CHAPTER 56

WINDOWS

CHAPTER 56
WINDOWS

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807	Nov 15/2022	
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412	Feb 15/2020	
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606	Feb 15/2023	
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404	Oct 15/2023							
405	Oct 15/2023							
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603	Oct 15/2017							
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PASSENGER WINDOW - CORROSION PREVENTION

1. General

Refer to the section in the Table 201 for corrosion prevention instructions for the frames of the passenger cabin windows.

Table 201/56-00-37-993-801 Specific Corrosion Problems - Passenger Windows

AREA	PROBLEM	INDEX
Passenger Windows	Corrosion on the passenger cabin window frames.	56–21–37

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FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK

1. **General**

A. This procedure contains the following tasks:

(1) Inspection of the Flight Deck Windows for damage.

B. The Flight Deck Window inspection is for damage that has an effect on the structural, visual and operational functions of the windshield.

C. Flight Deck Window inspection methods/tools for measurement of damage depths and material thickness.

TASK 56-11-00-200-803

2. **Inspect the Flight Compartment Windows**

A. General Flight Deck Windows Vocabulary

(1) Window Components:

(a) Acrylic Wafers: Acrylic Wafers are used to hold the temperature sensor wires in position. The sensor pack consists of acrylic wafers that attach the filament wires to stabilizes the wire grid and lets the part be moved while being made.

(b) Aerodynamic Smoother (Aero-Smoother): Sealant applied during installation to fill the space between the window and airplane structure. Also used as a component of the pre-molded (moisture) seal on some windows.

LOM 402 PRE SB 737-56-1017

(c) Cast Acrylic: A clear plastic material that is the crew shield for the No. 4 window.

(d) Crew shield: A non-structural acrylic pane designed as protection for the flight crew from broken glass.

LOM ALL

(e) Edge Seal: Seal around the edge of the window assembly used to prevent moisture penetration into the interlayer material.

(f) Fail-Safe Interlayer: Interlayer that will hold the pressure loads if there is a failure of a structural pane.

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

(g) Fail-Safe Pane: An acrylic pane that will hold the pressure loads if there is a failure of the primary structural pane.

LOM ALL

(h) Interlayer: A flexible transparent layer that bonds glass or acrylic panes together. It can be a structural component for pressure fail-safety and bird impact resistance.

(i) Laminate: Assembly of interlayer materials and glass or acrylic panes bonded together by application of heat and pressure.

(j) Metal Insert: A thin piece of metal around the periphery of the window used to transfer fail-safe pressure or bird impact loads from the interlayer to the window installation fasteners.

(k) Moisture Seal: A combination of the edge seal, Z-seal, and the aerodynamic smoother applied to the window installation.

(l) Pane: One layer of glass or acrylic in a window.

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(m) Parting Agent (DOPE): Yellow material painted on edges of eyebrow structural panes to prevent internal laminate chips.

LOM ALL

(n) Phenolic edge filler: A material that is a support for the window edge around the periphery of the window.

(o) Pre-Molded Seal: A component of the moisture seal of the window assembly. This is the primary moisture protection of the windshield and is subject to wear.

(p) Pressure Seal: A rubber gasket that makes a pressure seal between the window and the fuselage.

(q) Spacer tube: A metal bushing used to prevent clamp up of the window edge from the fasteners.

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

(r) Stretched Acrylic: Made from cast acrylic and used as a primary and fail-safe structural pane.

LOM ALL

(s) Structural Pane: A glass or acrylic pane that holds the pressure loads of the window.

(t) Urethane: A type of interlayer material.

(u) Vinyl (Polyvinyl Butyral or PVB): A type of interlayer material.

(v) Z-Seal: A z-shaped piece of metal that is bonded to the window edge. The seal is a barrier used to prevent external moisture penetration into the window laminate.

(2) Window Vision Terms (Figure 601):

(a) Clear View Area (Daylight Opening or DLO), zone I and zone II: The transparent area of the window for external vision.

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

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

(d) Non-Critical Vision Area, zone II: A 2.0 in. (50.80 mm) band around the periphery of the window measured into the clear view area.

(e) Tong Marks: Small dimples or indentations that are sometimes on the surface of the No. 1, or No. 3 window non-structural outer glass panes and cause local distortion in the clear view area. These are a by-product of the manufacturing procedure.

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

(3) Electrical Components:

(a) Bus Bar: Two thin electrical conductors put on opposite edges of the window, and used to transmit electrical current from the power wires to the conductive heating film.

(b) Conductive Heating Film (Coating): A transparent metallic film located on a glass pane used to heat the window for anti-ice and anti-fog function when electrical current is applied.

(c) Power Terminal: The location where the wire bundle that supplies power for the window heat is connected to the window.

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(d) Power Wire: A braided wire in the window laminate that connects the power terminals for the window heat to the bus bars.

(e) Sensor Terminal: The location where the wire bundle that supplies temperature sensor input is connected to the window.

(f) Sensor Wires: Thin solid or braided wire in the window laminate that connects the sensor terminals for the window heat to the temperature sensors embedded in the window.

(g) Solder Joint: Solder or a bonding application used to attach the power wire to the bus bar in the window laminate.

(h) Temperature Sensor: A sensor embedded in the window that has resistance that changes with temperature. The Window Heat Control Unit (WHCU) uses the embedded sensor to control power to the window and regulate temperature.

(i) Thermal Switch (Hockey Puck Sensor): A bi-metallic switch that removes or applies electrical power to control the window temperature.

(j) WHCU: A device that constantly monitors window temperature through the temperature sensors and controls the power to the window.

B. Flight Deck Windows Damage Description

(1) Arcing: An electrical arc is a discharge or short circuit across a discontinuity in a wire, bus bar, conductive heating film, or other internal window components. Arcs usually occur near the window bus bars, and are typically the result of moisture ingress. The heat from an arc can cause dark brown or black burn marks on the bus bar and in the interlayer or the fracture of a glass pane. It is also possible to see small bubbles in the interlayer at the location of an arc.

Arcs in the heating film away from the bus bar can occur as a jagged line and is also known as a line arc or “lightning bolt pattern” Figure 56-12-11-990-816.

LOM 402 PRE SB 737-56-1017

(2) Crazing (Acrylic Panes): Crazing is a series of very small cracks or fissures that can occur on the surface of acrylic windows. Crazing is not easy to find, it is easier to see when a light is shown at different angles through the window.

LOM ALL

(3) Crack: A crack is a break or discontinuity of the material. A list of descriptions of cracks by material follows.

LOM 402 PRE SB 737-56-1017

(a) Acrylic Panes: Cracks in an acrylic pane do not always grow to an edge in a window and can occur as many small fissures in a pane.

1) Cast acrylic panes: Cracks will look equivalent to smooth fissures perpendicular to the surface.

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

3) Stretched Acrylic Panes:

a) Cracks propagate at angles to the surface of stretched acrylic panes.

b) Cracks in stretched acrylic can have a chevron or clamshell growth lines that propagate from a stress riser such as a scratch, chip, craze, or other surface damage.

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LOM 402 PRE SB 737-56-1017 (Continued)

4) Temperature Sensor:
   a) Cracks in the acrylic wafers that are used to carry the sensor wires.
   b) The cracks usually appear horizontal in the window, between the sensor wires.
   c) The cracks can be stacked on top of each other.

LOM ALL

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

1) Non-Structural Pane - Cracks will look equivalent to smooth fissure perpendicular to the surface and through the entire thickness of the pane. There are usually many cracks across the glass surface (spider web pattern) of the pane. Cracks will not significantly decrease visual quality (Figure 607).

2) Structural Pane – The pane will break into many small irregularly shaped pieces, typically no larger than 0.5 in. (12.7 mm) maximum dimension. Visual quality is significantly decreased (Figure 607).

LOM 402 PRE SB 737-56-1017

The No. 4 window structural glass pane can break into many small irregularly shaped pieces, typically no larger than 0.5 in. (12.7 mm) maximum dimension (Figure 609).

LOM ALL

(c) Interlayers:

1) Urethane – Cracks can occur in urethane interlayer around the outboard edge of the window and at bolt hole locations. The cracks are usually in a network that does not run parallel to the edges of the window and are usually in random directions (also referred to as crackling). Urethane interlayer cracks have a maximum depth of approximately 0.02 in. (0.51 mm) and frequently occur with white or yellow discoloration. See also moisture ingression (Figure 614).

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

2) Vinyl – Cracks that can occur in the vinyl interlayer around the perimeter of the window and follow or extend from the edges of internal features, for example, the metal inserts, or bolt holes. The cracks usually appear as thick or broken lines perpendicular to the window panes. Cracks along the edges of the metal insert extend from the edge of the metal insert either outboard towards the face play or inboard toward the main structural glass ply, and run parallel to the edge of the metal insert (Figure 615).

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LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

3) Vinyl – Cracks that can occur in the vinyl interlayer around the perimeter of the window and follow or extend from the edges of internal features, for example, the metal inserts, or bolt holes. The cracks usually appear as thick or broken lines perpendicular to the window panes. Cracks along the edges of the metal insert extend from the edge of the metal insert either outboard towards the face play or inboard toward the main structural glass ply, and run parallel to the edge of the metal insert (Figure 617).

LOM ALL

(d) Epoxy Material:

1) Cracks in the epoxy material (white or red) do not degrade the structural or functional capability of the window in any way and therefore acceptable (Figure 621).

2) If there are vinyl interlayer cracks at or near the cracks in the epoxy material, they must examine the window for cracks in the vinyl interlayer (TASK 56-12-11-200-801).

(4) Scratch: The linear removal or displacement of material from the surface of a pane.

(5) Chips: The removal of material from the surface of a glass or acrylic pane, usually from the impact with a hard object. The descriptions that follow are a list of different types of chips.

(a) External chips:

1) Shell type chips are in the surface or edge of the pane. These chips have a circular or curved shape with many fine lines or ridges that follow the outline of the edge of the chip that give it almost the same shape of a shell. The width of the chip is more than its depth.

2) “V” shaped chips have the shape of a sharp narrow "V". Depth of the chip is equal to or larger than the width.

(b) Internal chips:

1) Peel Chips - Chips that occur on the internal surface of glass panes. Chipped areas have a curved, rough grained shape, and are easily seen in reflected light. The chipped area can have small glass flakes, usually white. The view through the window will distort through the rough surface of the chip. Usually the chips start very small but can continue to grow with the continued use of the airplane (Figure 611).

(6) Delamination: Delamination is the separation of a pane or panes from the interlayer internal to the window. Delamination looks like an air bubble that starts from the edge, is flat, smooth, and has a circular edge. Delaminations can have an edge with smooth finger-like projections. The delamination will cause a reflection of light when you look at it from an angle to the surface of the window. A delamination can distort vision through the delaminated area.

(7) Moisture Ingression: A cloudy white or yellow haze internal to the window usually around the periphery. It can follow wires internal to the window, along the bus bar and also in areas of delamination. Long term exposure to moisture can lead to electrical arcing of the heating system internal to the window.

(8) External aerodynamic smoother - Erosion and Cracking: External aerodynamic smoother will degrade with time because of wind, rain and UV exposure. Erosion or cracks of the aerodynamic smoother will let moisture penetrate into the window laminate. Repair and maintenance of external aerodynamic smoother is necessary to get as much window life as possible.

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(9) Bubbles: Small isolated or irregular shaped voids in the interlayer internal to the window not at the window edge. Bubbles can be the result of a damaged window heat control system. Multiple bubbles together in a small group, or black or dark brown bubbles are an indication of a damaged window heat control system.

(10) Haze: A white or light blue cloudiness between the panes of glass, which does not have a distinct boundary. Haze is most likely to appear along inboard and outboard edges where the window is not fully heated by the window heat system (Figure 620). Haze is most likely to appear during cold weather operation and will dissipate during warm weather.

LOM 402 PRE SB 737-56-1017

(11) Vinyl deformation: A section of the vinyl interlayer that is stretched or disconnected from the metal insert.

LOM ALL

C. Manufacturing Conditions

(1) Rainbow Color Like Discoloration or Shading

(a) When the window is viewed from outside the airplane, a range of colors similar to a rainbow may be visible on the surface of the window. When viewed from inside the airplane, lighter or darker areas may be visible as well as color variations. This coloration or shading may take on different regular or irregular shapes which may be rectangular, circular, stepped, banded, or jagged in appearance. This condition is usually most noticeable in corner areas of the windows (Figure 622).

(b) The noted condition is the result of small differences in the thickness of the windows conductive heating layer causing variations in the reflected and transmitted light. The described conditions are normal and not a cause for the removal of the windshield.

(2) Cracks in the acrylic wafers: The cracks in the acrylic wafers are usually horizontal in the window shown between the sensor wires. If the sensor resistance indication is in the limits, It is not necessary to replace the window (Figure 623).

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464

(a) Do a Check of the Resistance of the Sensors in the Window (TASK 30-41-21-760-801).

LOM 465-999

(b) Do a Check of the Resistance of the Sensors in the Window (TASK 30-41-21-760-803).

LOM ALL

D. General Flight Deck Window Inspection Methods/Tools

(1) The use of optical micrometers has been standard in the industry for many years.

(2) There have been improvements to this type of equipment and different companies that make it for use on aircraft.

(3) The use of the optical micrometer is best for determining damage depths (scratches, craze, etc.). It can be used for thickness measurements, if parts are off of the aircraft, for best results.

(4) Boeing has no objection to operators/repair stations using ultrasonic or other means to measure damage or material thickness provided operators/repair stations have the necessary skill and expertise with this type of equipment to ensure accurate findings.

(5) The optical micrometer is primary for use in determining depths of scratches/damage, etc. This can be done on-aircraft with the right skill level of the mechanics doing the task. Also, it is not as useful as on-aircraft measurement of pane thickness (inner or outer).

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E. References

Reference	Title
12-16-02 P/B 301	FLIGHT COMPARTMENT WINDOWS - SERVICING
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
30-41-21-760-801	Measure the Resistance of the Window Temperature Sensors (P/B 501)
30-41-21-760-803	Measure the Resistance of the Window Temperature Sensors (P/B 501)
56-11-00 P/B 801	FLIGHT COMPARTMENT WINDOWS - REPAIRS
56-11-00-300-801	Flight Compartment Windows - Repair of Aerodynamic Smoother and Pre-Molded Seal (P/B 801)
56-11-11 P/B 401	NO. 1 WINDOW - REMOVAL/INSTALLATION
56-11-11-000-801	No. 1 Window Removal (P/B 401)
56-11-11-400-801	No. 1 Window Installation (P/B 401)
56-11-21 P/B 401	WINDOW NO. 3 - REMOVAL/INSTALLATION
56-11-21-000-801	No. 3 Window Removal (P/B 401)
56-11-21-300-801	Repair Scratched or Crazed No. 3 Windows (P/B 801)
56-11-21-300-804	Repair of the Fillet Seal (P/B 801)
56-11-21-400-802	No. 3 Window Installation (P/B 401)
56-11-31-000-801	No. 4 and No. 5 Window Removal (P/B 401)
56-11-31-400-801	No. 4 and No. 5 Window Installation (P/B 401)
56-12-11-200-801	No. 2 Openable Window Inspection (P/B 601)
56-12-11-990-816	Figure: Window Heat Arcing (P/B 601)

F. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-2039	Micrometer, Optical (Accuracy +/-.001 Inch) Part #: MODEL 966A1 Supplier: 0ZYB5 Opt Part #: 8400K Supplier: 65956
COM-4786	Processor/Printer - Optical Micrometer (optional use with Part # 8400K) Part #: DP-1VR Supplier: 65956
COM-13454	Roughness and Contour Measurement Tool Part #: HOMMEL-ETAMIC T1000 Supplier: C6026 Part #: SURFTEST SJ-210 Supplier: 01EP7
STD-597	Micrometer - Depth, 0.0 to 6.0 in (0.0 to 152.4 mm)
STD-765	Scraper - Plastic
STD-4872	Gage - Feeler (0.002 - 0.010 inch)
STD-6637	Depressor - Tongue
STD-14360	Flashlight

G. Location Zones

Zone	Area
211	Flight Compartment - Left

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(Continued)

Zone	Area
212	Flight Compartment - Right

H. Prepare to Check the Flight Deck Windows

SUBTASK 56-11-00-860-013

> **WARNING** DO NOT TOUCH THE WINDOW UNLESS THE CIRCUIT BREAKERS ARE OPEN, AND THE WINDOW HEAT SWITCHES ARE OFF. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

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

SUBTASK 56-11-00-860-014

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM 402			
B	7	C00229	WINDOW HEAT POWER L3, L4 & L5
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
LOM 402			
B	7	C00395	WINDOW HEAT POWER R3, R4 & R5
LOM ALL			
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

These circuit breakers are inoperative and should remain open:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM 402 POST SB 737-56-1017			
B	7	C00229	WINDOW HEAT POWER L4 & L5 (INOP)

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R4 & R5 (INOP)

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LOM ALL

SUBTASK 56-11-00-110-002

(3) If it is necessary, clean the windshields (PAGEBLOCK 12-16-02/301).

NOTE: Clean windshields are necessary to do the inspection.

I. Windshield (No.1 window) - Inspection/Check

SUBTASK 56-11-00-210-002

(1) Examine the windshield for chips in the glass panes (Figure 610).

NOTE: Chips in structural glass panes can decrease structural capability. Chips can also decrease the visual quality of a windshield.

(a) Replace the windshield for one or more of the subsequent list of damages (TASK 56-11-11-000-801 and TASK 56-11-11-400-801).

1) Chips: A chip or group of chips on the surface of a structural pane that are more than 0.015 in. (0.381 mm) in depth are a cause for the removal of the windshield.

2) A chip or group of chips that decreases the visual quality on a pane of the windshield is a cause for the removal of the windshield.

3) The outer glass pane is non-structural. Unless chips decrease the visual quality, they are permitted.

SUBTASK 56-11-00-210-049

(2) Examine the window for moisture ingression.

(a) Examine the window for a cloudy white or yellow haze internal area in a delamination or around the periphery of the window.

NOTE: This is a sign of moisture ingress which can cause arcing in the window heat film.

1) If the moisture is found with any signs of arcing, replace the window.

2) If the delamination or the moisture limits vision, replace the window.

3) If moisture is found near bus bars, it is recommended to replace the window.

NOTE: Moisture ingression in the bus bar is an indication that electrical failure may occur.

NOTE: Delamination in the vicinity of the bus bars or electrical attachment can provide a direct path for moisture into the window heat system. Any delamination near a bus bar or electrical attachment should be checked carefully for a cloudy or yellow haze appearance or uneven discoloration of the adjacent bus bar.

SUBTASK 56-11-00-210-003

(3) Examine the windshield for delamination.

(a) Replace the windshield if the delamination decreases the visual quality (TASK 56-11-11-000-801 and TASK 56-11-11-400-801).

NOTE: Delamination can result in moisture ingress which can cause arcing and pane cracks. The recommended limit for delamination in a windshield is 2.0 in. (50.8 mm) from the edge of the pre-molded seal, that corresponds to the Non-Critical Vision area, zone II.

SUBTASK 56-11-00-210-004

(4) Examine the windshield for arcing (Figure 613).

(a) Examine the windshield for signs of arcing near the bus bar.

(b) Examine the windshield for line arcs.

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(c) Examine the bus bars for the signs of arcing.

(d) Examine the solder joints for the signs of arcing.

(e) Examine the power wires adjacent to solder joints for the signs of arcing.

(f) Replace the windshield if there are indications of arcing (TASK 56-11-11-000-801 and TASK 56-11-11-400-801).

NOTE: In some cases a solder joint imprint will be seen through the bus bar. This is an acceptable manufacturing condition.

NOTE: Limited dispatch per Minimum Equipment List (MEL) 30-11-02 is available with the associated window heat switch OFF. Refer to the MEL for dispatch requirements. Replace the windshield before the MEL expires.

SUBTASK 56-11-00-210-005

(5) Examine the windshield for bubbles.

(a) Multiple bubbles together in a small group, or black or dark brown bubbles are a typical indication of a damaged window heat control system.

1) If it is necessary, do a check of the heater control system for that windshield (TASK 30-41-00-710-801).

(b) Replace the windshield if the bubbles decrease the visual quality or bubbles are black or dark brown in color (TASK 56-11-11-000-801 and TASK 56-11-11-400-801).

NOTE: Tong Marks can be found on the non-structural outer glass panes and are not a cause for a removal.

SUBTASK 56-11-00-210-006

(6) Examine the windshield for scratches.

(a) The inner glass pane is structural. Replace the windshield if the inner glass pane has a scratch with a depth more than 0.015 in. (0.381 mm).

1) Use optical micrometer, COM-2039, or equivalent to measure the depth of the scratches.

NOTE: An optical micrometer processor/printer, COM-4786, is optional accessory to part # 8400K, micrometer, COM-2039, to process/print micrometer data.

2) Use roughness and contour measurement tool, COM-13454, as an alternative to measure the depth of the scratches.

a) Make sure that the depth of the scratches is no more than 0.0075 in. (0.1905 mm) if the roughness and contour measurement tool, COM-13454, is used.

NOTE: The roughness and contour measurement tool, COM-13454, is not able to reach the bottom of the scratches in glass material. The maximum allowable scratch depth is divided by two.

(b) A scratch or group of scratches that decreases the visual quality on a pane of the windshield is a cause for the removal of the windshield.

(c) The outer glass pane is non-structural. Unless scratches decrease the visual quality, they are permitted.

SUBTASK 56-11-00-210-007

(7) Examine the windshield for cracks in the vinyl interlayer.

(a) Examine the vinyl interlayer for cracks along the edges of the metal insert.

(b) Examine the vinyl interlayer for cracks that extend out from the bolt holes.

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(c) Replace the windshield if you find cracks in the vinyl interlayer (Figure 615).

NOTE: Cracks in the urethane interlayer do not decrease the windshield structural capability and are not a cause for a windshield removal unless they decrease the visual quality.

NOTE: Vinyl cracks that extend out from the bolt holes are permitted unless they are

- Cracks that extend into the daylight opening beyond the edge of the metal insert,
- Cracks that turn and are parallel to the edge of the metal insert, or
- Cracks that extend from one bolt hole to an adjacent bolt hole.

SUBTASK 56-11-00-210-008

(8) Examine the window for cracks (Figure 607).

(a) Replace the window if cracks are found in the inner glass panes (TASK 56-11-21-000-801 and TASK 56-11-21-400-802).

(b) For cracks in the outer panes, a limited dispatch can occur, in accordance with the limits of the Master Minimum Equipment List (MMEL) Electrically Heated Windshields (Ref MMEL section 30-11), if the flight crew agrees that the vision through the window is satisfactory.

NOTE: A crack in the outer pane can cause the window anti-ice system to not operate and it can cause unsatisfactory vision.

(c) For the replacement of the window refer to NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-11/401.

NOTE: A dispatch with cracks in the inner structural glass panes is not allowed. The windshield must be replaced before flight can occur.

SUBTASK 56-11-00-210-009

(9) Examine the external aerodynamic smoother or pre-molded seal for deterioration and cracks.

CAUTION

DO NOT LET THE AERODYNAMIC SMOOTHER BECOME DAMAGED. THE AERODYNAMIC SMOOTHER IS A PART OF THE MOISTURE SEAL. MOISTURE CAN CAUSE DAMAGE TO THE WINDOW.

(a) Examine the external aerodynamic smoother or pre-molded seal for evidence of disbond to the glass surface under the z-bar.

1) Use fingernail, plastic scraper, STD-765, or tongue depressor, STD-6637.

2) Lightly push fingernail, plastic scraper, STD-765, or tongue depressor, STD-6637, under the seal with a 0.004 in. (0.102 mm) thick feeler gage, STD-4872.

3) Measure how far the feeler gage, STD-4872, goes in.

a) If the measurements show from 0.15 in. (3.81 mm) to 0.25 in. (6.35 mm), repair the aerodynamic smoother (sealant) and pre-molded seal (TASK 56-11-00-300-801).

b) If the measurements show from 0.25 in. (6.35 mm) to 0.40 in. (10.16 mm), do the step above to examine the windshield for arcing.

c) If the measurements show from 0.25 in. (6.35 mm) to 0.4 in. (10.16 mm) and there is no indication of arcing, repair the aerodynamic smoother (sealant) and pre-molded seal (TASK 56-11-00-300-801).

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d) If the measurements show 0.40 in. (10.16 mm) or more, the Z-bar is completely disbonded, replace the windshield (TASK 56-11-11-000-801 and TASK 56-11-11-400-801).

NOTE: In some cases a solder joint imprint will be seen through the bus bar. This is an acceptable manufacturing condition.

4) Do an internal inspection for the evidence of disbond under the stainless steel Z-bar.

NOTE: Inspection is limited to the forward and aft edges of the windshield due to the bottom edge not being visible and the top edge having the bus bar in the way.

NOTE: There is no repair for a disbond under the Z-bar. It is recommended to repair the pre-molded seal to prevent moisture ingression.

5) If the aerodynamic smoother or pre-molded seal is cracked, eroded, or loose, it is recommended to repair it (TASK 56-11-00-300-801).

SUBTASK 56-11-00-210-040

(10) Examine the windshield for haze (Figure 620).

(a) If the haze decreases the visual quality of the windshield, you may do one of the two steps (Method 1 or Method 2).

1) Method 1:

a) Replace the windshield (TASK 56-11-11-000-801 and TASK 56-11-11-400-801).

2) Method 2:

a) You can turn the window heat on to remove the haze from the windshield.

NOTE: The windshields are most likely to exhibit haze during extended cold weather conditions, or extended periods of aircraft being out of operation. Running windshield heat for an extended period of time (> 8 hours) will likely clear up the majority of visible haze.

<1> If the haze does not clear and decreases the visual quality, replace the windshield.

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

J. No. 3 window (Glass) - Inspection/Check

SUBTASK 56-11-00-210-010

(1) Examine the window for chips in the glass panes (Figure 610).

NOTE: Chips in structural glass panes can decrease structural capability. Chips can also decrease the visual quality of a window.

(a) Replace the window for one or more of the subsequent list of damages (TASK 56-11-21-000-801 and TASK 56-11-21-400-802).

1) Chips: A chip or group of chips on the surface of a structural pane that are more than 0.015 in. (0.381 mm) in depth are a cause for the removal of the window.

2) A chip or group of chips that decreases the visual quality on a pane of the window is a cause for the removal of the window.

3) The outer glass pane is non-structural. Unless chips decrease the visual quality, they are permitted.

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SUBTASK 56-11-00-210-052

(2) Examine the window for moisture ingression.

(a) Examine the window for a cloudy white or yellow haze internal area in a delamination or around the periphery of the window.

NOTE: This is a sign of moisture ingress which can cause arcing in the window heat film.

1) If the moisture is found with any signs of arcing, replace the window.

2) If the delamination or the moisture limits vision, replace the window.

3) If moisture is found near bus bars, it is recommended to replace the window.

NOTE: Moisture ingression in the bus bar is an indication that electrical failure may occur.

NOTE: Delamination in the vicinity of the bus bars or electrical attachment can provide a direct path for moisture into the window heat system. Any delamination near a bus bar or electrical attachment should be checked carefully for a cloudy or yellow haze appearance or uneven discoloration of the adjacent bus bar.

SUBTASK 56-11-00-210-011

(3) Examine the window for delamination.

(a) Replace the window if the delamination decreases the visual quality (TASK 56-11-21-000-801 and TASK 56-11-21-400-802).

NOTE: Delamination can result in moisture ingress which can cause arcing and pane cracks. The recommended limit for delamination in a window is 2.0 in. (50.8 mm) from the edge of the external moisture seal, that corresponds to the Non-Critical Vision area, zone II.

SUBTASK 56-11-00-210-012

(4) Examine the window for arcing (Figure 612).

(a) Examine the window for signs of arcing near the bus bar.

(b) Examine the window for line arcs.

(c) Replace the window if there are indications of arcing (TASK 56-11-21-000-801 and TASK 56-11-21-400-802).

NOTE: Limited dispatch per MEL 30-11-05 is available with the associated window heat switch OFF. Refer to the MEL for dispatch requirements. Replace the windshield before the MEL expires.

SUBTASK 56-11-00-210-013

(5) Examine the window for bubbles.

(a) Multiple bubbles together in a small group, or black or dark brown bubbles are a typical indication of a damaged window heat control system.

1) If it is necessary, do a check of the heater control system for that window (TASK 30-41-00-710-801).

(b) Replace the window if the bubbles decrease the visual quality or bubbles are black or dark brown in color (TASK 56-11-21-000-801 and TASK 56-11-21-400-802).

NOTE: Tong Marks found on the glass panes are not cause for removal.

SUBTASK 56-11-00-210-014

(6) Examine the window for scratches.

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(a) The inner glass pane is structural. Replace the window if the inner glass pane has a scratch with a depth more than 0.015 in. (0.381 mm).

1) Use optical micrometer, COM-2039, or equivalent to measure the depth of the scratches.

NOTE: An optical micrometer processor/printer, COM-4786, is optional accessory to part # 8400K, micrometer, COM-2039, to process/print micrometer data.

2) Use roughness and contour measurement tool, COM-13454, as an alternative to measure the depth of the scratches.

a) Make sure that the depth of the scratches is no more than 0.0075 in. (0.1905 mm) if the roughness and contour measurement tool, COM-13454, is used.

NOTE: The roughness and contour measurement tool, COM-13454, is not able to reach the bottom of the scratches in glass material. The maximum allowable scratch depth is divided by two.

(b) A scratch or group of scratches that decreases the visual quality on a pane of the window is a cause for the removal of the window.

(c) The outer glass pane is non-structural. Unless scratches decrease the visual quality, they are permitted.

SUBTASK 56-11-00-210-015

(7) Examine the window for cracks in the vinyl interlayer.

(a) Examine the vinyl interlayer for cracks along the edges of the metal insert with a flashlight, STD-14360 (Figure 617).

NOTE: A crack in the vinyl interlayer can be detected by shining light from a flashlight onto the edge of the metal insert at an angle that is shallow relative to the window surface. The crack can be detected by the white appearance of the crack face, or by the shadow of the crack on the adjacent metal insert. (Figure 617 (Sheet 2), Figure 617 (Sheet 3)).

NOTE: Large vinyl cracks may be detected in bright ambient light without a flashlight.

1) Examine the windows for vinyl cracks along the edges of the metal insert from outside the airplane looking inboard.

a) If urethane interlayer discoloration obstructs the edge of the metal insert, the vinyl crack inspection will not be possible, and the window must be replaced.

2) Examine the windows for vinyl cracks along the edges of the metal insert from inside the airplane looking outboard.

a) If urethane interlayer discoloration obstructs the edge of the metal insert, the vinyl crack inspection will not be possible, and the window must be replaced.

(b) Examine the vinyl interlayer for cracks on the red insulating epoxy in the upper and lower aft corners of the window (Figure 616).

(c) If you find vinyl cracks along the edge of the metal insert, then replace the window.

NOTE: Cracks in the urethane interlayer do not decrease the window structural capacity and are not a cause for a window removal unless they decrease the visual quality.

(d) If you find any vinyl cracks that extend more than 0.3 in. (7.62 mm) beyond any edge of the red epoxy, then replace the window.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464 (Continued)

SUBTASK 56-11-00-210-016

(8) Examine the window for cracks (Figure 607).

(a) Replace the window if cracks are found in inner glass pane (TASK 56-11-21-000-801 and TASK 56-11-21-400-802).

(b) For cracks in the outer pane, a limited dispatch can occur, in accordance with the limits of MMEL Electrically Heated Windows (Ref MMEL section 30-11), if the flight crew agrees that the vision through the window is satisfactory.

NOTE: A crack in the outer pane can cause the window anti-ice system to not operate and it can cause unsatisfactory vision.

(c) For the replacement of the window refer to WINDOW NO. 3 - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-21/401.

NOTE: A dispatch with cracks in the inner structural glass panes is not allowed. The window must be replaced before flight can occur.

SUBTASK 56-11-00-210-017

(9) Examine the external aerodynamic smoother for deterioration and cracks.

(a) It is recommended to repair the aerodynamic smoother if cracked, eroded or loose (PAGEBLOCK 56-11-00/801).

SUBTASK 56-11-00-210-046

(10) Examine the fillet seal for the eroded, cracked, detached, or missed condition.

(a) If it is necessary, repair the fillet seal (TASK 56-11-21-300-804).

SUBTASK 56-11-00-200-019

(11) Examine the window for haze.

(a) If the haze decreases the visual quality of the window, you may do one of the two steps (Method 1 or Method 2).

1) Method 1:

a) Replace the window (No. 3 Window Removal, TASK 56-11-21-000-801 and No. 3 Window Installation, TASK 56-11-21-400-802).

2) Method 2:

a) You can turn the window heat on to remove the haze from the window.

NOTE: The windows are most likely to exhibit haze during extended cold weather conditions, or extended periods of aircraft being out of operation. Running window heat for an extended period time (>8 hours) will likely clear up the majority of visible haze).

<1> If the haze does not clear and decreases the visual quality, replace the window.

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

K. No. 3 window (Acrylic) - Inspection/Check

SUBTASK 56-11-00-210-018

(1) Examine the No. 3 window for chips in the acrylic panes.

(a) Replace or repair the stretched acrylic window panes if limits are larger than the following (TASK 56-11-21-000-801 and TASK 56-11-21-400-802):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) A chip, or group of chips, on the surface of a structural pane that are more than 0.01 in. (0.25 mm) in depth are a cause for the removal of the window.

2) A chip, or group of chips, that decreases the visual quality on a pane of the window is a cause for the removal of the window.

SUBTASK 56-11-00-210-039

(2) Examine the window for erosion along the forward, top, aft and bottom edges (Figure 604).

(a) Replace the window if the erosion is more than 0.25 in. (6.35 mm) wide.

(b) Replace the window if the erosion is more than 0.05 in. (1.27 mm) deep.

SUBTASK 56-11-00-210-019

(3) Examine the window for in-plane cracks (Figure 608).

(a) Replace or repair the window for one or more of the subsequent list of damages (TASK 56-11-21-000-801 and TASK 56-11-21-400-802).

(b) Examine the periphery of the window for visible in-plane cracks.

1) Replace the window if an in-plane crack extends more than 0.400 in. (10.160 mm) from the window edge.

(c) Examine the rabbet edge of the window.

1) Replace or repair the rabbet edge if an in-plane crack extends more than 0.05 in. (1.27 mm) from the rabbet edge.

SUBTASK 56-11-00-210-048

(4) Examine the window for cracks on the inner or outer surfaces.

(a) If cracks are found and are less than 0.05 in. (1.27 mm) in depth, repair window or replace at next convenient maintenance opportunity.

(b) Replace window prior to further flight if cracks at or above 0.05 in. (1.27 mm) in depth are present.

NOTE: Cracks will grow in-service and windows should be repaired or replaced long before they reach a depth of 0.05 in. (1.27 mm) to prevent in-service interruptions. When measuring crack depth a factor of 1.49 needs to be applied due to the index of refraction of acrylic.

NOTE: Cracks tend to grow at about a 45 degree angle into stretched acrylic so the depth of the scratch will be approximately the same as the width. Any window with a crack or scratch with a width of 0.05 in. (1.27 mm) or more should be replaced.

SUBTASK 56-11-00-210-020

(5) Examine the window for scratches.

(a) If scratches impair pilot visibility, do one of the following steps:

NOTE: Cracks often form at the base of scratches and any scratch of 0.02 in. (0.51 mm) in width or more should be treated as a crack.

1) Replace the window, do these tasks:

- No. 3 Window Removal, TASK 56-11-21-000-801
- No. 3 Window Installation, TASK 56-11-21-400-802.

2) Repair the window, do this task: Repair Scratched or Crazed No. 3 Windows, TASK 56-11-21-300-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-00-210-021

(6) Examine the No. 3 window aerodynamic smoother.

(a) It is recommended to repair the aerodynamic smoother if cracked, eroded or loose (TASK 56-11-00-300-801).

LOM 402 PRE SB 737-56-1017

L. No. 4 Window - Inspection/Check

SUBTASK 56-11-00-210-022

(1) Examine the window for chips in the structural inner glass pane (Figure 611).

NOTE: Chips in structural glass pane can decrease structural capability. Chips can also decrease the visual quality of a window.

(a) Replace the window for one or more of the subsequent list of damages (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

1) A peel type chip on a glass surface internal to the window laminate is a cause for the removal of the window.

SUBTASK 56-11-00-210-023

(2) Examine the window for chips in the non-structural outer glass pane and the non-structural acrylic pane (crew shield) (Figure 610).

(a) A chip or group of chips that decreases the visual quality on a pane of the window is a cause for the removal of the window.

(b) The outer glass pane and inner acrylic pane (crew shield) are non-structural. Unless chips decrease the visual quality, they are permitted.

SUBTASK 56-11-00-210-050

(3) Examine the window for moisture ingression.

(a) Examine the window for a cloudy white or yellow haze internal area in a delamination or around the periphery of the window.

NOTE: This is a sign of moisture ingress which can cause arcing in the window heat film.

1) If the moisture is found with any signs of arcing, replace the window.

2) If the delamination or the moisture limits vision, replace the window.

3) If moisture is found near bus bars, it is recommended to replace the window.

NOTE: Moisture ingression in the bus bar is an indication that electrical failure may occur.

NOTE: Delamination in the vicinity of the bus bars or electrical attachment can provide a direct path for moisture into the window heat system. Any delamination near a bus bar or electrical attachment should be checked carefully for a cloudy or yellow haze appearance or uneven discoloration of the adjacent bus bar.

SUBTASK 56-11-00-210-024

(4) Examine the window for delamination.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

(a) Replace the window if the delamination decreases the visual quality (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

NOTE: Delamination can result in moisture ingress which can cause arcing and pane cracks. The recommended limit for delamination in a window is 1.0 in. (25.4 mm) from the edge of the external moisture seal.

SUBTASK 56-11-00-210-025

(5) Examine the window for indications of arcing (Figure 612).

(a) Examine the window for arcing near the bus bar.

(b) Examine the window for line arcs.

(c) Replace the window if there are indications of arcing (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

SUBTASK 56-11-00-210-026

(6) Examine the window for bubbles.

(a) Multiple bubbles together in a small group, or black or dark brown bubbles are a typical indication of a damaged window heat control system.

1) If it is necessary, do a check of the heater control system for that window (TASK 30-41-00-710-801).

(b) Replace the window if the bubbles decrease the visual quality or bubbles are black or dark brown in color (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

SUBTASK 56-11-00-210-027

(7) Examine the window for scratches in the non-structural outer glass pane and the inner acrylic pane (crew shield).

