CHAPTER 56

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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.

TASK 56-11-00-200-801

2. Flight Compartment Windows - Inspection

A. General Flight Deck Windows Vocabulary

(1) Window Components

(a) 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.

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

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

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

(e) 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.

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

(g) 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.

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

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

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

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

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

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

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

(o) Urethane: A type of interlayer material.

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

(q) 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.

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(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. (5.1 cm) 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.

(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.

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Arcs in the heating film away from the bus bar (lightning bolt pattern) can occur as a jagged line and is also known as a line arc (Example: Figure 608).

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

(a) 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 (Example: Figure 604).

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 (Example: Figure 604).

(b) 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 (Example: Figure 610).

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. It is possible in some extreme conditions to see the vinyl interlayer as stretched or separated from the metal insert (Example: Figure 611).

(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 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 (Example: Figure 607).

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(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.

(7) 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.

(8) 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.

(9) 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 614). Haze is most likely to appear during cold weather operation and will dissipate during warm weather.

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 615).

(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 616).

(a) Do this task: Measure the Resistance of the Window Temperature Sensors, TASK 30-41-21-760-801.

D. References

Reference	Title
12-16-02 P/B 301	FLIGHT COMPARTMENT WINDOWS - SERVICING
30-41-00 P/B 501	CONTROL CABIN WINDOW ANTI-ICE SYSTEM - ADJUSTMENT/TEST
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)
56-11-00 P/B 801	FLIGHT COMPARTMENT WINDOWS - REPAIRS

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Reference	Title
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
56-11-21 P/B 401	NO. 3 WINDOW - REMOVAL/INSTALLATION
56-11-21-000-801	No. 3 Window Removal (P/B 401)
56-11-21-400-801	No. 3 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
COM-13454	Roughness and Contour Measurement Tool Part #: HOMMEL-ETAMIC T1000 Supplier: C6026 Part #: SURFTEST SJ-210 Supplier: 01EP7
STD-765	Scraper - Plastic
STD-4872	Gage - Feeler (0.002 - 0.010 inch)
STD-6637	Depressor - Tongue
STD-14360	Flashlight

F. Location Zones

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

G. Prepare to Check the Flight Deck Windows

SUBTASK 56-11-00-860-001

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) Put the window heat switches in the OFF positions.

SUBTASK 56-11-00-860-002

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

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F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 56-11-00-110-001

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

NOTE: Clean windshields are necessary to do the inspection.

H. Windshield (No. 1 window) Inspection/Check

SUBTASK 56-11-00-210-001

(1) Examine the windshield for chips in the glass panes (Figure 606):

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 (PAGEBLOCK 56-11-11/401).

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 56-11-00-210-017

(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.

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

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

(d) 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 56-11-00-210-002

(3) Examine the windshield for delamination:

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

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 external moisture seal that corresponds to the Non-Critical Vision area, zone II.

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SUBTASK 56-11-00-210-003

(4) Examine the windshield for arcing (Figure 609).

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

(b) Examine the windshield for line arcs.

(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 (PAGEBLOCK 56-11-11/401).

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

SUBTASK 56-11-00-210-004

(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 (PAGEBLOCK 30-41-00/501).

(b) Replace the windshield if the bubbles decrease the visual quality or bubbles are black or dark brown in color (PAGEBLOCK 56-11-11/401).

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

SUBTASK 56-11-00-210-005

(6) Examine 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: The 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 56-11-00-210-006

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

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

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

(c) Replace the windshield if you find cracks in the vinyl interlayer (Figure 611).

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.
- Cracks that extend from one bolt hole to an adjacent bolt hole.

SUBTASK 56-11-00-210-007

(8) Examine the window for cracks (Figure 604):

(a) Replace the window if cracks are found in the inner glass panes (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.

(b) For cracks in the outer panes, a limited dispatch can occur, in accordance with the limits of Master Minimum Equipment List (MMEL) section 30–11 (Electrically Heated Windshields), 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.

SUBTASK 56-11-00-210-008

(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 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 0.40 in. (10.16 mm) or more, the Z-bar is completely disbonded, replace the windshield (PAGEBLOCK 56-11-11/401).

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

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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 56-11-00-210-009

(10) Examine the windshield for haze (Figure 614).

(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 (PAGEBLOCK 56-11-11/401).

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.

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

SUBTASK 56-11-00-210-019

(1) Examine the window for chips in the glass panes (Figure 606).

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 56-11-21-400-801).

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 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 56-11-00-210-020

(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 56-11-00-210-021

(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 56-11-21-400-801).

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 56-11-00-210-022

(4) Examine the window for arcing (Figure 608).

(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 56-11-21-400-801).

SUBTASK 56-11-00-210-023

(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 56-11-21-400-801).

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

SUBTASK 56-11-00-210-024

(6) Examine the 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: 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.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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 56-11-00-210-025

(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 613).

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 613 (Sheet 2), Figure 613 (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 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 612).

(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.

SUBTASK 56-11-00-210-026

(8) Examine the window for cracks (Figure 604).

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

(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.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) For the replacement of the window refer to NO. 3 WINDOW - 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 56-11-00-210-027

(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 56-11-00-200-001

(10) 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 (TASK 56-11-21-000-801 and TASK 56-11-21-400-801).

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 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.

J. No. 3 window (Acrylic) Inspection/Check

SUBTASK 56-11-00-210-010

(1) Examine the No. 3 window for chips in the acrylic panes (Figure 603).

(a) Replace or repair the stretched acrylic window panes if limits are larger than the following (PAGEBLOCK 56-11-21/401):

1) Chips: 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 56-11-00-210-011

(2) Examine the window for erosion along the forward, top, aft, and bottom edges (Figure 603).

(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 56-11-00-210-012

(3) Examine the window for in-plane cracks (Figure 605).

(a) Replace or repair the window for one or more of the subsequent list of damages (PAGEBLOCK 56-11-21/401).

(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:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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 56-11-00-210-016

(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 the cracks are greater than or equal to 0.05 in. (1.27 mm) in depth.

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 56-11-00-210-013

(5) Examine the window for scratches.

(a) Replace the window if scratches impair pilot visibility (PAGEBLOCK 56-11-21/401).

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.

(b) Polish the window to decrease the severity of the scratches.

SUBTASK 56-11-00-210-014

(6) Examine the window aerodynamic smoother.

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

K. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-00-860-007

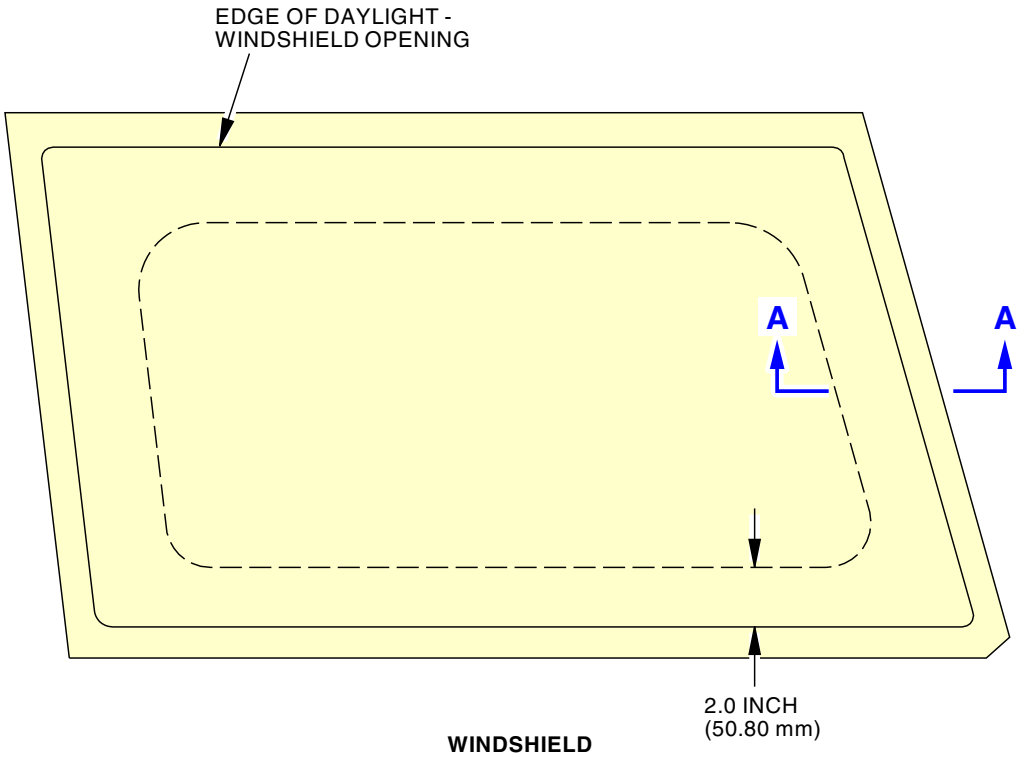
(1) Close these circuit breakers:

F/O Electrical System Panel, P6-5

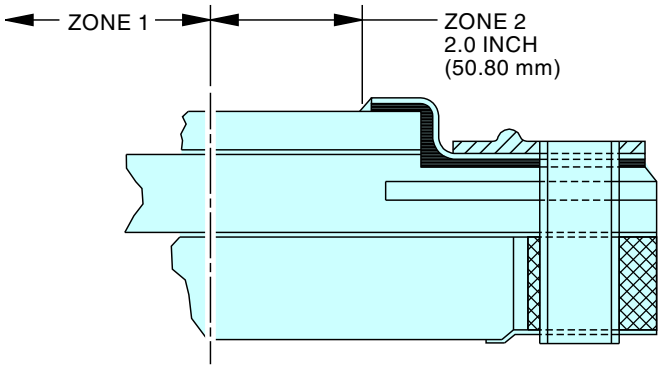
Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**WINDSHIELD
(EXAMPLE)**

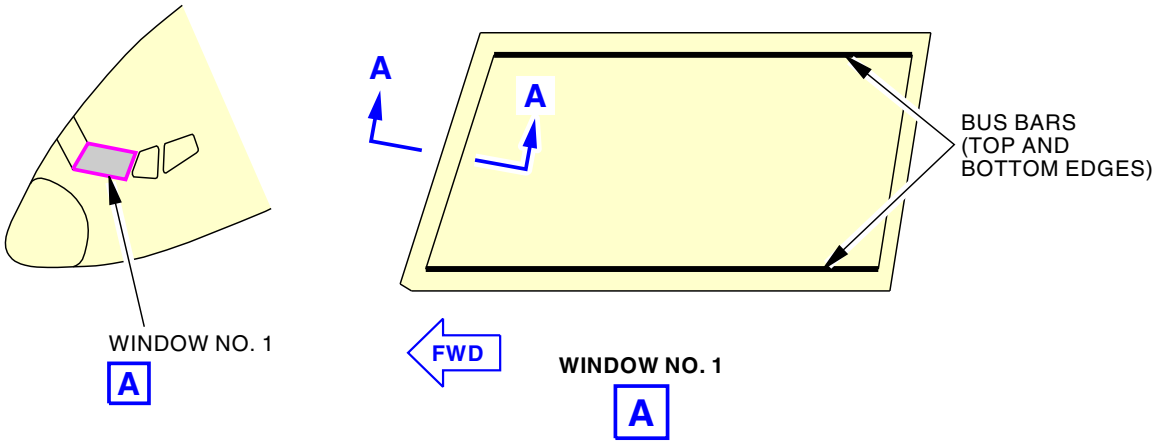


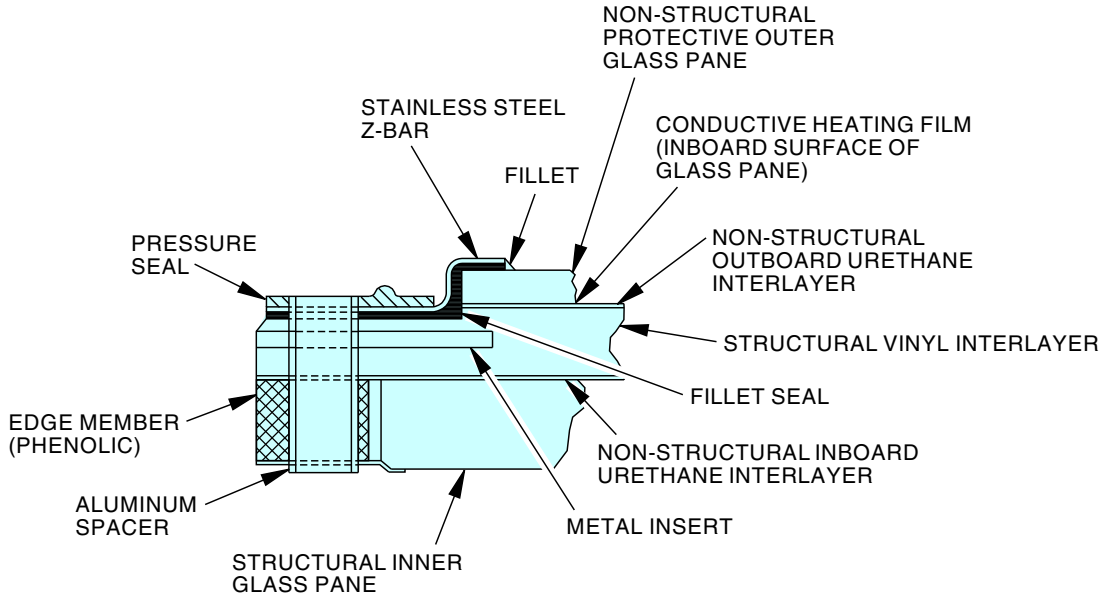
**(EXAMPLE)
A-A**

2416416 S00061540613_V2

**Flight Compartment Window Vision Terms
Figure 601/56-11-00-990-801**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



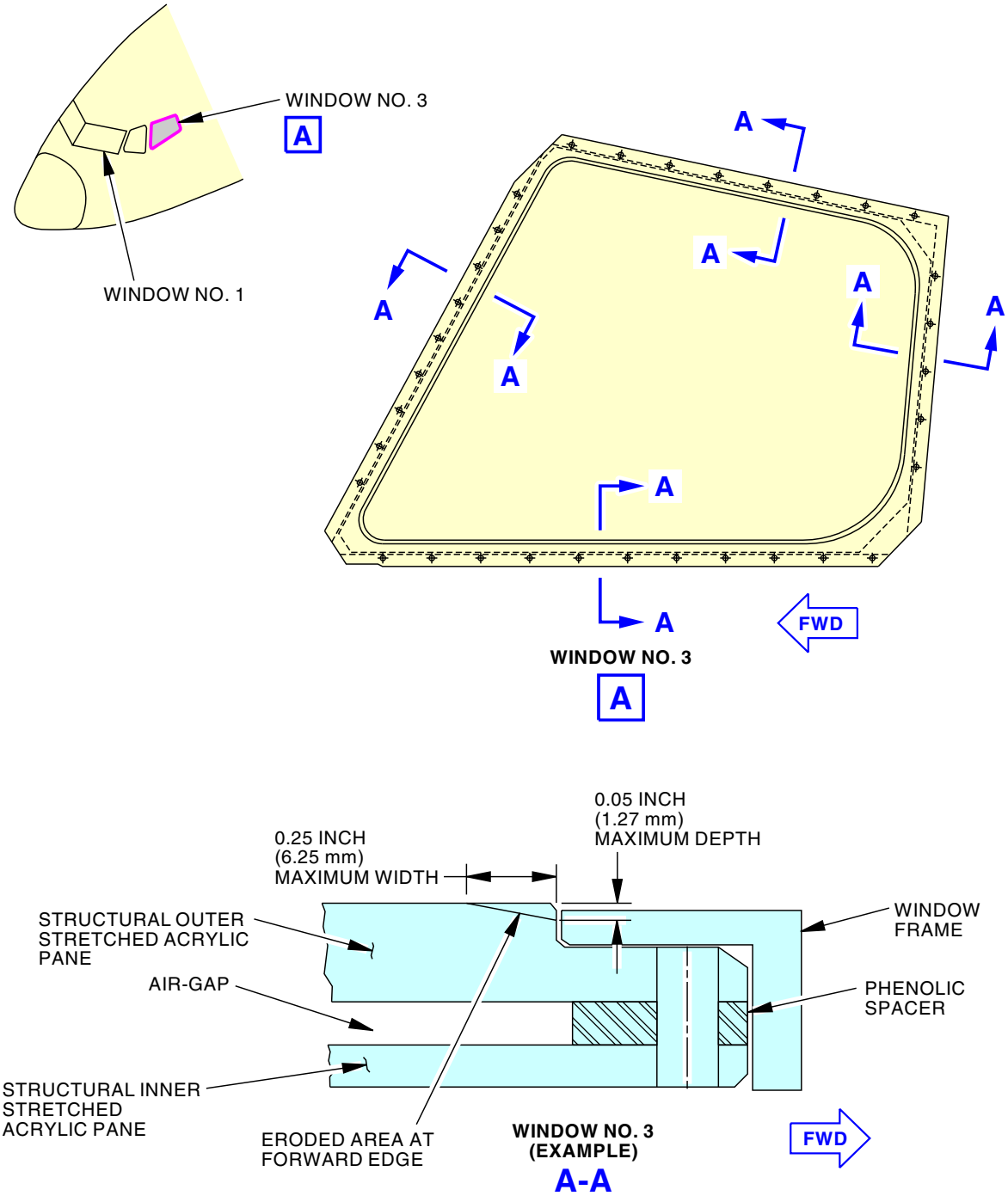


WINDOW NO. 1
(TYPICAL)
A-A

2416417 S00061540614_V2

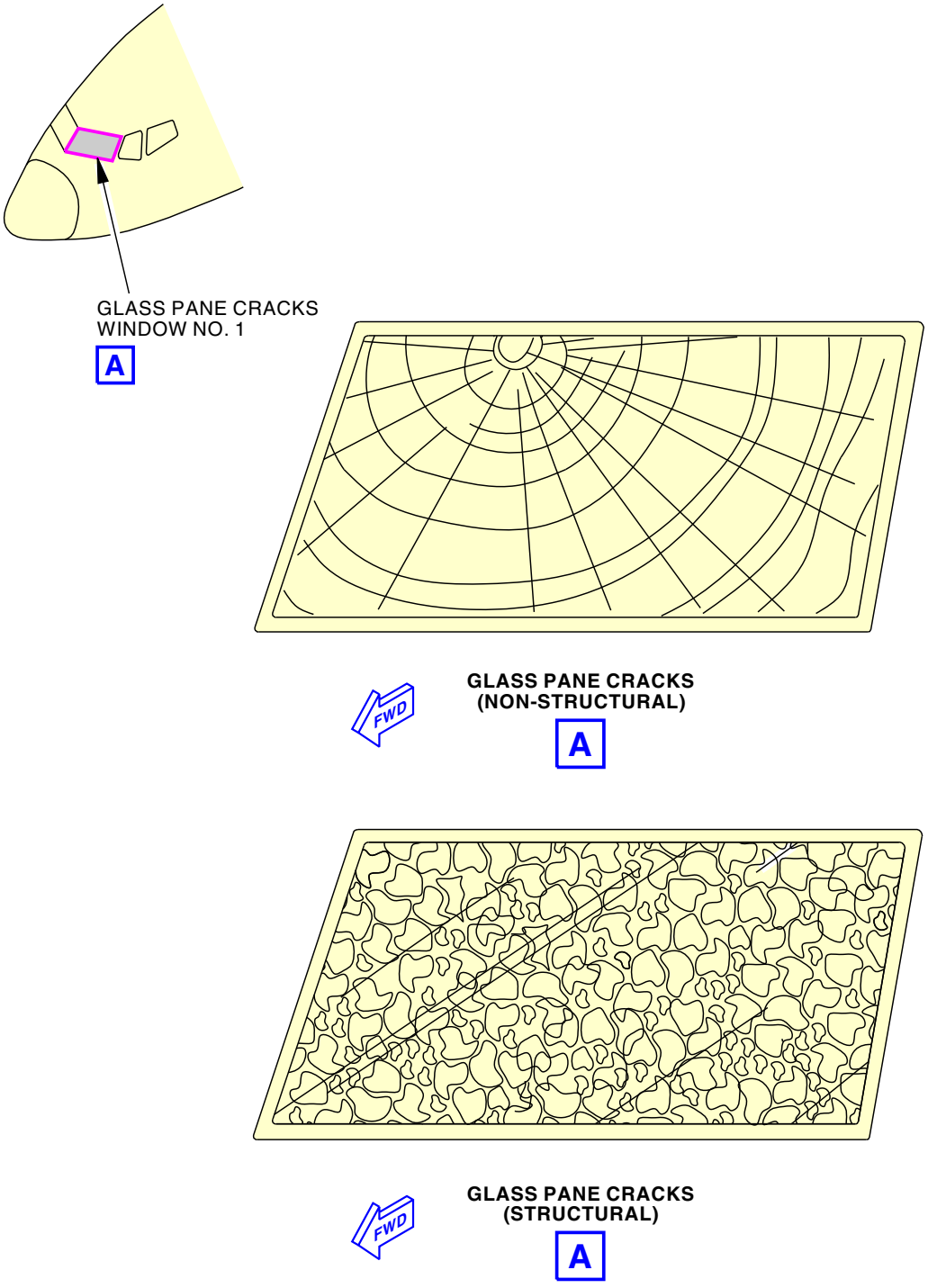
Flight Compartment Windshield
Figure 602/56-11-00-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details



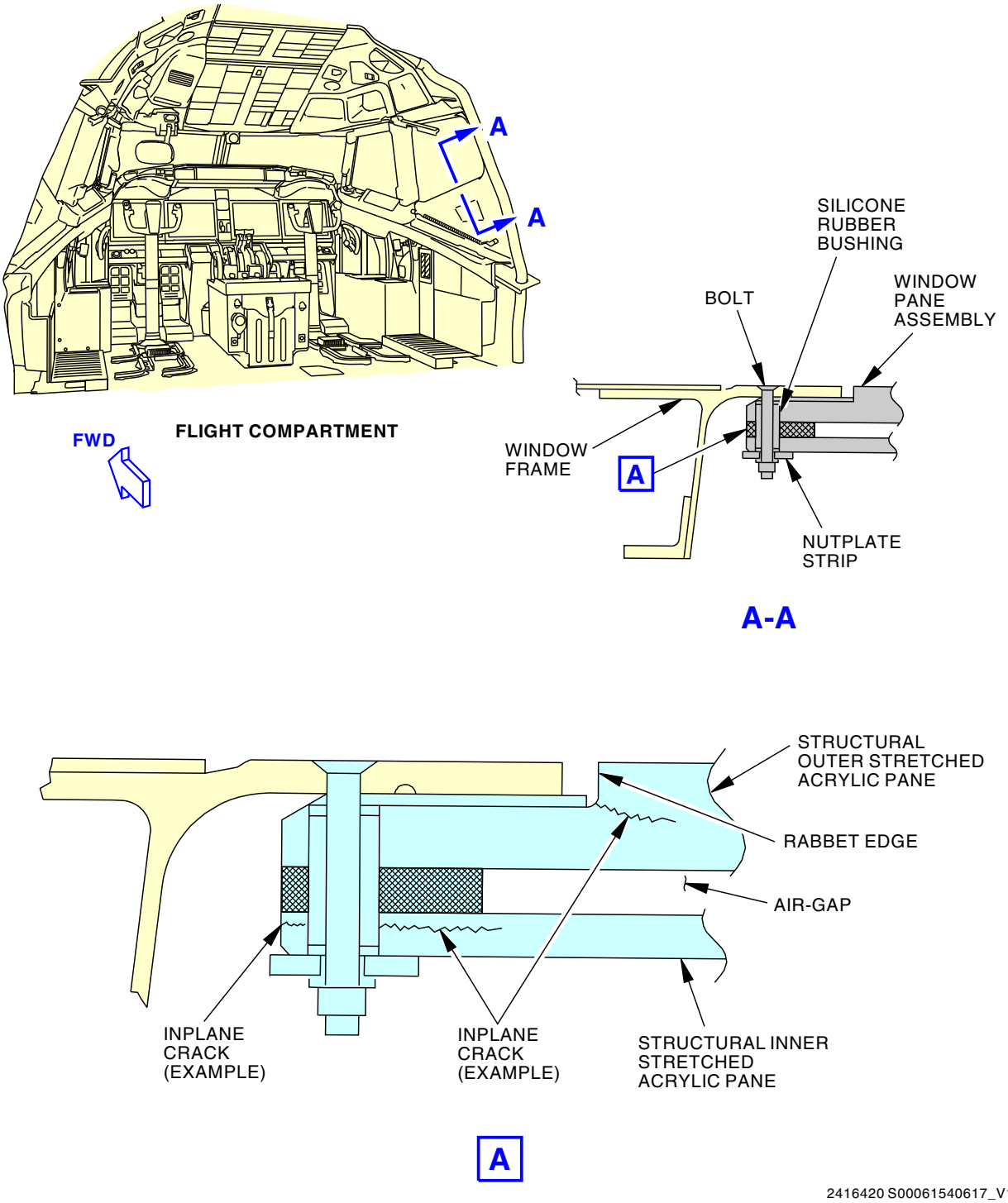
Flight Compartment No. 3 Window - Cross Sections
Figure 603/56-11-00-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details



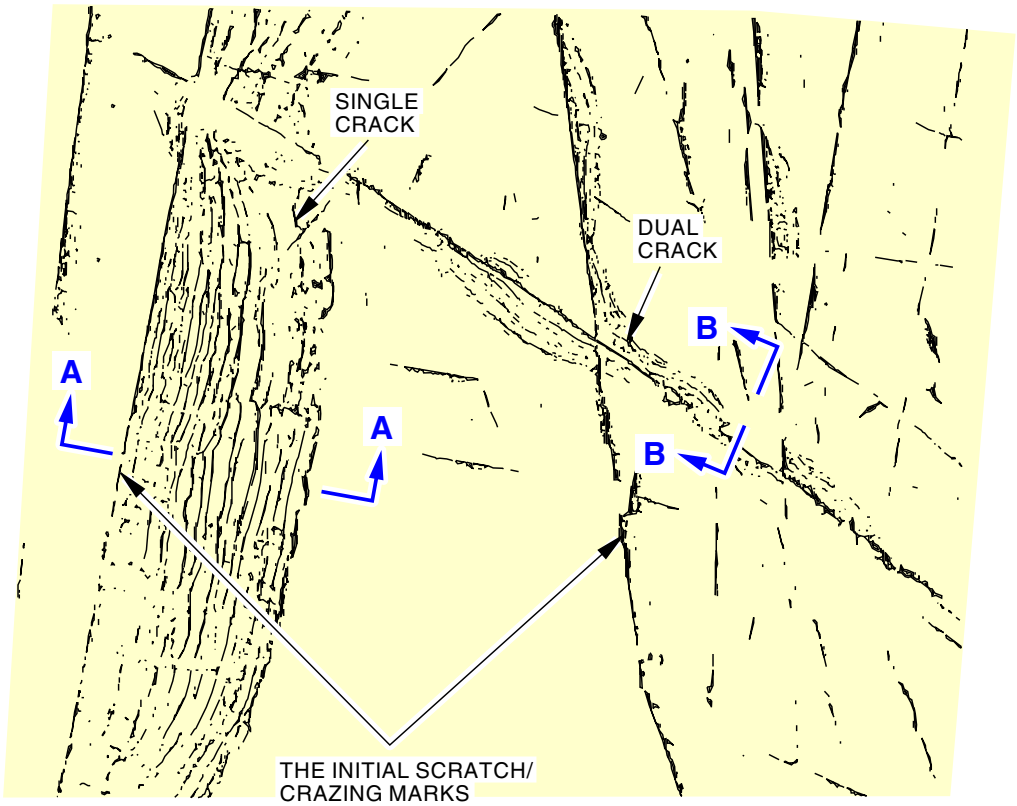
Glass Pane Cracks
Figure 604/56-11-00-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details

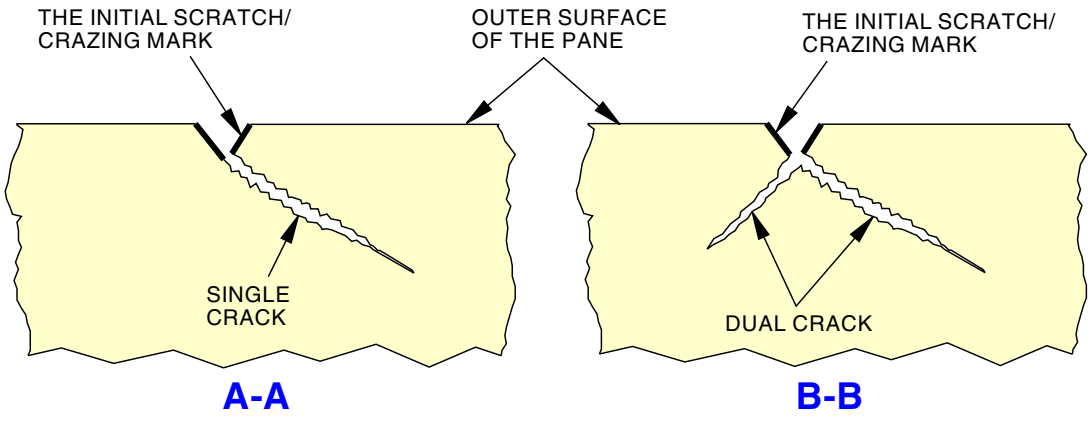


Flight Compartment No. 3 Window - Acrylic Cracks
Figure 605/56-11-00-990-805 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



VIEW OF WINDOW SURFACE



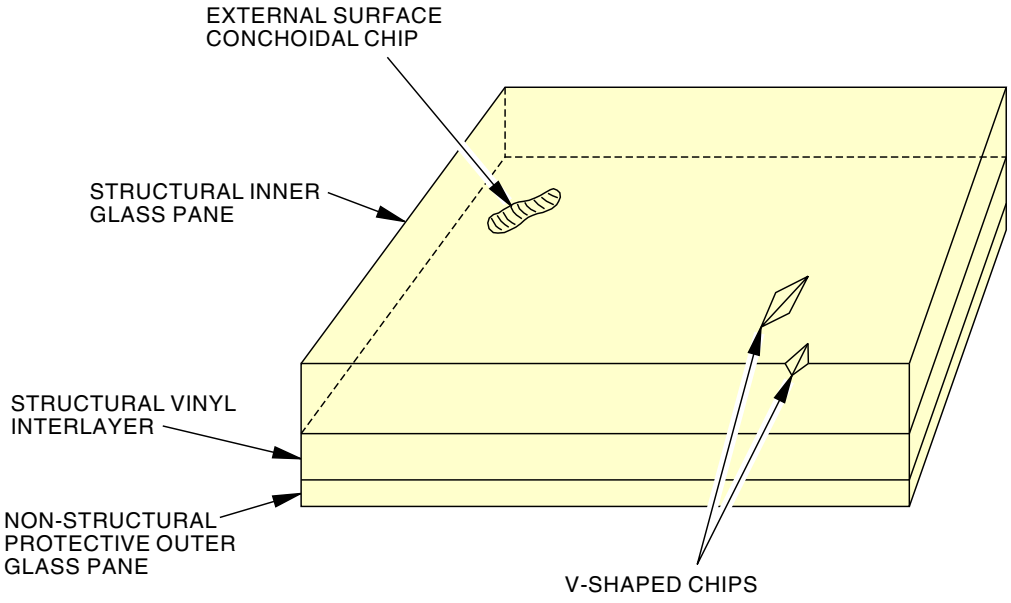
NOTE:

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.

