COCKPIT WINDSHIELD - REPAIRS

EFFECTIVITY: ALL

1. General

   A. This section gives the procedures to repair the cockpit windshield.

   B. For more information about repair to the PPG-made windshield, refer to PPG Abbreviated Component Maintenance Manual - ACMM 56-10-01, and for Sierracin-made windshield, refer to Sierracin Component Maintenance Manual - CMM 56-10-03.

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

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
56-10-01-300-801-A	AERODYNAMIC HUMP SEAL - REPAIR	AIRCRAFT WITH SIERRACIN-MADE WINDSHIELD
56-10-01-300-802-A	AERODYNAMIC HUMP SEAL - REPAIR	AIRCRAFT WITH PPG-MADE WINDSHIELD

TASK 56-10-01-300-801-A
EFFECTIVITY: AIRCRAFT WITH SIERRACIN-MADE WINDSHIELD

2. AERODYNAMIC HUMP SEAL - REPAIR

A. General

(1) This task gives the instructions to repair the aerodynamic hump seal on the cockpit windshield.

(2) You can do this repair procedure with the transparency installed in the aircraft.

NOTE: If you remove the transparency from the aircraft to repair it, you must use Sierracin Component Maintenance Manual - CMM 56-10-03, to do the repair.

(3) The consumable items named "MAT" (such MAT-624) are supplied by Sierracin, and the consumable items named "AC" (such AC-137) are supplied by Advanced Chemistry and Technology.

B. References

REFERENCE	*DESIGNATION*
SRM 51-20-01-PR	-
SRM 51-71-12-PR	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Semco gun (Model 250-A air-pressure activated, or Model 850, hand-activated)	To apply sealant	
Commercially available	House assembly (optional)	Item needed if you use Model 250-A Semco gun	
Commercially available	Industrial Heat Gun with temperature control	To dry the cleaning solvents	
Commercially available	Electric drill with capability to run between 300-500 RPM	To mix the sealant	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Tongue depressor	To ensure that the wave of sealant is kept ahead of the Screen block	1
Commercially available	Plastic scraper tool with knife	To remove the aerodynamic hump seal	1
Commercially available	Single-edge razor blade	To remove the aerodynamic hump seal	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Commercially available	Primer AC-137 or MAT-624 (part of Sierracin Repair Kit P/N 500705-03)	AR
Commercially available	Sealant PR 1425CF or MAT-136 - black (part of Sierracin Repair Kit P/N 500709)	AR
Commercially available	Primer PR-1861 (part of Sierracin Repair Kit P/N 500709)	AR
Commercially available	Seal Guide Tape P/N 500705-101 or MAT-258 (part of Sierracin Repair Kit P/N 500705-03)	AR
Commercially available	Scree Block Tool P/N 500616-03 (part of Sierracin Repair Kit P/N 500705-03)	AR
Commercially available	Protective Nitrite Gloves	2 pairs
TT-I-735	Isopropyl Alcohol	AR
Commercially available	Naphtha	AR
Commercially available	Q-tips or Small Cotton	AR
Commercially available	Rymple Cloth 201 (100% cotton wipe)	AR
Commercially available	Masking Tape 38.5 mm (1.5 in.), 25.4 mm (1.0 in.), and 6.35 mm (0.25 in.) - 3M 232 Double Coated Masking Tape	AR
Commercially available	Double Back Masking Tape 25.4 mm (1.0 in.) - 3M 401 Scotch Masking Tape	AR
Commercially available	Plating tape 25.4 mm (1 in.) - 3M Brand 218	
Commercially available	Protective Paper - American Biltrite No. 850	AR
Commercially available	Aluminum Adhesive Tape (3M 425) (If required)	AR
Commercially available	Scotch Brite Pad - 3M	AR
MIL-PRF-81733, Type II - CLASS B	PR-2050 B-1/2	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Forward fuselage
1	Helps the other technician	Forward fuselage

I. Preparation

SUBTASK 841-004-A

(1) Make an inspection on the backside of the aerodynamic hump seal where it is bonded to the glass. Areas that show lighter in color or show air bubbles show the start of the seal disbond (Figure 801).

CAUTION: • IF YOU USE TOO MUCH FORCE TO DO THIS TEST, THE FORCE WILL DAMAGE THE BONDED SEAL AND THE WINDSHIELD. USE LIGHT HAND PRESSURE ONLY.

• WHEN YOU USE A TOOL TO DO THIS TEST, KEEP IT POINTED AWAY FROM THE CENTER OF THE WINDSHIELD AND BE CAREFUL NOT TO SCRATCH THE GLASS.

(2) From the outside, carefully pull upward the edges of the seal on the glass surface. Use a fingernail or a tool which is not made of metal (Figure 801) to hold the seal. An incorrect bond will cause the seal to move apart from the glass.

(3) If you find a seal with weak bond while you do the inspection given above, obey the procedure given below to repair the seal. You can also make a temporary repair as shown in item K.

J. Aerodynamic Hump Seal Repair

SUBTASK 350-009-A

(1) Find the two ground braid wires near the lower sill of the windshield (Figure 802).

(2) Use a grease pencil and mark approximately 25.4 mm (1.0 in.) on one of the two sides of the braid location, on the windshield itself.

NOTE: • You must be able to see these marks from the outside of the windshield, when you look in.

• Be careful not to damage the ground braid wires while you remove the seal.

• If the ground braid wire brakes during the seal repair, repair it. To do this, refer to the last revision of the Sierracin Component Maintenance Manual - CMM 163500.

WARNING: CLEANING PRODUCTS ARE TOXIC AND FLAMMABLE. A GOOD FLOW OF AIR MUST BE AVAILABLE WHEN THE WORK IS DONE IN A CLOSED AREA.

CAUTION: • DO NOT PERMIT THE CLEANING PRODUCTS (SOLVENTS) TO TOUCH PAINT-FINISH SURFACES, PLASTICS OR SEALANT BEADS. THIS CAN CAUSE DAMAGE TO THEM.

• DO NOT PUT REMAINING CLEANING MATERIAL BACK INTO ORIGINAL CONTAINERS TO PREVENT CONTAMINATION.

• DO NOT PUT CLEANING PRODUCT DIRECTLY ON THE SURFACE TO CLEAN IT.

• REMOVE CLEANING PRODUCT FROM THE SURFACE WITH A LINT-FREE CLOTH BEFORE IT DRIES.

• DO NOT WEAR CLOTHES WITH ZIP FASTENERS, OR USE METAL OBJECTS (SUCH AS WATCHES, BRACELETS, AND RINGS) OR METAL TOOLS WHEN YOU CLEAN THE WINDOW, BECAUSE THEY MAY SCRATCH THE TRANSPARENCY, AND CAUSE OPTICAL DISTORTIONS.

(3) Put on a pair of protective Nitrite gloves.

CAUTION: BE VERY CAREFUL WHEN YOU USE A RAZOR BLADE ON OR NEAR THE WINDOW SURFACE.

(4) Use a plastic scraper to remove the aerodynamic hump seal from the glass faceply and metal frame surfaces. Remove the aerodynamic hump seal carefully until only a thin film of residue stays on the surfaces.

NOTE: • If the plastic scraper does not remove the seal, use a single-sided razor blade. But, when you use a single-sided razor blade, you must be careful and use this tool at an angle to the surface of the window; do not use a blade at a right angle to the surface.

• Be careful not to damage the glass faceply or the metal frame.

(5) If the groove between the frame and the faceply glass got the laminated surface of the glass exposed, do as follows:

(a) Use a plastic scraper along the groove to remove all remaining adhesive from the glass and the metal frame.

NOTE: • Make sure that you reach the bare metal and the glass.

• It is not necessary to use a scraper on the bottom of the groove.

(b) Use a Scotch-Brite Pad moist with Naphtha to clean the area. Continue the cleaning with a cloth moist with Naphtha followed by a cloth soaked in a solution of 50% Isopropyl alcohol + 50% water.

NOTE: • This will make sure that there will be no remaining silicone or oil contamination.

• Do this cleaning procedure again as necessary.

(c) Clean the area with a cloth moist with Isopropylalcohol (100%).

NOTE: Do this cleaning procedure again as necessary.

(d) Use a hot air blow for 15 minutes with the air temperature at 60°C ± 5°C (140°F ± 10°F) to dry the alcohol.

(6) If the groove between the frame and the faceply glass gets the laminated surface of the glass totally exposed and reaches the outboard interlayer, apply large quantities of Isopropyl Alcohol with a squirt bottle to the bottom of the groove and right after that, apply compressed air to dry the alcohol. Then apply the Windshield Hump Seal Curing Tool to the surface, tape down lightly (sufficient to hold in position only) and make the exposed groove hot until it reaches a temperature of 140°F ± 10°F. Keep it at this temperature for 2 hours.

NOTE: For this repair, the windshield removal and special tools are not necessary.

CAUTION: DO A VISUAL INSPECTION OF THE HUMP SEAL AREA FOR REMAINING LIQUIDS (OILS, SILICONE ADHESIVE, NAPHTHA, ISOPROPYL ALCOHOL, WATER, ETC.) AND A VISUAL INSPECTION OF THE EDGES OF THE INTERLAYER BELOW THE FACEPLY FOR SIGNS OF MOISTURE CONTAMINATION. IF YOU FIND SIGNS OF MOISTURE CONTAMINATION BELOW THE FACEPLY, STOP; THE WINDSHIELD IS NOT REPAIRABLE IN THE FIELD, YOU MUST SEND IT TO SIERRACIN FOR MORE ACTIONS. ONCE THE SURFACES THAT YOU WILL SEAL, ESPECIALLY ANY EXPOSED AREAS OF THE GROOVE, ARE FULLY CLEAN, GO TO THE NEXT STEP.

