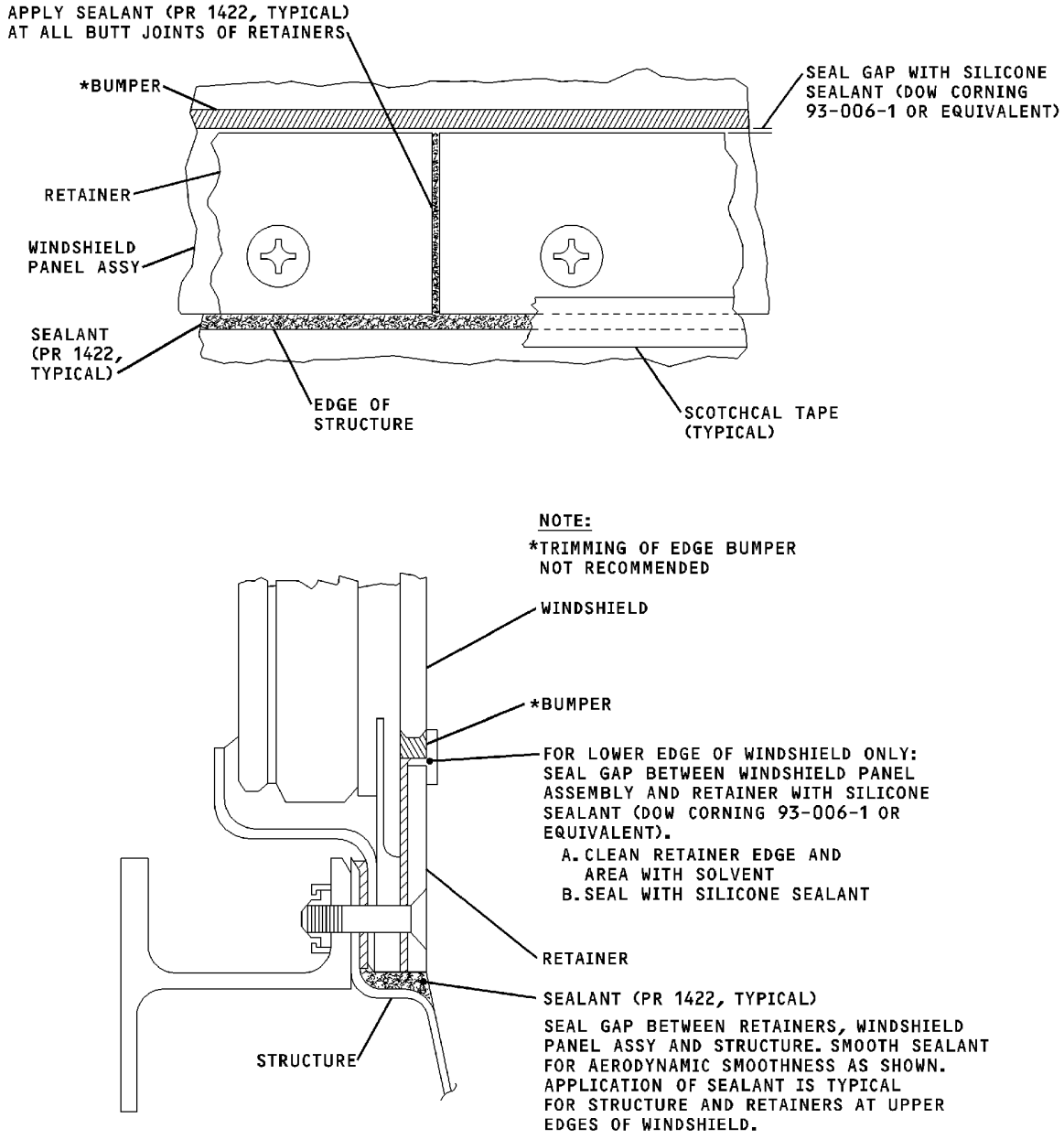


BOLT TORQUING INSTRUCTIONS

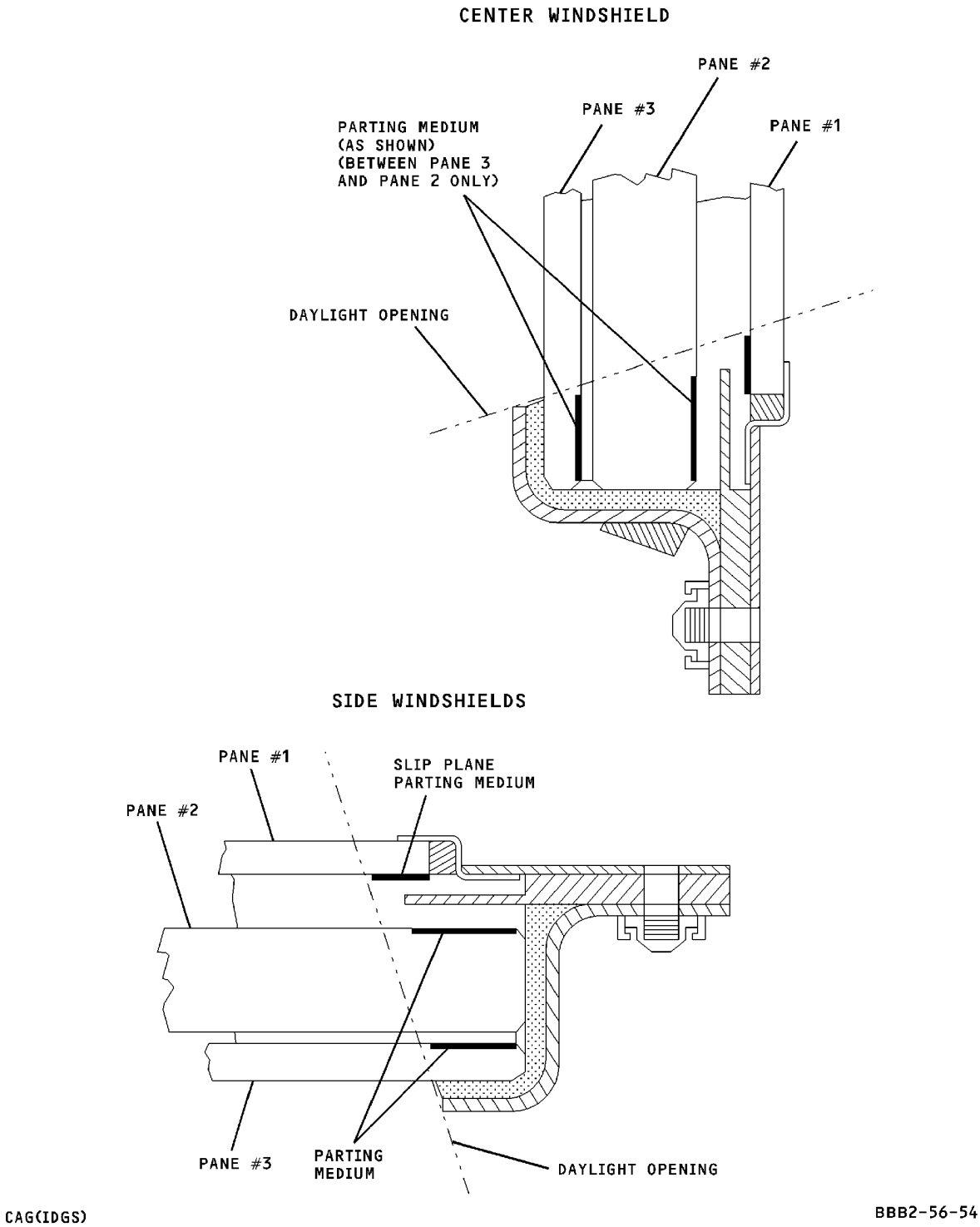
1. TORQUE BOLTS 1 THRU 14 TO 20-25 INCH POUNDS (2.26-2.83 N•m)
2. TORQUE BOLTS 15 THRU 45 TO 20-25 INCH POUNDS (2.26-2.83 N•m)
3. TORQUE BOLTS 46 THRU 68 TO 20-25 INCH POUNDS (2.26-2.83 N•m)
4. RETORQUE BOLTS 1 THRU 14 TO 40-50 INCH POUNDS (4.52-5.65 N•m)
5. RETORQUE BOLTS 15 THRU 37 TO 40-50 INCH POUNDS (4.52-5.65 N•m)
6. RETORQUE BOLTS 38 THRU 45 TO 40-50 INCH POUNDS (4.52-5.65 N•m)
7. RETORQUE BOLTS 46 THRU 64 TO 40-50 INCH POUNDS 4.52-5.65 N•m)
8. RETORQUE BOLTS 65 THRU 68 TO 40-50 INCH POUNDS (4.52-5.65 N•m)

BBB2-56-12A

Side Windshield -- Bolt Torquing Sequence
Figure 204/56-10-02-990-804



Windshield Sealing
Figure 205/56-10-02-990-805



Windshield Part Medium
Figure 206/56-10-02-990-806

4. Approved Repairs

A. Repair Leaks at Windshield Panel Attach Bolts

NOTE: This procedure can be used in whole or in part, as determined by maintenance personnel, to address multiple and single leaks or leak locations on the windshield installation.

NOTE: Operators may elect to localize retorque a single or multiple bolts, as part of the windshield installation in lieu of resealing and retorquing of the windshield attachment bolts.

WARNING: LOW VISCOSITY POLYSULFIDE SEALANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN LOW VISCOSITY POLYSULFIDE SEALANT IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET LOW VISCOSITY POLYSULFIDE SEALANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(1) If leaks develop at windshield panel attach bolts, loosen all bolts and apply silicone sealant under heads of bolts.

(2) Tighten bolts to torque of 20 to 25 inch-pounds (2.26-2.83 N·m).

(3) Seal gap between retainers and bumper on windshield panel outer glass ply with silicone sealant.

(4) Refer to appropriate figure in MD-80 Maintenance Manual for bolt torquing sequence. Tighten all bolts in proper sequence to torque of 40 to 50 inch-pounds (4.52 to 5.65 N·m).

FLIGHT COMPARTMENT CLEARVIEW WINDOWS - REMOVAL/INSTALLATION

1. General

A. The removal and installation procedures for the right and left clearview windows are identical. The windows are removed and installed from within the flight compartment.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following items:

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 401

Name and Number	Manufacturer
Silicone Sealant (with catalyst) 93-006-1 DPM 5697	Dow Corning Corp. Midland, Michigan
Torque wrench, (0-50 inch pounds (5.65 N·m) range)	
Lubricant, antiseize petrolatum, White	Castrol Industrial North America, Inc. Naperville, IL

3. Removal/Installation Clearview Windows

A. Remove Clearview Window

(1) If replacing the clearview window pane or pressure seal. (WINDOW, CLEARVIEW PANEL AND PRESSURE SEAL - REMOVAL/INSTALLATION, PAGEBLOCK 56-10-06/401)

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Open these circuit breakers and install safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(3) Install protective paper on both sides of clearview window and on inside of adjacent windows.

(4) Remove interior trim from aft edge of clearview window to expose wiring conduit.

NOTE: Interior trim is attached with Velcro tape and contact cement which may require cutting from structure.

(5) Remove electrical wiring access cover located above and aft of clearview window.

(6) Disconnect clearview window electrical wiring from terminals.

(7) Remove clearview window thermal switch, spring, and plate located at lower center of window panel. (Figure 401)

(8) Remove clamp securing wire bundle to window structure.

(a) Loosen nuts securing conduit to clearview window aft structure.

(b) Disconnect ground wire from clearview window lower aft structure.

(c) Remove nuts securing conduit to clearview window lower bottom structure.

(9) Open clearview window; remove all wiring and secure out of way.

(10) Mark location of forward-aft adjustment lock in upper track to facilitate installation. Remove lock. (Figure 401)

CAUTION: CONTROL COLUMN WILL RETURN TO CENTER POSITION IF NOT SECURED. CHECK THAT HYDRAULIC POWER IS OFF BEFORE CONTROL COLUMN IS MOVED AND SECURED.

(11) Move control column to extreme forward position and secure to adjacent structure.

(12) Remove bolts in forward end of lower track.

NOTE: Window lower edge will swing in when lower track bolts are removed.

CAUTION: WINDOW WEIGHS APPROXIMATELY 40 POUNDS (18.16 KG).

(13) Remove window by sliding forward out of upper track.

B. Install Clearview Window

NOTE: Full perimeter of clearview window and cast-in-place shim may be chamfered 1/16 inch (1.59 mm) and 1/32 inch (0.79 mm) respectively to prevent cutting of weather seal during cabin pressurization. (Figure 401)

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Make sure that these circuit breakers are open:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Make following adjustments before installing window: (Figure 401)

(a) Adjust lower forward linkage rod until approximately four threads are showing. Disconnect rod at forward end (barrel nut end) when making adjustment.

(b) Loosen screw and nut connecting upper linkage rod to link. Disconnect upper linkage rod at forward end.

(c) Remove upper and lower eccentric lockpins, temporarily, and retain for installation.

(d) Adjust lower eccentric so that roller is aft with handle in open position, then install lockpin temporarily.

(e) Adjust upper eccentric so slide is aft with handle in open position, then install lockpin temporarily.

NOTE: For ease of removal, cotter pin may be used in place of lockpin. (Paragraph 3.B.(2)(d) and Paragraph 3.B.(2)(e))

(f) With handle in open position, adjust lower aft linkage rod so that aft lock bar rests on window panel sealant.

(g) Check upper slides.

1) If slide has sharp edges, remove sharp edges to help prevent binding.

2) If installation is loose, install additional washers.

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1082, PETROLATUM/WHITE (DPM 675)

HAZMAT 1000, REFER TO MSDS

(h) Lubricate tracks with petrolatum or vaseline (amber) to allow for smooth operation of track slides.

CAUTION: CONTROL COLUMN WILL RETURN TO CENTER POSITION IF NOT SECURED. CHECK THAT HYDRAULIC POWER IS OFF BEFORE CONTROL COLUMN IS MOVED AND SECURED.

(3) Make certain control column is secured in extreme forward position.

(4) With slides in aft position, position window and slide aft in track.

(5) Position roller, raise lower track, and install bolts in forward end of lower track.

NOTE: Positioning (at forward end) of tapered shims between track and structure, should be thick end to thin end.

(a) Check that upper surface of roller is 0.050 to 0.150 inch (1.27 to 3.81 mm) below edge of track. If 0.150 inch (3.81 mm) dimension is exceeded, track may be lowered by tapping forward track structure with rubber mallet in downward motion.

(b) If Paragraph 3.B.(5)(a) proves ineffective, remove roller and washer installed between upper surface of roller and lower eccentric. Install roller with removed washer installed between existing lower washer and lower surface of roller.

(6) Connect upper linkage rod at forward end.

(7) Install forward-aft adjustment lock in upper track. Align index marks made during removal.

(8) Adjust window. (PAGEBLOCK 56-10-03/501)

(9) Connect electrical wires to terminals and secure conduits to window.

(10) Torque connectors on terminal block using the table in the (GENERAL INSTALLATIONS HARDWARE - MAINTENANCE PRACTICES, SWPM 20-20-03).

(11) Install plate, spring, and thermal switch.

(12) Install clamp securing wire bundle to clearview window structure.

(13) Install electrical wiring access cover.

(14) Align window trim with window frame and press trim firmly against frame.

(15) Remove the safety tags and close these circuit breakers:

LOWER EPC, AC BUS

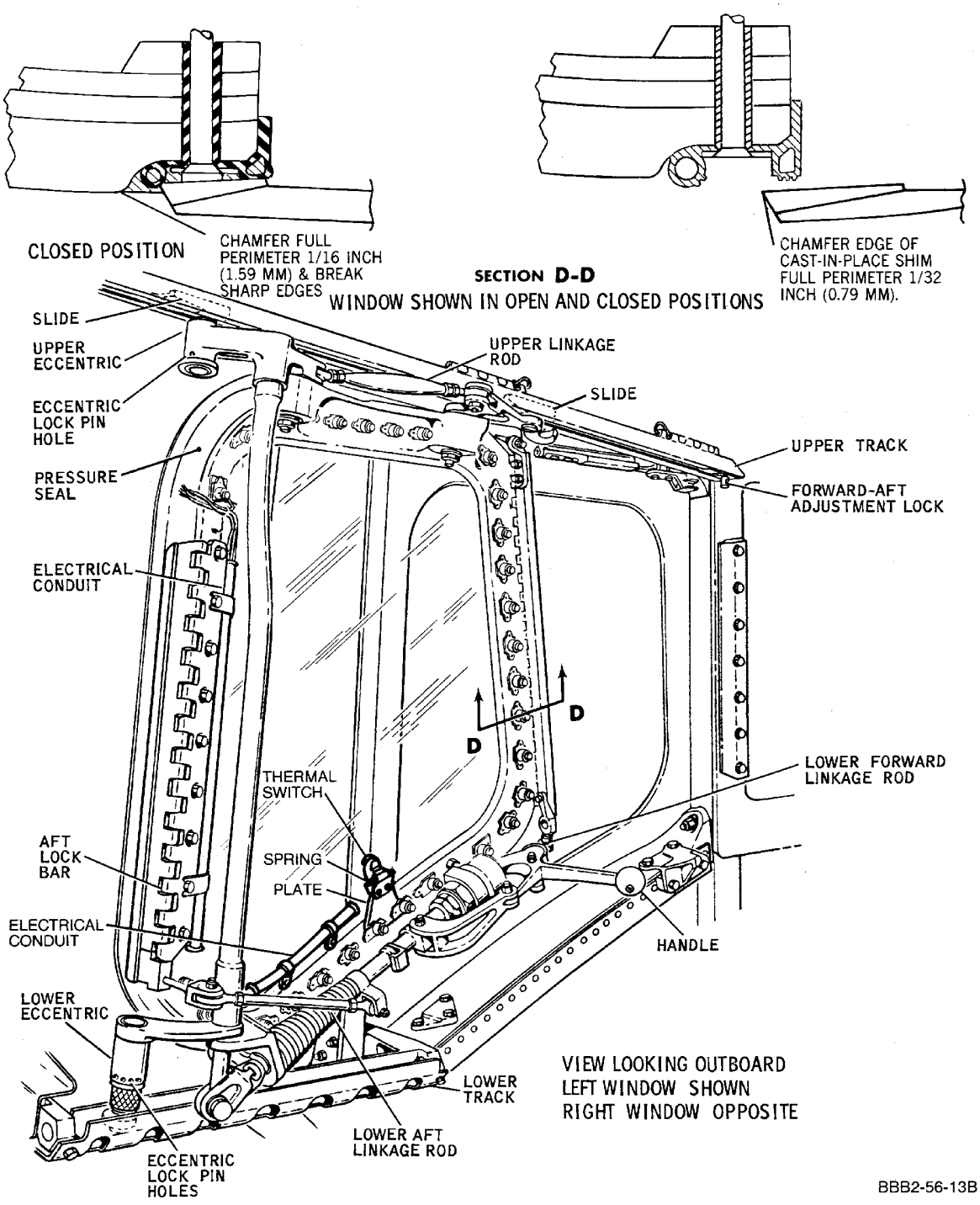
Row	Col	Number	Name
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(16) Lubricate window. (PAGEBLOCK 12-21-03/301)

(17) Remove protective paper and clean window. (PAGEBLOCK 56-00-00/701 Config 1)

(18) Perform operational check of window antifog system. (PAGEBLOCK 56-10-00/201)

NOTE: For additional maintenance procedures, including clearview window panel (pane) replacement, refer to the applicable MD-80 CMM 56-10-03 or 56-13-01.