2416421 S00061540618_V1

Flight Compartment No. 3 Window - Acrylic Cracks
Figure 605/56-11-00-990-805 (Sheet 2 of 2)

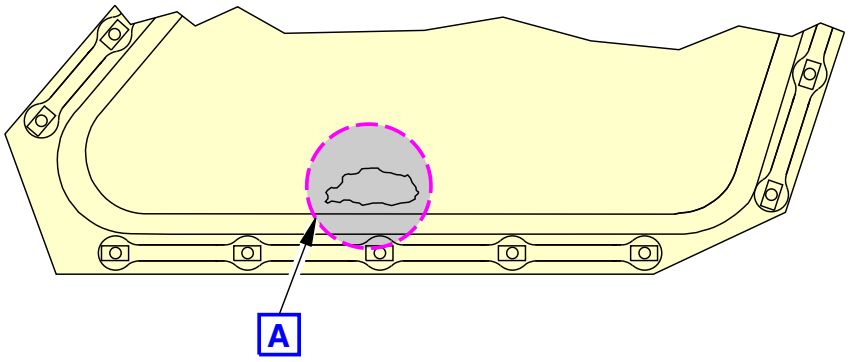
ECCN 9E991 BOEING PROPRIETARY - See title page for details



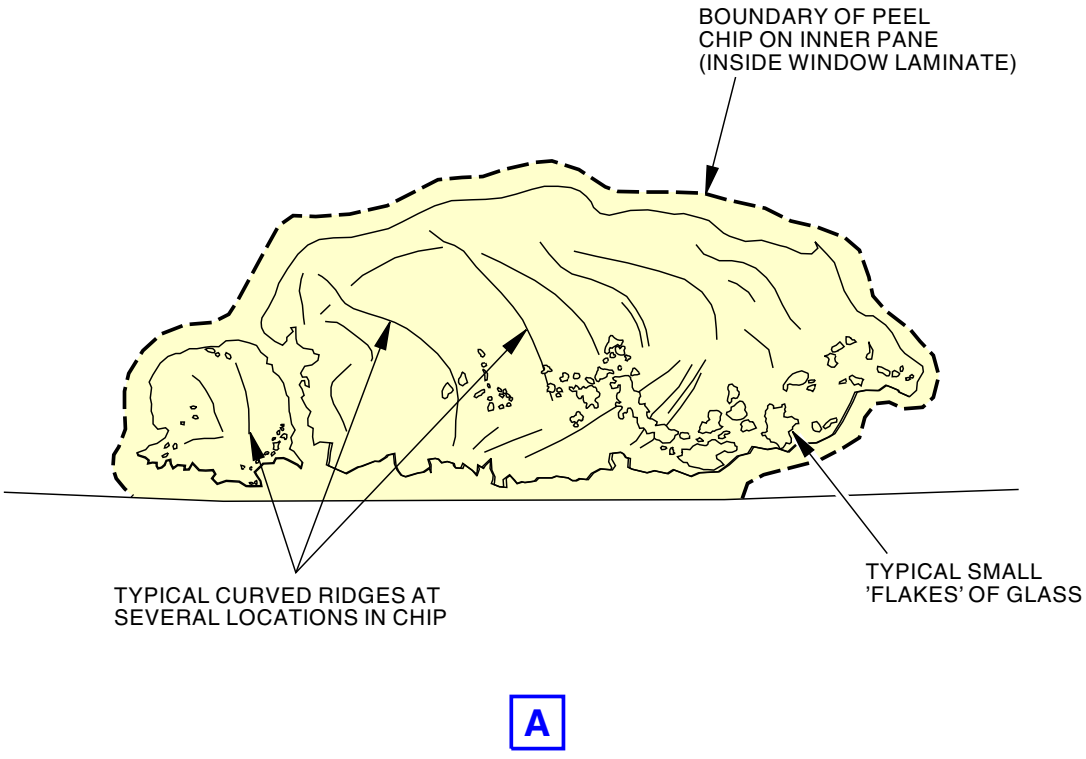
2416422 S00061540619_V1

Glass Pane Chips
Figure 606/56-11-00-990-806

ECCN 9E991 BOEING PROPRIETARY - See title page for details



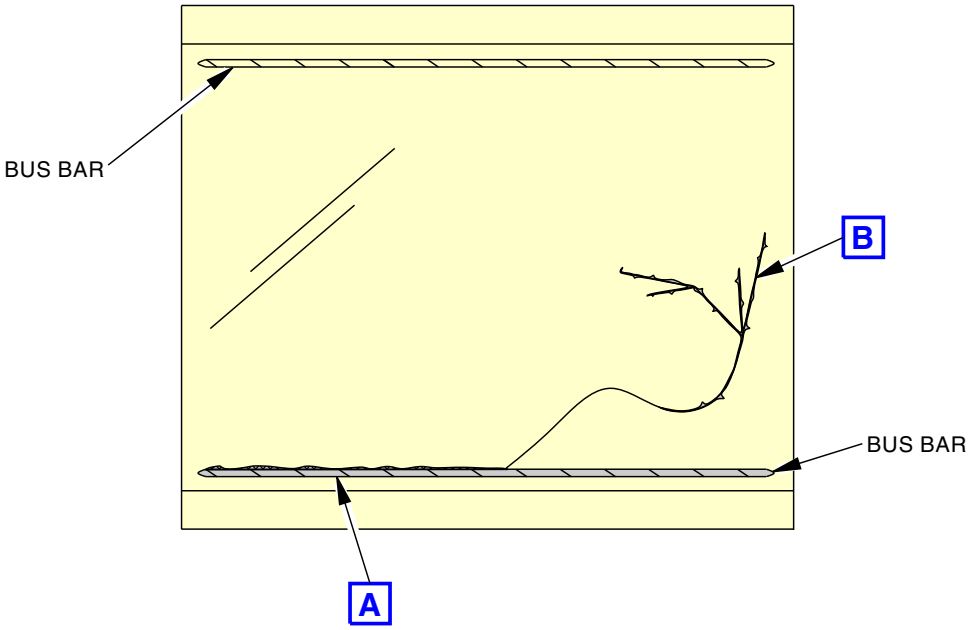
(TYPICAL)



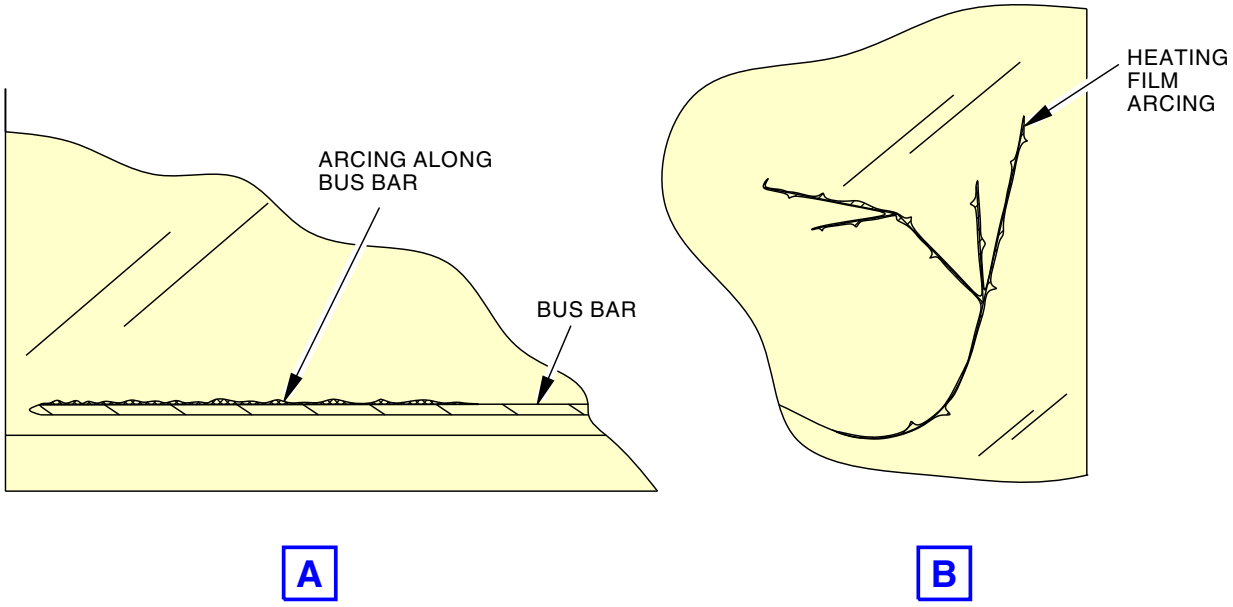
2416423 S00061540620_V1

Peel Chip
Figure 607/56-11-00-990-807

ECCN 9E991 BOEING PROPRIETARY - See title page for details



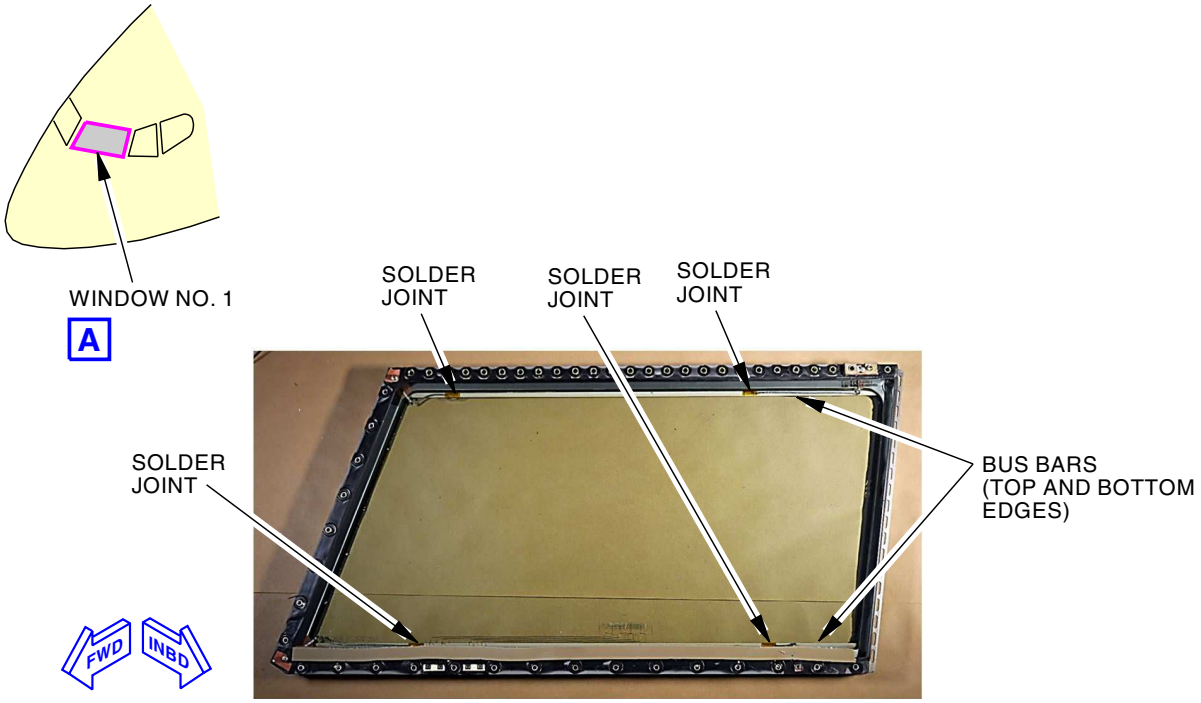
WINDOW HEAT ARCING



2416424 S00061540621_V1

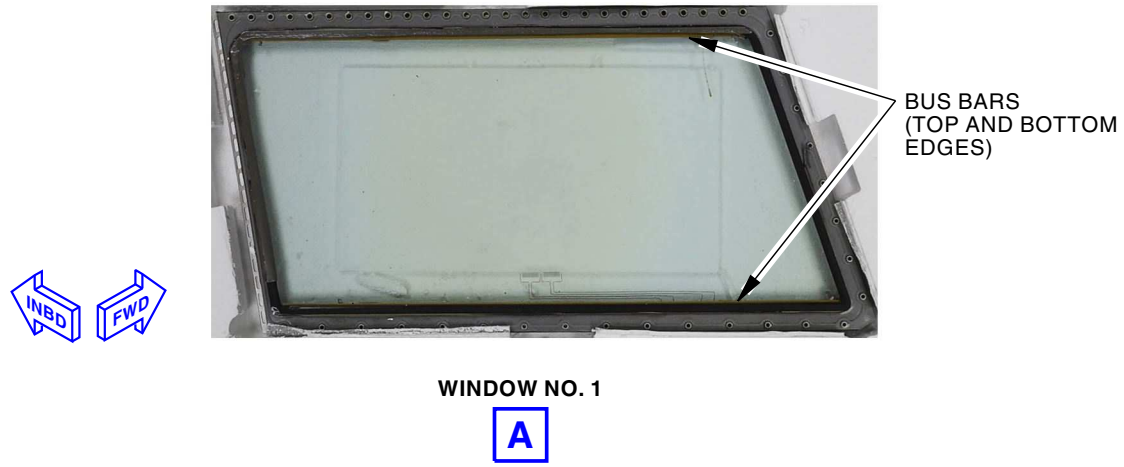
Window Heat Arcing
Figure 608/56-11-00-990-808

ECCN 9E991 BOEING PROPRIETARY - See title page for details



WINDOW NO. 1

A



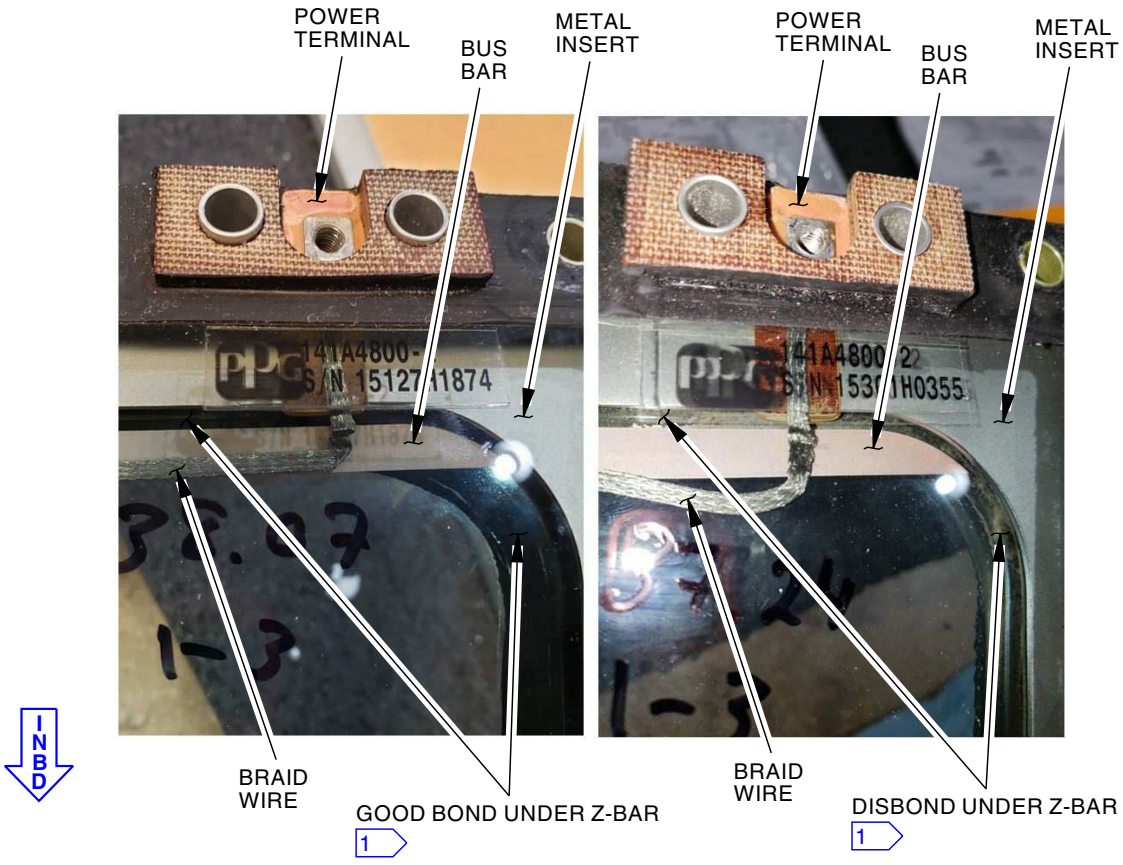
WINDOW NO. 1

A

2923173 S0000703824_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 609/56-11-00-990-814 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

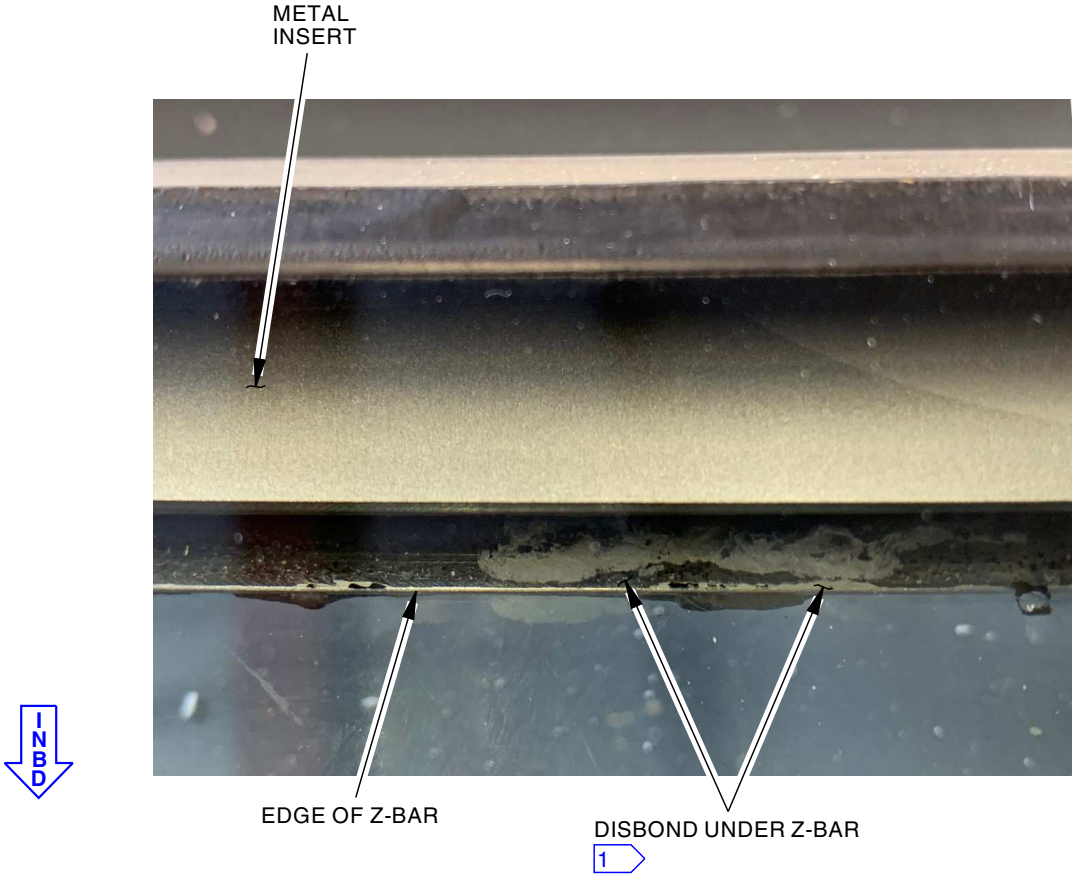


1 INSPECT SEALANT UNDER Z-BAR FROM INSIDE FOR SIGNS OF DISBOND. A GOOD BOND WILL BE SMOOTH AND UNIFORMLY DARK IN COLOR. DISBOND WILL HAVE LIGHT COLOR SPLOTCHES AND APPEAR TO BE STAINED.

2923177 S0000703823_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 609/56-11-00-990-814 (Sheet 2 of 6)

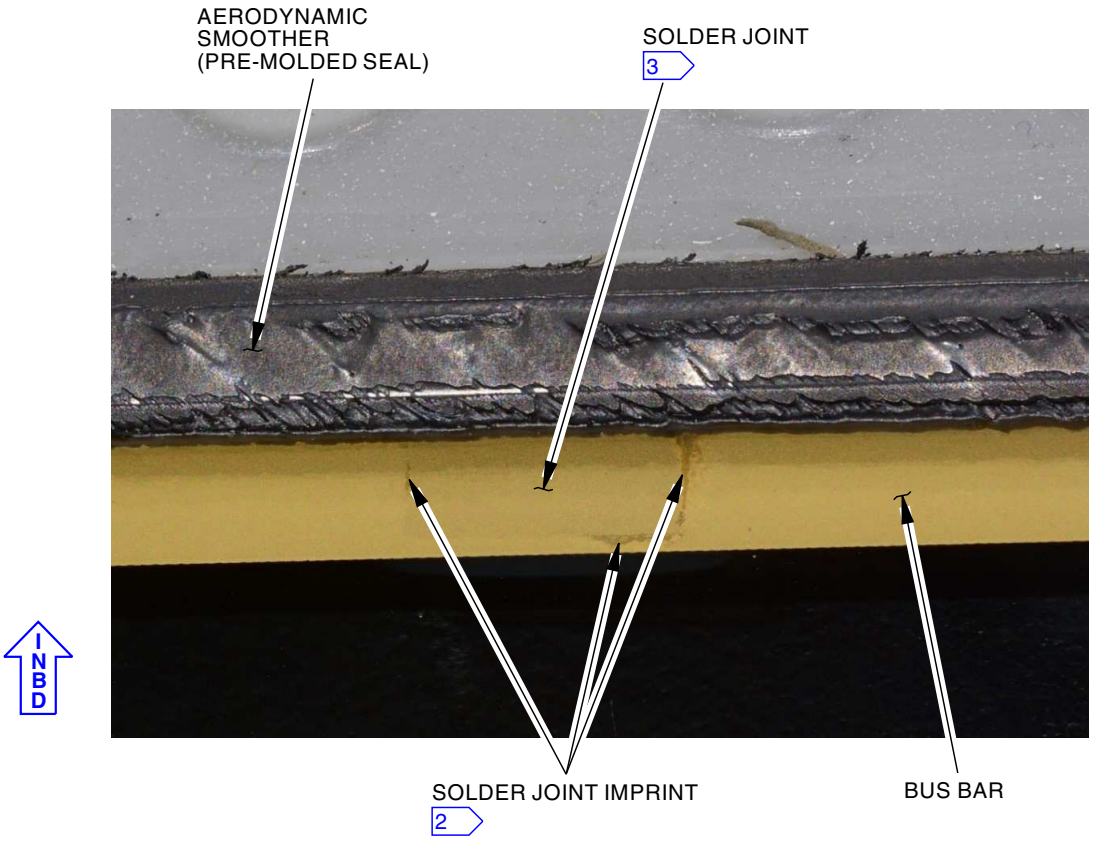
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2923178 S0000703822_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 609/56-11-00-990-814 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



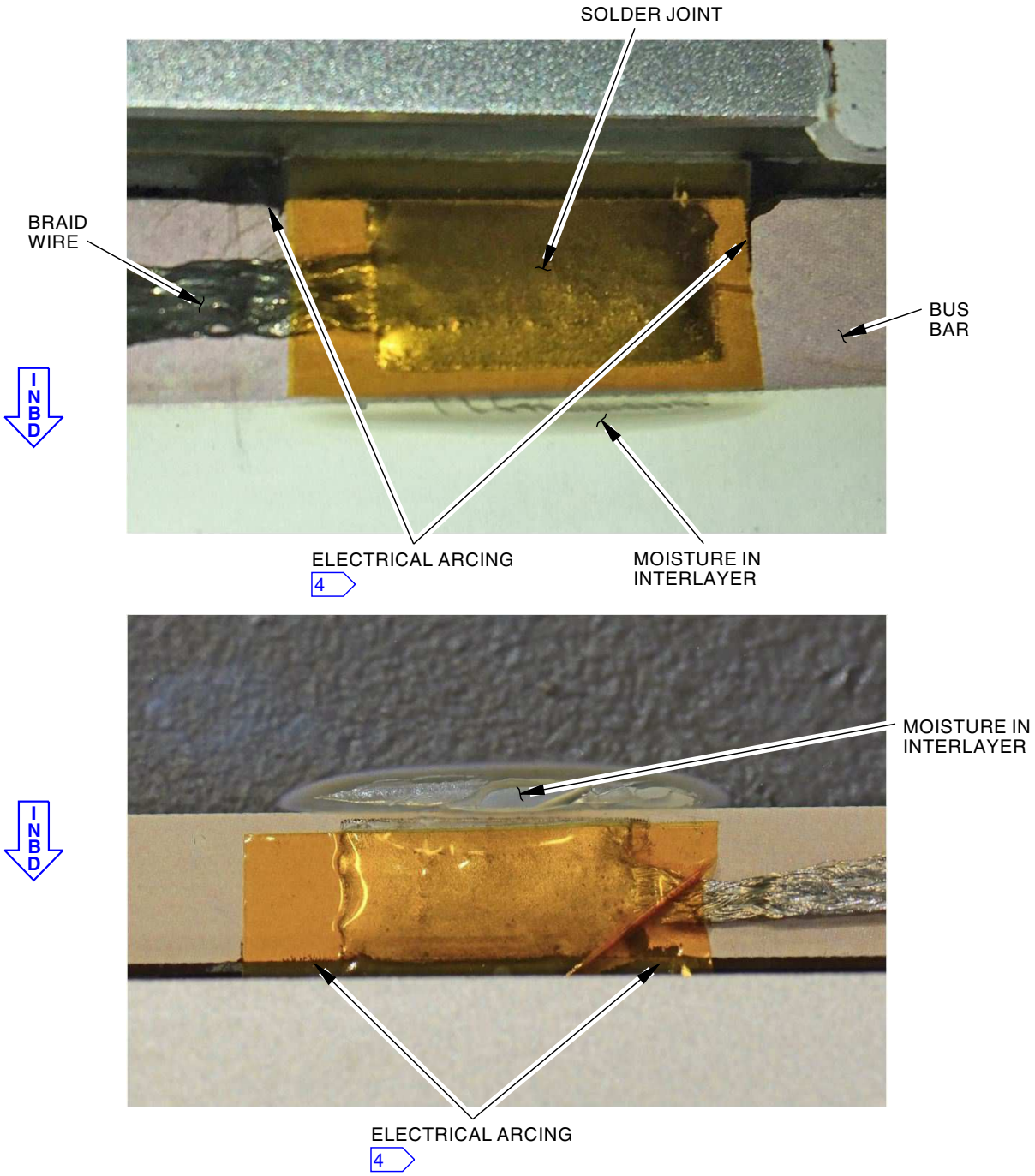
2 AN IMPRINT OF THE SOLDER JOINT IS AN ACCEPTABLE CONDITION. IN SOME CASES A SOLDER JOINT IMPRINT WILL BE SEEN DURING AN INSPECTION OF THE AERODYNAMIC SMOOTHER OR INSPECTION FOR ARCING AT THE BUS BAR.

