TO: ALL HOLDERS OF CONTROL CABIN WINDOWS OVERHAUL MANUAL, 56-11-11

REVISION NO. 31, DATED JUL 1/09

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D&O	D/Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Identified that disassembly and assembly of the Control Cabin Windows is done by standard industry practices (Table of Contents change only) Added "5-89356-series" to callout				X				X					

CONTROL CABIN WINDOWS

56-11-11

BOEING P/N 5-71761-3019, -3020
5-71763-13, -14, -29, -30, -33, -34
5-71764-3015, -3016
5-71765-13, -14
5-89354-29, -30, -3029, -3030, -3035, -3036, -3051, -3052, -3075, -3076, -3085, -3086, -3089, -3090, -3095, -3096, -3101, -3109, -3110, -3129, -3130, -3135 thru -3142
5-89356-41, -42
5-89357-21, -22, -33, -34
5-89358-21, -22, -41, -42
65-16323-11, -12, -21, -22, -25, -26, -31, -32
65-38210-9, -10
65C33819-1, -2
65C33822-1, -2
65C33823-1, -2
65C34348-1, -2

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 18077	Jul 5/80
		PRR 24428	Jul 5/80
		PRR 32928	Jul 5/80
		PRR 24598	May 10/81
		PRR 33061	Jul 5/81
		PRR 33800	Sep 5/85
		PRR 34119	Nov 10/86
		PRR 34161	Dec 5/89
		PRR 34383	Dec 5/89
		PRR 38448	Nov 1/01
		PRR 38275-11	Mar 1/06

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	56-11-11					
	T-1	Mar 1/06				
	T-2	BLANK				
*	LEP-1	Jul 1/09				
	LEP-2	BLANK				
*	T/C-1	Jul 1/09				
	T/C-2	BLANK				
*	1	Jul 1/09				
	2	Jul 1/01				
	3	Jul 1/01				
	4	Jul 1/01				
*	5	Jul 1/09				
	6	Jul 1/01				
	7	Jul 1/01				
	8	Jul 1/01				
	9	Jul 1/01				
	10	Jul 1/01				
	11	Jul 1/01				
	12	Mar 1/02				
	13	Jul 1/01				
*	14	Jul 1/09				
	15	Jul 1/01				
	16	Mar 1/02				
	17	Jul 1/01				
	18	Jul 1/01				
	19	Jul 1/01				
	20	Jul 1/01				
	21	Jul 1/01				
	22	Jul 1/01				
	23	Jul 1/01				
*	24	Jul 1/09				
	25	BLANK				
	26	Jul 1/01				
	27	Jul 1/01				
	28	BLANK				
	29	Jul 1/03				
	30	Jul 1/03				
	31	Jul 1/03				
	32	Mar 1/06				
	33	Mar 1/06				
	34	Jul 1/03				
	35	Jul 1/03				
	36	Jul 1/03				

TABLE OF CONTENTS

*[1] Special instructions are not required. Use standard industry practices.
*[2] Also refer to the instructions in SOPM 20-30-03.
*[3] Also refer to the instructions in SOPM 20-44-02 and 20-70-01.

CONTROL CABIN WINDOWS

1. DESCRIPTION AND OPERATION

A. No. 1 Windshield Assembly (Forward Windshield)

(1) Window No. 1 has laminated glass on each side of a plastic core. These windows have resistance if hit by a bird. The windows come with or without heat.

(2) The inner glass pane is thicker than the outer glass pane. It is the primary structural part. It holds the internal airplane pressure load.

(3) The plastic layer is a secondary structure. It is also a fail-safe device that prevents the shatter of a broken window if the inner pane breaks.

(4) The outer pane is not structural. It gives a rigid, hard, scratch-resistance surface.

(5) A conductive layer on the inner surface of the outer glass pane heats the window to remove ice and fog. Bus bars in the upper and lower edges of the windows connect the conductive layer to electrical terminals.

B. No. 3 Windshield Assembly (Side Windshield)

(1) The No. 3 windshield assembly has two glass panes (5-71763-series, 5-89356-series) or two stretched acrylic panes (65-16323-series, 65-38210-series) separated by a phenolic spacer. The spacer gives an insulation cavity which prevents fog on the inner surface of the window.

(2) A small hole in the upper forward corner of the inner panel lets pressure in the air space equalize with cabin pressure.

C. No. 4 and 5 Window Assemblies (Eyebrow Windows)

(1) Windows No. 4 and 5 are almost the same. They have laminated glass on each side of a plastic core.

(2) Window No. 4 has one more vinyl layer to prevent the shatter of broken glass if a bird hits the window. The inner vinyl layer is not structural.

(3) A conductive layer on the inner face of the outer glass pane heats the window to remove ice and fog. Bus bars connect the conductive layer to electrical terminals.

D. Leading Particulars (Approximate)

	Pane 1	Pane 3	Pane 4	Pane 5
Length	-- 35 inches	28 inches	13 inches	15 inches
Height	-- 18 inches	19 inches	10 inches	9 inches
Thickness	-- 1 inch	1 inch	1 inch	1 inch
Weight	-- 46 lbs	20 lbs	8 lbs	4 lbs

2. INSPECTION/CHECK

A. Window defect definitions

(1) Crazing: A series of very fine fissures perpendicular to the surface of the pane. Because these fissures are very narrow, they are not easy to see when viewed perpendicular to the surface. They can be seen by reflection from their smooth surfaces when viewed at different angles to the incident light.

(2) Crack: A fissure with visible width when viewed parallel to the faces of the fissure. A crack can be at any angle to the surface of a plastic pane. Cracks in stretched acrylic can have a chevron-shaped or clamshell type growth lines (Fig. 1). A crack will start from a stress riser such as a scratch or craze.

(3) Scratch: The removal or displacement of material from the surface of a pane along a line, caused by a hard pointed object. Scratches deeper than 0.002 inch are V-shaped chips.

(4) Chips: Small particles of glass removed from the surface by a sharp instrument or by stress. They can be on the outer surface of the glass or on the glass-inter-layer interface.

(a) Internal Chipping (Chipping at the glass-interlayer interface)

1) Chipped areas have a curved rough grained appearance, easily seen in reflected light. Ridges on the flaked or chipped surface appear as fine hairlines.

2) Powdered glass, usually white, can be seen in the chipped area.

3) The rough surface makes visibility through the area badly distorted.

(b) Spall (Shell Type) Chips

1) Chipped areas have circular or curved edges with many fine hairlines or ridges that follow the outline of the outer edge and become smoother toward the center or deepest point of the chip, almost the same as the growth lines on a clam shell.

2) Chipped areas have a smooth, clear surface easily seen in reflected light.

3) Visibility through chipped areas is badly distored..

4) The chip does not become larger in the glass

(c) V-Shaped Chips

1) V-shaped chips have a sharp, narrow V shape and which can become larger toward the interior of the glass.

2) Chipped areas have a rough, grained appearance easily seen without reflected lights.

3) Powered glass, usually white, is generally visible in the chipped area.

4) The sides of the chip come to a point in the center.

5) These chips are generally caused by something that hit the glass, and are usually on the exterior of the glass pane.

(5) In-plane cracking (also called delamination): A smooth surfaced fissure, or series of fissures, parallel to panel surfaces. In-plane cracking can occur in stretched acrylic and starts at edges of pane or at deep penetrations of the surface. It is most easily seen by the reflection of light from the smooth surfaces of the fissure.

(6) Delamination: A separation of the glass or acrylic plies from the interlayer materials. It is most easily seen by the reflections of light from the smooth surfaces of the layers.

(7) Vinyl Cracking: A fissure in the interlayer, usually through the thickness of the interlayer, adjacent to edge separators or edge inserts.

(8) Crackling: A series of cracks in only the urethane layer occur around the window edge adjacent to the frame and go toward the center of the window. The area can have a yellow color and make the view blurred.

B. No. 1 Windshield

(1) Reject the windshield if you find any of these defects

(a) Outer glass pane

NOTE: The outer pane is not a structural member. If there is outer pane damage, reject the window only for window heat or visibility problems.

1) Electric arcs, broken electrical circuits or cracks that prevent window heat system operation.

2) Chips or delaminations that cause uneven window heating or visibility problems.

(b) Inner glass pane

1) Cracks of any kind.

2) Scratches deeper than 0.015 inch.

3) Conchoidal chips in either surface, deeper than 0.015 inch (Fig. 2).

4) V-shaped chips of any skin (Fig. 2).

(c) Middle vinyl pane

1) Cracks from the teflon separator material (adjacent to the inner glass pane) that go toward the outer glass panel (Fig. 1A).

2) Cracks at either slip pane that go toward the inner glass panel (Fig. 1A).

(d) Delamination

1) Because delamination does not decrease the strength of the windshield, use the following limits only as approximate guidelines.

a) Continous edge delamination at or more than the limits shown (Fig. 3).

b) Any delamination that is cloudy (a sign of moisture between the vinyl and the glass).

C. No. 3 Acrylic Windshields (65-16323-series, 65-38210-series)

(1) Reject the windshield if you find any of these defects:

(a) Cracks of any kind unless they are cracks between bolt holes and the window edge.

(b) On windows with two acrylic panes with a bonded epoxy spacer with neoprene inner dam, visually examine the outer pane opposite the vent hole in upper forward corner of the inner pane. If there are tobacco tar stains at this location, the outer pane does not hold pressure and the windshield is not serviceable.