(7) Refer to Figure 803 to see the tape lay-up. Apply a 50.8 mm (2.0 in.) tape first, to cover the frame from its inner edge out.

NOTE:
- Cut small sections of tape for all taping procedures given below to get the necessary corner radius.
- When you overlap sections of masking tape, be careful to work in one direction around the perimeter of the window. This will make the removal of the tape easier at the end of the repair.

(8) Use the 38.1 mm (1.5 in.) wide tape and mask from the inner edge of the frame to the direction of the center of the windshield.

NOTE:
- Alternatively to the 38.1 mm (1.5 in.) tape you can use a 12.7 mm (0.5 in.) tape followed by the 25.4 mm (1.0 in.) tape to make your work easier.
- This tape is used to find the seal, and will be removed before the wet sealant application.

(9) Apply the 25.4 mm (1.0 in.) plating tape (3M Scotch Brand 218) at the inner edge of the 38.1 mm (1.5 in.) tape you applied before.

(10) Apply the 6.35 mm (0.25 in.) wide tape on the outer edge of the 38.1 mm (1.5 in.) tape that you applied before.

(11) Apply the 25.4 mm (1.0 in.) wide double back tape along the inner edge of the 6.35 mm (0.25 in.) tape, as far as possible from the center of the windshield.

NOTE: This tape can be 1/8 of the tape applied in the item (9).

(12) Apply the 9.52 mm (3/8 in.) wide seal-guide tape MAT-285 directly on top of the double back tape, along the inner edge of the 6.35 mm (0.25 in.) tape applied in item (9).

(13) Cut a piece of the protective paper to cover the windshield exposed glass faceply surface and apply it to the double back tape.

NOTE:
- Never cut tape or paper while it is on the surface of the part.
- Make sure that the protective paper slightly overlaps the double back tape for the full protection of the faceply.
- If there is a gap between the protective paper and the double back tape, apply a 25.4 mm (1.0 in.) to 38.1 mm (1.5 in.) tape wide to do the protection of the faceply.

(14) Remove the 38.1 mm (1.5 in.) wide tape (or 12.7 mm (0.5 in.) wide tape followed by the 25.4 mm (1.0 in.) wide tape), until the area to be sealed again is shown.

(15) Clean the area to be repaired as follows:

(a) Use a Scotch-Brite Pad moist with Naphtha to clean the section to be in contact with the hump seal.

(b) Clean the area with a cloth moist with Naphtha followed by a cloth soaked in a solution of 50% Isopropyl alcohol + 50% water.

NOTE:
- This will make sure that there is no remaining silicone or oil contamination.
- Do this cleaning procedure again as necessary.

(c) Clean the area with a cloth moist with Isopropylalcohol (100%).

NOTE: Do this cleaning procedure again as necessary.

(16) NOTE: Use one of the alternative sealants, PR 1425CF (black) or PR-1425B -1/2.

Use a lint free cloth to apply a thin coat of PR-1861 primer for PR-1425CF on the outer surface of the faceply glass only. Let the primer air dry for 30 minutes at ambient conditions. Remove the unwanted primer with a clean cloth.

NOTE:
- Put on a new pair of protective Nitrite gloves after primer application.

(17) Prepare the sealant as follows:

NOTE: The sealant cartridge is part of the Sierracin repair kit. That can change with the aircraft configuration.

(a) Hold the sealant cartridge and pull the dasher rod approximately 1/4 of the way up to the cartridge.

(b) Put the ramrod into the hollow of the dasher rod, move piston and put about 1/3 of the contents of the rod into the cartridge

NOTE: Use firm but equally applied pressure. Do not push, tap, or shake the ramrod if the piston does not move readily.

(c) Do these steps again until all the content of the rod is in the cartridge and remove the ramrod.

(18) Mix the sealant as follows:

(a) Attach the mixing rod of the cartridge to an electric drill at an RPM between 300-500 for 1.5 to 2 minutes.

NOTE:
- Refer to the mixing procedures on PR-1425CF or PR-1425B -1/2 sealant package for more information, as applicable.
- When mixed with its catalyst, the PR-1425CF or PR-1425B -1/2 sealant have a pot life of 15 minutes.

(19) Apply the sealant as follows:

(a) Remove the bottom cap from the sealing cartridge.

(b) Push the dasher rod to plunger the end of the cartridge and disconnect the dasher rod from the mixer dasher. Turn it counterclockwise. Remove the dasher rod from the cartridge.

(c) Install the Semco nozzle to the neck end of the sealant cartridge, and put it into the Semco dispensing gun.

NOTE: Discharge and discard the first 10 mm of the sealant.

(d) Apply the sealant (PR-1425CF or PR-1425B -1/2, as applicable) to the area repaired. Work it into the crevice between the frame and the glass. Apply a sufficient quantity of sealant in a bead to complete the seal.

NOTE:
- Extend the coverage a minimum of 50 mm (2 in.) beyond one of the two ends of the repair area where the seal is not fully replaced.
- If the seal has to be totally replaced, apply sufficient sealant around the periphery of the faceply with a tongue depressor before you smooth with the Scree Block Tool.

(e) Use the tongue depressor (or a rubber squeegee) to gradually apply the sealant on the repair area to make the seal cross-section.

(f) Use the Scree Block Tool to make the aerodynamic seal.

NOTE:
- The inner edge of the Scree Block Tool must be put against the outer edge of the Seal Guide Tape (MAT-285) that was applied on the faceply.
- Use one side of the Scree Block Tool to apply the hump seal along the top, bottom and forward edges of the windshield. Use the other side of the Scree Block Tool to apply the hump seal along the aft edge of the windshield (Figure 803).

- Use the tongue depressor to make sure that a wave of sealant material is kept forward of the Scree Block Tool.
- Try to pull the Scree Block Tool in a continuous movement around the sealed area, and continue through the start point until the sealant wave is decreased to the necessary seal height.

(g) Do the inspection of the wet seal for bubbles. If necessary, make the surface smooth, without bubbles with a soap/water mixture. Use you fingertips to apply it. Let the seal sit for 15 minutes.

(h) Remove the masking tape near the edges of the applied sealant and let the seal to cure. Do not touch the seal.

NOTE:
- Be careful when you remove the masking tape. Pull the masking tape away from the seal. If you applied the tape in an overlap, you can remove the tape in one continuous strip.
- See Accelerated Aerodynamic Hump Seal Cure in item L.

K. Temporary Repair Procedure

SUBTASK 350-010-A

(1) If there is peeling-off on the aerodynamic hump seal (Figure 801), do this temporary repair procedure:

(a) Clean the repair area with a clean cloth moist with 50% of isopropyl alcohol in 50% of water solution. Wait for a minimum of five minutes until the surface becomes dry.

(b) Apply an aluminum tape/polyethylene film combination (also known as speed tape) on the top of the surface of the damaged hump seal.

(c) The inner edge of the speed tape must be from 6.35 mm (0.25 in.) to 12.7 mm (0.50 in.) on the glass faceply surface.

(d) This repair is only temporary. Make a permanent repair before the aircraft completes 100 more flight hours.

(2) If there is peeling-off on the aerodynamic sealant (Figure 804), make this temporary repair procedure:

(a) Apply aluminum speed tape in the damaged area, as given in (Figure 804; DET. B). Refer to SRM 51-71-12-PR.

(b) This repair is temporary. Make a permanent repair by the time the aircraft completes 50 FC (Flight Cycles).

(c) Weekly, do a visual inspection to make sure that there is no damage to the aluminum speed tape.

(d) After the fly-by period, repair the aerodynamic sealant:

1 Do the protection the inner and outer surfaces of the transparency with latex-base paper or equivalent

2 With an acrylic spatula, remove the old aerodynamic sealant.

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

3 Clean the repair area with a clean cloth moist with 50% of isopropyl alcohol in 50% of water solution. Wait for a minimum of five minutes until the surface becomes dry.

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

4 With the aid of an adhesive tape, apply a fillet sealant to all windshield contour with sealant PR-2050 B-1/2.

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

5 Remove the unwanted aerodynamic sealant.

6 Restore the original paint

L. Accelerated Aerodynamic Hump Seal Cure

SUBTASK 350-011-A

(1) Apply the aerodynamic hump seal as given in item J.

(2) Allow it to cure for 30 minutes.

(3) Apply 50% of hand cream with 50% of water to the surface of the newly applied aerodynamic seal.

(4) Apply speed tape (aluminum tape/polyethylene film combination) directly on the aerodynamic seal. The inner edge of the speed tape must be located from 6.35mm to 12.7 mm (0.25 to 0.50 in.) on the glass faceply surface.