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

2923179 S0000703821_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 609/56-11-00-990-814 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

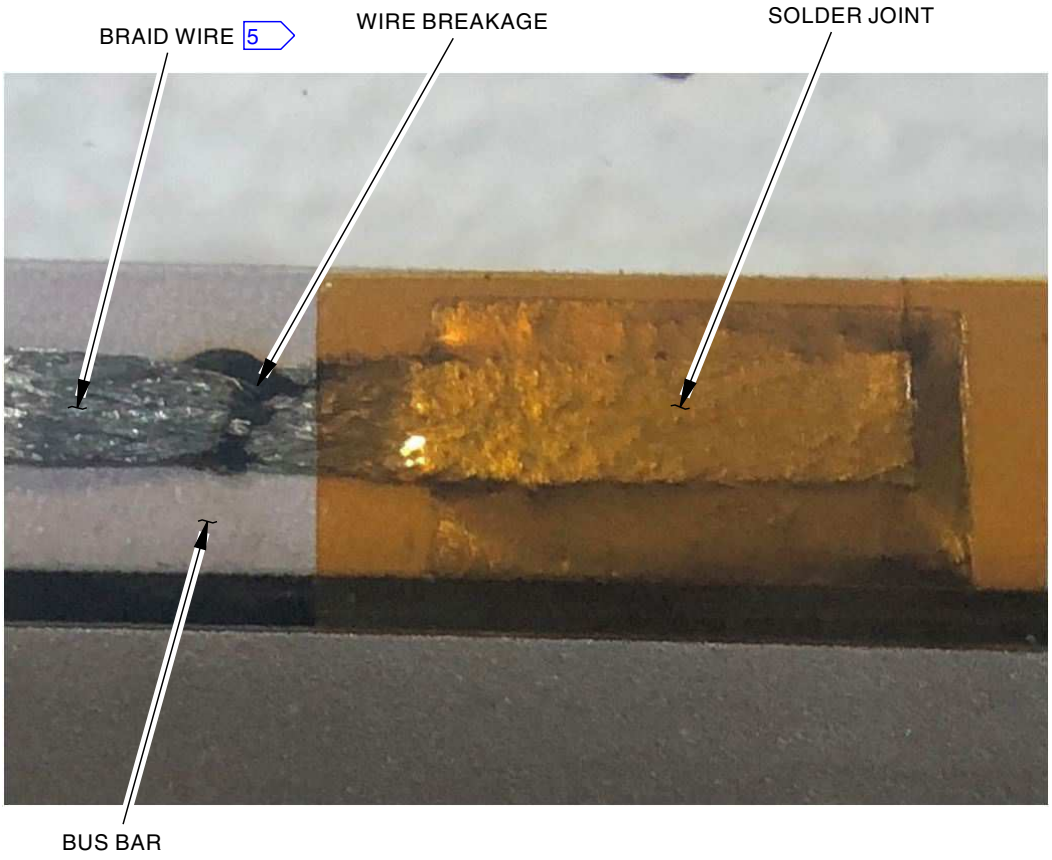


4 INSPECT OUTERMOST EDGE OF SOLDER JOINT AND ADJACENT BUS BAR FOR EVIDENCE OF ELECTRICAL ARCING, DISTINCT DARK BROWN OR BLACK AREAS.

2923180 S0000703820_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 609/56-11-00-990-814 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

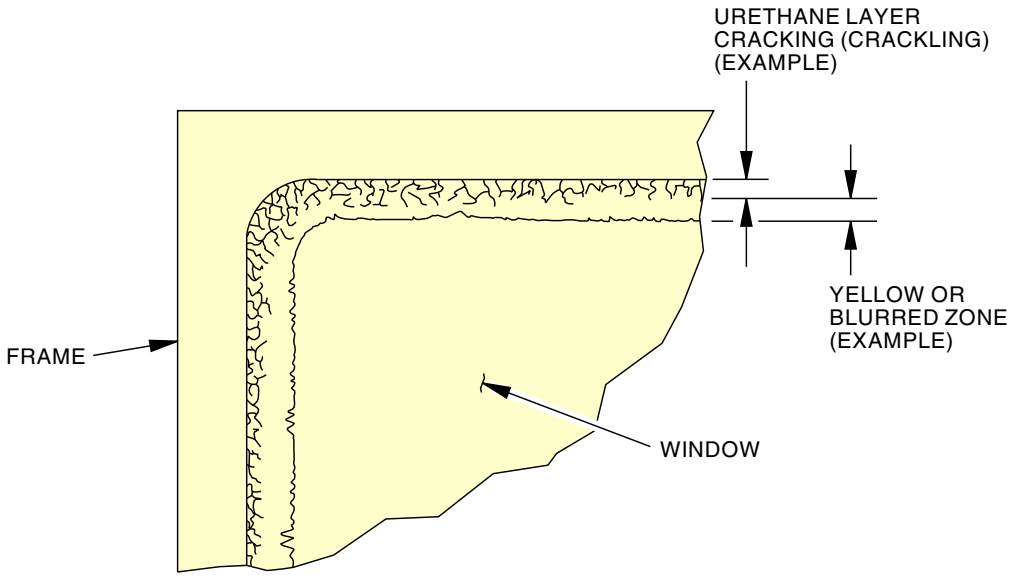


5 INSPECT POWER BRAID WIRE ADJACENT TO SOLDER JOINT FOR SIGNS OF BROKEN WIRES AND EVIDENCE OF ELECTRICAL ARCING.

2923181 S0000703819_V1

Windshield Z-Bar Disbond and Arcing at Bus Bar and Braid Wire Solder Joint
Figure 609/56-11-00-990-814 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

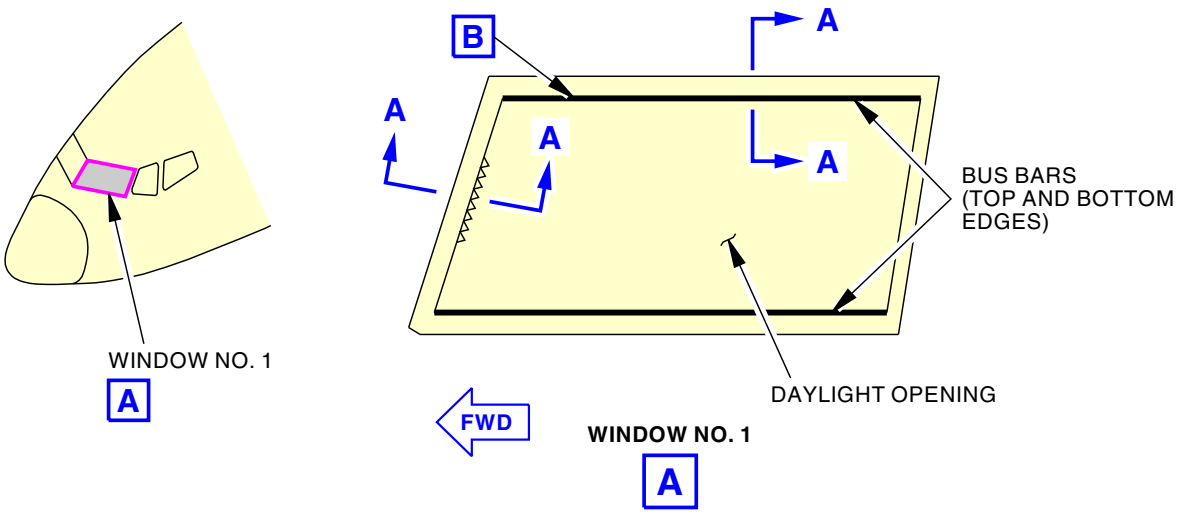


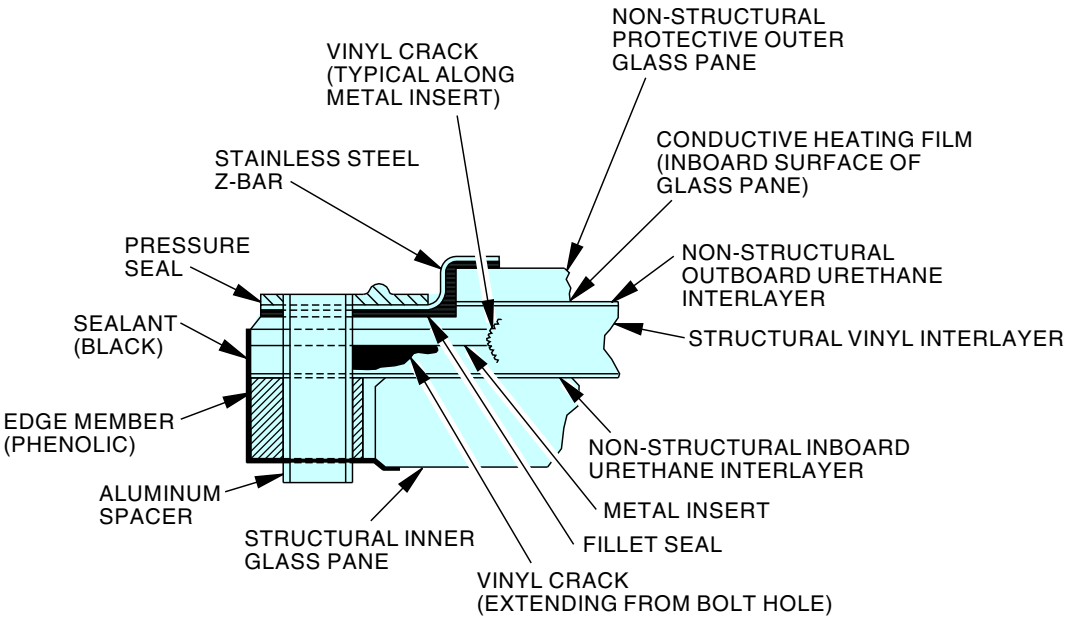
URETHANE INTERLAYER CRACKS

2416425 S00061540622_V1

Urethane Interlayer Cracks
Figure 610/56-11-00-990-809

ECCN 9E991 BOEING PROPRIETARY - See title page for details





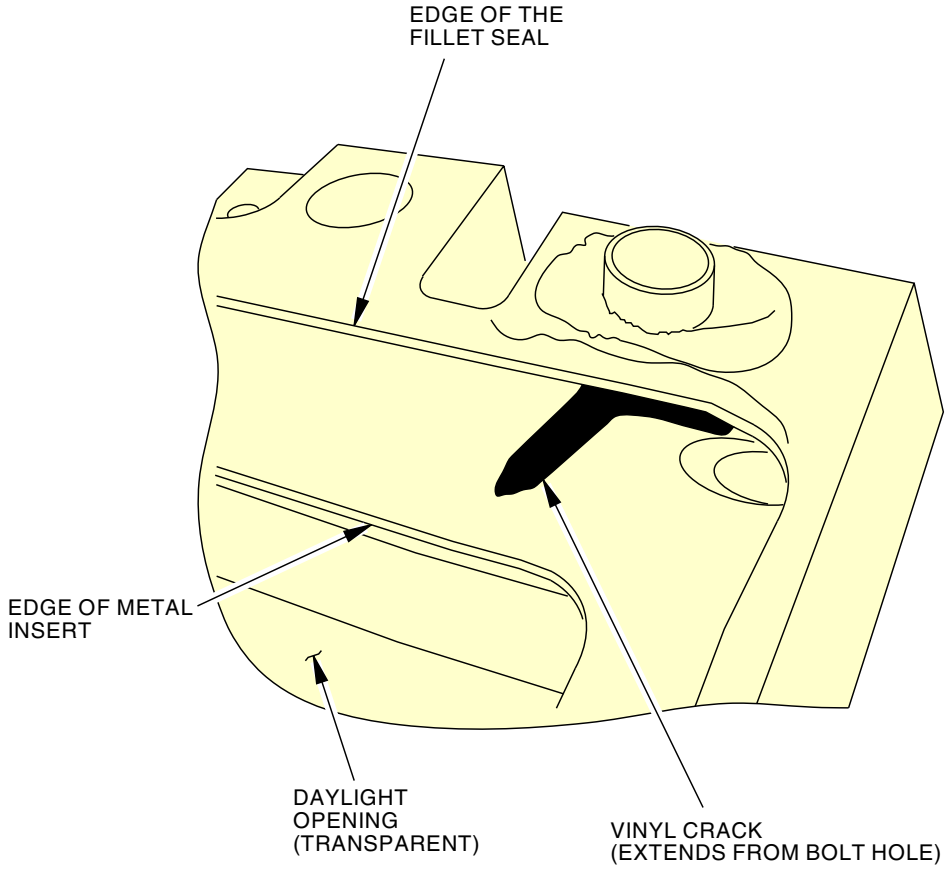
WINDOW NO. 1 VINYL CRACK (EXAMPLE)

A-A

2416426 S00061540623_V2

Windshield Structural Vinyl Interlayer Cracks
Figure 611/56-11-00-990-810 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

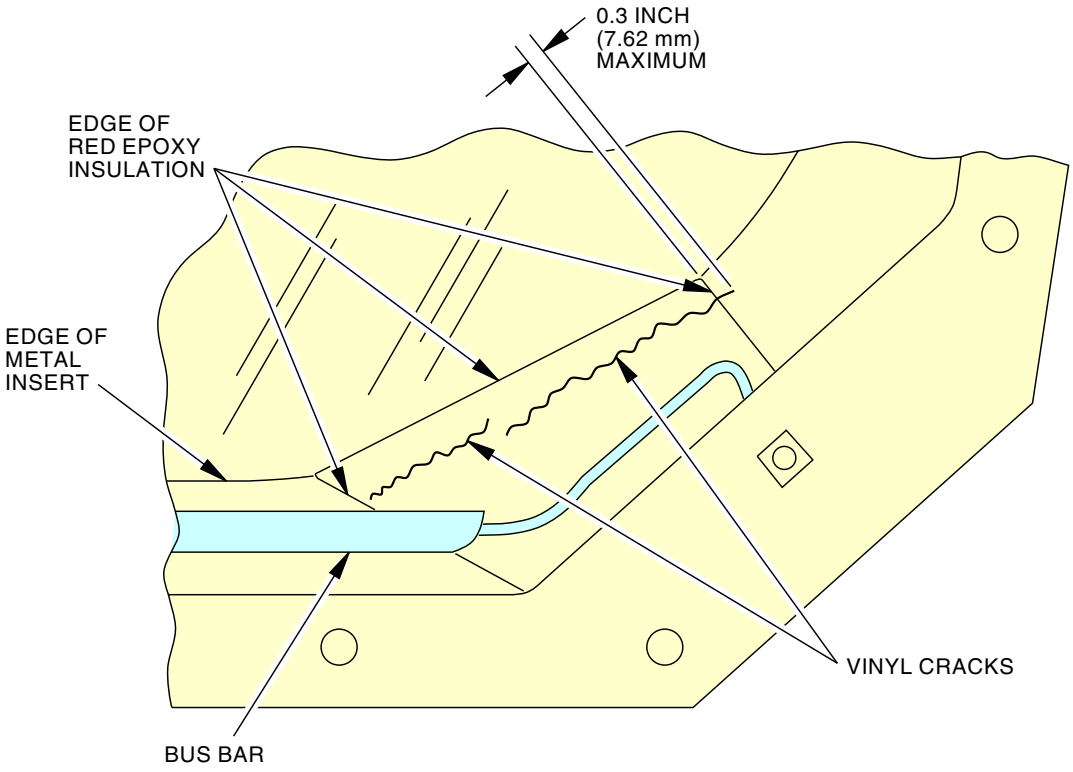


B

2416427 S00061540624_V2

Windshield Structural Vinyl Interlayer Cracks
Figure 611/56-11-00-990-810 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

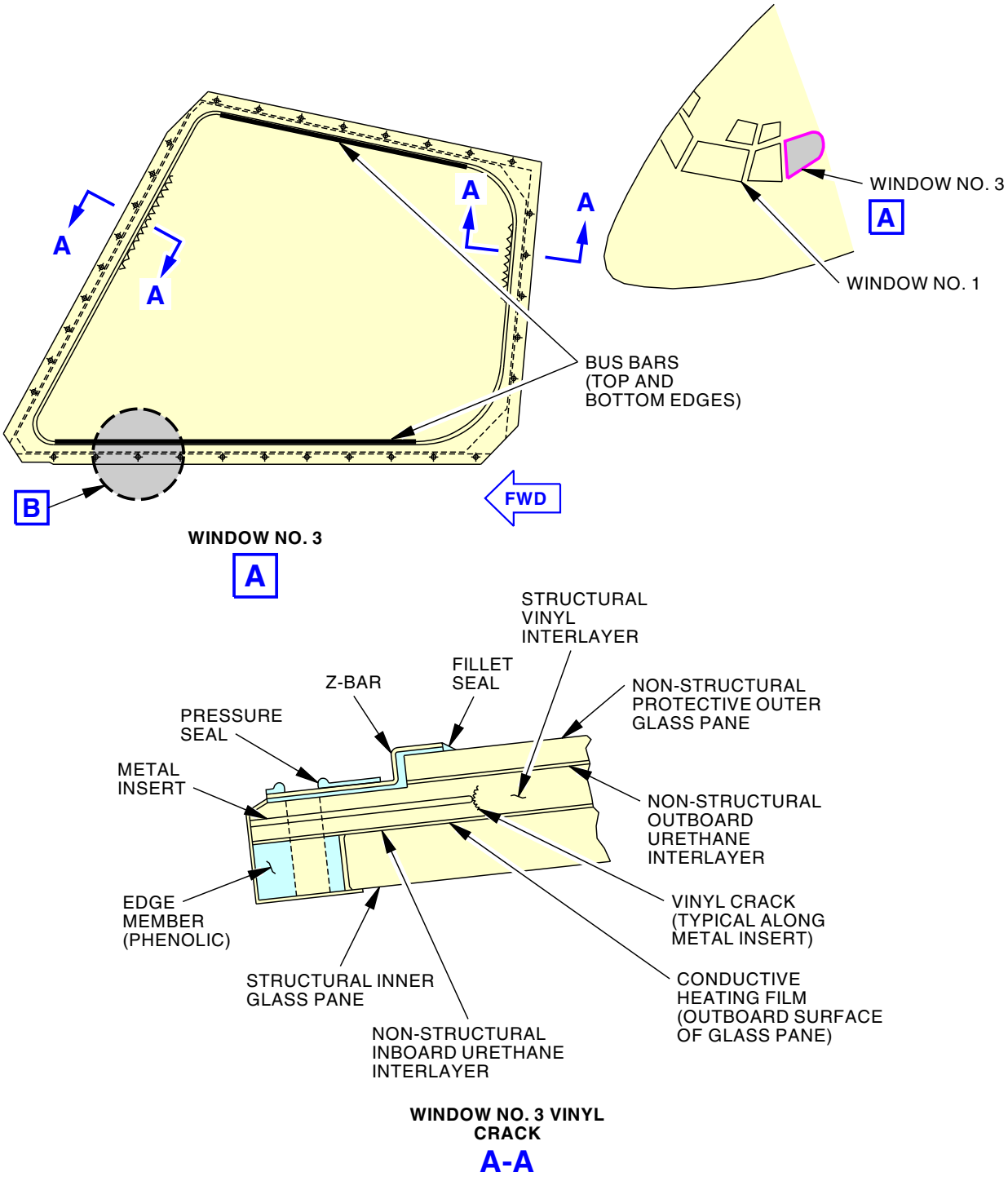


WINDOW NO. 3 CORNER-TYPE VINYL CRACK FOR HEATED GLASS (EXAMPLE)

3026090 S0000797543_V1

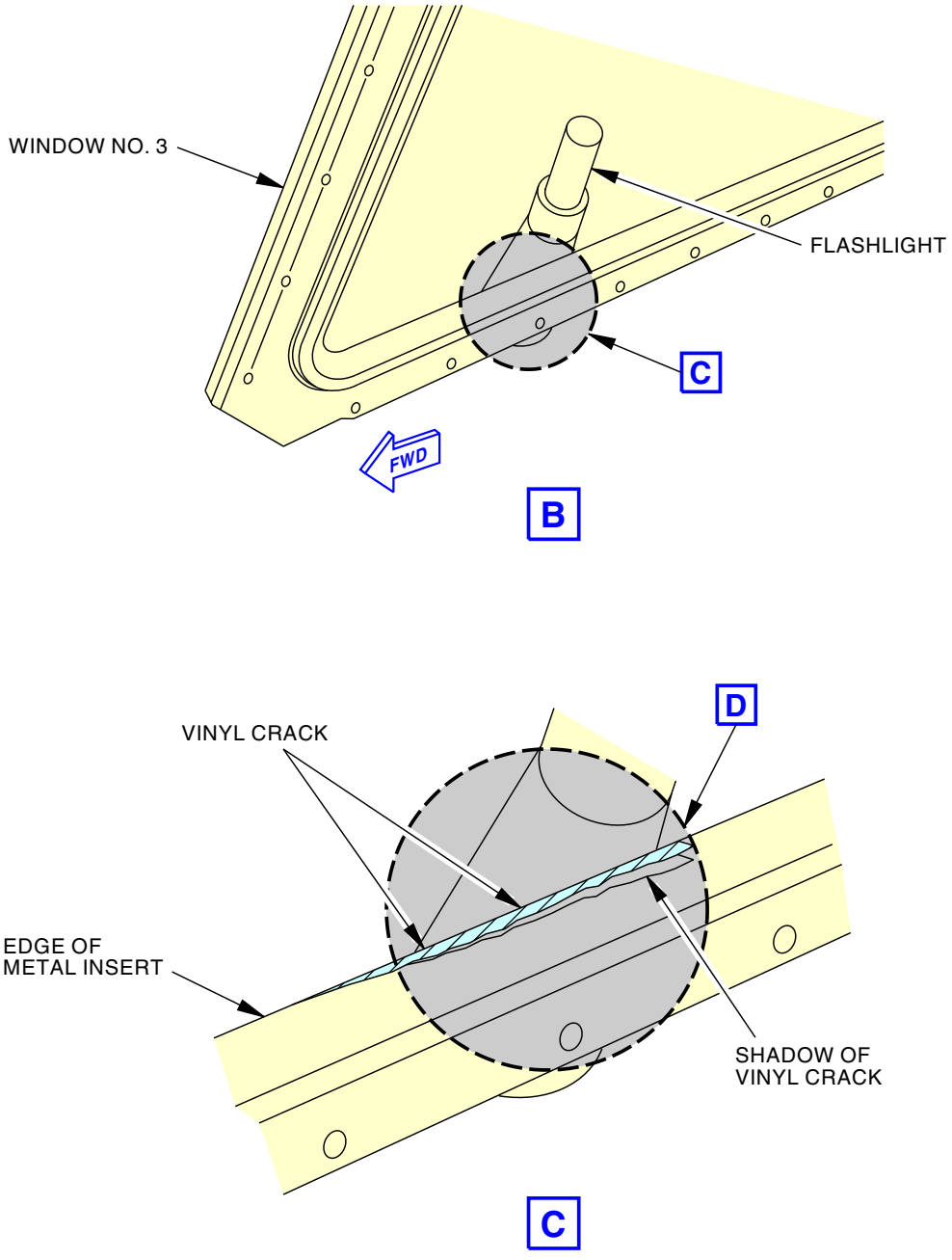
Window No. 3 Structural Vinyl Interlayer Cracks
Figure 612/56-11-00-990-816

ECCN 9E991 BOEING PROPRIETARY - See title page for details



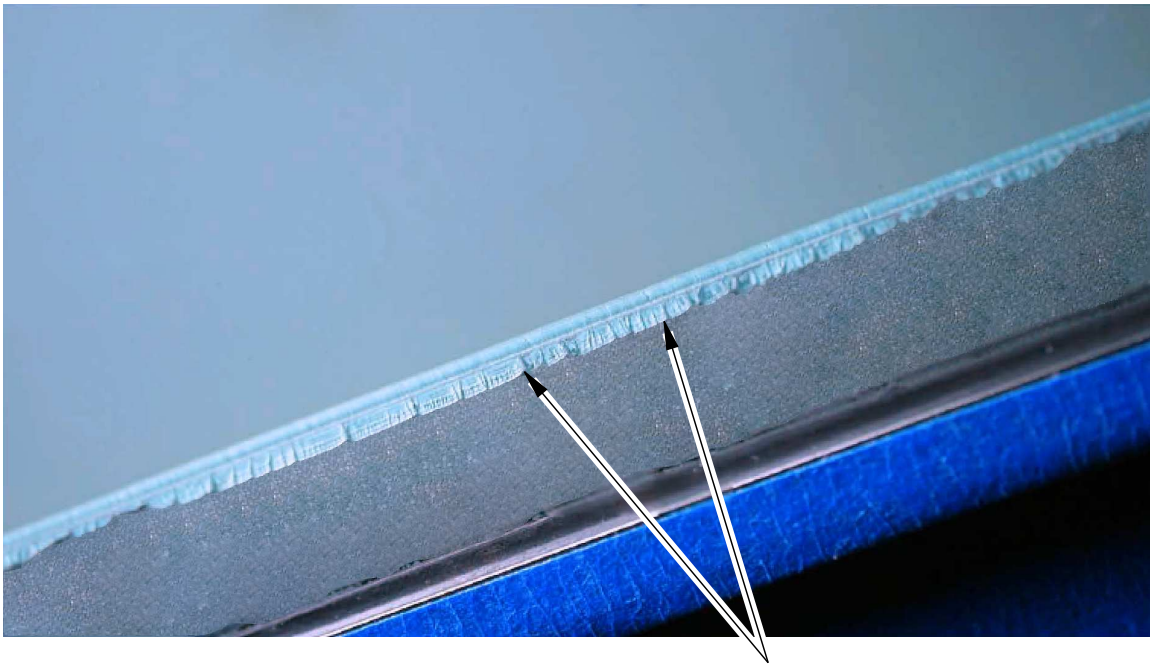
Window No. 3 Structural Vinyl Interlayer Cracks
Figure 613/56-11-00-990-817 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Window No. 3 Structural Vinyl Interlayer Cracks
Figure 613/56-11-00-990-817 (Sheet 2 of 3)

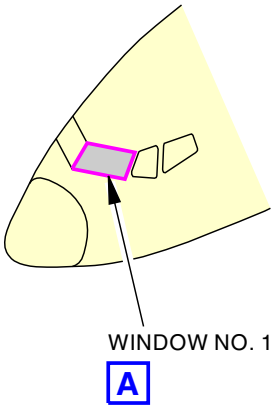
ECCN 9E991 BOEING PROPRIETARY - See title page for details

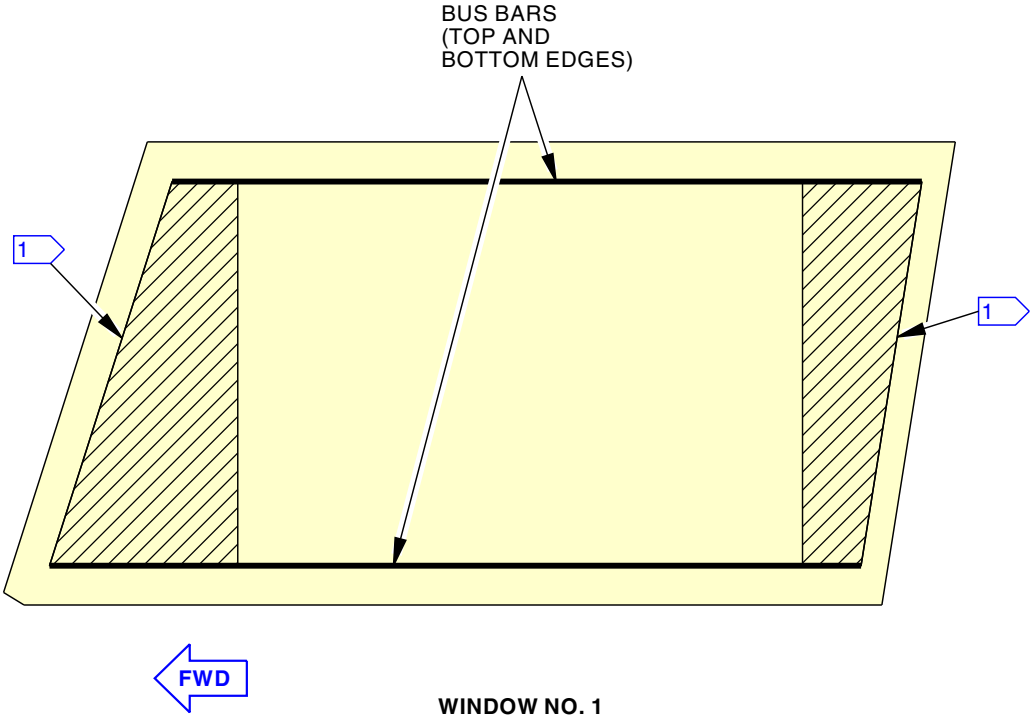


3026093 S0000797553_V1

Window No. 3 Structural Vinyl Interlayer Cracks
Figure 613/56-11-00-990-817 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