(c) Scratches on inner and outer stretched acrylic panes, more than the limits in Fig. 4.

(d) Crazing in any inner stretched acrylic pane.

(e) Crazing in the outer stretched acrylic pane, other than at the routed edge, more than the limits in Fig. 4.

(f) Chipping of the outer stretched acrylic pane more than the limits in Fig. 4.

(g) Any chip on surface of the inner stretched acrylic pane more than 0.01 inch deep and chips along edge more than 0.06 inch deep.

(h) Delaminations if they block visibility or if more than the limits in Fig. 4.

(i) Phenolic spacer torn or cracked.

D. No. 3 Glass Windshields (5-71763-series, 5-89356-series)

(1) Reject the windshield if you find any of these defects:

(a) Outer glass pane

NOTE: The outer pane is not a structural member. If there is outer pane damage, reject the window only for window heat or visibility problems.

1) Electric arcs, broken electrical circuits or cracks that prevent window heat system operation.

2) Chips or delamination that cause uneven window heating or visibility problems.

(b) Inner glass pane

1) Cracks of any kind.

2) Scratches deeper than 0.015 inch.

3) Conchoidal chips in either surface, deeper than 0.015 inch (Fig. 2).

4) V-shaped chips of any kind (Fig. 2).

(c) Middle vinyl pane

1) Cracks of any kind.

2) Isolated delamination areas (island delamination)

(2) Examine Window No. 3 for Delamination

(a) Because delamination does not decrease the strength of the windshield, use the following limits only as approximate guidelines.

1) Isolated delamination areas (island delamination) with diameter of 0.75 inch or more and located more than 2 inches from the nearest edge.

2) Continuous edge delamination at or more than the limits shown (Fig. 3).

3) Any delamination that is cloudy (a sign of moisture between the vinyl and the glass).

E. No. 4 Window

(1) Reject window No. 4 if you find any of these defects:

(a) Center glass pane

NOTE: When you examine the center glass pane, do not confuse it with the adjacent inner vinyl layers or the inner cast acrylic pane. Defects in these other items are not important.

1) Cracks of any kind.

2) Conchoidal chips in either surface, deeper than 0.015 inch (Fig. 2).

3) V-shaped chips of any kind (Fig. 2).

4) Electric arcs, chips, delaminations or broken electrical circuits that prevent window heat system operation or which cause visibility problems.

NOTE: If defects of the outer glass pane are a visibility problem, the window must be rejected.

(b) Middle vinyl interlayer

NOTE: Do not confuse the interlayer with the additional vinyl layer laminated to the cast acrylic sheet.

1) Cracks or tears of any kind.

F. No. 5 Window

(1) Reject window No. 5 if you find any of these defects:

(a) Inner glass pane

1) Cracks of any kind.

2) Conchoidal chips in either surface deeper than 0.015 inch (Fig. 2).

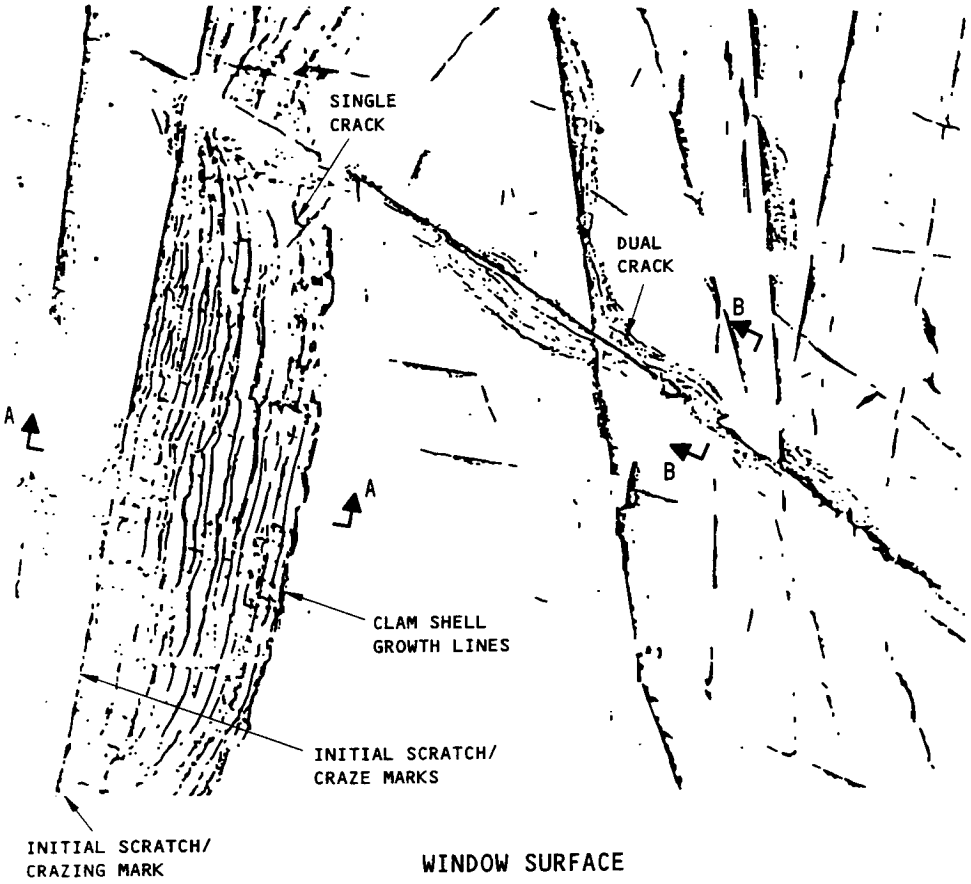
3) V-shaped chips of any kind (Fig. 2).

4) Delamination which causes noticeably uneven heating.

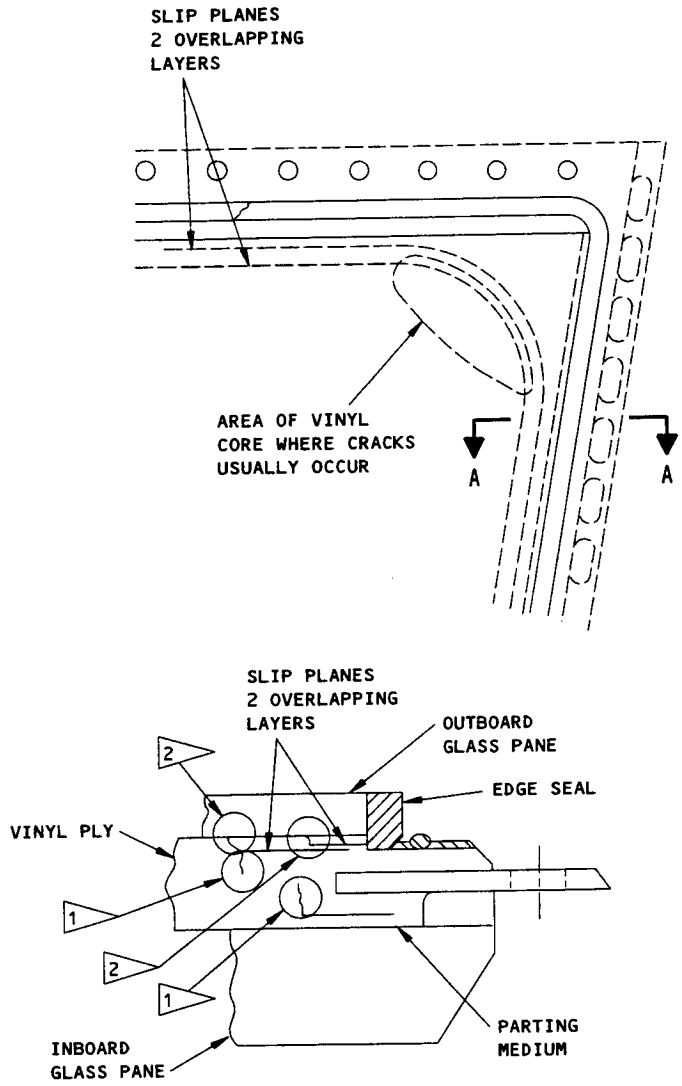
(b) Middle vinyl pane

1) Tears or cracks of any kind.

NOTE: If defects of outer glass pane are a visibility problem, the window must be rejected.