(a) A scratch or group of scratches that decreases the visual quality on a pane of the window is a cause for the removal of the window.

(b) The outer glass pane and inner acrylic pane (crew shield) are non-structural. Unless scratches decrease the visual quality, they are permitted.

SUBTASK 56-11-00-210-028

(8) Examine the window for cracks in the vinyl interlayer.

(a) Examine the vinyl interlayer for cracks along the edges of the metal insert. It is possible in some extreme conditions to see the vinyl interlayer as stretched or disconnected from the metal insert (typically along the forward edge of the window) (Figure 619).

(b) Replace the window if you find cracks in the vinyl interlayer (Figure 618).

NOTE: Cracks in the urethane interlayer do not decrease the window structural capacity and are not a cause for a window removal unless they decrease the visual quality (Figure 614).

SUBTASK 56-11-00-210-029

(9) Examine the window for cracks (Figure 607).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

(a) Replace the window if cracks are found in any glass pane or inner acrylic pane (crew shield) (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

NOTE: The structural inner glass pane is inside the window laminate (Figure 605, Figure 609).

NOTE: A crack in the outer pane can cause the window anti-ice system to not operate and it can cause unsatisfactory vision.

NOTE: If the flight crew agrees that the vision through the window is satisfactory, a limited dispatch can occur. The limits of the MMEL Electrically Heated Windshields (Ref MMEL section 30-11) must be followed.

NOTE: A dispatch with cracks in the inner structural glass panes is not allowed. The windshield must be replaced before flight can occur.

SUBTASK 56-11-00-210-030

(10) Examine the external aerodynamic smoother for deterioration and cracks.

(a) It is recommended to repair the aerodynamic smoother if cracked, eroded or loose (TASK 56-11-00-300-801).

M. No. 5 Window - Inspection/Check

SUBTASK 56-11-00-210-031

(1) Examine the window for chips in the structural inner glass pane (Figure 610, Figure 611).

NOTE: Chips in structural glass pane can decrease structural capability. Chips can also decrease the visual quality of a window.

(a) Replace the window for one or more of the subsequent list of damages (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

1) A chip on the surface of a structural pane that is more than 0.015 in. (0.381 mm) in depth is a cause for the removal of the window.

2) A peel type chip on a glass surface internal to the window laminate is a cause for the removal of the window.

3) A chip or group of chips that decreases the visual quality on a pane of the window is a cause for the removal of the window.

4) The outer glass pane is non-structural. Unless chips decrease the visual quality, they are permitted.

5) A V-shaped chip on the inner surface of the structural inner glass pane of the window is a cause for the removal of the window.

SUBTASK 56-11-00-210-051

(2) Examine the window for moisture ingression.

(a) Examine the window for a cloudy white or yellow haze internal area in a delamination or around the periphery of the window.

NOTE: This is a sign of moisture ingress which can cause arcing in the window heat film.

1) If the moisture is found with any signs of arcing, replace the window.

2) If the delamination or the moisture limits vision, replace the window.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) If moisture is found near bus bars, it is recommended to replace the window.

NOTE: Moisture ingression in the bus bar is an indication that electrical failure may occur.

NOTE: Delamination in the vicinity of the bus bars or electrical attachment can provide a direct path for moisture into the window heat system. Any delamination near a bus bar or electrical attachment should be checked carefully for a cloudy or yellow haze appearance or uneven discoloration of the adjacent bus bar.

SUBTASK 56-11-00-210-032

(3) Examine the window for delamination.

(a) Replace the window if the delamination decreases the visual quality (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

NOTE: Delamination can result in moisture ingress which can cause arcing and pane cracks. The recommended limit for delamination in a window is 1.0 in. (25.4 mm) from the edge of the external moisture seal.

SUBTASK 56-11-00-210-033

(4) Examine the window for indications of arcing (Figure 612).

(a) Examine the window for arcing near the bus bar.

(b) Examine the window for line arcs.

(c) Replace the window if there are indications of arcing (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

SUBTASK 56-11-00-210-034

(5) Examine the window for bubbles.

(a) Multiple bubbles together in a small group, or black or dark brown bubbles are a typical indication of a damaged window heat control system.

1) If it is necessary, do a check of the heater control system for that window (TASK 30-41-00-710-801).

(b) Replace the window if the bubbles decrease the visual quality or bubbles are black or dark brown in color (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

SUBTASK 56-11-00-210-035

(6) Examine window for scratches.

(a) The inner glass pane is structural. Replace the window if the inner glass pane has a scratch with a depth more than 0.015 in. (0.381 mm).

1) Use optical micrometer, COM-2039, or equivalent to measure the depth of the scratches.

NOTE: optical micrometer processor/printer, COM-4786, is optional accessory to part # 8400K, micrometer, COM-2039, to process/print micrometer data.

2) Use roughness and contour measurement tool, COM-13454, as an alternative to measure the depth of the scratches.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

a) Make sure that the depth of the scratches is no more than 0.0075 in. (0.1905 mm) if the roughness and contour measurement tool, COM-13454, is used.

NOTE: The roughness and contour measurement tool, COM-13454, is not able to reach the bottom of the scratches in glass material. The maximum allowable scratch depth is divided by two.

(b) A scratch or group of scratches that decreases the visual quality on a pane of the window is a cause for the removal of the window.

(c) The outer glass pane is non-structural. Unless scratches decrease the visual quality, they are permitted.

SUBTASK 56-11-00-210-036

(7) Examine the window for cracks in the vinyl interlayer.

(a) Examine the vinyl interlayer for cracks along the edges of the metal insert.

NOTE: It is possible in some extreme conditions to see the vinyl interlayer as stretched or separated from the metal insert (typically along forward edge of the window) (Figure 606, Figure 619).

(b) Replace the window if you find cracks in the vinyl interlayer (TASK 56-11-31-000-801 and TASK 56-11-31-400-801) (Figure 618, Figure 619).

NOTE: Cracks in the urethane interlayer do not decrease the window structural capacity and are not a cause for a window removal unless they decrease the visual quality (Figure 614).

SUBTASK 56-11-00-210-037

(8) Examine the window for cracks (Figure 607).

(a) Replace the window if cracks are found in a glass pane (TASK 56-11-31-000-801 and TASK 56-11-31-400-801).

NOTE: A crack in the outer pane can cause the window anti-ice system to not operate and it can cause unsatisfactory vision.

NOTE: If the flight crew agrees that the vision through the window is satisfactory, a limited dispatch can occur. The limits of the MMEL Electrically Heated Windshields (Ref MMEL section 30-11) must be followed.

NOTE: A dispatch with cracks in the inner structural glass panes is not allowed. The windshield must be replaced before flight can occur.

SUBTASK 56-11-00-210-038

(9) Examine the external aerodynamic smoother for deterioration and cracks.

(a) It is recommended to repair the aerodynamic smoother if cracked, eroded, or loose (TASK 56-11-00-300-801).

NOTE: Cracked or eroded aerodynamic smoother can result in moisture ingress which can cause arcing and pane cracks.

LOM ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

N. Flight Deck Window Inspection Methods/Tools for Measurement of Damage Depths and Material Thickness

SUBTASK 56-11-00-200-014

(1) Put the micrometer over the scratch or defect to be measured.

NOTE: The tripod base is most effective on flat surfaces or slightly curved transparent material.

NOTE: The micrometer light provides a kit that will pinpoint the location to be checked. The area covered varies (approximately) 0.0625 in. (1.5875 mm) in diameter.

(a) Use the depth micrometer 0.0 to 6.0 in (0.0 to 152.4 mm), STD-597, and do the detailed dimensional inspection of the window thicknesses which are installed on the aircraft.

1) Use the standard eyepiece unless width measurements are being made.

NOTE: The area in the focal plane will be in focus. The areas above and below the focal plane will be out of focus or be completely blank. The image being viewed will be inverted since the micrometer does not have prismatic correction.

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

SUBTASK 56-11-00-210-042

(2) All readings must be made by the same person, the same conditions.

NOTE: If the readings of a measurement are made by two persons, the measurements computed must be within 0.0002 in. (0.0051 mm) of each other.

SUBTASK 56-11-00-200-016

(3) Use the three scales to read the measurements as follows:

(a) Hundred-thousands (0.1) - indicated by the number on the barrel

(b) Thousands (0.001) - indicated on the lower part of the rotating thimble

(c) Ten-thousands (0.0001) - indicated on the vernier of the non-rotating part of the thimble

(d) Do the depth measurement as follows:

1) Measure the distance to the near surface and record the measurement.

2) Measure the distance to the far surface and record the measurement.

3) Subtract the distance to the near surface from the distance to the far surface to get the depth measurement.

SUBTASK 56-11-00-210-043

(4) When you measure transparent materials for thickness, multiply the reading by 1.5 for the index of refraction.

NOTE: The index of refraction for glass and acrylic are almost the same. Use 1.5 refraction index for the two materials. Bubbles inside transparent materials are air space or voids are not subject to the 1.5 index of refraction.

SUBTASK 56-11-00-200-017

(5) Measure the width of a bubble or inclusion as follows:

(a) Install the reticle eyepiece and 10x objective.

(b) Focus on the widest portion of the bubble or void and read the comparator scale in the eyepiece.

SUBTASK 56-11-00-020-008

(6) Remove all the tools and equipment form the work area.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the area is clean.

O. Put the Airplane Back to its Usual Condition

SUBTASK 56-11-00-860-018

(1) Close these circuit breakers:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDSHIELD
(EXAMPLE)

(EXAMPLE)
A-A

2122138 S0000457202_V5

Flight Compartment Window Vision Terms
Figure 601/56-11-00-990-825

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 1
(TYPICAL)
A-A

1333632 S0000235902_V4

Flight Compartment Windshield
Figure 602/56-11-00-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 1
(TYPICAL)
A-A

1333638 S0000235903_V4

Flight Compartment Windshield
Figure 602/56-11-00-990-806 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Flight Compartment No. 3 Window – Cross Sections
Figure 603/56-11-00-990-824

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Flight Compartment No. 3 Window - Cross Sections
Figure 604/56-11-00-990-809 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1333743 S0000235909_V5

Flight Compartment No. 3 Window - Cross Sections
Figure 604/56-11-00-990-809 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1333645 S0000235910_V2

Flight Compartment No. 4 Window
Figure 605/56-11-00-990-810

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1333700 S0000235911_V2

Flight Compartment No. 5 Window
Figure 606/56-11-00-990-811

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1331298 S0000235141_V2

Glass Pane Cracks
Figure 607/56-11-00-990-812 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1331300 S0000235142_V2

Glass Pane Cracks
Figure 607/56-11-00-990-812 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

A-A

A

1333931 S0000236122_V2

Flight Compartment No. 3 Window - Acrylic Cracks
Figure 608/56-11-00-990-813 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

VIEW OF WINDOW SURFACE

NOTE:

NOT TO SCALE.
THESE SECTION VIEWS AND ILLUSTRATIONS SHOW CRACKS THAT ARE LARGER THAN THE ACTUAL CRACKS, TO SHOW THE PROPERTIES OF CRACKS WHICH DEVELOP.

G29029 S0006581408_V2

Flight Compartment No. 3 Window - Acrylic Cracks
Figure 608/56-11-00-990-813 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 4

A

1335463 S0000236641_V3

Window No. 4 Structural Inner Pane Fracture
Figure 609/56-11-00-990-814

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G08514 S0006581367_V3

Glass Pane Chips
Figure 610/56-11-00-990-815

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(TYPICAL)

A

1335413 S0000236706_V2

Peel Chip
Figure 611/56-11-00-990-816

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW HEAT ARCING

1348379 S0000240983_V3

Window Heat Arcing
Figure 612/56-11-00-990-817

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 1

A

WINDOW NO. 1

A

2922733 S0000704633_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 613/56-11-00-990-834 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1 INSPECT SEALANT UNDER Z-BAR FROM INSIDE FOR SIGNS OF DISBOND. A GOOD BOND WILL BE SMOOTH AND UNIFORMLY DARK IN COLOR. DISBOND WILL HAVE LIGHT COLOR SPLOTCHES AND APPEAR TO BE STAINED.

2922734 S0000704634_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 613/56-11-00-990-834 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2922735 S0000704635_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 613/56-11-00-990-834 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2 AN IMPRINT OF THE SOLDER JOINT IS AN ACCEPTABLE CONDITION. IN SOME CASES A SOLDER JOINT IMPRINT WILL BE SEEN DURING AN INSPECTION OF THE AERODYNAMIC SMOOTHER OR INSPECTION FOR ARCING AT THE BUS BAR.

3 INSPECT SOLDER JOINT AREA ON INBOARD SIDE OF BUS BAR FOR EVIDENCE OF MOISTURE.

2922829 S0000704637_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 613/56-11-00-990-834 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4 INSPECT OUTERMOST EDGE OF SOLDER JOINT AND ADJACENT BUS BAR FOR EVIDENCE OF ELECTRICAL ARCING, DISTINCT DARK BROWN OR BLACK AREAS.

2922737 S0000704636_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 613/56-11-00-990-834 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5 INSPECT POWER BRAID WIRE ADJACENT TO SOLDER JOINT FOR SIGNS OF BROKEN WIRES AND EVIDENCE OF ELECTRICAL ARCING.

2922738 S0000704638_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 613/56-11-00-990-834 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

URETHANE INTERLAYER CRACKS

1348373 S0000240984_V2

Urethane Interlayer Cracks
Figure 614/56-11-00-990-818

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 1

A

WINDOW NO. 1 VINYL CRACK
(EXAMPLE)

A-A

1336227 S0000236876_V5

Windshield Structural Vinyl Interlayer Cracks
Figure 615/56-11-00-990-819 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 1

A

WINDOW NO. 1 VINYL CRACK
(EXAMPLE)

A-A

1336225 S0000235218_V5

Windshield Structural Vinyl Interlayer Cracks
Figure 615/56-11-00-990-819 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B

1337794 S0000237326_V4

Windshield Structural Vinyl Interlayer Cracks
Figure 615/56-11-00-990-819 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 3 CORNER-TYPE VINYL CRACK FOR HEATED GLASS (EXAMPLE)

2214554 S0000493984_V4

Window No. 3 Structural Vinyl Interlayer Cracks
Figure 616/56-11-00-990-827

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 3 VINYL CRACK

A-A

2476342 S0000581070_V4

Window No. 3 Structural Vinyl Interlayer Cracks
Figure 617/56-11-00-990-821 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2476466 S0000581071_V2

Window No. 3 Structural Vinyl Interlayer Cracks
Figure 617/56-11-00-990-821 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D

2476540 S0000581072_V2

Window No. 3 Structural Vinyl Interlayer Cracks
Figure 617/56-11-00-990-821 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1335924 S0000236778_V2

Eyebrow Window Vinyl Interlayer Cracks
Figure 618/56-11-00-990-832 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Eyebrow Window Vinyl Interlayer Cracks
Figure 618/56-11-00-990-832 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1336113 S0000236792_V2

Eyebrow Window Vinyl Interlayer Cracks
Figure 618/56-11-00-990-832 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1336142 S0000236794_V2

Eyebrow Window Vinyl Interlayer Cracks
Figure 618/56-11-00-990-832 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1336213 S0000236899_V2

Vinyl Separation
Figure 619/56-11-00-990-833

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 1
(EXAMPLE)

A

1 POTENTIAL WINDOW HAZE IN THIS AREA.

2370892 S0000542675_V3

Windshield No.1 Haze
Figure 620/56-11-00-990-826

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2575353 S0000618984_V1

Window No. 2 Epoxy Cracked Areas
Figure 621/56-11-00-990-831

ECCN 9E991 BOEING PROPRIETARY - See title page for details

**WINDOW
(EXAMPLE)**

2994392 S0000771123_V1

**Rainbow Color Like Discoloration
Figure 622/56-11-00-990-835**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 1 WINDOW

3045065 S0000812099_V1

Cracking of the Acrylic Wafers
Figure 623/56-11-00-990-836

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT WINDOWS - REPAIRS

1. General

A. This procedure has this task:

(1) The repair of the aerodynamic smoother and pre-molded seal for the flight compartment windows.

B. There is aerodynamic smoother (sealant) around all flight compartment windows. The aerodynamic smoother can erode and have cracks.

TASK 56-11-00-300-801

2. Flight Compartment Windows - Repair of Aerodynamic Smoother and Pre-Molded Seal

(Figure 801, Figure 802)

A. References

Reference	Title
51-31-00-160-801	Prepare For Sealing (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-21324	Control Panel - electrical Rapid Curing Device (eRCD) Part #: RC-E-CP Supplier: 3FM31
COM-21325	Emitters, eRCD - Windshield Rapid Curing System (WRCS) Part #: RC-E-WS-B737 Supplier: 3FM31
STD-449	Gun - Sealant
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
A01056	Sealant - Aerodynamic - PR 1829	
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B
A50084	Sealant - P/S 860 Class B-1/6 Quick Repair Fuel Tank Sealant	AMS-S-83318 Class B
A50205	Adhesive - PR-142 Adhesion Promoter (One-Part Compound)	
A50454	Tape - Masking, General Purpose, Scotch 234	
A50485	Promoter - Adhesion, PR-1861	
A50493	Sealant - Windshield And Canopy - PR-1425CF	
A50517	Sealant - AC-251 Black Class B	
A50543	Promoter - Adhesion, AC-137	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
A50574	Promoter - Adhesion, PR-1826AP	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00039	Cord - Fibrous, Nylon (100 Lb Strength)	MIL-C-5040 Type IA
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00291	Tape - Aluminum Foil, 3M 425	AMS-T-23397 / L-T-80

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Repair

SUBTASK 56-11-00-860-001

WARNING THE WINDOW HEAT SYSTEM MUST BE DISABLED WHEN YOU DO WORK ON OR NEAR THE WINDOWS. IF THE WINDOW HEAT SYSTEM IS NOT DISABLED, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Move these switches, on the P5 panel, to the OFF position and attach DO NOT OPERATE tags, STD-858:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT L FWD

(c) WINDOW HEAT R SIDE

(d) WINDOW HEAT R FWD.

SUBTASK 56-11-00-020-001

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM 404, 411, 412, 415, 423, 424, 427, 428, 439, 441, 464			
B	7	C01650	WINDOW HEAT POWER L3
LOM 402			
B	7	C00229	WINDOW HEAT POWER L3, L4 & L5
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
LOM 404, 411, 412, 415, 423, 424, 427, 428, 439, 441, 464			
B	7	C01649	WINDOW HEAT POWER R3
LOM 402			
B	7	C00395	WINDOW HEAT POWER R3, R4 & R5
LOM ALL			
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

These circuit breakers are inoperative and should remain open:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM 402 POST SB 737-56-1017			
B	7	C00229	WINDOW HEAT POWER L4 & L5 (INOP)

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R4 & R5 (INOP)

LOM ALL

F. Aerodynamic Smoother (Sealant) and Pre-molded Seal Repair

SUBTASK 56-11-00-120-001

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

> **CAUTION** YOU MUST USE PLASTIC TOOLS WHEN YOU REMOVE THE SEALANT. IF YOU DO NOT USE PLASTIC TOOLS, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(1) Remove the sealant of aerodynamic smoother and/or pre-molded seal in areas with the conditions that follow (TASK 51-31-00-160-801):

(a) Cracks

(b) Erosion

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Aerodynamic smoother is not bonded to the glass.

SUBTASK 56-11-00-110-001

> **CAUTION**
> USE A MOIST CHEESECLOTH ONLY. IF THERE IS TOO MUCH SOLVENT ON THE CHEESECLOTH, IT COULD GO INTO THE WINDSHIELD LAMINATIONS. THIS CAN CAUSE DAMAGE TO THE WINDOW.

(2) Clean the adjacent window and frame with cotton wiper, G00034, and solvent, B00083.

SUBTASK 56-11-00-950-001

(3) Apply Scotch Flatback Masking Tape 250, G00270 (preferred), or Scotch General Purpose Masking Tape 234, A50454 (alternate), on the glass window and window frame where the new aerodynamic smoother or pre-molded seal will be applied.

SUBTASK 56-11-00-420-001

(4) For aerodynamic smoother repair only, install a new nylon cord, G00039, in the bottom of the gap between the fuselage and window at the repaired section.

NOTE: In production the cord should be longer than the distance around the edge of the window. The ends of the cord should overlap approximately 0.5 in. (12.7 mm) with the ends in the upper aft corner.

Above practice is to better aid in common location of the cord and ease of removal of the cord (sealant) during window replacement.

Operators may deviate from this standard practice and not overlap the ends of the cord and/or position the ends of the cord other than in the upper aft corner, as they see fit.

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

SUBTASK 56-11-00-390-001

(5) Use one of the sealants that follow (in sequence of preference):

(a) PR-1425 sealant, A00103 (preferred)

(b) PR-1425CF sealant, A50493 (alternative)

(c) AC-251 sealant, A50517 (alternative)

(d) sealant, A00247 (PRO-SEAL 870 Class B) (alternative)

(e) PR 1829 sealant, A01056 (alternative)

(f) PR-1826 sealant, A50052 (alternative)

(g) PR-1828 sealant, A00708 (alternative)

(h) P/S 860 B-1/6 sealant, A50084 (Glass windows only) (alternative).

NOTE: For the No. 1 and No. 2 window moisture seal repair, it is permissible to use P/S 860 B-1/6 sealant, A50084.

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

SUBTASK 56-11-00-390-004

(6) Use one of the sealants that follow (in sequence of preference):

(a) PR-1425 sealant, A00103 (preferred)

(b) PR-1425CF sealant, A50493 (alternative)

(c) AC-251 sealant, A50517 (alternative)

(d) sealant, A00247, (PRO-SEAL 870 Class B) (alternative)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) PR 1829 sealant, A01056 (alternative).

NOTE: For the No. 1 and No. 2 window moisture seal repair, it is permissible to use P/S 860 B-1/6 sealant, A50084.

NOTE: For the No. 1 and No. 2 window, it is permissible to use PR-1826 sealant, A50052, or PR-1828 sealant, A00708.

LOM ALL

SUBTASK 56-11-00-390-008

(7) Use one of the adhesion promoters that follow:

(a) PR-142 adhesion promoter, A50205, for the PR-1425 sealant, A00103.

(b) PR-1861 adhesion promoter, A50485, for the PR-1425CF sealant, A50493.

(c) AC-137 adhesion promoter, A50543, for the AC-251 sealant, A50517.

(d) PR-142 adhesion promoter, A50205, for the sealant, A00247 (PRO-SEAL 870 Class B).

(e) PR-1861 adhesion promoter, A50485, for the PR 1829 sealant, A01056 (Rapid Cure).

(f) PR-142 adhesion promoter, A50205 (preferred), or PR-1826AP adhesion promoter, A50574 (alternate), for the PR-1826 sealant, A50052.

(g) PR-142 adhesion promoter, A50205, for the P/S 860 B-1/6 sealant, A50084.

SUBTASK 56-11-00-390-009

(8) Apply the adhesion promoter according to the manufacturer's instructions.

NOTE: It is recommended to use adhesion promoter to improve sealant adhesion.

SUBTASK 56-11-00-390-002

(9) Mix the sealant to the manufacturer's instructions.

SUBTASK 56-11-00-390-003

(10) Use a sealant gun, STD-449, to apply the sealant you have chosen.

NOTE: When you apply the sealant with the sealant gun, STD-449, you should push the sealant gun, STD-449. This will keep you from trapping air underneath the sealant.

(a) Apply more sealant than is necessary.

SUBTASK 56-11-00-860-002

(11) Smooth the sealant to the shape of aerodynamic smoother and/or pre-molded seal (Figure 801).

SUBTASK 56-11-00-950-002

(12) Remove Scotch Flatback Masking Tape 250, G00270 (preferred), or Scotch General Purpose Masking Tape 234, A50454 (alternate), before the sealant starts to get hard.

SUBTASK 56-11-00-860-003

(13) Let the sealant cure (Figure 802).

SUBTASK 56-11-00-950-003

(14) If it is necessary to send the airplane before the sealant fully cures, do one of the following steps:

(a) Apply 3M 425 Aluminum Foil Tape, G00291, on the top of the aerodynamic smoother and/or pre-molded seal.

(b) If it is necessary to accelerate sealant curing, use eRCD control panel, COM-21324, and WRCS emitters, COM-21325, to apply heat to the sealant.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-00-950-004

(15) If it is applied, remove 3M 425 Aluminum Foil Tape, G00291, after the aerodynamic smoother and/or pre-molded seal has fully cured.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-00-840-001

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM 404, 411, 412, 415, 423, 424, 427, 428, 439, 441, 464			
B	7	C01650	WINDOW HEAT POWER L3
LOM 402			
B	7	C00229	WINDOW HEAT POWER L3, L4 & L5
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
LOM 404, 411, 412, 415, 423, 424, 427, 428, 439, 441, 464			
B	7	C01649	WINDOW HEAT POWER R3
LOM 402			
B	7	C00395	WINDOW HEAT POWER R3, R4 & R5
LOM ALL			
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

These circuit breakers are inoperative and should remain open:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM 402 POST SB 737-56-1017			
B	7	C00229	WINDOW HEAT POWER L4 & L5 (INOP)

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R4 & R5 (INOP)

LOM ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-00-860-017

(2) Remove the DO NOT OPERATE tags from these switches, on the P5 pilot's overhead panel:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT L FWD

(c) WINDOW HEAT R SIDE

(d) WINDOW HEAT R FWD.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Aerodynamic Smoother Application
Figure 801/56-11-00-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Aerodynamic Smoother Application
Figure 801/56-11-00-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEALANT SHAPE - WINDOW NO. 3
(EXAMPLE)
B-B

J99219 S0000190424_V3

Aerodynamic Smoother Application
Figure 801/56-11-00-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEALANT SHAPE - WINDOW NOS. 4, 5

J99222 S0000190423_V2

Aerodynamic Smoother Application
Figure 801/56-11-00-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEALANT	TEMPERATURE 2 3				
	57˚F (13.9˚C)	77˚F (25˚C)	97˚F (36.1˚C)	117˚F (47.2˚C)	137˚F (58.3˚C)
PR-1425CF B-2	24 Hours	12 Hours	6 Hours	3 Hours	1.5 Hours
BMS 5-95 B-2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425 B-2	96 Hours	48 Hours	24 Hours	12 Hours	6 Hours
BMS 5-95 B-1/2	20 Hours	10 Hours	5 Hours	2.5 Hours	1.25 Hours
PR-1826 B-1/2 or PR-1828 B-1/2	6 Hours	3 Hours	1.5 Hours	45 Minutes	23 Minutes
PR-1829 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	30 Minutes
PR-1425 B-1/2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425CF B-1/2	12 Hours	6 Hours	3 Hours	1.5 Hours	45 Minutes
AC-251 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	0.5 Hours
AC-251 B-1	14 Hours	7 Hours	3.5 Hours	1.75 Hours	52 Minutes
AC-251 B-2	18 Hours	9 Hours	4.5 Hours	2.25 Hours	1.125 Hours

AVERAGE CURE TIME FOR SEALANT 1 4 5

1 ROUND AMBIENT TEMPERATURE DOWN TO THE LOWER TEMPERATURE COLUMN (IE 116˚F WOULD USE 97˚F COLUMN)

2 DO NOT CURE SEALANT ABOVE 140˚F (60˚C)

3 DO NOT CURE SEALANT BELOW 50˚F (10˚C)

4 REX A DUROMETER READING OF 30

5 REFER TO THE DATA SHEET FOR FASTER CURE TIMES OF THE SEALANT OR SPEAK TO THE MANUFACTURER IF NOT AVAILABLE

2843657 S0000664119_V4

Sealant Cure Times
Figure 802/56-11-00-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 1 WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the No. 1 window

(2) An installation of the No. 1 window.

TASK 56-11-11-000-801

2. No. 1 Window Removal

(Figure 401, Figure 404, and Figure 405)

A. References

Reference	Title
22-11-34-000-801	DFCS Mode Control Panel Removal (P/B 401)
25-11-21-000-801	Flight Compartment Forward Ceiling Panel Removal (P/B 201)
25-11-21-000-805	Flight Compartment Forward Ceiling Panel Removal (P/B 201)
30-42-31-000-801	Windshield Wiper Arm - Removal (P/B 201)
31-62-12-000-801	EFIS Control Panel Removal (P/B 401)
WDM 31-62-11	Wiring Diagram Manual
WDM 31-62-21	Wiring Diagram Manual

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. No. 1 Window Removal

SUBTASK 56-11-11-862-001

> **WARNING** REMOVE POWER FROM THE WINDOW HEAT SYSTEM BEFORE YOU REMOVE THE WINDOW. IF WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. AN ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

(1) Move these switches on the P5-9 pilot's overhead panel to the OFF position and attach DO NOT OPERATE tags, STD-858:

(a) WINDOW HEAT L FWD

(b) WINDOW HEAT R FWD

(c) WINDOW HEAT L SIDE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) WINDOW HEAT R SIDE.

SUBTASK 56-11-11-865-001

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
LOM ALL			
A	9	C00308	CONTROL CABIN LIGHTING MAP & KIT
A	10	C00309	CONTROL CABIN LIGHTING OBS READING

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-11-11-950-006

(3) Install a protective wrapping paper, G02173, cover with Scotch Flatback Masking Tape 250, G00270, to the two sides of the window assembly.

NOTE: If the window is unserviceable and the damage investigation is not necessary, it is acceptable to not install wrapping paper, G02173.

(a) Minimize the use of Scotch Flatback Masking Tape 250, G00270, to the edge of the window.

SUBTASK 56-11-11-010-001

(4) Do this task: Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801 or Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-805.

SUBTASK 56-11-11-020-010

(5) Remove the center post cover screws.

SUBTASK 56-11-11-020-011

(6) Disconnect the following drain tubes:

(a) Left Drain Tube (if installed - non Head-Up Display (HUD) airplanes)

(b) Center Drain Tube

(c) Right Drain Tube.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-020-012

(7) Remove the screws that attach the window sill cover to the frame.

SUBTASK 56-11-11-020-013

(8) Remove the window sill cover.

SUBTASK 56-11-11-020-014

(9) Remove the glareshield [30] as follows (Figure 404):

(a) Do this task: DFCS Mode Control Panel Removal, TASK 22-11-34-000-801.

(b) Do this task: EFIS Control Panel Removal, TASK 31-62-12-000-801.

(c) Remove the lower glareshield covers.

(d) If it is necessary, disconnect the chart lights and headphone jacks.

(e) Remove the glareshield [30] from the support frame as follows:

1) Remove the quater turn fastener [31] from the glareshield [30].

2) Remove the glareshield [30] from the support frame.

3) Disconnect the electrical connectors from the left and right side of the support frame and attach covers to the connectors and receptacles.

4) Disconnect the quick-disconnect strap jumper assembly on the support frame.

5) Disconnect the Electronic Flight Instrument System (EFIS) control panel electrical connectors (D3993 and D3995) and ground wires (GD701-DC and GD703-DC), from the support frame (WDM 31-62-11, WDM 31-62-21).

(f) Remove the bolts that attach the left and right support frame attach brackets to the window sill.

(g) Remove the glareshield support bracket.

(h) Remove the demist outlet and outboard glareshield support bracket as follows:

1) Remove the demist outlet attach screws.

2) Move the demist outlet to gain access to the window screws.

3) Remove the bolts that attach the outboard glareshield support bracket.

NOTE: Do not disconnect the wiring to the center instrument panel.

(i) Remove the fasteners from the center engine instrument panel.

NOTE: This will provide clearance for the glareshield [30].

(j) Move the panel down and as far aft as possible.

(k) Remove the glareshield brackets or clips, as required.

1) Support the glareshield [30].

2) Remove the four screws from each of the two inboard glareshield support frame brackets.

3) Lift the aft edge of the glareshield [30].

4) Disconnect the antifogging ducts from the nozzles.

5) Remove the glareshield [30] from the cockpit.

SUBTASK 56-11-11-010-004

(10) If it is necessary, disconnect the sunshade support rod above the window drain tube clamps at the window post on the airplane centerline.

NOTE: You must move the drain tubes to one side to permit the removal of the window.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-020-031

(11) Remove the drain pan and drain tube clamps at the window post on the airplane centerline.

SUBTASK 56-11-11-020-018

(12) Disconnect the electrical wires to the power terminals and the sensor terminals (Figure 405).

(a) Remove the screw and ring lug that attach the wire to the terminal.

NOTE: Shipside wiring is attached with a screw and ring lug to the terminal.

(b) Disconnect the electrical wire.

SUBTASK 56-11-11-020-030

LOM 428-434, 437-447, 450-999

(13) Remove the screw [29], lock washer [28], washer [27], and bonding jumper [26] from the terminal [14] (two places).

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-427

(14) Remove the screw [29], washers [27], and bonding jumper [26] from the terminal [14] (two places).

LOM ALL

SUBTASK 56-11-11-020-019

(15) Do this task: Windshield Wiper Arm - Removal, TASK 30-42-31-000-801.

SUBTASK 56-11-11-020-020

(16) Remove the aerodynamic smoother from the free end of the nylon cord in the top aft corner of the window.

SUBTASK 56-11-11-020-021

(17) Pull the nylon cord from the window to remove the aerodynamic smoother.

NOTE: Pull the cord parallel to the window frame. This will help stop the cord from breaking before it is fully removed.

F. Remove the No. 1 window.

SUBTASK 56-11-11-020-022

(1) Remove the No. 1 window attachments as follows:

NOTE: Make a note of all the parts and their locations to make the installation easier. Refer to the IPC for new parts and their location.

(a) Remove the eight bolts [9] and nutplate strip assembly [5] from the windshield [1] (View B-B, Figure 401).

(b) Remove the bolt [8], washer [15], O-ring [20], and nut [18] from the windshield [1] (View H-H, Figure 401).

(c) Remove the four bolts [8] and nutplate strip assembly [4] from the forward corner of the windshield [1].

1) If it is necessary, remove the two bolts [22], two washers [23], and two clips [24] from the nutplate strip assembly [4] (View E, Figure 401).

(d) Remove the bolt [19], washer [15], O-ring [12], and nut [18] from the windshield [1] (View F, Figure 401).

(e) Remove the bolt [8], seal washer [16], washer [15], and nut [18] from the bottom aft corner of the windshield [1] (View F, Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Remove the eight bolts [8] and nutplate strip assembly [3] from the windshield [1] (View G-G, Figure 401).

1) If it is necessary, remove the three bolts [22], three washers [23], and three clips [24] from the nutplate strip assembly [3] (View E, Figure 401).

(g) Remove the bolt [25], spacer [21], O-ring [12], washer [11], and nut [10] (View D, Figure 401).

(h) Remove the bolt [17], washer [15], seal washer [16], and nut [10] from the top aft corner of the windshield [1] (View E-E, Figure 401).

(i) Remove the 24 bolts [9] and nutplate strip assembly [2] from the windshield [1] (Figure 401).

SUBTASK 56-11-11-020-023

(2) Do these steps to remove the retaining angle bolts:

(a) Open an adjacent sliding window.

(b) Remove all 18 retaining angle bolts along the vertical post from the doubler, the retaining angle and the window frame post.

NOTE: Keep the retaining angle bolts and the retaining angle with the doubler for installation.

NOTE: The retaining angle cannot be removed until the windshield [1] is out of the window frame.

SUBTASK 56-11-11-020-024

WARNING MAKE SURE THAT YOU DO NOT DROP THE WINDOW. THE WINDOW IS HEAVY. IF YOU DROP IT, YOU CAN CAUSE DAMAGE TO THE WINDOW AND THE AIRPLANE AND INJURY TO PERSONS.

(3) Apply hand pressure to the outer side of the window to break the pressure seal.

NOTE: This procedure requires two persons, one on the inside and one on the outside of the airplane.

NOTE: Always apply pressure to the largest area possible. You can tap the window with a rubber mallet and nonmetallic block if it is particularly difficult to remove. Do not permit the window to fall free when you break the pressure seal. Remove the spacers and the silicone rubber molded-in-position seal with the window assembly.

SUBTASK 56-11-11-020-025

(4) Remove the window.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 1 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 2 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 3 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 4 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B-B

C-C

G32862 S0006581381_V6

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 5 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B-B

ASSIST HANDLE
C-C 3

ASSIST HANDLE
C-C 4

3 IN STOWED POSITION WHEN HUD IS INSTALLED.

4 IN STOWED POSITION WHEN HUD IS NOT INSTALLED.

M45542 S0006581382_V7

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 6 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 7 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 8 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 9 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G32866 S0006581386_V5

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 10 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2969080 S0000748348_V2

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 11 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 12 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 13 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H

2343449 S0000533303_V2

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 14 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5 IF IT IS INSTALLED

6 HEX HEAD FLATS SHOULD BE ALIGNED WITH THE POST PLANE AS SHOWN.

2583912 S0000623162_V2

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 15 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3 IF IT IS INSTALLED

4 HEX HEAD FLATS SHOULD BE ALIGNED WITH THE POST PLANE AS SHOWN.

2973731 S0000752532_V1

Window No. 1 Installation
Figure 401/56-11-11-990-809 (Sheet 16 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 1 WINDSHIELD
(VIEW FROM OUTSIDE)
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

NOTE:

THIS IS AN EXAMPLE OF HOW YOU CAN TIGHTEN THE FASTENERS FOR THE WINDOW. ANY PATTERN THAT IS ALMOST THE SAME IS PERMITTED. FIRST ATTACH THE WINDOW AT AS MANY POINTS THAT ARE OPPOSITE ON THE WINDOW. DO THIS AS EARLY IN THE FASTENER TORQUE SEQUENCE AS POSSIBLE.
CONTINUE IN THIS PATTERN. ALWAYS GO TO A FASTENER THAT IS IN THE MIDDLE OF TWO INSTALLED FASTENERS. YOU MUST GO TO A SIDE OTHER THAN THE SIDE ON WHICH A FASTENER WAS JUST TIGHTENED.