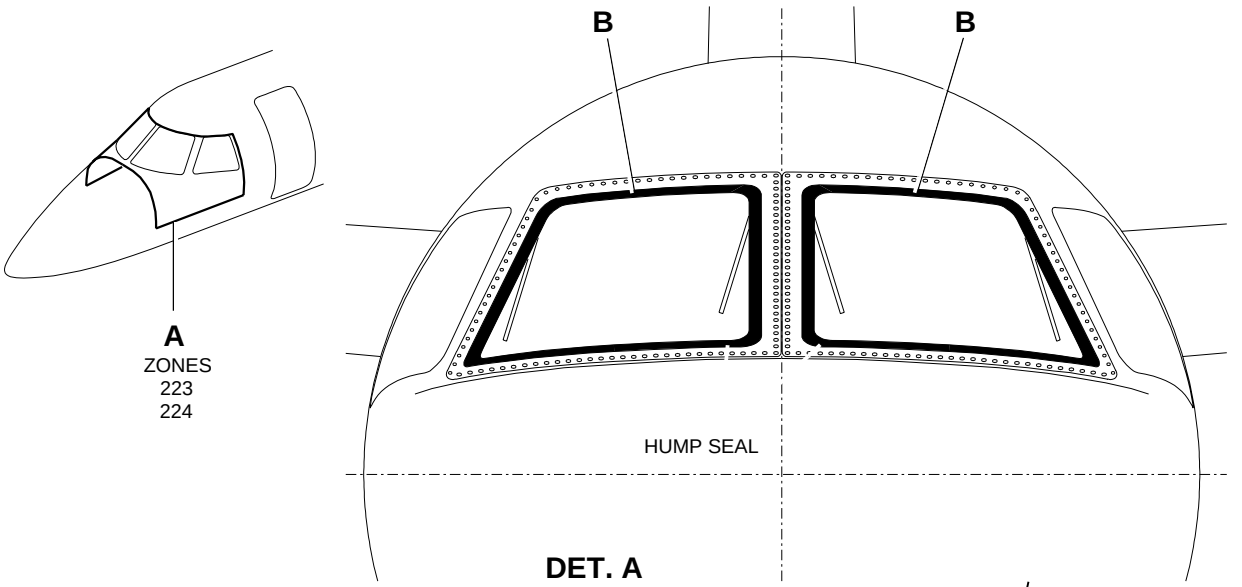
(5) You can remove the speed tape after 150 hours of additional cure time.

NOTE:
- After you applied the speed tape, the aircraft can go back to usual operations.
- The speed tape must stay on the repaired seal for a period of 150 hours before you remove it.

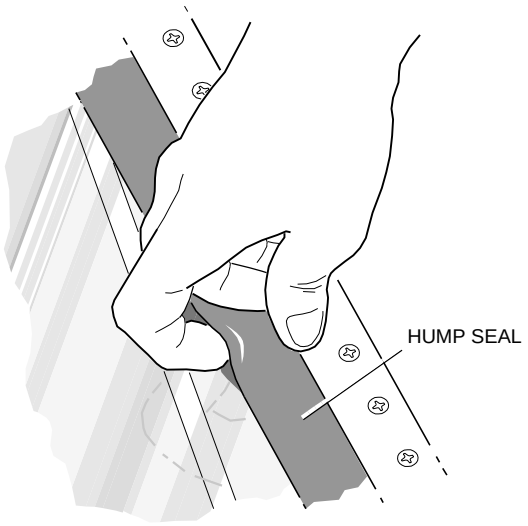
EFFECTIVITY: AIRCRAFT WITH SIERRACIN-MADE WINDSHIELD

Inspection of the Hump Seal

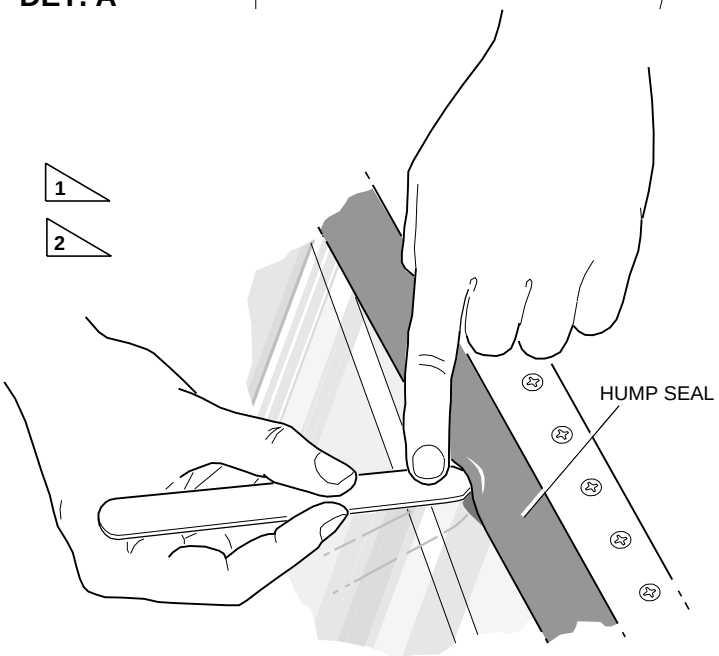
Figure 801



DET. A



DET. B



DET. B

1 INSPECT THE BACKSIDE OF THE HUMP SEAL WHERE IT IS BONDED TO THE GLASS. AREAS THAT APPEAR LIGHTER IN COLOR OR SHOW BUBBLES INDICATE THE START OF SEAL DISBOND.

2 FROM THE EXTERIOR, GENTLY PULL UPWARD ON THE EDGES OF THE SEAL ON THE GLASS SURFACE USING A FINGERNAIL OR NONMETTALIC TOOL (SEE FIGURES ABOVE) TO GRIP THE SEAL. AN INADEQUATE BOND WILL CAUSE THE SEAL TO SEPARATE FROM THE GLASS.

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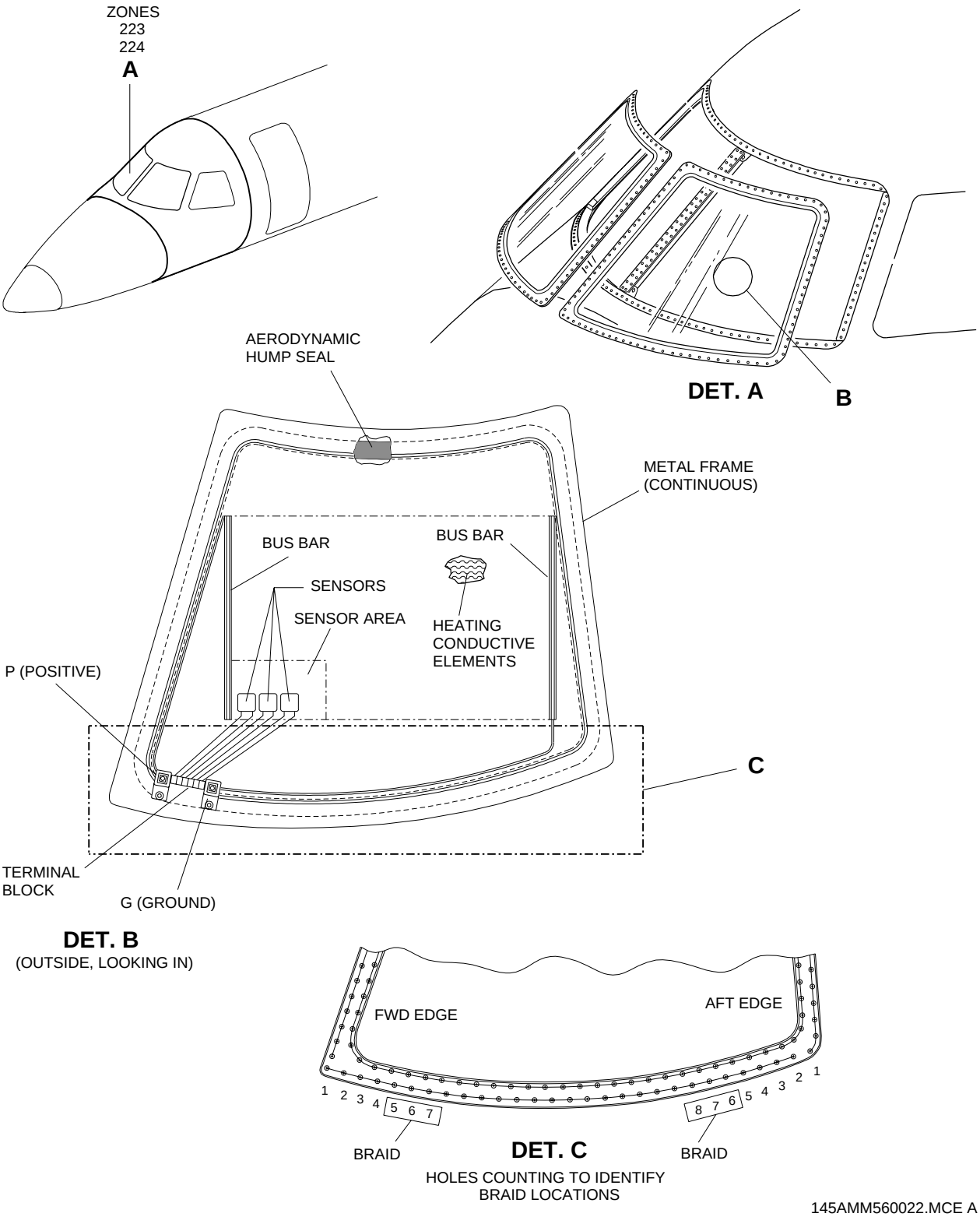
EFFECTIVITY: AIRCRAFT WITH SIERRACIN-MADE WINDSHIELD
Ground Braid Wire/Bus Bar Location
Figure 802