Window Surface Damage
Figure 1

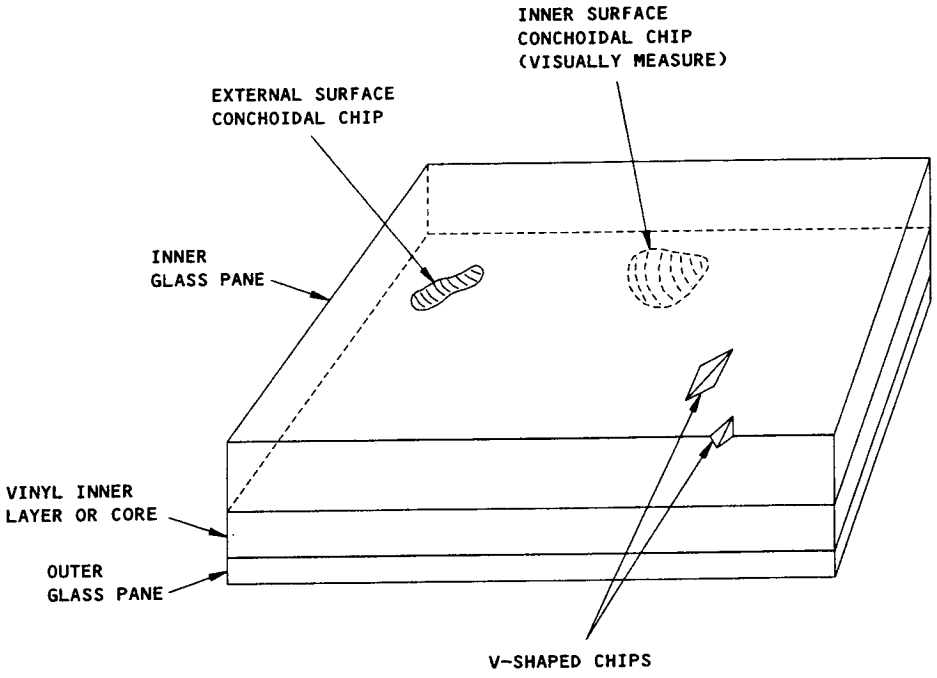


A-A

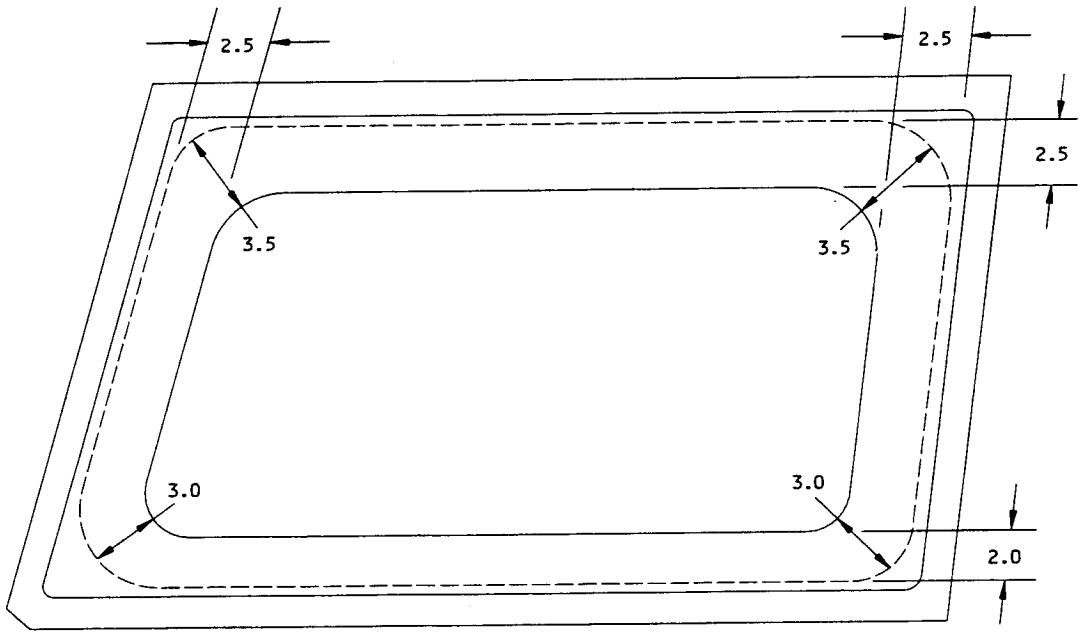
1 REJECT WINDSHIELD NO. 1 IF YOU FIND THIS TYPE OF CRACK.

2 THIS TYPE OF CRACK IS ACCEPTABLE BECAUSE IT DOES NOT CHANGE THE STRENGTH OF THE VINYL INTERLAYER.

Control Cabin Window Vinyl Interlayer Crack Identification
Figure 1A

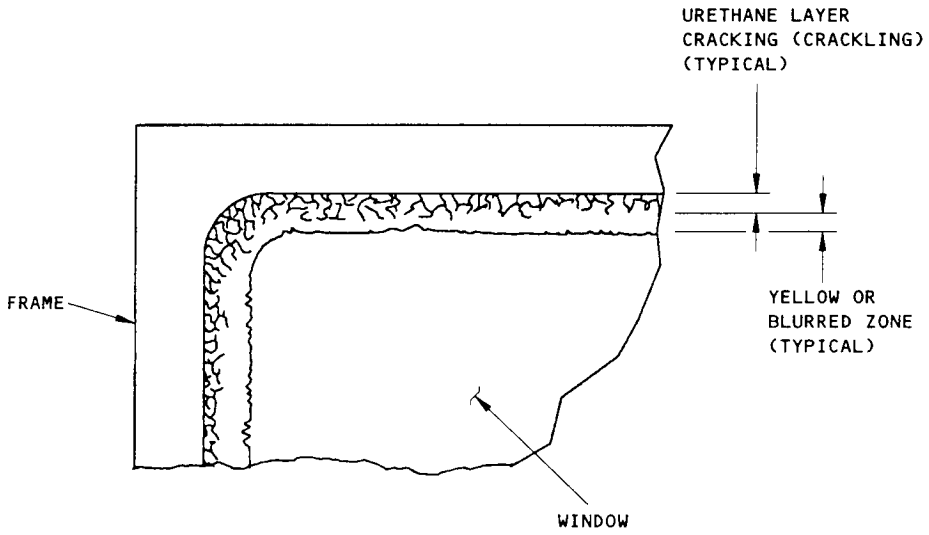


Control Cabin Window Inner Pane Chip Identification
Figure 2



NOTE: THE DOTTED LINE IS THE EDGE OF THE PARTING MEDIUM.
ALL DIMENSIONS ARE IN INCHES.

No. 1 or 3 Window Delamination Limits
Figure 3



Number 3 Window Urethane Layer Crack Identification
Figure 3A

SCRATCHES				
Scratch Depth (in.)	OUTER PANE		INNER PANE	
	Max Length of Each Scratch (in.)	Max Cumulative Length of All Scratches (in.)	Max Length of Each Scratch (in.)	Max Cumulative Length of All Scratches (in.)
0.050	Minimum detectable	2.0	Not Permitted	-
0.020	1.0	5.0	Not Permitted	-
0.010	3.0	9.0	3.0	9.0
0.005	4.0	10.0	4.0	10.0

CRAZING	
Max Depth (in.)	Max Local Area
0.04 0.03	2.0-inch dia Over entire surface

CHIPPING		
Max Chip Depth (inch)	Max Size of Delamination Due To Chip (inch)	Min Distance Between Chips (inches)
0.05	0.50 dia	1.00

DELAMINATION					
Edge	Max Extension In From Edge (inch)	Max Length At Edge (inch)	Min Distance Between Defects (inch)	Max No. Per Edge	Max No. Per Pane
Extreme edge outer pane	0.40	1.00	2.00	2	4
Rabbet edge	0.05	0.50		2	8
	0.02	Continuous			
Bolt hole edges	0.025	All around hole circumference	Must not be consecutive holes	2 holes	8

No. 3 Window Defect Limits
Figure 4

3. REPAIR

A. Materials

NOTE: Equivalent substitutes can be used.

(1) Wax

(a) Kwykwax, V64807

(b) Simoniz, V09457

(c) DuPont No. 7, V18873

(2) Buffing Compounds (SOPM 20-60-04)

(a) Learok 888

(b) Learok S-30

(3) Buffing Wheels, Loosely stitched flannel, 4, 6 and 8-inch diameter, 1 and 2 inch diameter, 1 and 2 inches thick, for 0.25-inch arbor -- Grey No. 4M-3D or Red No. B-7, Van Winkle Munning Co., Matawan, New Jersey

(4) Cleaners and Polishes -- MIL-C-18767

(5) Protective Coatings

(a) Spraylat SC-1072 or SC-1071B Black, V87354

(b) Spraylat SC-1058 clear, or Spraylat SC-1071T white, V87354

(6) Tapes

(a) Permacel No. 75, V99742

(b) Scotch 221 or 600, V76381

(c) Scotch 346 or 670, V76381

(d) Gizard Protex 28V, V06929

(e) Scotch 549 (Teflon), V76381

(f) Permacel P-422, V99742

(7) Sandpaper -- Carborundum Wet-or-Dry, 400A and 600A grit

(8) Sealant

(a) BMS 5-26, class B (Replaces BMS 5-19, Class B)

(b) DC 93-006-1 or -6, V71984

(c) DC 93-076, V71984

(d) DC-S-6508, V71984

(9) Primer, Sealant

(a) Dow Corning 1200 Red, V71984

(b) General Electric SS 4179, V01139

(c) Wacker SWS 417, V07607

(10) Aliphatic Naphtha -- TT-N-95, Type 2 (SOPM 20-60-01)

(11) Adhesive -- Type 77 (SOPM 20-50-12)

B. Repair

(1) Scratch removal on No. 3 acrylic windows (65-16323-series, 65-38210-series)

(a) General

1) Before you start to repair a window pane surface, first clean the unscratched pane and give it the protection of a coating, tape or paper.

2) Use clean cotton gloves when you work with polished window panes.

3) Be careful not to scratch the window surface with finger rings or other sharp objects.

(b) Cleaning

CAUTION: INCORRECT CLEANING METHODS OR AGENTS COULD DAMAGE THE WINDOW.

1) Flush the surface with clean water. Use only your bare hand to remove abrasives and other contamination.

2) Wash with mild soap and water, soft cloth, sponge or chamois. Rinse with clean water. Dry with damp chamois.