Clearview Window Installation
Figure 401/56-10-03-990-801

FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST

1. General

A. Adjustment of the clearview window is necessary after installation, and when window does not lock or unlock properly.

B. The adjustment procedures for the right and left clearview windows are identical.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following listed items:

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 501

Name and Number	Manufacturer
Silicone sealant, (with catalyst) 93-006-1 DPM 5697	K. R. Anderson Co. Inc. Santa Ana, CA
Torque wrench, (0 - 50 inch pounds (0-5.65 N·m) range)	
Lockwire, NASM20995N32, DPM 684	Not Specified

3. Adjustment/Test

A. Adjust Clearview Window Locking and Unlocking Mechanism

(1) Install protective paper on inside of clearview window and on inside of adjacent windows.

(2) Close window but do not engage locks.

(3) Adjust window forward-aft adjustment stop in upper track, as required to center window in frame and to provide clearance between aft lock bar and lock. (Figure 501, View C and Section F-F)

NOTE: Use care to return stop to its original position.

(4) Open window.

(5) Adjust set screws (1) and (2) in lower crank flush with surface of lower crank; tighten locknuts. (Figure 501, View G)

(6) The following adjustments are made with window positioned against fwd upper stop, window seal in contact with epocast surface and handle rotated outboard, but not locked.

(a) Remove upper eccentric lockpin. Adjust eccentric position to obtain maximum outboard adjustment of lower forward corner of window. Back off adjustment of eccentric 1 hole position to allow lower forward corner to move inboard. (Figure 501, Section K-K)

(b) Temporarily install cotter pins in upper eccentric until final position is determined.

(c) Remove lower eccentric lockpin, adjust eccentric position to position lower aft edge of window approximately parallel with adjacent aircraft structure.

(d) Temporarily install cotter pins in lower eccentric until final position is determined.

CAUTION: MAKING CERTAIN THAT WINDOW CLEARS GUSSET AND RUBSTRIPS BY MINIMUM OF 0.030 INCH (0.762 MM), CAREFULLY OPEN WINDOW AND SLIDE BACK UNTIL LATCH IN LOWER TRACK IS ENGAGED. IF CLEARANCE IS NOT ACHIEVED, READJUST UPPER ROD UNTIL MINIMUM GAP REQUIREMENT IS ACHIEVED

(e) Adjust upper rod by rotating rod to obtain proper seal pressure at fwd and aft window edges and enable the window to be completely closed and locked. Rotate handle fully outboard and push forward until it stops.

(f) Close window and engage locks.

(g) Open window.

NOTE: If aft window lock does not release, forward-aft adjustment is incorrectly set or lower linkage is adjusted too long. Repeat Paragraph 3.A.(3) until window locks release properly.

(7) Visually make certain that seal is compressed along outer perimeter of window assembly. Readjust upper rod assembly, upper or lower eccentric as necessary to increase or decrease seal compression.

NOTE: Upper eccentric adjustment affects seal compression at upper aft and lower forward corners of the window.

Lower eccentric adjustment affects seal compression along the lower edges of the window assembly.

Upper rod assembly adjustment affects seal compression along forward edge and aft edge of the window.

NOTE: Adjustment of rod also affects window fwd/aft location.

(8) Check window fair by inserting 1-inch (25.4 mm) strip of paper between window pressure seal and retainers. Close and lock window.

(a) If paper can be pulled out easily, seal is not tight enough.

(b) Repeat check at several locations around periphery of window to verify a snug fit.

(9) Replace retained lockpins in upper and lower eccentrics.

(10) Tighten locknuts on upper linkage rod turnbarrel.

(11) Safety turnbarrel locknuts with lockwire. (LOCKWIRE SAFETYING - MAINTENANCE PRACTICES, PAGEBLOCK 20-10-18/201)

(12) With window closed and locked, check that clearance between aft lock bar and stop is 1/32-inch (0.79 mm) minimum to 1/8- inch (3.18 mm) maximum. If not within tolerance, perform applicable Paragraph 3.A.(12)(a) thru Paragraph 3.A.(12)(d) as required. (Figure 501)

(a) Remove interior trim from aft lock bar support to gain access to attaching bolts.

1) Shim lock bar support as required. (Figure 501, Section F-F)

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1330, SEALANT/SILICONE (DPM 5697)

HAZMAT 1000, REFER TO MSDS

(WARNING PRECEDES)

2) Sealant is installed under head of each lock bar support attaching bolt. If sealant is damaged, remove old sealant from bolt and window and apply a bead of silicone sealant (93-006-1) under head of bolt. Tighten bolts to eliminate end play, do not deform seal or retainer. Maximum torque 30 inch pounds (3.39 N·m).

(b) Check that lock bar clears stop as window is opened.

(c) Rotate handle up from the open position. Move window forward against forward upper stop. Hold the window position while rotating handle aft until significant resistance is felt, adjust length of the lower aft link until roller bearing aligns with groove in housing. Tighten locknuts and safety forward locknut with lockwire. (Figure 501, Section J-J)

(d) Install interior trim.

(13) Adjust upper lock bar actuating linkage rod as follows:

(a) Adjust cam follower vertical adjustment to position cam follower in cam slot when window is closed but not locked. (Figure 501, Views A and B)

(b) Adjust cam follower extension adjustment by arranging washers so that cam follower will engage cam slot securely as window is latched, but will clear as window is opened.

(c) If Paragraph 3.A.(13)(b) does not result in satisfactory alignment between cam and cam follower, adjust cam forward-aft adjustment as necessary.

(14) Adjust lower forward linkage rod so that when handle hook engages lower hook fitting, forward lockbar is fully engaged under forward lockstop on window post. Verify clearances and a parallel relationship between the forward lock bar and the forward lock bar stop. (Figure 501, section D-D and View E)

(15) Adjust lower aft hook and hook fitting as follows:

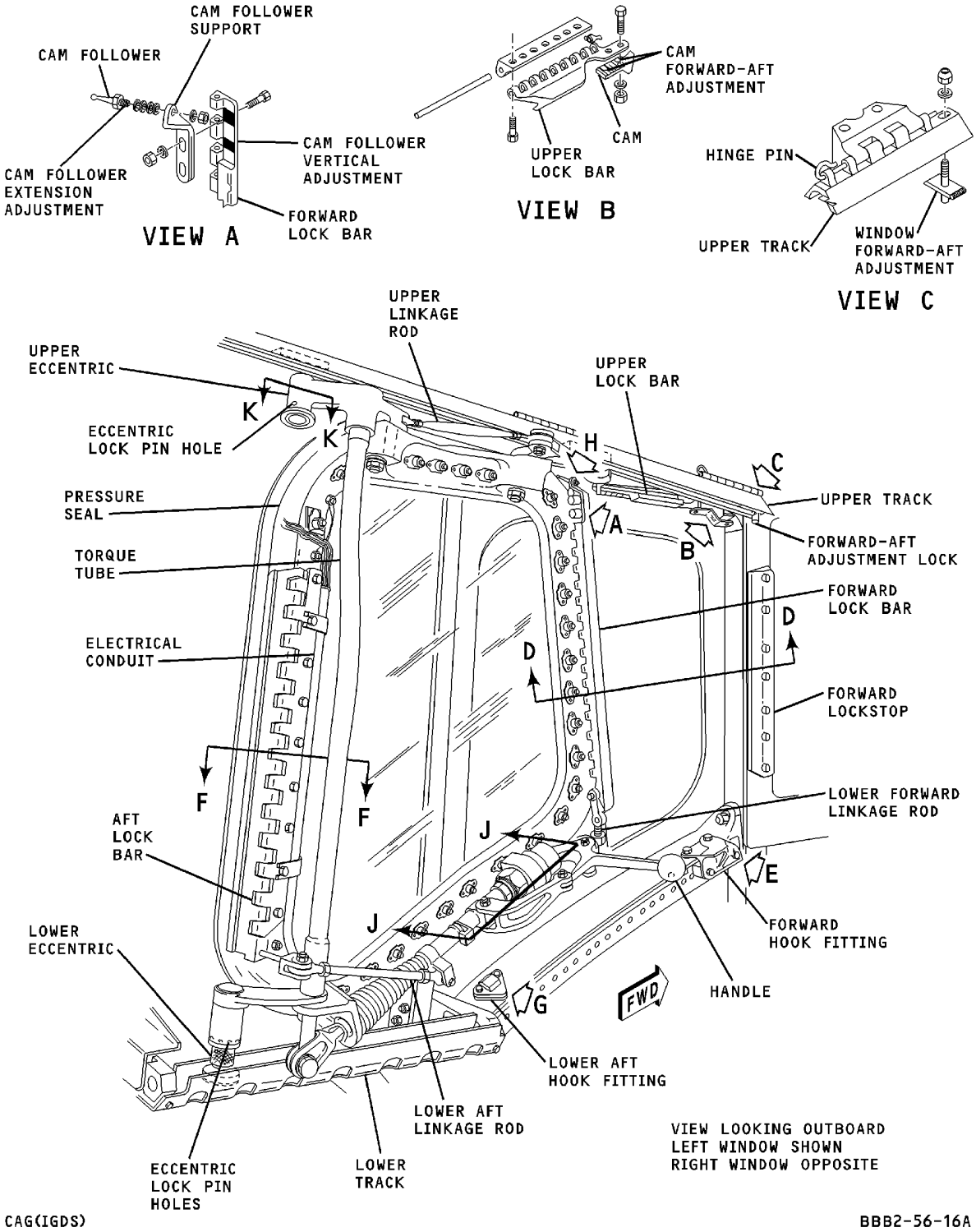
(a) Check gap between lower aft hook fitting and lower aft hook. Adjust setscrew (1) to obtain proper clearance per Figure 501, View G.

(b) Loosen attaching bolts and adjust lower aft hook fitting by sliding fitting over plate serrations as required to obtain desired clearance.

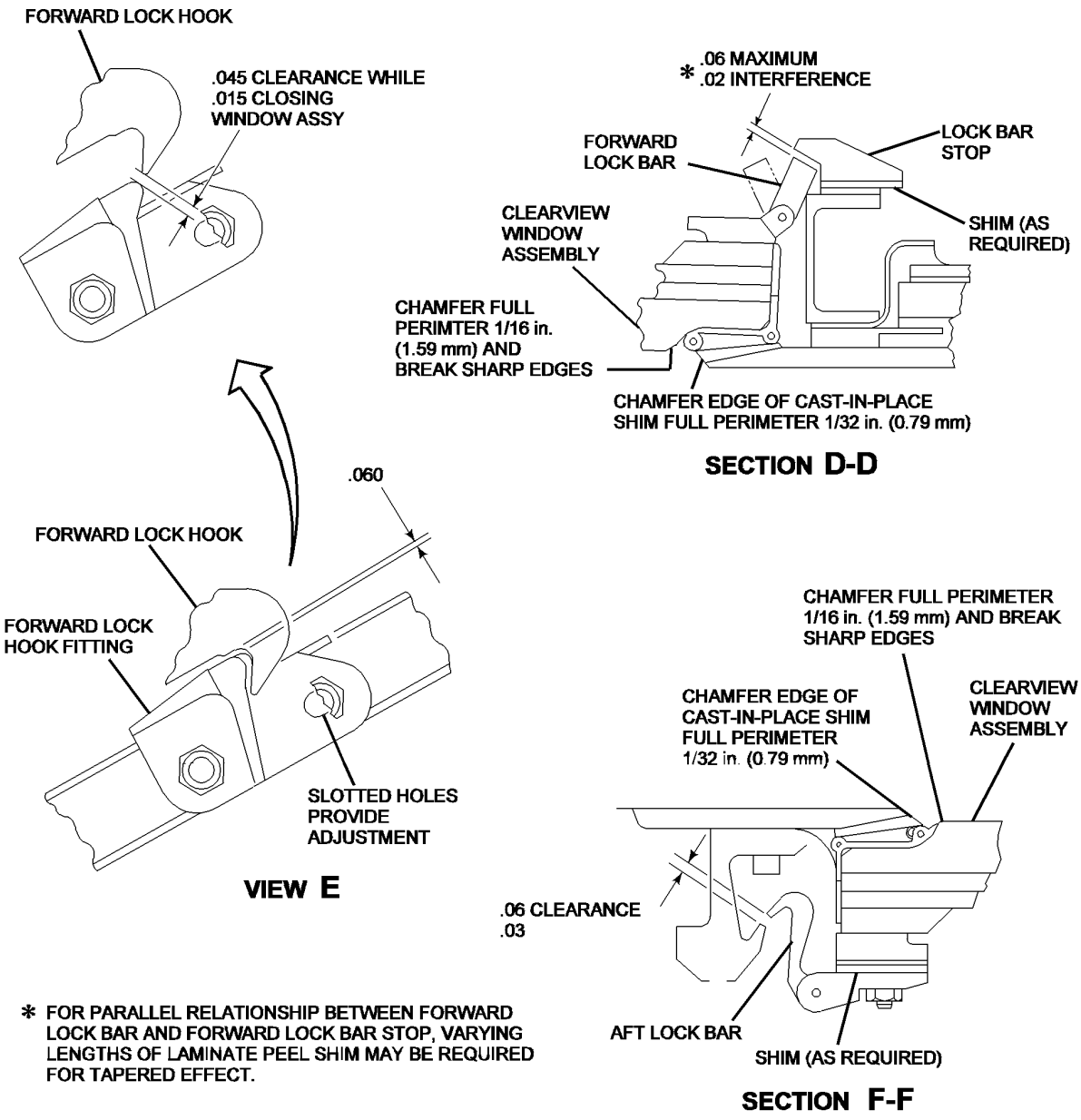
(c) Adjust setscrew (1) to seat against shoulder of hook forcing hook to engage fitting and secure with locknut.

(16) Remove protective paper.

(17) Clean window.



Flight Compartment -- Clearview Window
Figure 501/56-10-03-990-804 (Sheet 1 of 3)



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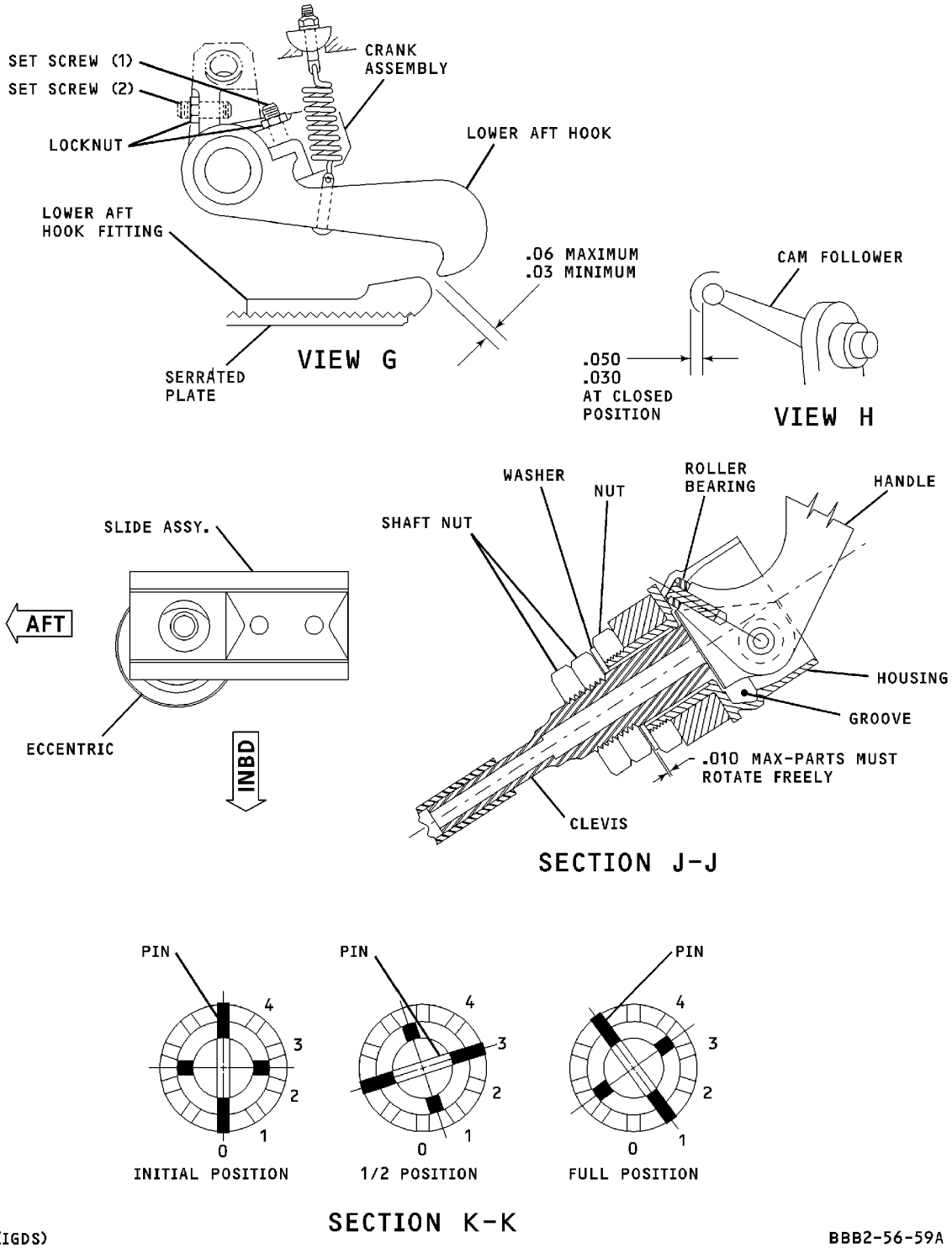
Flight Compartment -- Clearview Window
Figure 501/56-10-03-990-804 (Sheet 2 of 3)



Flight Compartment -- Clearview Window
Figure 501/56-10-03-990-804 (Sheet 3 of 3)

FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST

1. General

A. This procedure contains MSG-3 task card data.

TASK 56-10-03-710-801

2. Operational Check of the Sliding Clearview Window

A. Procedure - Flight Compartment Clearview Window Operational Test

SUBTASK 56-10-03-710-001

(1) Do the clearview window operational test as follows:

(a) Pull down the clearview window handle and slide the window to the rear.