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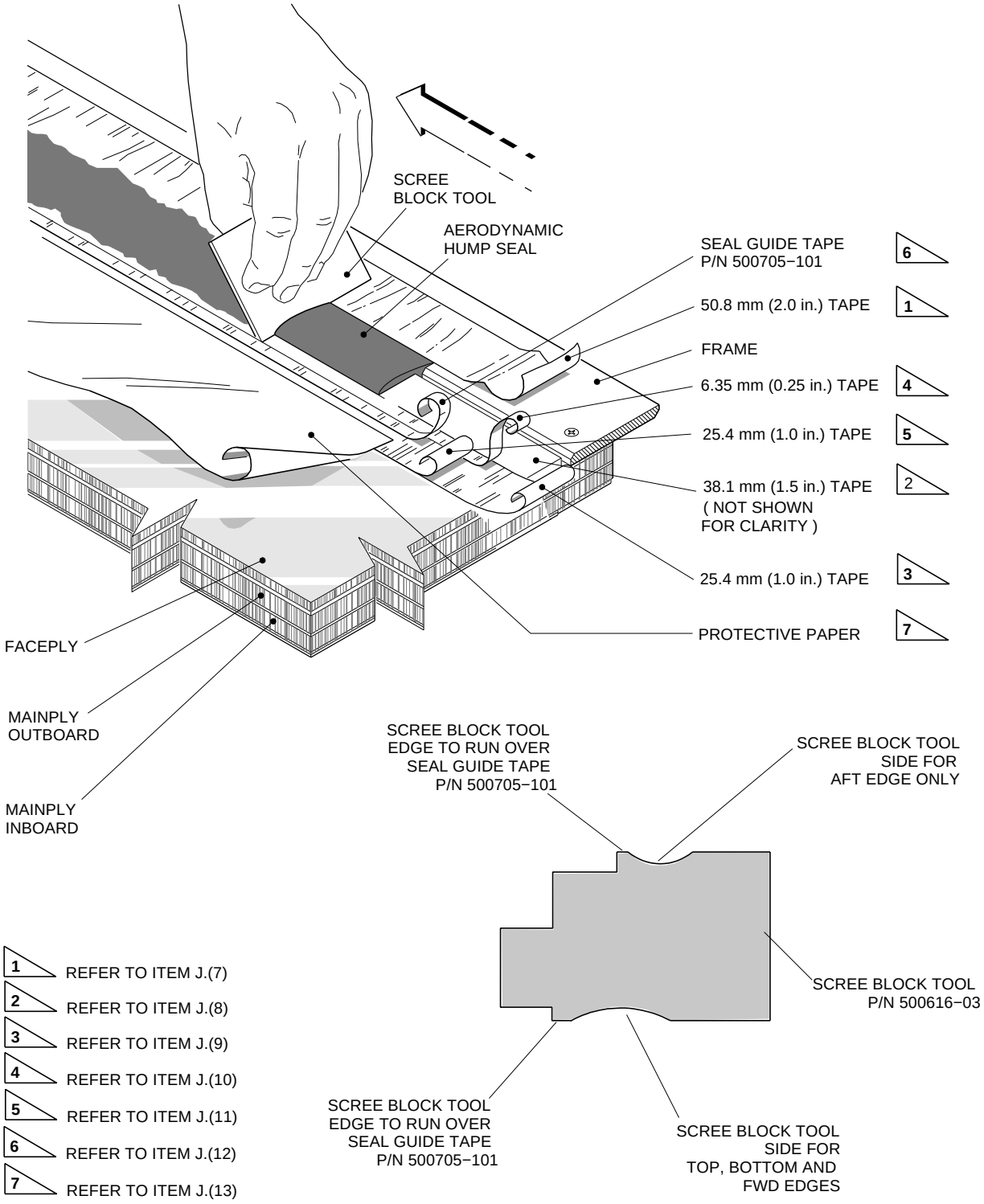
EFFECTIVITY: AIRCRAFT WITH SIERRACIN-MADE WINDSHIELD

Scree Block Fabrication

Figure 803



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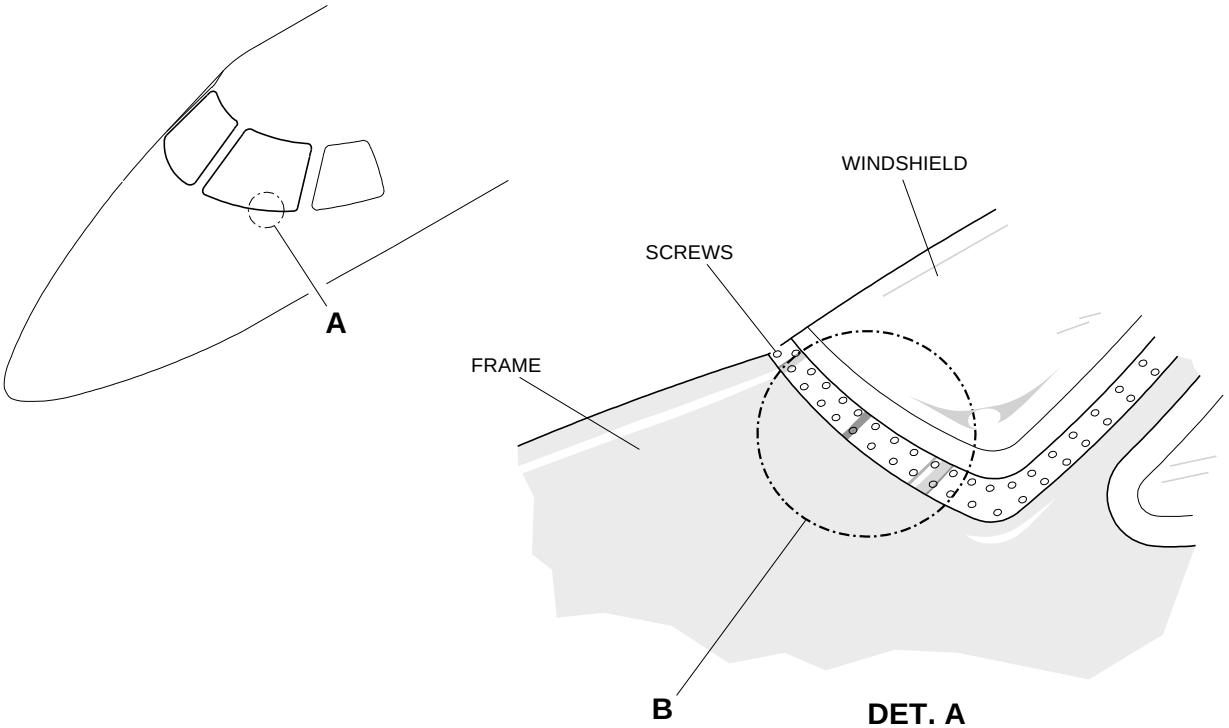
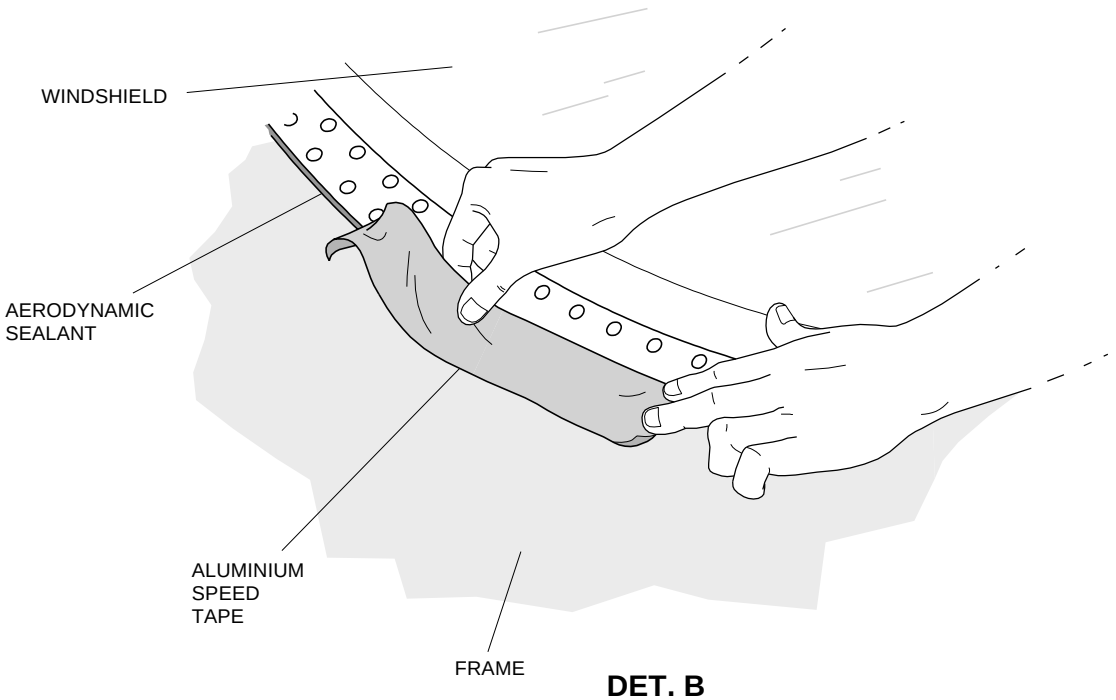
EFFECTIVITY: AIRCRAFT WITH SIERRACIN-MADE WINDSHIELD
Aerodynamic Sealant Repair
Figure 804





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TASK 56-10-01-300-802-A
EFFECTIVITY: AIRCRAFT WITH PPG-MADE WINDSHIELD

3. AERODYNAMIC HUMP SEAL - REPAIR

A. General

(1) This task gives the instructions to repair the aerodynamic hump seal on the cockpit windshield.

(2) You can do this repair procedure with the transparency installed in the aircraft.

NOTE: If you remove the transparency from the aircraft to repair it, you must use PPG Abbreviated Component Maintenance Manual - ACMM 56-10-01 to do the repair.