G32869 S0006581388_V4

Window No. 1 Retaining Bolt Torque Sequence
Figure 402/56-11-11-990-810

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEALANT	TEMPERATURE 2 3				
	57˚F (13.9˚C)	77˚F (25˚C)	97˚F (36.1˚C)	117˚F (47.2˚C)	137˚F (58.3˚C)
PR-1425CF B-2	24 Hours	12 Hours	6 Hours	3 Hours	1.5 Hours
BMS 5-95 B-2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425 B-2	96 Hours	48 Hours	24 Hours	12 Hours	6 Hours
BMS 5-95 B-1/2	20 Hours	10 Hours	5 Hours	2.5 Hours	1.25 Hours
PR-1826 B-1/2 or PR-1828 B-1/2	6 Hours	3 Hours	1.5 Hours	45 Minutes	23 Minutes
PR-1829 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	30 Minutes
PR-1425 B-1/2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425CF B-1/2	12 Hours	6 Hours	3 Hours	1.5 Hours	45 Minutes
AC-251 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	0.5 Hours
AC-251 B-1	14 Hours	7 Hours	3.5 Hours	1.75 Hours	52 Minutes
AC-251 B-2	18 Hours	9 Hours	4.5 Hours	2.25 Hours	1.125 Hours

AVERAGE CURE TIME FOR SEALANT 1 4 5

1 ROUND AMBIENT TEMPERATURE DOWN TO THE LOWER TEMPERATURE COLUMN (IE 116˚F WOULD USE 97˚F COLUMN)

2 DO NOT CURE SEALANT ABOVE 140˚F (60˚C)

3 DO NOT CURE SEALANT BELOW 50˚F (10˚C)

4 REX A DUROMETER READING OF 30

5 REFER TO THE DATA SHEET FOR FASTER CURE TIMES OF THE SEALANT OR SPEAK TO THE MANUFACTURER IF NOT AVAILABLE

2843657 S0000664119_V4

Sealant Cure Times
Figure 403/56-11-11-990-811

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

GLARESHIELD

A

1924919 S0000363699_V3

Glareshield Installation
Figure 404/56-11-11-990-812

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

NO. 1 WINDOW
(CAPTAIN WINDOW IS SHOWN,
FIRST OFFICER WINDOW IS OPPOSITE)

A

3015331 S0000788688_V1

Terminal Location/Identification
Figure 405/56-11-11-990-813

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-11-11-400-801

3. No. 1 Window Installation

(Figure 401, Figure 402, Figure 403, Figure 404, and Figure 405)

A. General

(1) This task is for the installation of the No. 1 window.

B. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
12-16-02 P/B 301	FLIGHT COMPARTMENT WINDOWS - SERVICING
22-11-34-400-801	DFCS Mode Control Panel Installation (P/B 401)
25-11-21-400-801	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
25-11-21-400-805	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
30-41-21-000-801	Check the Electrical Resistance of the Window Heat Film (P/B 501)
30-42-31-400-801	Windshield Wiper Arm - Installation (P/B 201)
31-62-12-400-801	EFIS Control Panel Installation (P/B 401)
56-11-00-200-803	Inspect the Flight Compartment Windows (P/B 601)
56-11-00-300-801	Flight Compartment Windows - Repair of Aerodynamic Smoother and Pre-Molded Seal (P/B 801)
WDM 30-41-11	Wiring Diagram Manual
WDM 30-41-12	Wiring Diagram Manual
WDM 31-62-11	Wiring Diagram Manual
WDM 31-62-21	Wiring Diagram Manual

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
COM-21324	Control Panel - electrical Rapid Curing Device (eRCD) Part #: RC-E-CP Supplier: 3FM31
COM-21325	Emitters, eRCD - Windshield Rapid Curing System (WRCS) Part #: RC-E-WS-B737 Supplier: 3FM31
STD-449	Gun - Sealant
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic
STD-3911	Brush - Bristle, Medium Nylon

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00230	Compound - Electrical Insulating Coating	BMS5-37
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
A01056	Sealant - Aerodynamic - PR 1829	
A50048	Sealant - PR-1436-G Sprayable Corrosion Inhibitive Sealant	MIL-S-81733
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B
A50084	Sealant - P/S 860 Class B-1/6 Quick Repair Fuel Tank Sealant	AMS-S-83318 Class B
A50205	Adhesive - PR-142 Adhesion Promoter (One-Part Compound)	
A50485	Promoter - Adhesion, PR-1861	
A50493	Sealant - Windshield And Canopy - PR-1425CF	
A50517	Sealant - AC-251 Black Class B	
A50543	Promoter - Adhesion, AC-137	
A50574	Promoter - Adhesion, PR-1826AP	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B50073	Alcohol - Isopropyl	ASTM D 770
B50078	Solvent - Aliphatic Naphtha (For Organic Coatings)	TT-N-95 Type I (Supersedes BMS3-2 Type I)
B50095	Solvent	BAC5750
B50225	Solvent - Citra-Safe (Deodorized)	
I B50226	Solvent - Citra-Safe	BAC5750
C50005	Coating - Chemical Conversion - Bonderite M-CR 1200S Aero (Formerly Alodine 1200S)	BAC5719 Class A, C or D, MIL-DTL-81706 Type I Class 1A or 3
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00039	Cord - Fibrous, Nylon (100 Lb Strength)	MIL-C-5040 Type IA
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00291	Tape - Aluminum Foil, 3M 425	AMS-T-23397 / L-T-80
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)
G50072	Gasket - Knitted Aluminum Alloy Wire Mesh - Tecknit 20-21112	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
G50360	Seal - Closed Cell Silicone Foam Rubber, Hydraulic Fluid Resistant (with Adhesive)	BMS1-68 Grade A Form III

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Wire mesh	56-11-11-03-080	LOM 402, 404, 406, 407, 411, 412, 425-434, 437-447, 450-999
		56-11-11-03A-080	LOM 415, 416, 420, 422-424
		56-11-11-04A-080	LOM 402, 404, 406, 407, 411, 412
		56-11-11-04B-080	LOM 415, 416, 420, 422-434, 437-447, 450-999
		56-11-21-02-198	LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

F. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

G. Prepare for the Installation

SUBTASK 56-11-11-210-014

(1) Do a visual inspection of the serviceable No. 1 window (TASK 56-11-00-200-803).

SUBTASK 56-11-11-420-009

(2) Put the new bolts and nuts in groups for the installation.

NOTE: It is recommended that new hardware be installed. If new hardware is not available, the old hardware can be installed if in good condition. Before you can use the old hardware, examine the condition and clean off any contamination.

NOTE: It is structurally acceptable to adjust the grip length of the bolt.

SUBTASK 56-11-11-210-010

(3) If it is necessary examine the leveling compound for the window and repair, do this task: Flight Compartment Windows - Repair of Aerodynamic Smoother and Pre-Molded Seal, TASK 56-11-00-300-801.

NOTE: The spacer will compress the leveling compound on the structure around the end of the spacer. You do not have to repair the compound on subsequent window installations.

SUBTASK 56-11-11-210-011

(4) Do a visual check of the window post and window sill for cracks and corrosion.

SUBTASK 56-11-11-210-012

(5) Examine the windshield [1] for its electrical resistance.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 465-999

NOTE: The electrical resistance check is not necessary.

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464

(a) For windshields that are new, examine the corner of the windshield [1] near the bus bar terminal for the window resistance code.

1) Record the window resistance code.

NOTE: The window resistance code is located on a clear decal with black markings. This code may be covered when the window is installed. It is necessary to know this code when you connect the window heat wiring.

NOTE: For windshields that are new, the window resistance check is not necessary.

2) Make sure that the terminal board tap matches the window resistance code (TASK 30-41-21-000-801).

NOTE: Use the table in the task: Check the Electrical Resistance of the Window Heat Film, TASK 30-41-21-000-801. For example, if the window code for the left front window is H12, the equivalent terminal board tap is TB5010-2.

(b) When a used windshield [1] is installed, do this task: Check the Electrical Resistance of the Window Heat Film, TASK 30-41-21-000-801.

1) Make sure that the terminal board tap matches the resistance measured on the connector terminal.

NOTE: For example, if you measure 40 ohms (40000 milliohms) on D40070P-F (Left Front), the matching terminal is TB5010-3 on M321.

2) Make sure that the heat film resistance is between 30 ohms (30000 milliohms) - 50 ohms (50000 milliohms).

NOTE: It is possible for the window resistance to change with time.

(c) For new windshields that do not have the resistance code on the corner of the windshield [1], do this task: Check the Electrical Resistance of the Window Heat Film, TASK 30-41-21-000-801.

1) Make sure that the terminal board tap matches the resistance measured on the connector terminal.

NOTE: For example, if you measure 40 ohms (40000 milliohms) on D40070P-F (Left Front), the matching terminal is TB5010-3 on M321.

LOM ALL

SUBTASK 56-11-11-950-001

(6) Cover the window with protective wrapping paper, G02173, and Scotch Flatback Masking Tape 250, G00270, or equivalent.

(a) Do not attach Scotch Flatback Masking Tape 250, G00270, to the glass or plastic surfaces.

SUBTASK 56-11-11-420-032

(7) Install the protective cover on the two sides of the window assembly.

(a) If the protective tape is cut or torn, check the windshield for damage and apply new protective tape.

(b) Align the tape with the edges of the glass panes.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-110-001

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

(8) Use a clean cotton wiper, G00034, and solvent, B00083, to clean these surfaces:

NOTE: Be careful to not cause damage, or change the shape of the mating surfaces.

(a) The mating surfaces of the pressure seal

(b) The window frame

(c) The window frame post.

SUBTASK 56-11-11-100-001

(9) Do not let the solvent, B00083, dry on the surfaces.

(a) Clean the surfaces until there is no remaining film.

SUBTASK 56-11-11-420-010

> **CAUTION**
> DO NOT INSTALL MAGNETIC OR HIGH PERMEABILITY MATERIALS IN A 20-INCH RADIUS FROM THE CENTER OF THE MAGNETIC COMPASS. MAGNETIC MATERIALS CAN CAUSE DAMAGE TO THE INSTRUMENT.

(10) Install the retaining angle and doubler loosely in position with one or two retaining angle bolts.

NOTE: These bolts must be the same as those removed. This will make sure that the bolt ends do not come out to where it is possible they can touch the edge of the window glass (Figure 401).

SUBTASK 56-11-11-400-003

(11) Examine seal, G50360, on the window.

(a) If it is necessary to replace seal, G50360, do these steps:

NOTE: If seal, G50360, is not available, install the window without the tape for no more than 24 months. Without the tape, the flight deck noise and moisture can increase.

1) Remove the used seal, G50360, from the window.

2) Clean the window, do this task: FLIGHT COMPARTMENT WINDOWS - SERVICING, PAGEBLOCK 12-16-02/301.

3) Install a new seal, G50360, to the window, do these steps:

a) Clean the surface of the window with solvent, B50095, to the area on where to install the seal, G50360.

NOTE: Usage of citra-safe solvent, B50225, or citra-safe solvent, B50226, is not permitted.

b) Keep the surface of the window clean before installation of seal, G50360.

c) Do not let the solvents get in contact with the plastics, control cables, lubricated areas, plastic decals, paints, or markings that are non-Skydrol-resistant.

NOTE: If the solvents get in contact with such surfaces, the parts must be rejected.

4) Remove seal, G50360, from the roll.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) Turn the surface of seal, G50360, with adhesive down and cut seal, G50360, into length.
   a) Cut only the length of seal, G50360, necessary for installation.
   b) Do not let the surface of seal, G50360, with adhesive gets contamination with dust, dirt, lint, or grease.

      NOTE: The recommended dimensions for seal, G50360, are thickness: 0.25 in. (6.35 mm), width: 0.75 in. (19.05 mm), and length: 32.5 in. (825.5 mm).
6) For seal, G50360, with protective linings on the adhesive, do these steps:
   a) Cut seal, G50360, into length.

      <1> Keep the other tapes for storage until its time for installation.
   b) Pull the protective lining off the adhesive gradually.
7) Set seal, G50360, at the bottom of the window, above the mating surface of the lower nut plate strip.
8) Carefully push from the center of seal, G50360, to the edges to release the air from seal, G50360.
9) Remove the wrinkles from the surface of seal, G50360, and seal the edges with a roller or polyethylene.
10) Make sure that you put a puncture in seal, G50360, with a pin to remove air below seal, G50360.

    NOTE: Air can be below the tape and window surface.
    a) Make sure that you do not put a scratch on the surface of the window where seal, G50360, is installed.
11) Carefully push the air out with your fingers from the edge of the bubble to the puncture hole.
12) If it is necessary to remove seal, G50360, again, make sure that you clean off the adhesive on the metal surface.
    a) Do the steps to clean the surface of the window, to remove and install seal, G50360, again.

H. No. 1 Window Installation

SUBTASK 56-11-11-420-018

(1) Install the No. 1 window as follows:

> **WARNING** MAKE SURE THAT YOU DO NOT DROP THE WINDOW. THE WINDOW IS HEAVY. IF YOU DROP IT, YOU CAN CAUSE DAMAGE TO THE WINDOW AND THE AIRPLANE AND INJURY TO PERSONS.

(a) Install the windshield [1] in the window frame and window frame post.

(b) Do a check of the minimum clearance between the outer edge of the window and fuselage outer skin.

LOM 422-434, 437-447, 450-999

1) The minimum clearance is 0.0400 in. (1.0160 mm) to 0.1200 in. (3.0480 mm) between the outer edge of the windshield [1] and the fuselage outer skin (Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420

2) The minimum clearance is 0.0600 in. (1.5240 mm) to 0.1400 in. (3.5560 mm) between the outer edge of the windshield [1] and the fuselage outer skin (Figure 401).

LOM ALL

SUBTASK 56-11-11-420-020

(2) Put the nutplate strip assembly [2] in its position at the top of the windshield [1].

(a) Install the bolt [9] to the nutplate strip assembly [2] in 24 locations (Figure 401).

1) First install the bolt in the forward corner near reference point A.

2) Temporarily tighten all of the bolts around the window with your fingers.

a) Do not use a tool to tighten the bolts yet.

(b) Install the washer [15], seal washer [16], nut [10], and bolt [17] to the top aft corner (View E-E, Figure 401).

(c) Install the spacer [21], O-ring [12], washer [11], bolt [25], and nut [10] (View D, Figure 401).

SUBTASK 56-11-11-420-021

(3) Put the nutplate strip assembly [3] in its position on the bottom of the windshield [1].

(a) If it is removed, install the three clips [24], three washers [23], three bolts [22], and three nuts [10] to the nutplate strip assembly [3] (View E, Figure 401).

(b) Install the bolts [8] to the nutplate strip assembly [3] in eight locations (View G-G, Figure 401).

1) Temporarily tighten all of the bolts around the window with your fingers.

a) Do not use a tool to tighten the bolts yet.

(c) Install the bolt [8], seal washer [16], washer [15], and nut [18] to the bottom aft corner of the windshield [1] (View F, Figure 401).

1) Temporarily tighten all of the bolts around the window with your fingers.

a) Do not use a tool to tighten the bolts yet.

2) Make sure that the cut edge of the washers [15] and seal washer [16] after installation is parallel to the edge of the windshield [1].

NOTE: The washer must be a minimum of 0.02 in. (0.51 mm) away from the edge of the glass. It must not touch the glass during the fastener installation.

(d) Install the bolt [19], O-ring [12], washer [15], and nut [18] in the windshield [1] (View F, Figure 401).

SUBTASK 56-11-11-410-001

(4) Put the nutplate strip assembly [4] in its position on the bottom of the windshield [1].

(a) If it is removed, install the two clips [24], two washers [23], two bolts [22], and two nuts [10] to the nutplate strip assembly [4] (View E, Figure 401).

(b) Install the four bolts [8] into the nutplate strip assembly [4] at the forward corner of the windshield [1].

1) Temporarily tighten all of the bolts around the window with your fingers.

a) Do not use a tool to tighten the bolts yet.

(c) Install the bolt [8], O-ring [20], washer [15], and nut [18] in the windshield [1] (View H-H, Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-420-022

(5) Put the nutplate strip assembly [5] in its position on the windshield [1].

(a) Install the bolt [9] in the nutplate strip assembly [5] in eight locations (View B-B, Figure 401).

1) Temporarily tighten all of the bolts around the window with your fingers.

a) Do not use a tool to tighten the bolts yet.

SUBTASK 56-11-11-220-003

(6) After you install the windshield [1], you must measure the dimensions as follows between the outer edge of the windshield [1] and fuselage outer skin (Figure 401).

LOM 422-434, 437-447, 450-999

(a) Get a dimension of 0.0400 in. (1.0160 mm) to 0.1200 in. (3.0480 mm) between the outer edge of the windshield and the fuselage outer skin along all 4 sides.

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420

(b) Get a dimension of 0.0600 in. (1.5240 mm) to 0.1400 in. (3.5560 mm) between the outer edge of the windshield and the fuselage outer skin along all 4 sides.

LOM ALL

SUBTASK 56-11-11-420-024

(7) Install all the retaining angle bolts.

(a) To install the retaining angle bolts that attach the retaining angle on the aft window frame, open the adjacent sliding window.

NOTE: The window frame post is made by the join between the No. 1 window and No. 2 window frames.

(b) Install these retaining angle bolts first before you tighten the retaining angle bolts that are finger tight.

NOTE: This will let you move the retaining angle bolts to align the window correctly for the installation of the other retaining angle bolts.

(c) Tighten all the retaining angle bolts slowly while you adjust the window in the frame.

1) Make sure that you keep the minimum dimension between the retaining angle bolts ends and window pane (Figure 401).

NOTE: HEX head flats should be aligned with the post plane (View I, Figure 401).

a) Torque the retaining angle bolts to 22.50 ±2.50 in-lb (2.54 ±0.28 N·m).

SUBTASK 56-11-11-420-028

(8) Tighten all the bolts in the sequence shown (Figure 402).

(a) Torque the 3/16 inch diameter bolts to 20 in-lb (2.3 N·m) - 25 in-lb (2.8 N·m).

(b) Torque the 1/4 inch diameter bolts to 50 in-lb (5.6 N·m) - 70 in-lb (7.9 N·m).

SUBTASK 56-11-11-860-004

(9) Make sure that the window is installed correctly, do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

SUBTASK 56-11-11-950-004

(10) Apply Scotch Flatback Masking Tape 250, G00270, on the top of the outer area between the window and the skins.

NOTE: This will prevent the contamination before you install nylon cord, G00039, and sealant.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-950-005

(11) Remove Scotch Flatback Masking Tape 250, G00270, immediately on the top of the area at the outer edge of the window.

NOTE: You can do this with a sharp knife.

(a) Make sure that Scotch Flatback Masking Tape 250, G00270, protects the edges of the clearance.

LOM ALL; NUMBER 1 WINDOW WITH EXPOSED Z-SEAL

SUBTASK 56-11-11-420-025

(12) Install nylon cord, G00039, into the clearance around the window.

NOTE: The two ends must touch in the top aft corner of the window frame. They must make an overlap of approximately 0.5 in. (12.7 mm).

LOM ALL

SUBTASK 56-11-11-390-001

(13) Use one of the aerodynamic smoothers (in sequence of preference):

(a) PR-1425 sealant, A00103 (Preferred)

(b) PR-1425CF sealant, A50493 (Alternative)

(c) AC-251 sealant, A50517(Alternative)

(d) sealant, A00247 (PRO-SEAL 870 Class B) (Alternative)

(e) PR 1829 sealant, A01056 (Rapid Cure) (Alternative)

(f) PR-1828 sealant, A00708 (Alternative)

(g) PR-1826 sealant, A50052 (Alternative)

(h) P/S 860 B-1/6 sealant, A50084 (Alternative).

SUBTASK 56-11-11-390-002

(14) Use one of the adhesion promoters:

(a) PR-142 adhesion promoter, A50205, for PR-1425 sealant, A00103

(b) PR-1861 adhesion promoter, A50485, for PR-1425CF sealant, A50493

(c) AC-137 adhesion promoter, A50543, is the adhesion promoter for AC-251 sealant, A50517.

(d) PR-142 adhesion promoter, A50205, for sealant, A00247 (PRO-SEAL 870 Class B)

(e) PR-1861 adhesion promoter, A50485, for PR 1829 sealant, A01056 (Rapid Cure)

(f) PR-142 adhesion promoter, A50205, or PR-1826AP adhesion promoter, A50574, for PR-1826 sealant, A50052

(g) PR-142 adhesion promoter, A50205, for P/S 860 B-1/6 sealant, A50084.

SUBTASK 56-11-11-420-026

(15) Before the sealant is applied, do a check of the resistance between the cres zee seal [7] and skin with an intrinsically safe approved bonding meter, COM-1550 (Figure 401).

(a) If you measure the resistance between the cres zee seal [7] and skin to be 1 ohm or less, do the steps:

NOTE: It is recommended to install the wire mesh regardless of resistance measured values.

1) Clean the gap surfaces of the structure and pre-molded seal on the windshield with alcohol, B50073.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Prime the gap surfaces with adhesion promoter.

NOTE: It is not necessary to prime the gap surfaces with adhesion promoter, if you use PR-1828 sealant, A00708.

3) Install nylon cord, G00039, into the clearance around the window.

NOTE: The two ends must touch in the top aft corner of the window frame. They must make an overlap of approximately 0.5 in. (12.7 mm).

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

4) Slowly put the sealant in the clearance with a sealant gun, STD-449, or hardwood or plastic fillet smoothing spatula, STD-810, until the area is fully filled.

LOM ALL; NUMBER 1 WINDOW WITH PRE-MOLDED AEROSEAL

NOTE: Do not permit air to be caught in the sealant. The sealant shall not overlap the pre-molded seal more than 0.06 in. (1.52 mm).

LOM ALL; NUMBER 1 WINDOW WITH EXPOSED Z-SEAL

NOTE: Do not permit air to be caught in the sealant. Apply the sealant on the top of the bumper strip or Z-seal to overlap glass surface of the window 0.15 ±0.03 in. (3.81 ±0.76 mm).

LOM ALL

a) If you must send the airplane before the sealant is fully cured, install 3M 425 Aluminum Foil Tape, G00291, on the top of the sealant.

<1> Remove 3M 425 Aluminum Foil Tape, G00291, when the sealant is fully cured.

b) If it is necessary to accelerate sealant curing, use eRCD control panel, COM-21324, and WRCS emitters, COM-21325, to apply heat to the sealant.

5) Remove the unwanted sealant while it is wet, until the sealant is level with Scotch Flatback Masking Tape 250, G00270.

6) Remove Scotch Flatback Masking Tape 250, G00270, from the edges of the clearance and protective cover from the external surface of the window.

NOTE: You can make the material that lifts at the edges of the clearance smooth with a tool.

(b) If you measure the resistance between the cres zee seal [7] and skin to be greater than 1 ohm with an intrinsically safe approved bonding meter, COM-1550, install the wire mesh [6], as follows:

NOTE: If part number 141A4840-3 is not available for item wire mesh [6], it can be made from Tecknit 20-21112 gasket, G50072 by cutting a 2.5 in. (63.5 mm) length for each part needed.

NOTE: The installation of the wire mesh [6] will ground the zee-seal to the skin and will help prevent large static build-up to the window. The wire mesh [6] installation will give a low resistance value.

NOTE: It is recommended to install the wire mesh [6] even if resistance measures less than 1 ohm.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Remove the finish from the edge of the structure at the midpoint on each of the four sides of the window frame.
   a) Use a clean cotton wiper, G00034, and aliphatic naphtha, B50078, to clean the area to remove unwanted material.
2) Apply Bonderite M-CR 1200S Aero coating, C50005, to the surface from where you removed the finish.

LOM ALL; NUMBER 1 WINDOW WITH PRE-MOLDED AEROSEAL

3) Clean the gap surfaces of the structure and the pre-molded seal on the windshield with alcohol, B50073.
4) Prime the gap surfaces with adhesion promoter.

   NOTE: It is not necessary to prime the gap surfaces with adhesion promoter, if you use PR-1828 sealant, A00708.

LOM ALL

5) Make sure that you have installed nylon cord, G00039, into the clearance around the perimeter of the window.
6) Install the wire mesh [6] in the four locations along the window perimeter to get it to touch the zee seal [7] and section of the frame where you applied Bonderite M-CR 1200S Aero coating, C50005 (Figure 401).

   NOTE: Any one of the four locations may be omitted if installation is difficult due to window fit up.

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

7) Slowly put the sealant in the clearance with a sealant gun, STD-449, or a hardwood or plastic fillet smoothing spatula, STD-810, until the area is fully filled.

LOM ALL; NUMBER 1 WINDOW WITH PRE-MOLDED AEROSEAL

NOTE: Do not permit air to be caught in the sealant. The sealant shall not overlap the pre-molded seal more than 0.06 in. (1.52 mm).

LOM ALL; NUMBER 1 WINDOW WITH EXPOSED Z-SEAL

NOTE: Do not permit air to be caught in the sealant. Apply the sealant on the top of the bumper strip or Z-seal, to overlap glass surface of the window 0.15 ±0.03 in. (3.81 ±0.76 mm).

LOM ALL

NOTE: If sealant is not readily available, use PR-1436-G sealant, A50048, as an alternative substitute.

a) If you must send the airplane before the sealant is fully cured, install 3M 425 Aluminum Foil Tape, G00291, on the top of the sealant.
   <1> Use PR 1829 sealant, A01056, if rapid cure is required for dispatch.
   <2> Remove 3M 425 Aluminum Foil Tape, G00291, when the sealant is fully cured.

   NOTE: The usage of 3M 425 Aluminum Foil Tape, G00291, is not intended for long term use but only until the sealant is cured.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) If it is necessary to accelerate sealant curing, use eRCD control panel, COM-21324, and WRCS emitters, COM-21325, to apply heat to the sealant.

8) Remove the unwanted sealant while it is wet until the sealant is level with Scotch Flatback Masking Tape 250, G00270 (Figure 403).

9) Remove Scotch Flatback Masking Tape 250, G00270, from the edges of the clearance and protective cover from the external surface of the window.

NOTE: You can make the material that lifts at the edges of the clearance smooth with a tool.

I. Put the Airplane Back to Its Usual Condition

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464

SUBTASK 56-11-11-760-002

CAUTION MAKE SURE THAT THE TRANSFORMER TAPS THAT ARE ATTACHED TO THE LEAD HAVE THE SAME RESISTANCE AS THE WINDOW. DIFFERENT RESISTANCES CAN CAUSE DAMAGE TO THE ANTI-ICING SYSTEM.

(1) Make sure that the resistance of the window is the same as the transformer taps (WDM 30-41-11, WDM 30-41-12).

LOM ALL

SUBTASK 56-11-11-420-011

(2) Connect the electrical wires to the power terminals and sensor terminals (Figure 405).

(a) Remove all the paint or primer from the electrical contacts before the wire installation.

(b) Connect the electrical wire.

(c) Install the screw that attaches the wire to the terminal.

(d) If you use ethylene propylene O-rings [12] on the fasteners adjacent to the power terminals and sensor terminals, cut material from the O-ring [12] to supply a minimum clearance.

NOTE: This is not necessary if the non-conductive rubber O-rings are installed on the adjacent windshield fasteners.

LOM 428-434, 437-447, 450-999

SUBTASK 56-11-11-400-002

(3) Install bonding jumper [26], washer [27], lock washer [28], and screw [29] (two places).

(a) Torque screws [29] to 20 in-lb (23 kg-cm).

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-427

SUBTASK 56-11-11-400-004

(4) Install bonding jumper [26], washers [27], and screw [29] (two places).

(a) Torque screws [29] to 20 in-lb (23 kg-cm).

LOM ALL

SUBTASK 56-11-11-950-008

(5) Cover the lugs of the bonding jumpers [26] with their fasteners with approximately to 0.04 in. (1.02 mm) - 0.06 in. (1.52 mm) thick coating of insulating compound, A00230.

(a) Use a medium nylon bristle brush, STD-3911, to apply insulating compound, A00230.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-420-034

> **CAUTION** MAKE SURE THAT THE INSULATING BOOT IS TIGHT ON THE WINDOW HEAT TERMINAL. IF THE BOOT IS NOT TIGHT, ELECTRICAL ARCING TO THE ADJACENT STRUCTURE CAN OCCUR. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(6) Install the insulating boot on the terminal connection.

SUBTASK 56-11-11-420-013

(7) Install the drain pan and drain tube clamps at the window post on the airplane centerline.

SUBTASK 56-11-11-420-014

(8) If it is necessary, install the sunshade support rod at the top of the window.

SUBTASK 56-11-11-420-033

(9) Connect headphone jacks and chart lights.

SUBTASK 56-11-11-420-016

(10) Install the glareshield [30].

(a) Install the glareshield [30] with the aft edge of the glareshield [30] lifted.

(b) Install the glareshield brackets or clips.

1) Attach four screws to each of the two glareshield brackets.

2) Connect the antifogging ducts to the nozzles.

(c) Move the center engine instrument panel up and forward into position.

(d) Attach the fasteners to the center engine instrument panel.

(e) Install the de-mist outlet and outboard glareshield brackets as follows:

1) Install the bolts on the outboard glareshield support bracket.

2) Move the de-mist outlet back into position.

3) Install the de-mist outlet attach screws.

(f) Install the glareshield support frame as follows:

1) Install the glareshield support bracket.

2) Install the bolts to the left and right support frame attach brackets.

3) Connect the Electronic Flight Instrument System (EFIS) control panel electrical connectors (D3993 and D3995) and ground wires (GD701-DC and GD703-DC) to the support frame (WDM 31-62-11, WDM 31-62-21).

4) Connect the quick-disconnect strap jumper assembly to the support frame.

5) Remove covers from connectors and receptacles and connect the electrical connectors to the left and right side of the support frame.

LOM ALL; AIRPLANES WITH TAPE ON GLARESHIELD

6) Remove the backing from the double-sided adhesive tape that is on the glareshield [30] (Figure 404).

LOM ALL

7) Attach the glareshield [30] to the support frame.

8) Install the quater turn fasteners [31] to the glareshield [30].

(g) If it is necessary, connect the chart light and headphone jacks.

1) Test the lights that had been disconnected.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Install the lower glareshield covers.

(i) Do this task: EFIS Control Panel Installation, TASK 31-62-12-400-801.

(j) Do this task: DFCS Mode Control Panel Installation, TASK 22-11-34-400-801.

SUBTASK 56-11-11-420-029

(11) Reconnect the following drain tubes:

(a) Left Drain Tube (if installed - non Head-Up Display (HUD) airplanes)

(b) Center Drain Tube

(c) Right Drain Tube.

1) Make sure that the panduit strap head is rotated forward and not lobed aft.

NOTE: This will prevent visibility from the pilot's side.

SUBTASK 56-11-11-420-017

(12) Do this task: Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801 or Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-805.

SUBTASK 56-11-11-950-003

(13) Remove the protective covers from the surface of the window.

SUBTASK 56-11-11-800-006

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
LOM ALL			
A	9	C00308	CONTROL CABIN LIGHTING MAP & KIT
A	10	C00309	CONTROL CABIN LIGHTING OBS READING

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-11-11-800-007

(15) Remove the DO NOT OPERATE tags, from these switches, on the P5 pilot's overhead panel:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) WINDOW HEAT L FWD

(b) WINDOW HEAT R FWD

(c) WINDOW HEAT L SIDE

(d) WINDOW HEAT R SIDE.

SUBTASK 56-11-11-710-001

(16) Do this task: Window Heat System - Operational Test, TASK 30-41-00-710-801.

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464

(a) Do this test using primary and spare temperature sensors.

LOM ALL

SUBTASK 56-11-11-820-001

(17) Do this task: Windshield Wiper Arm - Installation, TASK 30-42-31-400-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 3 - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the No. 3 window.

(2) Installation of the No. 3 window.

TASK 56-11-21-000-801

2. No. 3 Window Removal

(Figure 401)

A. References

Reference	Title
30-41-31-000-801	Thermal Switch Removal (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1166	Block - Wood, 1 to 3 Inch Thick, More Than 6 Inch Length
STD-3906	Mallet - Rubber

C. Consumable Materials

Reference	Description	Specification
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Removal

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

SUBTASK 56-11-21-200-031

WARNING REMOVE POWER FROM THE WINDOW HEAT SYSTEM BEFORE YOU REMOVE THE WINDOW. IF WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. AN ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

(1) Move these switches on the pilots overhead panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-21-200-032

(2) Make sure that the SIDE L and SIDE R WINDOW HEAT ON lights on the window/pilot heat module (P5-9) are off.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464 (Continued)

SUBTASK 56-11-21-200-033

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C01650	WINDOW HEAT POWER L3
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

LOM ALL

SUBTASK 56-11-21-010-002

(4) Remove the screws [3] and the interior liner [2].

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

SUBTASK 56-11-21-200-034

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

(5) Disconnect the electrical wires from the power terminals and the sensor terminals.

LOM ALL

SUBTASK 56-11-21-200-035

(6) Install the protective wrapping paper, G02173, to the two sides of the window with the Scotch Flatback Masking Tape 250, G00270.

NOTE: If the window is unserviceable and the damage investigation is not necessary, it is acceptable to not install wrapping paper, G02173.

(a) Minimize the use of Scotch Flatback Masking Tape 250, G00270, to the edge of the window.

F. No. 3 Window Removal

SUBTASK 56-11-21-000-001

(1) Remove the nylon cord from around the window, as follows (Figure 401):

(a) Carefully remove some aerodynamic sealant at the top aft corner of the window to get access to the nylon cord.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Pull the outboard end of the nylon cord away from the corner of the window.

(c) Fold the nylon cord and slowly pull it completely away from the window.

SUBTASK 56-11-21-020-001

(2) Remove the items that follow:

(a) The window retaining bolts [5]

(b) The nutplate strip [6]

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

(c) The window thermal switch [7], do this task: Thermal Switch Removal, TASK 30-41-31-000-801

LOM ALL

(d) The support clip [8].

SUBTASK 56-11-21-020-002

CAUTION	DO NOT LET THE WINDOW FALL FREELY WHEN YOU BREAK THE PRESSURE SEAL. HOLD THE WINDOW, OR USE EQUIPMENT TO HOLD THE WINDOW IN ITS POSITION. IF THE WINDOW FALLS, IT CAN CAUSE DAMAGE TO THE WINDOW OR TO THE FLIGHT COMPARTMENT INSTRUMENTS.

(3) Do the steps that follow to break the pressure seal:

(a) Apply hand pressure to the outer surface of the window.

NOTE: Always apply pressure to the largest area possible.

(b) If the pressure seal will not break, do the step that follows:

1) Place wood block, STD-1166 (nonmetallic block), against the window and lightly hit the block with a rubber mallet, STD-3906.

SUBTASK 56-11-21-020-004

(4) Remove all the aerodynamic smoother from the window frame.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 3 Window Installation
Figure 401/56-11-21-990-813 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 3 Window Installation
Figure 401/56-11-21-990-813 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NOTE:

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

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

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No. 3 Window Installation
Figure 401/56-11-21-990-813 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

GLASS WINDOW

A-A

WINDOW PANE

B

NOTE:

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

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

J98804 S0000190123_V3

No. 3 Window Installation
Figure 401/56-11-21-990-813 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D65101 S0000161582_V2

Wire Mesh Installation
Figure 402/56-11-21-990-814

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Aerodynamic Smoother Application
Figure 403/56-11-21-990-815 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Aerodynamic Smoother Application
Figure 403/56-11-21-990-815 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 3

A

2371097 S0000542699_V3

Foam Tape Inspection
Figure 404/56-11-21-990-816

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-11-21-400-802

3. No. 3 Window Installation

(Figure 401, Figure 402 or Figure 403 and Figure 404)

A. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
25-11-21-400-801	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
25-11-21-400-805	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
30-41-31-400-801	Thermal Switch Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
STD-123	Brush - Soft Bristle
STD-449	Gun - Sealant
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

C. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00230	Compound - Electrical Insulating Coating	BMS5-37
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
A01056	Sealant - Aerodynamic - PR 1829	
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B
A50084	Sealant - P/S 860 Class B-1/6 Quick Repair Fuel Tank Sealant	AMS-S-83318 Class B
A50205	Adhesive - PR-142 Adhesion Promoter (One-Part Compound)	
A50485	Promoter - Adhesion, PR-1861	
A50493	Sealant - Windshield And Canopy - PR-1425CF	
A50517	Sealant - AC-251 Black Class B	
A50543	Promoter - Adhesion, AC-137	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B50095	Solvent	BAC5750
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00039	Cord - Fibrous, Nylon (100 Lb Strength)	MIL-C-5040 Type IA
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00291	Tape - Aluminum Foil, 3M 425	AMS-T-23397 / L-T-80
G02092	Tape - Flexible Foam Sound Damping And Sealing Tape	BMS8-283
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)
G50072	Gasket - Knitted Aluminum Alloy Wire Mesh - Tecknit 20-21112	

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Installation

SUBTASK 56-11-21-840-003

(1) Prepare the window frame on the fuselage, as follows:

(a) Install the nutplate strips [6] in all positions where a nutplate strip is missing or damaged.

(b) Clean these faying surfaces with a cotton wiper, G00034, that is moist with solvent, B00083:

1) The rubber pressure seal

2) The window frame

3) The window center post.

(c) Dry the parts with a clean cotton wiper, G00034, before the solvent, B00083, dries.

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

SUBTASK 56-11-21-210-009

(2) Make sure that the silicone rubber bushings [4] are in the bolt holes in the window (Acrylic Windows).

LOM ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-21-210-010

(3) Do a visual check of the window post and sill from inside and outside of the flight compartment for cracks and corrosion.

NOTE: The No.3 Window is installed from inside the flight compartment and the fasteners are attached from the outside.

SUBTASK 56-11-21-840-004

(4) Prepare the window pane assembly [1], as follows:

(a) Use Scotch Flatback Masking Tape 250, G00270, to apply a protective wrapping paper, G02173, cover to both window surfaces.

NOTE: Attach the tape to the surfaces only near the edge of the pane.

F. No. 3 Window Installation

SUBTASK 56-11-21-420-001

(1) Install the window pane assembly [1] in the frame as follows:

NOTE: The glass window with the cres z-seal has a corrosion resistant steel (CRES) zee fitting around the outside edge of the window assembly, with the pressure seal attached to the zee fitting.

I NOTE: It is structurally acceptable to adjust the grip length of the bolts.

(a) Apply corrosion preventive compound, C00528, to the retaining bolts [5] shanks.

(b) Install the retaining bolts [5].

(c) Install the following items:

1) The nutplate strip [6].

2) The support clip [8].

CAUTION DO NOT APPLY MORE THAN THE MAXIMUM SPECIFIED TORQUE WHEN YOU TIGHTEN THE PARTS. DAMAGE TO THE PARTS CAN OCCUR IF YOU APPLY TOO MUCH TORQUE.

(d) Tighten each bolt to 20 in-lb (2 N·m) - 25 in-lb (3 N·m) in the correct sequence (Figure 401).

SUBTASK 56-11-21-410-006

(2) Examine the tape, G02092, on the flight deck structure and if replacement is necessary, do these steps:

NOTE: If the tape, G02092, is not available, install the window without the tape for no more than 24 months. Without the tape, the flight deck noise and moisture can increase.