(b) Make sure hold open lock engages and holds window in place.

(c) Push the clearview window forward to the closed position.

(d) Push up on the handle to lock the clearview window in the closed position.

(e) The clearview window should slide easily and smoothly.

B. Job Close-up

SUBTASK 56-10-03-942-001

(1) Remove all the tools and equipment from the work area. Make sure the area is clean.

——— END OF TASK ———

FLIGHT COMPARTMENT CLEARVIEW WINDOWS - APPROVED REPAIRS

1. General

A. Approved repairs for the flight compartment clearview windows include repairs to the cast shim, and correction of air leakage problems.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following items:

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 801

Name and Number	Manufacturer
Cloth (low lint) MIL-C-85403 (type II)	
Sandpaper, 180 Grit DPM 919	
Sandpaper, 400 Grit DPM 919	
Solvent handwipe cleaner DPM 6380-1	
Sealing compound, PR1422 DPM 2292-2	Products Research and Chemical Corp.

3. Approved Repairs Clearview Window Epocast Shim

A. Repair Shim

(1) Surface defects such as minor cracks, voids, pinholes, or bubbles can be repaired as follows:

(a) Open the clearview sliding window to access the epocast.

(b) Cut blisters, voids or bubbles with utility knife.

WARNING: HANDWIPE CLEANER IS AN AGENT THAT IS FLAMMABLE, A SENSITIZER, AN ASPHYXIANT, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN HANDWIPE CLEANER IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET HANDWIPE CLEANER IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

(WARNING PRECEDES)

WARNING: FLUOROCARBON MOLD RELEASE IS AN AGENT THAT IS POISONOUS, AN ASPHYXIANT, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN FLUOROCARBON MOLD RELEASE IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET FLUOROCARBON MOLD RELEASE IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(c) Lightly abrade shim surface with 180 grit sandpaper.

(d) Wipe area with clean cloth wipers moistened with solvent (DPM 6380-1). Allow to dry thoroughly.

(e) Clamp the area that overlaps the repair area with a metallic block that is coated with mold release.

(2) Prepare sealant/shim material as follows:

WARNING: SEALING COMPOUND (POLYSULFIDE SEALANT B1/2 AND B2) IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN SEALING COMPOUND IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET SEALING COMPOUND IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(WARNING PRECEDES)

(a) Weigh shim material PR-1422 B2, in ratio of 100 parts by weight of base component to 13.5 parts by weight of catalyst.

1) Weigh desired amount of base component in container large enough to accommodate mixed compound.

2) In separate container, weigh required amount of catalyst for weight of base component used.

NOTE: Preweighed kits do not require weighing of base component and catalyst before mixing when entire quantity is used.

(b) Stir catalyst thoroughly to smooth uniform consistency. Do not use catalyst that is dried out, flaky or lumpy.

(c) Add catalyst to base component, distributing evenly throughout base with spatula.

(d) Slowly mix components, with a clean spatula, for approximately 5 minutes to ensure complete dispersion of catalyst throughout base component and to avoid entrapment of air. Scrape sides and bottom of container frequently to ensure complete mixing. Pot life of mixture is 2-1/2 hours.

(3) Prepare a cure control sample as follows:

WARNING: SEALING COMPOUND (POLYSULFIDE SEALANT B1/2 AND B2) IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN SEALING COMPOUND IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET SEALING COMPOUND IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(a) Put a 4.00 in. (10.16 cm) piece of polysulfide sealant material that is 0.38 in. (9.65 mm) thick on a piece of board or equivalent.

(b) Put the control sample adjacent to the repaired area.

NOTE: The control sample must be exposed to the same repair environment.

(4) Repair the damaged area of the epocast surface as follows:

(a) Put a sufficient quantity of polysulfide sealant on the damaged area. Fully build up the area to the same level around the epocast.

NOTE: For the dispatch of the aircraft, you can put cellophane on the wet sealant. Then close and lock the clearview window. The tape strip must be sufficient to include all signs of sealant. Make sure that the sealant does not bond to the window or window frame.

(b) Clamp the area with a metallic block coated with mold release to make sure of a good contact.

(c) Do not put sealant on the drain tube. The drain tube is in the lower aft corner of the epocast.

(5) Dry the sealant/shim material as follows: (Figure 801)

CAUTION: EXERCISE CARE TO AVOID DAMAGE TO TEMPERATURE SENSITIVE COMPONENTS IF HEAT LAMPS OR OTHER SOURCES ARE USED.

(a) Dry a an ambient temperature unless a external heat source is necessary to decrease cure time.

(b) Cure the sample material to a minimum Shore A durometer hardness of 35.

(c) Examine the sealant/shim material. Make sure that it is not tacky.

NOTE: Make sure the sealant is dried. You can use the hand check procedure. Chart in Figure 801 may be used to facilitate this.

(d) After the sealant is dry, use 400 grit sandpaper, to make surface smooth.

(e) Make sure that there is no sealant in the drain tube.

WARNING: HANDWIPE CLEANER IS AN AGENT THAT IS FLAMMABLE, A SENSITIZER, AN ASPHYXIANT, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN HANDWIPE CLEANER IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET HANDWIPE CLEANER IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA.
- APPROVED SAFETY EQUIPMENT.
- EMERGENCY MEDICAL AID.
- TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

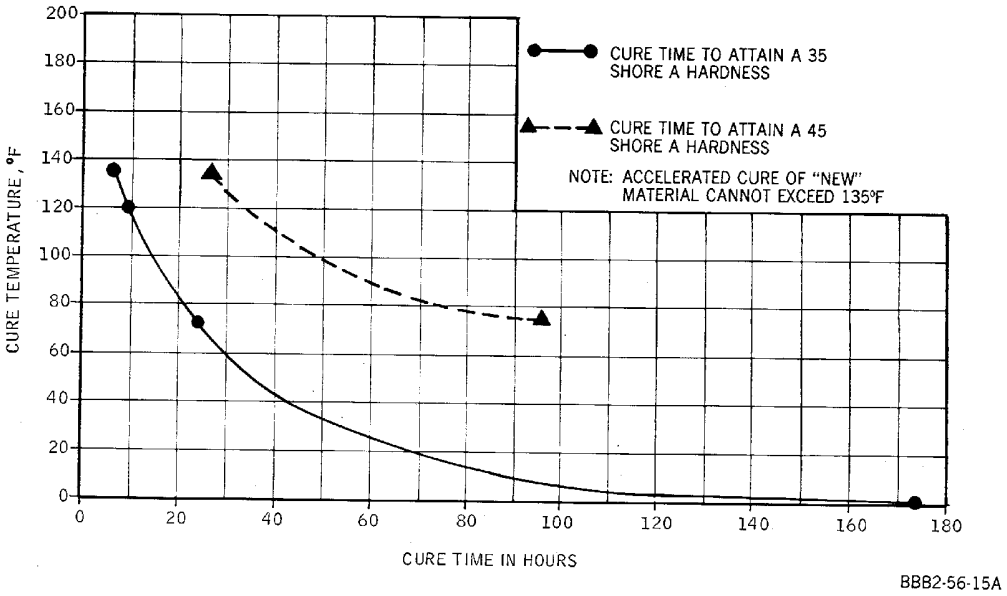
(f) Remove metal block and clean the epocast with the hand wipe cleaner.

(6) Examine the new sealant on the epocast as follows:

(a) The epocast surface must be smooth. It cannot have waviness of +0.015/-0.005 in (+0.38100/ -0.12700 mm) above a 2 in. (5 cm) area.

(7) Pull paper strip from window. Some resistance to removal of paper strip should be apparent, otherwise, window is not properly sealed.

(8) If necessary, adjust the clearview sliding window to the new seal surface of the epocast. (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)



Curing Cycle For Shim Material
Figure 801/56-10-03-990-809

4. Clearview (Sliding Window) Air Leaks

A. General

(1) The following instructions are provided to correct clearview window air leakage problems.

(2) Complaints (by crew) have occurred pertaining to clearview window pressure leaks. Many of these leaks are occurring at very low differential pressures during climb and descent.

(3) If difficulty is encountered in determining the origin of a leak, the preferred method is to pressurize the aircraft to two psi on the ground and apply a mild liquid soap around the window area. The presence of bubbles indicates a leak path.

(4) There are electronic methods of air leak detection. However, an ordinary passenger entertainment headset can be used as a simplified leak detector. With the aircraft pressurized on the ground, the prong end of the headset can be moved around the window area to detect escaping air.

B. Corrective Action

(1) Window air leaks are generally caused by one or a combination of the following:

(a) Damage to the form-in-place gasket - The window seats against a rubber (PR-1422) gasket which is formed in place during the initial installation of the window. This gasket is bonded to the aft side of the forward windshield retainer and the upper, lower and aft sides of the clearview window opening. This surface, in reality, is an overhanging projection of the eyebrow and fixed window retainers. These overhang areas are largely unsupported and during pressurization, they move slightly. This movement, at the joints, upper and lower clearview forward area and upper aft corner area, allow the formed gasket to essentially move away locally from the clearview window pressure seal at each retainer joint. This movement is sufficient to allow pressure to escape and is where many problems occur.

(b) Out of rig window - The flight compartment clearview window consists of a panel, seal frame, two upper slides, lower roller and slide, hooks, linkages, and torque tubes. If the window is not rigged to seat securely in center of the window cutout, a gap will occur between the clearview window pressure seal and the cast-in-place shim.

(2) A troubleshooting guide is provided on Table 802 to aid in identifying and correcting air leakage problems.

Table 802 Sliding Clearview Windows Air Leaks -- Troubleshooting Guide

PROBLEM	POSSIBLE CAUSES	SOLUTION
Window Leaks	1) Pressure seal split	1) Replace pressure seal (WINDOW, CLEARVIEW PANEL AND PRESSURE SEAL, SUBJECT 56-10-06, Page 401)
	2) Cast in place shim worn	2) Repair cast in place shim (CLEARVIEW WINDOWS, SUBJECT 56-10-03, Page 401)
	3) Window not seated in cutout properly	3) Adjust window fair (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)
	4) Shim deformed at window sill joints	4) Install repair shims in window sill joints (CLEARVIEW WINDOWS, SUBJECT 56-10-03, Page 401)
Window will not slide easily	1) Lower track tire may be worn	1) Replace lower track tire
	2) Windows inboard and outboard adjustment is OFF	2) Adjust upper turnbarrel (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)
	3) Upper track sliders binding	3) Break sharp edges on slider
Window will not center in cutout	1) Upper track stop out of position	1) Adjust upper track stop (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)

Table 802 Sliding Clearview Windows Air Leaks -- Troubleshooting Guide (Continued)

PROBLEM	POSSIBLE CAUSES	SOLUTION
Window will close but will not open	1) Inboard outboard adjustment incorrect	1) Adjust upper turnbarrel (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)
	2) Lower linkage adjusted too long Aft lock bar doesn't disengage	2) Adjust lower turnbarrel (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)
Window will close but binds on lower sill	1) Lower aft hook adjustment incorrect	1) Adjust lower aft hook (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)
	2) Lower aft hook spring stretched	2) Replace lower aft hook spring CPN 5683647
	3) Inboard outboard adjustment incorrect	3) Adjust upper turnbuckle (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)
Window will close but upper lock will not engage	1) Cam follower out of rig	1) Adjust CAM follower (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)
	2) Upper lock adjusted incorrectly	2) Adjust inboard outboard adjustment (FLIGHT COMPARTMENT CLEARVIEW WINDOWS - ADJUSTMENT/TEST, PAGEBLOCK 56-10-03/501)

(3) Adjustments

(a) Air leaks may often be solved by adjusting clearview window. Window can be adjusted outboard by means of adjusting rods (upper and lower) and eccentric cams, depending on the area of the leak.

(4) Sealing

(a) If leaks cannot be solved by adjustment of the clearview window, seal repair or buildup may be required. Check form-in-place seal on aircraft frame structure and window seals for evidence of damage (tears, cuts, separations). Repair as necessary. (Paragraph 3.)

NOTE: Before repairing form-in-place seal, ensure that window rigging is basically correct. Adjust as necessary to bring window within proper rig.

NOTE: To facilitate dispatch of aircraft, wet sealant may be covered with cellophane tape and window closed and locked. Tape strip should be wide enough to cover all traces of sealant. Ensure that sealant does not bond to window or window frame.

(5) Metal Shim Repair

(a) Repair shim as follows: (Figure 802)

1) At three retainer joints, insert a knife blade between metal retainer and bonded gaskets.

2) Separate gasket from retainer approximately 1 inch (25.4 mm) forward and aft of retainer joint.

WARNING: INTEGRAL FUEL TANKS SEALING COMPOUND (POLYSULFIDE SEALANT B1/2 AND B2) IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN INTEGRAL FUEL TANKS SEALING COMPOUND IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET INTEGRAL FUEL TANKS SEALING COMPOUND IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

3) Using sealant gun, inject sufficient amount of sealant, PR-1422, to slightly bulge separated area.

4) Insert a section of shim material across each of retainer joints (make sure that the shim should extend from lower sill almost to upper edge of retainer). The purpose of metal shims at manufacturing joints is to provide a bridge across the joint(s) and preclude a leak path. Shim thickness should not exceed 0.020 inch (0.508 mm).

NOTE: Shim thickness must not exceed 0.020 inch (0.508 mm). Any type of metal shim stock is acceptable for this application. Purpose of metal shim joints is to make a bridge across the joint to remove leak paths.

5) Apply clear cellophane tape, at least 2 inches (50.8 mm) wide, (or equivalent) over gasket surface in area of joint. Normally, length of 4 inches (101.6 mm) is sufficient.

6) Press access sealant with hand keeping gasket as flat and in same plane as possible, but allowing joint area to bulge inward very slightly.

CAUTION: MAKE CERTAIN AREA HAS BEEN THOROUGHLY CLEANSED OF EXCESS WET SEALANT PRIOR TO CLOSING WINDOW.

7) Close window and allow sealant to cure with window locked in place. (Normally, 6 hours is sufficient cure time.) Remove tape after sealant has cured.

NOTE: Before closing window, check the entire area around the window opening and look for any possible areas where pressure could escape, such as, at skin joints and at fasteners. If any discrepant areas are found, seal with PR-1422 sealant.

C. Materials

(1) Sealant PR-1422 Class A 1/2

(2) Tape, Mylar 2 inch wide clear

D. Final Check

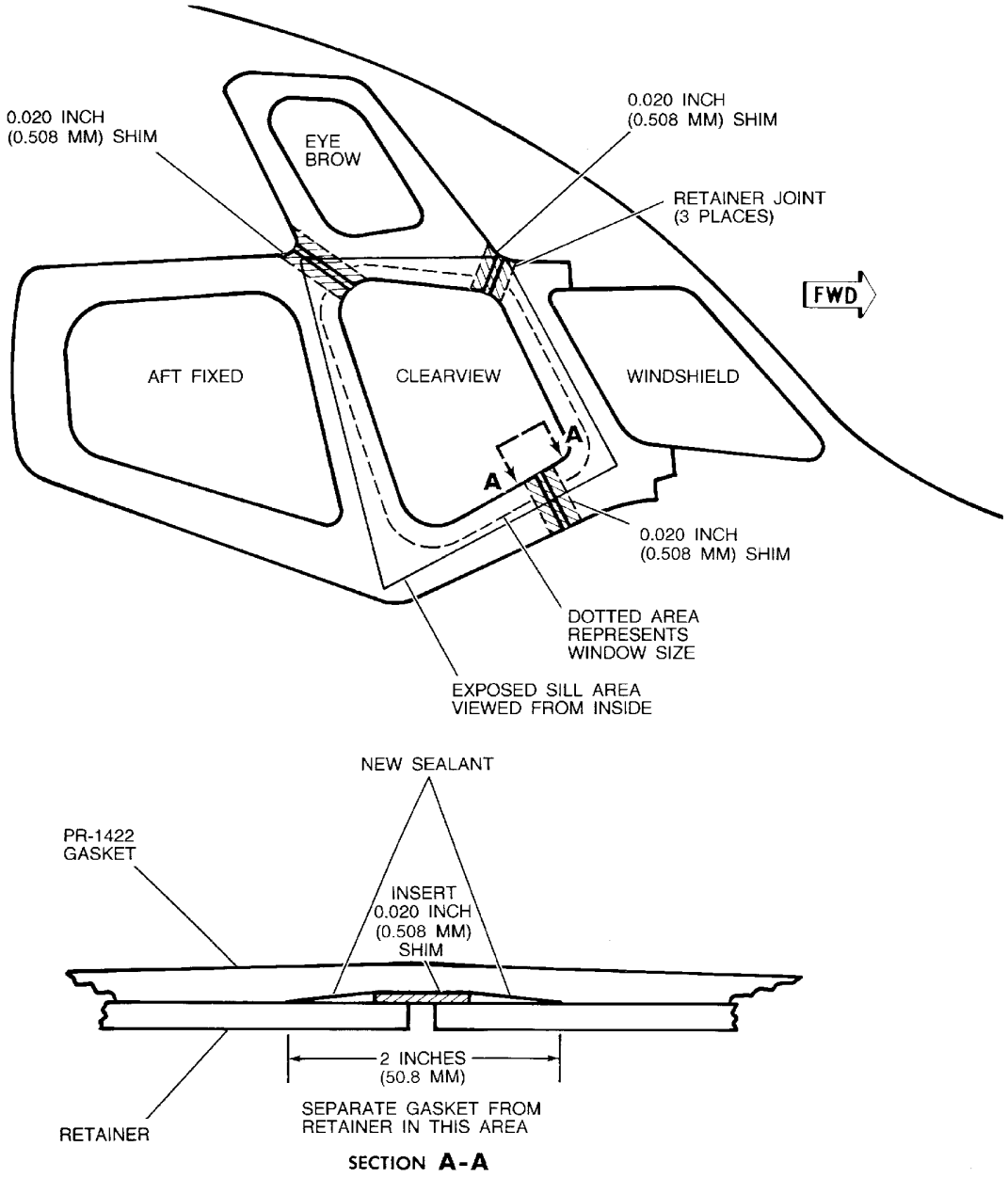
(1) After performing air leak repairs, check seal between window pressure seal and retainer as follows:

(a) Open window and insert 1 inch (25.4 mm) wide strip of paper between window pressure seal and retainer.