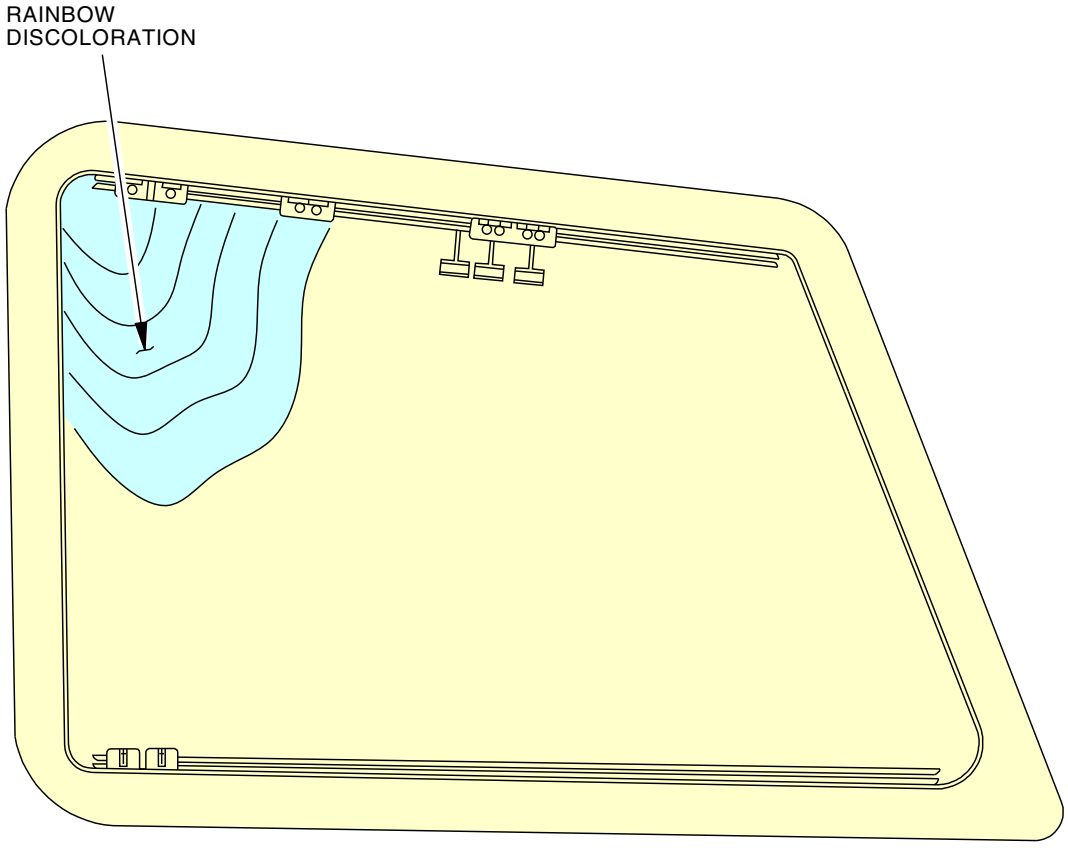
NOTE:

1 POTENTIAL WINDOW HAZE IN THIS AREA

2416428 S00061540625_V1

Windshield No.1 Haze
Figure 614/56-11-00-990-811

ECCN 9E991 BOEING PROPRIETARY - See title page for details

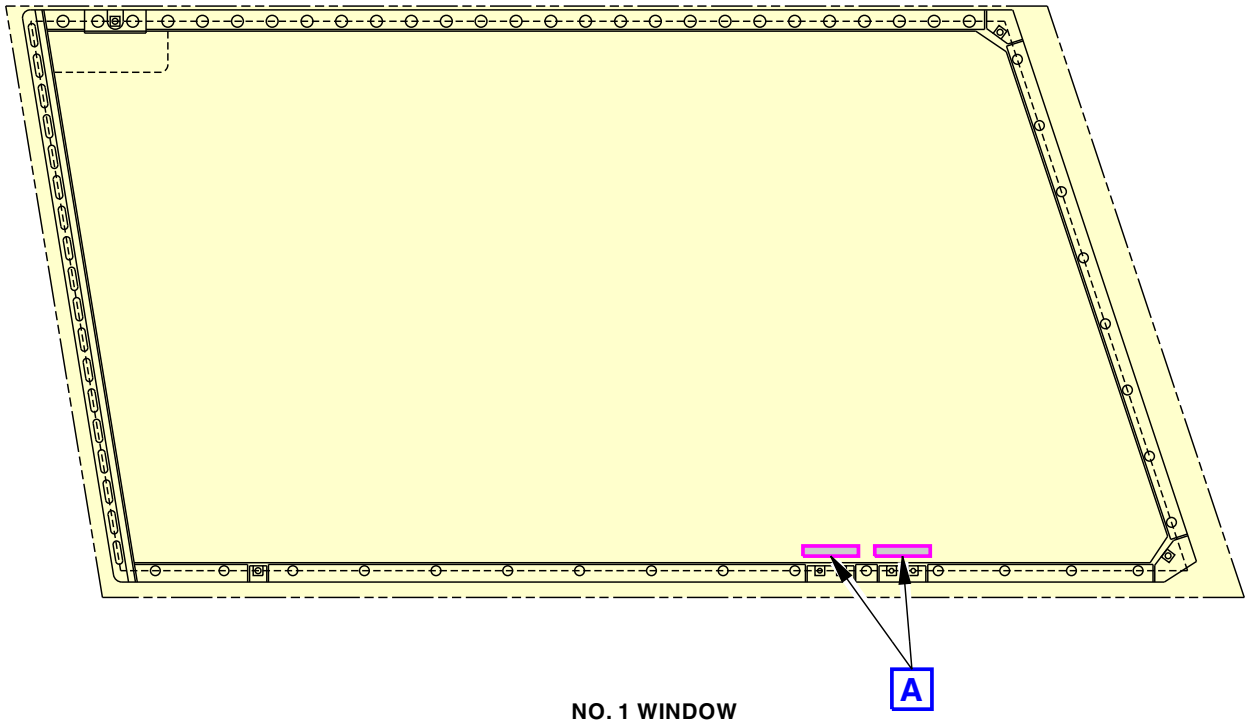


**WINDOW
(EXAMPLE)**

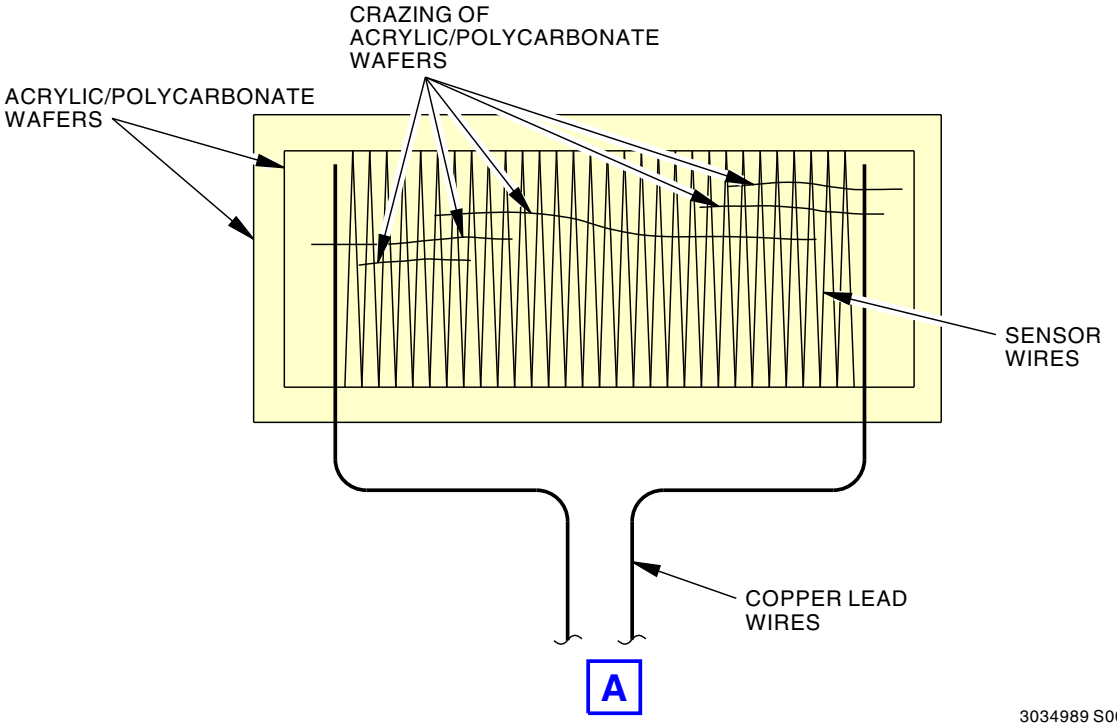
2995727 S0000772164_V1

**Rainbow Color Like Discoloration
Figure 615/56-11-00-990-815**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NO. 1 WINDOW



3034989 S0000804844_V1

Cracking of the Acrylic Wafers
Figure 616/56-11-00-990-818

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
51-21-72-370-804	BMS10-11 Primer - Application (P/B 701)
51-22-00-160-801	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
A01024	Compound - Fairing - 3M EC-3587B	BAC5530
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	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
A50543	Promoter - Adhesion, AC-137	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
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 56-11-00-860-003

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 overhead 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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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 aerodynamic smoother in areas where the following conditions exists (TASK 51-22-00-160-801):

(a) Cracks

(b) Erosion

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

SUBTASK 56-11-00-110-002

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, on the glass window and window frame where you will apply the new aerodynamic smoother.

SUBTASK 56-11-00-420-001

(4) Install a new nylon cord, G00039, in the bottom of the gap between the fuselage and the window.

NOTE: 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.

SUBTASK 56-11-00-390-001

(5) Use one of the aerodynamic smoother 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).

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.

SUBTASK 56-11-00-390-007

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

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(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 56-11-00-390-008

(7) 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

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

SUBTASK 56-11-00-390-003

(9) Use a sealant gun, STD-449, to apply the aerodynamic smoother sealant you have chosen between the frame and the glass window.

NOTE: When you apply the aerodynamic smoother sealant 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 aerodynamic sealant than is necessary.

SUBTASK 56-11-00-860-004

(10) Smooth the aerodynamic smoother sealant to the shape that is shown in (Figure 801).

SUBTASK 56-11-00-950-002

(11) Remove the Scotch Flatback Masking Tape 250, G00270, before the aerodynamic smoother sealant starts to get hard.

SUBTASK 56-11-00-860-005

(12) Let the aerodynamic smoother sealant cure (Figure 802).

SUBTASK 56-11-00-950-003

(13) 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.

(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.

SUBTASK 56-11-00-950-004

(14) If it is applied, remove 3M 425 Aluminum Foil Tape, G00291, after the aerodynamic smoother has fully cured.

G. Leveling Compound Repair

SUBTASK 56-11-00-160-001

(1) Remove damaged leveling compound (TASK 51-22-00-160-801).

SUBTASK 56-11-00-390-004

(2) Apply primer, C00259, to areas where the primer is damaged (TASK 51-21-72-370-804).

(a) Do not apply the leveling compound to the bare aluminum surface.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-00-860-006

(3) Make sure that the airplane is in a level attitude or a taxi attitude.

SUBTASK 56-11-00-390-005

(4) Apply 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 cure (Table 801).

Table 801/56-11-00-993-802 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 56-11-00-210-015

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.

H. 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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 56-11-00-860-008

(2) 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 SIDE

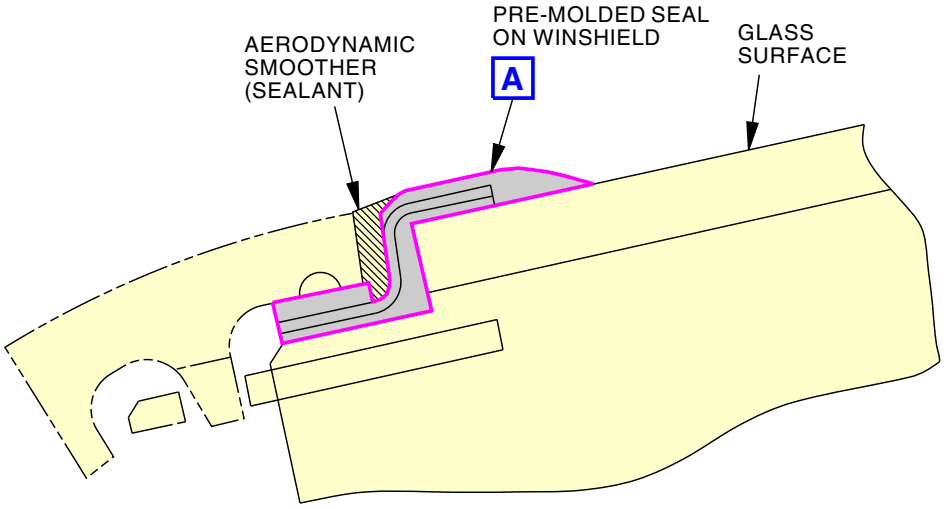
(b) WINDOW HEAT L FWD

(c) WINDOW HEAT R SIDE

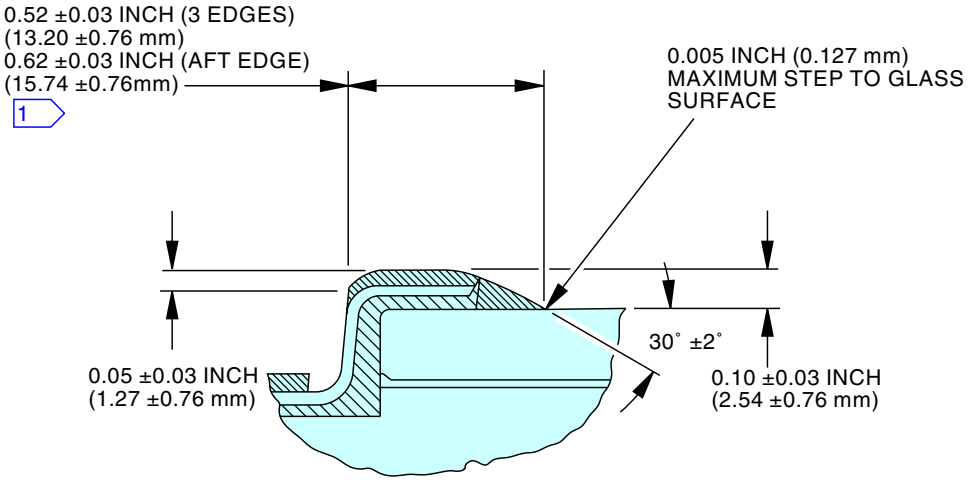
(d) WINDOW HEAT R FWD.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SEALANT SHAPE WINDOW NO. 1



PRE-MOLDED SEAL ON WINDSHIELD

A

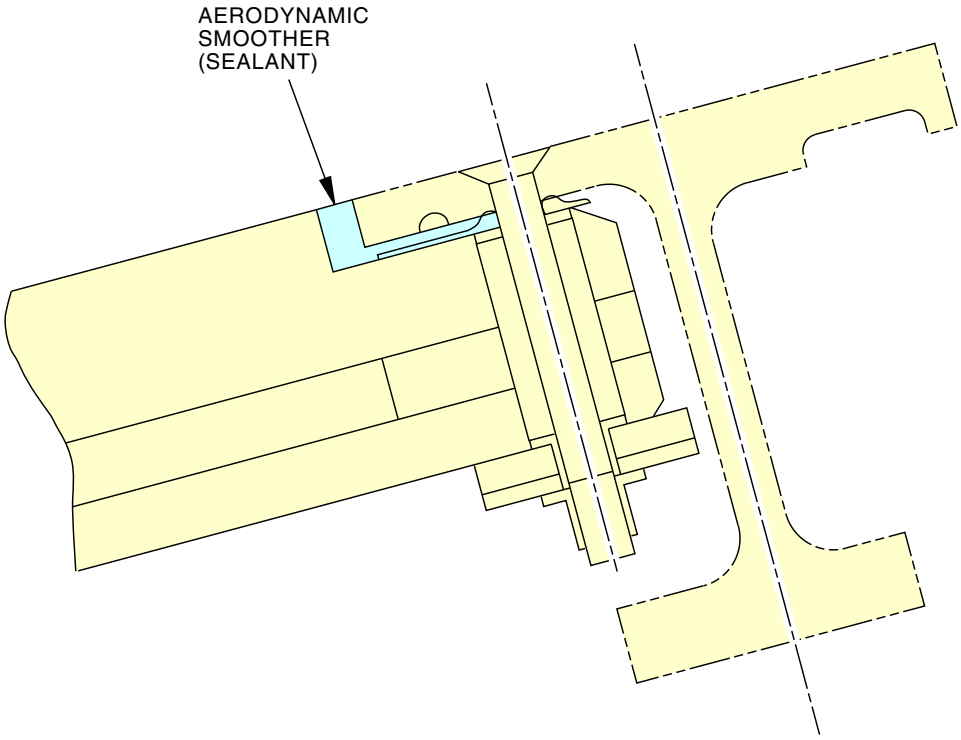
NOTE:

1 SHOWN DIMENSIONS WILL VARY IN CORNERS TO PROVIDE SMOOTH TRANSITION BETWEEN EDGES.

2416429 S00061540628_V2

Aerodynamic Smoother Application
Figure 801/56-11-00-990-812 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SEALANT SHAPE - WINDOW NO. 3

2416430 S00061540629_V1

Aerodynamic Smoother Application
Figure 801/56-11-00-990-812 (Sheet 2 of 2)

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 FOR ACCELERATED CURING TIMES SEE TECHNICAL DATA SHEET FOR THE SEALANT

2845694 S0000665110_V3

Sealant Cure Times
Figure 802/56-11-00-990-813

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 and Figure 404)

A. General

(1) This task gives the instructions to remove the No. 1 window.

B. 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)
30-42-31-000-801	Windshield Wiper Arm Removal (P/B 401)
31-65-11-000-801	MAX Display Unit Removal (P/B 401)
31-65-12-000-801	EFIS Control Panel Removal (P/B 401)
WDM 31-65-11	Wiring Diagram Manual
WDM 31-65-21	Wiring Diagram Manual

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. 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)

E. Location Zones

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

F. Prepare for the Removal

SUBTASK 56-11-11-860-002

WARNING REMOVE POWER FROM THE WINDOW HEAT SYSTEM BEFORE YOU REMOVE THE WINDOWS. ELECTRICAL POWER CAN CAUSE 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:

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 56-11-11-860-003

(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

F/O Electrical System Panel, P6-3

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 56-11-11-950-007

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

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

SUBTASK 56-11-11-010-004

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

SUBTASK 56-11-11-020-016

(5) Remove the center post cover screws.

SUBTASK 56-11-11-020-017

(6) Disconnect the following drain tubes:

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

(b) Center Drain Tube

(c) Right Drain Tube.

SUBTASK 56-11-11-020-018

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

SUBTASK 56-11-11-020-019

(8) Remove the window sill cover.

SUBTASK 56-11-11-020-020

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

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

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Do this task: EFIS Control Panel Removal, TASK 31-65-12-000-801.

(c) Do this task: MAX Display Unit Removal, TASK 31-65-11-000-801.

(d) Remove the lower glareshield covers.

(e) If necessary, disconnect the chart lights and headphone jacks.

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

1) Remove the quarter-turn fasteners [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 (D13781 and D13783) and ground wires (GD701-DC, GD697-ST and GD703-DC, GD709-ST) from the support frame (WDM 31-65-11, WDM 31-65-21).

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

(h) Remove the glareshield support bracket.

(i) Remove the de-mist outlet and outboard glareshield support bracket as follows:

1) Remove the de-mist outlet attach screws.

2) Move the de-mist outlet to gain access to the window screws.

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

(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 anti-fogging ducts from the nozzles.

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

SUBTASK 56-11-11-010-006

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

(a) Move the drain tubes to one side to permit the removal of the window.

SUBTASK 56-11-11-020-021

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

SUBTASK 56-11-11-020-022

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

(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.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-020-023

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

SUBTASK 56-11-11-020-024

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

SUBTASK 56-11-11-020-025

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

SUBTASK 56-11-11-020-026

(16) 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.

G. No. 1 Window Removal

SUBTASK 56-11-11-020-027

(1) Remove the following components (Figure 401):

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

(a) bolts [8], bolts [9], bolts [13], bolts [17], bolts [19], bolts [22], and bolts [25]

(b) nutplate strip assembly [2], nutplate strip assembly [3], nutplate strip assembly [4], and nutplate strip assembly [5]

(c) nuts [10] and nuts [18]

(d) spacer [21]

(e) washers [11], washers [15], seal washers [16], and washers [23]

(f) O-rings [12] and O-rings [20]

(g) clips [24].

SUBTASK 56-11-11-020-028

(2) Do these steps to remove the retainer bolts [34], washers [35], retainer [32], and assy - plate, scuff [33] from the window frame post:

NOTE: The window frame post is the joint where the No. 1 window frame attaches to the No. 2 window frame.

(a) Open the adjacent sliding window of Window No. 2.

(b) Remove the retainer bolts [34], washers [35], and assy - plate, scuff [33] from the retainer [32] and the window frame post.

(c) If possible, remove the retainer [32] from the window frame post.

NOTE: Keep the retainer, assy - plate, scuff, retainer bolts, and washers for installation.

NOTE: The retainer cannot be removed until the windshield is out of the window frame.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-11-11-020-029

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.

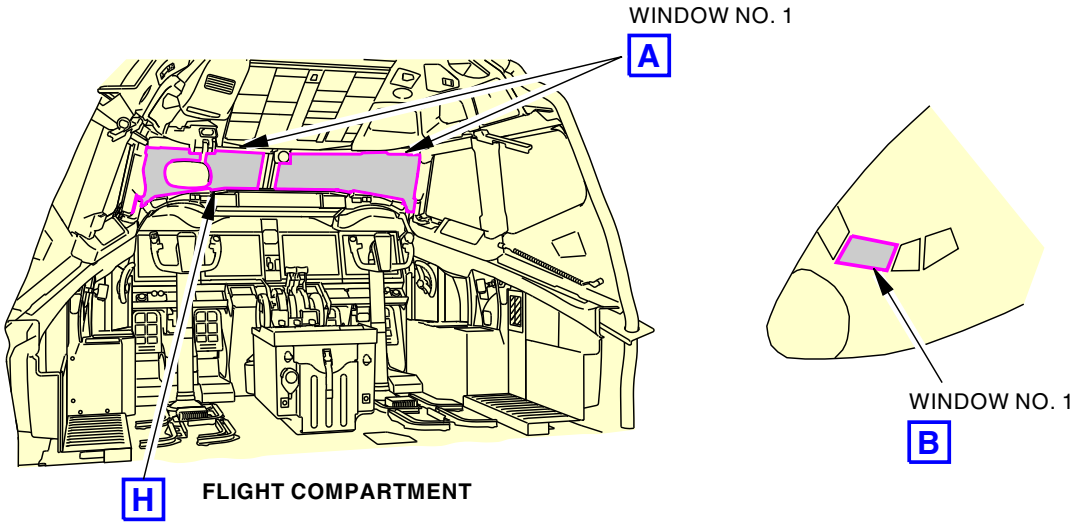
NOTE: Always apply pressure to the largest area possible. You can tap the window with a rubber mallet and nonmetallic block if it is particularly difficult to remove. Do not permit the window to fall free when you break the pressure seal. Remove the spacers and the silicone rubber molded-in-position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

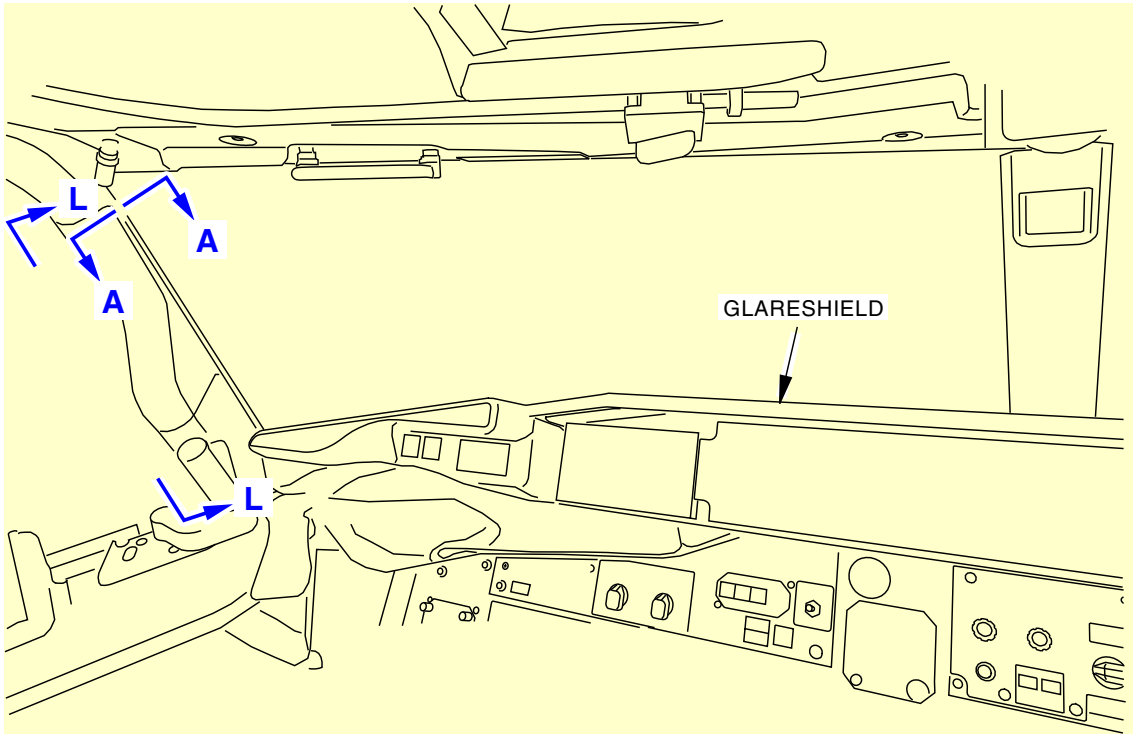
SUBTASK 56-11-11-020-030

(4) Remove the No. 1 window.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





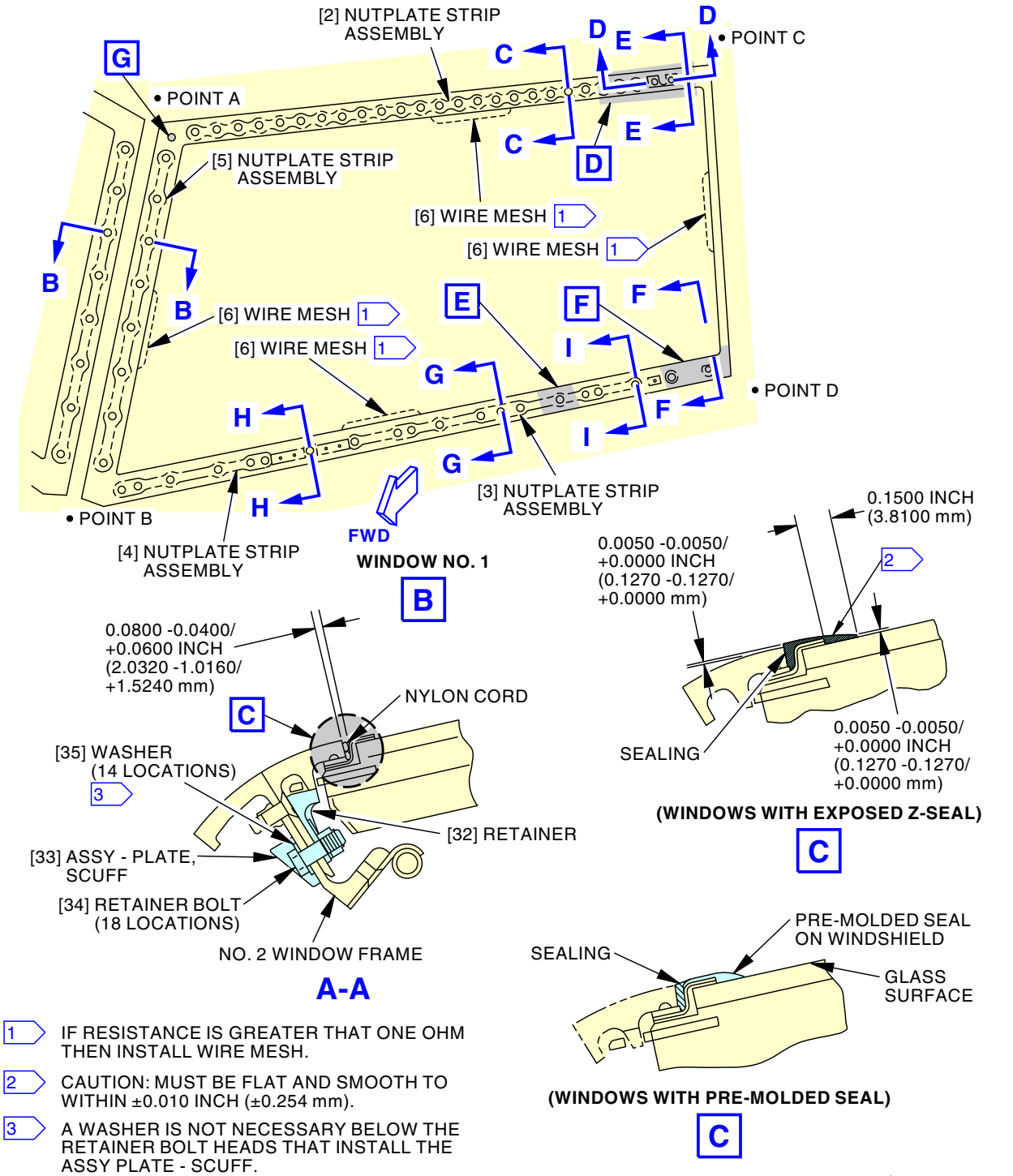
WINDOW NO. 1
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2416432 S00061540635_V2