3) If necessary, clean with cleaning agent, then rinse with clean water and dry with damp chamois.

(c) Sanding

NOTE: Sanding is used to remove buildup material on large scratches.

1) Soak 400-A grit wet or dry sandpaper in water.

2) Wrap the sandpaper around a rubber block that has a Shore Type "A" durometer hardness of 30-40 or a wooden block wrapped with cotton flannel.

CAUTION: DO NOT USE A VIBRATOR SANDER BECAUSE IT COULD REMOVE TOO MUCH MATERIAL. DO NOT USE BUFFING WHEEL WITH ABRASIVES, BECAUSE IT COULD CAUSE OPTICAL DISTORTION.

3) Sand across the scratch at a 45-degree angle with light hand pressure and frequent application of water.

4) Sand an area approximately 4 inches in diameter to keep optical distortion to a minimum. Change sandpaper as necessary.

5) When scratch buildup is removed, remove sanding abrasions with water soaked 600-A grit wet or dry sandpaper.

6) Apply Learock S-30 compound to a buffing wheel and buff the area until the frosted finish is removed.

CAUTION: KEEP THE BUFFING WHEEL IN CONSTANT MOTION ON THE WINDOW SURFACE TO KEEP THE SURFACE TEMPERATURE BELOW 130°F. AT THIS TEMPERATURE, THE WINDOW WILL NOT FEEL HOT WHEN TOUCHED BY THE BACK OF YOUR HAND WITHIN 2 SECONDS AFTER YOU REMOVE THE BUFFING WHEEL FROM THE PANE.

7) Stop the Learock S-30 buffing procedure when the frosted finish is gone, or optical distortion could occur.

8) Now polish the window surface to a high gloss per par. (d).

(d) Machine Polishing

NOTE: Polishing is used to remove small scratches.

1) Apply Learock 888 buffing compound to a clean buffing wheel.

2) Start at the center of the pane and work outwards to the edges. Polish all of the pane.

CAUTION: KEEP THE BUFFING WHEEL IN CONSTANT MOTION ON THE WINDOW SURFACE TO KEEP THE SURFACE TEMPERATURE BELOW 130°F. AT THIS TEMPERATURE, THE WINDOW WILL NOT FEEL HOT WHEN TOUCHED BY THE BACK OF YOUR HAND WITHIN 2 SECONDS AFTER YOU REMOVE THE BUFFING WHEEL FROM THE PANE.

3) Adjust buffing wheel pressure, feed rate and surface speed to not let the window become too hot.

4) After the window is polished, measure the thickness of the panes.

a) The inner pane must not be decreased in thickness below 0.23 inch.

b) 65-24110 -- The outer pane must not be decreased in thickness below 0.43 inch.

c) 65-16323, 65-38210 -- The outer pane must not be decreased in thickness below 0.38 inch.

5) Lightly polish the pane with wax. Then give the surfaces protection with Spraylat or protective tape.

(e) Hand Polishing

NOTE: Hand polishing is used to remove small scratches.

1) Apply Learock 888 to a clean cloth.

2) With a circular motion, start at the center of the pane and work outward to the edges.

CAUTION: DO NOT TRY TO POLISH OUT SCRATCHES IN SMALL LOCAL AREAS. OPTICAL DISTORTION WILL OCCUR.

3) Rub over all of the surface of the pane until the scratches are removed.

4) Apply a polish to a wet clean cloth and polish the surface with a circular motion. Wipe with a clean cotton-flannel cloth.

5) After you polish the window, measure thickness of the panes. Make sure their thickness is not less than the limits of par. (d)4) above.

6) Lightly polish the pane with wax and protect the face with Spraylat or protective tape.

(2) Edge chips

(a) To remove edge chips, chamfer the edge of the pane. The window is not serviceable if there are chips remaining after the chamfer is 0.12 inch x 45 degrees maximum.

(3) Rabbetted edge repair (Fig. 4A)

(a) Remove material from the edge of the outer pane as necessary, within repair limits, to remove defects. You can remove material from all of the edge, or from local areas. If you repair only local areas, blend the repaired areas smooth with adjacent areas with a 100 to 1 ratio.

(4) Repair molded-in-place silicone seal (Fig. 5)

(a) Make a molding tool with a teflon surface (Fig. 6).

(b) Completely remove the damaged section of seal from the window.

(c) Clean the faying surface of the window, and the edge of the glass, with aliphatic naphtha.

(d) Mask the window (Fig. 7).

(e) Brush a thin layer of Dow Corning 1200 red primer onto the cleaned faying surface and glass edge. Do not let the primer get on the adjacent seals.

(f) Let the primer dry a minimum of one hour at 70°F before you apply sealant. Give the primed surface protection from contamination if a delay in sealant application could occur.

(g) Prepack seal mold groove (Fig. 6), with applicable sealant applied with a Semco type cartridge gun, or equivalent. Do not put too much sealant in, or sealant in the groove will overlap the good seal beads when you clamp the molding tool in position.

(h) Apply a continuous bead of sealant to the window glass edge to make a bumper strip and to the faying surface of the window.

(i) Work sealant into corners and onto flat areas for a good bond and to minimize air bubbles.

(j) Install the molding tool on the window and attach it in position.

(k) Inject sealant into the gap under the tool until the gap is completely filled (Fig. 8).

CAUTION: TEMPERATURES ABOVE 120°F COULD CAUSE WINDOW DAMAGE.

(l) After the sealant is cured to a rubbery state (8 hours at 70°F or 4 hours at 120°F), remove the molding tool.

(m) If necessary, fill void areas with fresh sealant and install the molding tool again. Let this new sealant cure.

(n) Remove masking tape. Cut off unwanted sealant (Fig. 9).

(5) Repair seals made of tape and sealant (Fig. 10).

(a) Remove the damaged section of sealant and tape.

(b) Clean the surface with aliphatic naphtha.

(c) Apply sealant on the window to the level of the sealant there now. Let the sealant dry to a tack-free state.

(d) Use sealant to fill in voids in the old sealant. Let the sealant dry.

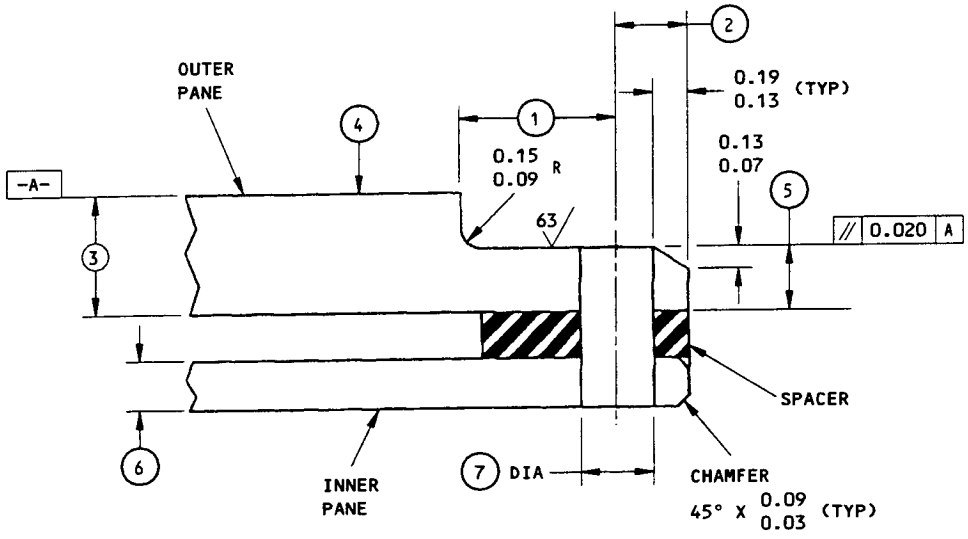
(e) Completely cover the sealant with tape. Use butt joints only. Do not overlap the tape.

(f) Make the tape smooth with finger pressure or a rubber roller.

C. Replacement

(1) Dry seal (5, 30, Fig. 13) -- Bond a replacement with Type 77 adhesive (SOPM 20-50-12).

(2) Bumper strip (11, Fig. 13) -- Use a parting medium on the replacement strip.