(b) Close and lock window.

(c) Pull paper strip from window. Some resistance to removal of paper strip should be apparent, otherwise, window is not properly sealed.

(d) Accomplish Paragraph 4.D.(1)(a) thru Paragraph 4.D.(1)(c) at several locations around window periphery to verify snug fit.



BBB2-56-31A

Clearview (Sliding Window) Air Leaks -- Repair
Figure 802/56-10-03-990-810

FLIGHT COMPARTMENT UPPER WINDOWS - MAINTENANCE PRACTICES

1. General

A. The removal and installation procedures for the left and right upper windows are identical. Each panel weighs approximately 15 pounds (6.8 kg) and is removed and installed from inside the flight compartment. Two men are required to remove and install the panels, one man outside the flight compartment to install the bolts and one man within the flight compartment to handle the panel.

B. When air leaks or noise squawks are reported, check window for condition: loose screws, loose or missing sealant, evidence of open leak paths, etc. If evidence of the above or if leaks persist, remove all window attachments, reseal, reinstall and retorque attachments.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following items:

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 201

Name and Number	Manufacturer
Compound, Heat Transfer TS-281 DPM 5979	Techcon Systems Inc. Gardena, Calif.
Compound, Mold Release MS-122 DPM 3494	Miller-Stephenson Chemical Co. Inc. Los Angeles, Calif.
Sealant, PR-1422 B1/2 DPM 2292-2	PRC-DeSoto International, Inc., Glendale, CA
Torque wrench (0 - 50 inch pounds (0 - 5.65 N·m) range)	

3. Removal/Installation Flight Compartment Upper Window

NOTE: On windows installed using Hi-Lok fasteners, the Hi-Lok fasteners may be replaced with NAS 1203 bolts during window replacement for convenience of future repairs.

A. Remove Flight Compartment Upper Window (Figure 201)

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Open these circuit breakers and install safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Install protective paper on both sides of window panel.

CAUTION: INTERIOR TRIM IS CEMENTED TO WINDOW PANEL AND STRUCTURE. EXERCISE CARE IN REMOVING TO PREVENT DAMAGE TO TRIM.

(3) Remove interior trim as necessary. (PASSENGER COMPARTMENT LINING - MAINTENANCE PRACTICES, PAGEBLOCK 25-21-00/201)

CAUTION: TO PREVENT DAMAGE TO WINDOW SURFACE, RELEASE HOLD-DOWN SPRING SLOWLY AFTER REMOVING THERMAL SWITCH.

(4) Lift hold-down spring, and remove thermal switch from window.

(5) Remove terminal block protective cover, and remove terminal block.

(6) Remove nuts, washers, bolts, and inner retainer.

(7) Remove window panel and gasket.

B. Install Flight Compartment Upper Window

NOTE: Prior to installing upper window, check two forward bolts, securing clearview window upper track, for tightness.

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Make sure that these circuit breakers are open and have safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

WARNING: LOW VISCOSITY POLYSULFIDE SEALANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN LOW VISCOSITY POLYSULFIDE SEALANT IS USED.

- GAS/AIR MIXTURE MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET LOW VISCOSITY POLYSULFIDE SEALANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(2) Apply sealant, PR-1422 B1/2, to inboard surface of outer retainer and to outboard surface of inner retainer.

WARNING: FLUOROCARBON MOLD RELEASE IS AN AGENT THAT IS POISONOUS, AN ASPHYXIANT, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN FLUOROCARBON MOLD RELEASE IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET FLUOROCARBON MOLD RELEASE IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(3) Apply mold release compound, MS-122, to outboard side of gasket seal and to inboard side of fiberglass reinforcement block (bonded to window panel).

(4) Install rubber gasket, window panel, and inner retainer.

(5) Install bolts as follows:

NOTE: Install washers as required to prevent bottoming out of nuts during tightening.

(a) From inner side of window, temporarily install one bolt in center of each side to hold window in position.

(b) From outside of flight compartment, install rest of bolts.

NOTE: Bolts should be installed wet with sealant, PR-1422 B1/2, to maximize sealing effort.

(c) Replace bolts installed in Paragraph 3.B.(5)(a) in accordance with Paragraph 3.B.(5)(b).

(d) Alternating from side to side, top to bottom, and moving from centers to corners, tighten bolts until snug.

CAUTION: BOLTS SHOULD BE TORQUED ONE TIME ONLY. TORQUE DROP OFF DOES NOT AFFECT STRUCTURAL STRENGTH OF WINDOW PANEL.

(e) Using same rotation as Paragraph 3.B.(5)(d), torque bolts 25 to 30 inch-pounds (2.82 to 3.39 N·m).

(f) If retorquing of bolts is necessary, bolts should be completely removed and installed in accordance with Paragraph 3.B.(5)(a) thru Paragraph 3.B.(5)(e).

NOTE: If gap exists between the window flange area and the fuselage skin, it may be sealed for aerodynamic purposes and to prevent water intrusion.

(6) Install thermal switch as follows:

(a) Clean window. (WINDOWS - CLEANING/PAINTING, PAGEBLOCK 56-00-00/701 Config 1)

(b) Remove protective paper from switch collar.

(c) Place collar around switch, and apply adhesive side to window surface using switch hold-down spring to aid in locating switch properly.

(d) Press collar against window. Remove switch from collar.

WARNING: SILICONE HEAT SINK COMPOUND IS AN AGENT THAT FLAMMABLE, EXPLOSIVE, POISONOUS, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN SILICONE HEAT SINK COMPOUND IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET SILICONE HEAT SINK COMPOUND IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(e) Apply thin coat of heat transfer compound, TS-281, on center portion of switch contact surface.

NOTE: Heat transfer compound should be applied only to approximately one-half of the switch sensing surface area.

(f) Lift hold-down spring and install switch. Press switch into position to ensure thermal contact.

(7) Install terminal block on window.

(8) Torque connectors on terminal block using the table in the (GENERAL INSTALLATIONS HARDWARE - MAINTENANCE PRACTICES, SWPM 20-20-03).

(9) Install protective cover on terminal block.

(10) Perform operational check. (FLIGHT COMPARTMENT - MAINTENANCE PRACTICES, PAGEBLOCK 56-10-00/201)

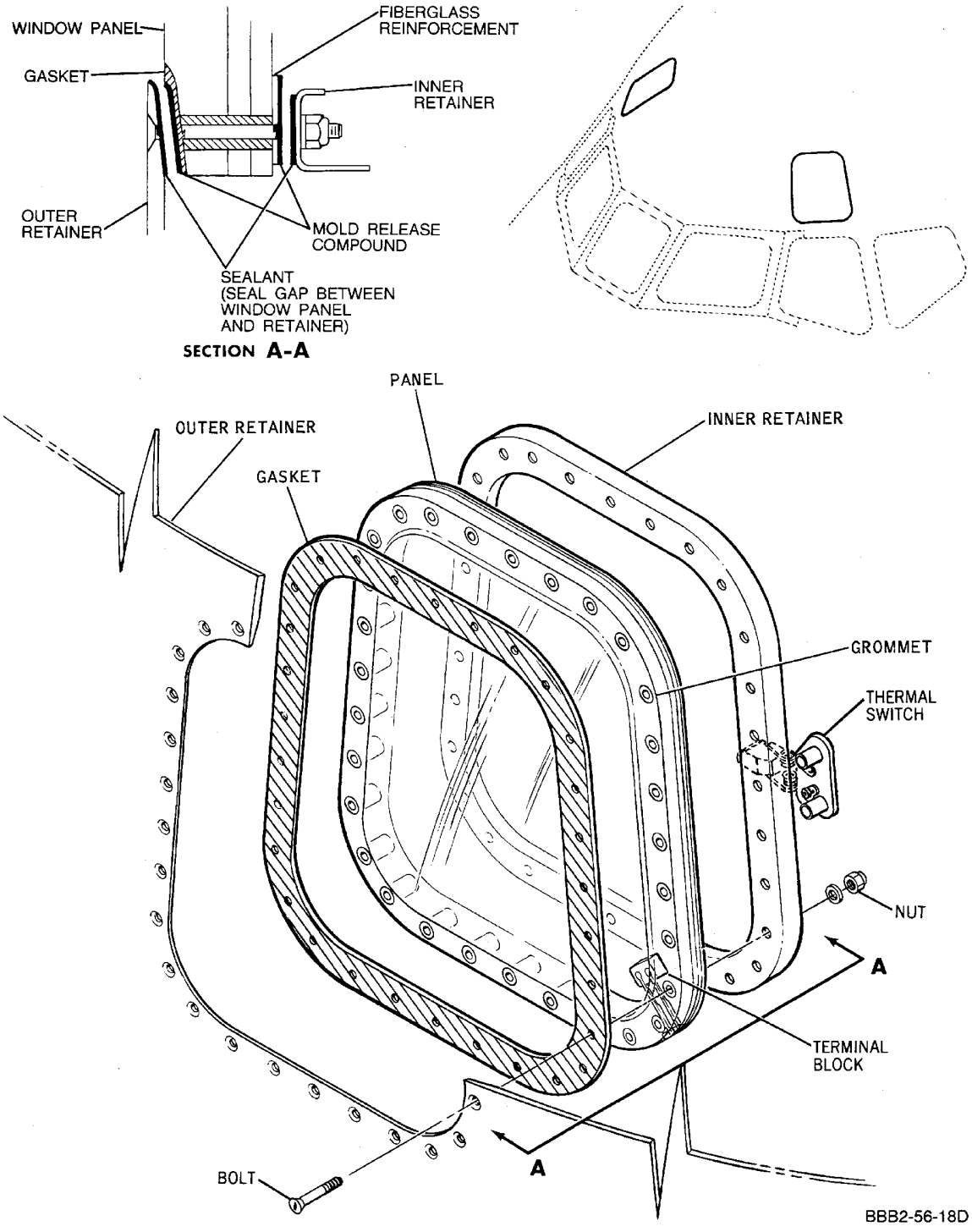
(11) Install interior window trim. (FLIGHT COMPARTMENT LINING AND INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-11-00/201)

(12) Clean window. (WINDOWS - CLEANING/PAINTING, PAGEBLOCK 56-00-00/701 Config 1)

(13) Remove the safety tags and close these circuit breakers:

LOWER EPC, AC BUS

Row	Col	Number	Name
X	26	B1-337	WINDOW ANTI-FOG CAPT, F/O & CENTER
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW



Flight Compartment Upper Window
Figure 201/56-10-04-990-801

FLIGHT COMPARTMENT AFT WINDOWS - MAINTENANCE PRACTICES

1. General

A. The removal and installation procedures for the left and right flight compartment aft windows are identical.

B. Each window panel weighs approximately 20 lb (9 kg) and is removed from within the flight compartment.

2. Equipment and Materials

WARNING: ITEMS INDICATED BY ASTERISK ARE FLAMMABLE. EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE.

NOTE: Equivalent substitutes may be used instead of the following items.

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 201

Name and Number	Manufacturer
Adhesive, Neoprene Contact DPM 6307	AC Tech Garden Grove, CA
*Standard thinner, 200 DPM 5934-1	Standard Oil of Southern California Los Angeles, California
Hi-Lok fastener tool, HLH 110-6	Hi-Shear Corp. Torrance, California

3. Removal/Installation Flight Compartment Aft Windows

A. Remove Flight Compartment Aft Window

(1) Install protective paper on both sides of window.

CAUTION: TO PREVENT DAMAGE TO INTERIOR TRIM, EXERCISE CARE DURING REMOVAL. TRIM IS CEMENTED TO WINDOW PANEL AND STRUCTURE.

(2) Peel back interior trim.

(3) Remove Hi-Lok collars. (PAGEBLOCK 20-10-15/201)

(4) Remove inner retainer and gasket.

NOTE: Gasket is bonded to inner retainer.

(5) Remove window panel and rubber gasket.

B. Install Flight Compartment Aft Windows

(1) Install rubber gasket, window panel, and inner retainer.

(2) From inner side of window, install one bolt in center of each side to hold window in place.

(3) From outside of flight compartment, install mounting Hi-Lok pins.

(4) Install Hi-Lok collars on pins fingertight.

(5) Install bolts installed in Paragraph 3.B.(2) in accordance with Paragraph 3.B.(3) and Paragraph 3.B.(4).

(6) Alternating from side to side, top to bottom, and moving from centers to corners, tighten Hi-Lok collars. (FASTENERS - MAINTENANCE PRACTICES, PAGEBLOCK 20-10-15/201)

NOTE: Do not attempt to retighten Hi-Lok collars after hex part of collars have sheared off. Collars are designed so that hex part of collar will shear off at a specific torque.

(7) Install interior window trim as follows:

WARNING: STANDARD THINNER NO. 200 IS AN AGENT THAT IS FLAMMABLE, EXPLOSIVE, AND POISONOUS. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN STANDARD THINNER NO. 200 IS USED.

- GAS/AIR MIXTURES MORE THAN THE LOWER EXPLOSIVE LIMIT (LEL) CAN CAUSE AN EXPLOSION IF HIGH HEAT, SPARKS, OR FLAMES SUPPLY IGNITION.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET STANDARD THINNER NO. 200 IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

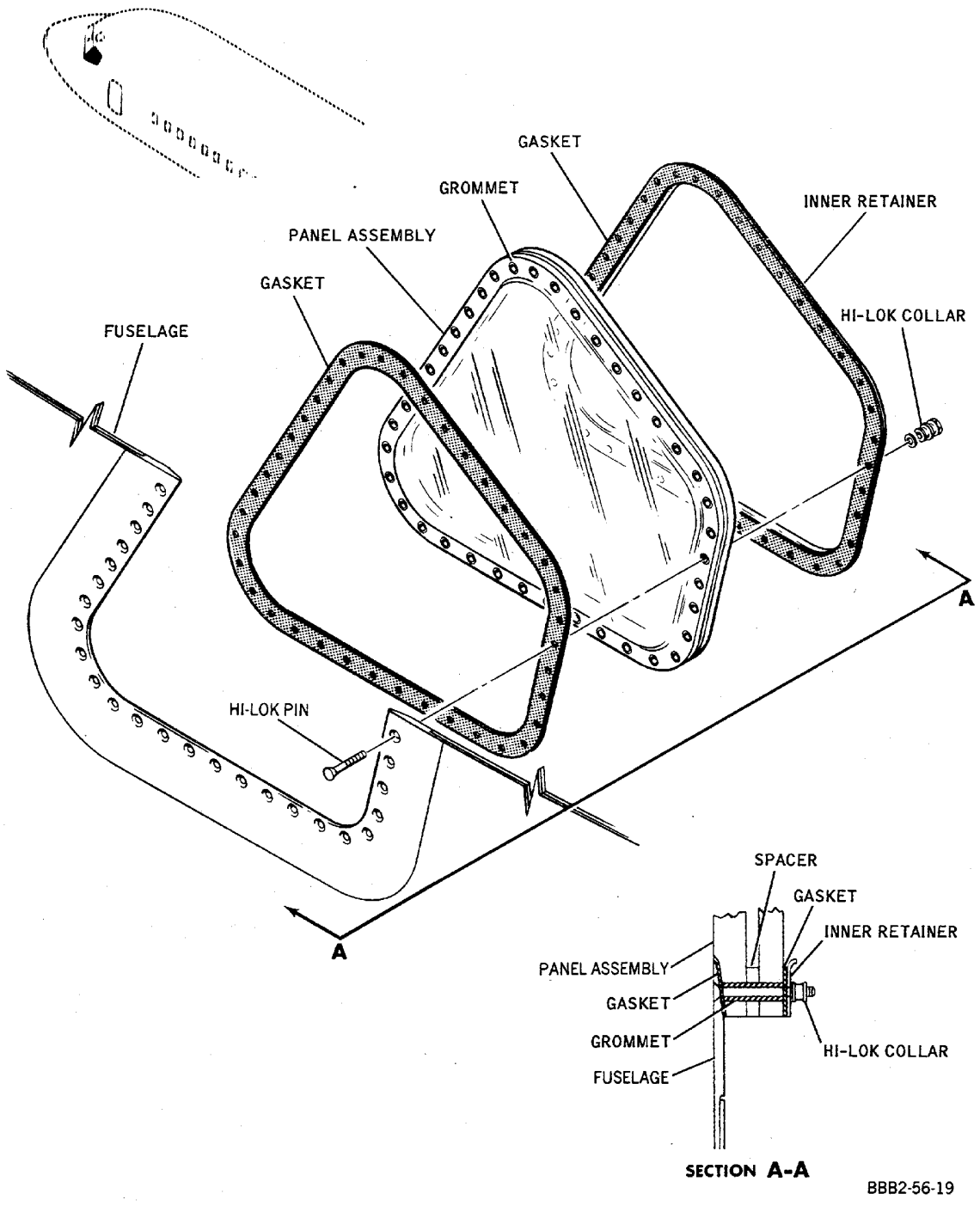
TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(a) Clean faying surfaces to be cemented with Standard thinner No. 200.

(b) Apply brush coat of adhesive DPM 6307 on all faying surfaces and let dry until tacky.

(c) Cement trim to window panel structure by applying firm pressure.

(8) Clean windows. (WINDOWS - CLEANING/PAINTING, PAGEBLOCK 56-00-00/701 Config 1)



Flight Compartment Aft Window
Figure 201/56-10-05-990-801

WINDOW, CLEARVIEW PANEL AND PRESSURE SEAL - REMOVAL/INSTALLATION

1. General

A. This procedure has the removal and installation instructions for the clearview window panel and pressure seal.

B. The removal and installation procedure for the left and right clearview window panels and pressure seals are the same.

2. Equipment and Materials

NOTE: Equivalent replacements are permitted for the items that follow.