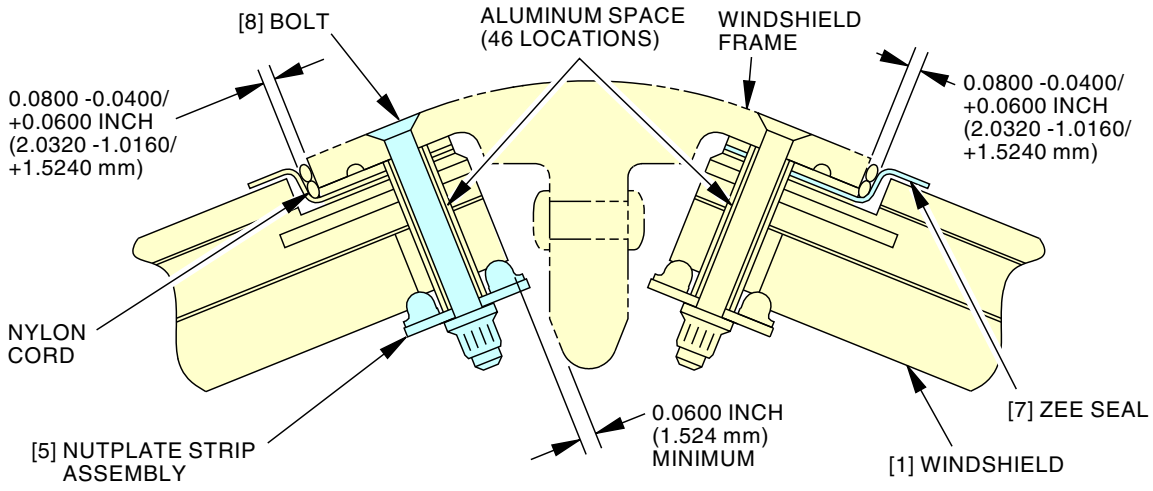
No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

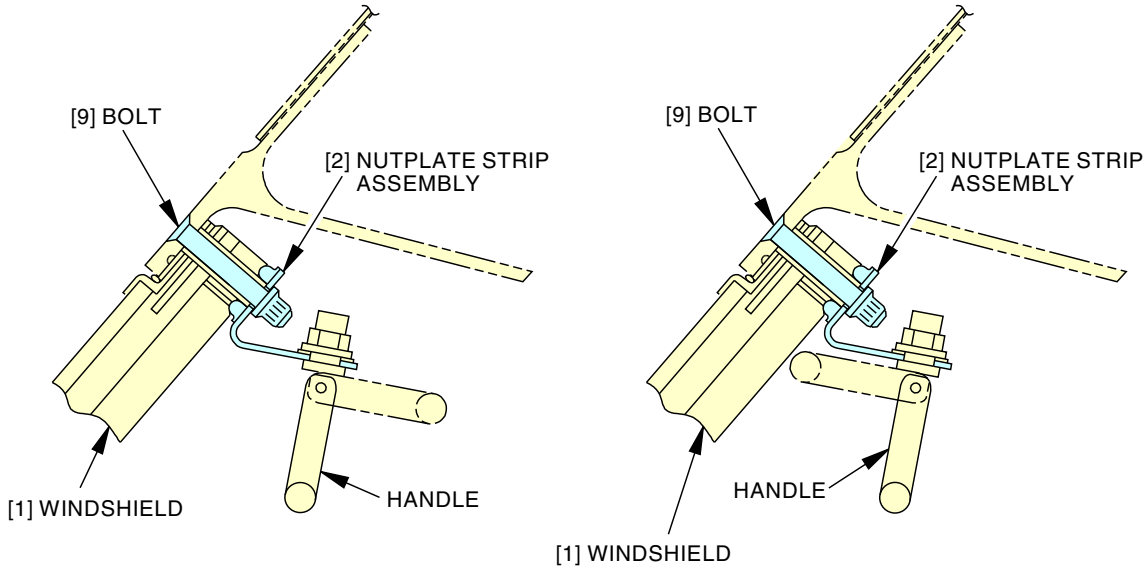


No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



B-B



ASSIST HANDLE
C-C 3

ASSIST HANDLE
C-C 4

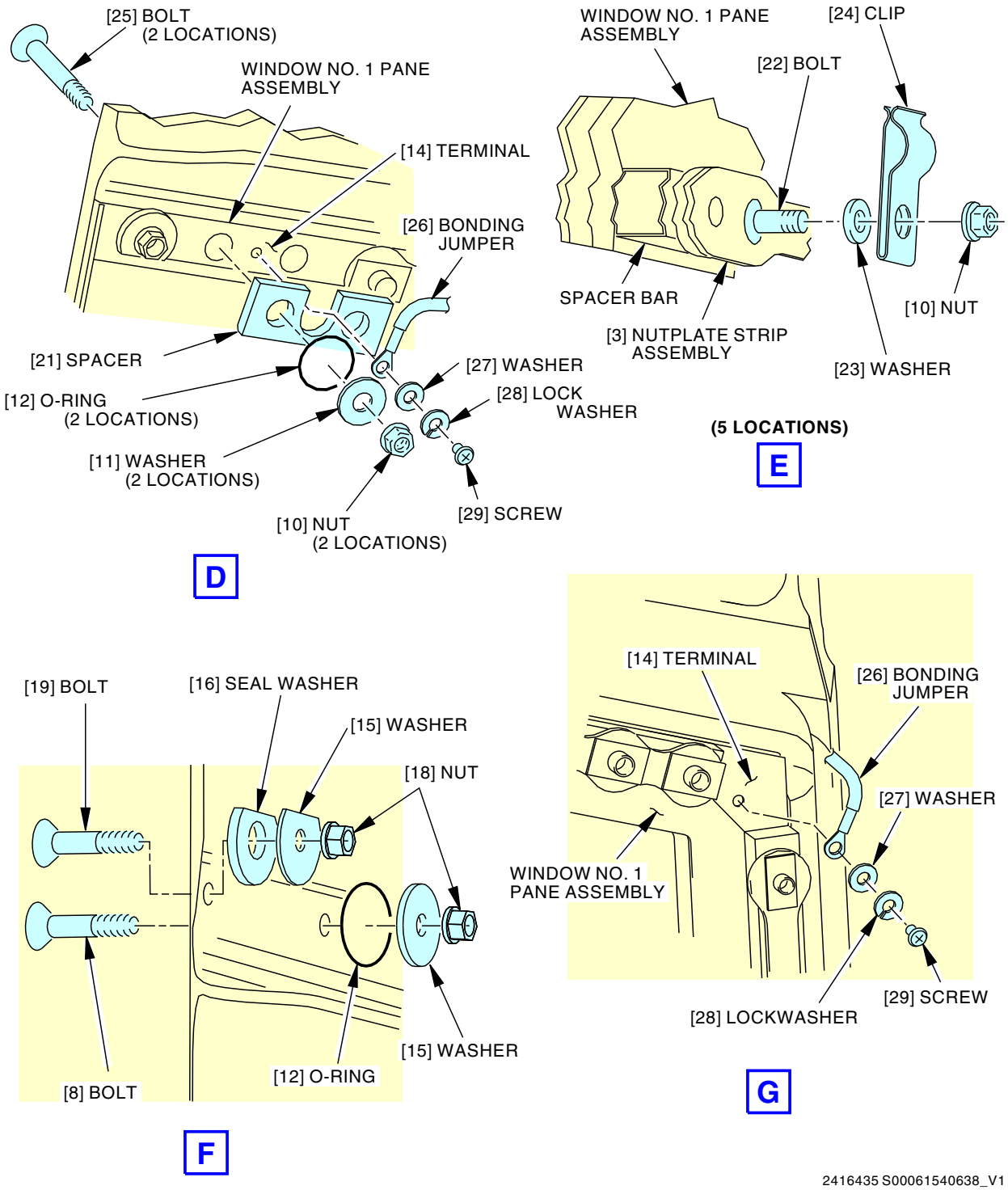
3 IN STOWED POSITION WHEN HUD IS INSTALLED.

4 IN STOWED POSITION WHEN HUD IS NOT INSTALLED.

2416434 S00061540637_V1

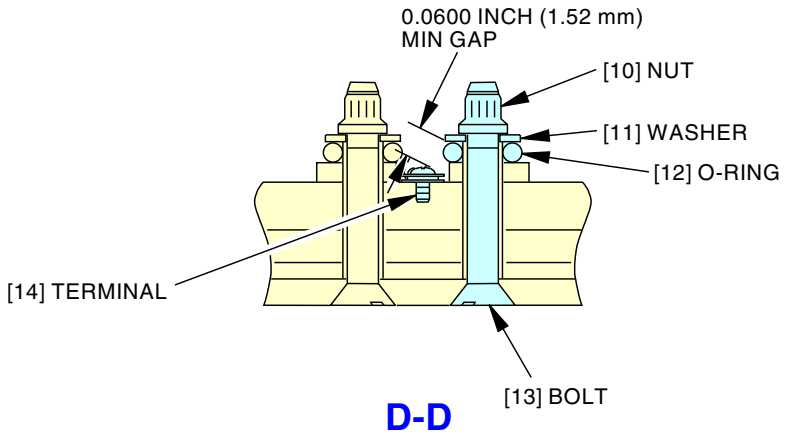
No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 3 of 9)

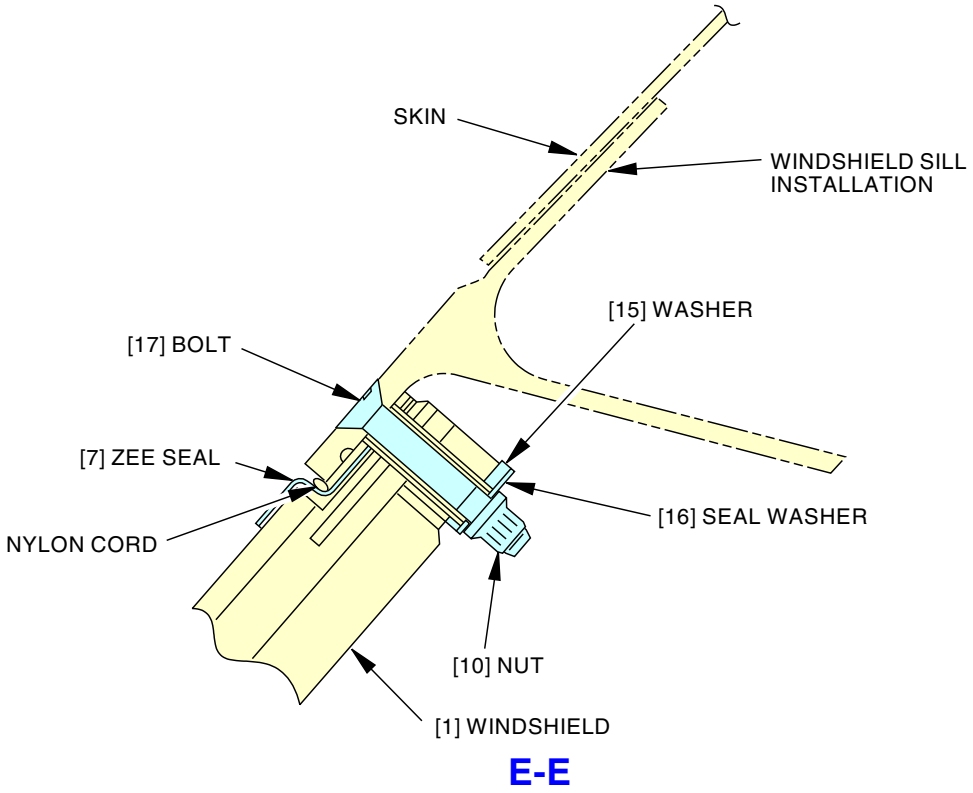
ECCN 9E991 BOEING PROPRIETARY - See title page for details



No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

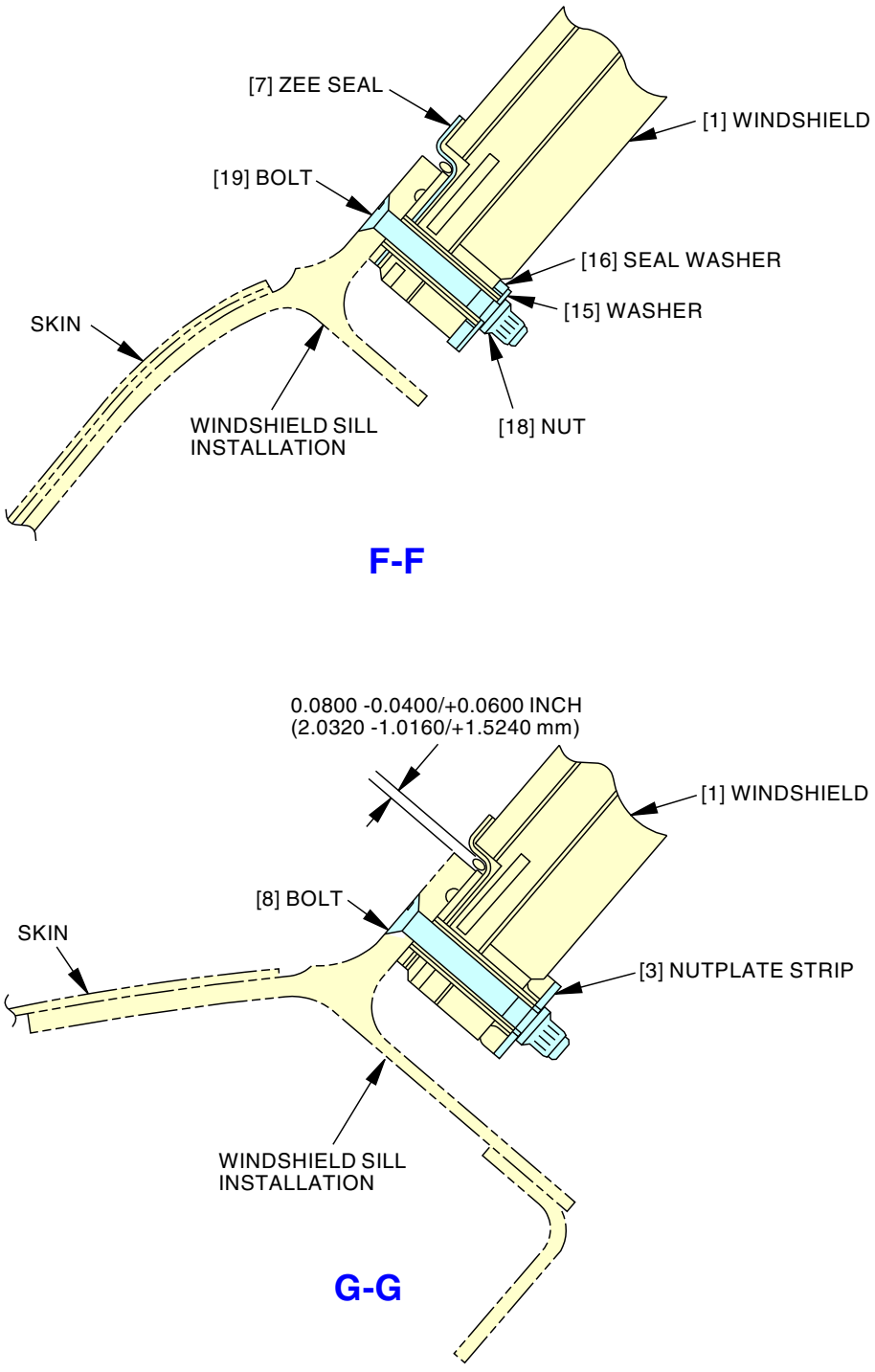




2416436 S00061540639_V1

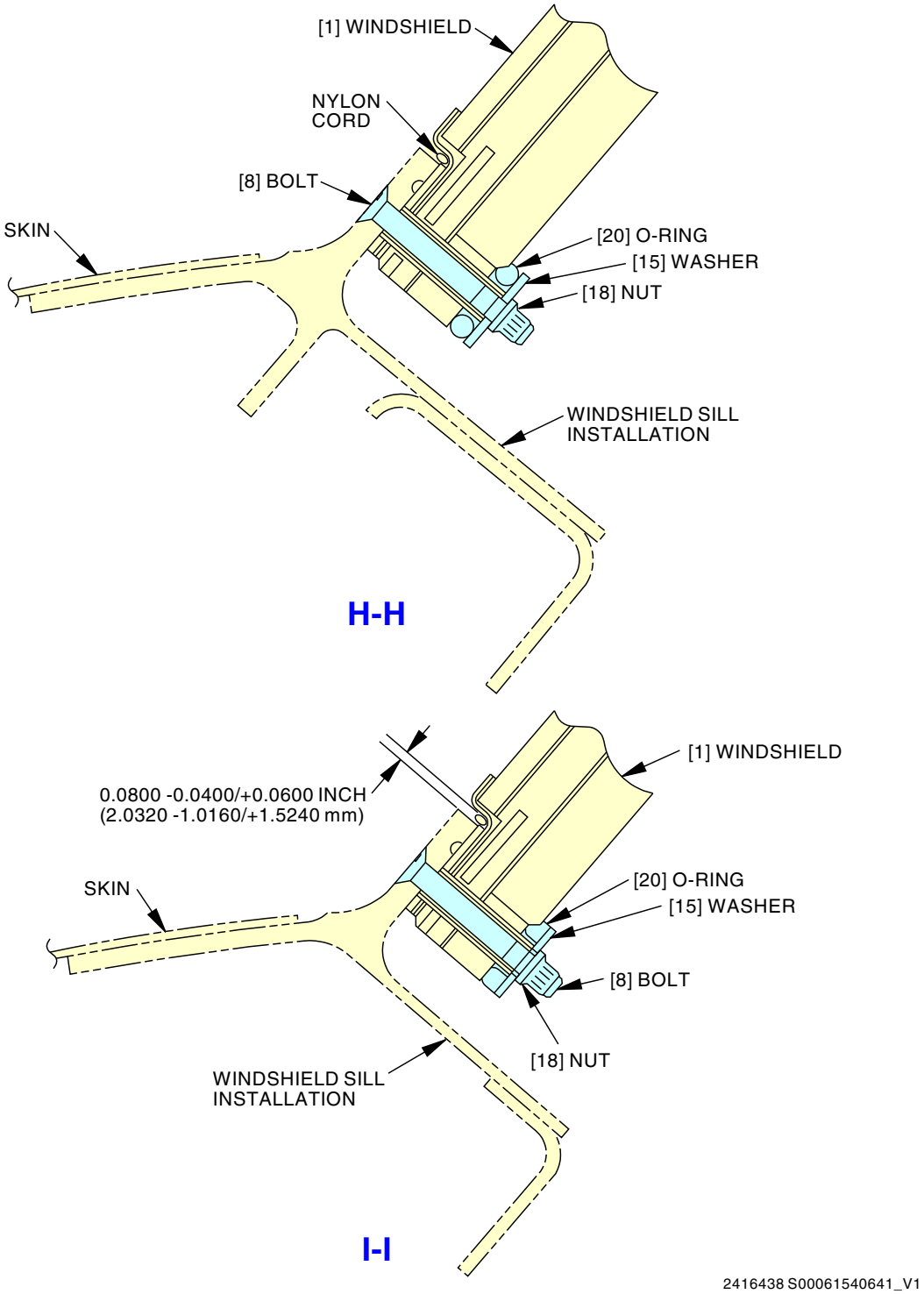
No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



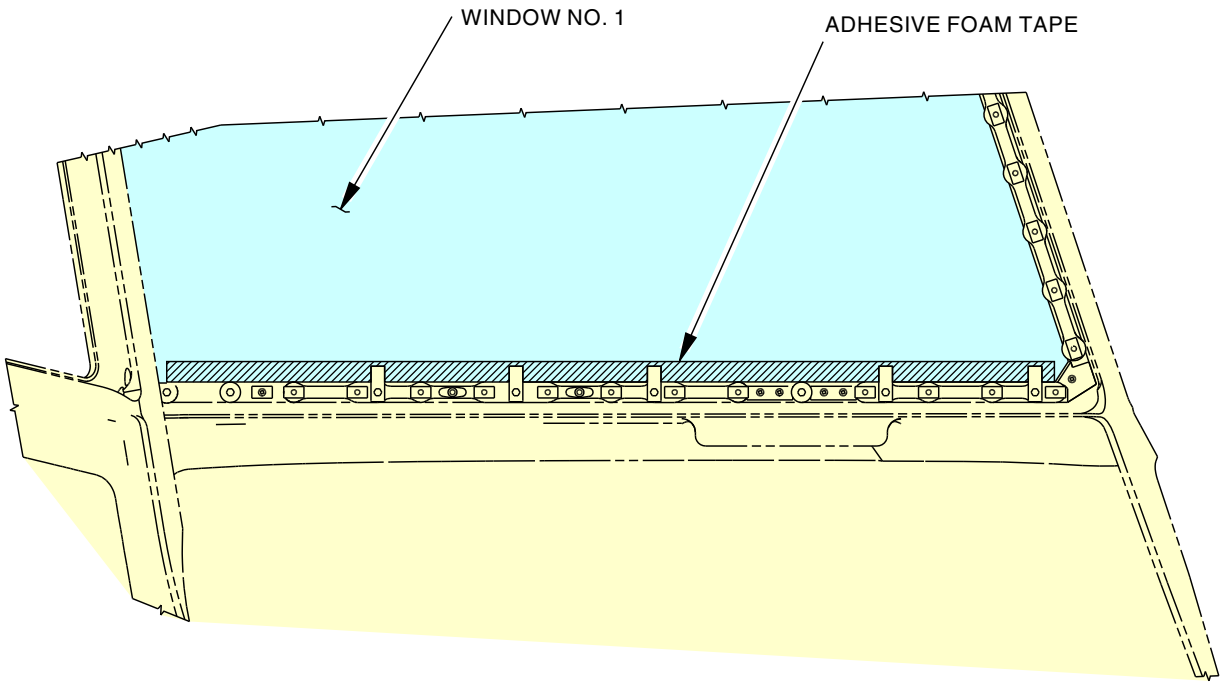
No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

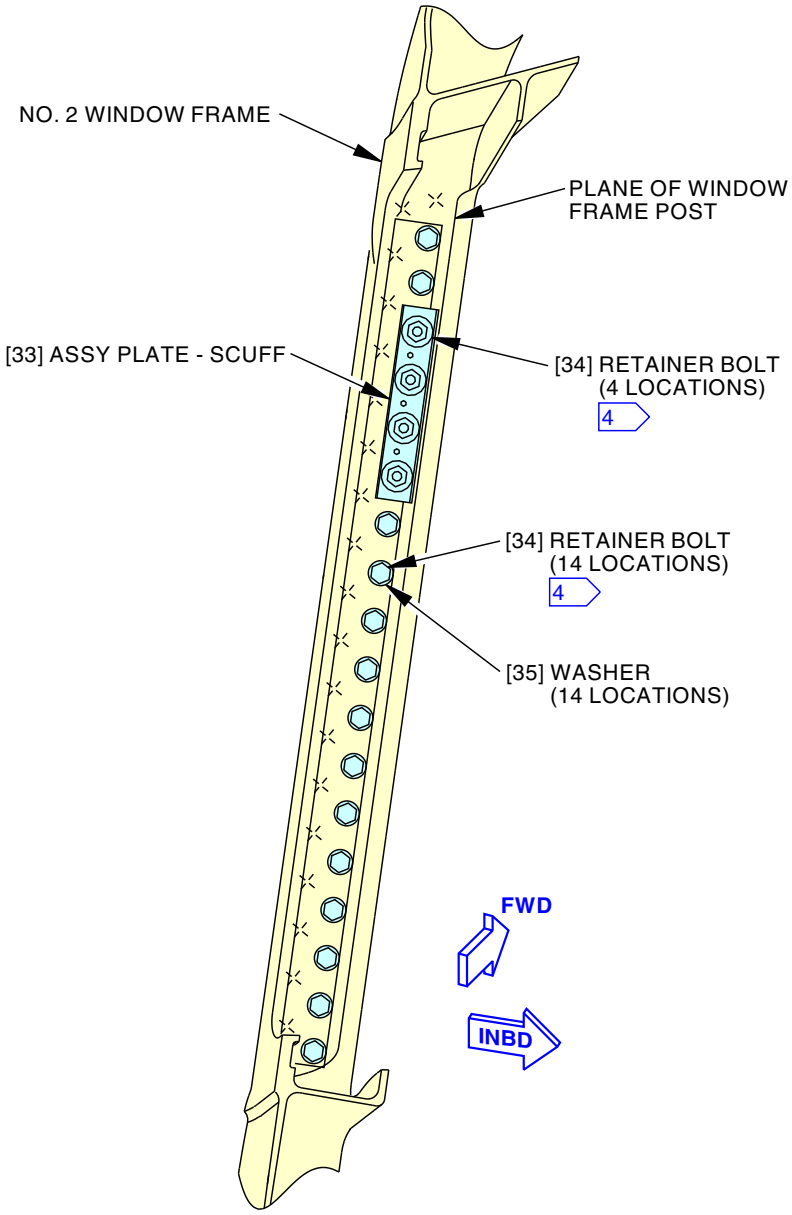


H

2416439 S00061540642_V1

No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)

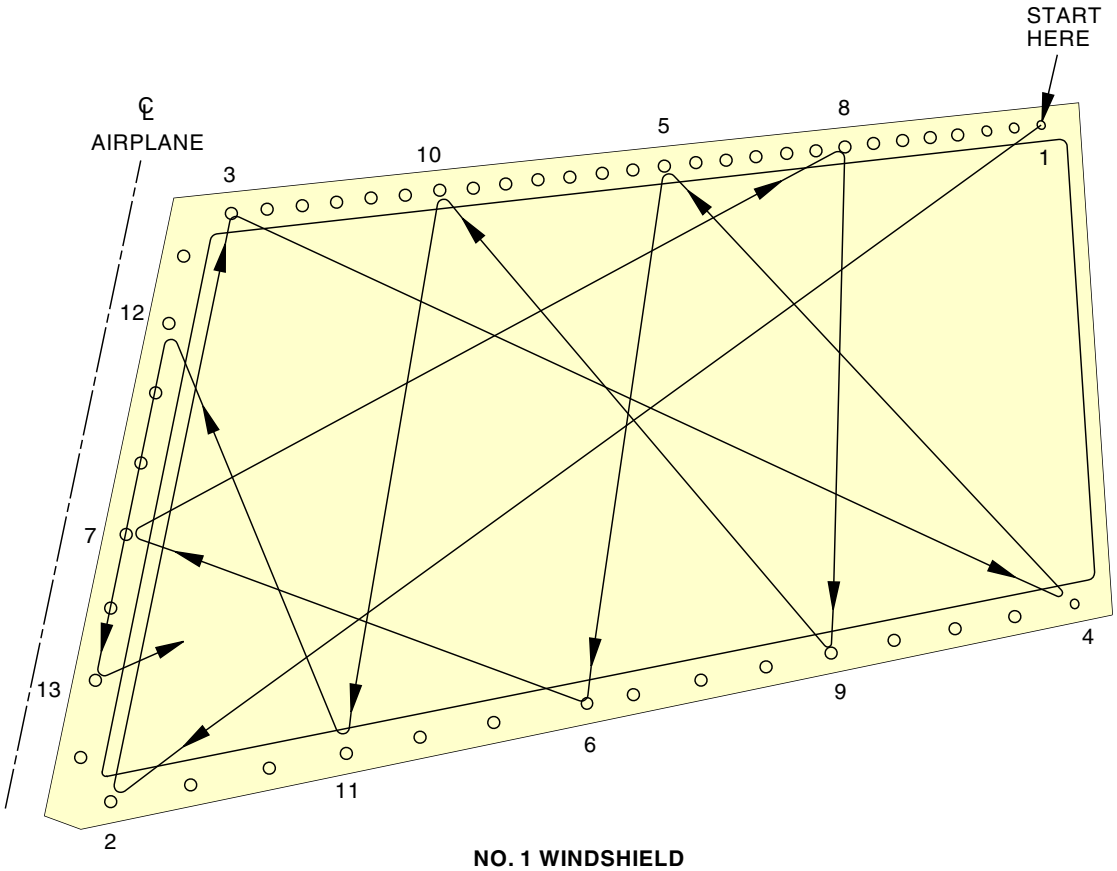
L-L

4 MAKE SURE THAT THE HEX HEAD FLATS OF THE RETAINER BOLTS AND THE PLANE OF THE WINDOW FRAME POST ARE ALIGNED.

2975800 S0000753692_V1

No. 1 Window Installation
Figure 401/56-11-11-990-805 (Sheet 9 of 9)

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.