(a) Remove the used tape, G02092, from the flight deck structure.

(b) To install a new tape, G02092, to the flight deck structure, do these steps:

1) Clean the surface of the flight deck structure with solvent, B50095, to the area on where to install the tape, G02092.

NOTE: Use of citra-safe solvent, B50225, or citra-safe solvent, B50226, is not permitted.

NOTE: Do not let the solvents get in contact with the plastics, control cables, lubricated areas, plastic decals, paints or markings that are non–Skydrol–resistant. If the solvents get in contact with such surfaces, the parts must be rejected.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Keep the surface of the flight deck structure clean before tape, G02092, installation.

2) Remove the tape, G02092, from the roll.

3) Turn the surface of the tape, G02092, with adhesive down and cut the tape, G02092, into length.

NOTE: The recommended dimensions for the tape, G02092, are thickness: 0.125 in. (3.18 mm), width: 1.5 in. (38.1 mm) and length: 20.55 in. (522.0 mm).

NOTE: Do not let the surface of the tape, G02092, with adhesive gets contamination with dust, dirt, lint, or grease.

a) Cut only the length of tape, G02092, necessary for installation.

4) For tape, G02092, with protective linings on the adhesive, do these steps:

a) Cut the tape, G02092, into length.

<1> Keep the other tapes for storage until its time for installation.

b) Pull the protective lining off the adhesive gradually.

5) Set the tape, G02092, on the flight deck structure (Figure 404).

6) Carefully push from the center of the tape, G02092, to the edges to release the air from the tape, G02092.

7) Remove the wrinkles from the surface of the tape, G02092, and seal the edges with a roller or polyethylene.

8) Make sure that to put a puncture in the tape, G02092, with a pin to remove air below the tape, G02092.

NOTE: Air can be below the tape and flight deck structure.

a) Make sure that to not put a scratch on the surface of the flight deck structure where the tape, G02092, is installed.

9) Carefully push the air out with your fingers from the edge of the bubble to the puncture hole.

10) If it is necessary to remove the tape, G02092, again, make sure to clean off the adhesive on the metal surface.

a) Do the steps to clean the surface of the flight deck structure, to remove and install the tape, G02092, again.

SUBTASK 56-11-21-780-001

(3) Make sure that the window is installed correctly, do the cabin pressure leak test (TASK 05-51-91-790-801).

SUBTASK 56-11-21-420-011

(4) Tighten each bolt again after the cabin pressure leak test.

SUBTASK 56-11-21-950-001

(5) Apply a strip of Scotch Flatback Masking Tape 250, G00270, over the gap between the fuselage and window.

SUBTASK 56-11-21-950-002

(6) Cut out a strip of Scotch Flatback Masking Tape 250, G00270, directly over the gap between the fuselage and window.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-21-410-004

(7) Install a new nylon cord, G00039, in the bottom of the gap between the fuselage and the window.

NOTE: The cord must be longer than the distance around the edge of the window. The ends of the cord must overlap approximately 0.5 in. (12.7 mm) with the ends in the upper aft corner.

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

SUBTASK 56-11-21-760-001

(8) Check the resistance with an intrinsically safe approved bonding meter, COM-1550.

(a) Check the resistance between the structure and the (cres) zee fitting on all four sides of the window.

1) If the resistance is 1 ohm or less, continue with the installation of the window.

a) Go to the steps to apply the aerodynamic smoother.

2) If the resistance is greater than 1 ohm, go to the steps to install the Tecknit 20-21112 gasket, G50072.

SUBTASK 56-11-21-420-010

(9) Install the Tecknit 20-21112 gasket, G50072.

(a) Remove the finish of each side's midpoint for 2.5 in. (63.5 mm) along the edge of the structure.

(b) Put a 2.5 in. (63.5 mm) piece of the Tecknit 20-21112 gasket, G50072, in the midpoint of each side of the window.

1) You must install the Tecknit 20-21112 gasket, G50072, on at least three sides of the window.

NOTE: It is possible that the window frame dimensions will only let 3 gaskets be installed.

LOM ALL

SUBTASK 56-11-21-390-003

(10) Use one of the aerodynamic smoothers that follow (in sequence of preference):

(a) PR-1425 sealant, A00103 (Preferred)

(b) PR-1425CF sealant, A50493 (Alternative)

(c) AC-251 sealant, A50517(Alternative).

(d) sealant, A00247 (PRO-SEAL 870 Class B) (Alternative)

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

(e) sealant, A00247 (PRO-SEAL 870 Class B) (Alternative)

LOM ALL

(f) PR 1829 sealant, A01056 (Rapid Cure) (Alternative)

(g) PR-1828 sealant, A00708 (Alternative)

1) Do not use this sealant on acrylic windows.

NOTE: Sealant can be used only on glass windows.

(h) PR-1826 sealant, A50052 (Alternative)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Do not use this sealant on acrylic windows.

NOTE: Sealant can be used only on glass windows.

(i) P/S 860 B-1/6 sealant, A50084 (Alternative).

SUBTASK 56-11-21-390-006

(11) Use one of the adhesion promoters that follow:

(a) PR-142 adhesion promoter, A50205, for the PR-1425 sealant, A00103.

(b) PR-1861 adhesion promoter, A50485, for the PR-1425CF sealant, A50493.

(c) AC-137 adhesion promoter, A50543, for the AC-251 sealant, A50517.

(d) PR-142 adhesion promoter, A50205, for the sealant, A00247 (PRO-SEAL 870 Class B).

(e) PR-1861 adhesion promoter, A50485, for the PR 1829 sealant, A01056 (Rapid Cure).

(f) PR-142 adhesion promoter, A50205, for the PR-1826 sealant, A50052.

(g) PR-142 adhesion promoter, A50205, for the P/S 860 B-1/6 sealant, A50084.

SUBTASK 56-11-21-390-005

(12) Mix the sealant to the manufacturer's instructions.

SUBTASK 56-11-21-390-002

(13) Use a sealant gun, STD-449, or hardwood or plastic fillet smoothing spatula, STD-810, to apply sealant.

(a) When you apply the sealant make sure that you push the sealant gun, STD-449, to avoid trapped air under the sealant.

(b) Use PR 1829 sealant, A01056, if rapid cure is required for dispatch.

1) Apply more aerodynamic sealant than is necessary.

SUBTASK 56-11-21-020-005

CAUTION

WHEN YOU APPLY THE SMOOTHER, BE CAREFUL THAT YOU DO NOT MAKE SCRATCHES ON THE METAL, ACRYLIC OR GLASS SURFACES. ALSO, DO NOT MAKE THE METAL, ACRYLIC OR THE GLASS SURFACES ROUGH WHEN YOU APPLY THE SMOOTHER.

(14) Remove excess sealant until it is level with the masking tape.

NOTE: Excess sealant must be removed while still wet.

SUBTASK 56-11-21-950-003

(15) Remove the Scotch Flatback Masking Tape 250, G00270.

NOTE: You can smooth the sealant that lifts up at the edges of the gap between the fuselage and the window.

SUBTASK 56-11-21-410-003

(16) If you must send the airplane before the sealant is fully cured, install 3M 425 Aluminum Foil Tape, G00291, on the top of the sealant.

(a) Remove the 3M 425 Aluminum Foil Tape, G00291, when the sealant is fully cured.

NOTE: The use of 3M 425 Aluminum Foil Tape, G00291, is not intended for long term use but only until the sealant is cured.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

SUBTASK 56-11-21-150-004

(1) Remove all the paint or primer from the electrical contacts before you install the wire.

SUBTASK 56-11-21-420-012

(2) Connect the electrical wires to the bus bar terminals.

SUBTASK 56-11-21-420-013

(3) Do this task: Thermal Switch Installation, TASK 30-41-31-400-801.

SUBTASK 56-11-21-480-004

(4) Use a soft bristle brush, STD-123, to apply one layer of insulating compound, A00230, on the terminals.

SUBTASK 56-11-21-420-014

CAUTION

MAKE SURE THAT THE INSULATING BOOT IS TIGHT ON THE WINDOW HEAT TERMINAL. IF THE BOOT IS NOT TIGHT, ELECTRICAL ARCING TO THE ADJACENT STRUCTURE CAN OCCUR. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(5) Install the insulating boot on the top of the terminal connection.

SUBTASK 56-11-21-410-007

(6) Do this task: Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801 or Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-805, where it is necessary.

LOM ALL

SUBTASK 56-11-21-950-006

(7) Remove the plastic layer from the inner surface of the window.

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

SUBTASK 56-11-21-720-004

(8) Do this task: Window Heat System - Operational Test, TASK 30-41-00-710-801.

LOM ALL

SUBTASK 56-11-21-410-008

(9) Install the interior liner [2] and screws [3].

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

SUBTASK 56-11-21-200-036

(10) Remove the DO-NOT-OPERATE tags from these switches on the pilot's overhead panel:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-21-200-037

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464 (Continued)

(Continued)

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C01650	WINDOW HEAT POWER L3
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 3 WINDOW - REPAIRS

1. General

A. This procedure has these tasks:

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

(1) The repair of a No. 3 window that has scratches or crazing.

(2) The repair of a No. 3 window that has chips.

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

(3) The repair of the fillet seal.

LOM 402, 404, 406, 407, 416, 420, 422, 425, 426, 429-434, 437, 438, 440, 442-447, 450-463, 465-999

TASK 56-11-21-300-801

2. Repair Scratched or Crazed No. 3 Windows

A. General

(1) Do not use materials that are not approved.

(2) Do not cause damage to the window surface with finger rings or other sharp objects.

B. References

Reference	Title
56-11-00 P/B 601	FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK
56-11-00-200-803	Inspect the Flight Compartment Windows (P/B 601)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-2039	Micrometer, Optical (Accuracy +/-.001 Inch) Part #: MODEL 966A1 Supplier: 0ZYB5 Opt Part #: 8400K Supplier: 65956
COM-4786	Processor/Printer - Optical Micrometer (optional use with Part # 8400K) Part #: DP-1VR Supplier: 65956
STD-1207	Sander/Polisher - Orbital, Air-Driven

D. Consumable Materials

Reference	Description	Specification
B00137	Abrasive - Garnet Coated Paper	
B00138	Abrasive - Silicon Carbide Coated Cloth	
B00703	Compound - Plastic Polish	P-P-560
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00834	Cloth - Lint-free Cotton	

E. Location Zones

Zone	Area
211	Flight Compartment - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
212	Flight Compartment - Right

F. Repair Scratched or Crazed No. 3 Windows

SUBTASK 56-11-21-220-001

(1) Use optical micrometer, COM-2039, or equivalent to measure the depth of the scratches.

NOTE: The optical micrometer processor/printer, COM-4786, is an optional accessory to Part # 8400K, micrometer, COM-2039, to the process/print micrometer data.

(a) Check the maximum depth of scratches or craze (TASK 56-11-00-200-803).

NOTE: For the inner pane, if the depth of the scratch is more than 0.02 in. (0.508 mm), you cannot repair the window.

NOTE: For the outer pane, if the depth of the scratch or craze is more than 0.05 in. (1.27 mm), you cannot repair the window.

SUBTASK 56-11-21-940-001

(2) Apply masking Scotch Flatback Masking Tape 250, G00270, to the window frame and the seal.

SUBTASK 56-11-21-170-001

(3) Flush loose dirt from the window.

SUBTASK 56-11-21-350-001

CAUTION: DO NOT TRY TO REPAIR THE SURFACE DAMAGE ON A LOCAL AREA OF THE WINDOW. IF YOU DO NOT OBEY, VISUAL DISTORTION CAN OCCUR.

(4) Remove small clamshell surface chips, scratches, and surface crazing with abrasive, B00137, paper or the abrasive, B00138, cloth.

(a) Use a coarse abrasive, B00137, paper for gauges, deep scratches, and bad crazing (usually not more than 100 grit).

SUBTASK 56-11-21-170-002

CAUTION: KEEP THE SURFACE OF THE WINDOW COOL. THE HEAT THAT OCCURS WHEN YOU RUB OR POLISH THE SURFACE CAN CAUSE THE DAMAGE TO THE WINDOW. IF YOU DO NOT OBEY, VISUAL DISTORTION CAN OCCUR.

(5) Flush away the grit and acrylic material with water.

SUBTASK 56-11-21-350-002

(6) Rub all the window surface in the horizontal direction with the sander/polisher, STD-1207, that operates at approximately 800 cycles per minute.

SUBTASK 56-11-21-350-003

(7) Rub all the window surface in the vertical direction.

NOTE: If you rub with an abrasive, B00137, for 2 to 5 minutes, you will remove approximately 0.005 in. (0.127 mm) of acrylic. Change the abrasive paper frequently.

SUBTASK 56-11-21-350-004

(8) Do this task again until all the surface damage is removed and the surface has a constant thickness.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-21-350-005

(9) Rub the window with an abrasive, B00137, paper for 2 minutes to make sure that all the cracks and crazes are removed.

SUBTASK 56-11-21-140-001

(10) Polish the window with graduations of abrasive materials (coarse to fine). Use 100-600 grit paper and micromesh cloths of 1600-1800 grit.

SUBTASK 56-11-21-140-002

(11) Continue each step until the polish masks are removed (normally 2-3 minutes in each step).

SUBTASK 56-11-21-140-003

(12) Move the sander/polisher, STD-1207, horizontally to polish the window surface.

SUBTASK 56-11-21-140-004

(13) Move the sander/polisher, STD-1207, vertically across the window surface.

SUBTASK 56-11-21-220-002

(14) Examine the window pane thickness (FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK, PAGEBLOCK 56-11-00/601):

(a) Make sure that the inner window pane thickness is equal to or more than 0.23 in. (5.84 mm).

(b) Make sure that the outer window pane thickness is equal to or more than 0.38 in. (9.65 mm)

SUBTASK 56-11-21-940-002

(15) Remove the water spray.

SUBTASK 56-11-21-140-005

(16) Polish the window with buffing compound, B00703, and a clean lint-free cloth, G00834, or wool pad.

(a) If necessary, use coarse and fine compounds to get a glossy finish.

(b) If you use the rotary buffer, the wheel surface speed must be 3200 ft (975 m) per minute for coarse compound and 4200 ft (1280 m) per minute for fine compound.

SUBTASK 56-11-21-210-001

(17) Do a check of the window visually for optical quality.

SUBTASK 56-11-21-350-006

(18) If the window has damage, repeat the repair process.

SUBTASK 56-11-21-220-003

(19) Examine the window pane thickness after rework (FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK, PAGEBLOCK 56-11-00/601):

(a) Make sure that the inner window pane thickness is equal to or more than 0.23 in. (5.84 mm).

(b) Make sure that the outer window pane thickness is equal to or more than 0.38 in. (9.65 mm)

SUBTASK 56-11-21-140-006

(20) Apply wax to the window surface.

(a) Polish the window to a glossy finish.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-11-21-300-802

3. Repair of Chipped No. 3 Windows

A. References

Reference	Title
56-11-00 P/B 601	FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK

B. Consumable Materials

Reference	Description	Specification
B00137	Abrasive - Garnet Coated Paper	

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 56-11-21-210-002

(1) Inspect the chips to make sure the chips do not have cracks around them.

SUBTASK 56-11-21-350-007

(2) Repair the chips in the window bolt holes, and the large chips in the window surface.

SUBTASK 56-11-21-140-007

(3) Rub with an abrasive, B00137 paper to remove the clamshell chips or erosion at the window edges. Polish to a 62 RHS finish.

SUBTASK 56-11-21-210-008

(4) Examine the window pane thickness after rework (FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK, PAGEBLOCK 56-11-00/601):

(a) Make sure that the inner window pane thickness is equal to or more than 0.23 in. (5.84 mm).

(b) Make sure that the outer window pane thickness is equal to or more than 0.38 in. (9.65 mm)

——— END OF TASK ———

LOM 411, 412, 415, 423, 424, 427, 428, 439, 441, 464

TASK 56-11-21-300-804

4. Repair of the Fillet Seal

(Figure 801, Figure 802)

A. General

(1) This procedure has this task:

(a) The repair of the fillet seal for the No. 3 window.

(2) There is aerodynamic smoother (sealant) around the No. 3 windows. The aerodynamic smoother can erode and have cracks.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
51-31-00-160-801	Prepare For Sealing (P/B 201)

C. Tools/Equipment

Reference	Description
STD-449	Gun - Sealant

D. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
A01056	Sealant - Aerodynamic - PR 1829	
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B
A50493	Sealant - Windshield And Canopy - PR-1425CF	
A50517	Sealant - AC-251 Black Class B	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Fillet Seal Repair

SUBTASK 56-11-21-000-002

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

> **CAUTION** YOU MUST USE PLASTIC TOOLS WHEN YOU REMOVE THE SEALANT. IF YOU DO NOT USE PLASTIC TOOLS, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(1) Remove the sealant from the fillet seal if the following conditions exist (TASK 51-31-00-160-801):

(a) Cracks

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Erosion

(c) Sealant is not bonded to the window.

SUBTASK 56-11-21-100-001

(2) Clean the window with cotton wiper, G00034, and solvent, B00083.

SUBTASK 56-11-21-400-002

(3) Apply Scotch Flatback Masking Tape 250, G00270, on the glass window where you will apply the new fillet seal.

SUBTASK 56-11-21-400-003

(4) Use one of the sealants that follow (in sequence of preference):

(a) sealant, A00247 (PRO-SEAL 870 Class B) (preferred)

(b) PR-1425 sealant, A00103

(c) PR-1425CF sealant, A50493

(d) AC-251 sealant, A50517

(e) PR 1829 sealant, A01056

(f) PR-1826 sealant, A50052

(g) PR-1828 sealant, A00708.

SUBTASK 56-11-21-400-004

(5) Mix the sealant to the manufacturer's instructions.

SUBTASK 56-11-21-400-005

(6) Use a sealant gun, STD-449, to apply the sealant you have chosen to the glass window.

NOTE: When you apply the aerodynamic smoother with the sealant gun, STD-449, you should push the sealant gun, STD-449. This will keep you from trapping air underneath the aerodynamic sealant.

(a) Apply more sealant than is necessary.

SUBTASK 56-11-21-400-006

(7) Make the surface of the sealant smooth.

SUBTASK 56-11-21-000-003

(8) Remove Scotch Flatback Masking Tape 250, G00270, before the aerodynamic smoother starts to get hard.

SUBTASK 56-11-21-400-007

(9) Let the sealant cure (Figure 802).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 3

A

(EXAMPLE)

A-A

2958697 S0000736828_V2

Fillet Seal Application
Figure 801/56-11-21-990-818

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEALANT	TEMPERATURE 2 3				
	57˚F (13.9˚C)	77˚F (25˚C)	97˚F (36.1˚C)	117˚F (47.2˚C)	137˚F (58.3˚C)
PR-1425CF B-2	24 Hours	12 Hours	6 Hours	3 Hours	1.5 Hours
BMS 5-95 B-2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425 B-2	96 Hours	48 Hours	24 Hours	12 Hours	6 Hours
BMS 5-95 B-1/2	20 Hours	10 Hours	5 Hours	2.5 Hours	1.25 Hours
PR-1826 B-1/2 or PR-1828 B-1/2	6 Hours	3 Hours	1.5 Hours	45 Minutes	23 Minutes
PR-1829 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	30 Minutes
PR-1425 B-1/2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425CF B-1/2	12 Hours	6 Hours	3 Hours	1.5 Hours	45 Minutes
AC-251 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	0.5 Hours
AC-251 B-1	14 Hours	7 Hours	3.5 Hours	1.75 Hours	52 Minutes
AC-251 B-2	18 Hours	9 Hours	4.5 Hours	2.25 Hours	1.125 Hours

AVERAGE CURE TIME FOR SEALANT 1 4 5

1 ROUND AMBIENT TEMPERATURE DOWN TO THE LOWER TEMPERATURE COLUMN (IE 116˚F WOULD USE 97˚F COLUMN)

2 DO NOT CURE SEALANT ABOVE 140˚F (60˚C)

3 DO NOT CURE SEALANT BELOW 50˚F (10˚C)

4 REX A DUROMETER READING OF 30

5 REFER TO THE DATA SHEET FOR FASTER CURE TIMES OF THE SEALANT OR SPEAK TO THE MANUFACTURER IF NOT AVAILABLE

2843657 S0000664119_V4

Cure Times vs Temperatures for Sealants
Figure 802/56-11-21-990-817

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 4 AND NO. 5 WINDOWS - REMOVAL/INSTALLATION

1. General

A. This procedure contains these tasks:

LOM 402 PRE SB 737-56-1017

(1) The removal of the No. 4 and No. 5 windows.

(2) The installation of the No. 4 and No. 5 windows.

LOM 402 POST SB 737-56-1017

(3) The removal of the No. 4 and No. 5 window plugs.

(4) The installation of the No. 4 and No. 5 windows plugs.

LOM 402 PRE SB 737-56-1017

TASK 56-11-31-000-801

2. No. 4 and No. 5 Window Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-11-21-000-801	Flight Compartment Forward Ceiling Panel Removal (P/B 201)
30-41-31-000-801	Thermal Switch Removal (P/B 401)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the No. 4 and No. 5 Window Removal

SUBTASK 56-11-31-860-001

> **WARNING** REMOVE POWER FROM THE WINDOW HEAT SYSTEM BEFORE YOU REMOVE THE WINDOW. IF WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. AN ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

(1) Make sure that the window heat switch is in the OFF position.

SUBTASK 56-11-31-010-001

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C00229	WINDOW HEAT POWER L3, L4 & L5

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R3, R4 & R5

SUBTASK 56-11-31-020-001

(3) Where it is necessary, do this task: Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

SUBTASK 56-11-31-020-002

(4) Disconnect the power leads at the bus bar terminals on the window.

SUBTASK 56-11-31-020-003

(5) Remove the thermal switch [11] and the bracket from the No. 5 window frame [10] along with these components. To remove the thermal switch, do this task: Thermal Switch Removal, TASK 30-41-31-000-801.

(a) The self-locking nut [7]

(b) The washer [8]

(c) The bolt [9].

SUBTASK 56-11-31-020-004

(6) Remove the aerodynamic smoother from the clearance around the external edge of the window as follows:

(a) Pull the nylon cord out and away from the airplane (Figure 401).

NOTE: The end of the cord is at the upper aft corner of the window.

D. Procedure - Remove the No. 4 and No. 5 windows

SUBTASK 56-11-31-020-005

(1) Remove these components from the window pane assembly [1] and the window frame [10].

NOTE: These steps can be made easier in the area of the map light if you remove the map light housing, then remove the lamp.

(a) Remove bolt [2]

(b) Remove nutplate [4]

(c) Remove the metal strip [5]

(d) Remove the O-ring strip [6].

SUBTASK 56-11-31-020-006

(2) Apply hand pressure to the outer side of the window pane assembly [1] to break the seal.

NOTE: Always apply pressure to the largest area possible. You can hit the window lightly with a rubber mallet and a nonmetallic block if the window is not easy to remove.

NOTE: The aluminum spacer [3] and pressure seal [12] are removed with the window.

SUBTASK 56-11-31-020-007

(3) Remove the window from the window frame [10].

SUBTASK 56-11-31-020-008

CAUTION

BE CAREFUL WHEN YOU REMOVE THE METAL OR THE FAIRING COMPOUND. IF YOU ARE NOT CAREFUL, DAMAGE TO THE METAL OR TO THE FAIRING COMPOUND ON THE INBOARD FACE OF THE WINDOW FRAME CAN OCCUR.

(4) Carefully remove the remaining aerodynamic smoother from the window frame [10]. Do not cause damage to the fairing compound [14].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-11-31-400-801

3. **No. 4 and No. 5 Window Installation**
(Figure 401, Figure 402, Figure 403)

A. **General**

(1) The aerodynamic smoother is installed in the area between the window frame and the edge of the pressure seal and window pane. It gives aerodynamic flushness and keeps water out of the window installation. A nylon cord or a nylon thread is installed below the aerodynamic smoother to make the removal of the smoother easier.

(2) O-rings are made of ethylene propylene. They are installed below the nut washers. The O-rings can compress a set quantity to transmit the sufficient compression load into the window. This will cause the bead to compress and make a weather seal.

B. **References**

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
25-11-21-400-801	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
30-41-31-400-801	Thermal Switch Installation (P/B 401)
56-11-00-200-803	Inspect the Flight Compartment Windows (P/B 601)
56-11-00-300-801	Flight Compartment Windows - Repair of Aerodynamic Smoother and Pre-Molded Seal (P/B 801)

C. **Tools/Equipment**

Reference	Description
STD-449	Gun - Sealant
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

D. **Consumable Materials**

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
A01056	Sealant - Aerodynamic - PR 1829	
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B
A50084	Sealant - P/S 860 Class B-1/6 Quick Repair Fuel Tank Sealant	AMS-S-83318 Class B
A50205	Adhesive - PR-142 Adhesion Promoter (One-Part Compound)	
A50485	Promoter - Adhesion, PR-1861	
A50493	Sealant - Windshield And Canopy - PR-1425CF	
A50517	Sealant - AC-251 Black Class B	
A50543	Promoter - Adhesion, AC-137	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

(Continued)

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
G00039	Cord - Fibrous, Nylon (100 Lb Strength)	MIL-C-5040 Type IA
G00139	Tape - Protective, Protex 20V	
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00291	Tape - Aluminum Foil, 3M 425	AMS-T-23397 / L-T-80

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Prepare the No. 4 and No. 5 Windows for Installation

SUBTASK 56-11-31-210-001

(1) Examine the fairing compound [14] for the following:

(a) Cracks

(b) Chips

(c) Broken

(d) Damaged.

SUBTASK 56-11-31-390-005

(2) Repair or replace the plastilock seal [12] for the following conditions (TASK 56-11-00-300-801).

NOTE: The spacer [3] will crush the fairing compound [14] on the structure around the end of the spacer. You can not repair the compound after the window is installed.

SUBTASK 56-11-31-210-002

(3) Do a visual check of the window post and sill for cracks and corrosion.

SUBTASK 56-11-31-950-001

(4) Apply the Protex 20V tape, G00139.

(a) Align the tape with the edge of the glass panes.

SUBTASK 56-11-31-110-001

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

(5) Clean the mating surfaces of the plastilock seal [12], the external edge of the window pane assembly [1] and the window frame [10] with solvent, B00083.

SUBTASK 56-11-31-110-002

(6) Clean the surfaces until they are free of remaining film.

(a) Make sure that you do not damage mating surface.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

SUBTASK 56-11-31-110-003

(7) Make sure that the spacers [3] are put into the bolt holes in the window pane assembly [1].

(a) Keep the spacers [3] together by friction until you install retaining bolts and attach nuts.

1) Do not bond the spacers.

NOTE: The spacers must be free to move on the bolts and in the bolt holes in the window.

G. Procedure - Install No. 4 and No. 5 Windows

SUBTASK 56-11-31-110-004

(1) Apply the corrosion preventative compound, C00528, to the bolt shanks immediately before installation.

SUBTASK 56-11-31-420-003

CAUTION	DO NOT INSTALL MAGNETIC OR HIGH PERMEABILITY MATERIALS IN A 20-INCH RADIUS FROM THE CENTER OF THE MAGNETIC COMPASS. MAGNETIC MATERIALS CAN CAUSE DAMAGE TO THE INSTRUMENT.

(2) Install the window pane assembly [1] in the window frame [10].

(a) If the replacement window pane assembly [1] is not new or has unknown flight hours, do the following:

1) Do an inspection for cracking and damage in the vinyl interlayer and glass panes (TASK 56-11-00-200-803).

SUBTASK 56-11-31-420-004

CAUTION	USE ONLY NONMAGNETIC BOLTS HEAT TREATED TO 160,000 PSI ALONG THE TOP, BOTTOM, AND FORWARD EDGES OF THE WINDOW. THIS IS BECAUSE THEY ARE CLOSE TO THE STANDBY COMPASS. THE BOLTS THAT ATTACH THE WINDOW RETAINING ANGLE AT THE AFT EDGE ARE NOT STANDARD. YOU MUST ONLY INSTALL THE CORRECT BOLTS AT THE AFT EDGE. YOU MUST TIGHTEN THE BOLTS TO THE SPECIFIED TORQUE OR YOU CAN CAUSE DAMAGE TO THE WINDOW.

(3) Install the bolts [2].

SUBTASK 56-11-31-420-005

(4) Bond the O-ring strip [6] to the metal strip [5] after assembly of nutplate [4] to the metal strip [5].

NOTE: O-ring strip together with the metal strip builds nutplate strip assembly.

SUBTASK 56-11-31-420-007

CAUTION	DO NOT TIGHTEN THE FASTENERS MORE THAN THE MAXIMUM TORQUE. IF YOU TORQUE THE FASTENERS MORE THAN THE MAXIMUM TORQUE, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(5) For the No. 4 window tighten each bolt from 50 in-lb (5.6 N·m) to 60 in-lb (6.8 N·m) (Figure 403).

NOTE: Use the example sequence shown in (Figure 403).

(a) Measure the projection of the spacer [3] as shown in (Figure 401).

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LOM 402 PRE SB 737-56-1017 (Continued)

1) The outboard end of the spacer must align with the seal surface.
2) The inboard end of the spacer must extend 0.16 ±0.02 in. (4.06 ±0.51 mm) through the inner surface of the glass pane.

SUBTASK 56-11-31-420-009

CAUTION

DO NOT TIGHTEN THE FASTENERS MORE THAN THE MAXIMUM TORQUE. IF YOU TORQUE THE FASTENERS MORE THAN THE MAXIMUM TORQUE, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(6) For the No. 5 window tighten each bolt form 20 in-lb (2.3 N·m) to 25 in-lb (2.8 N·m).

NOTE: Use the example sequence shown in (Figure 403).

(a) Measure the projection of the spacer [3] as shown in (Figure 401).

1) The outboard end of the spacer must align with the seal surface.
2) The inboard end of the spacer must extend 0.16 ±0.02 in. (4.06 ±0.51 mm) through the inner surface of the glass pane.

SUBTASK 56-11-31-780-001

(7) Make sure that the window is installed correctly, do the cabin pressure leak test (Cabin Pressure Leak Test, TASK 05-51-91-790-801).

SUBTASK 56-11-31-420-015

(8) Tighten each bolt again after the cabin pressure leak test.

SUBTASK 56-11-31-950-002

(9) Apply Scotch Flatback Masking Tape 250, G00270, along the edge of window pane assembly [1] and the outer fuselage skin edge.

NOTE: This will prevent contamination before you install the nylon chord [15] nylon cord, G00039, and the aerodynamic sealant.

SUBTASK 56-11-31-420-011

(10) Install a new nylon cord, G00039 (Figure 402).

NOTE: The two ends must touch in the top aft corner of the window frame. They must make an overlap of approximately 0.5 inch. To make the installation of the cord easy, pull the nylon cord, G00039, lightly and tap it down into the clearance with a hardwood or plastic fillet smoothing spatula, STD-810.

SUBTASK 56-11-31-390-004

(11) Use one of the aerodynamic sealants that follow (in sequence of preference):

(a) PR-1425 sealant, A00103 (Preferred)
(b) PR-1425CF sealant, A50493 (Alternative)
(c) AC-251 sealant, A50517 (Alternative)
(d) sealant, A00247 (PRO-SEAL 870 Class B) (Alternative)
(e) PR 1829 sealant, A01056 (Rapid Cure) (Alternative)
(f) PR-1828 sealant, A00708 (Alternative)
(g) PR-1826 sealant, A50052 (Alternative)
(h) P/S 860 B-1/6 sealant, A50084 (Alternative).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

SUBTASK 56-11-31-390-009

(12) Use one of the adhesion promoters that follow:

(a) PR-142 adhesion promoter, A50205, for the PR-1425 sealant, A00103.

(b) PR-1861 adhesion promoter, A50485, for the PR-1425CF sealant, A50493.

(c) AC-137 adhesion promoter, A50543, for the AC-251 sealant, A50517.

(d) PR-142 adhesion promoter, A50205, for the sealant, A00247 (PRO-SEAL 870 Class B).

(e) PR-1861 adhesion promoter, A50485, for the PR 1829 sealant, A01056 (Rapid Cure).

(f) PR-142 adhesion promoter, A50205, for the PR-1826 sealant, A50052.

(g) PR-142 adhesion promoter, A50205, for the P/S 860 B-1/6 sealant, A50084.

SUBTASK 56-11-31-390-006

(13) Mix the sealant to the manufacturer's instructions.

SUBTASK 56-11-31-390-001

(14) Slowly put the aerodynamic sealant in the clearance with a sealant gun, STD-449, or a hardwood or plastic fillet smoothing spatula, STD-810, until the area is fully filled (Figure 401).

NOTE: When you apply the aerodynamic smoother with the sealant gun, STD-449, you should push the sealant gun, STD-449. This will keep you from trapping air underneath the aerodynamic sealant.

NOTE: Use PR 1829 sealant, A01056, if rapid cure is required for dispatch.

SUBTASK 56-11-31-390-002

CAUTION WHEN YOU APPLY THE SMOOTHER, BE CAREFUL THAT YOU DO NOT MAKE SCRATCHES ON THE METAL, ACRYLIC OR GLASS SURFACES. ALSO, DO NOT MAKE THE METAL, ACRYLIC OR THE GLASS SURFACES ROUGH WHEN YOU APPLY THE SMOOTHER.

(15) Remove the unwanted aerodynamic sealant while it is still wet, so that it is level with the window and the skin.

SUBTASK 56-11-31-390-007

(16) Smooth the aerodynamic smoother to the shape that is shown in (Figure 401).

SUBTASK 56-11-31-950-005

(17) Remove the Scotch Flatback Masking Tape 250, G00270, from the edge of the clearance.

SUBTASK 56-11-31-950-004

(18) Remove the items that follow:

NOTE: You can make the aerodynamic sealant that lifts at the edge of the clearance smooth with a hardwood or plastic fillet smoothing spatula, STD-810.

(a) The protective cover from the external surface of the window.

SUBTASK 56-11-31-390-003

(19) If you must send the airplane before the sealant is fully cured, install 3M 425 Aluminum Foil Tape, G00291, on the top of the sealant.

NOTE: Remove the 3M 425 Aluminum Foil Tape, G00291, when the sealant is fully cured. The use of 3M 425 Aluminum Foil Tape, G00291, is not intended for long term use but only until the sealant is cured.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 PRE SB 737-56-1017 (Continued)

H. Put the Airplane Back to its Usual Condition.

SUBTASK 56-11-31-420-012

(1) Install the map light lamp and the housing on the No. 4 window frame, if it was removed.

SUBTASK 56-11-31-420-013

(2) Install the thermal switch [11] and the bracket on the No. 5 window frame (TASK 30-41-31-400-801).

SUBTASK 56-11-31-760-001

(3) Connect the power leads to the terminals of the window bus bar.

SUBTASK 56-11-31-020-009

(4) Remove the protective cover from the inner side surface of the window.

SUBTASK 56-11-31-420-014

(5) Install the trim panels and the crash padding where they are necessary (TASK 25-11-21-400-801).

SUBTASK 56-11-31-010-003

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C00229	WINDOW HEAT POWER L3, L4 & L5

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R3, R4 & R5

SUBTASK 56-11-31-760-002

(7) Make sure that the window heat system operates correctly, do this task: Window Heat System - Operational Test, TASK 30-41-00-710-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Window No. 4 and 5 Seal Details
Figure 401/56-11-31-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEALANT SHAPE - WINDOW NOS. 4, 5

J99222 S0000190423_V2

Window No. 4 and 5 Seal Details
Figure 401/56-11-31-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

WINDOWS
(LEFT SIDE IS SHOWN,
RIGHT SIDE IS ALMOST THE SAME)

G21603 S0006581420_V2

Window No. 4 and 5 Installation
Figure 402/56-11-31-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 4

B

WINDOW NO. 5

C

G21900 S0006581421_V2

Window No. 4 and 5 Installation
Figure 402/56-11-31-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

A-A

NOTE:

RETAINING BOLT AND WINDOW FRAME NOT SHOWN TO MAKE THE ILLUSTRATION MORE CLEAR. REFER TO SECTION A-A FOR HOW TO ASSEMBLE. FOR A PROTECTIVE FINISH APPLY SULFURIC ACID AND ANODIZE TO AGREE WITH THE SPECTIFICATIONS OF MIL-A-8625 TYPE II OR CHEMICAL TREAT PER MIL-C-5541, PLUS ONE LAYER OF BMS 10-11, TYPE I, PRIMER

1. SPACER FOR THE GLASS WINDOW No. 4 (PL 5-89357):
MAKE FROM A 2024-T3 WW-T-785 ALUMINUM TUBE, 5/16 INCH (7.937 mm) OD BY 0.035 INCH (0.889 mm) WALL THICKNESS. THE TUBE MUST BE 0.95 INCH (24.13 mm) LONG. OPTIONAL MATERIAL 6061-T6 ALUMINUM TUBING PER WW-T-700/6

2. SPACER FOR THE ACRYLIC WINDOW No. 4 (PL 65C33822):
MAKE FROM A 2024-T3 WW-T-700/3. ALUMINUM TUBE, 5/16 INCH (7.937 mm) OD BY 0.035 INCH (0.889 mm) WALL THICKNESS. THE TUBE MUST BE 0.945 INCH (24 mm) LONG. OPTIONAL MATERIAL 6061-T6 ALUMINUM TUBE PER WW-T-700/6 OPTIONAL MATERIAL BS.L168 ALUMINUM (U.K.) OR BS.3L63 ALUMINUM (U.K.) FOR EXTRUDED TUBE

3. SPACER FOR THE GLASS WINDOW No. 5 (PL 5-89358):
MAKE FROM A 2024-T3 WW-T-785 ALUMINUM TUBE, 5/16 INCH (7.937 mm) OD BY 0.035 INCH (0.889 mm) WALL THICKNESS. THE TUBE MUST BE 0.75 INCH (19.05 mm) LONG. OPTIONAL MATERIAL 6061-T6 ALUMINUM TUBING PER WW-T-700/6

4. SPACER FOR THE ACRYLIC WINDOW No. 5 (PL 65C33823):
MAKE FROM A 2024-T3 WW-T-700/3. ALUMINUM TUBE, 5/16 INCH (7.937 mm) OD BY 0.035 INCH (0.889 mm) WALL THICKNESS. THE TUBE MUST BE 0.64 INCH (16.256 mm) LONG. OPTIONAL MATERIAL 6061-T6 ALUMINUM TUBE PER WW-T-700/6 OPTIONAL MATERIAL BS.L168 ALUMINUM (U.K.) OR BS.3L63 ALUMINUM (U.K.) FOR EXTRUDED TUBE

G21513 S0006581422_V3

Window No. 4 and 5 Installation
Figure 402/56-11-31-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NOTE:

THIS IS AN EXAMPLE OF HOW YOU CAN TIGHTEN THE FASTENERS FOR THE WINDOW. ANY PATTERN THAT IS ALMOST THE SAME AS THIS PATTERN IS PERMITTED. WHEN YOU INSTALL THE FASTENERS, FIRST CHOOSE AS MANY POINTS THAT HAVE OPPOSITE FASTENERS THAT ARE FAR APART FROM EACH OTHER. DO THIS AS EARLY AS POSSIBLE IN THE FASTENER TORQUE SEQUENCE.