NOTE: It is possible that some materials in the Consumable Materials chart cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 401

Name and Number	Manufacturer
Solvent, P-D-680, Type 1 DPM 518	Arco Corp. L.A. CA.
Cloth (low lint) MIL-C-85043 (Type II)	
Cleaner Acrylic, Window DPM 6011	Alglas, Brixham South Devon, UK
Detergent, Liquid DPM 3673	Procter & Gamble Co. Cincinnati, OH
Solvent, Isopropyl Alcohol DPM 530 (TT-I-735, Grade A)	
Cheesecloth DMS 1820 T1A3	American Fiber & Finishing 1 Federal Street Boston, MA 08901
Cloth, Low Lint MIL-C-24671	
Cloth, Outing Flannel DPM 491	
Wipers Cleaning, Cotton White DMS 1820 T1A2	American Fiber & Finishing 1 Federal Street Boston, MA 08901
Promoter, Adhesion Silicone DPM 3202	PRC-DeSoto International, Inc. Glendale, CA
Adhesive, Silicone Rubber Two-Part Air-drying DMS 1880	Momentive Performance Materials 260 Hudson River Road Waterford, NY 12188

Table 401 (Continued)

Name and Number	Manufacturer
Sealant, Silicone DMS 1799	Momentive Performance Materials 260 Hudson River Road Waterford, NY 12188
Sealing Compound, Low Adhesion DMS 2410 (MIL-S-8784 Class B-2)	PRC-DeSoto International 5340 San Fernando Road P.O. Box 1800 Glendale, CA 91203
Release, Mold Fluorocarbon DPM 3494	Miller-Stephenson Chemical Co., Inc. Sylmar, CA
Tape, Masking Low-tack DPM 5671	Minn. Mining & Mfg. Co. L.A. CA

3. **Removal/Installation Clearview Window Panel And Pressure Seal**

A. Remove The Clearview Window Panel And Pressure Seal

WARNING: TAG AND USE SAFETY CLIPS TO SAFETY THE CIRCUIT BREAKERS. IF THE CIRCUIT BREAKERS ARE NOT OPENED, TAGGED, AND SAFETIED, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Open these circuit breakers and install safety tags:

LOWER EPC, AC BUS

Row	Col	Number	Name
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(2) Remove the window interior trim pads as necessary, to gain access to window panel attaching hardware.

(3) Remove the applicable clearview window assembly (1), window panel (7) and pressure seal (2) as follows:(Figure 401)

(a) Remove the 38 nuts (4), washers (5), nine bolts (6) and 38 bolts (9), that attach the window panel (7) to the frame (8).

NOTE: It is not necessary to remove the window assembly from the track.

(b) Position the clearview window assembly (1) forward in the track.

(c) Remove the window panel (7) with the retainer (3) and pressure seal (2) from the window frame (8) by sliding the panel aft.

(d) Remove retainer (3) and pressure seal (2) from the window panel (7).

(e) Remove 38 grommets (10) from the window panel (7).

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1118, SOLVENT/DRY CLEANING (DPM 518)

(WARNING PRECEDES)

HAZMAT 1000, REFER TO MSDS

(f) Remove old sealant from the window panel (7) with a low lint cloth (MIL-C-85043) moistened with solvent (DPM 518).

B. Install The Clearview Window Panel And Pressure Seal

(1) Clean the applicable clearview window assembly (1), window panel (7) as follows:

(a) Flush panel (7) with clean water to remove any dust, loose particles of dirt, or foreign material.

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1241, DETERGENT/LIQUID (DPM 3673)

HAZMAT 1000, REFER TO MSDS

(b) Wash panel using liquid detergent (DPM 3673) and large quantities of clean water. Clean window panel (7) using bare hands only. Do not use cloth, sponge, or chamois to scrub window panel (7).

(c) Rinse window panel (7) thoroughly using large quantities of clean water.

(d) Dry window panel (7) using clean, damp cheesecloth (DMS 1820 T1A2).

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1342, CLEANER/WINDOW/ACRYLIC (DPM 6011)

HAZMAT 1000, REFER TO MSDS

(e) Clean window panel (7) with acrylic window cleaner (DPM 6011), and outing flannel cloth (DPM 491) or low lint cloth (MIL-C-24671).

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1118, SOLVENT/DRY CLEANING (DPM 518)

HAZMAT 1000, REFER TO MSDS

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

(WARNING PRECEDES)

Hazardous Material Warnings

HAZMAT 1030, ISOPROPYL ALCOHOL (DPM 530)

HAZMAT 1000, REFER TO MSDS

(f) Protect cleaned panel (7) from airborne dust, paint, and solvent vapors prior to installation. Should cleaning solvent (DPM 518), contact surfaces of panel (7), flush with isopropyl alcohol (DPM 530), to remove residue.

(2) Install the applicable clearview window assembly (1), window panel (7) and pressure seal (2) as follows:(Figure 401)

(a) Install 38 new grommets (10) in the panel (7).

1) Trim new grommets (10) to fit from flush to 0.0312 in. (0.792 mm) below the surface on the top and bottom ends.

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1152, PRIMER/SILICONE (DPM3202)

HAZMAT 1000, REFER TO MSDS

(b) Apply a thin, uniform coat of silicone adhesion promoter (DPM 3202) to the edge of window panel (7), where the pressure seal (2) will be attached. Let the coating dry completely to the touch.

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1165, ADHESIVE/SILICONE RUBBER (DMS QPL 1880)

HAZMAT 1000, REFER TO MSDS

(c) Apply silicone adhesive (DMS 1880) approximately 0.020 in. (0.51 mm) thick to the pressure seal (2) and let air dry until tacky.

NOTE: Proper surface tack can be determined by lightly touching the surface with your finger or knuckle. If the adhesive sticks, grabs or tends to adhere, but does not transfer, correct tack has been reached.

(d) Install pressure seal (2) on window panel (7), with masking tape (DPM 5671) or other suitable means. Apply sufficient pressure to get contact without excessive squeeze-out.

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

(WARNING PRECEDES)

HAZMAT 1184, MOLD RELEASE/FLUOROCARBON (DPM 3494)

HAZMAT 1000, REFER TO MSDS

(e) Apply a coat of mold release (DPM 3494) to the surface of the frame (8).

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1155, SEALANT/LOW ADHESION
(DMS QPL 2410; supersedes DPM 256-1)

HAZMAT 1000, REFER TO MSDS

(f) Apply sealing compound (DMS 2410) approximately 1 in. (25 mm) wide to the faying surfaces of the window panel (7). Do not get sealing compound in the holes.

(g) Put the support (11) in position on frame (8).

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1148, SEALANT/SILICONE (DMS QPL 1799)

HAZMAT 1000, REFER TO MSDS

(h) If necessary apply silicone sealant (DMS 1799) into the 38 grommets (10) installed in the window panel (7).

NOTE: Do not use silicone sealant on the retainer or seal assembly.

WARNING: USE THE HAZARDOUS MATERIAL WARNINGS GIVEN BELOW FOR THE STEPS THAT FOLLOW.

THE HAZARDOUS MATERIAL WARNINGS ARE LISTED AFTER THE INTRODUCTION SECTION IN THE FRONT OF THE AMM.

Hazardous Material Warnings

HAZMAT 1148, SEALANT/SILICONE (DMS QPL 1799)

HAZMAT 1000, REFER TO MSDS

(i) Apply silicone sealant (DMS 1799) under the heads of the nine bolts (6) and 29 bolts (9).

NOTE: Do not use silicone sealant on the retainer or seal assembly.

(j) Install the nine bolts (6) and 29 bolts (9), through the retainer (3), pressure seal (2), window panel (7), frame (8) and support (11).

(k) Install the 38 washers (5) and nuts (4).

1) Tighten the 38 nuts (4) enough to remove end play, but not enough to deform the pressure seal (2) or retainer (3).

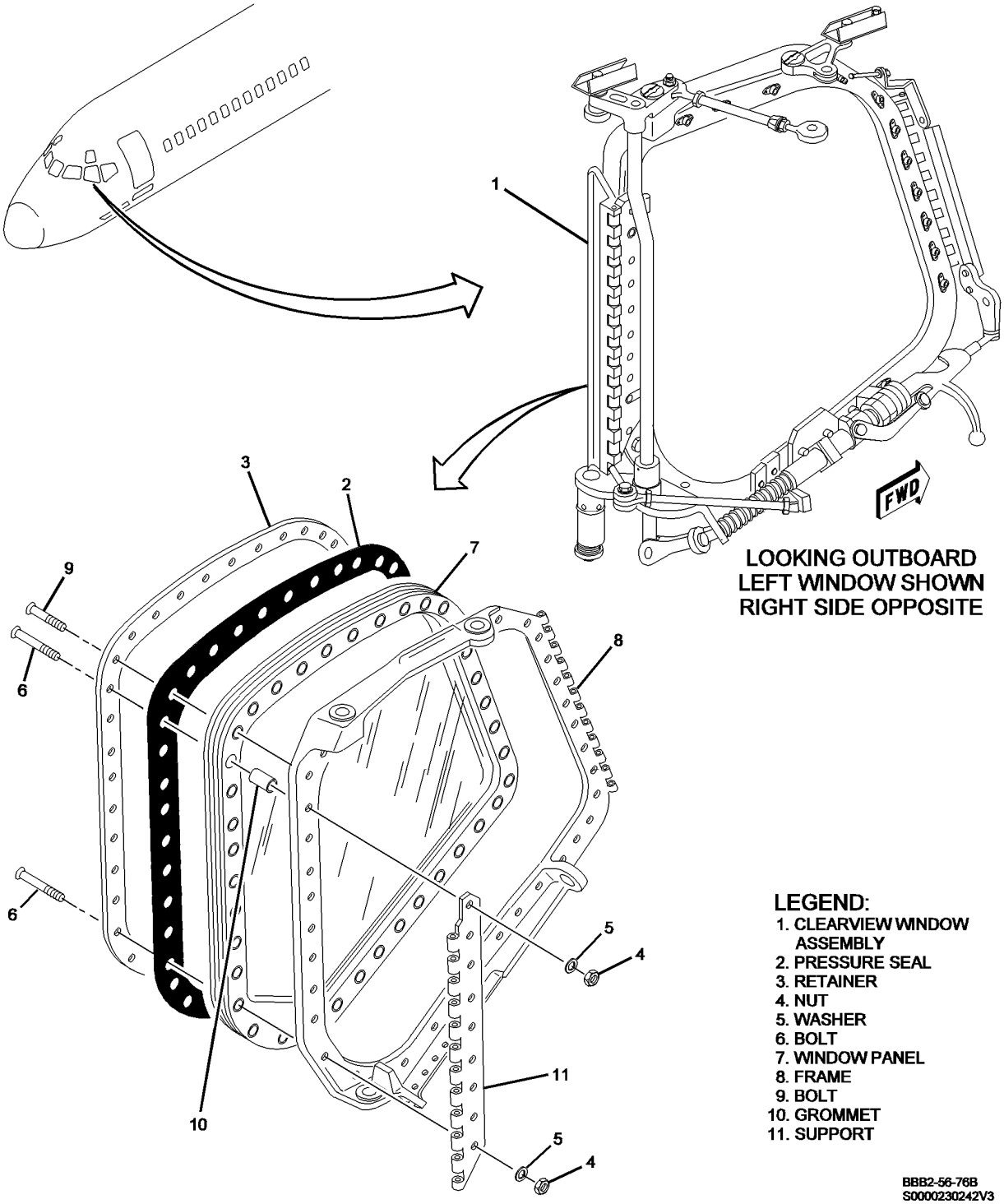
2) Remove all sealant squeeze-out with dry cleaning wipers (DMS 1820, T1A2), when tack free.

(3) Remove the safety tags and close these circuit breakers:

LOWER EPC, AC BUS

Row	Col	Number	Name
Z	25	B1-338	COCKPIT WINDOW ANTI-FOG CONTROL
Z	26	B1-339	COCKPIT WINDOW ANTI-FOG CLEARVIEW & EYEBROW

(4) Check the clearview window for proper operation.



Clearview Window Panel and Pressure Seal - Removal/Installation
Figure 401/56-10-06-990-801

CABIN - DESCRIPTION AND OPERATION

1. Description

A. The passenger compartment cabin windows are double-paned window assemblies. Each pane is capable of carrying the full cabin pressurization differential loads. Each window is equipped with an acoustic pane and a vertically moving shade installed integrally with the window trim panel.

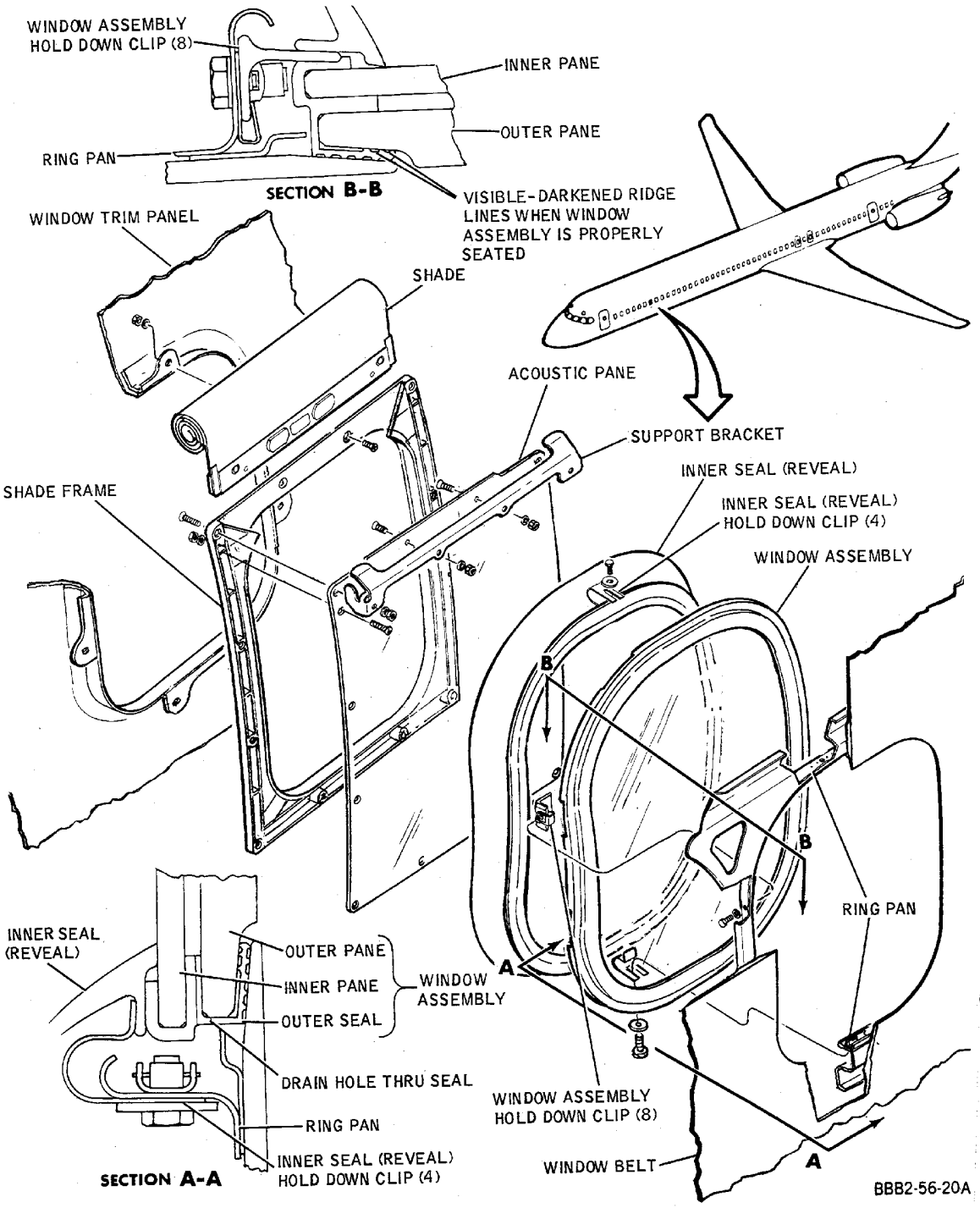
B. Each passenger compartment window assembly has an inner and an outer pane of stretched acrylic plastic formed to the contour of the fuselage. The edge of the outer pane is beveled to permit fairing of the pane with the exterior surface of the fuselage when the seal is installed. The inner and outer panes are held together as an assembly within a moulded rubber outer seal. The outer seal seals the exterior side of the outer pane and provides spacing between the inner and outer panes.

C. The window shade is a self-coiling type of fade-resistant material. The shade moves vertically in a shade frame for ease of operation.

D. The acoustic pane is made of acrylic or polycarbonate plastic.

The pane bears against the inner lip of the inner (reveal) seal to reduce the transmission of exterior sounds into the passenger compartment.

E. For removal and installation of the window shade or acoustic pane, removal of the window trim panel is necessary.



Passenger Compartment Window
Figure 1/56-20-00-990-801

1. General

CAUTION: SEALS ON PASSENGER COMPARTMENT WINDOWS ARE OF SILICONE RUBBER. DO NOT CLEAN WITH HYDROCARBON SOLVENTS.

A. The removal and installation procedures are the same for all passenger compartment cabin windows. The windows are removed and installed from the inside of the aircraft.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of following items.

NOTE: Some materials in the Equipment and Materials list may not be permitted to be used in your location. Persons in each location must make sure they are permitted to use these materials. All persons must obey all applicable federal, state, local, and provincial regulations for their location.

Table 201

Name and Number	Manufacturer
Torque wrench (0 - 50 inch-pounds) (5.65 N·m range)	

3. Removal/Installation Cabin Windows

A. Remove Cabin Window

(1) Remove window trim panel. (PAGEBLOCK 25-21-00/201)

NOTE: The acoustic window pane is an integral part of the window trim panel and is removed with the panel.

(2) Remove window as follows:

(a) Remove four inner (reveal) seal hold-down clips. (Figure 201)

(b) Remove inner seal. Retain seal and hold-down clips for installation.

(c) Remove 8 window hold-down clips, and retain for installation.

(d) Remove window assembly.

B. Install Cabin Window

CAUTION: EXERCISE EXTREME CAUTION TO AVOID PINCHING, CUTTING, AND TEARING OF SEALS, OR CHIPPING WINDOW PANES.

(1) Ensure that window assembly is not damaged and seal is properly seated around window. (Figure 201)

(2) Position window assembly in window belt opening and center as closely as possible to seat outer seal to window belt tapered surface.

NOTE: Make certain windowpane unit is installed right side up. Slot in seal shall be positioned at bottom of window unit. Hole near edge of inner pane may be installed at either top or bottom of window unit depending on operator's preference.

(3) A sharp, positive thrust with heel of hand in center of window pane will seat outer seal in place.

(a) Ensure that seal is in place and without wrinkles.

(b) If seal does not seat properly, remove window assembly and repeat Paragraph 3.B.(1), Paragraph 3.B.(2), and Paragraph 3.B.(3).

(4) Loosely install 8 hold-down clips, clip nuts, bolts, and washers.

(5) Starting at lower hold-down clip, one on each side, apply approximately 20 pounds (9.07 kg) pressure to each clip to seat outer seal. Tighten clip attaching bolt. (Figure 201, see Section B-B of graphic)

NOTE: A minimum of one continuous darkened ridge line of seal should be visible through the window.