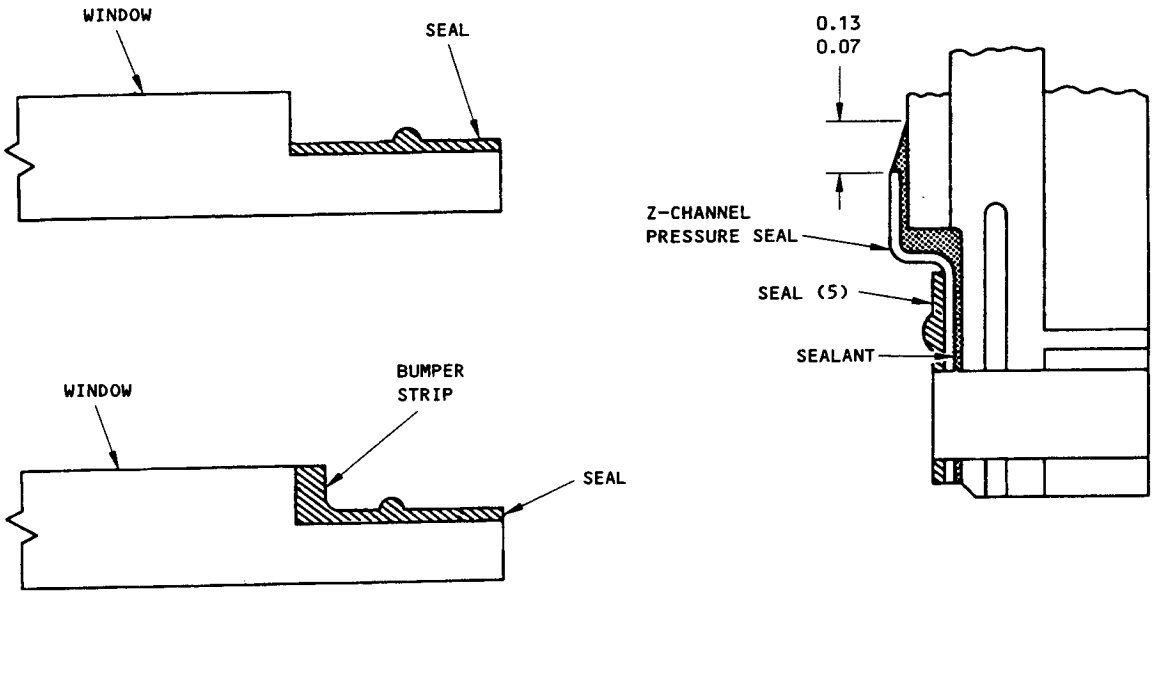


	1 ▷1	1 ▷2	2	3	4	5	6	7 ▷3	7 ▷4
DESIGN DIM	0.90 0.84	0.85 0.79	0.39 0.33	0.644 0.580	0.28 0.24	0.404 0.300	0.295 0.250	0.265 0.259	0.416 0.404
REPAIR LIMIT	1.00	0.95	—	—	—	0.260	—	—	—

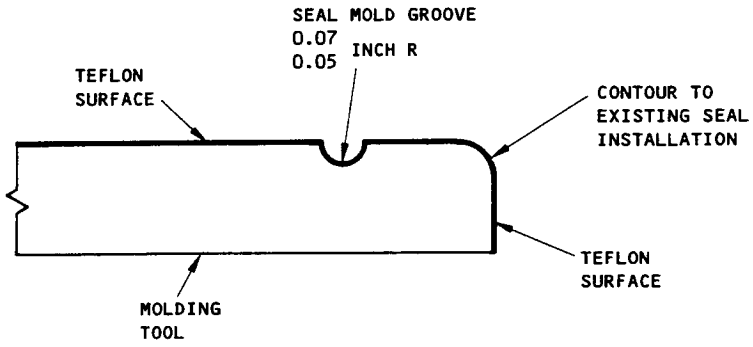
1 ▷ TOP EDGE ONLY.
2 ▷ ALL EDGES BUT THE TOP EDGE.
3 ▷ 65-38210-1,-2,-13,-14
4 ▷ 65-38210-19,-20

Window Edge Repair
Figure 4A

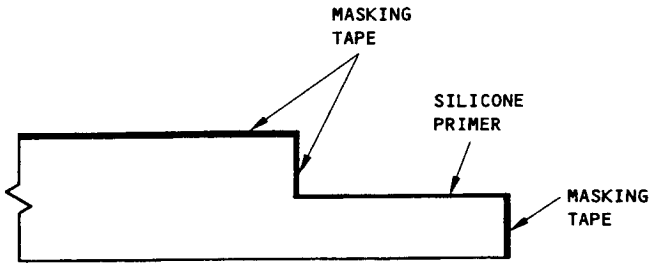
L96490



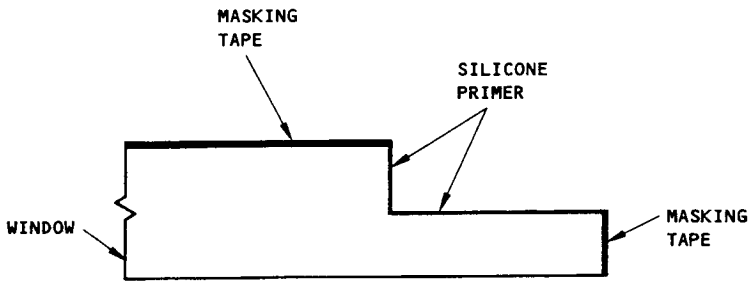
Molded Seal Installation
Figure 5



Molding Tool
Figure 6

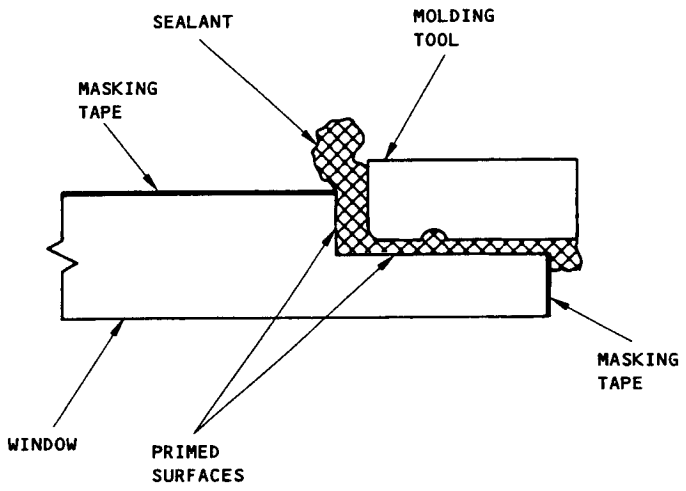


WITHOUT BUMPER STRIP

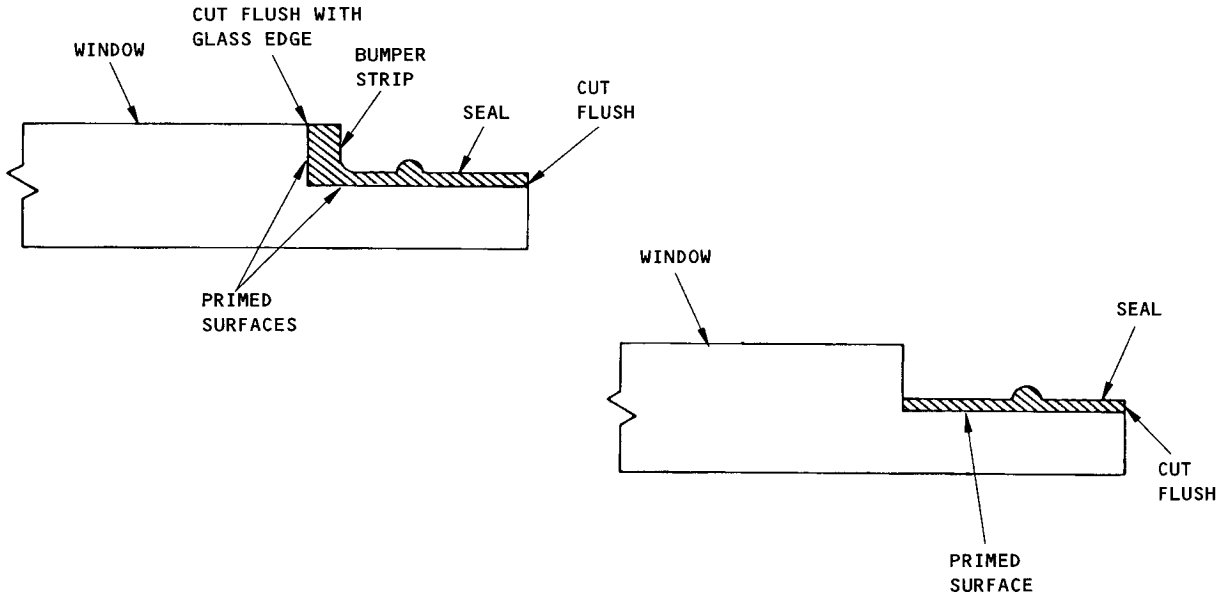


WITH BUMPER STRIP

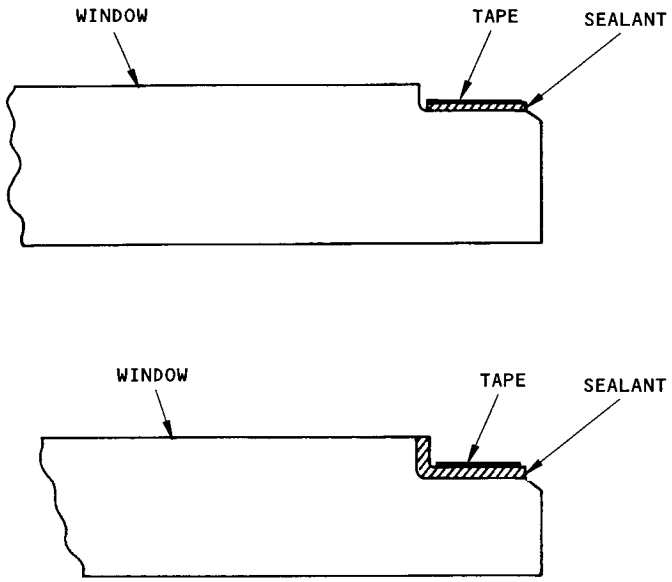
Masking Tape and Primer Application
Figure 7



Sealant Injection
Figure 8



Seal Trim
Figure 9



Tape and Sealant Repair
Figure 10

4. TESTING

A. Equipment and Materials

(1) Ohmmeter -- 0-500 ohm range, accurate to ±5%

B. Measure the resistance of the conductive coating.

(1) Connect the ohmmeter across the window terminals.