1 CONTINUE IN THIS PATTERN. ALWAYS GO TO A FASTENER THAT IS IN THE MIDDLE OF THE TWO INSTALLED FASTENERS. YOU MUST GO TO A DIFFERENT SIDE OF THE WINDOW TO CONTINUE WITH THE FASTENER INSTALLATION.

G21884 S0006581423_V2

Example of Window Fastener Installation
Figure 403/56-11-31-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 POST SB 737-56-1017

TASK 56-11-31-000-802

4. No. 4 and No. 5 Window Plug Removal

A. General

(1) This task includes the steps to remove the No. 4 and No. 5 Window Plugs.

B. References

Reference	Title
25-11-21-000-801	Flight Compartment Forward Ceiling Panel Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 56-11-31-040-001

(1) Make sure that the window heat switch is in the OFF position.

SUBTASK 56-11-31-020-011

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C00229	WINDOW HEAT POWER L3, L4 & L5

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R3, R4 & R5

These circuit breakers are inoperative and should remain open:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C00229	WINDOW HEAT POWER L4 & L5 (INOP)

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R4 & R5 (INOP)

SUBTASK 56-11-31-020-010

(3) If necessary, remove the map lamp light and the housing on the No. 4 window frame.

SUBTASK 56-11-31-020-014

(4) Remove the No. 5 eyebrow window pad: Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801.

SUBTASK 56-11-31-020-015

(5) Remove the No. 4 eyebrow window pad: Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801.

SUBTASK 56-11-31-020-022

(6) If necessary, remove the insulation blankets for the No.4 and No. 5 window plugs.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 POST SB 737-56-1017 (Continued)

E. No. 4 and No. 5 Window Plug Removal

(Figure 404)

SUBTASK 56-11-31-020-023

(1) Remove the No. 4 window plug.

(a) Remove the nut, washer, and bolt which support the window plug.

(b) If installed, remove the shims.

SUBTASK 56-11-31-020-024

(2) Remove the No. 5 window plug.

(a) Remove the nut, washer, and bolt which support the window plug.

(b) If installed, remove the shims.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 4 LEFT WINDOW PLUG
(VIEW IN THE UP AND OUTBOARD DIRECTION)

A

2213754 S0000485830_V2

No. 4 and No. 5 Window Plug Installation
Figure 404/56-11-31-990-807 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2213759 S0000493802_V2

No. 4 and No. 5 Window Plug Installation
Figure 404/56-11-31-990-807 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 4 and No. 5 Window Plug Installation
Figure 404/56-11-31-990-807 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 5 LEFT WINDOW PLUG
(VIEW IN THE UP AND OUTBOARD DIRECTION)

A

2213766 S0000493804_V3

No. 4 and No. 5 Window Plug Installation
Figure 404/56-11-31-990-807 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2213775 S0000493805_V2

No. 4 and No. 5 Window Plug Installation
Figure 404/56-11-31-990-807 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C-C

D-D

2213776 S0000493806_V2

No. 4 and No. 5 Window Plug Installation
Figure 404/56-11-31-990-807 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

SEALANT APPLICATION
(EXAMPLE)

A-A

N0. 4 AND NO. 5 WINDOW EYEBROW PAD

A

2213778 S0000493807_V2

No. 4 and No. 5 Window Plug Installation
Figure 404/56-11-31-990-807 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-11-31-400-802

5. **No. 4 and No. 5 Window Plug Installation**

Figure 404

A. **General**

(1) This task includes the steps to install the No. 4 and No. 5 window plugs.

B. **References**

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
20-50-11-910-801	Standard Torque Values (P/B 201)
25-11-21-400-801	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. **Tools/Equipment**

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. **Consumable Materials**

Reference	Description	Specification
A50057	Adhesive - Silicone Rubber, RTV157	BAC5010 Type 60
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
G50333	Tape - Hook/Loop Fastener, Flame Propagation Resistant	BMS8-372
G50961	Coating - Corrosion Inhibiting Epoxy Primer - (BAC 377 Yellow Color)	BMS10-11 Type I

E. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 POST SB 737-56-1017 (Continued)

F. Prepare for the Installation

SUBTASK 56-11-31-160-001

(1) Apply chemical conversion coating, C00064 to all bare metal.

SUBTASK 56-11-31-160-002

(2) Apply primer coating, G50961 to all bare metal.

G. No. 4 and No. 5 Window Plug Installation

SUBTASK 56-11-31-160-003

(1) Apply sealant, A50231 to the mating surface of the window plug, shims, and structure immediately before installation.

SUBTASK 56-11-31-420-016

(2) Install window plug into the window frame.

(a) Make sure that the gap is 0.03 in. (0.76 mm) outside of the window frame surface and 0.06 in. (1.52 mm) inside of the window frame surface.

(b) If necessary, install shim on window plug.

NOTE: Install shim if the clearance of the fasteners is more than 0.01 in. (0.25 mm) before you apply the torque. Maximum shim thickness is 0.05 in. (1.27 mm).

SUBTASK 56-11-31-420-017

(3) Install bolt into washer and nut to hold the window plug in place.

NOTE: Tighten bolts at opposite corners first.

(a) For No. 4 Window, initially torque nut 90 in-lb (10 N·m) to 110 in-lb (12 N·m) (Standard Torque Values, TASK 20-50-11-910-801).

(b) For No. 5 Window, initially torque nut 31.5 in-lb (3.6 N·m) to 38.5 in-lb (4.3 N·m) (Standard Torque Values, TASK 20-50-11-910-801).

(c) Measure the electrical bonding resistance between the spot of bare metal on the window blank and adjacent airframe with an intrinsically safe approved bonding meter, COM-1550 (SWPM 20-20-00).

1) Make sure that the resistance is 0.0025 ohm (2.5 milliohms) or less.

SUBTASK 56-11-31-390-008

(4) Apply sealant, A50231 to the clearance of the window frame.

(a) Fill the clearance around the window frame with the sealant.

(b) Remove unwanted sealant while it is wet until it is level with the window plug and skin.

H. No. 4 and No. 5 Window Plug Installation Test

SUBTASK 56-11-31-480-001

(1) Do the Cabin Pressure Leak Test, TASK 05-51-91-790-801

SUBTASK 56-11-31-200-003

(2) Do a torque check on the nuts.

(a) For No. 4 Window, make sure torque is 90 in-lb (10 N·m) to 110 in-lb (12 N·m).

(b) For No. 5 Window, make sure torque is 31.5 in-lb (3.6 N·m) to 38.5 in-lb (4.3 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 POST SB 737-56-1017 (Continued)

I. No. 4 and No. 5 Window Eyebrow Plug Installation

SUBTASK 56-11-31-420-018

(1) Install the forward window eyebrow plug assembly.

(a) Apply RTV157 adhesive, A50057 on the edge of the window plug assembly.

(b) Install bracket, washer, and screw which support the forward window plug assembly.

SUBTASK 56-11-31-420-020

(2) Install the aft window eyebrow plug assembly.

(a) Apply RTV157 adhesive, A50057 on the edge of the window plug assembly.

(b) Install bracket, washer, and screw which support the forward window plug assembly.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-31-420-021

(1) Install the insulation blankets for the No.4 and No. 5 window plugs.

(a) Clean the surface before installation

(b) Apply tape, G50333 to the insulation blanket.

(c) Install insulation blanket.

(d) Make sure to push on the insulation blanket to get the correct bond.

SUBTASK 56-11-31-420-023

(2) Install the No. 4 eyebrow window pad (Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801).

SUBTASK 56-11-31-420-027

(3) Install the No. 5 eyebrow window pad (Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801).

SUBTASK 56-11-31-420-028

(4) Install the map lamp light and housing on the No. 4 window frame, if it was removed.

SUBTASK 56-11-31-410-008

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C00229	WINDOW HEAT POWER L3, L4 & L5

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R3, R4 & R5

These circuit breakers are inoperative and should remain open:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	7	C00229	WINDOW HEAT POWER L4 & L5 (INOP)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 402 POST SB 737-56-1017 (Continued)

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	7	C00395	WINDOW HEAT POWER R4 & R5 (INOP)

SUBTASK 56-11-31-480-002

(6) Do the operational test of the window heat system (Window Heat System - Operational Test, TASK 30-41-00-710-801).

SUBTASK 56-11-31-370-001

(7) If necessary, paint the window plugs.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 OPENABLE WINDOW - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) A replacement of the No. 2 window handle trigger return spring

(2) A replacement of the No. 2 window bearing

LOM 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412 POST SB 737-56-1024

(3) A replacement of the No. 2 window scuff plate assembly.

LOM ALL

TASK 56-12-11-300-803

2. Replace the No. 2 Window Handle Trigger Return Spring

(Figure 201)

A. General

(1) This task includes steps to replace the No. 2 window handle trigger return spring.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Replacement

SUBTASK 56-12-11-010-003

(1) Open the window.

NOTE: This will remove the load from the compressed bulb seal off the spring pin through the handle and the bellcrank shaft.

D. No. 2 Window Handle Trigger Return Spring Replacement

SUBTASK 56-12-11-020-011

(1) Remove the trigger return spring [5] (Figure 201).

(a) Remove the handle spring pin [1].

(b) Remove the handle [7] from the bellcrank shaft [6].

(c) Remove the lower spring pin [2].

(d) Remove the trigger bolt [4] from the handle [7].

(e) Remove the middle spring pin [3].

(f) Remove the trigger return spring [5] from the handle [7].

SUBTASK 56-12-11-420-008

(2) Install the new trigger return spring [5] (Figure 201).

(a) Put the new trigger return spring [5] in the handle [7].

(b) Align the trigger return spring [5] with the middle spring pin [3] hole.

(c) Install the middle spring pin [3].

(d) Put the trigger bolt [4] in a position opposite the lower spring pin [2] hole.

(e) Install the lower spring pin [2].

(f) Make sure that the trigger bolt [4] has full return when released.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Put the handle [7] on the lower forward bellcrank shaft [6].

(h) Install the handle spring pin [1] through the handle [7] and bellcrank shaft [6].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 56-12-11-410-003

CAUTION	CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(1) Close the window.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Handle Trigger Return Spring Replacement
Figure 201/56-12-11-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-300-802

3. Repair the No. 2 Window Bearing

(Figure 202)

A. General

(1) This task includes the steps to repair the No. 2 window bearing.

B. References

Reference	Title
56-12-11-000-801	No. 2 Openable Window Removal (P/B 401)
56-12-11-400-801	No. 2 Openable Window Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Repair

SUBTASK 56-12-11-010-002

(1) Do this task: No. 2 Openable Window Removal, TASK 56-12-11-000-801.

E. No. 2 Window Bearing Repair

SUBTASK 56-12-11-020-002

(1) Remove the track roller bearing (Figure 202).

(a) Loosen the setscrew in the bellcrank [21].

(b) Remove the special bolt [24] from the bellcrank [21].

NOTE: Parts can fall when you remove the special bolt.

SUBTASK 56-12-11-420-002

(2) Install the new track roller bearing (Figure 202).

(a) Install the special bolt [24] with the new glide track roller bearing [23] and shim washer [22].

(b) Change the number of shim washer [22] to give the correct vertical window adjustment as required.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 56-12-11-410-002

(1) Do this task: No. 2 Openable Window Installation, TASK 56-12-11-400-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEFT NO. 2 WINDOW
(RIGHT NO. 2 WINDOW IS EQUIVALENT)

G02267 S0006581436_V2

No. 2 Window Bearing Installation
Figure 202/56-12-11-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-300-805

4. Replace the No.2 Window Scuff Plate Assembly

(Figure 203)

A. General

(1) A scuff plate is attached to the upper forward post of the fuselage frame for the No. 2 window.

(2) This scuff helps to prevent contact between the movable frame and the bolt heads on the fuselage frame.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Replacement

SUBTASK 56-12-11-010-006

(1) Open the No. 2 window.

D. No. 2 Window Scuff Plate Assembly Replacement

SUBTASK 56-12-11-020-012

(1) Remove the bumper plate assembly (Figure 203).

(a) Remove the bolts [34] that attach the bumper plate assembly to the window post.

SUBTASK 56-12-11-420-011

(2) Install a new bumper plate assembly (Figure 203).

(a) Align new bumper plate assembly with the fastener bolts [34].

NOTE: Old fasteners could be re-used provided they are clean and free from damage.

(b) Hand tighten the bolts [34].

(c) Tighten the bolts [34] to 22.5 ±2.5 in-lb (2.5 ±0.3 N·m).

NOTE: Hex head flats should be aligned with the post plane (View A-A, Figure 203).

E. Put the Airplane Back to Its Usual Condition

SUBTASK 56-12-11-410-006

CAUTION	CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(1) Close the No. 2 window.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No.2 Window Scuff Plate Assembly Replacement
Figure 203/56-12-11-990-825

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 OPENABLE WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) The removal of the No. 2 openable window

(2) The installation of the No. 2 openable window.

TASK 56-12-11-000-801

2. No. 2 Openable Window Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the No. 2 openable window.

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 56-12-11-860-001

WARNING

DO NOT TOUCH THE WINDOW UNLESS THE WINDOW HEAT SWITCHES ARE OFF. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

(1) Move these switches on the pilots overhead panel to the OFF position and attach DO NOT OPERATE tags, STD-858:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-12-11-020-003

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-12-11-860-012

(3) If it is necessary, put soft blankets to the adjacent windows to prevent damage.

NOTE: This will prevent scratches or damage to the windows during the removal.

E. No. 2 Openable Window Removal

SUBTASK 56-12-11-980-001

(1) Unlock the No. 2 window.

SUBTASK 56-12-11-020-007

(2) Disconnect the electrical connector from the receptacle [6].

(a) If it is necessary, remove the window frame pad from the window assembly [2].

SUBTASK 56-12-11-980-002

(3) Move the window assembly [2] aft until the aft lower roller [9] is approximately 2.50 in. (63.50 mm) from the locked open stop [8].

SUBTASK 56-12-11-020-004

(4) Remove the forward lower roller [3] from the lower track [7]:

(a) Lift the lower front corner of the window assembly [2].

(b) Move the window assembly [2] forward and aft in the roller track [4] (approximately 1.00 in. (25.40 mm)) until the forward lower roller [3] aligns with the track lip cutout [11].

(c) Lift the lower front corner of the window assembly [2] and move the forward lower roller [3] through the cutout and out of the lower track [7].

SUBTASK 56-12-11-020-005

(5) Remove the upper roller [1] from the upper track [10]:

(a) Move the window assembly [2] forward until the aft lower roller [9] and the track lip cutout [11] align.

NOTE: With the window in this position the forward edge of the clothing guard will be approximately aligned with the forward edge of the lower track.

(b) Move the window assembly [2] to make sure that the top edge of the window assembly [2] moves aft.

1) Put a blanket on the edges of the window assembly [2] to prevent damage to the adjacent windows during the removal.

(c) Make sure the aft lower roller [9] stays in its position when you move the window assembly [2].

(d) Remove the upper roller [1] from the upper track [10].

SUBTASK 56-12-11-020-006

CAUTION

DO NOT MOVE THE WINDOW SIDE TO SIDE. SIDE TO SIDE MOVEMENT CAN CAUSE THE WINDOW TO HIT ADJACENT WINDOWS. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(6) Lift the window to remove the aft lower roller [9] through the track lip cutout [11].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Put a blanket on the edges of the window assembly [2] to prevent damage to the adjacent windows during the removal.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G01524 S0006581440_V7

No. 2 Window Installation
Figure 401/56-12-11-990-833 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Installation
Figure 401/56-12-11-990-833 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Installation
Figure 401/56-12-11-990-833 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1574487 S0000294349_V3

No. 2 Window Installation
Figure 401/56-12-11-990-833 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

No. 2 WINDOW
(EXAMPLE)

A

2371012 S0000542703_V3

Foam Tape Installation
Figure 402/56-12-11-990-835

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT CAPTAIN'S SIDEWALL
(FIRST OFFICER'S SIDEWALL IS OPPOSITE)

2842278 S0000663395_V1

Coil Cord Keyway Position Inspection
Figure 403/56-12-11-990-836 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Coil Cord Keyway Position Inspection
Figure 403/56-12-11-990-836 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Coil Cord Keyway Position Inspection
Figure 403/56-12-11-990-836 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-400-801

3. No. 2 Openable Window Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the No. 2 openable window.

NOTE: It is not always necessary to adjust windows removed from and then installed on the same aircraft. For a window installed on an aircraft for the first time. It is necessary to do to this task and the adjustment task (No. 2 Openable Window Adjustment, TASK 56-12-11-820-801).

B. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
30-41-21-000-801	Check the Electrical Resistance of the Window Heat Film (P/B 501)
56-12-11-200-801	No. 2 Openable Window Inspection (P/B 601)
56-12-11-720-801	No. 2 Openable Window Functional Check (P/B 501)
56-12-11-820-801	No. 2 Openable Window Adjustment (P/B 501)
SRM Boeing 737	Structural Repair Manual
WDM 30-41-11	Wiring Diagram Manual
WDM 30-41-12	Wiring Diagram Manual

C. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B50095	Solvent	BAC5750
D50039	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122RB (use until stock depleted)	
D50118	Lubricant - Dry Film Silicone Spray	
D50119	Lubricant - Fluorocarbon PTFE Release Agent - Miller-Stephenson MS-122DF	
D50244	Compound - Dow Corning 340 Heat Sink Compound	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01659	Swab - Cotton Or Rayon, (Disposable)	
G02092	Tape - Flexible Foam Sound Damping And Sealing Tape	BMS8-283
G50063	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122XD (Replaces MS-122DF)	
G51035	Release Agent - Miller-Stephenson MS-122AD	

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(Continued)

Reference	Description	Specification
G51443	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122ADL	

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Installation

SUBTASK 56-12-11-210-015

(1) Examine the bulb seal for defects that can cause pressure leaks.

SUBTASK 56-12-11-110-001

(2) Clean the tracks, rollers and areas around them with a cotton wiper, G00034, which is moist with solvent, B00083.

SUBTASK 56-12-11-210-014

(3) Examine the emergency release handle:

(a) Make sure that the emergency release handle is flush with the skin 0.00 ±0.03 in. (0.00 ±0.76 mm).

(b) If it is necessary, adjust the emergency release handle (TASK 56-12-11-820-801).

SUBTASK 56-12-11-710-014

(4) Examine the ditching latch:

(a) Move the pull rod of the ditching latch forward to the open position.

(b) Move the pull rod of the ditching latch aft to the closed position.

1) Make sure that the ditching latch easily deploys to the closed position.

NOTE: The ditching latch must not touch the insulation blankets.

SUBTASK 56-12-11-710-020

(5) With the window handle fully forward, the trigger released, and lock bolt fully engaged to the lock plate, make sure that the lock bolt is flush to the lower surface of the stiffener [18] within 0.020 in. (0.508 mm) to 0.000 in. (0.000 mm) (TASK 56-12-11-720-801).

NOTE: The window is in the closed/locked position at this point.

(a) If the lock bolt is not flush to the lower surface of the stiffener [18] within the noted range, then adjust the stiffener [18]:

NOTE: If the window handle operation is not affected, the lock bolt protrusion can be more than 0.020 in. (0.508 mm).

1) Loosen the bolts, washers and nuts that are common to the basic stiffener, housing and lock plate.

2) Adjust the basic stiffener by moving it up or down through the slotted holes until the lock bolt protrusion from the lower surface of the stiffener is 0.020 in. (0.508 mm) to 0.000 in. (0.000 mm).

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3) Once the lock bolt is within the noted range, hold the basic stiffener in place, and tighten all the bolts.

NOTE: The stiffener flange between the lock plate and basic stiffener is a sheet metal with a thickness of 0.050 in. (1.270 mm). It might slightly deflect to adjust the lock bolt protrusion to be flush within 0.000 in. (0.000 mm) to 0.020 in. (0.508 mm).

4) Make sure that the trigger returns fully when it is released.

SUBTASK 56-12-11-820-001

(6) Adjust the forward lower bellcrank [16], aft lower bellcrank [23], window lockplate [14], and rod assembly [21]:

NOTE: The handle [13] must be against the window locked shut stop [12] while you measure the bellcranks.

NOTE: Move the window lockplate [14] to adjust the forward lower bellcrank [16]. Adjust the rod assembly [21] to adjust the aft lower bellcrank [23].

(a) Make sure that the center of the bolt [15] and bolt [22] are 0.22 ±0.03 in. (5.59 ±0.76 mm) forward of the center of the bellcrank shaft [17] and bellcrank shaft [24].

NOTE: You can measure the distance from the bottom of the bellcranks. The bellcrank shaft [17] and bellcrank shaft [24] are on the inner side of the aft lower housing [20]. Measure the distance between the center of the forward lower roller [3] and center of the bellcrank shaft [17], center of the aft lower roller [9] and center of the bellcrank shaft [24].

NOTE: Align the bolt [22] in the forward lower bellcrank and aft lower bellcrank [23] to tighten the set screw [25] against the flat side of the bolt [22].

(b) Adjust the window lockplate [14] and rod assembly [21] if the dimension is not 0.22 ±0.03 in. (5.59 ±0.76 mm).

1) Loosen the threelockplate adjustment screws [19] that attach the window lockplate [14] to the stiffener [18] to adjust the forward lower bellcrank [16].

NOTE: You must turn the handle [13] to get access to all of the lockplate adjustment screws [19].

2) Hold the handle [13] against the locked shut stop [12].

3) Move the window lockplate [14] to get the 0.22 ±0.03 in. (5.59 ±0.76 mm) dimension at the forward lower bellcrank [16].

4) Tighten the three lockplate adjustment screws [19].

5) Hold the handle [13] against the locked shut stop [12].

6) Loosen the locknuts on the ends of the rod assembly [21].

7) Adjust the rod length to get the 0.22 ±0.03 in. (5.59 ±0.76 mm) dimension at the aft lower bellcrank [23].

8) Tighten the locknuts on the rod assembly [21].

SUBTASK 56-12-11-400-001

(7) Do an inspection for cracking and damage in the vinyl interlayer and glass panes on the window assembly (TASK 56-12-11-200-801).

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SUBTASK 56-12-11-400-011

(8) Apply a layer of Dow Corning 340 heat sink compound, D50244, to the temperature sensor terminals with a swab, G01659.

NOTE: The Dow Corning 340 heat sink compound, D50244, is intended to prevent inadvertent loss of insulation between the sensor terminals and metal frame of the window, which can cause the window to overheat.

SUBTASK 56-12-11-400-010

(9) If necessary, install the window heat wire/bundle and frame pad.

SUBTASK 56-12-11-410-005

(10) Examine the tape, G02092, on the flight deck structure for damage, missing sections or peeled off sections.

NOTE: If the tape, G02092, is not available, install the window without the tape for no more than 24 months. Without the tape, the flight deck noise and moisture can increase.

(a) If missing, damaged or peeled off tape, G02092, is found, do these steps:

1) Remove the used tape, G02092 from the flight deck structure.

2) To install a new tape, G02092, to the flight deck structure, do these steps:

a) Clean the surface of the flight deck structure with solvent, B50095, where the tape, G02092, will be installed.

NOTE: Use of the citra-safe solvent, B50225, or citra-safe solvent, B50226, is not permitted.

NOTE: Do not let the solvents get in contact with the plastics, control cables, lubricated areas, plastic decals, paints or markings that are non–skydrol–resistant. If the solvents get in contact with such surfaces, the parts must be rejected.

<1> Do not let the surface of the tape, G02092, with adhesive get contaminated with dust, dirt, lint, or grease.

b) Remove the tape, G02092, from the roll.

c) Turn the surface of the tape, G02092, with adhesive down and cut the tape, G02092, into length.

NOTE: The recommended dimensions for the tape, G02092, are thickness: 0.125 in. (3.18 mm), width: 1.5 in. (38.10 mm) and length: 20.55 in. (522.0 mm).

<1> Cut the length of tape, G02092, necessary for installation.

d) For tape, G02092, with protective linings on the adhesive, do these steps:

<1> Cut the tape, G02092, into length.

<a> Keep the other tapes for storage until its time for installation.

<2> Pull the protective lining off the adhesive gradually.

e) Set the tape, G02092, on the flight deck structure as shown in Figure 402.

f) Carefully push from the center of the tape, G02092, to the edges to release the air from the tape, G02092.

g) Remove the wrinkles from the surface of the tape, G02092, and seal the edges with a roller or polyethylene.

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h) Make sure that you put a puncture in the tape, G02092, with a pin to remove air below the tape, G02092.

NOTE: Air can be below the tape and flight deck structure surface.

<1> Make sure that you do not put a scratch on the surface of the flight deck structure where the tape, G02092, is installed.

i) Carefully push the air out with your fingers from the edge of the bubble to the puncture hole.

j) If it is necessary to remove the tape, G02092, again, make sure that you clean off the adhesive on the metal surface.

<1> Do the steps to clean the surface of the flight deck structure, to remove and install the tape, G02092, again.

F. No. 2 Openable Window Installation

SUBTASK 56-12-11-200-001

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

(a) For cracks and corrosion, refer to the SRM Boeing 737.

SUBTASK 56-12-11-420-004

CAUTION DO NOT CLOSE THE WINDOW BEFORE ADJUSTMENT. CLOSING THE WINDOW BEFORE ADJUSTMENT CAN CAUSE DAMAGE TO THE WINDOW ASSEMBLY FRAME.

(2) Put the aft lower roller [9] in the lower track [7].

(a) Move the window until the forward edge of the clothing guard [5] and forward edge of the lower track [7] align.

(b) Put the aft lower roller [9] on the top of the lower track [7] and move the window to find the track lip cutout [11].

(c) Put the aft lower roller [9] through the track lip cutout [11] and into the lower track [7].

SUBTASK 56-12-11-420-005

(3) Put the upper roller [1] in the upper track [10]:

(a) Move the top edge of the window aft.

1) Make sure that the aft lower roller [9] stays in its position when you move the window.

(b) Put the upper roller [1] in the upper track [10].

SUBTASK 56-12-11-420-006

(4) Put the forward lower roller [3] into the lower track [7]:

(a) Put the forward lower roller [3] on the lower track [7].

(b) Move the window assembly [2] aft until the forward lower roller [3] goes through the track lip cutout [11].

SUBTASK 56-12-11-420-003

(5) Connect the electrical connector to the receptacle [6].

NOTE: The cord is nonreversible.

(a) Make sure that the window side connector has 5 pins.

(b) Make sure that the sidewall side connector has 6 pins.

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(c) Make sure that the connector keyway is in the correct position, refer to Figure 403.

SUBTASK 56-12-11-210-030

(6) Examine the windshield for its electrical resistance.

LOM 465-999

NOTE: The electrical resistance check is not necessary.

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464

(a) For windshields that are new, examine the corner of the windshield near the bus bar terminal for the window resistance code.

1) Record the window resistance code.

NOTE: The window resistance code is located on a clear decal with black markings. This code may be covered when the window is installed. It is necessary to know this code when you connect the window heat wiring.

NOTE: For windshields that are new, the window resistance check is not necessary.

(b) When a used windshield is installed, do this task: Check the Electrical Resistance of the Window Heat Film, TASK 30-41-21-000-801.

1) Determine the terminal board tap that matches the resistance measured on the connector terminal.

NOTE: For example, if you measure 40 ohms on D40070P-F (Left Front), the matching terminal is TB5010-3 on M321.

2) Make sure that the heat film resistance is between 55.7 - 100 ohms.

NOTE: It is possible for the window resistance to change with time.

(c) For new windshields that do not have the resistance code on the corner of the windshield, do this task: Check the Electrical Resistance of the Window Heat Film, TASK 30-41-21-000-801.

1) Record the window resistance code.

NOTE: This code is necessary to determine the terminal board tap that matches the resistance measured on the connector terminal.

SUBTASK 56-12-11-760-001

CAUTION

MAKE SURE THAT THE TRANSFORMER TAPS THAT ARE ATTACHED TO THE LEAD HAVE THE SAME RESISTANCE AS THE WINDOW. DIFFERENT RESISTANCES CAN CAUSE DAMAGE TO THE ANTI-ICING SYSTEM.

(7) Make sure that the resistance of the window is the same as the transformer taps (WDM 30-41-11, WDM 30-41-12).

LOM ALL

SUBTASK 56-12-11-820-002

CAUTION

DO NOT CLOSE THE WINDOW BEFORE ADJUSTMENT. CLOSING THE WINDOW BEFORE ADJUSTMENT CAN CAUSE DAMAGE TO THE WINDOW ASSEMBLY FRAME.

(8) Do this task: No. 2 Openable Window Adjustment, TASK 56-12-11-820-801.

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SUBTASK 56-12-11-710-021

(9) With the window handle fully forward, the trigger released, and lock bolt fully engaged to the lock plate, make sure that the lock bolt is flush to the lower surface of the stiffener [18] within 0.020 in. (0.508 mm) to 0.000 in. (0.000 mm) (TASK 56-12-11-720-801).

NOTE: The window is in the closed/locked position at this point.

SUBTASK 56-12-11-640-002

(10) Apply dry film silicone spray, D50118, MS-122DF lubricant, D50119, MS-122XD release agent, G50063, MS-122RB lubricant, D50039, MS-122ADL lubricant, G51443, or Miller-Stephenson MS-122AD release agent, G51035, to the tracks, rollers and mechanisms that touch the tracks.

SUBTASK 56-12-11-710-015

(11) Examine the emergency release handle:

(a) Make sure that the emergency release handle is flush with the skin 0.00 ±0.03 in. (0.00 ±0.76 mm).

(b) If it is necessary, adjust the emergency release handle (TASK 56-12-11-820-801)

SUBTASK 56-12-11-780-001

(12) Make sure that the window is installed correctly, do the cabin pressure leak test (TASK 05-51-91-790-801).

SUBTASK 56-12-11-860-003

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-12-11-710-003

(14) Do this task: Window Heat System - Operational Test, TASK 30-41-00-710-801.

SUBTASK 56-12-11-800-006

(15) Remove the DO-NOT-CLOSE tags from these switches, on the P5 pilot's overhead panel:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

END OF TASK

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NO. 2 OPENABLE WINDOW - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) An adjustment of the No. 2 openable window

(2) An operation check of the No. 2 openable window

(3) A function check of the No. 2 openable window.

TASK 56-12-11-820-801

2. No. 2 Openable Window Adjustment

(Figure 501, Figure 502, and Figure 503)

A. General

(1) This task is for the right and left No. 2 openable windows.

NOTE: It is not always necessary to adjust windows removed from and then installed on the same aircraft. For a window installed on an aircraft for the first time, it is necessary to do to this task.

(2) Do these steps to examine the window assembly. Make all the necessary adjustments to the window assembly. Do this task as many times that are necessary to get correct clearance and rigging.

B. References

Reference	Title
56-12-11-000-801	No. 2 Openable Window Removal (P/B 401)
56-12-11-400-801	No. 2 Openable Window Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-7425	Socket Assembly - Window Latch (Left and Right Hand) Part #: C56001-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00270	Compound - Threadlocking, Low-strength - Loctite 222	
A00562	Adhesive - High Strength Silicone Rubber, One-Part - RTV157	
A50250	Sealant - P/S 870 Class B-1/2 Corrosion Inhibitive Sealant	BMS5-95 Class B-1/2
G01925	Tape - 3M Polyester Film Tape 850 (Formerly 3M No. 850 Tape)	

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E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Prepare for the No. 2 Window Adjustment

SUBTASK 56-12-11-860-004

> **WARNING** THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU MAKE AN INSPECTION OF THE WINDOWS. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Move these switches, on the P5 pilot's overhead panel, to the OFF position and attach DO NOT OPERATE tags, STD-858:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-12-11-020-009

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

G. No.2 Openable Window Inspection

SUBTASK 56-12-11-820-008

> **CAUTION** DO NOT CLOSE THE WINDOW BEFORE ADJUSTMENT. CLOSING THE WINDOW BEFORE ADJUSTMENT CAN CAUSE DAMAGE TO THE WINDOW ASSEMBLY FRAME.

(1) Put two layers of 3M 850 tape, G01925, along the forward and aft edges of the window frame.

SUBTASK 56-12-11-210-013

(2) Examine the window assembly [1] to make sure that it attaches into the frame correctly.

> **CAUTION** CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(a) Slowly move the window assembly [1] to the closed position.

NOTE: Use two persons if possible to do this step. One external to the aircraft, the other internally to the aircraft to close the window assembly frame. It is necessary for the two personnel to monitor the window while it closes.

1) Make sure that the window assembly frame will not touch the section 41 bolts or frame.

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(b) If it is necessary, adjust the window in the Forward-Aft direction.

(c) Continue with the adjustment task when the window assembly frame does not hit the section 41 bolts or frame.

SUBTASK 56-12-11-820-009

CAUTION	CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(3) Close the window.

(a) Move the window assembly [1] forward.

(b) Turn the handle to lock the window assembly [1] into the closed position.

SUBTASK 56-12-11-820-012

(4) Open the window.

(a) Turn the handle to unlock the window assembly [1].

(b) Move the window assembly [1] aft into the open position.

SUBTASK 56-12-11-210-017

(5) Examine 3M 850 tape, G01925, on the window assembly frame for grooves or tears.

NOTE: Grooves and tears on the tape show areas that touch between the window assembly and the section 41 frame.

NOTE: The tape is used to make sure that the window assembly does not touch the frame. The tape can be removed after the adjustments.

(a) Adjust the window assembly [1] to remove areas that touch the section 41 frame.

1) If it is necessary, adjust the window in the Forward-Aft direction.

2) If the window assembly frame touches in the top forward corner only, remove the shim washer [40] from the aft lower roller [38].

SUBTASK 56-12-11-820-013

CAUTION	CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(6) Close the window.

(a) Move the window assembly [1] forward.

(b) Turn the handle to lock the window assembly [1] into the closed position.

SUBTASK 56-12-11-210-016

(7) Measure the forward and aft clearances between the window assembly frame and the section 41 window frame (Figure 502).

(a) The clearance for the forward edge must be 0.08 ±0.03 in. (2.03 ±0.76 mm).

(b) The clearance for the aft edge must be 0.08 +0.14 / -0.06 in. (2.03 +3.56 / -1.53 mm).

(c) If the clearance is out of the tolerance, adjust the window in the Forward-Aft direction.

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(d) If the clearance decreases to one side along the forward or aft edges, adjust the window about the Inboard-Outboard axis.

NOTE: Adjustments to the window about the Inboard-Outboard axis will change the forward, aft, top, and bottom clearances.

(8) Measure the top and bottom clearances between the window assembly frame and section 41 window frame.

(a) Make sure that the window assembly [1] does not hit the upper or lower window sill when it is opened or closed.

(b) The clearance for the top and bottom edges must be 0.12 ±0.10 in. (3.05 ±2.54 mm).

(c) If the clearance is out of the tolerance, adjust the window vertically.

(d) If the clearance decreases to one side along the top or bottom edges, adjust the window about the Inboard-Outboard axis.

NOTE: Adjusting the window about the Inboard-Outboard axis will change the forward, aft, top, and bottom clearances.

SUBTASK 56-12-11-220-001

(9) Do a check of the flushness of the window assembly [1] (View A-A, Figure 501).

(a) The flushness for the forward top corner must be 0.04 +0.11 / -0.03 in. (1.02 +2.79 / -0.76 mm).

(b) The flushness for the 3 other corners must be 0.04 +0.06 / -0.03 in. (1.02 +1.52 / -0.76 mm).

(c) If the flushness is out of the tolerance, adjust the window in the Inboard-Outboard direction.

SUBTASK 56-12-11-820-014

(10) Open the window.

(a) Turn the handle to unlock the window assembly [1].

(b) Move the window assembly [1] aft into the open position.

SUBTASK 56-12-11-210-008

(11) Make sure that the window rollers move freely in the tracks.

(a) Make sure that the window assembly frame moves freely and does not touch the section 41 frame.

(b) If it is necessary, add or remove washers to adjust the rollers to move freely in their tracks.

NOTE: Adjustments to the window about the Inboard-Outboard axis will change the forward, aft, top, and bottom clearances.

SUBTASK 56-12-11-280-001

(12) Measure the force necessary to open and close the window.

(a) Make sure that the force necessary to close the window is 45 ±15 lbf (200 ±67 N) or a torque of 97.5 ±32.5 in-lb (11.0 ±3.7 N·m).

NOTE: Measure the force on the handle at a right angle to the handle centerline as the window slides from the forward position into the closed position (lock/close).

NOTE: If available, use the window latch socket, SPL-7425, to help you with the window/latch torque specifications.

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(b) Make sure that the force necessary to open the window is 45 +15 / -26 lbf (200 +67 / -116 N) or a torque of 97.5 +32.5 / -57.5 in-lb (11.0 +3.7 / -6.5 N·m).

NOTE: Measure the force on the handle at a right angle to the handle centerline as the window is opened (unlock/open) into the forward position.

NOTE: If it is available, use the window latch socket, SPL-7425, to help you with the window/latch torque specifications.

(c) If the force is out of the limits, adjust the force necessary to open and close the window.

NOTE: The bulb seal must be permanently installed after all necessary adjustments of the No.2 window.

H. No. 2 Openable Window Adjustment

SUBTASK 56-12-11-010-005

(1) Remove the clothing guard [5] if it is necessary to do the adjustment.

SUBTASK 56-12-11-020-010

(2) Do this task: No. 2 Openable Window Removal, TASK 56-12-11-000-801.

SUBTASK 56-12-11-820-003

(3) If it is necessary, adjust the Forward-Aft position of the window assembly [1].

(a) The clearance for the forward edge must be 0.08 ±0.03 in. (2.03 ±0.76 mm).

(b) The clearance for the aft edge must be 0.08 +0.14 / -0.06 in. (2.03 +3.56 / -1.53 mm).

(c) Put a mark on the serrated plate [10] to record the position of the guide pin [8] before adjustment.