B. References

REFERENCE	*DESIGNATION*
SRM 51-20-01-PR	-
SRM 51-71-12-PR	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Cartridge dispenser for sealant application	To apply sealant	
Commercially available	Sealant mixer	To mix sealant	
Commercially available	Needle nose pliers	To remove the aerodynamic hump seal	
Commercially available	Hump Seal Trim Tool - PN: 22-17-7491	To trim the aerodynamic hump seal	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Acrylic spatula	To remove the aerodynamic hump seal	1
Commercially available	Single-edge razor blade	To remove the aerodynamic hump seal	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Commercially available	Sealant PR-1425CF B1/2 (model #654 Semkit)	AR
Commercially available	Primer/cleaner PR-1861	AR
Commercially available	Pumice (optionally, cerium oxide)	AR

(Continued)

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
TT-I-735	Isopropyl Alcohol	AR
ASTM-D-740	Methyl Ethyl Ketone	AR
Commercially available	Felt block	AR
Commercially available	Cotton clothes	AR
Commercially available	Gauze pads	AR
Commercially available	Cellulose sponge	AR
Commercially available	Soft-texture paper towels (such as Kaydryl)	AR
Commercially available	Masking Tape, 25.4 mm (1.0 in.)	AR
Commercially available	Rubber gloves (powder free/undusted)	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Forward fuselage
1	Helps the other technician	Forward fuselage

I. Preparation

SUBTASK 841-005-A

CAUTION: DO NOT WEAR CLOTHES WITH ZIP FASTENERS AND DO NOT USE METAL OBJECTS (SUCH AS WATCHES, BRACELETS, AND RINGS) OR METAL TOOLS WHEN YOU CLEAN THE WINDOW TO PREVENT SCRATCHES IN THE TRANSPARENCY. SCRATCHES CAUSE OPTICAL DISTORTIONS.

(1) Inspect the hump seal as follows (Figure 805; Sheet 1):

(a) If the hump seal is missing and the fiberglass strap is exposed, do a check of the adhesion of the strap to the glass as follows:

1 Tap the exposed area with a metallic coin (tap test).

NOTE: A solid bond will have a clear, distinct noise; a disbonded area will have a dull thud sound.

2 Mark disbonded areas to be repaired.

(b) If only the hump seal is damaged, the repair must be made if 50% or more of the seal width is affected.

NOTE: Give particular attention to the areas eroded by the wiper blades along the top and the aft edge of the windshield.

J. Aerodynamic Hump Seal Repair

SUBTASK 350-012-A

CAUTION:
- DO NOT LET THE CLEANING PRODUCTS (SOLVENTS) TOUCH PAINT-FINISH SURFACES, PLASTICS OR SEALANT BEADS NOT TO CAUSE DAMAGE TO THEM.
- DO NOT PUT REMAINING CLEANING MATERIAL BACK INTO ORIGINAL CONTAINERS TO PREVENT CONTAMINATION.
- DO NOT POUR CLEANING PRODUCT DIRECTLY ON THE SURFACE TO BE CLEANED.
- DO NOT LET CLEANING PRODUCT EVAPORATE BEFORE IT IS DRIED WITH THE LINT-FREE CLOTH.
- DO NOT WEAR CLOTHES WITH ZIP FASTENERS AND DO NOT USE METAL OBJECTS (SUCH AS WATCHES, BRACELETS, AND RINGS) OR METAL TOOLS WHEN YOU CLEAN THE WINDOW TO PREVENT SCRATCHES IN THE TRANSPARENCY. SCRATCHES CAUSE OPTICAL DISTORTIONS.

(1) Clean the windshield as follows:

(a) Remove all excess amount of dirt and other foreign matter from the glass surface with clean water.

NOTE: Spray or flood the surface to wash away abrasive material. If it is not possible, use a clean sponge or a soft cloth.

(b) Use a solution of 50% water and 50% isopropyl alcohol with a mild liquid soap in a 2% to 5% concentration to wash the windshield surface.

NOTE: You can use a commercial glass cleaner that do not contain ammonium.

(c) Rinse thoroughly with clean water and dry with a damp chamois, sponge or cloth.

(2) If the outer Z-Strap is loose, remove it as follows (Figure 805; Sheet 2 and Figure 806):

(a) Mask off the outer glass surface of the window; let a maximum of 3 mm (0.12 in.) area stay all around the outboard moisture seal (Figure 806).

(b) Do a careful check to determine the extent of the disbonded area.

NOTE: Only the loose areas are to be removed.

(c) Carefully slide the spatula under a loose portion of the strap.

CAUTION: BE VERY CAREFUL WHEN YOU USE A RAZOR BLADE ON OR NEAR THE WINDOW SURFACE. DO NOT SCORE THE GLASS.

(d) Use a razor blade to cut through the fiberglass strap on top of the spatula. Cut the strap all the way to the edge of the glass.

(e) Carefully lift the cut portion of the strap with the spatula and grip the corner of the cut strap with the needle nose pliers.

(f) Lift the strap with the needle nose pliers and cut it at the glass edge with the razor blade. Continue to lift and apply tension on the strap with the needle nose pliers while you cut the strap free with the razor blade.

NOTE: Continue this process until the loose portion of the strap is removed from the glass edge.

(g) After the removal of the disbonded areas of the Z-Strap, repair the outer moisture seal.

(3) To repair the outer moisture seal, do as follows (Figure 805; Sheet 2 and Figure 806):

(a) Prepare the outer glass surface as follows:

NOTE:
- All windows contaminated with a silicone-based product/sealant must be cleaned as specified in this section.
- If there is doubt that the outer surface of the glass is contaminated by a silicone-based product, it is necessary that the glass-surface preparation procedure be done.

1 Mask off the outer glass surface of the window; let a maximum of 3 mm (0.12 in.) area stay all around the outboard moisture seal (Figure 806).

NOTE: If the loose outer Z-Strap was removed, the window will already be masked.

2 Degrease the work area of the windshield with Methyl Ethyl Ketone or equivalent solvent. Use a progressive cleaning procedure as follows: clean a small area at a time with MEK followed by an isopropyl alcohol rinse to remove solvent residue and then dry with a clean cloth.

NOTE: Discard soiled cloths regularly to prevent re-deposit of contaminants.

3 Soak a block of clean felt with water. Use a thin liquid mixture of pumice or cerium oxide and water to manually polish the exposed glass surface all around until you see a water-break free surface.

NOTE:
- A water-break free surface is when the water fully "wets" or "sheets" over the glass surface with no sign of drawing up or receding into droplets with dry areas in between.
- A water-break free surface is critical to make you sure of adhesion of the sealant to the outer glass surface.

4 After a water-break free surface is got, clean all the area with an 80% isopropyl alcohol and 20% water solution and wipe dry with a lint-free cloth or towel.

CAUTION: WEAR POWDER-FREE/UNDUSTED CLEAN RUBBER GLOVES DURING ALL CLEANING OPERATIONS AND SEALANT APPLICATIONS TO PREVENT CONTAMINATION OF THE BONDING SURFACES AND TO PREVENT CHEMICAL CONTACT WITH SKIN.

(b) Apply the new sealant to repair the outer moisture seal as follows (Figure 806 and Figure 807):

NOTE: • Use clean cotton cloths or soft texture paper towels for all cleaning operations. Change cloths frequently to prevent transfer of residue back onto cleaned surfaces.

• Clean surfaces until no residue is visible on cloth.

• Change cloths frequently to prevent transfer of residue back onto cleaned surfaces.

• A water break-free surface must be got on glass before application of primer and sealant.

1 Apply 25.4 mm (1.0 in.) masking tape approximately 25.4 mm (1.0 in.) inside the inner periphery of the outboard retainer to define the moisture seal on the glass surface.

2 Apply 25.4 mm (1.0 in.) masking tape to the outboard retainer at the edge of the remaining weather seal.

3 Apply a second strip of 25.4 mm (1.0 in.) masking tape; overlap 6.35 mm (0.25 in.) the first strip, on the outboard retainer.

NOTE: If no loose strap was removed, the Z-strap will not be missing.

4 Mask remaining area of glass to protect glass surface during repair operation.

CAUTION: • BE SURE NOT TO TOUCH OR CONTAMINATE THE PREVIOUSLY CLEANED WORK AREA. IT IS RECOMMENDED TO AGAIN CLEAN THE SEAL REPAIR AREA WITH AN 80% ISOPROPYL ALCOHOL 20% WATER SOLUTION IF A CONTACT OCCURS, BEFORE APPLICATION OF THE NEW SEALANT.

• THE PRIMER MUST BE APPLIED TO THE WINDSHIELD IMMEDIATELY AFTER CLEANING OF THE WINDSHIELD. THIS WILL PREVENT THE SETTLING OF DUST PARTICLES AND OTHER AIRBORNE CONTAMINANTS ON THE CLEANED SURFACES. CONTAMINANT ON THE SURFACE CAN ADVERSELY AFFECT THE ADHESION OF THE SEALANT TO THE SUBSTRATE.

5 Use a gauze pad to apply a thin coat of the PR-1861 Primer/Cleaner to the surface of the glass and exposed moisture seal.

NOTE: • Do not let the PR-1861 run or drip.

• Let the PR-1861 dry for a minimum of 30 minutes.

WARNING: WEAR SAFETY GLASSES AND GLOVES WHILE YOU MIX THE SEALANT.

6 Thoroughly mix one PR-1425CF B 1/2 Semkit.

NOTE:
- Obey the instructions on kit to mix the sealant (approximately 5 minutes). Full mixing is very important.
- If it is necessary, mix a second Semkit after the first is applied.
- Be sure to follow the mixing instructions given with the sealant.
- Working time for sealant is 1/2 hour.