2416440 S00061540643_V1

Window No. 1 Retaining Bolt Torque Sequence
Figure 402/56-11-11-990-806

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)

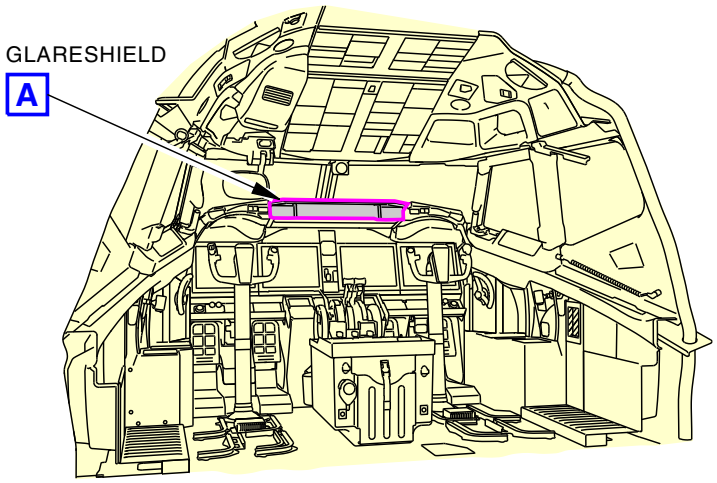
4 REX A DUROMETER READING OF 30

5 FOR ACCELERATED CURING TIMES SEE TECHNICAL DATA SHEET FOR THE SEALANT

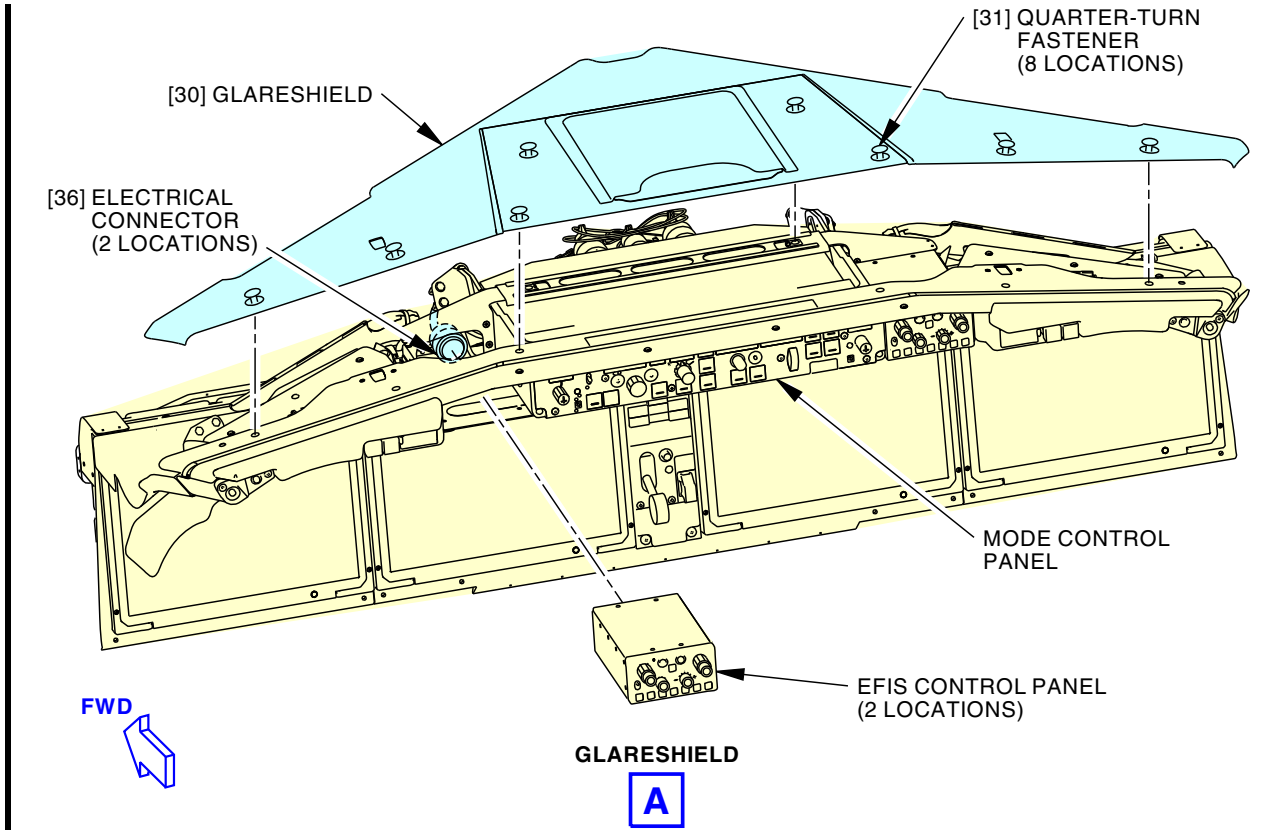
2845694 S0000665110_V3

Sealant Cure Times
Figure 403/56-11-11-990-807

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



2416442 S00061540645_V2

Glareshield Installation
Figure 404/56-11-11-990-808

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, and Figure 404)

A. General

(1) This task gives the instructions to install 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)
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)
30-42-31-400-801	Windshield Wiper Arm Installation (P/B 401)
31-65-11-400-801	MAX Display Unit Installation (P/B 401)
31-65-12-400-801	EFIS Control Panel Installation (P/B 401)
56-11-00-200-801	Flight Compartment Windows - Inspection (P/B 601)
56-11-00-300-801	Flight Compartment Windows - Repair of Aerodynamic Smoother and Pre-Molded Seal (P/B 801)
WDM 31-65-11	Wiring Diagram Manual
WDM 31-65-21	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-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426
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
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	
G50360	Seal - Closed Cell Silicone Foam Rubber, Hydraulic Fluid Resistant (with Adhesive)	BMS1-68 Grade A Form III

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Windshield	56-11-11-03-335	SIA ALL
		56-11-11-04-345	SIA ALL
6	Wire mesh	56-11-11-03-080	SIA ALL
		56-11-11-04-080	SIA ALL
12	O-ring	56-11-11-03-085	SIA ALL
		56-11-11-04-085	SIA ALL
20	O-ring	56-11-11-03-085	SIA ALL
		56-11-11-04-085	SIA ALL

F. Location Zones

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

G. Prepare for the Installation

SUBTASK 56-11-11-210-001

(1) Do a visual inspection of the serviceable No. 1 window (TASK 56-11-00-200-801).

SUBTASK 56-11-11-420-001

(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 the old hardware is used, examine the condition and clean off any contamination.

NOTE: It is structurally acceptable to adjust the grip length of the bolt in accordance with Boeing Process Specification BAC5009 (Bolt and Nut Installation).

SUBTASK 56-11-11-210-002

(3) Examine the leveling compound for the window and repair it if necessary (TASK 56-11-00-300-801).

NOTE: The spacer will compress the leveling compound on the structure around the end of the spacer. It is not necessary to repair the compound on subsequent window installations.

SUBTASK 56-11-11-210-003

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

SUBTASK 56-11-11-950-002

(5) 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 56-11-11-420-017

(6) 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 ALIPHATIC NAPHTHA IS THE RECOMMENDED SOLVENT AND IS ALSO POISONOUS. IF YOU USE NAPHTHA IN A CONFINED SPACE, MECHANICAL VENTILATION IS MANDATORY. RESPIRATORY DEVICES AND SKIN PROTECTION ARE NECESSARY. IF YOU DO NOT FOLLOW THESE INSTRUCTIONS, INJURY TO PERSONS CAN OCCUR.

CAUTION DO NOT CHANGE THE SHAPE OF THE MATING SURFACES ON THE WINDOW FRAME AND PRESSURE SEAL. IF YOU DO NOT OBEY, DAMAGE TO THE MATING SURFACES CAN OCCUR.

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

(a) The mating surfaces of the pressure seal

(b) The window frame

(c) The window frame post.

SUBTASK 56-11-11-100-001

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

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

SUBTASK 56-11-11-420-002

CAUTION DO NOT USE MAGNETIC TOOLS NEAR THE STANDBY MAGNETIC COMPASS. MAGNETIC TOOLS CAN CAUSE DAMAGE TO THE COMPASS.

(9) Install the retainer [32] loosely to the window frame post with one or two retainer bolts [34] and washers [35] (Figure 401).

(a) Make sure that the retainer bolts [34] agree with the removed bolts.

NOTE: This will make sure that the bolt ends do not touch the edge of the window glass.

(b) Tighten the retainer bolts [34] by hand.

SUBTASK 56-11-11-400-001

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

(a) If seal, G50360, replacement is necessary, 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) To clean the window, do these tasks: FLIGHT COMPARTMENT WINDOWS - SERVICING, PAGEBLOCK 12-16-02/301.

3) To 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.

<1> Keep the surface of the window clean before seal, G50360, installation.

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<2> Do not let the solvents get in contact with the plastics, control cables, lubricated areas, plastic decals, paints or markings that are not Skydrol resistant.

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

b) Remove seal, G50360, from the roll.

c) Turn the surface of seal, G50360, with adhesive down and cut the seal, G50360, into length.

<1> Cut only the length of seal, G50360, necessary for installation.

<2> 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).

d) For seal, G50360, with protective linings on the adhesive, do these steps:

<1> Cut seal, G50360, 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 seal, G50360, at the bottom of the window, above the mating surface of the lower nut plate strip.

f) Carefully push from the center of seal, G50360, to the edges to release the air from seal, G50360.

g) Remove the wrinkles from the surface of seal, G50360, and seal the edges with a roller or polyethylene.

h) Make sure that a puncture is put in seal, G50360, with a pin to remove air below seal, G50360.

NOTE: Air can be below the tape and window surface.

<1> Make sure that a scratch is not put on the surface of the window where seal, G50360, is installed.

i) Carefully push the air out with fingers from the edge of the bubble to the puncture hole.

j) If it is necessary to remove seal, G50360, again, make sure that the adhesive is cleaned off on the metal surface.

<1> Clean the surface of the window, to remove and install seal, G50360, again.

H. No. 1 Window Installation

SUBTASK 56-11-11-420-003

(1) Install the No. 1 window.

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

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

1) The minimum clearance is 0.0400 in. (1.0160 mm) - 0.1400 in. (3.5560 mm) between the outer edge of the windshield and the fuselage outer skin.

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SUBTASK 56-11-11-420-004

(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.

1) First install the bolt [9] in the forward corner near reference point A.

2) Temporarily tighten all of the bolts [9] around the window by hand.

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.

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

SUBTASK 56-11-11-420-005

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

(a) Install the clip [24], washer [23], bolt [22], and nut [10] to the nutplate strip assembly [3].

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

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

NOTE: The washers 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.

(c) Install the bolt [19], O-ring [12], washer [15], and nut [18] in the windshield [1].

SUBTASK 56-11-11-410-001

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

(a) Install the bolt [8] into the nutplate strip assembly [4] at the forward corner of the windshield [1].

(b) Install the bolt [8], O-ring [20], washer [15], and nut [18] into the nutplate strip assembly [4].

SUBTASK 56-11-11-420-006

(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 8 locations.

SUBTASK 56-11-11-220-001

(6) After the windshield [1] is installed, measure the dimensions as follows between the outer edge of the windshield [1] and the fuselage outer skin:

(a) Make sure that a dimension is 0.0400 in. (1.0160 mm) - 0.1400 in. (3.5560 mm) between the outer edge of the windshield [1] and the fuselage outer skin along all 4 sides.

SUBTASK 56-11-11-420-007

(7) Do these steps to Install the assy - plate, scuff [33] and all the retainer bolts [34] and washers [35]:

(a) Make sure that the adjacent sliding window of the No. 2 window is in the open position.

(b) Install the assy - plate, scuff [33] and the retainer bolts [34] and washers [35] to the window frame post and retainer [32].

NOTE: The window frame post is the joint where the No. 1 window frame attaches to the No. 2 window frame.

NOTE: The washers are not necessary below the head of the retainer bolts used to install the assy - plate, scuff.

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1) Tighten the retainer bolts [34] by hand.

NOTE: The retainer bolts can move to let you correctly align the adjacent window to aid installation of the retainer bolts.

(c) Tighten all the retainer bolts [34] slowly while you adjust the No. 1 window in the frame.

1) Make sure that the minimum dimension between the ends of the retainer bolts [34] and the window pane is kept.

a) Align the hex head flats on the retainer bolts [34] with the frame post plane of the window (View L-L, Figure 401).

b) Torque the bolts to 20 in-lb (2.3 N·m) - 25 in-lb (2.8 N·m).

(d) If it is necessary, close the adjacent sliding window of the No. 2 window.

SUBTASK 56-11-11-420-008

(8) Tighten all the bolts in the sequence (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 in diameter bolts to 50 in-lb (5.6 N·m) - 70 in-lb (7.9 N·m).

SUBTASK 56-11-11-860-001

(9) Make sure that the window is installed correctly.

(a) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

SUBTASK 56-11-11-950-003

(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 nylon cord, G00039, is installed and the sealant.

SUBTASK 56-11-11-950-004

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

NOTE: It can be done with a sharp knife.

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

SUBTASK 56-11-11-420-009

(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).

SUBTASK 56-11-11-390-001

(13) 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),

(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).

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SUBTASK 56-11-11-390-002

(14) 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, or PR-1826AP adhesion promoter, A50574, for the PR-1826 sealant, A50052,

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

SUBTASK 56-11-11-420-010

(15) Before the sealant is applied, measure the electrical bonding resistance between the cres zee seal [7] and skin (Figure 401, Figure 403).

(a) Use non-intrinsically safe bonding meter, COM-614.

(b) If the resistance between the cres zee seal [7] and skin is 1 ohm (1000 milliohms) or less, do these steps:

NOTE: It is recommended to install the wire mesh even if resistance measures less than 1 ohm (1000 milliohms). Use the steps below for wire mesh installation.

1) Clean the gap surfaces of the structure and the zee seal [7] on the windshield [1] with alcohol, B50073.

2) Prime the gap surfaces with PR-142 adhesion promoter, A50205.

NOTE: It is not necessary to prime the gap surfaces with PR-142 adhesion promoter, A50205, if PR-1828 sealant, A00708, is used.

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

a) 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.

NOTE: The smoother is available with several work lives to fit many different jobs. Apply the smoother during the work life that is chosen.

a) Do not permit air to be caught in the sealant.

b) Apply the sealant on the top of the bumper strip or zee seal [7] to overlap glass surface of the window 0.15 ±0.03 in. (3.81 ±0.76 mm).

c) If the airplane must be sent 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.

d) 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.

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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.

a) If it is necessary to make the material that lifts at the edges of the clearance smooth with a tool.

(c) Measure the resistance between the cres zee seal [7] and skin.

NOTE: If part number 141A4840-3 is not available for item wire mesh, 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 will ground the zee seal [7] to the skin and will help prevent large static build-up to the window. The wire mesh installation will give a low resistance value.

1) Use non-intrinsically safe bonding meter, COM-614.

2) If the resistance between the cres zee seal [7] and skin to be greater than 1 ohm (1000 milliohms) install the wire mesh [6] as follows:

NOTE: If part number 141A4840-3 is not available for item wire mesh, 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 will ground the zee seal [7] to the skin and will help prevent large static build-up to the window. The wire mesh installation will give a low resistance value.

a) Remove the finish from the edge of the structure at the midpoint on each of the four sides of the window frame.

WARNING

ALIPHATIC NAPHTHA IS THE RECOMMENDED SOLVENT AND IS ALSO POISONOUS. IF YOU USE NAPHTHA IN A CONFINED SPACE, MECHANICAL VENTILATION IS MANDATORY. RESPIRATORY DEVICES AND SKIN PROTECTION ARE NECESSARY. IF YOU DO NOT FOLLOW THESE INSTRUCTIONS, INJURY TO PERSONS CAN OCCUR.

<1> Use a clean cotton wiper, G00034, and aliphatic naphtha, B50078, to clean the area to remove unwanted material.

b) Apply Bonderite M-CR 1200S Aero coating, C50005, to the surface from where you removed the finish.

c) Make sure that nylon cord, G00039, is installed into the clearance around the perimeter of the window.

d) Install the wire mesh [6], in the four locations along the window perimeter to get it to touch the zee seal [7] and the section of the frame where Bonderite M-CR 1200S Aero coating, C50005, was applied (Figure 401).

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

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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.

e) 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.

NOTE: The smoother is available with several work lives to fit many different jobs. Apply the smoother during the work life that is chosen.

<1> If sealant is not readily available, use PR-1436-G sealant, A50048, as an alternative substitute.

<2> Do not permit air to be caught in the sealant.

<3> Apply the sealant on the top of the bumper strip or zee seal [7] to overlap glass surface of the window 0.15 ±0.03 in. (3.81 ±0.76 mm).

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

<4> Use PR 1829 sealant, A01056, if the rapid cure is required for dispatch.

<5> 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.

<6> 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.

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

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

<1> If it is necessary to make the material that lifts at the edges of the clearance smooth with a tool.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-11-420-011

(1) Connect the electrical wires to the power terminals and the sensor terminals.

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

(b) Connect the electrical wires.

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

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

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

SUBTASK 56-11-11-400-002

(2) Install the bonding jumpers [26], washers [27], lock washers [28], and screws [29].

(a) Torque the screws [29] to 20 in-lb (2 N·m).

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SUBTASK 56-11-11-950-006

(3) Cover the lugs of the bonding jumper [26] with their fasteners with approximately 0.04 in. (1.02 mm) to 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.

SUBTASK 56-11-11-420-018

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.

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

SUBTASK 56-11-11-420-012

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

SUBTASK 56-11-11-420-013

(6) Install the sunshade support rod at the top of the window.

SUBTASK 56-11-11-420-020

(7) Connect headphone jacks and chart lights.

SUBTASK 56-11-11-420-014

(8) Install the glareshield [30] (Figure 404).

(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 anti-fogging ducts to the nozzles.

(c) 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.

(d) 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 (D13781 and D13783) and ground wires (GD701-DC, GD697-ST and GD703-DC, GD709-ST) to the support frame (WDM 31-65-11, WDM 31-65-21).

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.

6) Remove the backing from the double-sided adhesive tape that is on the glareshield [30].

7) Attach the glareshield [30] to the support frame.

8) Install the quarter-turn fasteners [31] to the glareshield [30].

(e) Connect the chart light and headphone jacks.

1) Test the lights that had been disconnected.

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(f) Install the lower glareshield covers.

(g) Do this task: MAX Display Unit Installation, TASK 31-65-11-400-801.

(h) Do this task: EFIS Control Panel Installation, TASK 31-65-12-400-801.

(i) Do this task: DFCS Mode Control Panel Installation, TASK 22-11-34-400-801.

SUBTASK 56-11-11-420-015

(9) 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.

SUBTASK 56-11-11-420-016

(10) Do this task: Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801.

SUBTASK 56-11-11-950-005

(11) Remove the protective covers from the surface of the window.

SUBTASK 56-11-11-800-001

(12) 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

F/O Electrical System Panel, P6-3

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 56-11-11-800-002

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

(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

(14) Do this task: Window Heat System - Operational Test, TASK 30-41-00-710-801.

SUBTASK 56-11-11-820-001

(15) Do this task: Windshield Wiper Arm Installation, TASK 30-42-31-400-801.

END OF TASK

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NO. 3 WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) No. 3 window removal

(2) No. 3 window installation.

TASK 56-11-21-000-801

2. No. 3 Window Removal

(Figure 401, Figure 402 or Figure 403)

A. General

(1) This task gives the instructions to remove the No. 3 window.

B. References

Reference	Title
30-41-31 P/B 401	WINDOW THERMAL SWITCH - REMOVAL/INSTALLATION

C. Tools/Equipment

Reference	Description
STD-1166	Block - Wood, 1 to 3 Inch Thick, More Than 6 Inch Length
STD-3906	Mallet - Rubber

D. 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)

E. Location Zones

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

F. Prepare for the Removal

SUBTASK 56-11-21-860-001

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) 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 56-11-21-860-002

(2) Make sure the SIDE L and SIDE R WINDOW HEAT INOP lights are on.

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SUBTASK 56-11-21-860-003

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

F/O Electrical System Panel, P6-5

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
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 56-11-21-010-001

(4) Remove the screws [3] and the interior liner [2].

SUBTASK 56-11-21-020-005

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.

SUBTASK 56-11-21-200-001

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

NOTE: Tape should not be attached to the glass surfaces.

G. No. 3 Window Removal

SUBTASK 56-11-21-000-001

(1) Remove the nylon cord from around the window:

(a) Carefully remove some aerodynamic sealant at the top aft corner of the window to get access to the nylon cord.

(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]

(c) The window thermal switch [7] (PAGEBLOCK 30-41-31/401).

(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:

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(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) Put a wood block, STD-1166 (nonmetallic block), against the window and lightly hit the block with a rubber mallet, STD-3906.

SUBTASK 56-11-21-020-003

(4) Remove all the aerodynamic smoother from the window frame.

——— END OF TASK ———

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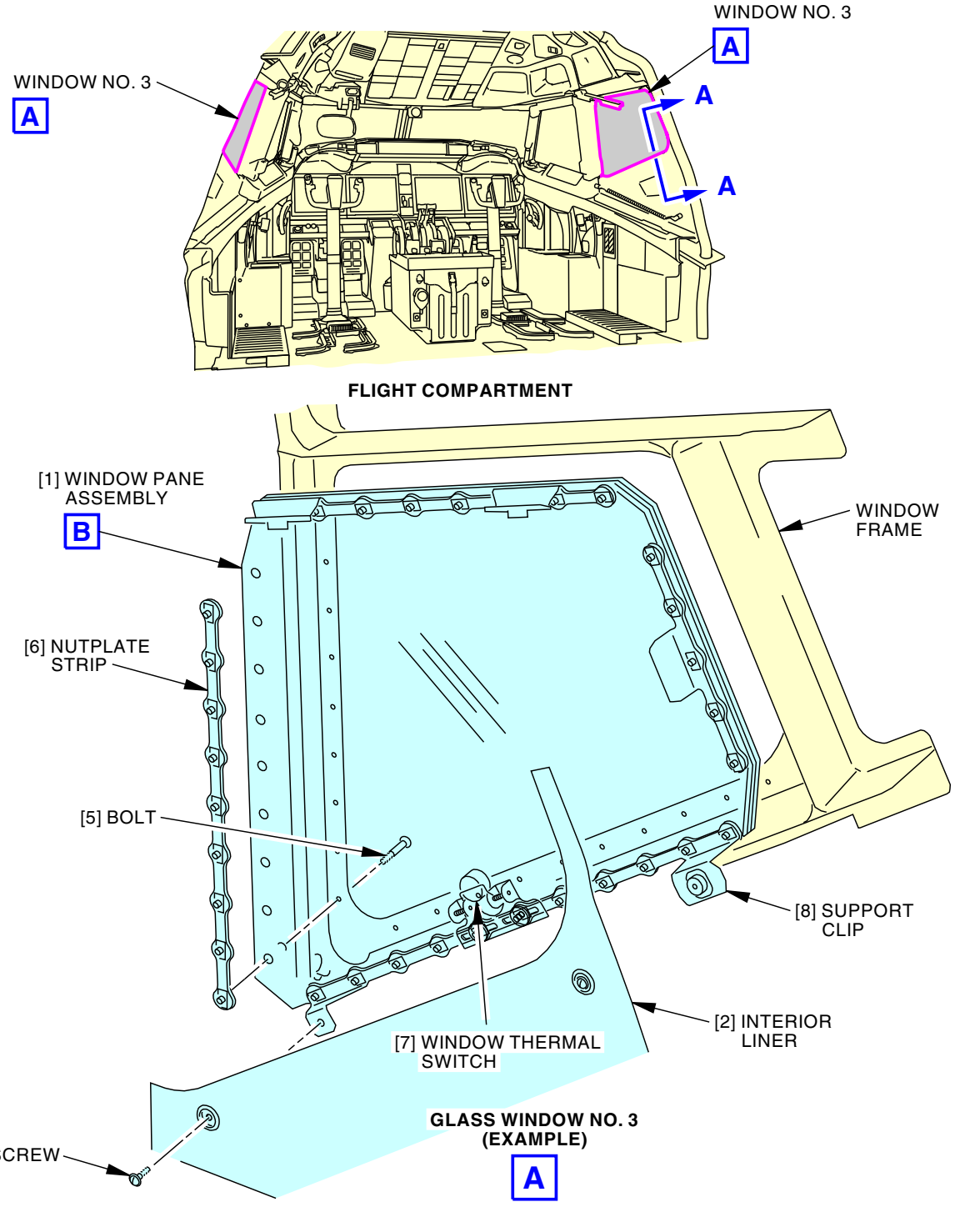

No. 3 Window Installation
Figure 401/56-11-21-990-801 (Sheet 1 of 2)

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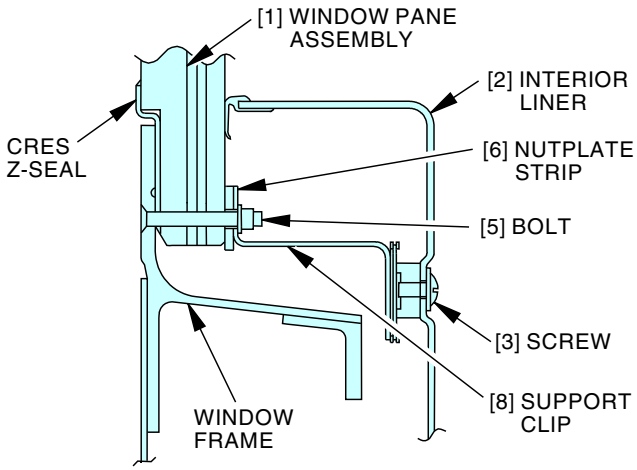
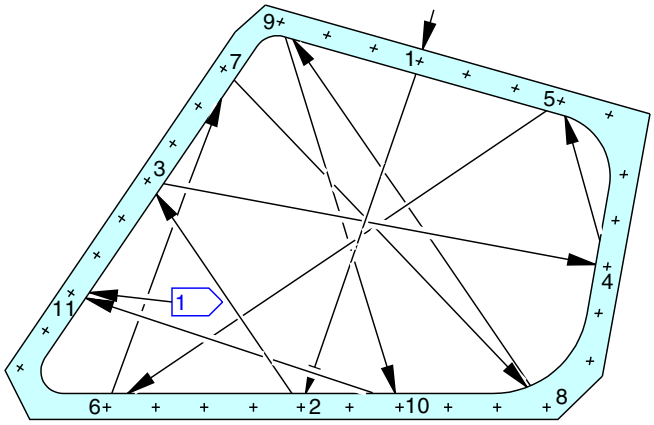


GLASS WINDOW

A-A



WINDOW PANE

B

NOTE:

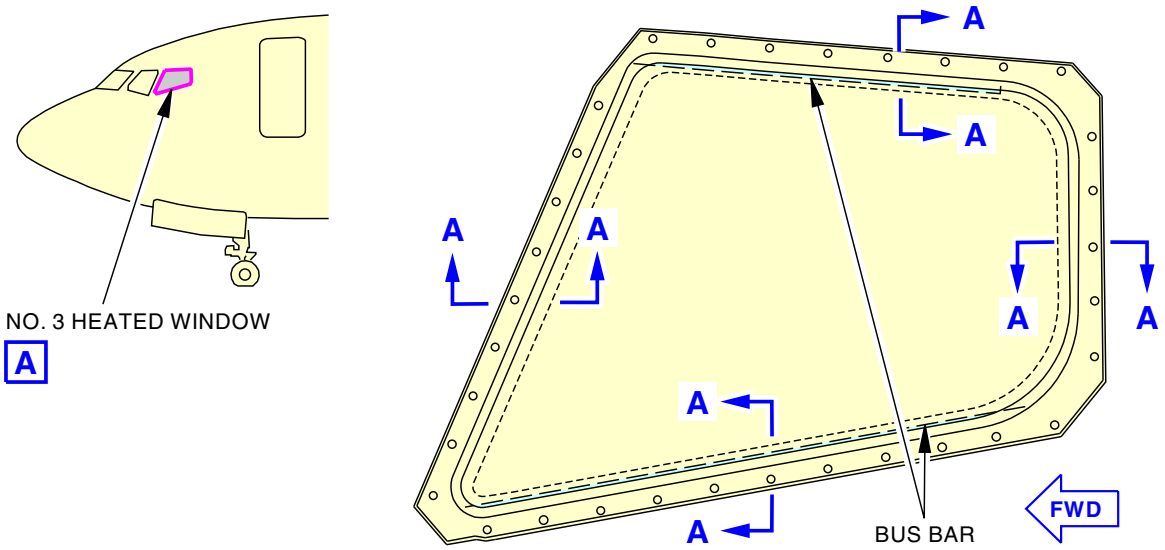
THIS IS AN EXAMPLE OF HOW YOU CAN TIGHTEN THE FASTENERS FOR THE WINDOW ANY PATTERN THAT IS ALMOST THE SAME IS PERMITTED. FIRST ATTACH THE WINDOW AT AS MANY POINTS THAT ARE OPPOSITE ON THE WINDOW. DO THIS AS EARLY IN THE FASTENER TORQUE SEQUENCE AS POSSIBLE.

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.