(2) Make sure resistance of the conductive coating is in these limits:

(a) Window No. 1: 31.4-52.0 ohms

(b) Window No. 2: 55.7-100.0 ohms

(c) Window No. 3: 44-54 ohms (for glass windows only: 5-71763-series, 5-89356-series)

(d) Window No. 4: (Triplex manufacturer) 41.3-55.8 ohms; (PPG manufacturer) (61.6-83.4 ohms)

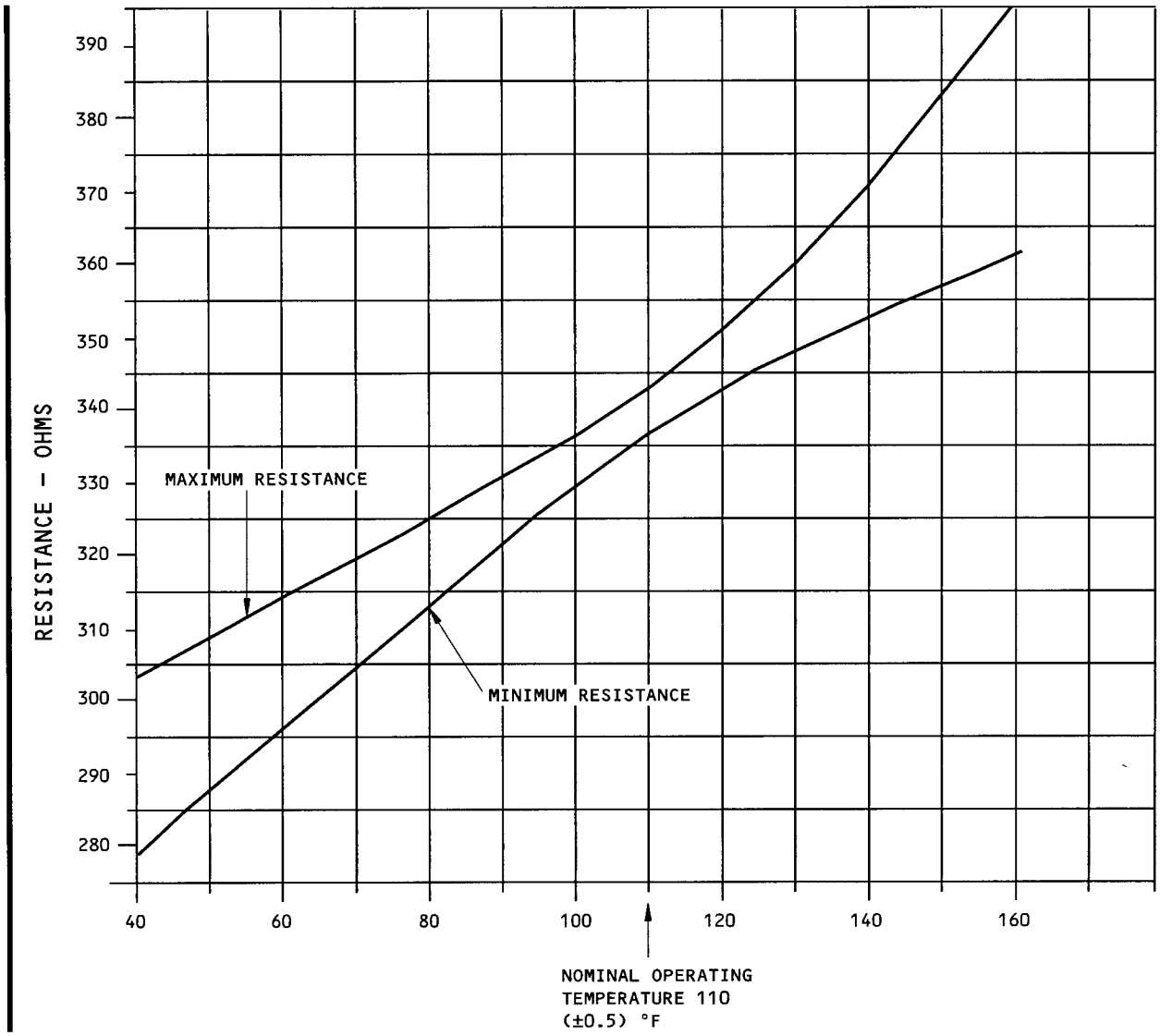
(e) Window No. 5: (Triplex Manufacturer) 34.1-46.0 ohms; (PPG manufacturer) (40.6-55.0 ohms)

(3) If the resistance of the conductive coating is not in this range, the windshield assembly is unserviceable.

C. Measure the resistance of the laminated heat sensor (No. 1 and No. 2 windows only)

(1) Make sure the window is in a temperature-stable environment for 2 hours minimum before you make this measurement.

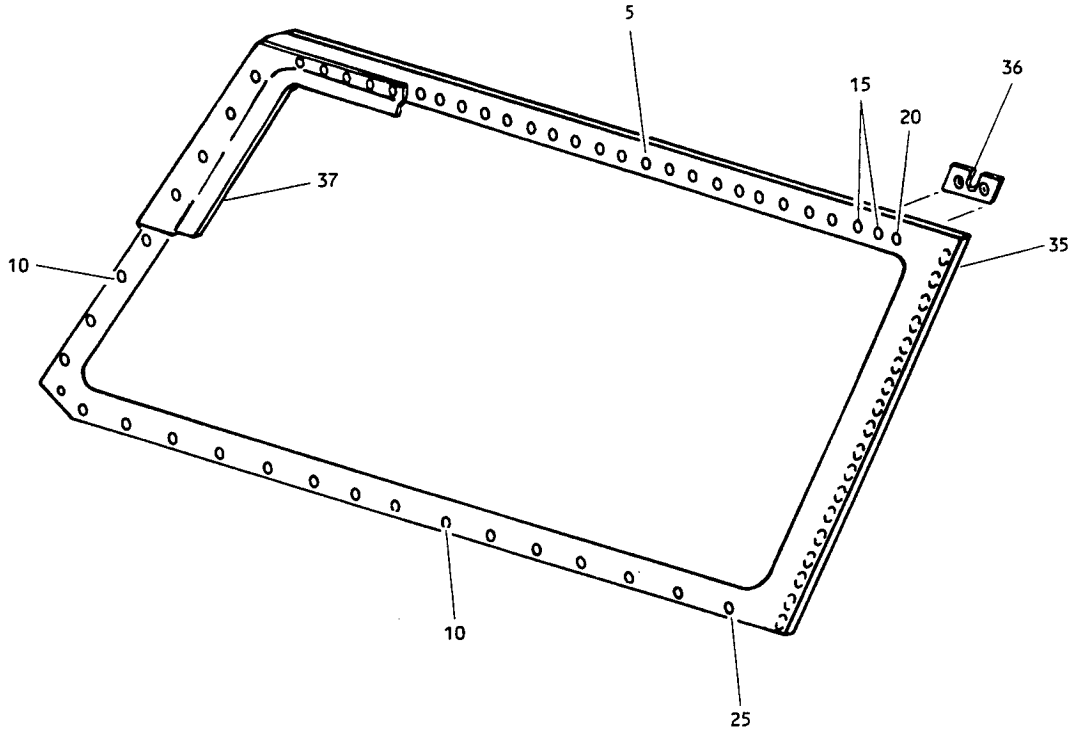
(2) Connect the ohmmeter to the terminals of the laminated heat sensor in the windshield assembly. Make sure the resistance for the laminated heat sensor is within the limits shown in Fig. 11.