7 Use a cartridge dispenser or a plastic spatula to apply the PR-1425CF B 1/2 to the cleaned and primed surfaces. Smooth the PR-1425CF B 1/2 with a spatula until all of the primed area is covered.

8 Make the moisture-seal repair tool (Figure 807).

9 Pull the forming (repair) tool around the window to form the outboard moisture seal.

NOTE: Let the moisture seal tool be on the 25.4 mm (1.0 in.) masking tape on the two sides of the moisture seal area.

10 Immediately remove the 25.4 mm (1.0 in.) masking tape and smooth the surface of the wet sealant; rub the 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 Let the sealant cure.

NOTE: Tack-free cure time for PR-1425CF B 1/2 at room temperature (75°F, 50% relative humidity) is 4 hours. Cure time is 6 hours.

12 After the sealant is cured, inspect for voids and repair as necessary (Figure 807).

K. Temporary Repair Procedure for 100 Flight Hours

SUBTASK 350-013-A

(1) If there is a peeling-off of the aerodynamic hump seal (Figure 805), do this temporary repair procedure:

NOTE: This repair is recommended for a maximum of 100 flight hours.

(a) Clean the repair area with a clean cloth moist with 50% of isopropyl alcohol in 50% of water solution. Wait for at least five minutes until the surface becomes dry.

(b) Apply an aluminum tape/polyethylene film combination (also known as speed tape) on the top of the surface of the damaged hump seal.

(c) The inside edge of the speed tape must be at 6.35 mm (0.25 in.) to 12.7 mm (0.50 in.) on the glass faceply surface.

(d) This repair is only temporary and must be permanently fixed before the aircraft completes 100 more flight hours.

(2) If there is a peeling-off of the aerodynamic sealant (Figure 804), do this a temporary repair procedure:

(a) Apply aluminium speed tape in the damaged area, according to (Figure 804; DET. B). Refer to SRM 51-71-12-PR.

(b) This repair is temporary. Permanent repair must be made by the time that the aircraft completes 50 FC (Flight Cycles).

(c) Weekly, perform a visual inspection to make sure that there is no damage to the aluminium speed tape.

(d) After the fly-by period, repair the aerodynamic sealant:

1 Protect the inner and outer surfaces of the transparency with latex-base paper or equivalent

2 With an acrylic spatula, remove the old aerodynamic sealant.

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

3 Clean the repair area with a clean cloth moist with 50% of isopropyl alcohol in 50% of water solution. Wait for at least five minutes until the surface becomes dry.

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

4 With the aid of an adhesive tape, apply a fillet sealant to all windshield contour by using sealant PR-2050 B-1/2.

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

5 Remove the excess aerodynamic sealant.

6 Restore the original paint.

L. Temporary Repair Procedure (Figure 805) (Figure 808) (Figure 809)

SUBTASK 350-014-A

(1) If the aerodynamic hump seal (Figure 805) has partially separated from the glass surface, do this temporary repair procedure:

NOTE: A permanent repair of the aerodynamic hump seal (item J) must be accomplished at the next 5A or C maintenance check.

CAUTION: FAILURE TO PROPERLY ADJUST THE RAZOR BLADE CAN RESULT IN DAMAGE TO THE WINDOW AND POSSIBLY FRACTURE OF THE GLASS PLY.

(a) Trim Tool Preparation Procedure:

1 Loosen the setscrew to allow insertion of the razor blade into the hump seal trim tool. Refer to (Figure 808).

2 With the trim tool flat on a hard surface, insert the razor blade in the trim tool until resistance by the blade is felt. Turn the setscrew to secure the razor blade in position.

NOTE: A properly installed blade will have 0.240 inch (+ 0.010 / -0.00 inch) of the top portion of the blade (non-sharp edge) protruding above the trim tool.

3 Check the razor blade depth setting as follows:

a Fold a piece of paper in half.

b Place the trim tool and folded paper on a flat surface.

c Drag the trim tool, with the razor side against the folded paper, across the paper several times.

d Remove the trim tool and visually check the paper surface. If any indentations or cuts are evident, adjust the blade setting to reduce the blade exposed in the hump seal cutout area (i.e. increase the amount showing on the tool upper surface).

NOTE: Repeat steps a through d each time the blade depth is adjusted or if the razor blade is replaced.

CAUTION: IF THE HUMP SEAL REQUIRES REWORK ON THE LOWER EDGE NEAR THE TERMINAL BLOCK, SPECIAL CAUTION IS NECESSARY TO PREVENT DAMAGE TO THE ANTI-STATIC GROUNDING CONNECTION. THE GROUNDING SYSTEM AND CONNECTION IS LOCATED AT THE SENSING ELEMENT LEAD WIRES AND EXTENDS ALONG THE LOWER EDGE FOR A DISTANCE OF 12.0 INCHES (304.8 MM). WHEN REMOVING THE POLYSULFIDE MOISTURE SEAL AND FIBERGLASS Z-STRAP FOR REPAIR, REMOVE ONLY THE SEALANT DOWN TO THE FIBERGLASS STRAP AND ANY LOOSE FIBERGLASS MATERIAL. DO NOT CUT THE FIBERGLASS STRAP IN THIS AREA.

(b) Polysulfide Moisture Seal Trim Repair:

1 Align the hump seal cutout on the tool bottom surface over the polysulfide moisture seal placing the 0.5 inch leg on the glass surface.

NOTE: On windshields where the moisture seal has been previously repaired and is wider than 1.20 inch, align the trim tool along the hump seal outboard edge. Attention will be needed in subsequent steps to maintain alignment along the moisture seal outer edge when scoring the seal for removal.

2 Press lightly on the trim tool portion that is on the metal retainer so that the tool is in contact with the metal retainer. This will allow the razor blade to penetrate into the polysulfide moisture seal setting the blade for trimming.

3 Push the trim tool along the moisture seal using the inboard edge (edge on the glass surface) as a guide. If necessary, the tool will follow the corner radii to facilitate trimming in the window corners.

4 Score the portion of moisture seal to be removed multiple times in accordance with steps a through d to ease removal of the trimmed portion of the moisture seal from the glass surface.

5 Place the non-metallic spatula perpendicular to the cut direction approximately 1/8 inch from the trim line (towards the glass surface) (Refer to Figure 809). Push hard to get down to the glass surface. With steady, continuous pressure, push the spatula in the same direction as the moisture seal trim line. To reduce the force needed to push the spatula, pull the removed portion of the moisture seal in the same direction as the trim line.

6 Repetitive scrapping may be necessary to remove residual sealant adhered to the glass surface. Leaving this residual sealant will not impact the flight crew visibility or cause operational issues if not fully removed.

NOTE: Application of aluminum tape over the trimmed area is not required.

M. Accelerated Aerodynamic Hump Seal Cure

SUBTASK 350-015-A

(1) Apply the aerodynamic hump seal as given in item J.

(2) Allow it to cure for 30 minutes.

(3) Apply 50% of hand cream with 50% of water to the surface of the newly applied aerodynamic seal.

(4) Apply speed tape (aluminum tape/polyethylene film combination) directly on the aerodynamic seal. The inner edge of the speed tape must be located from 6.35mm to 12.7 mm (0.25 to 0.50 in.) on the glass faceply surface.

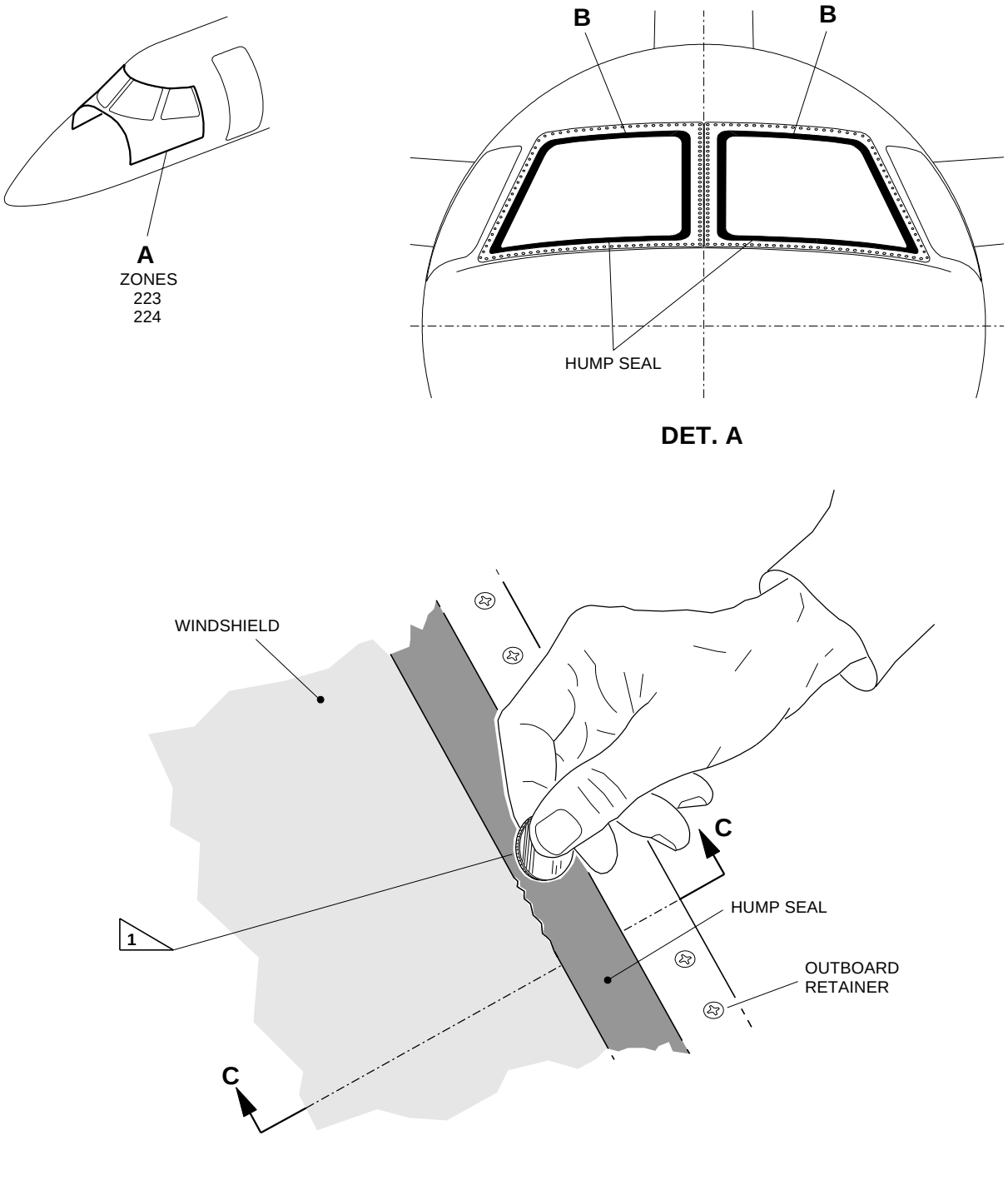
(5) You can remove the speed tape after 150 hours of additional cure time.