(6) Tighten hold-down clip attaching bolts to torque of 30(±5) inch-pounds (3.39(±.57) N·m).

NOTE: When cabin is unpressurized, an out of fair condition of .130 inch (3.30 mm) low to .020 inch (.51 mm) high is allowable. (Figure 201, see Section A-A of graphic)

(7) Center inner (reveal) seal on window assembly.

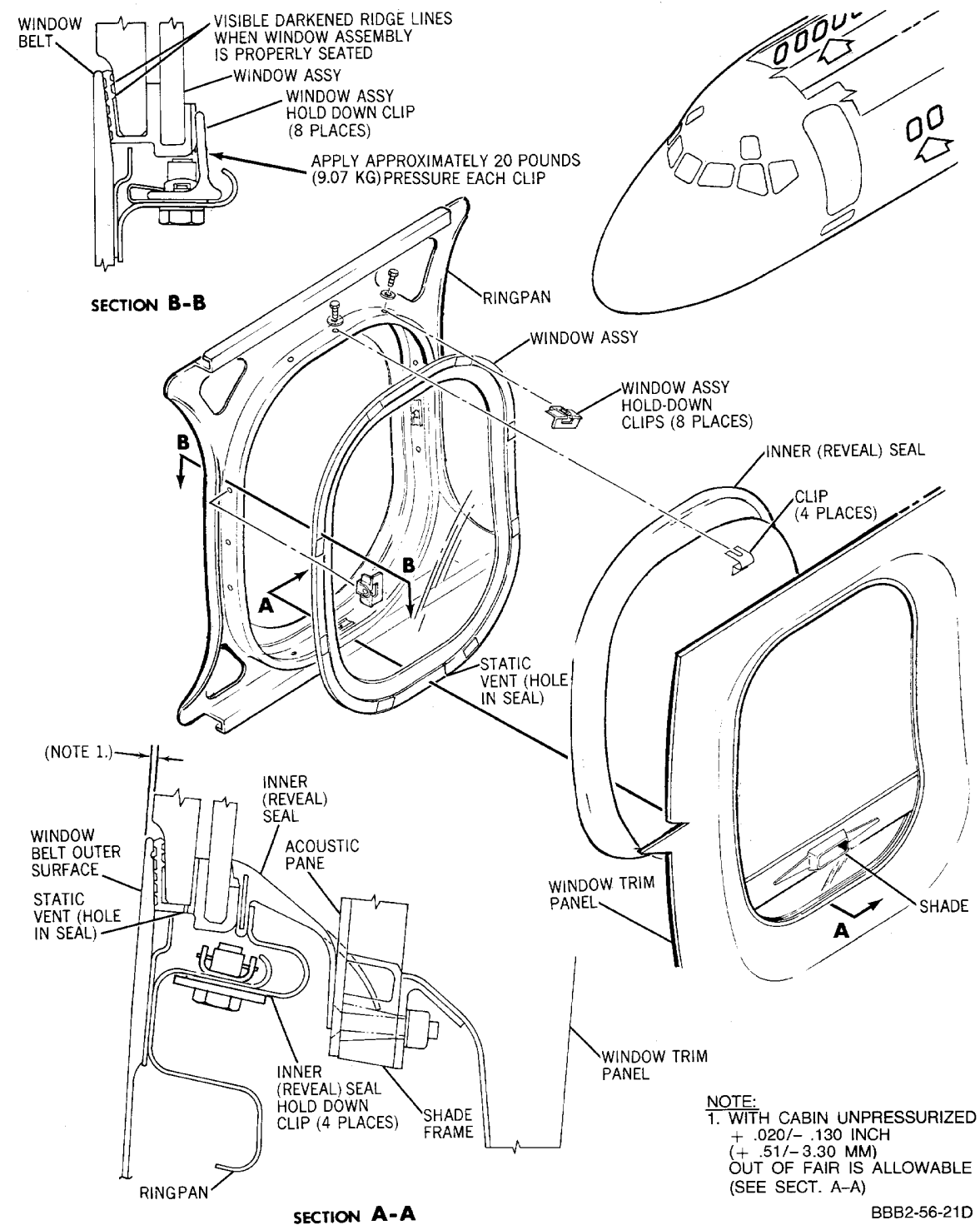
(a) Install 4 seal hold-down clips with slight pressure against collar of seal.

(b) Tighten hold-down clip bolt to torque of 30(±5) inch-pounds (3.39(±.57) N·m).

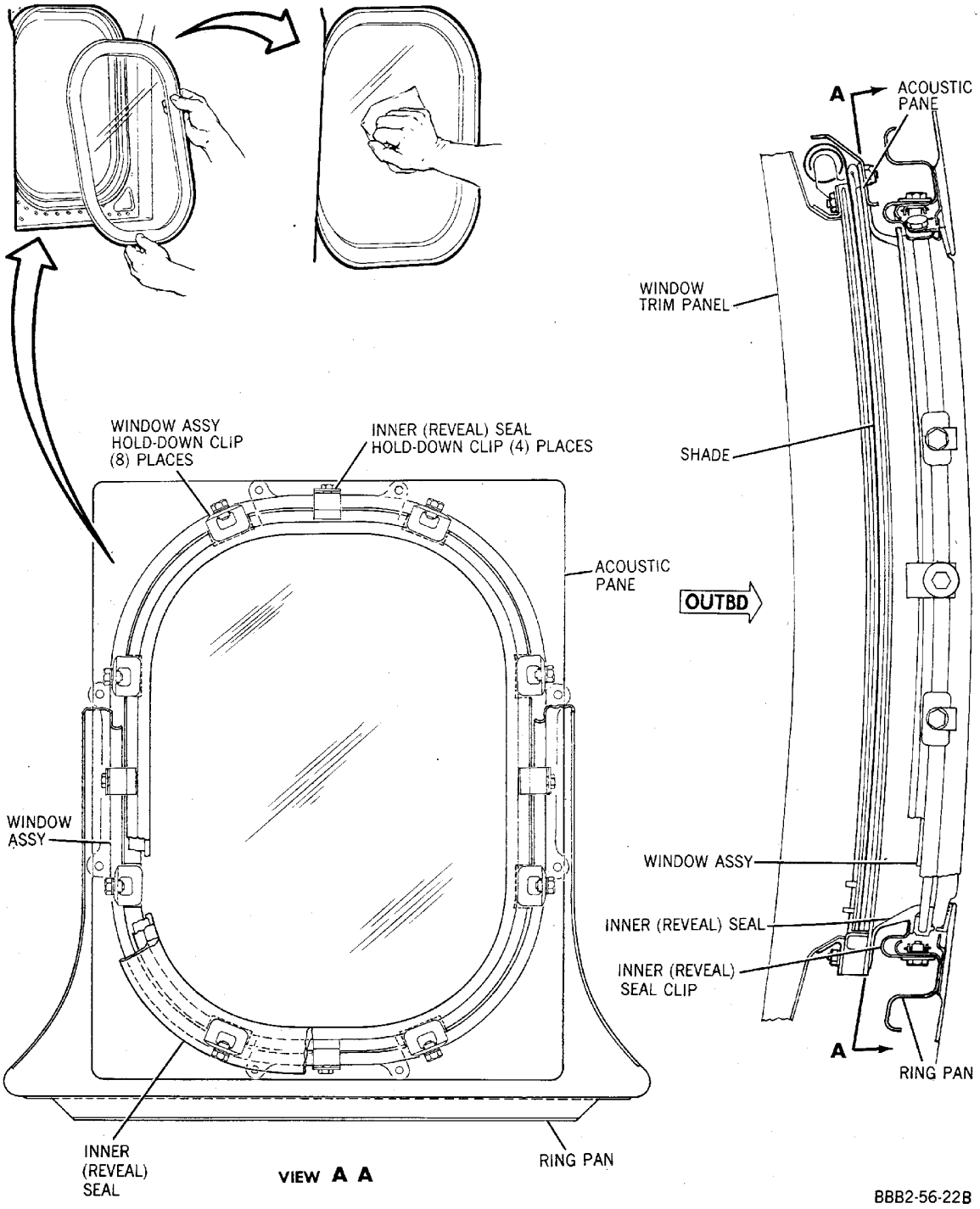
(c) Adjust clip, as necessary, to ensure seating of seal inner lip against acoustic pane.

(8) Clean inner pane surface. (GENERAL, SUBJECT 56-00-00 Page 701)

(9) Install window trim panel. (PAGEBLOCK 25-21-00/201)



Passenger Compartment -- Window Installation
Figure 201/56-20-00-990-802 (Sheet 1 of 2)



Passenger Compartment -- Window Installation
Figure 201/56-20-00-990-802 (Sheet 2 of 2)

WINDOW, PASSENGER COMPARTMENT - INSPECTION/CHECK

1. General

A. This procedure contains MSG-3 task card data.

TASK 56-20-00-211-801

2. Detailed Inspection of the Cabin and Door Window Panes

NOTE: This procedure is a scheduled maintenance task.

A. Equipment and Materials

Name and Number	Manufacturer
Scraper Tool T & E 56–20–03	
Prism T & E 56–20–02	
Flashlight	
Undiluted Glycol AMS 1424	

NOTE: It is possible that some materials in the Consumable Materials chart cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local and provincial laws and regulations when it is necessary to work with these materials.

B. Prepare for the Detailed Inspection of the Cabin and Door Window Panes

SUBTASK 56-20-00-010-001

(1) Gain access to the work area.

C. Detailed Inspection of the Cabin and Door Window Panes

SUBTASK 56-20-00-211-001

(1) Do a detailed inspection of the outer cabin windows and outer door windows.

NOTE: This check does not apply to Cockpit Windows.

(a) Clean the outer cabin and outer door window panes as required. Use scraper tool for the outer edge.

(b) Inspect the outer cabin windows for cracking at the pane's edge.

1) Apply a thin film of glycol to the cabin outer window panes outer edge and place prism over the film and pane.

2) Use a light source to shine through the end of the prism and visually inspect for edge cracks.

(c) Inspect the outer door windows for cracking at the pane's edge.

1) Apply a thin film of glycol to the cabin door outer window panes outer edge and place prism over the film and pane.

2) Use a light source to shine through the end of the prism and visually inspect for edge cracks.

(2) Clean glycol off the window after inspection.

D. Job Close-up

SUBTASK 56-20-00-410-001

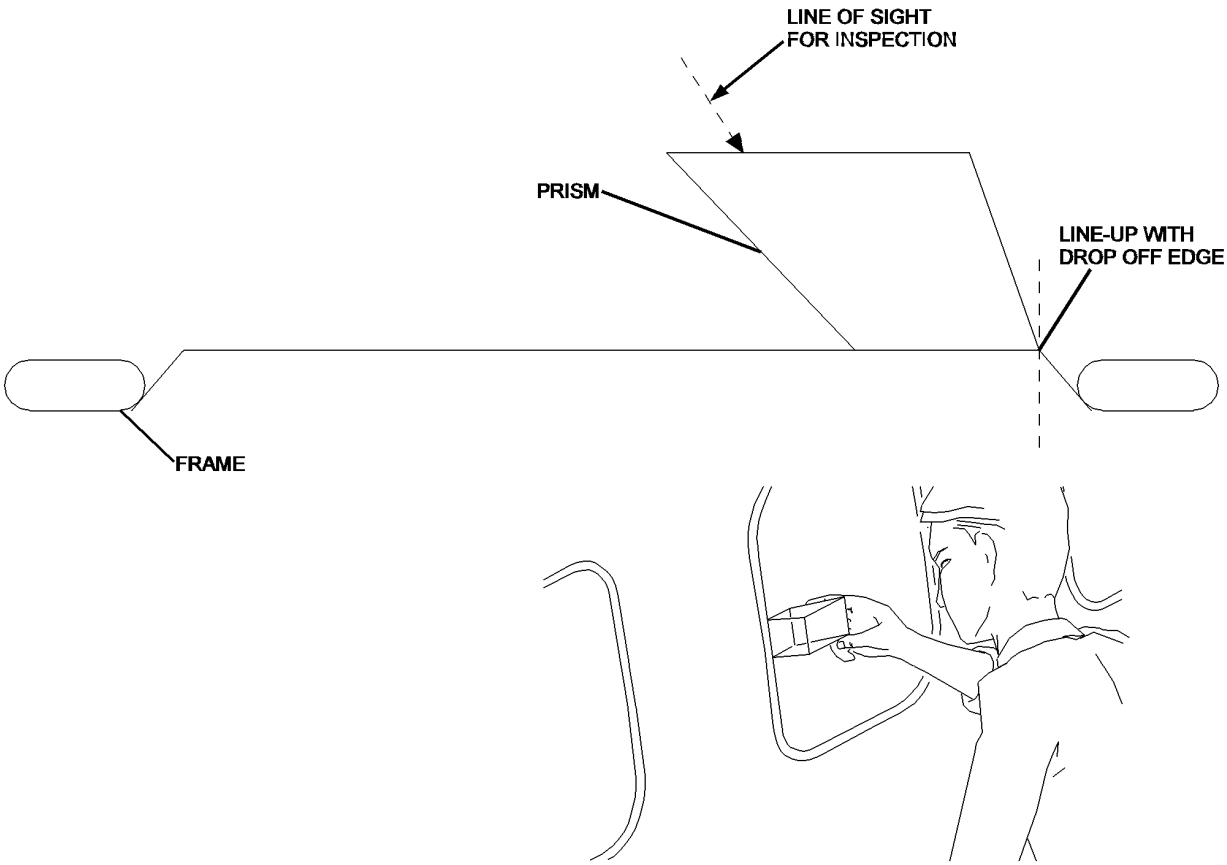
(1) Close opened access panels.

SUBTASK 56-20-00-840-001

(2) Remove all the tools and equipment from the work area. Make sure the area is clean.

(3) Return the aircraft to operable configuration.

——— END OF TASK ———



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Outer Window Pane - Inspection
Figure 601/56-20-00-990-803

PASSENGER COMPARTMENT ACOUSTIC PANE - MAINTENANCE PRACTICES

1. General

A. An acoustic pane is installed over each of the passenger compartment cabin windows. The removal and installation procedures for all the acoustic panes are identical.

B. The acoustic pane is an integral part of the window trim panel. Access to pane is from within the passenger compartment.

2. Removal/Installation Passenger Compartment Acoustic Pane

A. Remove Acoustic Pane

(1) Remove window trim panel. (PAGEBLOCK 25-21-00/201)

(2) Place window trim panel on clean, flat surface with interior side facing down.

(3) Move shade to full up position.

CAUTION: TO PREVENT DAMAGE TO WINDOW SHADE, SLIDE SHADE RETAINER BRACKETS SIDEWARDS WHEN REMOVING.

(4) Remove shade retainer bracket attaching screws.

(5) Remove shade retainer brackets by sliding sidewards to clear shade and window frame.

(6) For overwing acoustic panes, remove shade retainer and shade stop brackets by sliding sidewards to clear shade and window frame.

(7) Depress shade stiffener and handle to clear slide tracks and window frame; remove shade.

(8) Remove acoustic pane assembly.

(9) Remove angle from acoustic pane.

B. Install Acoustic Pane

CAUTION: TO PREVENT WARPING AND/OR CRACKING OF ACOUSTIC PANE AND WINDOW FRAME, DO NOT OVERTIGHTEN ATTACHING SCREWS.

(1) Position angle on upper, outer face of acoustic pane.

Install attaching screws in two inner holes.

(2) Install acoustic pane on window frame.

(3) Feed shade into slide tracks until shade stiffener and handle are positioned below upper edge of window frame.

NOTE: Shade stiffener and handle must be depressed to clear upper edge of window frame.

(4) Thread shade into retainer brackets, position brackets on window frame, and secure to window frame.

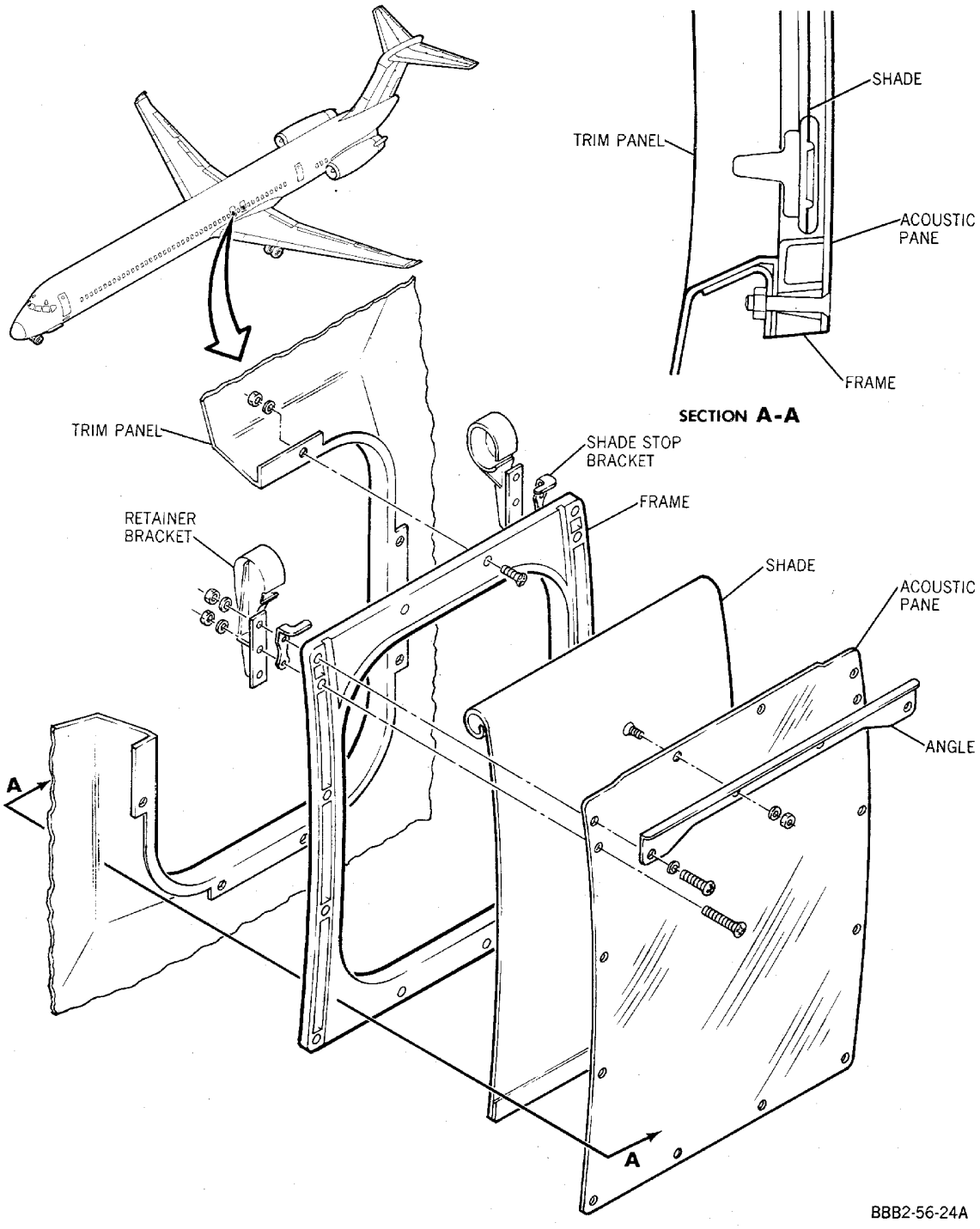
(5) For overwing acoustic panes, thread shade into retainer brackets, position retainer and shade stop brackets on window frame, and secure to window frame.