2538849 S0000602870_V1

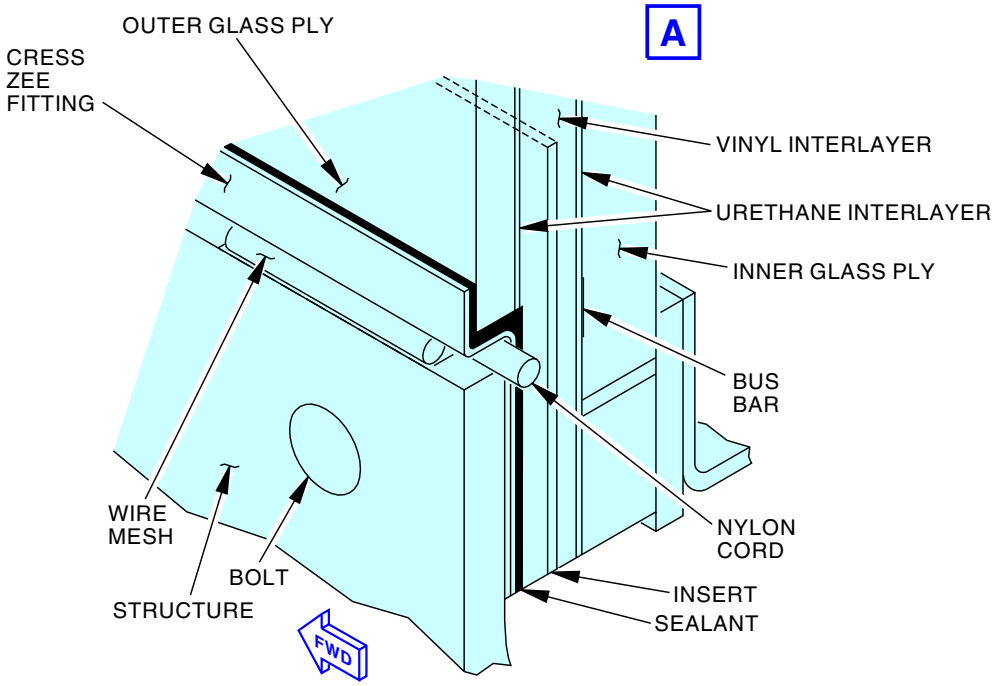
No. 3 Window Installation
Figure 401/56-11-21-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NO. 3 HEATED WINDOW
(LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE)

A



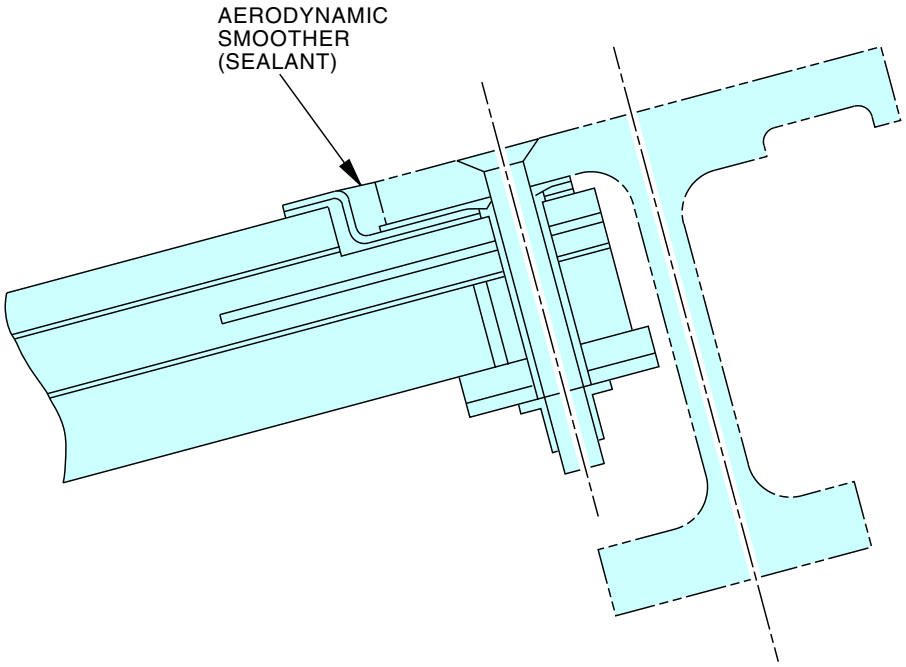
WIRE MESH INSTALLATION
(EXAMPLE)

A-A

2538850 S0000602875_V1

Wire Mesh Installation
Figure 402/56-11-21-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details

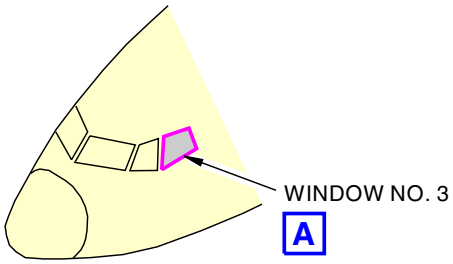


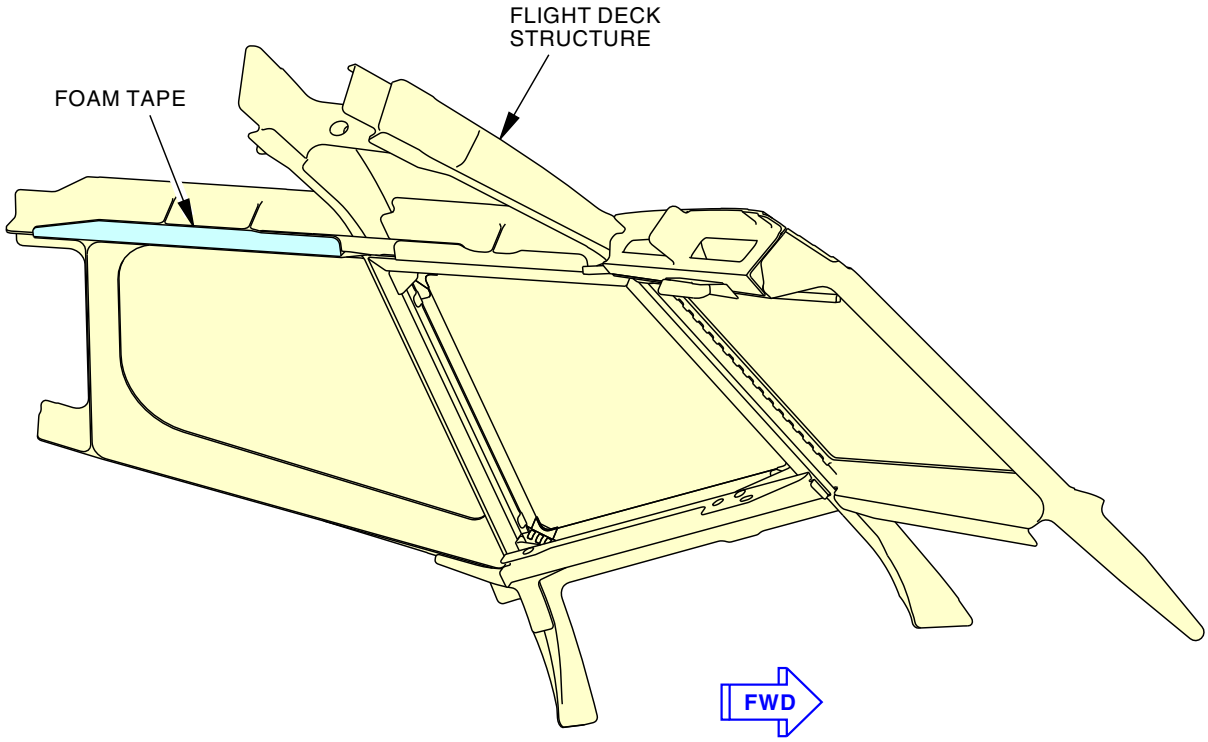
SEALANT SHAPE - WINDOW NO. 3

2538852 S0000602876_V1

Aerodynamic Smoother Application
Figure 403/56-11-21-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details





WINDOW NO. 3

A

2416445 S00061540655_V2

Foam Tape Installation
Figure 404/56-11-21-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-11-21-400-801

3. No. 3 Window Installation

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

A. General

(1) This task gives the instructions to install the No. 3 window.

B. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)

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
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	
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

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
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	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Window pane assembly	56-11-21-02-240	SIA ALL
		56-11-21-02-245	SIA ALL

F. Location Zones

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

G. Prepare for the Installation

SUBTASK 56-11-21-840-001

(1) Prepare the window frame on the fuselage:

(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.

SUBTASK 56-11-21-210-002

(2) 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 56-11-21-840-002

(3) Prepare the window pane assembly [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(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.

H. No. 3 Window Installation

SUBTASK 56-11-21-420-001

(1) Install the window pane assembly [1] in the frame:

NOTE: The glass window with the cres z-seal has a corrosion resistant steel (CRES) zee fitting around the outside edge of the window pane assembly [1], with the pressure seal attached to the zee fitting.

(a) Apply corrosion preventive compound, C00528, to the retaining bolts [5] shanks.

(b) Install the retaining bolts [5].

(c) Install these 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 (2.3 N·m) - 25 in-lb (2.8 N·m) in the sequence shown in Figure 401.

SUBTASK 56-11-21-410-001

(2) Examine the tape, G02092, on the flight deck structure and replace the tape, G02092, if it is necessary (Figure 404):

NOTE: If the tape, G02092, is not available, install the window without the tape for no more than 24 months. Without the tape, G02092, 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:

CAUTION

DO NOT ALLOW SOLVENT TO CONTACT PLASTICS, CONTROL CABLES, LUBRICATED AREAS, PLASTIC DECALS, OR PAINTS OR MARKINGS THAT ARE NON-SKYDROL-RESISTANT. IF SUCH SURFACES ARE INADVERTENTLY EXPOSED TO THE SOLVENT, THEY SHALL BE REJECTED.

1) Clean the surface of the flight deck structure with solvent, B50095, to the area on where the tape, G02092, will be installed.

2) Cut the length of tape, G02092, that is necessary for installation.

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).

a) Do not let the surface of the tape, G02092, with adhesive get contaminated with dust, dirt, lint, or grease.

3) Set the tape, G02092, on the flight deck structure as shown in Figure 404.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Carefully push from the center of the tape, G02092, to the edges to release the air from the tape, G02092.

5) Remove the wrinkles from the surface of the tape, G02092, and seal the edges with a roller or polyethylene.

6) 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, G02092, and flight deck structure.

a) Make sure that you do not put a scratch on the surface of the flight deck structure where the tape, G02092, is installed.

7) Carefully push the air out with your fingers from the edge of the bubble to the puncture hole.

8) If it is necessary to remove the tape, G02092, again, make sure that you 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.

(a) Do this task: Cabin pressure leak test, (TASK 05-51-91-790-801).

SUBTASK 56-11-21-420-002

(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 the window.

SUBTASK 56-11-21-410-002

(7) Install a new nylon cord, G00039, in the bottom of the gap between the fuselage and the window.

(a) Make sure that the nylon cord, G00039, is longer than the distance around the edge of the window.

(b) Make sure that the ends of the nylon cord, G00039, overlap approximately 0.5 in. (12.7 mm) with the ends in the upper aft corner.

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 56-11-21-420-003

(9) Install the Tecknit 20-21112 gasket, G50072:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(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.

SUBTASK 56-11-21-390-001

(10) Apply the aerodynamic smoother.

(a) Use one of the following smoothers:

1) PR-1425 sealant, A00103 (Preferred)
2) PR-1425CF sealant, A50493 (Alternative)
3) AC-251 sealant, A50517 (Alternative)
4) sealant, A00247 (PRO-SEAL 870 Class B) (Alternative)
5) PR 1829 sealant, A01056 (Rapid Cure) (Alternative)
6) PR-1828 sealant, A00708 (Alternative)
   a) Do not use this sealant on acrylic windows.

   NOTE: Sealant can be used only on glass windows.
7) PR-1826 sealant, A50052 (Alternative)
   a) Do not use this sealant on acrylic windows.

   NOTE: Sealant can be used only on glass windows.
8) P/S 860 B-1/6 sealant, A50084 (Alternative).

SUBTASK 56-11-21-390-005

(11) Use the adhesion promoter.

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

1) PR-142 adhesion promoter, A50205, for the PR-1425 sealant, A00103
2) PR-1861 adhesion promoter, A50485, for the PR-1425CF sealant, A50493
3) AC-137 adhesion promoter, A50543, for the AC-251 sealant, A50517
4) PR-142 adhesion promoter, A50205, for the sealant, A00247 (PRO-SEAL 870 Class B)
5) PR-1861 adhesion promoter, A50485, for the PR 1829 sealant, A01056 (Rapid Cure)
6) PR-142 adhesion promoter, A50205, for the PR-1826 sealant, A50052
7) PR-142 adhesion promoter, A50205, for the P/S 860 B-1/6 sealant, A50084.

SUBTASK 56-11-21-390-002

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

SUBTASK 56-11-21-390-003

(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.

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(b) Use PR 1829 sealant, A01056, if rapid cure is necessary for dispatch.

(c) Apply more aerodynamic sealant than is necessary.

SUBTASK 56-11-21-020-004

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 Scotch Flatback Masking Tape 250, G00270.

NOTE: Excess sealant should 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.

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

(a) Remove the 3M 425 Aluminum Foil Tape, G00291, when the sealant is fully cured.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-21-950-004

(1) Remove the plastic layer from the inner surface of the window.

SUBTASK 56-11-21-410-004

(2) Install the interior liner [2] and screws [3].

SUBTASK 56-11-21-860-004

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

F/O Electrical System Panel, P6-5

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
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

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) The replacement of the No. 2 Window Handle Trigger Return Spring.

(2) The replacement of the No. 2 Window Bearing.

TASK 56-12-11-300-801

2. Replace the No. 2 Window Handle Trigger Return Spring

(Figure 201)

A. Location Zones

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

B. Procedure

SUBTASK 56-12-11-010-001

(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.

SUBTASK 56-12-11-020-001

(2) Remove the trigger return spring:

(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 56-12-11-420-001

(3) Install the new trigger return spring:

(a) Put the new trigger return spring [5] in the handle [7].

(b) Align the trigger return spring [5] with the middle spring pin hole.

(c) Install the middle spring pin [3].

(d) Put the trigger bolt [4] in a position opposite the lower spring pin hole.

(e) Install the lower spring pin [2].

(f) Make sure that the trigger has full return when released.

(g) Put the handle [7] on the lower forward bellcrank shaft [6].

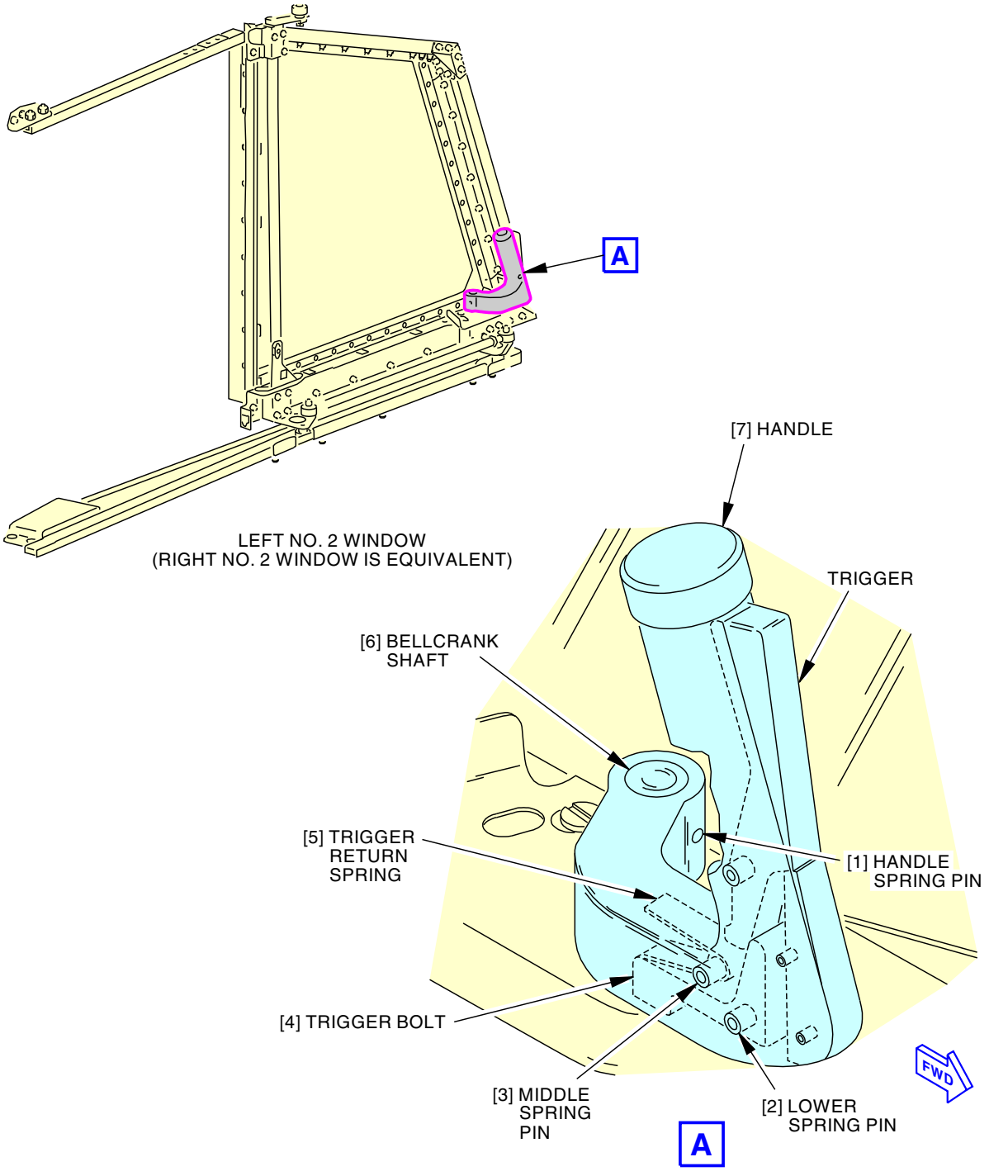
(h) Install the handle spring pin [1] through the handle [7] and the bellcrank shaft [6].

SUBTASK 56-12-11-410-001

(4) 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. 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)

B. Location Zones

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

C. No. 2 Window Bearing Repair

SUBTASK 56-12-11-010-002

(1) Do this task: No. 2 Openable Window Removal, TASK 56-12-11-000-801.

SUBTASK 56-12-11-020-002

(2) Remove the track roller bearing:

(a) Loosen the setscrew [25] in thebellcrank [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

(3) Install the new track roller bearing:

(a) Install the special bolt [24] with the new glide track roller bearing [23], and the shim washer [22].

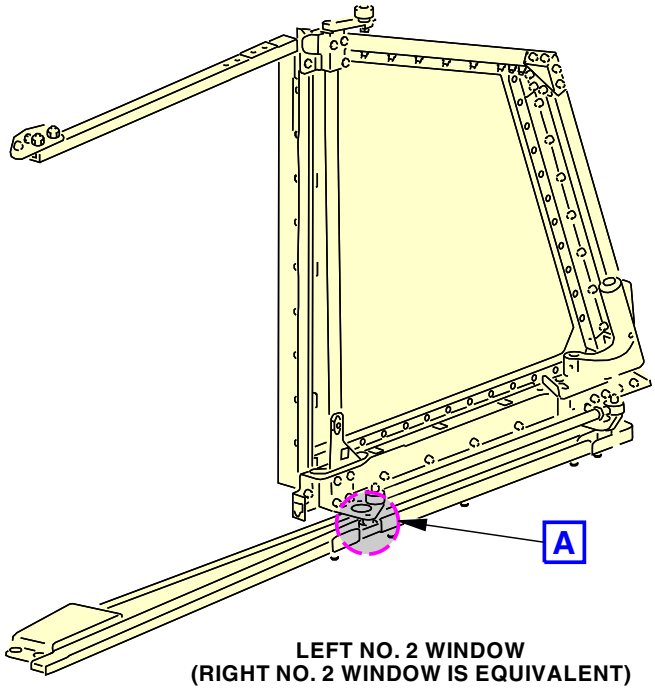
(b) Change the number of shim washer [22] to give the correct vertical window adjustment as required.

SUBTASK 56-12-11-410-002

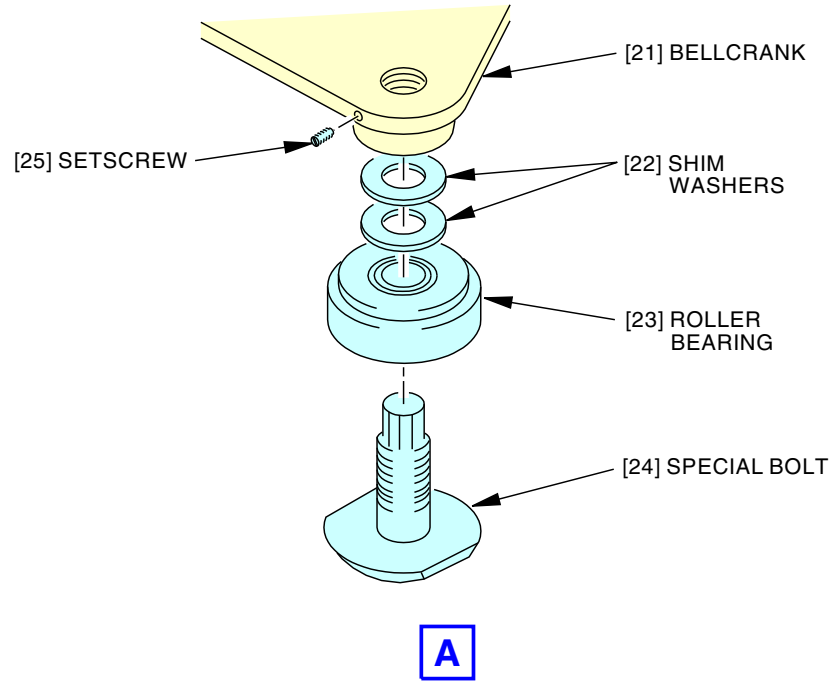
(4) Do this task: No. 2 Openable Window Installation, TASK 56-12-11-400-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT NO. 2 WINDOW
(RIGHT NO. 2 WINDOW IS EQUIVALENT)



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No. 2 Window Bearing Installation
Figure 202/56-12-11-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 OPENABLE WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) No. 2 openable window removal

(2) No. 2 openable window installation.

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:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

SUBTASK 56-12-11-860-002

(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.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-12-11-980-002

(2) 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

(3) 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 track lip cutout [11] and out of the lower track [7].

SUBTASK 56-12-11-020-005

(4) Remove the upper roller [1] from the upper track [10]:

(a) Move the window assembly [2] forward until the aft lower roller [9] and track lip cutout [11] align.

NOTE: With the window assembly 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 that the aft lower roller [9] stays in its position when the window assembly [2] is moved.

(d) Remove the upper roller [1] from the upper track [10].

SUBTASK 56-12-11-020-006

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.

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.

(5) Lift the window assembly [2] to remove the aft lower roller [9] through the track lip cutout [11].

(a) Put a blanket on the edges of the window assembly [2] to prevent damage to the adjacent windows during the removal.

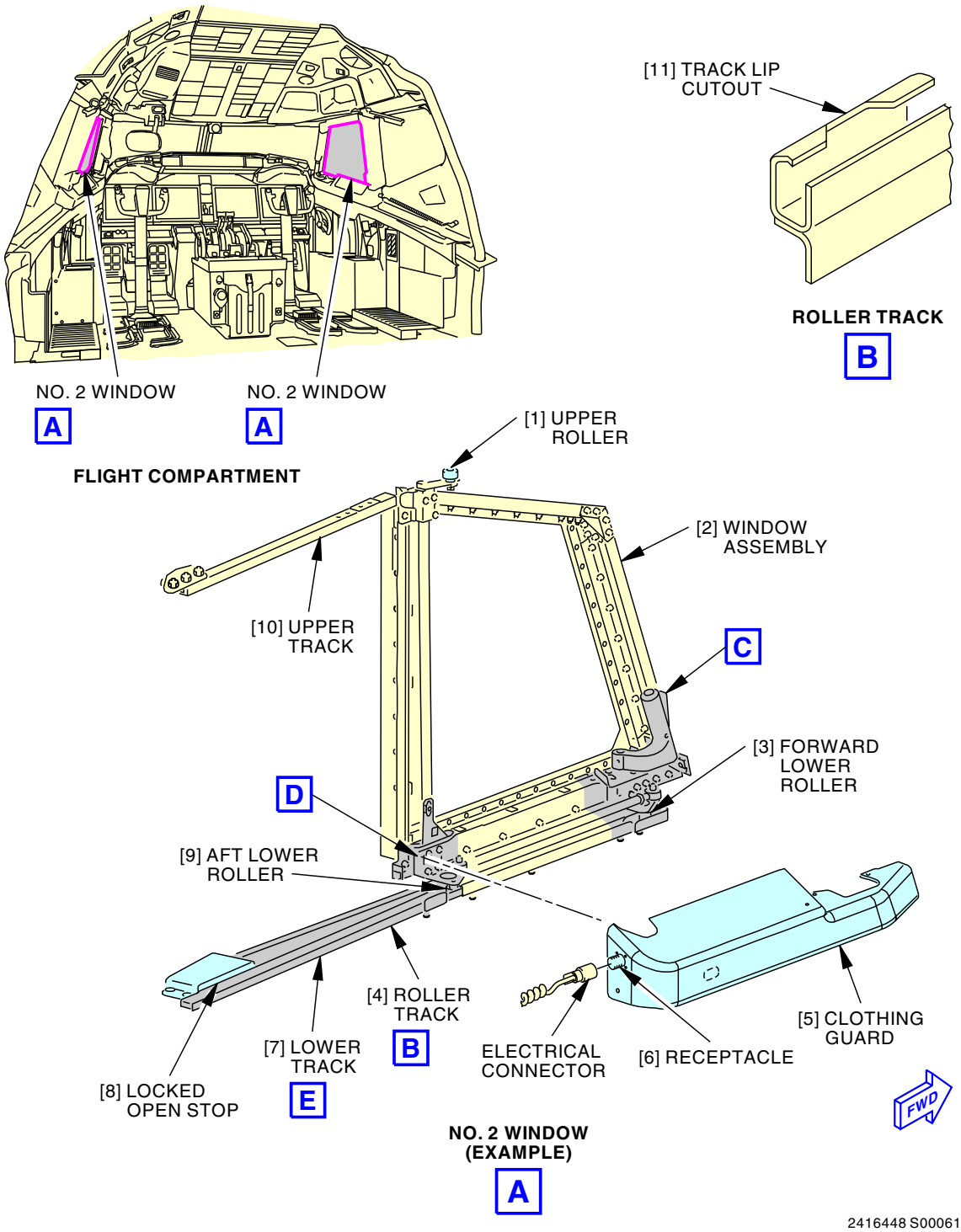
SUBTASK 56-12-11-020-007

(6) Disconnect the electrical connector from the receptacle [6].

(a) If it is necessary, remove the window frame pad from the window assembly [2].