NOTE:
- After you applied the speed tape, the aircraft can go back to usual operations.
- The speed tape must stay on the repaired seal for a period of 150 hours before you remove it.

EFFECTIVITY: AIRCRAFT WITH PPG-MADE WINDSHIELD

Inspection of the Hump Seal

Figure 805 - Sheet 1



1 INSPECT THE HUMP SEAL FOR ADHESION BY TAPING ON THE EXPOSED AREA WITH A METALLIC COIN (TAP TEST).

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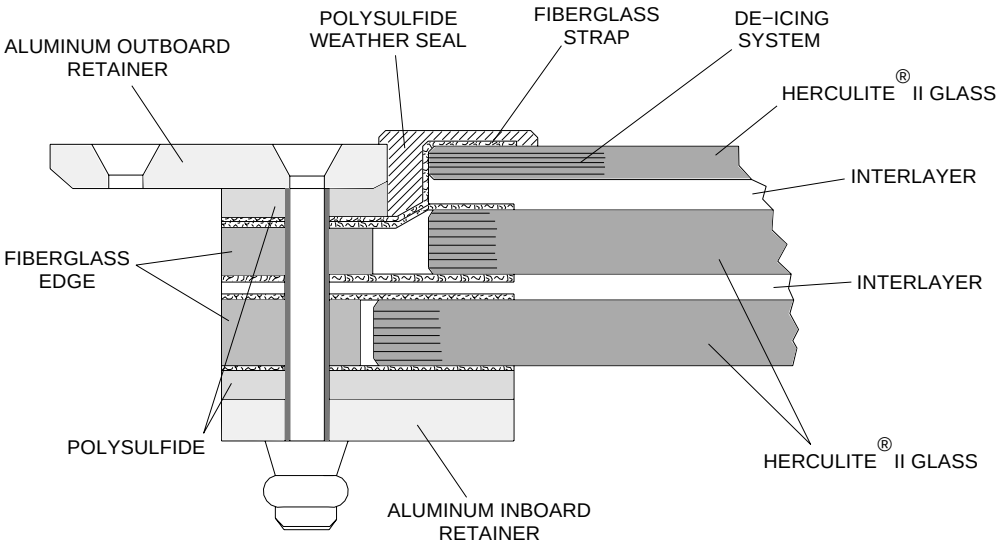
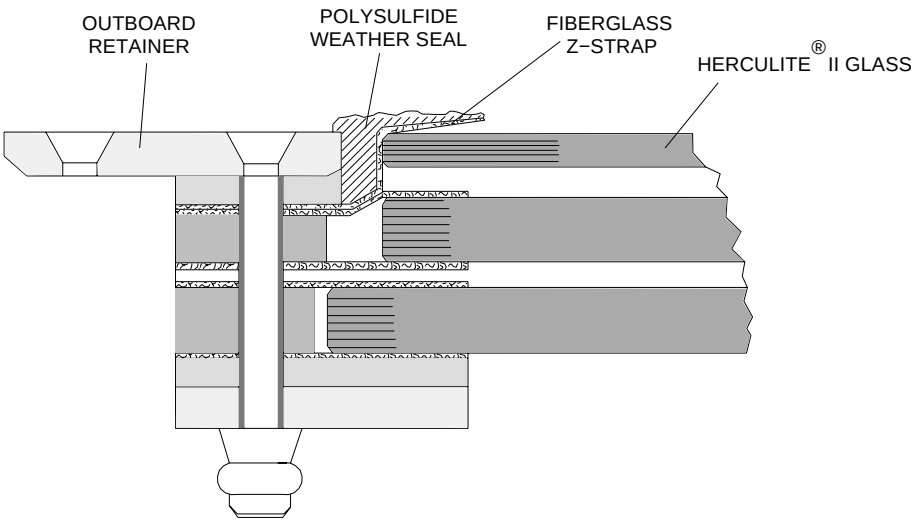
EFFECTIVITY: AIRCRAFT WITH PPG-MADE WINDSHIELD
Inspection of the Hump Seal
Figure 805 - Sheet 2



C−C

(WINDSHIELD CROSS SECTION)



C−C

(Z−STRAP/SEAL DAMAGED)

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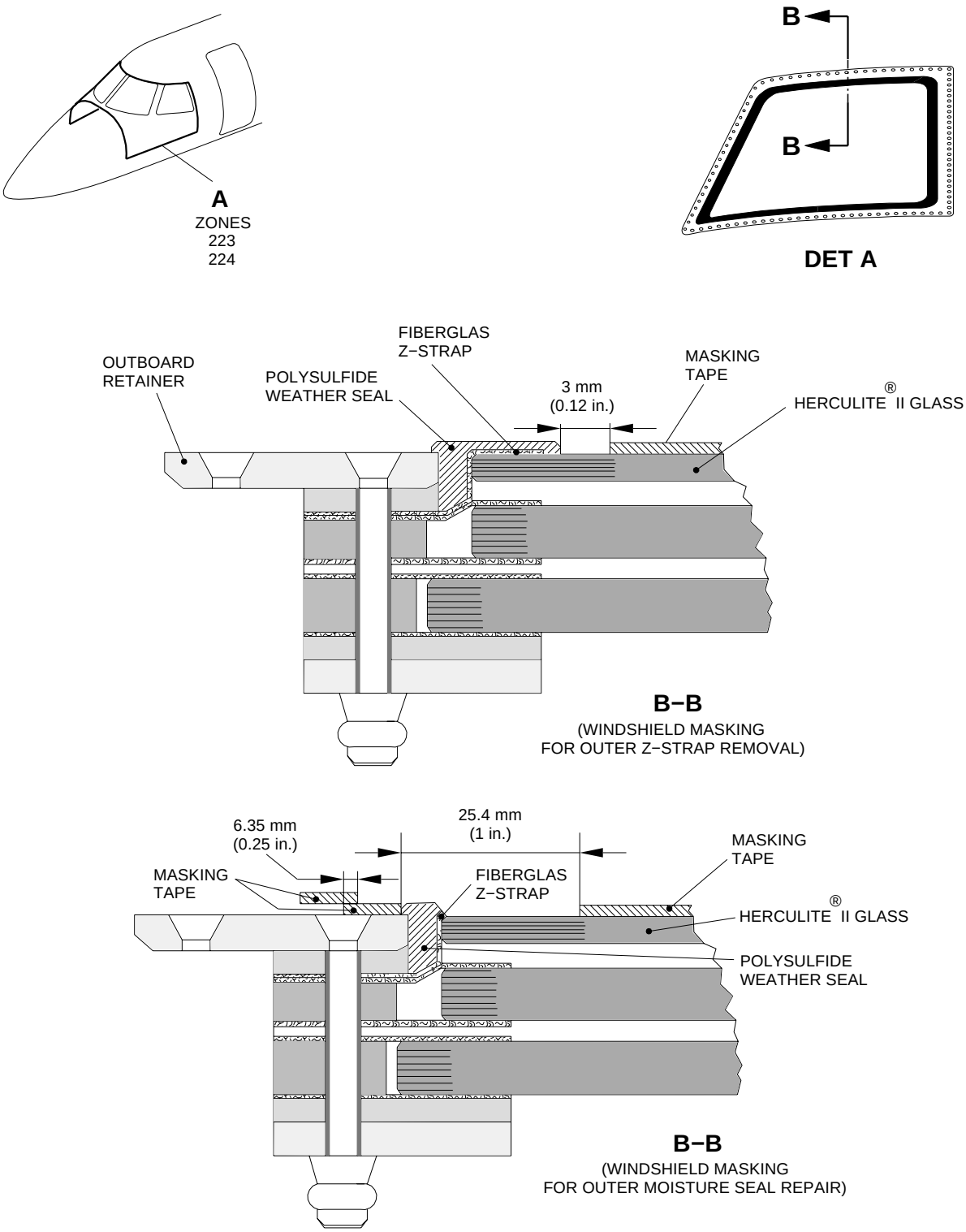
EFFECTIVITY: AIRCRAFT WITH PPG-MADE WINDSHIELD
Windshield Masking for Cleaning/Repair
Figure 806