NOTE: The window shade is a self-coiling type. Shade must be properly threaded into retainer brackets, inside of which the self-coiling function occurs.

(6) Move shade through full range of travel several times, and check for proper operation.

(7) Clean acoustic pane. (GENERAL, SUBJECT 56-00-00 Page 701)

(8) Install window trim panel. (PAGEBLOCK 25-21-00/201)



Passenger Compartment Acoustic Pane
Figure 201/56-20-01-990-801

PASSENGER COMPARTMENT PLUG WINDOW - MAINTENANCE PRACTICES

1. General

CAUTION: SEALS ON PASSENGER COMPARTMENT PLUG WINDOWS ARE OF SILICONE RUBBER. DO NOT CLEAN WITH HYDROCARBON SOLVENTS.

A. The removal and installation procedures are the same for all passenger compartment plug windows. The plug windows are removed and installed from the inside of the aircraft.

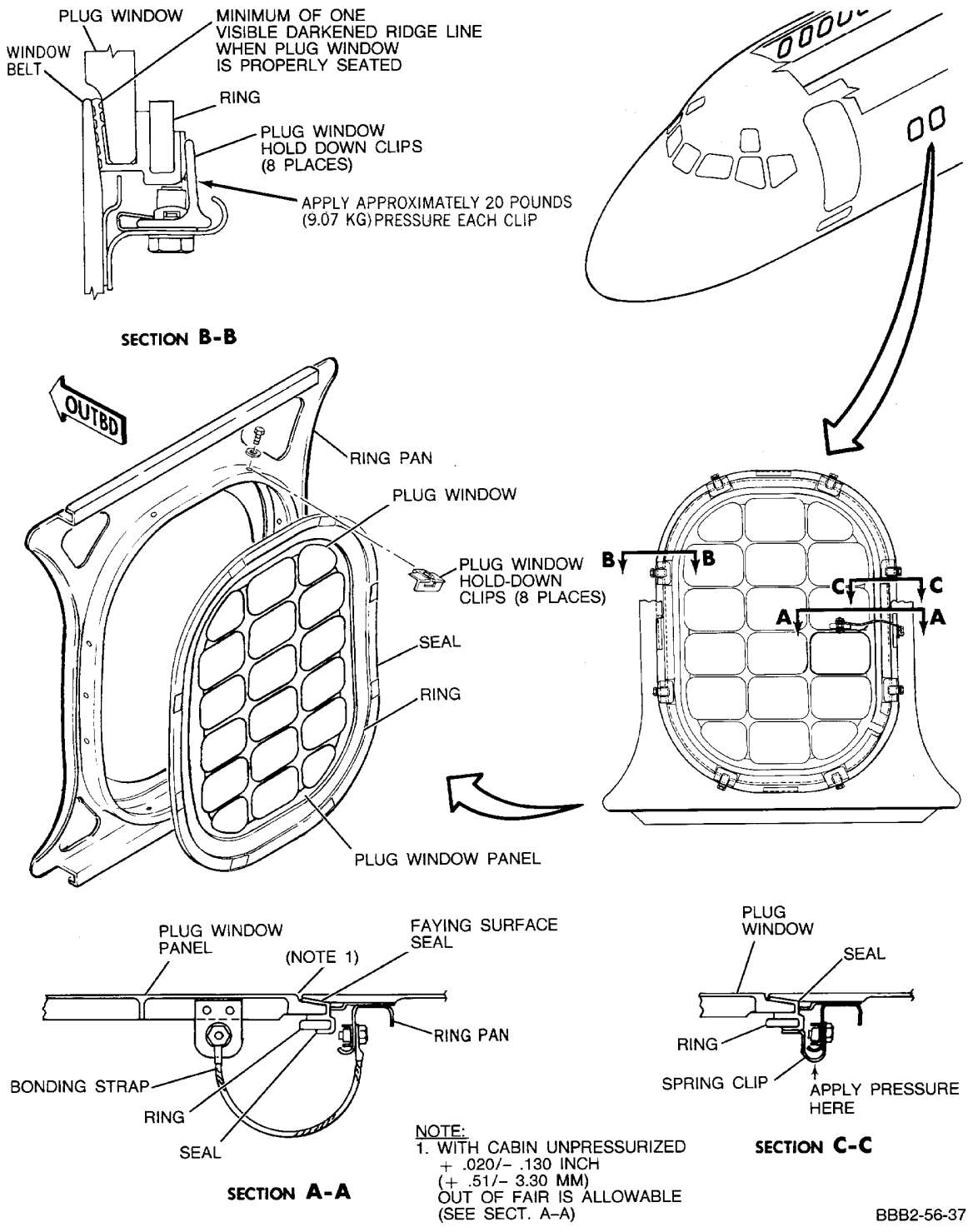
2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of following items.

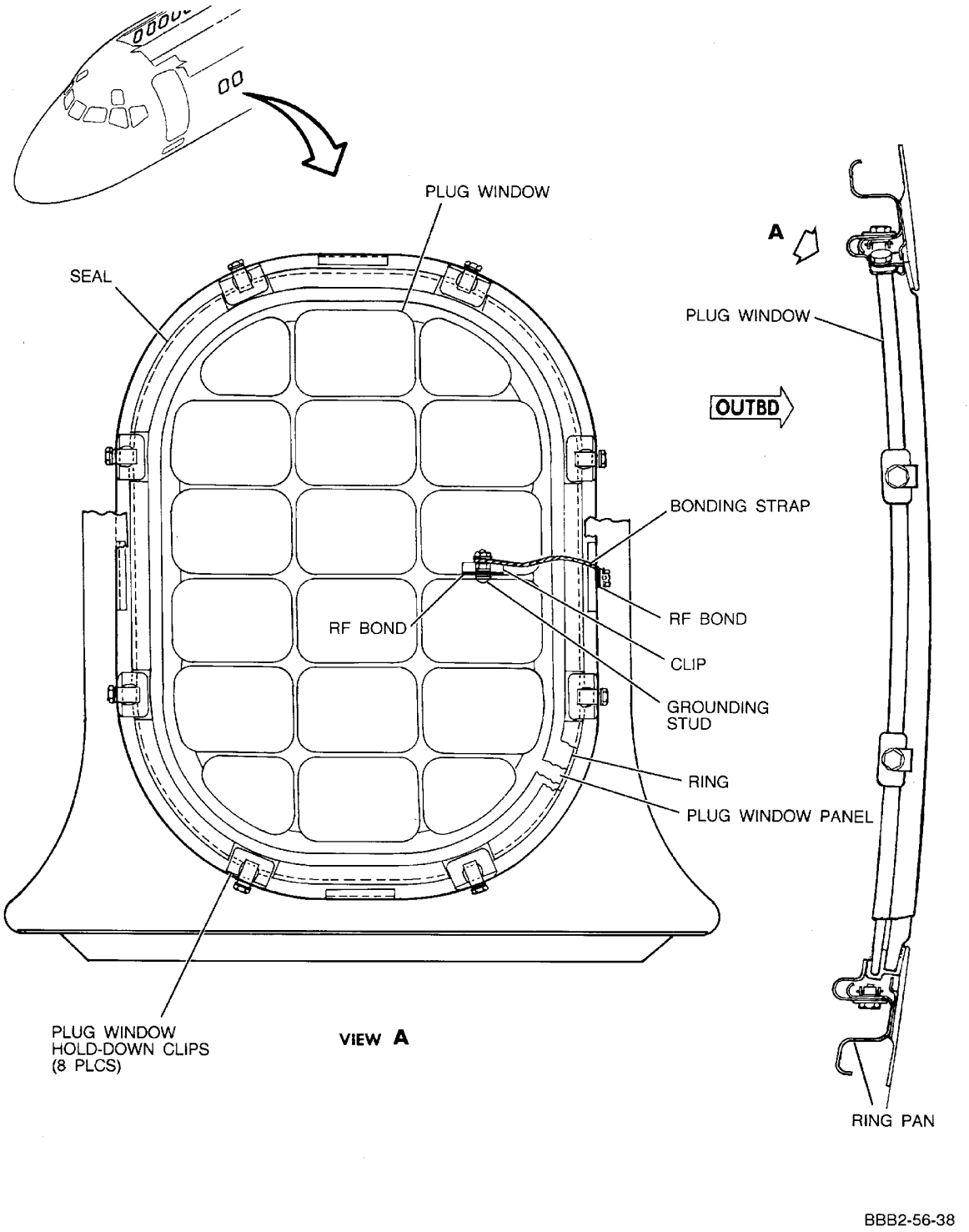
NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 201

Name and Number	Manufacturer
Torque wrench (0 - 50 inch-pounds) (5.65 N·m range)	
Coating, Chemical film, Alodine 1200 DPM 1453	Amchem Products Inc. Los Alamitos, CA
Sealant CS-3300 with accelerator CS-3300A	Chem Seal Corp. Sun Valley, CA



Passenger Compartment Plug Window -- Installation
Figure 201/56-20-02-990-801 (Sheet 1 of 2)



Passenger Compartment Plug Window -- Installation
Figure 201/56-20-02-990-801 (Sheet 2 of 2)

3. Removal/Installation Plug Windows

A. Remove Plug Window

WJE 401-411, 415-427, 429, 861-866, 868, 869, 871-881, 883, 884, 886, 887, 891-893

(1) Remove trim panel and insulation blankets, as necessary, to gain access to plug window. (PASSENGER COMPARTMENT LINING - MAINTENANCE PRACTICES, PAGEBLOCK 25-21-00/201) (PASSENGER COMPARTMENT INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-22-00/201 Config 1)

WJE 412, 414

(2) Remove trim panel and insulation blankets, as necessary, to gain access to plug window. (PASSENGER COMPARTMENT LINING - MAINTENANCE PRACTICES, PAGEBLOCK 25-21-00/201) (PASSENGER COMPARTMENT INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-22-00/201 Config 2)

WJE ALL

(3) Remove window as follows:

(a) Disconnect bonding strap at plug window clip. (Figure 201)

(b) Remove 8 window hold-down clips or 8 spring clips. (Figure 201, see Section B-B of graphic) (Figure 201, see Section C-C of graphic)

(c) Remove plug window from window opening.

B. Install Plug Window

CAUTION: EXERCISE EXTREME CAUTION TO AVOID PINCHING, CUTTING OR TEARING OF SEAL.

(1) Check that plug window (seal, panel plug and ring) are not damaged and are properly assembled.

(2) Position plug window in window belt opening and center as closely as possible to seat seal to window belt tapered surface.

(3) For installation using hold-down clips:

(a) Loosely install 8 hold-down clips, clipnuts, bolts, and washers. (Figure 201, see Section B-B of graphic)

(4) For installation using spring clips:

(a) Loosely install 8 spring clips, bolts, and washers. (Figure 201, see Section C-C of graphic)

(5) Starting at lower clip, one on each side, apply approximately 20 inch-pounds (9.07 kg) pressure to each clip to seat plug window seal to window belt tapered surface. Tighten clip attaching bolt. (Figure 201, see Section B-B of graphic)

NOTE: A minimum of one continuous darkened ridge line of seal should be clearly identified on the outer tapered surface area of the plug window panel.

(6) Tighten clip attaching bolts to torque of 30(±5) inch-pounds (3.39(±0.57) N·m).

NOTE: When cabin is unpressurized, an out-of-fair condition of .130 inch (3.30 mm) low to 0.020 inch (0.51 mm) high is allowable. (Figure 201, see Section A-A of graphic)

(7) Connect bonding strap to clip on plug window.

WARNING: ALODINE 1200 COATING IS AN AGENT THAT IS POISONOUS, CORROSIVE, CARCINOGENIC, AN OXIDIZER, AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN ALODINE 1200 COATING IS USED.

- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET ALODINE 1200 COATING IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE DUST OR MIST.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

(8) Low impedance RF bond, with chemical coating film (Alodine 1200), bonding strap connections (two places).

(9) Faying surface seal between plug window seal and tapered surface around window belt opening with sealant (CS-3300). (Figure 201, see Section A-A of graphic)

WJE 401-411, 415-427, 429, 861-866, 868, 869, 871-881, 883, 884, 886, 887, 891-893

(10) Install insulation blankets. (PAGEBLOCK 25-22-00/201 Config 1)

WJE 412, 414

(11) Install insulation blankets. PASSENGER COMPARTMENT INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-22-00/201 Config 2

WJE ALL

(12) Install trim panel. (PAGEBLOCK 25-21-00/201)

PASSENGER COMPARTMENT PLUG WINDOW - MAINTENANCE PRACTICES (ALTERNATE PROCEDURE)

1. General

A. This maintenance practice provides an alternate procedure to the standard removal/installation procedure for the passenger compartment plug window. This procedure may be used to help alleviate excess breakage of window hold-down clips due to jetbridge contact.

CAUTION: SEALS ON PASSENGER COMPARTMENT PLUG WINDOWS ARE OF SILICONE RUBBER. DO NOT CLEAN WITH HYDROCARBON SOLVENTS.

B. This alternate procedure uses seal, (PN 3912040-1) in place of seal, (PN 5951583-501) and seal, (PN 3912041-505) in place of either spring clip (PN 3951586-1) or hold-down clip (PN 3952171-1) to hold the plug window in position.

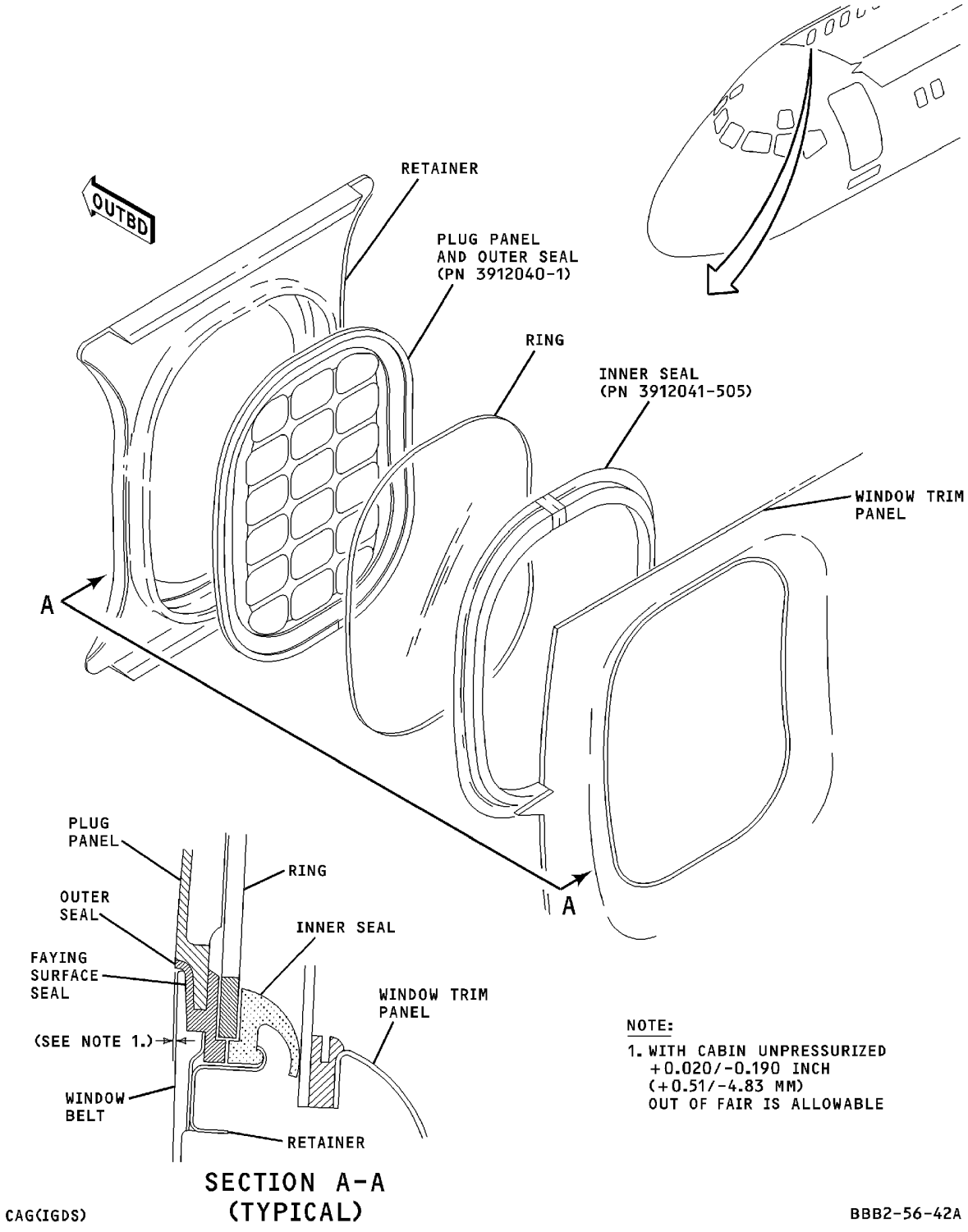
2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following items.