10-1675-2,-5

Window Heat Control Sensor Resistance
Figure 11

5. ILLUSTRATED PARTS LIST



Pane 1, Windshield Assembly
Figure 12

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
12-					
1	5-89354-29		WINDSHIELD ASSY, PANE 1	A	RF
1	5-89354-30		WINDSHIELD ASSY, PANE 1	B	RF
1	5-89354-3029		WINDSHIELD ASSY, PANE 1	C	RF
1	5-89354-3030		WINDSHIELD ASSY, PANE 1	D	RF
1	5-89354-3035		WINDSHIELD ASSY, PANE 1	E	RF
1	5-89354-3036		WINDSHIELD ASSY, PANE 1	F	RF
1	5-89354-3051		WINDSHIELD ASSY, PANE 1	G	RF
1	5-89354-3052		WINDSHIELD ASSY, PANE 1	H	RF
1	5-71761-3019		WINDSHIELD ASSY, PANE 1	I	RF
1	5-71761-3020		WINDSHIELD ASSY, PANE 1	J	RF
1	5-89354-3075		WINDSHIELD ASSY, PANE 1	K	RF
1	5-89354-3076		WINDSHIELD ASSY, PANE 1	L	RF
1	5-89354-3085		WINDSHIELD ASSY, PANE 1	M	RF
1	5-89354-3086		WINDSHIELD ASSY, PANE 1	N	RF
1	5-89354-3089		WINDSHIELD ASSY, PANE 1	O	RF
1	5-89354-3090		WINDSHIELD ASSY, PANE 1	P	RF
1	5-89354-3095		WINDSHIELD ASSY, PANE 1	Q	RF
1	5-89354-3096		WINDSHIELD ASSY, PANE 1	R	RF
1	5-89354-3101		WINDSHIELD ASSY, PANE 1	S	RF
1	5-89354-3109		WINDSHIELD ASSY, PANE 1 *[2]	T	RF
1	5-89354-3110		WINDSHIELD ASSY, PANE 1 *[3]	U	RF
1	65C33819-1		WINDSHIELD ASSY, PANE 1 *[2]	V	RF
1	65C33819-2		WINDSHIELD ASSY, PANE 1 *[3]	W	RF
1	65C34348-1		WINDSHIELD ASSY, PANE 1 *[2]	X	RF
1	65C34348-2		WINDSHIELD ASSY, PANE 1 *[3]	Y	RF
1	5-89354-3129		WINDSHIELD ASSY, PANE 1	Z	RF
1	5-89354-3130		WINDSHIELD ASSY, PANE 1	BA	RF
1	5-89354-3135		WINDSHIELD ASSY, PANE 1 (COATED)	CA	RF
1	5-89354-3136		WINDSHIELD ASSY, PANE 1 (COATED)	DA	RF
1	5-89354-3137		WINDSHIELD ASSY, PANE 1	EA	RF
1	5-89354-3138		WINDSHIELD ASSY, PANE 1	FA	RF
1	5-89354-3139		WINDSHIELD ASSY, PANE 1 (COATED)	GA	RF
1	5-89354-3140		WINDSHIELD ASSY, PANE 1 (COATED)	HA	RF
1	5-89354-3141		WINDSHIELD ASSY, PANE 1	IA	RF
1	5-89354-3142		WINDSHIELD ASSY, PANE 1	JA	RF
5	5-89354-40		. SPACER	A-D	24
5	5-89354-3041		. SPACER	E-H K-U Z-JA	24
5	65C33819-14		. SPACER	VW	24
5	65C34348-14		. SPACER	XY	24
10	5-89354-41		. SPACER	A-D	22
10	5-89354-3042		. SPACER	E-H K-U Z-JA	22
10	65C33819-15		. SPACER	VW	22
10	65C34348-15		. SPACER	XY	22

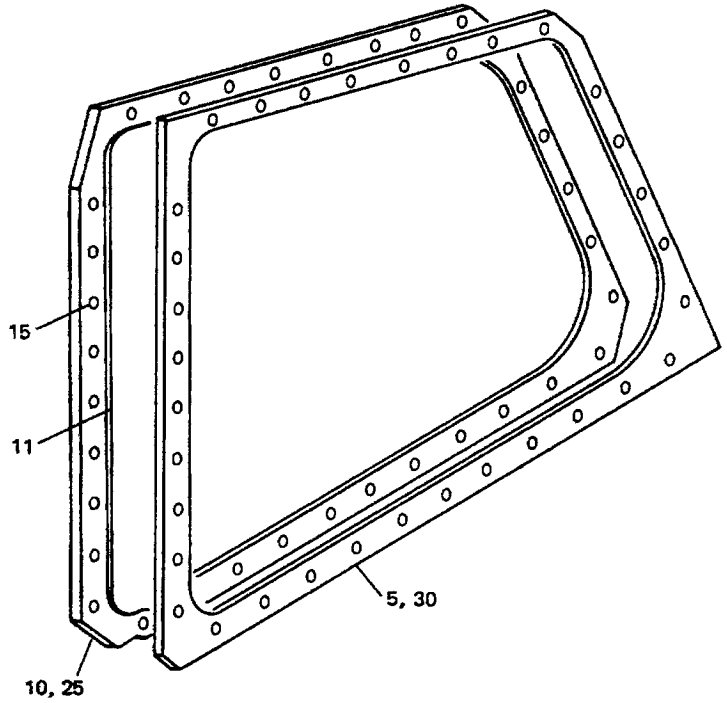
FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
12-					
15	5-89354-43		. SPACER	A-D	2
15	5-89354-3043		. SPACER	E-H K-U Z-JA	2
15	65C33819-16		. SPACER	VW	2
15	65C34348-16		. SPACER	XY	2
20	5-89354-44		. SPACER	A-D	1
20	5-89354-3044		. SPACER	E-H K-U Z-JA	1
20	65C33819-17		. SPACER	VW	1
20	65C34348-17		. SPACER	XY	1
25	5-89354-45		. SPACER	A-D	1
25	5-89354-3045		. SPACER	E-H K-U Z-JA	1
25	65C33819-18		. SPACER	VW	1
25	65C34348-18		. SPACER	XY	1
35	5-89354-31		. WINDSHIELD ASSY *[1]	A	1
35	5-89354-32		. WINDSHIELD ASSY *[1]	B	1
35	5-89354-3031		. WINDSHIELD ASSY *[1]	C	1
35	5-89354-3032		. WINDSHIELD ASSY *[1]	D	1
35	5-89354-3037		. WINDSHIELD ASSY *[1]	E	1
35	5-89354-3038		. WINDSHIELD ASSY *[1]	F	1
35	5-89354-3053		. WINDSHIELD ASSY *[1]	G	1
35	5-89354-3054		. WINDSHIELD ASSY *[1]	H	1
35	5-89354-3027		. WINDSHIELD ASSY *[1]	I	1
35	5-89354-3028		. WINDSHIELD ASSY *[1]	J	1
35	5-89354-3077		. WINDSHIELD ASSY *[1]	K	1
35	5-89354-3078		. WINDSHIELD ASSY *[1]	L	1
35	5-89354-3087		. WINDSHIELD ASSY *[1]	M	1
35	5-89354-3088		. WINDSHIELD ASSY *[1]	N	1
35	5-89354-3091		. WINDSHIELD ASSY *[1]	O	1
35	5-89354-3092		. WINDSHIELD ASSY *[1]	P	1
35	5-89354-3093		. WINDSHIELD ASSY *[1]	Q	1
35	5-89354-3094		. WINDSHIELD ASSY *[1]	R	1
35	5-89354-3102		. WINDSHIELD ASSY *[1]	S	1
35	5-89354-3111		. WINDSHIELD ASSY *[1]	TZ CA EA GA IA	1
35	5-89354-3112		. WINDSHIELD ASSY *[1]	U BA DA FA HA JA	1
36	5-89354-42		. INSULATOR	A-H K-U Z-JA	1
36	65C34348-13		. INSULATOR	XY	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
12-37	5-89354-3049		. Z-SEAL	EGKMOQT Z CA EA GA IA	1
37	5-89354-3050		. Z-SEAL (OPP)	FHLNPRU BA DA FA HA JA	1
37	65C34471-1		. Z-SEAL	X	1
37	65C34471-2		. Z-SEAL	Y	1

*[1] A BONDED ASSEMBLY OF PANES, FILLERS, ETC. WHICH CANNOT BE DISASSEMBLED IN THE FIELD.

*[2] 65C33819-1 AND 5-89354-3109 AND 65C34348-1 OPTIONAL TO EACH OTHER.

*[3] 65C33819-2 AND 5-89354-3110 AND 65C34348-2 OPTIONAL TO EACH OTHER.



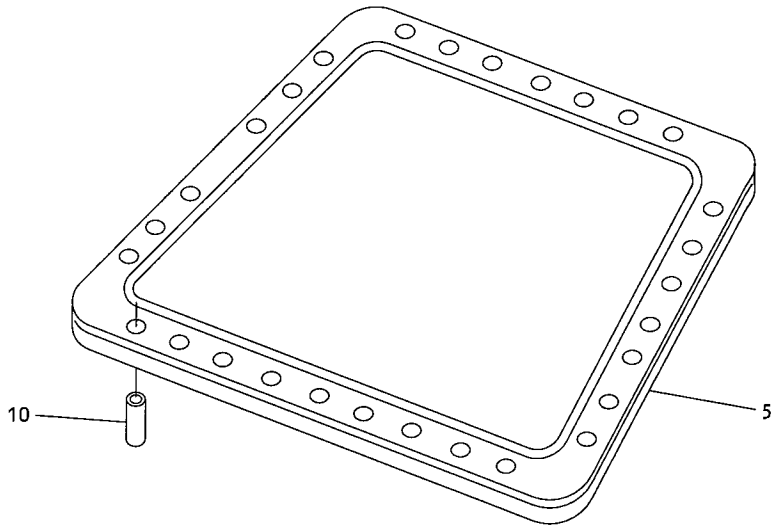
Windshield Assembly, Pane 3
Figure 13

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
13-					
1	5-71763-13		WINDSHIELD ASSY, PANE 3	A	RF
1	5-71763-14		WINDSHIELD ASSY, PANE 3	B	RF
1	65-16323-11		WINDSHIELD ASSY, PANE 3	C	RF
1	65-16323-12		WINDSHIELD ASSY, PANE 3	D	RF
1	65-16323-21		WINDSHIELD ASSY, PANE 3	E	RF
1	65-16323-22		WINDSHIELD ASSY, PANE 3	F	RF
1	65-16323-25		SPARES ASSY, PANE 3	G	RF
1	65-16323-26		SPARES ASSY, PANE 3	H	RF
1	5-71763-29		WINDSHIELD ASSY, PANE 3	I	RF
1	5-71763-30		WINDSHIELD ASSY, PANE 3	J	RF
1	5-71763-33		WINDSHIELD ASSY, PANE 3	K	RF
1	5-71763-34		WINDSHIELD ASSY, PANE 3	L	RF
1	65-38210-9		WINDSHIELD ASSY, PANE 3	M	RF
1	65-38210-10		WINDSHIELD ASSY, PANE 3	N	RF
1	5-89356-41		WINDSHIELD ASSY, PANE 3	O	RF
1	5-89356-42		WINDSHIELD ASSY, PANE 3	P	RF
1	65-16323-31		WINDSHIELD ASSY, PANE 3	Q	RF
1	65-16323-32		WINDSHIELD ASSY, PANE 3	R	RF