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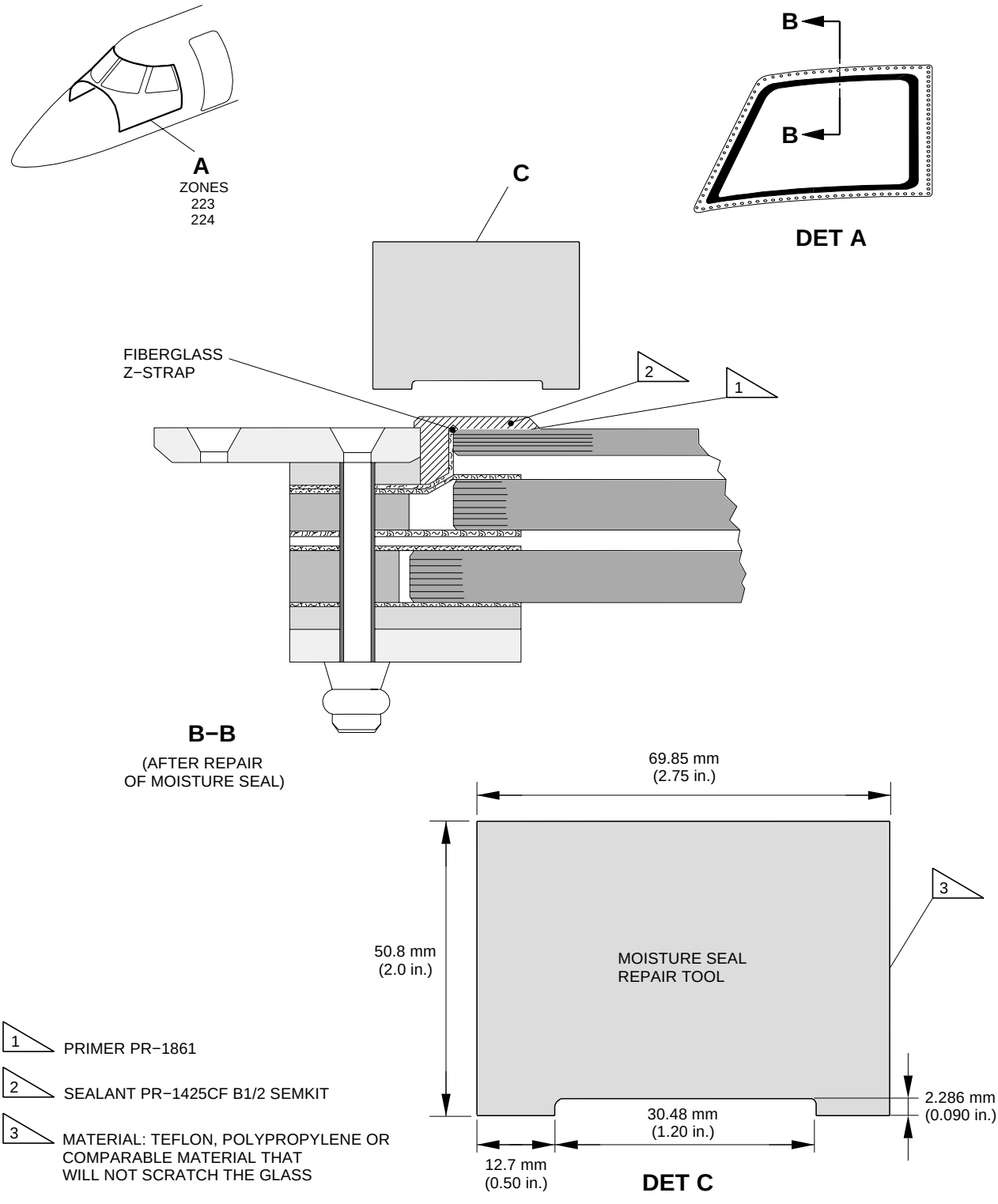
EFFECTIVITY: AIRCRAFT WITH PPG-MADE WINDSHIELD

Moisture Seal Repair

Figure 807



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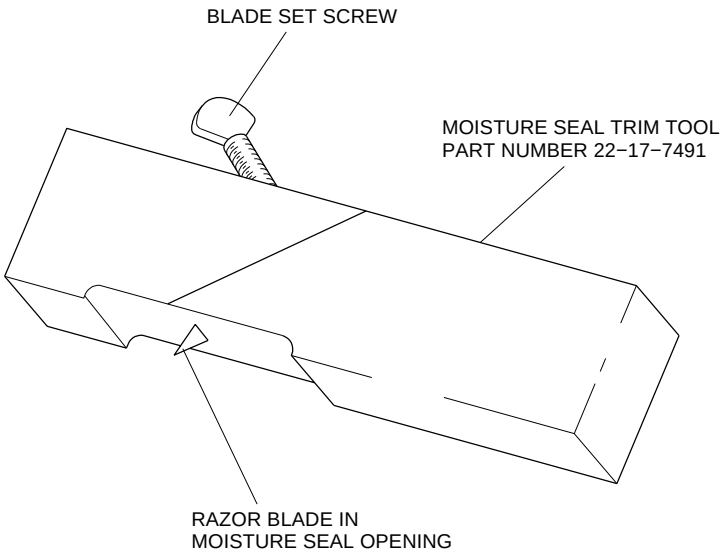
EFFECTIVITY: AIRCRAFT WITH PPG-MADE WINDSHIELD
Trim Tool
Figure 808



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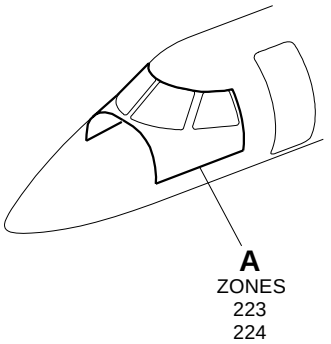
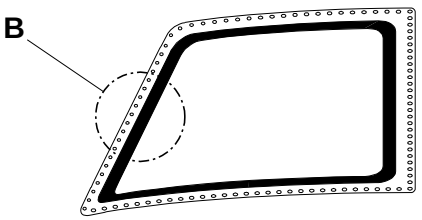
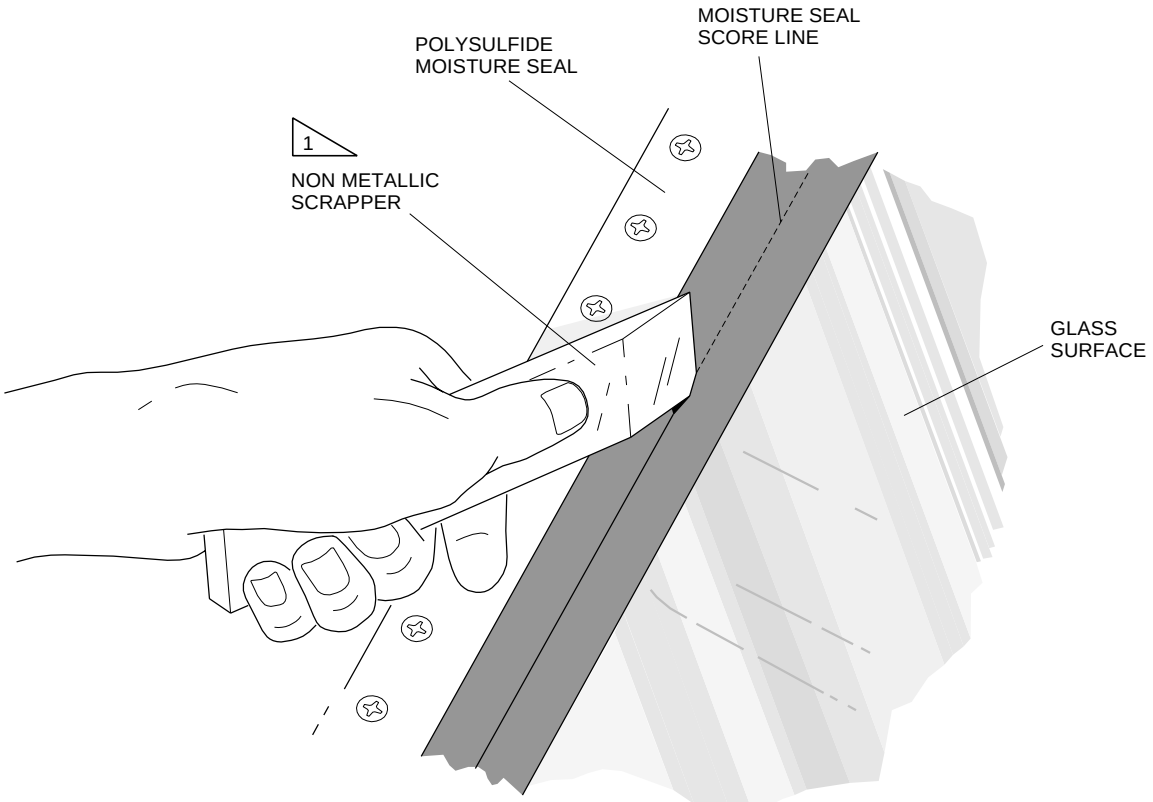
EFFECTIVITY: AIRCRAFT WITH PPG-MADE WINDSHIELD

Non-metallic Spatula Positioning to remove Trimmed Portion of Moisture Seal
Figure 809





DET A



1 PERPENDICULAR TO SCORE LINE.
1/8 INCH FROM SCORE LINE.

DET. B

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