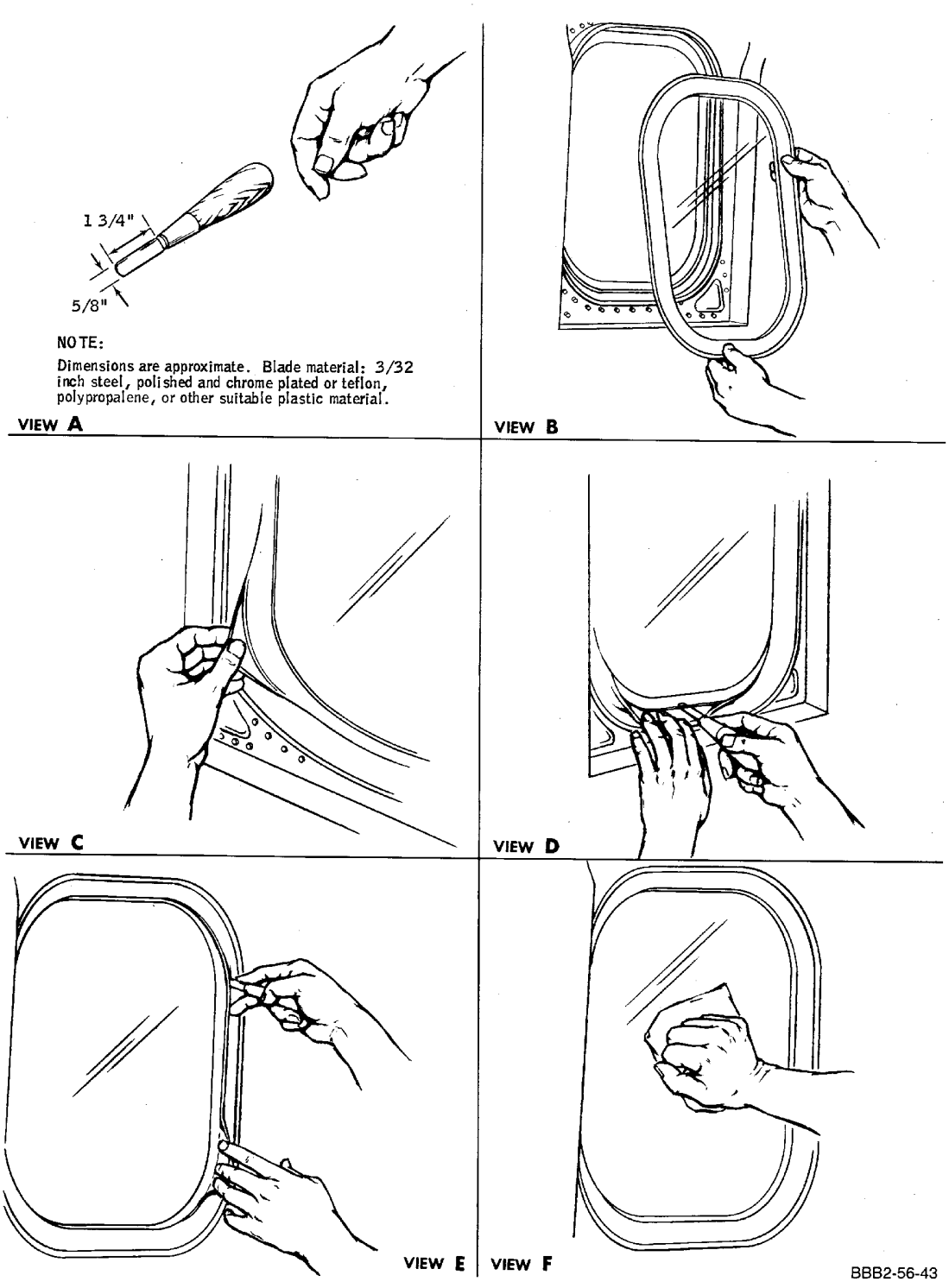
NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 201

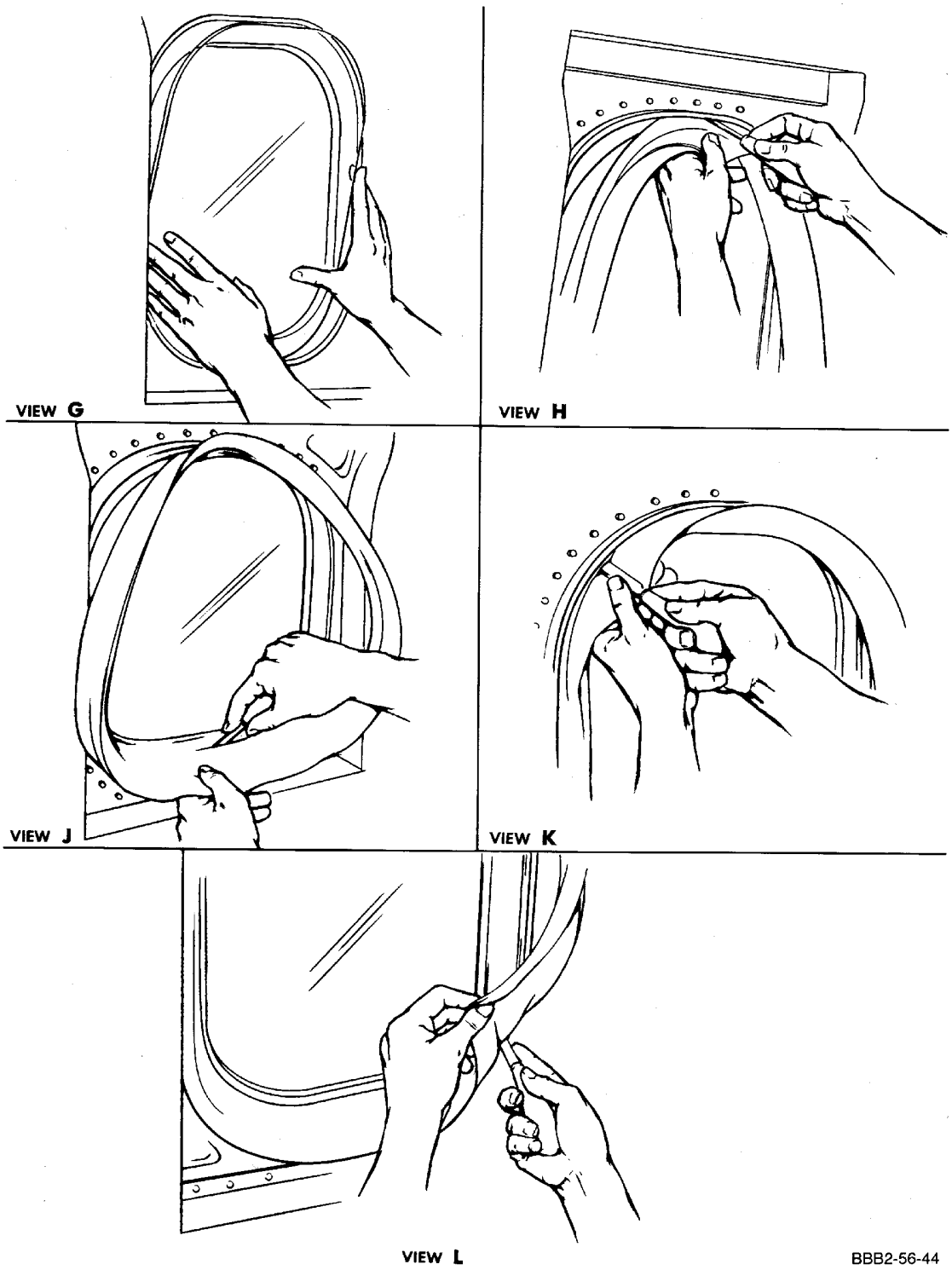
Name and Number	Manufacturer
Torque wrench (0 in-lb (0 N·m) -50 in-lb (6 N·m)	
Sealant, Class B-2 MIL-S-8784 (DMS QPL-2410)	Techon Systems, Inc. Carson, CA.



Passenger Compartment Plug Window -- Installation
Figure 201/56-20-03-990-801 (Sheet 1 of 3)



Passenger Compartment Plug Window -- Installation
Figure 201/56-20-03-990-801 (Sheet 2 of 3)



Passenger Compartment Plug Window -- Installation
Figure 201/56-20-03-990-801 (Sheet 3 of 3)

3. **Removal/Installation Passenger Compartment Plug Window**

A. Remove Plug Window (Figure 201)

WJE 401-411, 415-427, 429, 861-866, 868, 869, 871-881, 883, 884, 886, 887, 891-893

(1) Remove trim panel and insulation blankets, as necessary, to gain access to plug window. (PASSENGER COMPARTMENT LINING - MAINTENANCE PRACTICES, PAGEBLOCK 25-21-00/201) (PASSENGER COMPARTMENT INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-22-00/201 Config 1)

WJE 412, 414

(2) Remove trim panel and insulation blankets, as necessary, to gain access to plug window. (PASSENGER COMPARTMENT LINING - MAINTENANCE PRACTICES, PAGEBLOCK 25-21-00/201) (PASSENGER COMPARTMENT INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-22-00/201 Config 2)

WJE ALL

(3) Remove plug window as follows:

(a) Remove inner seal (PN 3912041-505) and ring from window opening.

(b) Remove outer seal (PN 3912040-1) and plug window panel from window belt opening.

B. Install Plug Window

CAUTION: EXERCISE EXTREME CAUTION TO AVOID PINCHING, CUTTING OR TEARING OF SEAL.

(1) Insert plug panel into outer seal. Check that seal fits smoothly and snugly all around plug panel. (Figure 201 (Sheet 2), View B)

(2) Install plug panel and outer seal into window opening from inside of aircraft.

(3) Check for proper seating of panel and seal to window belt tapered surface. Roll seal outward to fit into window belt structure. (Figure 201 (Sheet 2), View C)

(4) Using tool to force seal into place, work seal under panel until seal is even with beveled area on outside of plug panel. (Figure 201 (Sheet 2), View A, D, and E)

(5) A sharp, positive thrust with heel of hand in center of plug panel will seat panel in place. Check that seal is in place and without wrinkles on both inside and outside of plug. An out of fair condition of 0.190 in. (4.826 mm) low to 0.020 in. (0.508 mm) high when cabin is unpressurized is allowable. (Figure 201 (Sheet 2), View F)

NOTE: If seal does not fit properly in one area, pry out plug carefully with tool at nearest corner, then adjust seal and install plug by performing Paragraph 3.B.(4) and Paragraph 3.B.(5) as required.

(6) Install ring on outer seal (PN 3912040-1). It may be necessary to hold ring in place with blocks placed between ring and lip on retainer.

(7) Install inner retaining seal (PN 3912041-505) as follows: (Figure 201 (Sheet 3))

(a) Position seal with joint at top of panel and install portion of seal at top center. Let seal hang loose and carefully install portion of seal at bottom center.

(b) Locate approximate center of seal on right side and install under retainer.

(c) Perform procedure for left side of seal.

(d) Complete installation of seal by working both ways from installed points so that stretch in seal is even around corners.

(e) Work seal under lip by pushing in on seal with tool and at same time rolling tool away from ring in a kneading motion. (Figure 201 (Sheet 3), View K)

NOTE: If required to provide clearance for seal, hold ring away from edge of frame by carefully using tool as a pry. To obtain even distribution, avoid stretching seal during installation. Uneven distribution of seal results in imperfect fit. This condition is corrected by sliding seal as required to relieve stretching.

(8) Check final position of plug panel, seals, and ring. Position or adjust as required.

(9) Faying surface seal, using class B-2 (MIL-S-8784) sealant, between plug window outer seal and tapered surface around window belt opening. (Figure 201, Section A-A)

WJE 401-411, 415-427, 429, 861-866, 868, 869, 871-881, 883, 884, 886, 887, 891-893

(10) Install insulation blankets. (PAGEBLOCK 25-22-00/201 Config 1)

WJE 412, 414

(11) Install insulation blankets. (PASSENGER COMPARTMENT INSULATION - MAINTENANCE PRACTICES, PAGEBLOCK 25-22-00/201 Config 2)

WJE ALL

(12) Install trim panel. (PAGEBLOCK 25-21-00/201)

DOOR - DESCRIPTION AND OPERATION

1. General

A. The passenger entrance door and service door windows are identical in construction. The windows are double-paned and either pane is capable of carrying the full cabin pressurization differential loads. Removal and installation of the windows is accomplished from the interior side of the door.

B. The windows are circular in shape with an inner and an outer pane of stretched acrylic plastic. The edge of the outer pane is beveled to permit fairing of the pane with the exterior side of the door when the seal is installed. The inner and outer panes are held in position by an inner and outer seal of molded rubber. The outer seal encloses the beveled edge of the outer pane which seals the exterior side of the pane in the window opening and provides spacing between the inner and outer panes.

The inner seal fits around the periphery of the inner pane and secures the entire assembly in the window opening. The inner seal is held in position by a fixed retainer which is an integral part of the door structure.

C. The window frame is pan recessed to approximately 5 inches in diameter. The recessed frame allows for wide angle vision outside the airplane.

DOOR - MAINTENANCE PRACTICES

1. General

CAUTION: SEALS ON DOOR WINDOWS ARE OF SILICONE RUBBER. DO NOT CLEAN WITH HYDROCARBON SOLVENTS.

A. The removal and installation procedures for the passenger entrance door and the service door windows are identical.

Access to the windows is from within the passenger compartment.

2. Equipment and Materials

A. As an aid to installation, a simple tool may be fabricated to dimensions shown on Figure 201. All edges must be rounded and smooth. It is recommended that the blade be chrome-plated, if made of metal, to protect against tearing or cutting of seals.

3. Removal/Installation of Passenger and Service Door Windows

A. Remove Entrance or Service Door Window

(1) Remove window frame. (PASSENGER FORWARD ENTRANCE DOOR LINING, SUBJECT 52-11-01, Page 201) (FORWARD SERVICE DOOR LINING, SUBJECT 52-41-01, Page 201)

CAUTION: TO PREVENT CUTTING, RIPPING, OR TEARING OF SEALS, DO NOT USE SUDDEN PULLS OR JERKS WHEN REMOVING SEALS.

(2) Remove inner seal from retainer.

(3) Remove inner pane.

(4) Remove outer pane and seal as a unit.

(5) Remove seal from outer pane.

B. Install Entrance or Service Door Windows

(1) Clean inner and outer panes. (GENERAL, SUBJECT 56-00-00, Page 701)

NOTE: Avoid contact with the inner surface of the outer pane, and the outer surface of the inner pane, as these surfaces are inaccessible after installation.

(2) Install outer seal on outer pane; check for proper seating of seal on beveled edge of pane.

(3) Position outer pane and seal in window opening.

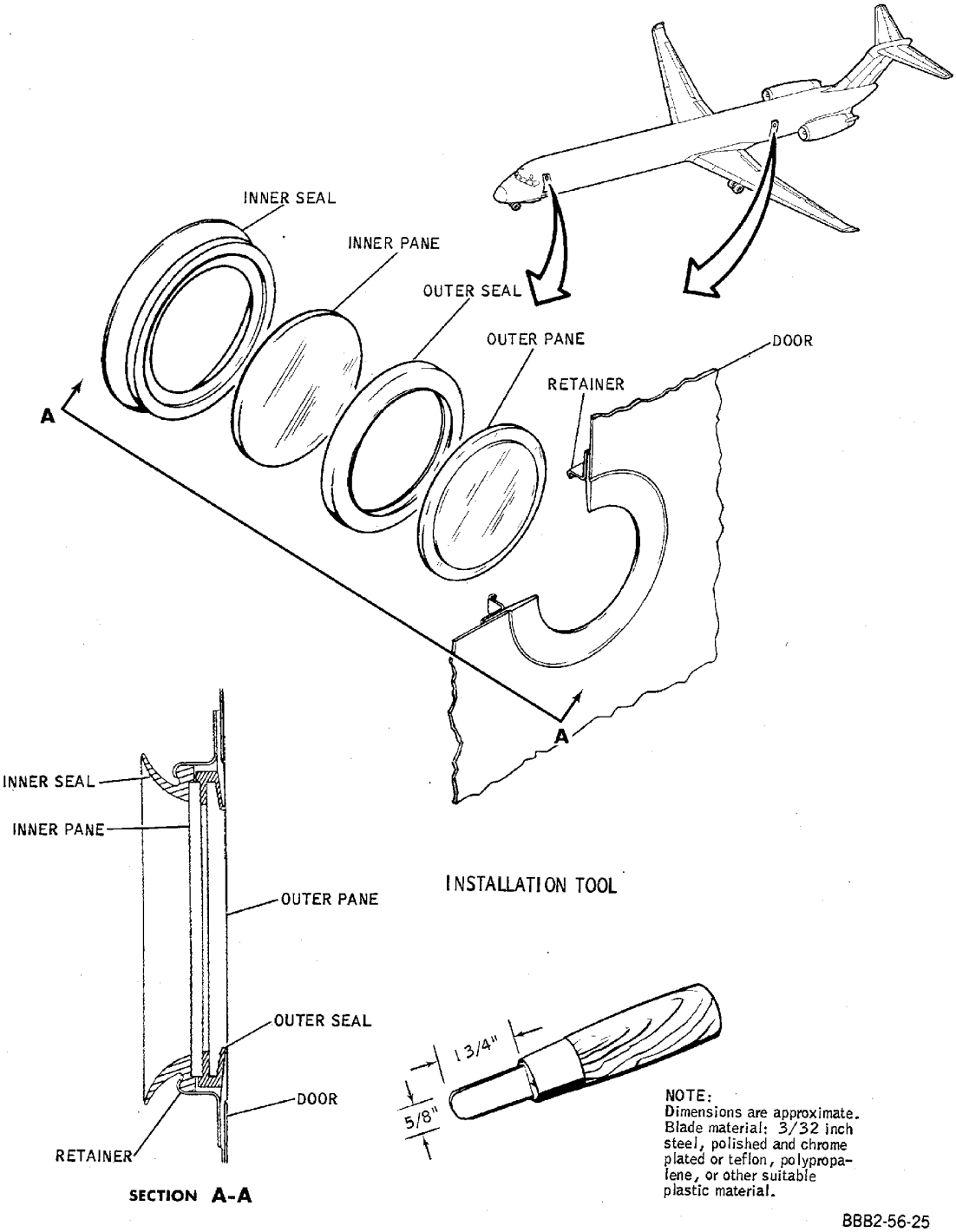
(4) Position inner pane against outer seal.

CAUTION: TO PREVENT DAMAGE TO SEAL, USE INSTALLATION TOOL (PARAGRAPH 2.A.), WOODEN OR PLASTIC TOOL WITHOUT SHARP EDGES.

(5) Install inner seal in retainer.

(6) Clean window. (GENERAL, SUBJECT 56-00-00, Page 701)

(7) Install window frame. (PASSENGER FORWARD ENTRANCE DOOR LINING, SUBJECT 52-11-01, Page 201) (FORWARD SERVICE DOOR LINING, SUBJECT 52-41-01, Page 201)



Entrance and Service Door Windows
Figure 201/56-30-00-990-801