(d) Move the guide pin [8] forward or aft to get to the specified clearance:

1) Lift the bulb pressure seal [7] out of the groove in the window rim to get access to the countersunk bolt.

NOTE: It is not necessary to remove all of the bulb pressure seal out of the groove.

2) Loosen the attachment bolt [9] that attach the guide pin [8] to the serrated plate [10].

3) Move the guide pin [8].

NOTE: There are 28 serrations per 1 in. (25 mm) on the serrated plate. Each serration will move the guide pin 0.036 in. (0.914 mm) forward or aft.

a) If it is necessary, move the guide pin [8] forward to move the window assembly [1] aft.

b) If it is necessary, move the guide pin [8] aft to move the window assembly [1] forward.

4) Tighten the attachment bolt [9] on the guide pin [8].

SUBTASK 56-12-11-820-005

(4) If it is necessary adjust the vertical position of the window.

(a) The clearance for the top and bottom edges must be 0.12 ±0.10 in. (3.05 ±2.54 mm).

(b) To increase the vertical position of the window assembly [1], do these steps:

1) Add a shim washer [40] between the forward lower bellcrank [34] and forward lower roller [42], the aft lower bellcrank [4], and aft lower roller [38].

a) Loosen the setscrews [37] in the forward lower bellcrank [34] and aft lower bellcrank [4].

b) Remove the special bolts [39].

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c) Add a shim washer [40] to the forward lower roller [42] and to aft lower roller [38].

<1> Do not add more than eight shim washers [40] to one roller.

<2> If it is necessary, add an equal number of shim washers [40] to each lower roller.

NOTE: This will adjust the window assembly vertically only.

<3> If it is necessary add shim washers [40] to the forward lower roller [42] and to aft lower roller [38].

NOTE: This will turn the window assembly about the Inboard-Outboard axis.

d) Install the special bolts [39].

<1> Tighten the special bolts [39] until one of the three flats align with the setscrews [37].

e) Tighten the setscrews [37].

2) Remove a shim washer [14] from between the upper bellcrank [16] and upper roller [13] (View B, Figure 501).

a) Loosen the setscrew [27] in the upper bellcrank [16].

b) Remove the special screw [11] from the upper bellcrank [16].

<1> Remove the nut [24], washer [25], filler [26], spacer [15], upper roller [13], and glide [12].

c) Remove a shim washer [14].

NOTE: It is permitted to remove all shim washers if it is necessary.

d) Install the special screw [11] in the upper bellcrank [16].

<1> Install the glide [12], upper roller [13], spacer [15], filler [26], washer [25], and nut [24].

e) Tighten the setscrew [27].

f) Tighten the nut [24] to 40 in-lb (4.5 N·m) - 50 in-lb (5.6 N·m).

(c) To decrease the vertical position of the window assembly [1], do these steps:

1) Remove a shim washer [40] between the forward lower bellcrank [34] and forward lower roller [42], the aft lower bellcrank [4] and aft lower roller [38].

a) Loosen the setscrews [37] in the forward lower bellcrank [34] and aft lower bellcrank [4].

b) Remove the special bolts [39].

c) Remove a shim washer [40] from the forward lower roller [42] and from the aft lower roller [38].

<1> If it is necessary, remove an equal number of shim washers [40] to a minimum of one shim washer [40] from the forward lower roller [42] and aft lower roller [38].

NOTE: This will adjust the window assembly vertically only.

<2> If it is necessary, remove a shim washer [40] to a minimum of one shim washer [40] from the forward lower roller [42] and aft lower roller [38].

NOTE: This will turn the window assembly about the Inboard-Outboard axis.

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d) Install the special bolts [39].

<1> Tighten the special bolts [39] until one of the three flats align with the setscrews [37].

e) Tighten the setscrews [37].

2) Add a shim washer [14] between the upper bellcrank [16] and upper roller [13] (View B, Figure 501).

a) Loosen the setscrew [27] in the upper bellcrank [16].

b) Remove the special screw [11] from the upper bellcrank [16].

<1> Remove the nut [24], washer [25], filler [26], spacer [15], upper roller [13], and glide [12].

c) Add a shim washer [14].

d) Do not add more than 10 shim washers [14].

e) Install the special screw [11] in the upper bellcrank [16].

<1> Install the glide [12], upper roller [13], spacer [15], filler [26], washer [25], and nut [24].

f) Tighten the setscrew [27].

g) Tighten the nut [24] to 40 in-lb (4.5 N·m) - 50 in-lb (5.6 N·m).

SUBTASK 56-12-11-820-006

(5) If it is necessary, adjust the upper roller [13] to move freely and to not bind (View B, Figure 501).

(a) Change the number of shim washers [14] between the upper bellcrank [16] and upper roller [13].

1) Loosen the setscrew [27] in the upper bellcrank [16].

2) Remove the special screw [11] from the upper bellcrank [16].

a) Remove the nut [24], washer [25], filler [26], spacer [15], upper roller [13], and glide [12].

3) Add or remove shim washers [14] between the upper bellcrank [16] and upper roller [13].

4) Do not add more than 10 shim washers [14].

NOTE: It is permitted to remove all shim washers if it is necessary.

5) Install the special screw [11] in the upper bellcrank [16].

a) Install the glide [12], upper roller [13], spacer [15], filler [26], washer [25], and nut [24].

6) Tighten the setscrew [27].

7) Tighten the nut [24] to 40 in-lb (4.5 N·m) - 50 in-lb (5.6 N·m).

SUBTASK 56-12-11-820-004

(6) If it is necessary, adjust the handle force and the Inboard-Outboard position of the window assembly [1].

(a) Use the window latch socket, SPL-7425, to adjust the handle force and the Inboard-Outboard position of the window assembly [1].

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(b) The force necessary to close the window must be 45 ±15 lbf (200 ±67 N) or a torque of 97.5 ±32.5 in-lb (11.0 ±3.7 N·m).

NOTE: Measure the force on the handle at a right angle to the handle centerline.

(c) The force necessary to open the window must be 45 +15 / -26 lbf (200 +67 / -116 N) or a torque of 97.5 +32.5 / -57.5 in-lb (11.0 +3.7 / -6.5 N·m).

NOTE: Measure the force on the handle at a right angle to the handle centerline.

NOTE: If it is available, use the window latch socket, SPL-7425, to help you with the window/latch torque specifications.

(d) The flushness for the forward top corner must be 0.04 +0.11 / -0.03 in. (1.02 +2.79 / -0.76 mm).

(e) The flushness for all the other corners must be 0.04 +0.06 / -0.03 in. (1.02 +1.52 / -0.76 mm).

(f) Remove the washers [19], nuts [20], washers [32], and nuts [33].

(g) Remove the bracket [21] from the upper housing [2].

(h) Pull the bulb pressure seal [7] out of the groove in the window rim to get access to the countersunk bolt.

NOTE: It is not necessary to remove all of the bulb pressure seal out of the groove.

(i) Remove the nut [29] and washer [54].

(j) Pull out the attachment bolts [18], attachment bolts [22], attachment bolts [23], attachment bolt [35], attachment bolts [36], and attachment bolts [41].

(k) Remove the stiffener [28] from the forward lower housing [31].

(l) Gently pull the upper housing [2], aft lower housing [3], and forward lower housing [31] from the window rim and corner fitting to get access to the shims [17] or shims [30].

(m) If it is necessary, add or remove an equal number of shims [17] and shims [30] to get the correct handle force.

NOTE: To adjust the force necessary to close the window it is preferable to add or remove the same number of shims at all three control housings.

NOTE: This will change the handle force and window assembly position at the same time.

1) Add the shims [17] and shims [30] to increase the handle torque.

2) Remove the shims [17] and shims [30] to decrease the handle torque.

(n) If it is necessary, add or remove the shims [17] and shims [30] from the upper housing [2], aft lower housing [3], and forward lower housing [31] to adjust the Inboard-Outboard position of each corner of the window assembly [1].

NOTE: This will change the handle force and window assembly position at the same time.

1) Add the shims [17] and shims [30] to increase the handle torque and obtain more inboard position.

2) Remove the shims [17] and shims [30] to decrease the handle torque and obtain more outboard position.

(o) Install the upper housing [2], aft lower housing [3], and forward lower housing [31].

(p) Install the stiffener [28] to the forward lower housing [31].

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(q) Install the attachment bolts [18], attachment bolts [22], attachment bolt [23], attachment bolts [35], attachment bolts [36], and attachment bolts [41].

(r) Install the washer [54] and nut [29].

(s) Install the bracket [21] to the upper housing [2].

(t) Install the washers [19], nuts [20], washers [32], and nuts [33].

SUBTASK 56-12-11-210-018

(7) Examine the window assembly [1] to make sure that it attaches into the frame correctly.

(a) Make sure that the window assembly frame will not touch the section 41 bolts or frame.

(b) If it is necessary, adjust the window in the Forward-Aft direction.

(c) Continue with the adjustment task when the window assembly frame does not hit the section 41 bolts or frame.

SUBTASK 56-12-11-820-011

(8) Examine the window assembly [1] again.

(a) Do the steps to examine the window assembly [1] again.

(b) If it is necessary, do the steps to adjust the window assembly [1] again.

1) Do all the steps to examine the window assembly [1] after each time that the window assembly [1] is adjusted.

(c) Do this task as many times that are necessary to get correct clearance and rigging.

SUBTASK 56-12-11-410-004

(9) If all checks and examinations of the window assembly [1] are completed and you determined that no more adjustment is needed, do these steps:

(a) Apply P/S 870 Class B-1/2 sealant, A50250, to the heads and shanks of the special screw [11], attachment bolts [18], attachment bolts [22], attachment bolt [23], attachment bolts [35], attachment bolts [36], special bolts [39], and attachment bolts [41].

(b) Permanently install the special screw [11], attachment bolt [18], attachment bolts [22], attachment bolt [23], attachment bolts [35], attachment bolts [36], special bolts [39], and attachment bolts [41] into the upper housing [2], aft lower housing [3], and forward lower housing [31].

(c) Apply P/S 870 Class B-1/2 sealant, A50250, to the heads and shanks of the attachment bolts [9].

(d) Permanently install the attachment bolt [9] into the guide pin [8].

(e) Permanently install the setscrew [27] and setscrew [37], do these steps:

1) Remove the setscrew [27] and setscrew [37].

2) Apply Loctite 222 compound, A00270, to the threads of the setscrew [27] and setscrew [37].

3) Install the setscrew [27] and setscrew [37].

(f) Permanently install the bulb pressure seal [7].

1) Use RTV157 adhesive, A00562, between the bulb pressure seal [7] and window assembly frame at each corner.

2) Apply RTV157 adhesive, A00562, to extend from each corner by 3 in. (76 mm).

SUBTASK 56-12-11-420-007

(10) Install the window assembly [1] in its tracks (TASK 56-12-11-400-801).

(a) Connect the window heat leads to the terminal board.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-12-11-840-002

(11) If it is removed, install the clothing guard [5].

SUBTASK 56-12-11-980-004

CAUTION	CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(12) Close the window.

(a) Move the window assembly [1] forward.

(b) Turn the handle [6] to lock the window assembly [1] into the closed position.

I. Emergency Exit Release Mechanism Adjustment

NOTE: For windows with an emergency exit release only.

SUBTASK 56-12-11-820-007

(1) Adjust the external release handle [47] if it is not aligned with the external skin (Figure 503).

(a) Remove the cockpit trim panel below the No. 2 window.

(b) Increase or decrease the length of the turnbuckle [43] and turn the eccentric bushing [44] as necessary.

(c) Install the lockwire or lockclip on the turnbuckle [43].

(d) Install the pin assembly [53] with Loctite 222 compound, A00270, or sealant, A00247.

NOTE: It is possible that the pin assembly will move and prevent the window from opening. Sealant on the pin assembly will let the release cams operate correctly to let the window open.

(e) Install the cockpit trim panel.

SUBTASK 56-12-11-980-005

(2) Make sure that the window unlocks, opens, closes, and locks freely when the emergency release handle is aligned with the external skin.

SUBTASK 56-12-11-210-009

(3) Make sure that the lower cam assembly [48] and camshaft assembly [49] are engaged correctly (View A-A, Figure 503).

(a) Close and lock the window.

(b) Make sure that the upper end of the camshaft pin [51] is not more than 0.02 in. (0.51 mm) above or 0.04 in. (1.02 mm) below the upper surface of the lower cam assembly cam [50].

NOTE: To see the camshaft pin, look between the lower edge of the clothing guard and the cockpit trim panel in the area of the forward lower bellcrank.

(c) Unlock and open the window.

(d) Make sure that the bottom end of the camshaft pin [51] is not below the bottom surface of the camshaft assembly cam [52].

(e) If the camshaft pin [51] is more than 0.02 in. (0.51 mm) above the upper surface of the lower cam assembly cam [50] and pin is not below the camshaft assembly cam [52], do these steps:

1) Grind the camshaft pin [51] to shorten it.

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2) Assemble the camshaft assembly [49].

(f) If the camshaft pin [51] is more than 0.04 in. (1.02 mm) below the upper surface of the lower cam assembly cam [50], and pin is not below the camshaft assembly cam [52], do this step:

1) Adjust the vertical position of the window assembly [1] to move the lower cam assembly [48] down.

(g) If the lower end of the camshaft pin [51] is below the lower surface of the camshaft assembly cam [52] replace the camshaft assembly [49].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Adjustment
Figure 501/56-12-11-990-830 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Adjustment
Figure 501/56-12-11-990-830 (Sheet 2 of 7)

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A-A

NOTE:

WINDOW FAIR NOT PRESSURIZED:
THE WINDOW RIM CAN RECLINE INWARD
FROM THE INNER SURFACE OF FRAME
SUPPORT FLANGE AS SHOWN.

1 FLUSHNESS:
TOP FORWARD CORNER: 0.04 +0.11/-0.03 INCH (1.02 +2.79/-0.76 mm)
THE OTHER 3 CORNERS: 0.04 +0.06/-0.03 INCH (1.02 +1.52/-0.76 mm).

2 FOR CLARITY, SKIN PANELS ARE NOT ILLUSTRATED.

G00435 S0006581447_V7

No. 2 Window Adjustment
Figure 501/56-12-11-990-830 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Adjustment
Figure 501/56-12-11-990-830 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Adjustment
Figure 501/56-12-11-990-830 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E-E

U46861 S0000195066_V2

No. 2 Window Adjustment
Figure 501/56-12-11-990-830 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3076599 S0000834394_V1

No. 2 Window Adjustment
Figure 501/56-12-11-990-830 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

U46791 S0000196862_V2

No. 2 Window Clearance
Figure 502/56-12-11-990-831

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G00287 S0006581450_V5

Emergency Exit Release Adjustment
Figure 503/56-12-11-990-832 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G00460 S0006581451_V5

Emergency Exit Release Adjustment
Figure 503/56-12-11-990-832 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C

U30677 S0000191395_V4

Emergency Exit Release Adjustment
Figure 503/56-12-11-990-832 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-710-803

3. No. 2 Openable Window Operational Check

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
56-12-11-300-803	Replace the No. 2 Window Handle Trigger Return Spring (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the No. 2 Window Operational Check.

SUBTASK 56-12-11-710-012

WARNING DO NOT TOUCH THE WINDOW UNLESS THE CIRCUIT BREAKERS ARE OPEN, AND THE WINDOW HEAT SWITCHES ARE OFF. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

(1) Move these switches on the pilot's overhead panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE

SUBTASK 56-12-11-710-013

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. No. 2 Window Operational Check.

SUBTASK 56-12-11-710-010

CAUTION CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(1) Do a check of the window operation.

(a) Make sure that the window unlocks, and that the handle turns freely when you pull the trigger.

(b) Make sure that the window moves freely on the tracks.

(c) Make sure that the window open lock holds the window open.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Make sure that the window can be unlocked from the open position.

(e) Make sure that the window locks shut when the handle is fully forward and the trigger is released.

(f) Make sure that the lock pin on the handle fully engages the lockplate as shown in View A-A of the (Figure 504).

NOTE: Window is in the closed/locked position. Lower surface of the lock pin to be flush to lower surface of stiffener within +0.020 in. (0.508 mm)/-0.000 in. (0.000 mm). If window handle operation is not affected, then the clearance can be greater than 0.020 in. (0.5080 mm)

NOTE: You can adjust the lock bolt protrusion through the lockplate by adjusting the stiffener location, up or down.

(g) Make sure that the trigger returns fully when it is released.

1) If the trigger does not return fully, replace the trigger return spring (TASK 56-12-11-300-803).

SUBTASK 56-12-11-710-011

(2) Do a check of the emergency exit release mechanism.

(a) Make sure that the window unlocks and opens when the external release handle is pulled.

(b) Make sure that the external release handle is aligned with the skin when the handle is in the flight position.

E. Put the Airplane Back to its Usual Condition.

SUBTASK 56-12-11-860-010

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-12-11-800-004

(2) Remove the DO-NOT-OPERATE tags from these switches on the pilot's overhead panel:

(a) WINDOW HEAT L SIDE.

(b) WINDOW HEAT R SIDE.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-720-801

4. No. 2 Openable Window Functional Check

A. Prepare for Functional Check

WARNING: DO NOT TOUCH THE WINDOW UNLESS THE CIRCUIT BREAKERS ARE OPEN, AND THE WINDOW HEAT SWITCHES ARE OFF. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 56-12-11-720-002

(1) Move these switches on the pilot's overhead panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE

SUBTASK 56-12-11-720-003

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

B. No. 2 Openable Window Functional Check

SUBTASK 56-12-11-710-008

CAUTION: CLOSE THE WINDOW WHILE SEATED IN THE PILOT SEAT OR FIRST OFFICER SEAT THAT IS NEAREST TO THE WINDOW. DO NOT APPLY AN UPWARD FORCE ON THE HANDLE. IF YOU DO NOT OBEY, THEN THE WINDOW CAN DISENGAGE FROM ITS TRACKS AND CAUSE DAMAGE TO ADJACENT WINDOWS.

(1) Do a check of the following window functions:

(a) The window unlocks and that the handle turns freely when you pull the trigger.

(b) The window moves freely on the tracks when opening and closing.

(c) The window open lock holds the window open and the window can be unlocked from the open position.

(d) The window locks shut when the handle is fully forward and the trigger is released.

(e) Make sure that the lock bolt on the handle fully engages to the lock plate. See Figure 504, view A-A.

NOTE: The window is in the closed/locked position at this point.

(f) Make sure that the lock bolt is flush to the lower surface of the stiffener within 0.020 in. (0.508 mm) to 0.000 in. (0.000 mm). If the lock bolt is not flush to the lower surface of the stiffener within the noted range, then adjust the stiffener as noted below.

NOTE: If the window handle operation is not affected, the lock bolt protrusion can be more than 0.020 in. (0.508 mm).

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1) Loosen the bolts, washers and nuts that are common to the basic stiffener, housing and lock plate.

2) Adjust the basic stiffener by moving it up or down through the slotted holes until the lock bolt protrusion from the lower surface of the stiffener is within 0.020 in. (0.508 mm) to 0.000 in. (0.000 mm).

3) Once the lock bolt is within the noted range, hold the basic stiffener in place and tighten all the bolts.

NOTE: The stiffener flange between the lock plate and basic stiffener is a sheet metal with a thickness of 0.050 in. (1.270 mm). It might slightly deflect to adjust the lock bolt protrusion to be flush within 0.000 in. (0.000 mm) to 0.020 in. (0.508 mm).

(g) Make sure that the trigger returns fully when it is released.

(h) The force necessary to close the window is within the range of 45 ±15 pounds (200 ± 67 newtons).

NOTE: Measure the Force on the handle at a right angle to the handle center line as the window slides from the forward position into the closed position(lock/close).

SUBTASK 56-12-11-710-009

(2) Do a check of the emergency exit release mechanism.

(a) Make sure that the window unlocks and opens when the external release handle is pulled.

NOTE: The maximum force necessary to pull the external release handle is 110 pounds (489 newtons).

(b) Make sure that the external release handle is aligned with the skin when the handle is in the flight position.

C. Put the Airplane Back to its Usual Condition.

SUBTASK 56-12-11-860-009

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-12-11-800-003

(2) Remove the DO-NOT-OPERATE tags from these switches on the pilot's overhead panel:

(a) WINDOW HEAT L SIDE.

(b) WINDOW HEAT R SIDE.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Emergency Exit Release Handle Clearance
Figure 504/56-12-11-990-823

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 OPENABLE WINDOW - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) The inspection of the No. 2 window.

B. The Control Cabin Window inspection is for damage that has an effect on the structural, visual and operational functions of the window.

TASK 56-12-11-200-801

2. No. 2 Openable Window Inspection

(Figure 601, Figure 602, Figure 603, Figure 604, Figure 605, Figure 606, Figure 607, Figure 608, Figure 609)

A. General Flight Deck Windows Vocabulary

(1) Window Components

(a) Acrylic Wafers: Acrylic Wafers are used to hold the temperature sensor wires in position. The sensor pack consists of acrylic wafers that attach the filament wires to stabilizes the wire grid and lets the part to be moved while being made.

(b) Fail-Safe Interlayer: Interlayer that will hold the pressure loads if there is a failure of a structural pane.

(c) Interlayer: A flexible transparent layer that bonds glass panes together. It can be a structural component for pressure fail-safety and bird impact resistance.

(d) Laminate: Assembly of interlayer materials and glass panes bonded together by application of heat and pressure.

(e) Metal Insert: A thin piece of metal around the periphery of the window used to transfer fail-safe pressure or bird impact loads from the interlayer to the window frame.

(f) Pane: One layer of glass in a window.

(g) Pressure Seal: A rubber bulb seal that makes a pressure seal between the window and the fuselage.

(h) Structural Pane: A glass pane that holds the structural loads of the window.

(i) Urethane: A type of interlayer material.

(j) Vinyl (Polyvinyl Butyral - PVB): A type of interlayer material.

(k) Z Seal: A Z-shaped piece of metal that is bonded to the window edge. The seal is a barrier used to prevent external moisture penetration into the window laminate.

(2) Window Vision Terms

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

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

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

(d) Non-Critical Vision Area: A 2.0 in. (5.1 cm) band around the periphery of the window measured into the clear view area.

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(e) Tong Marks: Small dimples or indentations that are sometimes on the surface of the non-structural outer glass pane and cause local distortion in the clear view area. These are a by-product of the manufacturing procedure.

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

(3) Electrical Components

(a) Bus Bar: Two thin electrical conductors put on opposite edges of the window, and used to transmit electrical current from the power wires to the conductive heating film.

(b) Conductive Heating Film (Coating): A transparent metallic film located on a glass pane used to heat the window for anti-ice and anti-fog function when electrical current is applied.

(c) Power Terminal: The location where the wire bundle that supplies power for the window heat is connected to the window.

(d) Power Wire: A braided wire in the window laminate that connects the power terminals for the window heat to the bus bars.

(e) Sensor Terminal: The location where the wire bundle that supplies temperature sensor input is connected to the window.

(f) Sensor Wires: Thin solid or braided wire that connects the sensor terminals for the window heat to the temperature sensors embedded in the window.

(g) Solder Joint: Solder or a bonding application used to attach the power wire to the bus bar in the window laminate.

(h) Temperature Sensor: A sensor embedded in the window that has resistance that changes with temperature. The WHCU uses the embedded sensor to control power to the window and regulate temperature.

(i) Window Heat Control Unit (WHCU): A device that constantly monitors window temperature through the temperature sensors and controls the power to the window

B. Flight Deck Windows Damage Description

(1) Arcing: An electrical arc is a discharge or short circuit across a discontinuity in a wire, bus bar, conductive heating film, or other internal window components. Arcs usually occur near the window bus bars, and are typically the result of moisture ingress. The heat from an arc can cause dark brown or black burn marks on the bus bar and in the interlayer or the fracture of a glass pane. It is also possible to see small bubbles in the interlayer at the location of an arc.

Arcs in the heating film away from the bus bar can occur as a jagged line and is also known as a line arc (“lightning bolt pattern”) (Figure 605).

(2) Crack: A crack is a break or discontinuity of the material. A list of descriptions of cracks by material follows.

(a) Acrylic Panes: Cracks in an acrylic pane do not always grow to an edge in a window and can occur as many small fissures in a pane.

1) Cast acrylic panes: Cracks will look equivalent to smooth fissures perpendicular to the surface.

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

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

4) Temperature Sensor: Cracks in the acrylic wafers that are used to carry the sensor wires. The cracks usually appear horizontal in the window, between the sensor wires. The cracks can be stacked on top of each other.

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

1) Non-Structural Pane - Cracks will look equivalent to smooth fissures perpendicular to the surface and through the entire thickness of the pane. There are usually many cracks across the glass surface (spider web pattern) of the pane. Cracks will not significantly decrease visual quality (Figure 603).

2) Structural Pane – The pane will break into many small irregularly shaped pieces, typically no larger than 0.25 in. (6.35 mm) maximum dimension. Visual quality is significantly decreased (Figure 603).

(c) Interlayers:

1) Urethane – Cracks can occur in urethane interlayer around the outboard edge of the window and at bolt hole locations. The cracks are usually in a network that does not run parallel to the edges of the window and are usually in random directions (also referred to as crackling). Urethane interlayer cracks frequently occur with white or yellow discoloration. See also moisture ingression (Figure 606).

2) Vinyl – Cracks that can occur in the vinyl interlayer around the perimeter of the window and usually follow the edges of internal features, for example, the metal inserts, or bolt holes. The cracks are usually thick or broken lines perpendicular to the window panes. It is possible in some extreme conditions to see the vinyl interlayer as stretched or separated from the metal insert (Figure 607).

(3) Scratch: The linear removal or displacement of material from the surface of a pane.

(4) Chips: The removal of material from the surface of a glass pane, usually from the impact with a hard object. The descriptions that follow are a list of different types of chips.

(a) External chips:

1) Shell type chips are in the surface or edge of the pane. These chips have a circular or curved shape with many fine lines or ridges that follow the outline of the edge of the chip that give it almost the same shape of a shell. The width of the chip is more than its depth.

2) “V” shaped chips have the shape of a sharp narrow "V". Depth of the chip is equal to or larger then the width.

(5) Delamination: delamination is the separation of a pane or panes from the interlayer internal to the window. Delamination looks like an air bubble that starts from the edge, is flat, smooth, and has a circular edge. Delaminations can have an edge with smooth finger-like projections. The delamination will cause a reflection of light when you look at it from an angle to the surface of the window. A delamination can distort vision through the delaminated area.

(6) Moisture Ingression: a cloudy white or yellow haze internal to the window usually around the periphery. It can follow wires internal to the window, along the bus bar and also in areas of delamination. Long term exposure to moisture can lead to electrical arcing of the heating system internal to the window.

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(7) Bubbles: small isolated or irregular shaped voids in the interlayer internal to the window not at the window edge. Bubbles can be the result of a damaged window heat control system. Multiple bubbles together in a small group, or black or dark brown bubbles are an indication of a damaged window heat control system.

(8) Metal Insert Corrosion: as an etching of the metal surface, and the result of a direct chemical attack (moisture ingression). Corrosion of the aluminum surface usually looks equivalent to whitish powdery contamination with dulling of the surface. While the corrosion attack continues, the surface will look mottled or etched possibly with pits.

NOTE: Corrosion found on metal insert of the No. 2 window is acceptable and the window can remain in service provided there is no other damage that is outside the limits of the AMM. Boeing has validated this type of corrosion by bird impact and fail-safe pressure testing.

C. Manufacturing Conditions

(1) Cracks in the acrylic wafers: the cracks in the acrylic wafers are usually horizontal in the window shown between the sensor wires. If the sensor resistance indication is in the limits, it is not necessary to replace the window (Figure 609).

(a) Do this task: Measure the Resistance of the Window Temperature Sensors, TASK 30-41-21-760-801 or Measure the Resistance of the Window Temperature Sensors, TASK 30-41-21-760-803.

D. References

Reference	Title
12-16-02 P/B 301	FLIGHT COMPARTMENT WINDOWS - SERVICING
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
30-41-21-760-801	Measure the Resistance of the Window Temperature Sensors (P/B 501)
30-41-21-760-803	Measure the Resistance of the Window Temperature Sensors (P/B 501)
56-12-11-000-801	No. 2 Openable Window Removal (P/B 401)
56-12-11-300-804	No. 2 Openable Window Fillet Seal Repair (P/B 801)
56-12-11-300-805	Replace the No.2 Window Scuff Plate Assembly (P/B 201)
56-12-11-400-801	No. 2 Openable Window Installation (P/B 401)

E. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-2039	Micrometer, Optical (Accuracy +/-.001 Inch) Part #: MODEL 966A1 Supplier: 0ZYB5 Opt Part #: 8400K Supplier: 65956
COM-4786	Processor/Printer - Optical Micrometer (optional use with Part # 8400K) Part #: DP-1VR Supplier: 65956

F. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Prepare for the Inspection

SUBTASK 56-12-11-860-011

> **WARNING** DO NOT TOUCH THE WINDOW UNLESS THE CIRCUIT BREAKERS ARE OPEN, AND THE WINDOW HEAT SWITCHES ARE OFF. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

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

SUBTASK 56-12-11-840-001

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-12-11-110-002

(3) If it is necessary, clean the window (PAGEBLOCK 12-16-02/301).

NOTE: Clean windows are necessary to do the inspection.

H. No. 2 Window - Inspection/Check

SUBTASK 56-12-11-210-019

(1) Examine the window for chips in the glass panes (Figure 604).

NOTE: Chips in structural glass panes can decrease structural capability. Chips can also decrease the visual quality of a window.

(a) Replace the window for one or more of the subsequent list of damages (TASK 56-12-11-000-801 and TASK 56-12-11-400-801):

1) A chip or group of chips on the surface of a structural pane that are more than 0.015 in. (0.381 mm) in depth are a cause for the removal of the window.

2) A chip or group of chips that decreases the visual quality on a pane of the window is a cause for the removal of the window.

3) The outer glass pane is non-structural. Unless chips decrease the visual quality, they are permitted.

SUBTASK 56-12-11-210-031

(2) Examine the window for moisture ingression.

(a) Examine the window for a cloudy white or yellow haze internal area in a delamination or around the periphery of the window.

NOTE: This is a sign of moisture ingress which can cause arcing in the window heat film.

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1) If the moisture is found with any signs of arcing, replace the window.
2) If the delamination or the moisture limits vision, replace the window.
3) If moisture is found near bus bars, it is recommended to replace the window.

NOTE: Moisture ingression in the bus bar is an indication that electrical failure may occur.

NOTE: Delamination in the vicinity of the bus bars or electrical attachment can provide a direct path for moisture into the window heat system. Any delamination near a bus bar or electrical attachment should be checked carefully for a cloudy or yellow haze appearance or uneven discoloration of the adjacent bus bar.

SUBTASK 56-12-11-210-020

(3) Examine the window for delamination.

(a) If the delamination decreases the visual quality, replace the window (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

NOTE: Delamination can result in moisture ingress which can cause arcing and ply cracks. The recommended limit for windows with a delamination is 2.0 in. (50.8 mm) from the edge of the external moisture seal.

SUBTASK 56-12-11-210-021

(4) Examine the window for arcing (Figure 605).

(a) Examine the window for signs of arcing near the bus bar.

(b) Examine the window for line arcs.

(c) If there are indications of arcing, replace the window (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

NOTE: Limited dispatch per Minimum Equipment List (MEL) 30-11-03 is available with the associated window heat switch OFF. Refer to the MEL for dispatch requirements. Replace the windshield before the MEL expires.

SUBTASK 56-12-11-210-022

(5) Examine the window for bubbles.

(a) Multiple bubbles together in a small group, or black or dark brown bubbles are a typical indication of a damaged window heat control system.

1) If it is necessary, do a check of the heater control system for that window(TASK 30-41-00-710-801).

(b) If the bubbles decrease the visual quality or bubbles are black or dark brown in color, replace the window (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

NOTE: Tong Marks can be found on non-structural outer glass panes are not cause for removal.

SUBTASK 56-12-11-210-023

(6) Examine window for scratches.

(a) The glass outer pane is non-structural.

1) Unless scratches or other damages decrease the visual quality, they are permitted.

(b) The glass inner pane is structural.

1) If the inner glass pane has a scratch with a depth more than 0.015 in. (0.381 mm) or if it decreases the visual quality, replace the window.

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2) Use the optical micrometer, COM-2039, or equivalent to measure the depth of the scratches.

NOTE: The optical micrometer processor/printer, COM-4786, is optional accessory to Part # 8400K, micrometer, COM-2039, to process/print micrometer data.

SUBTASK 56-12-11-210-024

(7) Examine the window for cracks in the vinyl interlayer (Figure 606 and Figure 607).

(a) If any of the following conditions are found, replace the window:

1) The window has a vinyl interlayer crack that runs parallel to the long edges of the metal insert.

NOTE: Cracks in the urethane interlayer do not decrease the window structural capacity and are not a cause for a window removal unless they decrease the visual quality.

LOM ALL; AIRPLANES WITH 5-89355-77/-78 NO. 2 FLIGHT DECK WINDOWS OR EARLIER

NOTE: Cracking usually appears as thick or broken lines perpendicular to the surface of the window panes. In severe cases the vinyl interlayer can appear to stretch or separate at a crack along the metal insert.

NOTE: Cylindrical cracking in the vinyl interlayer at the holes in the metal insert I acceptable and not cause for window replacement.

LOM ALL; AIRPLANES WITH 5-89355-87/-88 NO. 2 FLIGHT DECK WINDOWS OR NEWER

2) If you find vinyl cracks that extend more than 0.1 in. (2.54 mm) beyond any edge of the red or white epoxy, then replace the window (Figure 607).

NOTE: Vinyl cracks that you find on the red (power terminal locations) or white (temperature sensor location) insulating epoxy in the corners common to the power and temperature sensor terminals are permitted. Vinyl cracks that you find that are up to a maximum of 0.1 in. (2.54 mm) of the red or white insulating epoxy in the corners common to the power and temperature sensor terminals are permitted.

3) Vinyl interlayer cracks in the forward upper corner are permitted as defined below.

a) The maximum permitted length of the crack is 0.5 in. (12.7 mm) into the ‘‘daylight opening’’ or, 0.45 in. (11.43 mm) from the nearest edge of the metal insert.

LOM ALL; AIRPLANES WITH 5-89355-77/-78 NO. 2 FLIGHT DECK WINDOWS OR EARLIER

4) Vinyl interlayer cracks in the forward upper corner are permitted as defined below.

a) The maximum permitted length of the crack is 0.5 in. (12.7 mm) into the ‘‘daylight opening’’ or, 0.45 in. (11.43 mm) from the nearest edge of the metal insert.

5) Do an internal and external detailed inspection for non clear damage which impairs inspection of the above types of damage.

NOTE: White or yellow discoloration and cracking of the urethane interlayer is considered to be acceptable, as long as the pilot's vision is not obscured and should not be confused with cracking in the vinyl interlayer.

LOM ALL

SUBTASK 56-12-11-210-025

(8) Examine the window for cracks (Figure 603).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Replace the window if cracks are found in any glass pane (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

NOTE: For cracks in the outer panes, a limited dispatch can occur, in accordance with the limits of the Master Minimum Equipment List (MMEL) Electrically Heated Windshields (Ref MMEL Section 30-11), if the flight crew agrees that the vision through the window is satisfactory.

NOTE: A dispatch with cracks in the inner structural glass panes is not allowed. The window must be replaced before flight can occur.

SUBTASK 56-12-11-210-026

(9) Examine the mechanism for worn areas (Figure 601).

Table 601/56-12-11-993-807 No. 2 Window Mechanism Wear Limits

		DESIGN LIMITS		WEAR LIMITS		REWORK LIMITS					
INDEX NO.	DIM	DIA-METER		MAX WEAR DIM	MAX DIAM CLEAR-ANCE	BUSHING OR PLATING PERMITTED			OVERSIZE HOLE OR PLATING BUILD-UP	BUSHING INTER-FERENCE	
		MIN	MAX			YES	NO	MTL	MAX	MIN	MAX
[1]In	I/D	0.500	0.501	0.531	0.05			REPLACE			
[1]Mm	I/D	12.7	12.725	13.49	1.27			REPLACE			

SUBTASK 56-12-11-210-028

(10) Examine the window frame drain (TASK 56-12-11-200-802).

LOM 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406, 407, 411, 412 POST SB 737-56-1024

SUBTASK 56-12-11-210-032

(11) Examine the scuff plate for wear damage.

NOTE: Minor delamination between the scuff plate shim and bumper (wedge piece of the assembly) does not require immediate replacement. It can be replaced at the next maintenance opportunity (Figure 608).

(a) The three rivets attaching the bumper and shim are not loose.

(b) Wear damage on the bumper provides clearance between the leading edge of the window frame and the bolt heads attaching the No.1 window to the post.

SUBTASK 56-12-11-900-001

(12) If any of the following conditions are found, replace the scuff plate assembly (TASK 56-12-11-300-805):

- Complete delamination between the scuff plate shim and bumper (wedge piece of the assembly)
- Loose or missing rivets
- Loose bumper.

LOM ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-12-11-210-033

(13) Examine the pressure bulb seal for wear damage.

NOTE: A damaged or dislocated pressure bulb seal will cause unwanted noise in the flight deck.

(a) If any of the following conditions are found, replace the window (TASK 56-12-11-000-801 and TASK 56-12-11-400-801):

- Torn pressure bulb seal
- Collapsed pressure bulb seal
- Pressure bulb seal is dislodged from the window frame
- Pressure bulb seal is disbonded at the corners of the window frame.

SUBTASK 56-12-11-210-035

(14) Examine the fillet seal for the eroded, cracked, detached, or missed condition.

(a) If it is necessary, repair the fillet seal (TASK 56-12-11-300-804).

SUBTASK 56-12-11-200-007

(15) Examine the window for haze.

(a) If the haze decreases the visual quality of the window, you may do one of the two steps (Method 1 or Method 2).

1) Method 1:

a) Replace the window (No. 2 Openable Window Removal, TASK 56-12-11-000-801 and No. 2 Openable Window Installation, TASK 56-12-11-400-801).

2) Method 2:

a) You can turn the window heat on to remove the haze from the window.

NOTE: The windows are most likely to exhibit haze during extended cold weather conditions, or extended periods of aircraft being out of operation. Running window heat for an extended period of time (>8 hours) will likely clear up the majority of visible haze.