L98439

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
13-					
5	69-30627-1		. SEAL, DRY	A-F	1
5	5-71763-23		. SEAL, PRESSURE (OPT TO 69-30627-1 OR 65-38210-15)	AIKM	1
5	65-38210-15		. SEAL	M	1
5	5-71763-24		. SEAL, PRESSURE (OPT TO 69-30627-1 OR 65-38210-16)	BJLN	1
5	65-38210-16		. SEAL	N	1
5	65-16323-17		. PRESSURE SENSITIVE TAPE (OPT TO 69-30627-1)	C-F	1
5	69-30627-3		. SEAL, PRESSURE	OQ	1
5	69-30627-4		. SEAL, PRESSURE	PR	1
10	5-89356-1		. WINDSHIELD ASSY *[1]	A	1
10	5-89356-2		. WINDSHIELD ASSY *[1]	B	1
10	65-24110-17		. WINDSHIELD ASSY *[1]	C	1
10	65-24110-18		. WINDSHIELD ASSY *[1]	D	1
10	5-89356-17		. WINDSHIELD ASSY *[1]	I	1
10	5-89356-18		. WINDSHIELD ASSY *[1]	J	1
10	5-89356-19		. WINDSHIELD ASSY *[1]	K	1
10	5-89356-20		. WINDSHIELD ASSY *[1]	L	1
10	65-38210-13		. WINDSHIELD ASSY *[1]	M	1
10	65-38210-14		. WINDSHIELD ASSY *[1]	N	1
-10	PANE		. WINDSHIELD ASSY *[1]	OP	1
10	65-38210-19		. WINDSHIELD ASSY *[1]	Q	1
10	65-38210-20		. WINDSHIELD ASSY *[1]	R	1
11	5-89356-14		. . STRIP, BUMPER (USED ON 5-89356-1, -2, -17,-18)		1
11	5-89356-21		. . STRIP, BUMPER (USED ON 5-89356-19, -20)		1
12	65-38210-8		. . BUSHING, INSERT (USED ON 65-38210-13,-14)		33
15	66-25258-1		. BUSHING		33
20	65-16323-15		. WINDSHIELD ASSY	E	1
20	65-16323-16		. WINDSHIELD ASSY	F	1
20	65-38210-17		. WINDSHIELD ASSY	G	1
20	65-38210-18		. WINDSHIELD ASSY	H	1
25	65-38210-1		. . WINDSHIELD ASSY *[1]	E	1
25	65-38210-2		. . WINDSHIELD ASSY *[1]	F	1
25	65-38210-19		. . WINDSHIELD ASSY *[1]	G	1
25	65-38210-20		. . WINDSHIELD ASSY *[1]	H	1
30	69-30627-1		DELETED		
30	65-38210-15		. . SEAL, PRESSURE	G	1
30	65-38210-16		. . SEAL, PRESSURE	H	1
30	5-71763-23		. . SEAL, PRESSURE (OPT TO 65-38210-15)	G	1
30	5-71763-24		. . SEAL, PRESSURE (OPT TO 65-38210-16)	H	1

*[1] THE WINDSHIELD ASSEMBLY INCLUDES A BASIC WINDSHIELD ASSEMBLY WITH BONDED SEALS AND CANNOT BE DISASSEMBLED IN THE FIELD.

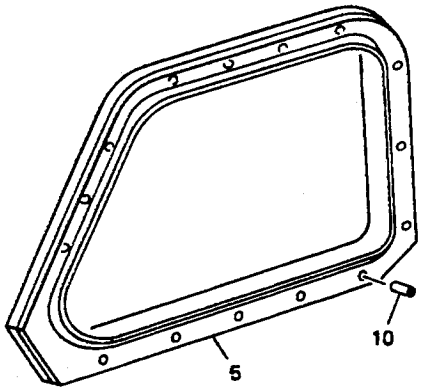


Window Assembly, Pane 4
Figure 14

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
14-					
1	5-71764-3015		WINDOW ASSEMBLY, PANE 4	A	RF
1	5-71764-3016		WINDOW ASSEMBLY, PANE 4	B	RF
1	5-89357-21		WINDOW ASSEMBLY, PANE 4 *[2]	C	RF
1	5-89357-22		WINDOW ASSEMBLY, PANE 4 *[3]	D	RF
1	65C33822-1		WINDOW ASSEMBLY, PANE 4 *[2]	G	RF
1	65C33822-2		WINDOW ASSEMBLY, PANE 4 *[3]	H	RF
1	5-89357-33		WINDOW ASSEMBLY, PANE 4 *[2]	E	RF
1	5-89357-34		WINDOW ASSEMBLY, PANE 4 *[3]	F	RF
5	5-89357-3003		. WINDOW ASSEMBLY *[1]	A	1
5	5-89357-3004		. WINDOW ASSEMBLY *[1]	B	1
5	5-89357-23		. WINDOW ASSEMBLY *[1]	C	1
5	5-89357-24		. WINDOW ASSEMBLY *[1]	D	1
5	5-89357-35		. WINDOW ASSEMBLY *[2]	E	1
5	5-89357-36		. WINDOW ASSEMBLY *[3]	F	1
10	5-89357-31		. SPACER	C-F	30
10	65C33822-17		. SPACER	GH	30

*[1] THE WINDOW ASSEMBLY INCLUDES A BASIC WINDOW ASSEMBLY WITH BONDED SEALS AND CANNOT BE DISASSEMBLED IN THE FIELD
*[2] 5-89357-21 OPTIONAL TO 65C33822-1 OR 5-89357-33
*[3] 5-89357-22 OPTIONAL TO 65C33822-2 OR 5-89357-34

G15171



Window Assembly, Pane 5
Figure 15

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
15-					
1	5-71765-13		WINDOW ASSY, PANE 5	A	RF
1	5-71765-14		WINDOW ASSY, PANE 5	B	RF
1	5-89358-21		WINDOW ASSY, PANE 5 *[2]	C	RF
1	5-89358-22		WINDOW ASSY, PANE 5 *[3]	D	RF
1	5-89358-41		WINDOW ASSY, PANE 5 *[2]	E	RF
1	5-89358-42		WINDOW ASSY, PANE 5 *[3]	F	RF
1	65C33823-1		WINDOW ASSY, PANE 5 *[2]	G	RF
1	65C33823-2		WINDOW ASSY, PANE 5 *[3]	H	RF
5	5-89358-1		. WINDOW ASSY *[1]	A	1
5	5-89358-2		. WINDOW ASSY *[1]	B	1
5	5-89358-23		. WINDOW ASSY *[1]	C	1
5	5-89358-24		. WINDOW ASSY *[1]	D	1
5	5-89358-43		. WINDOW ASSY *[1]	E	1
5	5-89358-44		. WINDOW ASSY *[1]	F	1
10	5-89358-25		. SPACER	C-F	16
10	65C33823-20		. SPACER	GH	16

*[1] THE WINDOW ASSEMBLY INCLUDES A BASIC WINDOW ASSEMBLY WITH BONDED SEALS AND CANNOT BE DISASSEMBLED IN THE FIELD.
*[2] 5-89358-21 OPTIONAL TO 65C33823-1 OR 5-89358-41.
*[3] 5-89358-22 OPTIONAL TO 65C33823-2 OR 5-89358-42.

VENDORS

V01139	GENERAL ELECTRIC CO., SILICON PRODUCTS BUSINESS DEPT., HUDSON RIVER RD., WATERFORD, NEW YORK 12188
V06929	MASK-OFF CO., INC., 345 W. MAPLE AVE., MONROVIA, CALIFORNIA 91016-3331
V07607	SWS SILICONES DIV. OF STAUFFER CHEMICAL CO., MATAWAN, NEW JERSEY 07747-1245
V09457	TEXIZE CHEMICALS CO., DIV. OF MORTON-THIOKOL, INC., LAURENS RD., P.O. BOX 368, GREENVILLE, NORTH CAROLINA 29602
V18873	E. I. DUPONT DE NEMOURS AND CO., INC., 1007 MARKET ST., P.O. BOX 1635, WILMINGTON, DELAWARE 19899
V64807	WEST CHEMICAL PRODUCTS, INC., 1000 HERRONTOWN RD., SUITE 4216, PRINCETON, NEW JERSEY 08540-7702
V71984	DOW CORNING CORP., 2200 W. SALZBURG RD., P.O. BOX 997, MIDLAND, MICHIGAN 48640
V76236	MATCHLESS METAL POLISH CO., 840 W. 49TH PL., CHICAGO, ILLINOIS 60609-5196
V76381	MINNESOTA MINING AND MANUFACTURING CO., 3M CENTER BLDG., 224-5S-04, ST. PAUL, MINNESOTA 55144-1000
V87354	SPRAYLAT CORP., 716 S. COLUMBUS AVE., MT. VERNON, NEW YORK 10550-4717
V99742	PERMACEL, US HWY 1, P.O. BOX 671, NORTH BRUNSWICK, NEW JERSEY 08902