<1> If the haze does not clear and decreases the visual quality, replace the window.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 56-12-11-860-006

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-464			
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
LOM ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

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F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Mechanism Wear Limits
Figure 601/56-12-11-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1333639 S0000235880_V2

Control Cabin Window Cross Sections
Figure 602/56-12-11-990-812 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Control Cabin Window Cross Sections
Figure 602/56-12-11-990-812 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1931754 S0000365268_V2

Control Cabin Window Cross Sections
Figure 602/56-12-11-990-812 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1342111 S0000238241_V2

Glass Pane Cracks
Figure 603/56-12-11-990-813 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Glass Pane Cracks
Figure 603/56-12-11-990-813 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G08514 S0006581367_V3

Glass Pane Chips
Figure 604/56-12-11-990-814

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW HEAT ARCING

1348379 S0000240983_V3

Window Heat Arcing
Figure 605/56-12-11-990-816

ECCN 9E991 BOEING PROPRIETARY - See title page for details

URETHANE INTERLAYER CRACKS

1348373 S0000240984_V2

Urethane Interlayer Cracks
Figure 606/56-12-11-990-817

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 WINDOW
(RIGHT SIDE)
(VIEW IN THE OUTBOARD DIRECTION)

LOCATION OF CRACK
(AIRPLANE WINDOW FRAME IS NOT SHOWN)

A

484013 S0000144514_V5

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-810 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(AIRPLANE WINDOW FRAME NOT SHOWN)

A-A

U64701 S0000211089_V3

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-810 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-810 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1931756 S0000365270_V2

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-810 (Sheet 4 of 5)

EFFECTIVITY
LOM ALL; AIRPLANES WITH 5-89355-87/-88 NO. 2 FLIGHT DECK WINDOWS OR NEWER

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW NO. 2 CORNER-TYPE VINYL CRACK (EXAMPLE)

2214475 S0000493964_V3

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-810 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

No. 2 Window Scuff Plate Assembly Replacement
Figure 608/56-12-11-990-829

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 WINDOW

3046673 S0000813174_V1

Cracking of the Acrylic Wafers
Figure 609/56-12-11-990-839

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-200-802

3. **No. 2 Openable Window Sill and Frame Drain Inspection**
(Figure 610)

NOTE: This procedure is a scheduled maintenance task.

A. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. **Perform a general visual check of the pilot's and co-pilot's no. 2 openable window sill and frame drain for obvious damage, clogging, condition and security.**

SUBTASK 56-12-11-200-003

(1) Examine no. 2 openable window sill drain.

(a) Examine no. 2 openable window sill drain for obvious damage, condition and security.

(b) Make sure the drain is not blocked and that water has not accumulated in the frame.

SUBTASK 56-12-11-200-005

(2) Examine no. 2 openable window frame drain

(a) Examine no. 2 openable window frame drain for obvious damage, condition and security.

(b) Make sure the drain is not blocked and that water has not accumulated in the frame.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

NOTE:

LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE.

482079 S0000143859_V2

No. 2 Openable Window Sill and Frame Drain Inspection
Figure 610/56-12-11-990-809 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

NOTE:

LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE.

D65166 S0000161612_V2

No. 2 Openable Window Sill and Frame Drain Inspection
Figure 610/56-12-11-990-809 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

WINDOW NO. 2
(EXAMPLE)

A

2535236 S0000599931_V2

No. 2 Openable Window Sill and Frame Drain Inspection
Figure 610/56-12-11-990-809 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 OPENABLE WINDOW - REPAIRS

1. General

A. This procedure has this tasks:

(1) The repair of the No. 2 openable window fillet seal.

(2) The repair of the No. 2 openable window leveling compound.

B. There is fillet seal around the No. 2 windows. The fillet seal can erode and have cracks.

TASK 56-12-11-300-804

2. No. 2 Openable Window Fillet Seal Repair

(Figure 801 or Figure 802, Figure 803)

A. References

Reference	Title
51-31-00-160-801	Prepare For Sealing (P/B 201)
51-31-00-390-804	Fillet Seal Application (P/B 201)

B. Tools/Equipment

Reference	Description
STD-449	Gun - Sealant
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
A01056	Sealant - Aerodynamic - PR 1829	
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B
A50493	Sealant - Windshield And Canopy - PR-1425CF	
A50517	Sealant - AC-251 Black Class B	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00291	Tape - Aluminum Foil, 3M 425	AMS-T-23397 / L-T-80

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. General

SUBTASK 56-12-11-000-001

(1) This procedure is for the right and left No. 2 openable windows.

F. Prepare for the Repair

SUBTASK 56-12-11-040-001

WARNING DO NOT TOUCH THE WINDOW UNLESS THE CIRCUIT BREAKERS ARE OPEN, AND THE WINDOW HEAT SWITCHES ARE OFF. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

(1) Make sure that the following switches on the P5 overhead panel are in the OFF position and attach DO NOT OPERATE tags, STD-858:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-12-11-040-002

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

G. Repair the Fillet Seal

SUBTASK 56-12-11-000-002

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

CAUTION YOU MUST USE PLASTIC TOOLS WHEN YOU REMOVE THE SEALANT. IF YOU DO NOT USE PLASTIC TOOLS, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(1) Remove the sealant from the fillet seal if the following conditions exist (TASK 51-31-00-160-801):

(a) Cracks

(b) Erosion

(c) Sealant is not bonded to the window.

SUBTASK 56-12-11-100-001

(2) Clean the window with cotton wiper, G00034, and solvent, B00083.

SUBTASK 56-12-11-400-002

(3) Apply the Scotch Flatback Masking Tape 250, G00270, on the glass window where you will apply the new fillet seal.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-12-11-400-003

(4) Use one of the sealants that follow (in sequence of preference):

(a) sealant, A00247, (PRO-SEAL 870 Class B) (preferred)

(b) PR-1425 sealant, A00103

(c) PR-1425CF sealant, A50493

(d) AC-251 sealant, A50517

(e) PR 1829 sealant, A01056

(f) PR-1826 sealant, A50052

(g) PR-1828 sealant, A00708.

SUBTASK 56-12-11-400-004

(5) Mix the sealant to the manufacturer's instructions.

SUBTASK 56-12-11-400-005

(6) Use a sealant gun, STD-449, to apply the sealant you have chosen to the glass window (TASK 51-31-00-390-804).

NOTE: When you apply the sealant with the sealant gun, STD-449, you should push the sealant gun, STD-449. This will keep you from trapping air underneath the sealant.

(a) Apply more sealant than is necessary.

SUBTASK 56-12-11-400-006

(7) Use a hardwood or plastic fillet smoothing spatula, STD-810, to smooth the sealant to the shape that is shown in Figure 801 or Figure 802.

SUBTASK 56-12-11-000-003

(8) Remove the Scotch Flatback Masking Tape 250, G00270, before the sealant starts to get hard.

SUBTASK 56-12-11-400-007

(9) Let the sealant cure (Figure 803).

SUBTASK 56-12-11-400-008

(10) If you must send the airplane before the sealant fully cures, do the step that follows:

(a) Apply 3M 425 Aluminum Foil Tape, G00291, on the top of the sealant.

SUBTASK 56-12-11-000-004

(11) Remove the 3M 425 Aluminum Foil Tape, G00291, after the sealant has fully cured.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 56-12-11-400-009

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 56-12-11-020-013

(2) Remove the DO NOT OPERATE tags from the following switches on the P5 overhead panel:

(a) WINDOW HEAT L SIDE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) WINDOW HEAT R SIDE.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Fillet Seal Application
Figure 801/56-12-11-990-818 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Fillet Seal Application
Figure 801/56-12-11-990-818 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Fillet Seal Application
Figure 802/56-12-11-990-837

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEALANT	TEMPERATURE 2 3				
	57˚F (13.9˚C)	77˚F (25˚C)	97˚F (36.1˚C)	117˚F (47.2˚C)	137˚F (58.3˚C)
PR-1425CF B-2	24 Hours	12 Hours	6 Hours	3 Hours	1.5 Hours
BMS 5-95 B-2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425 B-2	96 Hours	48 Hours	24 Hours	12 Hours	6 Hours
BMS 5-95 B-1/2	20 Hours	10 Hours	5 Hours	2.5 Hours	1.25 Hours
PR-1826 B-1/2 or PR-1828 B-1/2	6 Hours	3 Hours	1.5 Hours	45 Minutes	23 Minutes
PR-1829 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	30 Minutes
PR-1425 B-1/2	48 Hours	24 Hours	12 Hours	6 Hours	3 Hours
PR-1425CF B-1/2	12 Hours	6 Hours	3 Hours	1.5 Hours	45 Minutes
AC-251 B-1/2	8 Hours	4 Hours	2 Hours	1 Hour	0.5 Hours
AC-251 B-1	14 Hours	7 Hours	3.5 Hours	1.75 Hours	52 Minutes
AC-251 B-2	18 Hours	9 Hours	4.5 Hours	2.25 Hours	1.125 Hours

AVERAGE CURE TIME FOR SEALANT 1 4 5

1 ROUND AMBIENT TEMPERATURE DOWN TO THE LOWER TEMPERATURE COLUMN (IE 116˚F WOULD USE 97˚F COLUMN)

2 DO NOT CURE SEALANT ABOVE 140˚F (60˚C)

3 DO NOT CURE SEALANT BELOW 50˚F (10˚C)

4 REX A DUROMETER READING OF 30

5 REFER TO THE DATA SHEET FOR FASTER CURE TIMES OF THE SEALANT OR SPEAK TO THE MANUFACTURER IF NOT AVAILABLE

2843657 S0000664119_V4

Cure Times vs Temperatures for Sealants
Figure 803/56-12-11-990-819

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-300-807

3. No. 2 Openable Window Leveling Compound Repair
(Figure 804)

A. References

Reference	Title
51-21-72-370-804	BMS10-11 Primer - Application (P/B 701)
51-31-00-160-801	Prepare For Sealing (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A01024	Compound - Fairing - 3M EC-3587B	BAC5530
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. General

SUBTASK 56-12-11-000-005

(1) This procedure is for the right and left No. 2 openable windows.

E. No. 2 Openable Window Leveling Compound Repair

SUBTASK 56-12-11-160-001

(1) Remove the damaged leveling compound (Prepare For Sealing, TASK 51-31-00-160-801).

SUBTASK 56-12-11-390-001

(2) Apply the primer, C00259, to areas where the primer is damaged (BMS10-11 Primer - Application, TASK 51-21-72-370-804).

(a) Do not apply the leveling compound to the bare aluminum surface.

SUBTASK 56-12-11-860-014

(3) Make sure that the airplane is in a level attitude or a taxi attitude.

SUBTASK 56-12-11-390-002

(4) Apply the 3M EC-3587B compound, A01024, as follows:

(a) Obey the manufacturer's instructions to mix the base and the curing agents.

> **CAUTION**
> MAKE SURE THAT THE DRAIN HOLES AND PATHS ARE CLEAR. IF THE DRAIN HOLES AND PATHS ARE NOT CLEAR, CORROSION CAN OCCUR.

(b) Pour the leveling compound until it is level with the top of the drain hole.

(c) Let the leveling compound to cure (Table 801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 801/56-12-11-993-808 APPLICATION TIMES AND CURE RATES OF LEVELING COMPOUNDS

MATERIAL	TEMPERATURE (DEGREES F)	APPLICATION TIME (MINUTES)	RELEASE FROM MOLD (HOURS)	SANDABLE (HOURS	FULL CURE (HOURS)
EC-3587 B-1/4	75 ± 5	15	2	4	48
	120 ± 5	NA*[1]	1	2	20
EC-3587 B-1	75 ± 5	60	8	16	96
	120 ± 5	NA*[1]	2	4	30

*[1] NA = not applicable

SUBTASK 56-12-11-210-034

CAUTION

MAKE SURE THAT THE DRAIN HOLES AND PATHS ARE CLEAR. IF THE DRAIN HOLES AND PATHS ARE NOT CLEAR, CORROSION CAN OCCUR.

(5) After the leveling compound is cured, make sure that the drain holes are open and there is no water in the drain.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT COMPARTMENT

No. 2 WINDOW
(EXAMPLE)

A

1 DO NOT ALLOW LEVELING COMPOUND TO BLOCK OR ENTER DRAIN HOLE.

2926170 S0000706379_V1

Leveling Compound Application
Figure 804/56-12-11-990-827

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PASSENGER CABIN WINDOWS - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

(1) The removal of a passenger cabin window

(2) The installation of a passenger cabin window

B. If you need to remove or install a window plug, do one of these tasks:

(1) Passenger Cabin Window Plug Removal, TASK 56-21-11-000-801

(2) Passenger Cabin Window Plug Installation, TASK 56-21-11-400-801

TASK 56-21-00-000-801

2. Removal of a Passenger Cabin Window

(Figure 401 or Figure 402)

A. References

Reference	Title
25-21-12-000-804	Snap In Window Shade and Reveal Assembly - Removal (P/B 401)
25-21-12-020-801	Window Shade and Reveal Assembly - Removal (P/B 401)

B. Consumable Materials

Reference	Description	Specification
G00834	Cloth - Lint-free Cotton	

C. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

D. Passenger Cabin Window Removal

SUBTASK 56-21-00-010-001

(1) To remove the window shade and reveal, do this task: Window Shade and Reveal Assembly - Removal, TASK 25-21-12-020-801 or Snap In Window Shade and Reveal Assembly - Removal, TASK 25-21-12-000-804

SUBTASK 56-21-00-940-001

(2) Cover the window shade and reveal assembly with a lint-free cloth, G00834, to prevent scratches.

SUBTASK 56-21-00-020-001

(3) Remove the window assembly from the window frame [1].

(a) Remove the clip adjustment screws [5] and washers [8].

(b) If installed, remove the rigid window retaining clips [4].

(c) If installed, remove the spring clips [7].

LOM 402, 404, 406 PRE SL 737-56-012; WINDOWS WITHOUT AIRFLOW DAMPERS

(d) Remove the window assembly from the window frame [1].

NOTE: The window assembly has an outer pane, seal, and middle pane.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012; WINDOWS WITH AIRFLOW DAMPERS

(e) Remove the window assembly from the window frame [1].

NOTE: The window assembly has an outer pane, seal, stiffener ring, airflow damper, middle pane, and clamping ring.

LOM ALL

SUBTASK 56-21-00-700-001

(4) Look for damage on the window seal [6].

SUBTASK 56-21-00-960-001

(5) Replace the window seal [6] if it has damage.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1 USE THIS DIAGRAM AS AN EXAMPLE ONLY. ANY SIMILAR PATTERN TO TIGHTEN THE SCREWS IS SATISFACTORY.

W03348 S0006581463_V2

Passenger Cabin Windows Installation
Figure 401/56-21-00-990-807 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW CLIP
(TOP/BOTTOM OF WINDOW)
(EXAMPLE, 4 LOCATIONS)

A-A 2

WINDOW CLIP
(LEFT AND RIGHT SIDES OF WINDOW)
(EXAMPLE, 6 LOCATIONS)

B-B

2 WINDOW CLIPS AT TOP (2 LOCATIONS) AND BOTTOM OF WINDOW (2 LOCATIONS) ARE SLIGHTLY LONGER THAN CLIPS AT SIDES OF WINDOW AND USE A LONGER ADJUSTING SCREW.

3 THE END OF THE SPRING CLIP CAN PUSH AGAINST THE SEAL OR AGAINST THE EDGE OF THE MIDDLE PANE. THE RECOMMENDED POSITION IS AGAINST THE SEAL.

4 TIGHTEN THE SCREWS UNTIL THE FASTENER STACKUP BOTTOMS OUT IN THE NUTPLATE.

W08423 S0006581467_V5

Passenger Cabin Windows Installation
Figure 401/56-21-00-990-807 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEQUENCE DIAGRAM TO TIGHTEN THE SCREWS

A 1

1 USE THIS DIAGRAM AS AN EXAMPLE ONLY. ANY SIMILAR PATTERN TO TIGHTEN THE SCREWS IS SATISFACTORY.

J72469 S0000176951_V5

Passenger Cabin Window Installation
Figure 402/56-21-00-990-808 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C

WINDOW SPRING RETAINING CLIP
(AS INSTALLED)
(EXAMPLE)

B

WINDOW SPRING RETAINING CLIP

C

J72299 S0000176967_V3

Passenger Cabin Window Installation
Figure 402/56-21-00-990-808 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEFT AND RIGHT SIDES OF WINDOW (EXAMPLE, 6 LOCATIONS)

A-A

B-B

2 TIGHTEN SCREWS UNTIL THE FASTENER HEAD AND WASHER ARE FLUSH WITH DEFLECTED FLANGE OF WINDOW CLIP [7].

J72295 S0000176968_V4

Passenger Cabin Window Installation
Figure 402/56-21-00-990-808 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-21-00-400-801

3. Passenger Cabin Window Installation

(Figure 401 or Figure 402)

A. References

Reference	Title
25-21-12-400-801	Window Shade and Reveal Assembly - Installation (P/B 401)
25-21-12-400-805	Snap In Window Shade and Reveal Assembly - Installation (P/B 401)
25-21-46-000-801	Sidewall Panel - Removal (P/B 401)
25-21-46-400-801	Sidewall Panel - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00834	Cloth - Lint-free Cotton	
G01989	Soap - Castile (Vegetable Oil Based)	
G50397	Tape - Acrylic Foam, White	

C. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

D. Passenger Cabin Window Installation

SUBTASK 56-21-00-540-001

(1) If applicable, remove the temporary protective coating from the window assembly.

LOM 402, 404, 406 PRE SL 737-56-012; WINDOWS WITHOUT AIRFLOW DAMPERS

SUBTASK 56-21-00-420-001

(2) Put the window assembly together.

NOTE: Windows without airflow dampers have the vent hole at the bottom of the middle pane.

(a) Clean the surfaces of the window seal [6] and window frame [1] with cotton wiper, G00034, with solvent, B00083.

(b) Make sure that the part number on the outer window pane [2] is at the top of the window assembly.

(c) Make sure that the breather hole on the middle window pane [3] is at the bottom of the window assembly.

(d) Assemble the outer window pane [2], window seal [6] and middle window pane [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012; WINDOWS WITH AIRFLOW DAMPERS

SUBTASK 56-21-00-420-004

(3) Put the window assembly together.

NOTE: Windows with airflow dampers have the vent hole at the top of the middle pane.

(a) Clean the surfaces of the window seal [6], and window frame [1] with a cotton wiper, G00034, and solvent, B00083.

(b) Make sure that the part number on the outer window pane [2] is at the top of the window assembly and place in seal [6].

(c) Make sure to install the stiffener ring [10] in the window seal [6].

NOTE: The window seal to be on the inner edge of the stiffening ring.

(d) Install the middle window pane [3] in the seal [6] with the breather hole at the top of the assembly.

SUBTASK 56-21-00-420-005

(4) Install the airflow damper [9] on top of the vent hole on the middle pane:

(a) Clean the surfaces of the airflow damper [9] and middle window pane [3] with cotton wiper, G00034, and solvent, B00083.

(b) Cut tape to align with the mating surface of the airflow damper.

NOTE: Adhesive must not extend more than 0.01 in. (0.25 mm) from the edge of the airflow damper.

(c) Apply adhesive tape, G50397, to the middle window pane [3].

NOTE: The vent hole must not be blocked with adhesive. There must not be space between the adhesive and the middle pane. Do not put the edge of adhesive nearer than 0.42 in. (10.7 mm) from the edge of the middle pane.

(d) Remove the backing of the adhesive on the middle window pane [3].

(e) Apply the airflow damper [9] directly to the adhesive above the breather hole (Figure 402 (Sheet 1)).

(f) Put the clamping ring [11] on the window assembly on the edge of the seal that covers the middle window pane [3].

LOM ALL

SUBTASK 56-21-00-160-001

(5) To help make sure that the installation of the window assembly occurs easily, do the steps that follow:

NOTE: This step is optional.

(a) Apply a mixture of castile soap, G01989, and water to the edge of the window seal [6].

(b) If the soap and water mixture comes in contact with the outer window pane [2] or middle window pane [3], do the step that follows:

1) Use cotton wiper, G00034, to wipe the soap and water mixture from the window immediately.

NOTE: The combination of extended soap contact and extended sun exposure can cause the window to craze.

(c) If it is necessary, loosen or remove the sidewall panel to give access to the adjustment screws (TASK 25-21-46-000-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-21-00-420-011

(6) Install the passenger window as follows:

(a) Put the window assembly in the window frame [1].

(b) Install the window retaining clips as follows:

NOTE: It is recommended that the applicable window assembly be installed with either rigid or spring window retaining clips only. The AIPC will provide the applicable window retaining clips for the window assembly.

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012; WINDOWS WITH AIRFLOW DAMPERS

NOTE: For windows with airflow dampers, the spring window retaining clip will contact the clamping ring and not the seal or the edge of the middle pane.

LOM ALL; WINDOWS WITH SPRING CLIPS

1) To install a spring clips [7], do these steps:

a) Install the clip adjustment screws [5] and washers [8].

CAUTION	DO NOT TIGHTEN THE CLIP ADJUSTMENT SCREWS TOO QUICKLY. YOU WILL BEND THE SPRING CLIP TOO MUCH. OR, THE SPRING CLIP WILL STAY AGAINST THE NUTPLATE. THIS CAN CAUSE DAMAGE TO THE SPRING CLIP OR THE WINDOW.

b) Slowly tighten the window clip adjustment screws [5].

NOTE: Only tighten the window clip adjustment screws sufficiently to keep the window seal in its correct location.

NOTE: For windows with airflow dampers, the spring window retaining clips will contact the clamping ring and not the seal or the edge of the middle pane.

<1> Use the torque sequence shown in Figure 401 or Figure 402.

LOM 402, 404, 406 PRE SL 737-56-012; WINDOWS WITHOUT AIRFLOW DAMPERS

c) For the four spring clips [7] on the top and bottom of the window, a clearance of 0.32 ±0.05 in. (8.13 ±1.27 mm) is permitted between the spring clip [7] and the window frame flange.

NOTE: A distance between the spring clip and head of the clip adjustment screw or washer is permitted.

<1> Do not use more than 20 in-lb (2 N·m) when you install the screw.

d) For the six spring clips [7] on either side of the window, the spring clip [7] may contact the nutplate but should not be fully tightened down to the nutplate.

NOTE: A distance between the spring clip and head of the clip adjustment screw or washer is permitted.

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012; WINDOWS WITH AIRFLOW DAMPERS

e) For all ten spring clips [7] of the window, the spring clip [7] may contact the nut plate but should not be fully tightened down to the nutplate.

<1> A clearance of 0.02 in. (0.51 mm) is permitted between the head of the clip adjustment screw [5], washer [8], and flange of spring clip [7].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

<2> Tighten the screws until the fastener head and washer are flush with the deflected flange of spring clip [7].

<a> Do not use more than 20 in-lb (2 N·m) when you install the screw.

LOM ALL; WINDOWS WITH SPRING CLIPS

f) If the seal [6] gets wrinkles in it, apply light pressure to the location of the wrinkles.

g) If the seal [6] continues to have wrinkles in it, do these steps:

<1> Remove the clip adjustment screws [5], washers [8], and spring clips [7].

<2> Remove the window assembly from the window frame [1].

<3> Adjust the spring clips [7] and seal [6] where necessary.

<4> Tighten the window clip adjustment screws [5] to 13.5 ±1.5 in-lb (1.5 ±0.2 N·m).

<a> Use the torque sequence in Figure 401 or Figure 402.

<5> If the spring clips [7] are loose, increase the torque in increments of 5 in-lb (0.56 N·m) to no more than 20 in-lb (2 N·m).

NOTE: Bowing of the clip on installation is acceptable.

<6> If the seal [6] continues to have wrinkles in it, repeat these steps.

LOM ALL

SUBTASK 56-21-00-110-001

(7) Clean the inside surface of the middle window pane [3].

SUBTASK 56-21-00-420-003

(8) Do this task: Window Shade and Reveal Assembly - Installation, TASK 25-21-12-400-801 or Snap In Window Shade and Reveal Assembly - Installation, TASK 25-21-12-400-805.

SUBTASK 56-21-00-110-002

(9) Use a mixture of warm water and castile soap, G01989, and lint-free cloth, G00834, to clean the out side of the outer window pane [2].

SUBTASK 56-21-00-110-003

(10) Use a damp chamois cloth, B00106, to dry the window.

E. Put the Airplane Back to Its Usual Condition.

SUBTASK 56-21-00-420-012

(1) Secure or install sidewall panel if it was loosened or removed, do this task: Sidewall Panel - Installation, TASK 25-21-46-400-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PASSENGER CABIN WINDOWS - INSPECTION/CHECK

1. General

A. This procedure has this task:

(1) An inspection of the passenger cabin window.

TASK 56-21-00-200-801

2. Passenger Cabin Window Inspection

(Figure 601, Figure 602)

A. General

CAUTION	APPLICATION OF PAINT OR OTHER UNAPPROVED OR NON-TRANSPARENT MATERIAL TO THE ACRYLIC CARGO WINDOW PANES IS PROHIBITED. SOLVENT IN PAINT MAY CAUSE STRUCTURAL DAMAGE TO THE ACRYLIC AND THE PAINT WILL PREVENT DAMAGE DETECTION.

(1) The types of damage to acrylic windows are as follows:

(a) Crazing:

1) Crazing is many very fine fissures with no visible width at the surface of a ply.

2) In a bright light shown from an angle to the surface, crazing looks frosted and appears to light up.

3) In dim light and light normal to the surface, crazing is difficult to see.

4) Crazing can develop into cracks.

(b) Cracks:

1) A crack is a fissure that has a visible width and depth.

2) Cracks can start from a scratch or a crazing mark (Figure 601).

3) Cracks can be single or dual (Figure 601).

4) Cracks in stretched acrylic plastic that occur in the direction of the applied force can become in-plane cracks.

(c) Scratches:

1) A scratch is the removal of material from the surface of the window.

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

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

(d) Chips:

1) Chips are pieces or layers of acrylic broken from the surface.

2) Spall (shell-type) chips:

a) Spall chips are circular with many fine ridges.

b) The ridges in the chip follow the outer edge and get smaller and deeper near the center and give it the clamshell appearance.

3) Vee-shaped chips:

a) These chips have a sharp "V" shape bottom that continues to the surface of the ply.

(e) In-plane Cracking:

1) In-plane cracking can be referred to as delamination.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) In-plane cracking is a crack that is parallel to the surface of the ply from an edge or crack.

3) The reflection of light makes in-plane cracking shiny.

(f) If there is damage to a window as specified in this procedure, do one of these steps:

1) Remove and replace the window (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

2) Repair the damage found on the components (TASK 56-21-00-300-801 or TASK 56-21-00-300-802).

(2) Other conditions that may be seen on acrylic windows are as follows:

(a) Fogging:

1) Fogging is visible moisture that has condensed on window surfaces.

NOTE: During aircraft flight, or cold weather ground operations, the moisture can freeze on the window panes and appear as frost or ice crystals.

2) The causes for fogging can be:

a) A leak in a seal.

b) Too much humidity because of changes in the weather and location.

3) The categories for fogging are minor or severe:

a) Minor fogging:

<1> Appears as a very light mist, or fog on a window surface.

<2> Has few or no visible water droplets in the primary area of the window.

NOTE: It is normal for some visible water droplets to be found in the area directly around the window vent hole.

<3> May dry during usual aircraft operation, but become worse and change to severe fogging.

b) Severe fogging:

<1> Appears as a thick mist, or fog on a window surface.

NOTE: Severe fogging will prevent clear vision through large areas of the window, usually 1/3 or more.

<2> Has many easily visible water droplets in the primary viewing area of the window.

<3> Continues to become worse during usual aircraft operations and can cause water to collect at the bottom of the window.

(b) Warping (deformation):

1) Warping is a deformation of a window pane from its initial shape.

NOTE: The ‘initial’ or correct shape of the window panes will align with the shape (bend) of the aircraft structure. Panes on a correct window will have a constant air space between the panes and no warping.

2) The causes of warping of the panes can be as follows:

a) Temperatures of more than 200°F (93°C) for an extended time.

b) When the panes get too much moisture from fogging.

3) Warping can occur at the edge of the window panes where the clips to attach the panes touch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Damaged or worn coating:

1) The protective finish on the outer pane has damage or is worn.

NOTE: The hard coating on the passenger windows is not structural. It is a protective surface finish that is intended to maximize the service life of the window. Once the coating wears away and the bare structural acrylic pane is exposed, the window is much more susceptible to chemical attack and surface damage.

NOTE: Provided no other damage is visible, a window with peeled or worn coating may remain in service. The window may be repaired or replaced as desired by the operator during a future scheduled maintenance check.

B. References

Reference	Title
56-21-00-000-801	Removal of a Passenger Cabin Window (P/B 401)
56-21-00-300-801	Repair the Passenger Windows (Orbital Sander Method) (P/B 801)
56-21-00-300-802	Repair the Passenger Windows (Hand Method) (P/B 801)
56-21-00-400-801	Passenger Cabin Window Installation (P/B 401)
FIM 56-21 TASK 801	Cabin Window Fogged/Moisture Problems - Fault Isolation

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-2039	Micrometer, Optical (Accuracy +/-.001 Inch) Part #: MODEL 966A1 Supplier: 0ZYB5 Opt Part #: 8400K Supplier: 65956
COM-4786	Processor/Printer - Optical Micrometer (optional use with Part # 8400K) Part #: DP-1VR Supplier: 65956

D. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

E. Passenger Cabin Window Inspection

SUBTASK 56-21-00-200-001

(1) Use an optical micrometer, COM-2039, or equivalent to measure the depth of the scratches.

NOTE: The optical micrometer processor/printer, COM-4786, is optional accessory to Part # 8400K, micrometer, COM-2039, to process/print micrometer data.

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

SUBTASK 56-21-00-200-002

(2) Examine the middle pane for damage.

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WARNING IF THERE IS A CRACK IN THE MIDDLE PANE, REPLACE IT IMMEDIATELY. CORRECT PRESSURIZATION OF THE FUSELAGE IS CRITICAL. A CRACK IN THE WINDOW PANE MAY CAUSE INCORRECT PRESSURIZATION OF THE FUSELAGE.

(a) Replace the middle pane if it has any cracks (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

NOTE: Middle pane cracks that start from the vent hole and are 0.062 in. (1.575 mm) or less in length do not need to be replaced.

(b) Replace the middle pane if the thickness is less than 0.157 in. (3.988 mm) (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

(c) Replace the middle pane if it is crazed (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

(d) If there is a scratch with a depth of more than 0.010 in. (0.254 mm), do one of these steps:

1) Replace the middle pane (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

2) Repair the middle pane (TASK 56-21-00-300-801 or TASK 56-21-00-300-802).

NOTE: The middle pane thickness must be more than 0.157 in. (3.988 mm) after the repair.

SUBTASK 56-21-00-200-003

(3) Examine the outer pane for cracks.

(a) Replace the outer pane if the depth of the crack is more than 0.050 in. (1.270 mm) on outboard surface or more than 0.030 in. (0.762 mm) on bevel edge (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

(b) Replace the outer pane if the thickness, after the repair, is less than 0.265 in. (6.731 mm) thick (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

LOM 402, 404, 406 PRE SL 737-56-012

NOTE: The outer pane original thickness is 0.310 in. (7.874 mm).

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012

NOTE: The outer pane original thickness is 0.350 in. (8.890 mm).

LOM ALL

SUBTASK 56-21-00-200-004

(4) Examine the outer pane for crazing.

(a) Replace the outer pane if the depth of the crazing on the outboard surface is more than 0.050 in. (1.270 mm) or more than 0.030 in. (0.762 mm) on the bevel edge (Figure 602).

SUBTASK 56-21-00-200-005

(5) Examine the edges of the outer pane for in-plane cracking.

(a) Replace the outer pane if it has these damages (TASK 56-21-00-000-801 and TASK 56-21-00-400-801):

1) With the window installed, in-plane cracking at the edges is visible.

2) With the window removed, the in-plane cracks are more than 0.55 in. (13.97 mm) from the edge.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) There is less than 0.14 in. (3.56 mm) between damaged areas, 0.10 in. (2.54 mm) from the edge of the window (Figure 602).

SUBTASK 56-21-00-200-006

(6) Examine the outer pane at the areas other than the edges for chips.

(a) Replace the outer pane if it has these damages (TASK 56-21-00-000-801 and TASK 56-21-00-400-801):

1) The depth of a chip is more than 0.05 in. (1.27 mm).

2) The maximum diameter of an area of in-plane cracks is more than 0.40 in. (10.16 mm).

3) The minimum distance between damaged areas is less than two times the maximum diameter of the damaged areas.

SUBTASK 56-21-00-200-007

(7) Examine the outer pane for scratches.

(a) If scratches are found, repair it (TASK 56-21-00-300-801 or TASK 56-21-00-300-802).

(b) Replace the outer pane if the thickness, after the repair, is less than 0.265 in. (6.731 mm) thick (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

LOM 402, 404, 406 PRE SL 737-56-012

NOTE: The outer pane original thickness is 0.310 in. (7.874 mm).

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012

NOTE: The outer pane original thickness is 0.350 in. (8.890 mm).

LOM ALL

SUBTASK 56-21-00-200-009

(8) Examine the windows for deterioration.

(a) If deterioration is found, repair it (TASK 56-21-00-300-801 or TASK 56-21-00-300-802).

SUBTASK 56-21-00-200-011

(9) Examine the window for warping (deformation).

(a) Make sure that the middle pane vent hole is open.

NOTE: A window that has warping that also has damage less than the permitted limits is structurally satisfactory. The window is also structurally satisfactory if the middle and outer panes touch when the airplane is not pressurized. To prevent possible leaks, replace the window panes that have the deformation or damage during usual maintenance.

(b) If warping (deformation) is found, repair it (TASK 56-21-00-300-801 or TASK 56-21-00-300-802).

SUBTASK 56-21-00-200-012

(10) If window is bent, repair it (TASK 56-21-00-300-801 or TASK 56-21-00-300-802).

NOTE: It is possible to repair the window to its initial shape or very near.

(a) Remove the bent window with moisture in it.

(b) To dry the window, put it in a low moisture space at room temperature for an extended period of time.

SUBTASK 56-21-00-200-013

(11) Examine the windows for visual distortion.

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(a) Replace the windows that have bad visual distortion, or window thickness that is not constant (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

NOTE: High temperatures can cause this damage.

SUBTASK 56-21-00-210-002

(12) Examine the windows for fogging between the middle and outer panes.

NOTE: Windows that have fogging and with no damage more than permitted limits are structurally satisfactory and can stay serviceable. Replace the windows with severe fogging when necessary during a scheduled maintenance check.

(a) Do the fault isolation procedure for a cabin window with fogged or moisture problems if you find severe fogging (FIM 56-21 TASK 801).

(b) Replace the window or seal if severe fogging causes collected water and blockage of the vent hole (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

NOTE: Water will collect and cause a blockage of the vent hole at the bottom of the window.

(c) Examine the windows with severe fogging for signs of leaks.

SUBTASK 56-21-00-200-015

(13) Examine the windows for leaks between the middle and the outer panes.

(a) Replace the seals if these signs of leaks show on the window (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

1) Repair or replace the window or seal if the vent hole at the bottom of the window is blocked.

2) Brown stains show near the seal or in the vent hole in the middle pane.

3) A seal that is rolled back or has damage or is not in the correct position.

NOTE: A seal can stay serviceable if no damage more than permitted limits is found. A seal that is not in the correct position or rolled back can also stay serviceable. Repair or replace the seal if necessary during a scheduled maintenance check.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WINDOW SURFACE
(EXAMPLE)

Example of Window Surface Cracks that Develop (Outer Pane Stretched Acrylic)
Figure 601/56-21-00-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Passenger Compartment Window Inspection
Figure 602/56-21-00-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PASSENGER CABIN WINDOWS - REPAIRS

1. General

A. This procedure has two tasks. These tasks repair the external surface of the outer passenger windows.

B. This procedure contains repairs that you can do with the windows installed in the airplane.

C. The damage limits for the windows are given in Passenger Cabin Windows - Inspection/Check (AMM 56–21–00/601).

D. Use clean cotton gloves when you touch the windowpanes to prevent more damage.

E. Do not cause damage to the window surface with finger rings or other sharp objects.

TASK 56-21-00-300-801

2. Repair the Passenger Windows (Orbital Sander Method)

A. References

Reference	Title
56-21-00-000-801	Removal of a Passenger Cabin Window (P/B 401)
56-21-00-200-801	Passenger Cabin Window Inspection (P/B 601)
56-21-00-400-801	Passenger Cabin Window Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1207	Sander/Polisher - Orbital, Air-Driven

C. Consumable Materials

Reference	Description	Specification
G00139	Tape - Protective, Protex 20V	
G01111	Tape - Aluminum Foil, Pressure Sensitive, Heat Reflective, Adhesive	A-A-59258
G50978	Kit - Micro-Surfaces Finishes Light Damage Removal Kit	

D. Location Zones

Zone	Area
200	Upper Half of Fuselage

E. Passenger Windows Repair

SUBTASK 56-21-00-160-004

(1) Do the steps that follow to clean the window:

(a) Examine the condition of the seal (TASK 56-21-00-200-801).

1) Replace the window seal if there are signs of condensation or seal damage (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

(b) Apply Protex 20V tape, G00139, or tape, G01111, to the window frame.

(c) Apply Protex 20V tape, G00139, or tape, G01111, to the seal.

(d) Use a water spray to clean the window.

(e) Remove loose dirt with your bare hand.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-21-00-350-003

(2) Do the steps that follow to remove the window damage (Orbital Sander Method):

NOTE: This task is intended to supplement the manufacturers' repair kit instructions for final polishing of the window, and is not intended to replace them.

(a) Select the grade of sandpaper found in the repair kit listed below:

1) Light Damage Removal Kit, G50978.

(b) Wrap the sandpaper around the sander/polisher, STD-1207.

(c) Use sufficient water to keep the window surface cool and to flush away the grit and acrylic material removed.

(d) Sand the window with the orbital sander horizontal direction.

(e) Sand the whole window surface.

(f) Keep water on the surface being sanded.

NOTE: Water will serve as a lubricant and coolant on the window.

(g) Sand the window with the abrasive paper in a vertical direction.

(h) Sand the whole window surface.

(i) Use each grade of sandpaper in the kit to remove the previous pattern made by the previous sandpaper.

(j) Do the procedure until all the surface damage is removed and the window has a constant thickness.

(k) Measure the window thickness dimensions (TASK 56-21-00-200-801).

(l) Remove the water spray.

(m) Attach the polishing pad (included in the kit) to a right angle polisher.

(n) Wet the surface with water.

(o) Apply approximately 1 tablespoon (15 mL) of Micro-Gloss (included in the kit) and polish for 2-4 minutes.

(p) Attach the white foam sponge pad (included in the kit) to the right angle polisher and repeat the previous three steps.

(q) Rinse the surface off with water.

(r) Wipe clean with the dry flannel cloth.

NOTE: All fine scratches should be gone.

(s) Apply Anti-Static compound (included in the kit) to the surface with a clean dry flannel cloth.

(t) Polish the surface by hand to remove the static charge that has built up during the process.

(u) Measure the window thickness dimensions (TASK 56-21-00-200-801).

(v) Make sure that the window pane thickness is greater than the limits permitted (TASK 56-21-00-200-801).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-21-00-300-802

3. Repair the Passenger Windows (Hand Method)

A. References

Reference	Title
56-21-00-000-801	Removal of a Passenger Cabin Window (P/B 401)
56-21-00-200-801	Passenger Cabin Window Inspection (P/B 601)
56-21-00-400-801	Passenger Cabin Window Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-9478	Sanding Block

C. Consumable Materials

Reference	Description	Specification
G00139	Tape - Protective, Protex 20V	
G01111	Tape - Aluminum Foil, Pressure Sensitive, Heat Reflective, Adhesive	A-A-59258
G50972	Abrasive - 3M Wetordry Tri-M-ite 400A abrasive paper (400 Grit)	
G50973	Abrasive - 3M Wetordry Tri-M-ite 600A abrasive paper (600 Grit)	
G50974	Kit - Micro-Surfaces Finishes KR-70 Acrylic/Plastic Restoral Kit	
G50975	Kit - Micro-Surfaces Finishes HP-100 Acrylic Restoral Kit	
G50976	Kit - Micro-Surfaces Finishes NC-78-1 Acrylic Restoral Kit	
G50977	Kit - Micro-Surfaces Finishes MA-1 Acrylic Restoral Kit	

D. Passenger Windows Repair

SUBTASK 56-21-00-160-005

(1) Do the steps that follow to clean the window:

(a) Examine the condition of the seal (TASK 56-21-00-200-801).

1) Replace the window seal if there are signs of condensation or seal damage (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

(b) Apply Protex 20V tape, G00139, or tape, G01111, to the window frame.

(c) Apply Protex 20V tape, G00139, or tape, G01111, to the seal.

(d) Use a water spray to clean the window.

(e) Remove loose dirt with your bare hand.

SUBTASK 56-21-00-350-004

(2) Do the steps that follow to remove the window damage (Hand Method):

(a) Select the grade of sandpaper from the items that follow:

1) Use 3M Wetordry Tri-M-ite 400A abrasive paper, G50972, for deep scratches and bad crazing.

2) Use 3M Wetordry Tri-M-ite 600A abrasive paper, G50973, for minor scratches and crazing.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Use sufficient water to keep the window surface cool and to flush away the grit and acrylic material removed.

(c) Wrap the sandpaper around a sanding block, STD-9478.

(d) Sand the window with the abrasive paper in a horizontal direction.

(e) Sand the whole window surface.

(f) Keep water on the surface being sanded.

NOTE: Water will serve as a lubricant and coolant on the window.

(g) Sand the window with the abrasive paper in a vertical direction.

(h) Sand the whole window surface.

(i) Do this procedure until all the surface damage is removed and the window has a constant thickness.

SUBTASK 56-21-00-350-005

(3) Do the steps that follow to polish the window after repairs have been done:

NOTE: This task is intended to supplement the manufacturers' repair kit instructions for final polishing of the window, and is not intended to replace them.

(a) Select the grade of sandpaper found in the repair kits listed below:

1) KR-70 Acrylic/Plastic Restoral Kit, G50974

2) HP-100 Acrylic Restoral Kit, G50975

3) NC-78-1 Acrylic Restoral Kit, G50976

4) MA-1 Acrylic Restoral Kit, G50977.

(b) Wrap the sandpaper sheets around a foam sanding block (included in the kit).

(c) Use sufficient water to keep the window surface cool and to flush away the grit and acrylic material removed.

(d) Sand the window with the abrasive paper in a horizontal direction.

(e) Sand the whole window surface.

(f) Keep water on the surface being sanded.

NOTE: Water will serve as a lubricant and coolant on the window.

(g) Sand the window with the abrasive paper in a vertical direction.

(h) Use each grade of sandpaper in the kit to remove the previous pattern made by the previous sandpaper.

(i) Do this procedure until all the surface damage is removed and the window has a constant thickness.

(j) Measure the window thickness dimensions (TASK 56-21-00-200-801).

(k) Do a check of the window visually for optical quality.

1) If the window is damaged, do the repair process again.

(l) Make sure that the window pane thickness is greater than the limits permitted (TASK 56-21-00-200-801).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PASSENGER CABIN WINDOW PLUG - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) The removal of the passenger compartment window plug.

(2) The installation of the passenger compartment window plug.

TASK 56-21-11-000-801

2. Passenger Cabin Window Plug Removal

(Figure 401)

A. References

Reference	Title
25-21-12-000-804	Snap In Window Shade and Reveal Assembly - Removal (P/B 401)
25-21-12-020-801	Window Shade and Reveal Assembly - Removal (P/B 401)

B. Consumable Materials

Reference	Description	Specification
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00834	Cloth - Lint-free Cotton	

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 56-21-11-010-001

(1) Do this task: Window Shade and Reveal Assembly - Removal, TASK 25-21-12-020-801 or Snap In Window Shade and Reveal Assembly - Removal, TASK 25-21-12-000-804.

SUBTASK 56-21-11-010-002

(2) Remove the insulation pillow.

SUBTASK 56-21-11-020-001

(3) Remove the window adjustment screws.

SUBTASK 56-21-11-020-002

(4) Remove the window retaining clips.

SUBTASK 56-21-11-020-003

(5) Disconnect the grounding strap from the window plug.

SUBTASK 56-21-11-010-003

(6) Remove the window plug and seal.

NOTE: You do not have to remove the seal from the plug if the seal is not damaged.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-21-11-950-001

CAUTION	UNLESS YOU IMMEDIATELY INSTALL THE PLUG, INSTALL A SHEET OF CLOTH OR EQUIVALENT MATERIAL TO THE PLUG SURFACES WITH MASKING TAPE. THIS WILL PREVENT DAMAGE TO THE PLUG AFTER YOU REMOVE THE PLUG.

(7) Use Scotch Flatback Masking Tape 250, G00270 to install a protective cover of lint-free cloth, G00834 to the window plug surfaces.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RETAINING CLIP (EXAMPLE)

A

1 IF THE WINDOW RETAINING CLIP TOUCHES PLUG SURFACE B, A SPACE IS PERMITTED BETWEEN THE WINDOW RETAINING CLIP AND PLUG SURFACE A.

2 NOT INSTALLED ON ALL AIRPLANES

G27000 S0006581478_V3

Passenger Cabin Window Plate (Plug) Installation
Figure 401/56-21-11-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-21-11-400-801

3. Passenger Cabin Window Plug Installation

(Figure 401)

A. References

Reference	Title
25-21-12-400-801	Window Shade and Reveal Assembly - Installation (P/B 401)
25-21-12-400-805	Snap In Window Shade and Reveal Assembly - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B00130	Alcohol - Isopropyl	TT-I-735
G00834	Cloth - Lint-free Cotton	

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Prepare for installation

SUBTASK 56-21-11-950-002

(1) Remove the tape and the cloth from the plug surfaces.

SUBTASK 56-21-11-110-001

> **WARNING**
> DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE. OBEY THE MATERIAL SAFETY DATA SHEETS (MSDS) FOR SOLVENTS. OBEY LOCAL REGULATIONS FOR THE CORRECT PROCEDURES TO USE OR DISCARD SOLVENTS. SOLVENTS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Apply solvent, B00083 or alcohol, B00130 to a lint-free cloth, G00834 and clean the mating surfaces of the seal and the window frame.

E. Install the window plug

SUBTASK 56-21-11-420-001

(1) Install the seal on the window plug.

SUBTASK 56-21-11-410-001

(2) Install the window plug and seal in the window frame where necessary.

SUBTASK 56-21-11-420-002

(3) Install the window retaining clips.

(a) Install the window retaining clip screws

(b) Tighten each retaining clip adjustment screw to 12 in-lb (1.4 N·m) to 15 in-lb (1.7 N·m).

NOTE: If the window retaining clip does not contact the window plug, you can increase the torque to a maximum of 25 in-lb (2.8 N·m).

SUBTASK 56-21-11-420-003

(4) Connect the grounding strap to the window plug.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-21-11-410-002

(5) Install the insulation pillow.

SUBTASK 56-21-11-410-003

(6) Do this task: Window Shade and Reveal Assembly - Installation, TASK 25-21-12-400-801 or Snap In Window Shade and Reveal Assembly - Installation, TASK 25-21-12-400-805.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PASSENGER CABIN CORROSION PREVENTION - MAINTENANCE PRACTICES

1. General

A. Corrosion can occur on the passenger cabin window frames. To reduce the possibility of this corrosion, an improved finish system is now used.

B. Refer to the Introduction of this manual for a discussion of the Aging Airplane Corrosion Prevention and Control Program and related documentation. Structural items within this section are subject to the unique requirements of the mandatory Corrosion Prevention and Control Program.

TASK 56-21-37-600-801

2. CORROSION PREVENTION

A. References

Reference	Title
SRM 737-678	Structural Repair Manual

B. Consumable Materials

Reference	Description	Specification
C00033	Coating - Protective Enamel, Flexibility Use	BMS10-60 Type II
C00319	Primer - Urethane Compatible, Corrosion Resistant	BMS10-79 Type II

C. Corrosion Prevention

SUBTASK 56-21-37-610-001

(1) Make periodic inspections of the window frames internally and externally for evidence of corrosion or deterioration of finish.

(2) Where minor corrosion is evident or the finish is broken, refer to SRM 737-678 for details of corrosion removal.

(3) The improved finish system can be applied to the entire interior surfaces of passenger cabin windows and those in doors. The finish consists of one coat of primer, C00319 followed by one coat of white enamelcoating, C00033. To gain access to the areas to be repainted, it is necessary to remove the decorative trim, the window reveal and the window assembly. It is not necessary to strip existing finish although any evidence of corrosion should be removed. Areas not to be repainted should be masked, but overspray on the inner skin surface, nut plates and sheet metal parts is permissible.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TYPICAL PASSENGER CABIN WINDOW AREA

J69956 S0000174584_V2

Passenger Cabin Window Frames
Figure 201/56-21-37-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AUTOMATIC OVERWING EXIT WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) The removal of the automatic overwing exit window.

(2) The installation of the automatic overwing exit window.

TASK 56-22-00-000-801

2. Automatic Overwing Exit Window Removal

(Figure 401)

A. References

Reference	Title
52-22-51-000-801	Emergency Exit Door Lining Removal (P/B 401)

B. Consumable Materials

Reference	Description	Specification
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)

C. Location Zones

Zone	Area
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

D. Procedure

SUBTASK 56-22-00-010-001

(1) Do this task: Emergency Exit Door Lining Removal, TASK 52-22-51-000-801.

SUBTASK 56-22-00-020-001

> **CAUTION** BE CAREFUL WHEN YOU TOUCH THE MIDDLE AND OUTER WINDOW PANES. THE MIDDLE AND OUTER WINDOW PANES ARE ACRYLIC AND CAN BE EASILY DAMAGED.

(2) Remove the automatic overwing exit door window assembly as follows:

(a) Remove the screws [4] and the window clip [3] that hold the window assembly in the window frame.

LOM 402, 404, 406 PRE SL 737-56-012

(b) Remove the window assembly.

NOTE: The window assembly has an outer pane [1], seal [5], and inner pane [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012

(c) Remove the window assembly.

NOTE: The window assembly has an outer pane [1], seal [5], stiffener ring [6], inner pane [2], and clamping ring [7].

LOM ALL

(d) If necessary, remove the seal [5] from the window assembly.

(e) Apply a protective cover of wrapping paper, G02173 with Scotch Flatback Masking Tape 250, G00270 to the inner and outer surfaces of the outer pane [1] and inner pane [2].

——— END OF TASK ———

TASK 56-22-00-400-801

3. Automatic Overwing Exit Window Installation

(Figure 401)

A. References

Reference	Title
12-16-03-600-801	Apply Antistatic Solution to the Passenger Compartment Windows (P/B 301)
52-22-51-400-801	Emergency Exit Door Lining Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01989	Soap - Castile (Vegetable Oil Based)	

C. Location Zones

Zone	Area
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

D. Prepare for the Installation

SUBTASK 56-22-00-100-001

(1) Clean the window frame and the seal [5] with solvent, B00083 on a clean, oil-free cotton wiper, G00034.

SUBTASK 56-22-00-100-002

(2) Use a clean, dry cotton wiper, G00034 to remove the solvent, B00083 before it dries on the frame and the seal [5].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-22-00-020-002

> **CAUTION** BE CAREFUL WHEN YOU TOUCH THE MIDDLE AND OUTER WINDOW PANES. THE MIDDLE AND OUTER WINDOW PANES ARE ACRYLIC AND CAN BE EASILY DAMAGED.

(3) Remove the protective paper cover and tape from the window panes.

SUBTASK 56-22-00-100-003

> **CAUTION** DO NOT RUB THE WINDOW SURFACES WITH A DRY CHEESECLOTH. THIS CAN CAUSE SCRATCHES AND MAKE AN ELECTROSTATIC CHARGE WHICH CAN CAUSE DUST PARTICLES TO BOND TO THE WINDOW SURFACES.

(4) Clean the outer pane [1] and inner pane [2].

SUBTASK 56-22-00-100-004

(5) Do this task (optional): Apply Antistatic Solution to the Passenger Compartment Windows, TASK 12-16-03-600-801.

E. Installation

LOM 402, 404, 406 PRE SL 737-56-012

SUBTASK 56-22-00-420-001

(1) Put the parts of the window assembly together as follows (Figure 401):
   - (a) Get these parts:
     1) seal [5]
     2) Outer pane [1]
     3) Inner pane [2].
   - (b) Put the seal [5] around the outer pane [1].
     1) Make sure the serial number of the outer pane [1] is at the top of the assembly.
   - (c) Put the inner pane [2] in position so the seal is around the edges and also between the two panes (Figure 401).
     1) Make sure the breather hole in the inner pane [2] is at the bottom of the assembly.

LOM 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-999; LOM 402, 404, 406 POST SL 737-56-012

SUBTASK 56-22-00-420-004

(2) Put the parts of the window assembly together as follows (Figure 401):
   - (a) Get these parts:
     1) seal [5]
     2) Outer pane [1]
     3) Inner pane [2].
     4) Stiffener ring [6]
     5) Clamping ring [7]
   - (b) Install the window seal [5] on the inner edge of the stiffening ring [6].
   - (c) Put the seal [5] around the outer pane [1].
     1) Make sure the serial number of the outer pane [1] is at the top of the assembly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Put the inner pane [2] in position so the seal is around the edges and also between the two panes (Figure 401).

1) Make sure the breather hole in the inner pane [2] is at the top of the assembly.

(e) Put the clamping ring [7] on the window assembly on the edge of the seal [5] that covers the middle pane [2].

LOM ALL

SUBTASK 56-22-00-420-002

(3) Install the window assembly in the window frame as follows:

(a) Align the window assembly with the frame.

(b) Push at the edges on opposite sides of the assembly to move it into the frame.

NOTE: If the window assembly will not slide into the window frame apply a soap and water solution to the outer edge of the seal [5] on the window assembly.

(c) Make sure the window is correctly aligned in the center of the frame.

SUBTASK 56-22-00-420-003

(4) Install the window clip [3] to attach the window assembly to the frame. (Figure 401).

(a) Loosely install the screws [4] on the frame.

(b) Tighten the screws [4] until the clip foot is flat against the pane: (Figure 401)

(c) Tighten these top and bottom screws [4] to 27 in-lb (3 N·m) - 38 in-lb (4 N·m):

1) Top aft

2) Bottom forward

3) Bottom aft

4) Top forward

(d) Tighten these screws [4] above and below the middle screws to 27 in-lb (3 N·m) - 38 in-lb (4 N·m):

1) Aft above

2) Forward below

3) Aft below

4) Forward above

(e) Tighten these screws [4] in the middle to 27 in-lb (3 N·m) - 38 in-lb (4 N·m):

1) Forward middle

2) Aft middle

(f) Tighten the window clip [3] to increase the pressure on the rubber seal [5] in the area where the rubber seal [5] is not visible.

NOTE: To insure a correct seal between the window and the window frame the seal should be visible when you look through the window.

F. Put the Airplane To Its Usual Condition

SUBTASK 56-22-00-410-001

(1) Do this task: Emergency Exit Door Lining Installation, TASK 52-22-51-400-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-22-00-160-001

(2) Clean the outer surface of the outer pane:

(a) Make a solution of castile soap, G01989 and warm water.

(b) Apply the soap solution to the outer surface with a cotton wiper, G00034.

CAUTION	DO NOT RUB THE OUTER SURFACE WITH A DRY CHEESECLOTH. THIS CAN CAUSE SCRATCHES AND MAKE AN ELECTROSTATIC CHARGE WHICH CAN CAUSE DUST PARTICLES TO BOND TO THE OUTER SURFACE.

(c) Dry the outer surface with a clean cotton wiper, G00034 moist with water.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Automatic Overwing Exit Window Installation
Figure 401/56-22-00-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Automatic Overwing Exit Window Installation
Figure 401/56-22-00-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

EMERGENCY EXIT HATCH WINDOW - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) The inspection/check of the emergency exit hatch windows.

B. The inspection/check requirements for the emergency exit hatch windows are the same as for the passenger windows.

TASK 56-22-00-200-801

2. Emergency Exit Hatch Window - Inspection/Check

A. References

Reference	Title
56-21-00-200-801	Passenger Cabin Window Inspection (P/B 601)

B. Location Zones

Zone	Area
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

C. Procedure

SUBTASK 56-22-00-210-001

(1) Do this task: Passenger Cabin Window Inspection, TASK 56-21-00-200-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) The removal of door-mounted windows

(2) The installation of door-mounted windows

B. The entry and galley service door windows have three panes.

(1) The outer and middle panes mount on a frame and each one is resistant to the loads of cabin pressurization.

(2) The inner pane mounts in the door lining and is not a structural pane.

TASK 56-31-00-000-801

2. Remove the Door-Mounted Windows

(Figure 401)

A. References

Reference	Title
52-11-31-000-802	Forward Entry Door Lining - Removal (P/B 401)
52-13-31-000-802	Aft Entry Door Lining Removal (P/B 401)
52-41-31-000-802	Galley Service Door Lining Removal (P/B 401)

B. Location Zones

Zone	Area
831	Forward Entry Door
834	Left Aft Entry Door
841	Forward Galley Service Door
844	Aft Galley Service Door

C. Door-Mounted Windows Removal

SUBTASK 56-31-00-010-001

(1) If it is necessary to get access to the window, do this task: Forward Entry Door Lining - Removal, TASK 52-11-31-000-802, or Aft Entry Door Lining Removal, TASK 52-13-31-000-802, or Galley Service Door Lining Removal, TASK 52-41-31-000-802.

SUBTASK 56-31-00-020-001

(2) Remove the bolts [1] that hold the window assembly in the door.

SUBTASK 56-31-00-020-007

(3) Remove the seal [3] on the retainer assembly.

SUBTASK 56-31-00-020-002

(4) Remove the window assembly.

SUBTASK 56-31-00-020-003

(5) Lift the edge of the outer seal [5] to remove the outer pane [7].

SUBTASK 56-31-00-020-004

(6) Do the steps that follow to remove the middle pane [6]:

LOM ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8

(a) Remove the three backup clips [9] that hold the middle pane [6] in its position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 141A6570-1

(b) Remove the six backup clips [9] that hold the middle pane [6] in its position.

LOM ALL

(c) Lift the outer seal [5] and remove the middle pane [6].

SUBTASK 56-31-00-550-001

(7) Apply a cover to the surfaces of the window panes for protection.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Door-mounted Window Installation
Figure 401/56-31-00-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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Door-mounted Window Installation
Figure 401/56-31-00-990-806 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-31-00-400-801

3. Install the Door-Mounted Windows

(Figure 401)

A. References

Reference	Title
52-11-31-400-802	Forward Entry Door Lining - Installation (P/B 401)
52-13-31-400-802	Aft Entry Door Lining Installation (P/B 401)
52-41-31-400-802	Galley Service Door Lining Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G01989	Soap - Castile (Vegetable Oil Based)	

C. Location Zones

Zone	Area
831	Forward Entry Door
834	Left Aft Entry Door
841	Forward Galley Service Door
844	Aft Galley Service Door

D. Door-Mounted Windows Installation

SUBTASK 56-31-00-010-002

(1) Remove the protective covers from the window panes.

SUBTASK 56-31-00-140-001

(2) Use a cotton wiper, G00034 with warm water and castile soap, G01989 to clean the inner surface of the outer pane [7] and the outer surface of the middle pane [6].

SUBTASK 56-31-00-140-002

(3) Dry the window surface with a chamois cloth, B00106.

LOM ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8

SUBTASK 56-31-00-420-001

(4) Install the pane or panes in the outer seal [5].

NOTE: The clock position is defined as you looking from inboard to outboard.

LOM ALL

(a) Make sure that the vent hole is located at roughly the 10:00 o'clock position for the FWD Galley, AFT Galley, and AFT Entry door.

(b) Make sure that the vent hole is located at the 5:00 o'clock position for the FWD Entry door.

LOM ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOM ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8 (Continued)

(c) For the FWD Entry door, make sure that the manufacturing code and date are in the 11:00 o'clock position on the middle pane [6] and the 1:00 o'clock position on the outer pane [7].

NOTE: This will insure correct orientation of the window panes.

(d) For the FWD Galley service door, AFT Galley service door, and AFT Entry door, make sure that the manufacturing code and date are in the 5:00 o'clock position on the middle pane [6] and the 7:00 o'clock position on the outer pane [7].

NOTE: This will insure correct orientation of the window panes.

SUBTASK 56-31-00-420-002

(5) Install the three backup clips [9].

LOM ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 141A6570-1

SUBTASK 56-31-00-420-004

(6) Install the pane or panes in the outer seal [5].

NOTE: The clock position is defined as you looking from inboard to outboard.

(a) For the FWD Entry door, make sure that the manufacturing code and date are in the 11:00 o'clock position on the middle pane [6] and the 1:00 o'clock position on the outer pane [7].

NOTE: This will insure correct orientation of the window panes.

(b) For the FWD Galley service door, AFT Galley service door, and AFT Entry door, make sure that the manufacturing code and date are in the 5:00 o'clock position on the middle pane [6] and the 7:00 o'clock position on the outer pane [7].

NOTE: This will insure correct orientation of the window panes.

SUBTASK 56-31-00-420-006

(7) Install the six backup clips [9].

LOM ALL

SUBTASK 56-31-00-020-008

(8) Install seal [3] on to retainer assembly.

SUBTASK 56-31-00-420-003

(9) Put the window assembly in the door and install the bolts [1].

SUBTASK 56-31-00-420-005

(10) Tighten the bolts.

(a) For the door-mounted window on the FWD Entry door, tighten the bolts to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).

(b) For all other door-mounted windows, tighten the bolts to 25 in-lb (2.8 N·m) - 35 in-lb (4.0 N·m).

SUBTASK 56-31-00-140-003

(11) Rub the surfaces of the window assembly with a cotton wiper, G00034.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-31-00-010-003

(12) If removed the door lining to get access to the window, do this task: Forward Entry Door Lining - Installation, TASK 52-11-31-400-802, or Aft Entry Door Lining Installation, TASK 52-13-31-400-802, or Galley Service Door Lining Installation, TASK 52-41-31-400-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

DOOR MOUNTED WINDOWS - INSPECTION/CHECK

1. **General**
   A. This procedure has these tasks:
      (1) An inspection of the door mounted windows.
   B. The types of damage are as follows:
      (1) Crazing:
         (a) Crazing is many very fine fissures with no visible width or depth at the surface of a ply.
         (b) In a bright light shown from an angle to the surface, crazing looks frosted and appears to light up.
         (c) In dim light and light normal to the surface, crazing is difficult to see.
         (d) Crazing can develop into cracks.
      (2) Cracks:
         (a) A crack is a fissure that has a visible width or depth.
         (b) Cracks can start from a scratch or a crazing mark.
         (c) Cracks can be single or dual.
      (3) Scratches:
         (a) A scratch is the removal of material from the surface of the window.
         (b) Scratches usually occur in a straight line or slight curve.
         (c) The depth of a scratch is not usually greater than the width of the scratch.
      (4) Chips:
         (a) Chips are pieces or layers of acrylic broken from the surface.
         (b) Spall (shell-type) chips:
            1) Spall chips are circular with many fine ridges.
            2) The ridges in the chip follow the outer edge and get smaller and deeper near the center and give it the clamshell appearance.
         (c) Vee-shaped chips:
            1) These chips have a sharp "V" shape bottom that continues to the surface of the ply.
      (5) In-plane Cracking:
         (a) In-plane cracking is sometimes referred to as delamination.
         (b) In-plane cracking is a crack that grows parallel to the surface of the ply from an edge or crack.
         (c) In-plane cracking looks shiny in reflected light.

TASK 56-31-00-200-801

2. **Door Mounted Window Inspection**
   (Table 601)

   A. General
      (1) The inner pane is not a structural pane.
      (2) Only replace the inner pane if the visual quality is not acceptable.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
56-31-00 P/B 401	DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION
56-31-00 P/B 801	ENTRY AND GALLEY SERVICE DOOR WINDOWS - REPAIRS
56-31-00-000-801	Remove the Door-Mounted Windows (P/B 401)

C. Location Zones

Zone	Area
831	Forward Entry Door
834	Left Aft Entry Door
841	Forward Galley Service Door
844	Aft Galley Service Door

D. Examine the door mounted windows

SUBTASK 56-31-00-210-001

(1) Examine the window seal for deterioration.

(a) If the seal has deteriorated replace the seal, (TASK 56-31-00-000-801).

SUBTASK 56-31-00-210-002

(2) Examine the window for marks, scratches, and dents in the plastic reveal.

(a) To repair the window, refer to: (ENTRY AND GALLEY SERVICE DOOR WINDOWS - REPAIRS, PAGEBLOCK 56-31-00/801).

SUBTASK 56-31-00-210-003

(3) Examine the window for loose fasteners.

SUBTASK 56-31-00-210-004

CAUTION

DO NOT PRESSURIZE THE AIRPLANE IF THE MIDDLE PANE HAS CRACKS OR CRAZING. THE PRESSURE CAN BREAK THE WINDOW.

(4) Examine the windows for cracks and crazing.

NOTE: It is not necessary to remove the pane to examine it for crazing. You can examine the window pane from inside the airplane.

(a) Replace the pane if the crazing is greater than 0.060 in. (1.524 mm) in depth in an area less than 2.0 in. (50.8 mm) in diameter.

(b) Replace the pane if the crazing is greater than 0.050 in. (1.270 mm) maximum depth along the full surface of the window.

(c) Replace the pane if there is crazing on the routed edge.

(d) Routed Radius Crazing

1) Replace the pane if the depth of the crazing is greater than 0.012 in. (0.305 mm) around the routed edge.

NOTE: The crazing can be continuous around the radius of the pane.

2) Replace the pane if the depth of the crazing is greater than 0.005 in. (0.127 mm) in an area with delamination.

(e) Replace the window if it is necessary: DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-31-00-210-005

CAUTION

REPLACE THE MIDDLE PANE IF IT HAS A DELAMINATION. THE WINDOW PANE IS NO LONGER STRUCTURALLY ACCEPTABLE.

(5) Examine the window for delamination.

(a) Edge delamination in the outer pane is permitted if it is within the limits that follow:

1) The maximum distance from the edge of the pane is 0.20 in. (5.08 mm).

2) The maximum length at the edge of the window is 0.50 in. (12.70 mm).

3) The minimum distance between delaminations is 1.0 in. (25.4 mm).

4) No more than 2 delaminations are permitted in the outer pane.

5) The maximum depth at the routed edge is 0.012 in. (0.305 mm).

NOTE: A delamination at the routed edge can be continuous.

6) A depth of 0.025 in. (0.635 mm) for a maximum length of 0.25 in. (6.35 mm). The crazing in the area must have a depth of less than 0.005 in. (0.127 mm).

(b) Replace the window if it is necessary: DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401.

LOM ALL; WINDOWS WITH A VENT HOLE IN THE WINDOW SEAL

SUBTASK 56-31-00-020-005

(6) Replace the outer pane if the delamination or chip is larger than the limits that follow (DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401).

NOTE: Delaminations in the outer pane, other than at the edge, are usually with chips.

(a) The depth of the chip is 0.025 in. (0.635 mm).

(b) The delamination is 0.25 in. (6.35 mm) in diameter or greater.

(c) The distance between delaminations is 0.50 in. (12.70 mm) or greater.

LOM ALL; WINDOWS WITHOUT A VENT HOLE IN THE WINDOW SEAL

SUBTASK 56-31-00-210-011

(7) Replace the outer pane if the delamination or chip is larger than the limits that follow (DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401).

NOTE: Delaminations in the outer pane, other than at the edge, are usually with chips.

(a) The depth of the chip is 0.05 in. (1.27 mm).

(b) The delamination is 0.25 in. (6.35 mm) in diameter or greater.

(c) The distance between delaminations is 0.50 in. (12.70 mm) or greater.

LOM ALL

SUBTASK 56-31-00-210-006

(8) Examine the window panes for scratches.

(a) If the scratches are larger than the limits in (Table 601), do this task: Remove the Door-Mounted Windows, TASK 56-31-00-000-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/56-31-00-993-802 Scratch Limits

Scratch Depth	Max. Length One Scratch	Max. Total Length
0.01 in. (0.254 mm)	0.5 in. (12.7 mm)	2.5 in. (63.5 mm)
0.005 in. (0.127 mm)	1.5 in. (38.1 mm)	4 in. (101.6 mm)

LOM ALL; WINDOWS WITH A VENT HOLE IN THE WINDOW SEAL

SUBTASK 56-31-00-210-007

(9) Examine the window for chips.

NOTE: Surface and V-shaped chips are not permitted in the middle pane. Shell type chips less than 0.03 inch (0.762) are permitted.

(a) Refer to SUBTASK 56-31-00-020-005 for the limits of chips in the outer pane.

(b) Replace the window if the chip is larger than the limits (DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401).

LOM ALL; WINDOWS WITHOUT A VENT HOLE IN THE WINDOW SEAL

SUBTASK 56-31-00-210-010

(10) Examine the window for chips.

NOTE: Surface and V-shaped chips are not permitted in the middle pane. Shell type chips less than 0.05 in. (1.27 mm) are permitted.

(a) Refer to SUBTASK 56-31-00-210-011 for the limits of chips in the outer pane.

(b) Replace the window if the chip is larger than the limits (DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401).

LOM ALL

SUBTASK 56-31-00-210-008

(11) Examine the window for concavity (out of contour).

NOTE: Concavity alone is not a cause to replace the window. The panes can touch.

(a) Uniform concavity.

1) Put a straightedge along the width of the outboard surface of the outer pane.

NOTE: If there is a clearance between the straightedge and the center of the pane, the window is concave. Windows which become fogged regularly, frequently have uniform concavity.

2) You can dry a window to get it close to its initial contour.

a) To dry a window, remove it from the airplane and keep it in room temperature air.

NOTE: The time it will take to dry the window will change because of local humidity and how badly the window is deformed.

NOTE: Windows panes usually do not go fully to their initial contour.

(b) Examine the seals for a leak into the window between the outer and the middle pane.

1) Replace all seals which have a leak (DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401).

SUBTASK 56-31-00-020-006

(12) If a window has a distortion or a thickness that changes, do this task: Remove the Door-Mounted Windows, TASK 56-31-00-000-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Examine the window for a surface contour that is not smooth or has a distortion.

NOTE: Exposure to a high temperature, such as a photo flood lamp, can cause a distortion.

SUBTASK 56-31-00-210-009

(13) Examine the middle pane for a warped or deformed condition.

CAUTION	DO NOT PRESSURIZE THE AIRPLANE IF THE WARPED CONDITION HAS AN EFFECT ON THE SEAL. THE FAIL-SAFE PROPERTY OF THE WINDOW IS REMOVED. THE WINDOW CAN BREAK.

(a) Window replacement is not necessary if it is warped or deformed, unless there is an effect on the pressure seal.

(b) Replace the seals which have a leak (DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ENTRY AND GALLEY SERVICE DOOR WINDOWS - REPAIRS

1. General

A. This procedure has this task:

(1) The repair of the entry and galley service door windows.

TASK 56-31-00-300-801

2. Entry or Galley Service Door Window Repair

(Figure 801)

A. General

(1) When you polish or buff the window start at the center of the pane and move out towards the edges.

(2) Machine polishing and buffing are recommended when the equipment and an approved operator are available.

B. Tools/Equipment

Reference	Description
STD-1205	Wheel - Buffer, Cotton Cloth, 80/92 Thread Count, Spiral Sewn, 6 Inch Diameter, 7/8 Inch Thick, 1/4 Inch Arbor Hole

C. Consumable Materials

Reference	Description	Specification
B00026	Compound - Buffing - Learok 119	
B00027	Compound - Buffing - Learok 884E (Formerly Learock 888)	
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
B00138	Abrasive - Silicon Carbide Coated Cloth	
B00703	Compound - Plastic Polish	P-P-560
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00253	Material - Barrier Materials, Greaseproofed, Waterproof, Flexible, Heat-Sealable	MIL-PRF-121 (Supersedes MIL-B-121)
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00834	Cloth - Lint-free Cotton	
G01989	Soap - Castile (Vegetable Oil Based)	
G02373	Abrasive - Emery Cloth - No. 400	

D. Location Zones

Zone	Area
831	Forward Entry Door
834	Left Aft Entry Door
841	Forward Galley Service Door
844	Aft Galley Service Door

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E. Clean the Window

SUBTASK 56-31-00-110-001

> **CAUTION** MAKE SURE THAT YOU USE THE CORRECT PROCEDURES TO CLEAN THE WINDOW AND THE CORRECT CLEANING AGENTS. IF YOU USE INCORRECT PROCEDURES OR CLEANING AGENTS, THEY CAN CAUSE DAMAGE TO THE WINDOW.

(1) Clean the window as follows:

(a) Use a spray of clean water to gently clean the window.

NOTE: This will remove sand or abrasive material.

(b) Use castile soap, G01989, and water and a chamois cloth, B00106, or cotton wiper, G00034, to wash the window.

(c) Use clean water to flush the castile soap, G01989, and unwanted material from the window.

(d) Dry the window with clean compressed air or a clean damp chamois cloth, B00106.

(e) Apply a protective cover of barrier material, G00253, and Scotch Flatback Masking Tape 250, G00270, on the side of the window you will not polish.

F. Repair the Window

SUBTASK 56-31-00-350-001

(1) If the window has superficial or minor scratches, do the steps that follow:

> **CAUTION** BE CAREFUL NOT TO CAUSE AN OVERHEAT OF THE WINDOW WITH THE BUFFING WHEEL. IF THE WINDOW BECOMES TOO HOT, IT CAN BECOME DAMAGED.

(a) Use a lint-free cloth, G00834, or a buffing cotton cloth buffer wheel, STD-1205, to polish the window with compound, B00703.

(b) Move the buffing wheel in a constant motion on the window to keep from over heating the window.

LOM ALL; WINDOWS WITH A VENT HOLE IN THE WINDOW SEAL

(c) Measure the repaired window pane to make sure it has a minimum thickness of 0.20 in. (5.08 mm) (Figure 801).

LOM ALL; WINDOWS WITHOUT A VENT HOLE IN THE WINDOW SEAL

(d) Measure the repaired window pane to make sure it has a minimum thickness of 0.265 in. (6.731 mm) (Figure 801).

LOM ALL

SUBTASK 56-31-00-340-001

(2) If the window has major scratches, do the steps that follow:

NOTE: It is not recommended to use a vibrator with sandpaper because it can remove too much material from the window.

(a) Soak the No. 400 abrasive cloth, G02373, sandpaper in water for a few minutes.

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(b) Sand the window with No. 400 abrasive cloth, G02373, and water.

NOTE: If you sand an area approximately 4 inches (10 cm) in diameter, you can reduce optical distortion. You should rub the surface across the scratch at a 45 degree angle with light hand pressure. Continue to sand the area until the scratch buildup material is removed.

(c) After the buildup material is removed, sand with No. 600 abrasive, B00138, wet and dry sandpaper that has been soaked in water.

NOTE: This will reduce the sanding abrasions made with the No. 400 abrasive cloth, G02373, and water.

CAUTION BE CAREFUL NOT TO CAUSE AN OVERHEAT OF THE WINDOW WITH THE BUFFING WHEEL. IF THE WINDOW BECOMES TOO HOT, IT CAN BECOME DAMAGED.

(d) Apply Learok 119 compound, B00026, to a buffing cotton cloth buffer wheel, STD-1205, and buff the affected area until you remove all frosted finish.

NOTE: If you buff the area too much with Learok 119 compound, B00026, you can cause optical distortion.

(e) Move the buffing wheel in a constant motion on the window to keep from over heating the window.

(f) Use a buffing cotton cloth buffer wheel, STD-1205, and Learok 884E compound, B00027, to polish the window surface to a high gloss.

LOM ALL; WINDOWS WITH A VENT HOLE IN THE WINDOW SEAL

(g) Measure the repaired window pane to make sure it has a minimum thichness of 0.20 in. (5.08 mm) (Figure 801).

LOM ALL; WINDOWS WITHOUT A VENT HOLE IN THE WINDOW SEAL

(h) Measure the repaired window pane to make sure it has a minimum thichness of 0.265 in. (6.731 mm) (Figure 801).

LOM ALL

SUBTASK 56-31-00-370-001

(3) Apply one of the approved waxes to the window and lightly polish it with a flannel cloth.

SUBTASK 56-31-00-370-002

(4) Apply barrier material, G00253, and Scotch Flatback Masking Tape 250, G00270, to protect the window.

END OF TASK

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NOTE:

ALL DIMENSIONS ARE FOR MINIMUM WINDOW THICKNESS.

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Entry and Galley Service Window Outer Panel Allowable Rework Limits
Figure 801/56-31-00-990-803 (Sheet 1 of 2)

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NOTE:

ALL DIMENSIONS ARE FOR MINIMUM WINDOW THICKNESS.

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Entry and Galley Service Window Outer Panel Allowable Rework Limits
Figure 801/56-31-00-990-803 (Sheet 2 of 2)

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