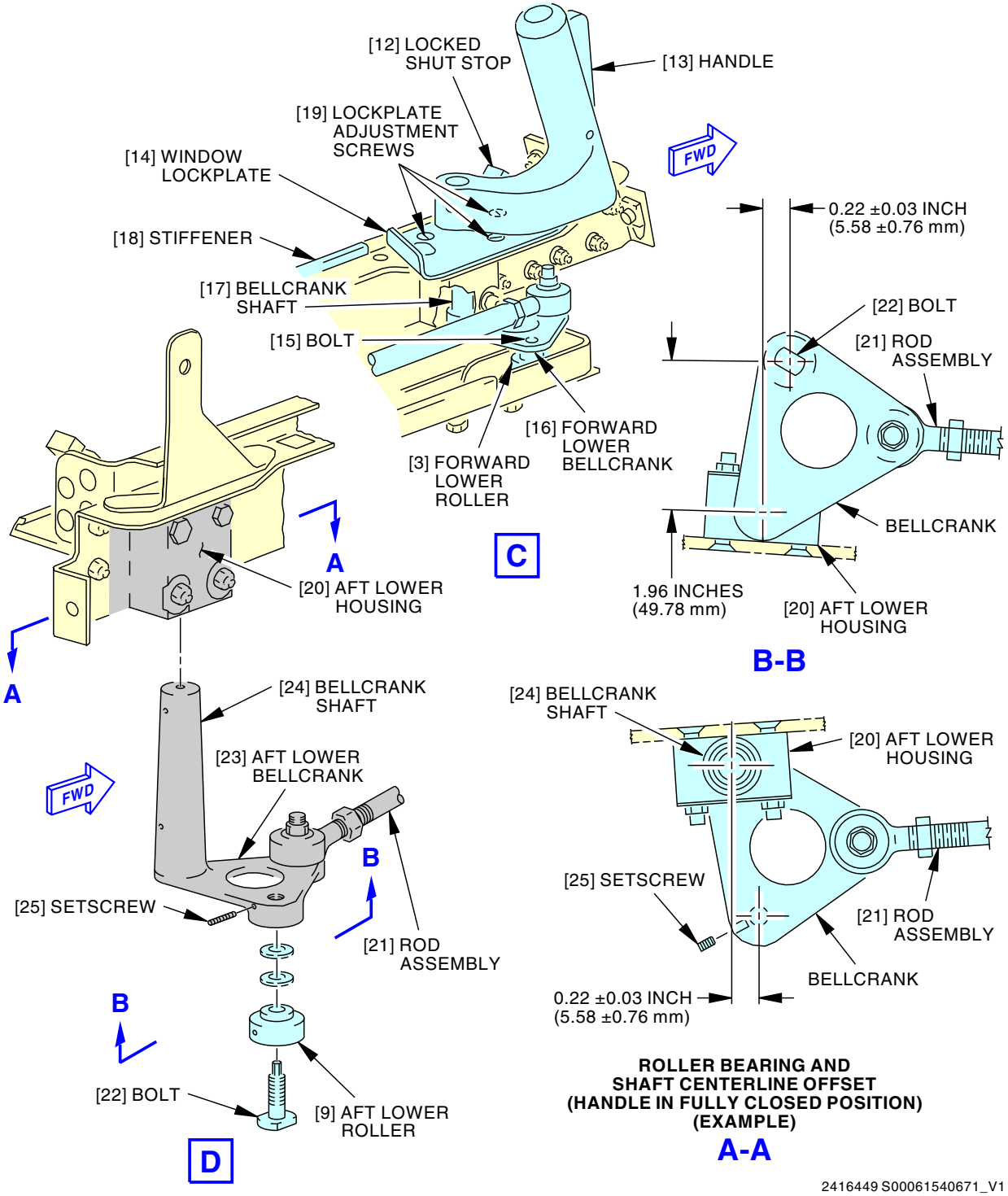
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



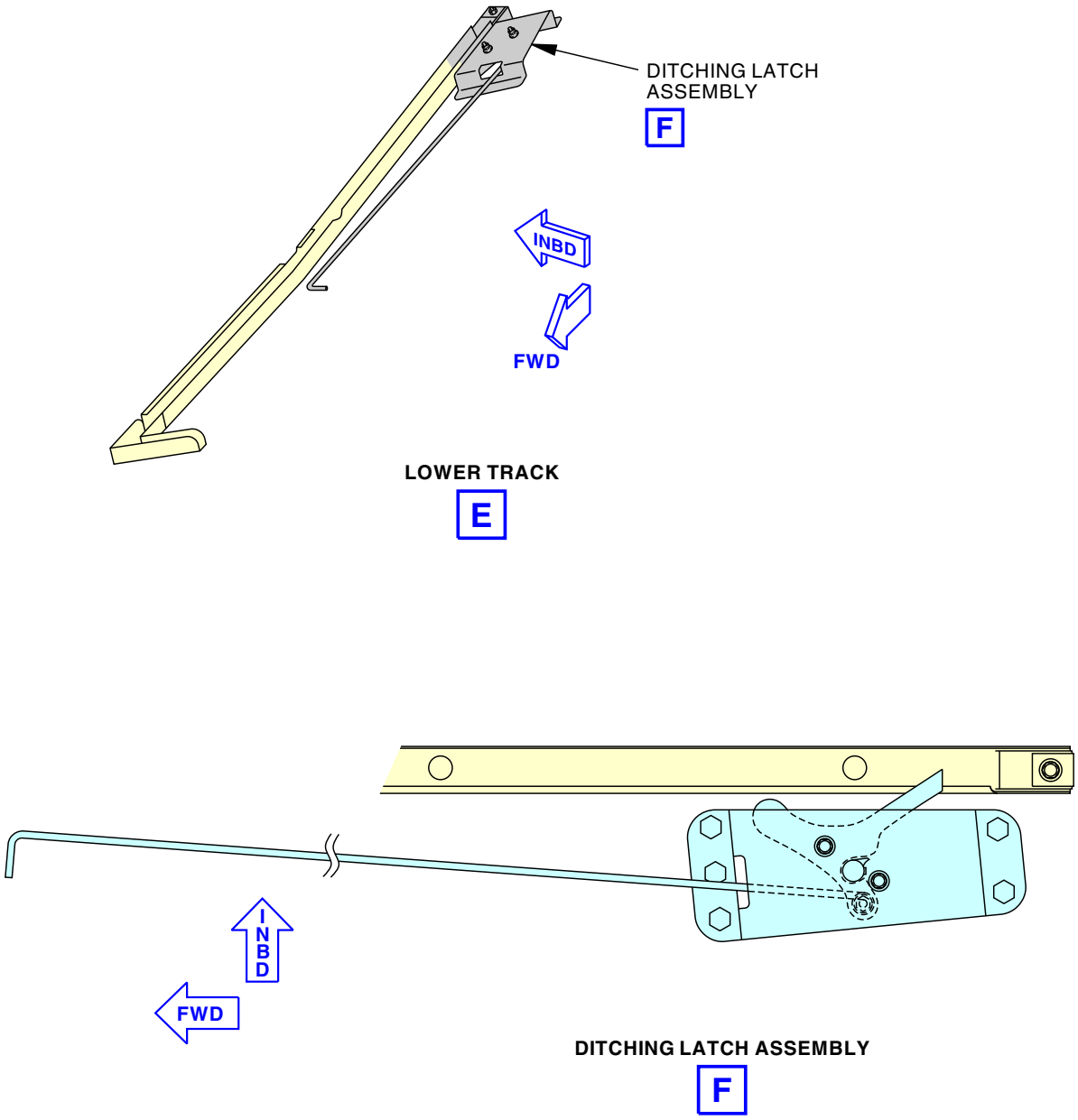
No. 2 Window Installation
Figure 401/56-12-11-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



No. 2 Window Installation
Figure 401/56-12-11-990-803 (Sheet 2 of 3)

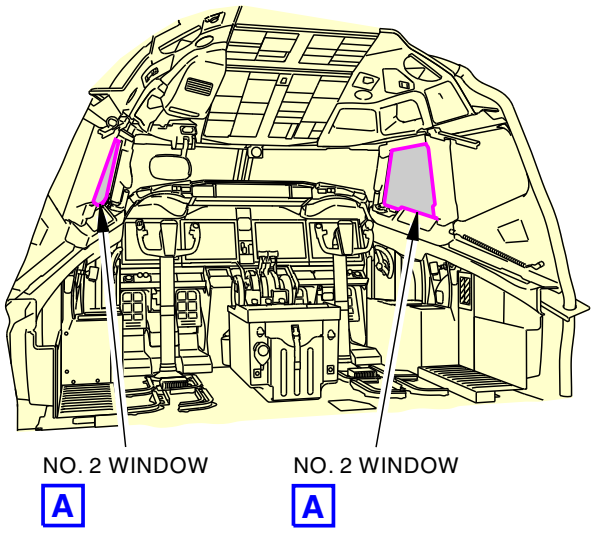
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2416450 S00061540672_V2

No. 2 Window Installation
Figure 401/56-12-11-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Foam Tape Installation
Figure 402/56-12-11-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-400-801

3. No. 2 Openable Window Installation

(Figure 401 and Figure 402)

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)
30-41-00-200-801	Coil Cord - Inspection (P/B 601)
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	D000534538
WDM 30-41-11	D000534537
WDM 30-41-12	D000534539

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	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G02092	Tape - Flexible Foam Sound Damping And Sealing Tape	BMS8-283
G50063	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122XD (Replaces MS-122DF)	
G50532	Tape - Silicone, Foam	BMS1-68
G51443	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122ADL	

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D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Window assembly	56-12-11-01A-011	SIA ALL
		56-12-11-01A-750	SIA ALL
		56-12-11-01B-005	SIA ALL
		56-12-11-01B-525	SIA ALL

E. Location Zones

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

F. Prepare for the Installation

SUBTASK 56-12-11-210-001

(1) Before installation of borrowed No. 2 LH and/or No. 2 RH windows only: inspect the to be installed Window No. 2 LH side per Task Card AD20081108-NG-56-2L, and No. 2 RH Window per Task Card AD20081108-NG-56-2R.

NOTE: No. 2 LH and/or No. 2 RH window, having windshield (transparency) assembly P/N 5-89355-87, 5-89355-88, 08934 or 08935 installed, do not require inspection in accordance with Task Card AD20081108-NG-56-2L and/or Task Card Task Card AD20081108-NG-56-2R, respectively.

(a) Make sure that each respective Task Card includes the aircraft number on that the window is to be installed.

SUBTASK 56-12-11-210-018

(2) Examine the bulb seal for defects that can cause pressure leaks.

SUBTASK 56-12-11-110-001

(3) Clean the tracks, rollers, and areas around them with cotton wiper, G00034, that is moist with solvent, B00083.

SUBTASK 56-12-11-210-002

(4) 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 56-12-11-710-001

(5) 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 56-12-11-710-010

(6) With the window handle fully forward, 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.

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(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).

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

(7) 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 forward lower bellcrank [16] and aft lower bellcrank [23].

(a) Move the window lockplate [14] to adjust the forward lower bellcrank [16]. Adjust the rod assembly [21] to adjust the aft lower bellcrank [23].

1) 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: The distance can be measured 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].

a) Measure the distance between the center of the forward lower roller [3] and aft lower roller [9].

b) Align the bolt [22] in the forward lower bellcrank [16] and aft lower bellcrank [23] to tighten the setscrew [25] against the flat side of the bolt [22].

(b) Adjust the window lockplate [14] and the rod assembly [21] if the dimension is not 0.22 ±0.03 in. (5.59 ±0.76 mm).

1) To adjust the forward lower bellcrank [16], loosen the three lockplate adjustment screws [19] that attach the window lockplate [14] to the stiffener [18].

a) 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].

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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

(8) If the No. 2 window is a replacement:

(a) For new No. 2 window:

1) If it is necessary, install the window heat wire/bundle and frame pad.

2) Install the window.

(b) For No. 2 window that are not new:

1) Examine the window for cracks and damages.

a) Do this task: No. 2 Openable Window Inspection, TASK 56-12-11-200-801.

2) If the window has damages:

a) Do the applicable repairs.

b) Or replace the window with another one.

SUBTASK 56-12-11-410-003

(9) Examine tape, G02092, on the flight deck structure. If loose or damaged tape is found, do tape, G02092, repair or replacement:

NOTE: The tape, G50532 is optional. The window can be installed without the tape. Without the tape, flight deck noise and moisture can increase.

(a) Repair tape, G02092, as follows:

1) Trim/remove loose or damaged parts of tape, G02092, as necessary.

2) Create a deferral and record the following information: “Replace tape, G02092, in accordance with No. 2 Openable Window Installation, TASK 56-12-11-400-801 at the next heavy/extended maintenance opportunity.”

(b) Remove the used tape, G02092, from the flight deck structure.

(c) Install new tape, G02092, to the flight deck structure:

CAUTION

DO NOT ALLOW SOLVENT TO CONTACT PLASTICS, CONTROL CABLES, LUBRICATED AREAS, PLASTIC DECALS, OR PAINTS OR MARKINGS THAT ARE NON-SKYDROL-RESISTANT. IF SUCH SURFACES ARE INADVERTENTLY EXPOSED TO THE SOLVENT, THEY SHALL BE REJECTED.

1) Clean the surface of the flight deck structure with solvent, B50095, to the area on where tape, G02092, will be installed.

2) Cut the length of tape, G02092, necessary for installation.

NOTE: The recommended dimensions for 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).

a) Do not let the surface of tape, G02092, with adhesive get contaminated with dust, dirt, lint, or grease.

3) Set tape, G02092, on the flight deck structure as shown in Figure 402.

4) Carefully push from the center of tape, G02092, to the edges to release the air from tape, G02092.

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5) Remove the wrinkles from the surface of tape, G02092, and seal the edges with a roller or polyethylene.

6) Make sure that a puncture is put in tape, G02092, with a pin to remove air below tape, G02092.

NOTE: Air can be below the tape and flight deck structure.

a) Make sure that a scratch is not put on the surface of the flight deck structure where tape, G02092, is installed.

7) Carefully push the air out with your fingers from the edge of the bubble to the puncture hole.

8) If it is necessary to remove tape, G02092, again, make sure that the adhesive is cleaned off on the metal surface.

a) Do the steps to clean the surface of the flight deck structure, to remove and install tape, G02092, again.

G. 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 56-12-11-420-003

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 assembly [2] 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 assembly [2] 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 56-12-11-420-004

(3) Put the upper roller [1] in the upper track [10].

(a) Move the top edge of the window assembly [2] aft.

1) Make sure that the aft lower roller [9] stays in its position when you move the window assembly [2].

(b) Put the upper roller [1] in the upper track [10].

SUBTASK 56-12-11-420-005

(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 56-12-11-420-006

(5) Connect the electrical connector to the receptacle [6].

(a) Turn the connector keyway to the applicable keyway position (TASK 30-41-00-200-801).

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SUBTASK 56-12-11-720-001

(6) Do this task: Check the Electrical Resistance of the Window Heat Film, TASK 30-41-21-000-801.

NOTE: The window resistance check is optional for old windows. If a new window is installed, it is not necessary to do a resistance measurement check. The resistance of the heater coating on the windshield window can change over time in service (WDM 30-41-11, WDM 30-41-12).

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.

(7) Do this task: No. 2 Openable Window Adjustment, TASK 56-12-11-820-801.

SUBTASK 56-12-11-640-001

(8) Apply dry film silicone spray, D50118, MS-122DF lubricant, D50119, MS-122XD release agent, G50063, MS-122RB lubricant, D50039 or MS-122ADL lubricant, G51443 to the tracks, rollers and mechanisms that touch the tracks.

SUBTASK 56-12-11-710-002

(9) 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).

H. No. 2 Openable Window Installation Test

SUBTASK 56-12-11-780-001

(1) Make sure that the window is installed correctly, unlocks, open, closes and locks freely when the emergency release handle is aligned with the external skin.

SUBTASK 56-12-11-780-002

(2) Make sure that the handle trigger is fully extended when the window is closed.

SUBTASK 56-12-11-720-002

(3) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

NOTE: If the same serviceable No. 2 window is being removed from and installed on the same airplane with no adjustment/changes required to airframe and/or No. 2 window, the accomplishment of Cabin Pressure Leak test is not required.

SUBTASK 56-12-11-860-003

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

SUBTASK 56-12-11-710-003

(5) Do this task: Window Heat System - Operational Test, TASK 30-41-00-710-801.

SUBTASK 56-12-11-780-003

(6) Make sure that P/N 110001027-737 Passenger Evacuation Placard is not installed on the window frame map holder during the number 2 position sliding window installation.

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(a) Remove it and clean the removal area with solvent if installed.

SUBTASK 56-12-11-860-011

(7) Remove the DO NOT OPERATE 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 operational check of the No. 2 openable window

(3) A functional 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 56-12-11-020-008

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

G. No.2 Window Examination

SUBTASK 56-12-11-820-003

CAUTION DO NOT CLOSE THE WINDOW BEFORE ADJUSTMENT. CLOSING THE WINDOW BEFORE ADJUSTMENT CAN CAUSE DAMAGE TO THE WINDOW ASSEMBLY FRAME.

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) Put two layers of 3M 850 tape, G01925, along the forward and aft edges of the window frame.

SUBTASK 56-12-11-210-003

(2) Examine the window assembly [1] to make sure that it attaches into the frame correctly (Figure 501).

(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.

(b) If it is necessary, adjust the window in the Forward-Aft direction.

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(c) Continue with the adjustment task when the window assembly frame does not hit the section 41 bolts or frame.

SUBTASK 56-12-11-820-004

(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 56-12-11-820-005

(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 56-12-11-210-004

(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 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 a shim washer [40] from the aft lower roller [38].

SUBTASK 56-12-11-820-006

(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 56-12-11-210-005

(7) Measure the forward and aft clearances between the window assembly frame and 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.

(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.

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(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] (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).

SIA 001-003, 006-999

(b) The flushness for the 3 other corners must be 0.04 +0.08 / -0.03 in. (1.02 +2.03 / -0.76 mm).

SIA 004, 005

(c) The flushness for the 3 other corners must be 0.04 +0.11 / -0.03 in. (1.02 +2.79 / -0.76 mm).

SIA ALL

(d) If the flushness is out of the tolerance, adjust the window in the Inboard-Outboard direction.

SUBTASK 56-12-11-820-007

(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 56-12-11-210-006

(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.

NOTE: If it is available, use the window latch socket, SPL-7425, to help you with the window/latch torque specifications.

(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.

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.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. No. 2 Window Adjustment

SUBTASK 56-12-11-010-003

(1) Remove the clothing guard [5] if it is necessary to do the adjustment.

SUBTASK 56-12-11-020-009

(2) Do this task: No. 2 Openable Window Removal, TASK 56-12-11-000-801.

SUBTASK 56-12-11-820-008

(3) If it is necessary, adjust the Foward-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 bolts [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 bolts [9] on the guide pin [8].

SUBTASK 56-12-11-820-009

(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].

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.

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<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> Slightly tighten or loosen 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].

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 rollers [38].

<1> If it is necessary, remove an equal number of shim washers [40] to a minimum of one shim washer [40] for 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 washers [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.

d) Install the special bolts [39].

<1> Slightly tighten or loosen 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].

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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 56-12-11-820-010

(5) If it is necessary, adjust the upper roller [13] to move freely and to not bind.

(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 the shim washer [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 56-12-11-820-011

(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 Inboard-Outboard position of the window assembly [1].

(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.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) The clearance for the forward top corner must be 0.04 +0.11 / -0.03 in. (1.02 +2.79 / -0.76 mm).

SIA 001-003, 006-999

(e) The clearance for all the other corners must be 0.04 +0.08 / -0.03 in. (1.02 +2.03 / -0.76 mm).

SIA 004, 005

(f) The clearance for all the other corners must be 0.04 +0.11 / -0.03 in. (1.02 +2.79 / -0.76 mm).

SIA ALL

(g) Remove the washers [19], nuts [20], washers [32], and nuts [33].

(h) Remove the bracket [21] from the upper housing [2].

(i) 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.

(j) Remove the stiffener [28] from the forward lower housing [31].

(k) Pull out the attachment bolts [18], attachment bolts [22], attachment bolt [23], attachment bolts [35], attachment bolts [36], and attachment bolts [41].

(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.
2) Remove the shims [17] and shims [30] to decrease the handle torque.

(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].

(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 bracket [21] to the upper housing [2].

(s) Install the washers [19], nuts [20], washers [32], and nuts [33].

SUBTASK 56-12-11-210-007

(7) Examine the window assembly [1] to make sure that it attaches into the frame correctly.

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(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 56-12-11-820-012

(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].

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 as 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 bolts [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 bolts [9] into the guide pin [8].

(e) Permanently install the setscrew [27] and setscrews [37].

1) Remove the setscrew [27] and setscrews [37].

2) Apply Loctite 222 compound, A00270, to the threads of the setscrew [27] and setscrews [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.

SUBTASK 56-12-11-410-005

(11) If it is removed, install the clothing guard [5].

SUBTASK 56-12-11-980-003

(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.

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I. Emergency Exit Release Mechanism Adjustment

NOTE: For windows with an emergency exit release only.

SUBTASK 56-12-11-820-013

(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 56-12-11-980-004

(2) Make sure that the window unlocks, opens, closes, and locks freely when the emergency release handle is aligned with the external skin.

SUBTASK 56-12-11-210-008

(3) Make sure that the lower cam assembly [48] and camshaft assembly [49] are engaged correctly.

(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 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.

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 ———

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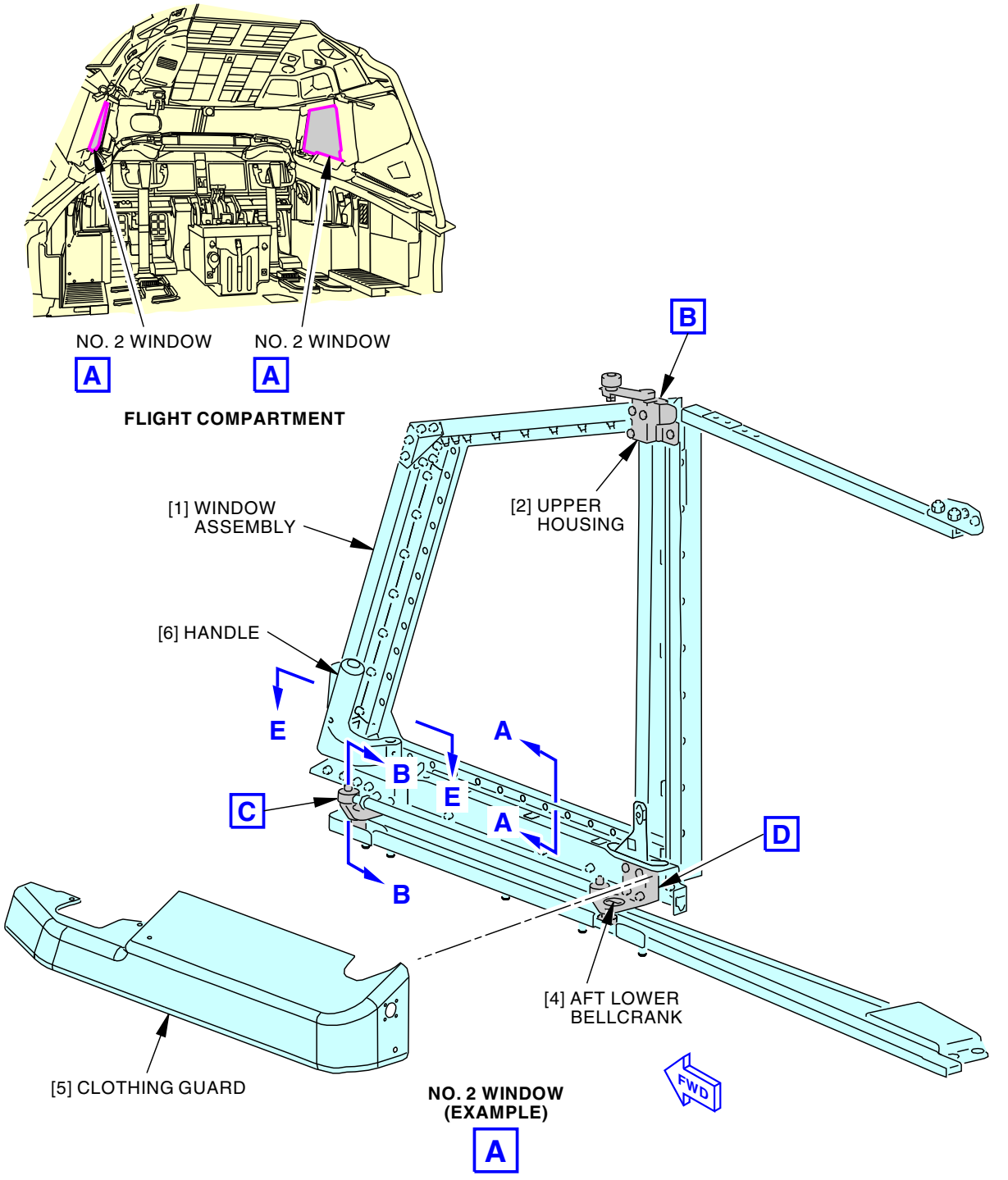
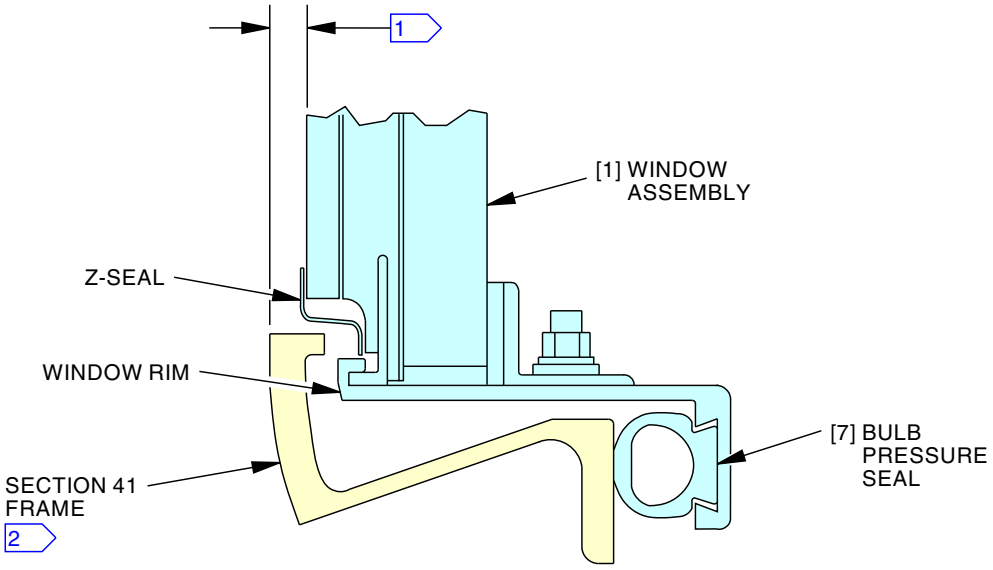


No. 2 Window Adjustment
Figure 501/56-12-11-990-821 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A

NOTE:

WINDOW FAIR NOT PRESSURIZED:
THE WINDOW RIM CAN RECLINE INWARD FROM THE INNER SURFACE OF FRAME SUPPORT FLANGE AS SHOWN.

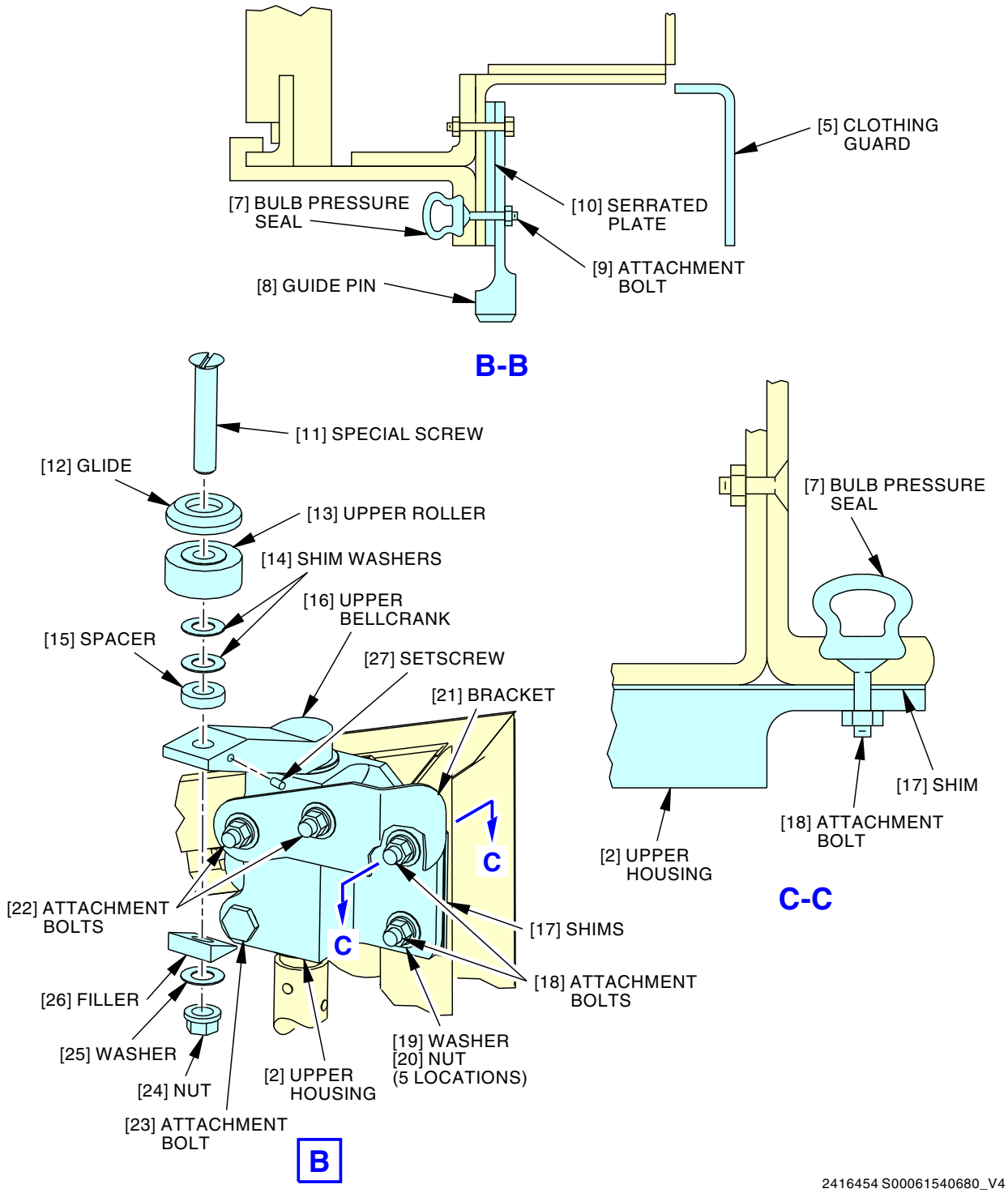
1 FLUSHNESS:
TOP FORWARD CORNER: 0.04 +0.11/-0.03 INCH (1.02 +2.8/-0.77 mm)
THE OTHER 3 CORNERS: 0.04 +0.08/-0.03 INCH (1.02 +2.79/-0.77 mm)

2 FOR CLARITY, SKIN PANELS ARE NOT ILLUSTRATED.

2416453 S00061540679_V6

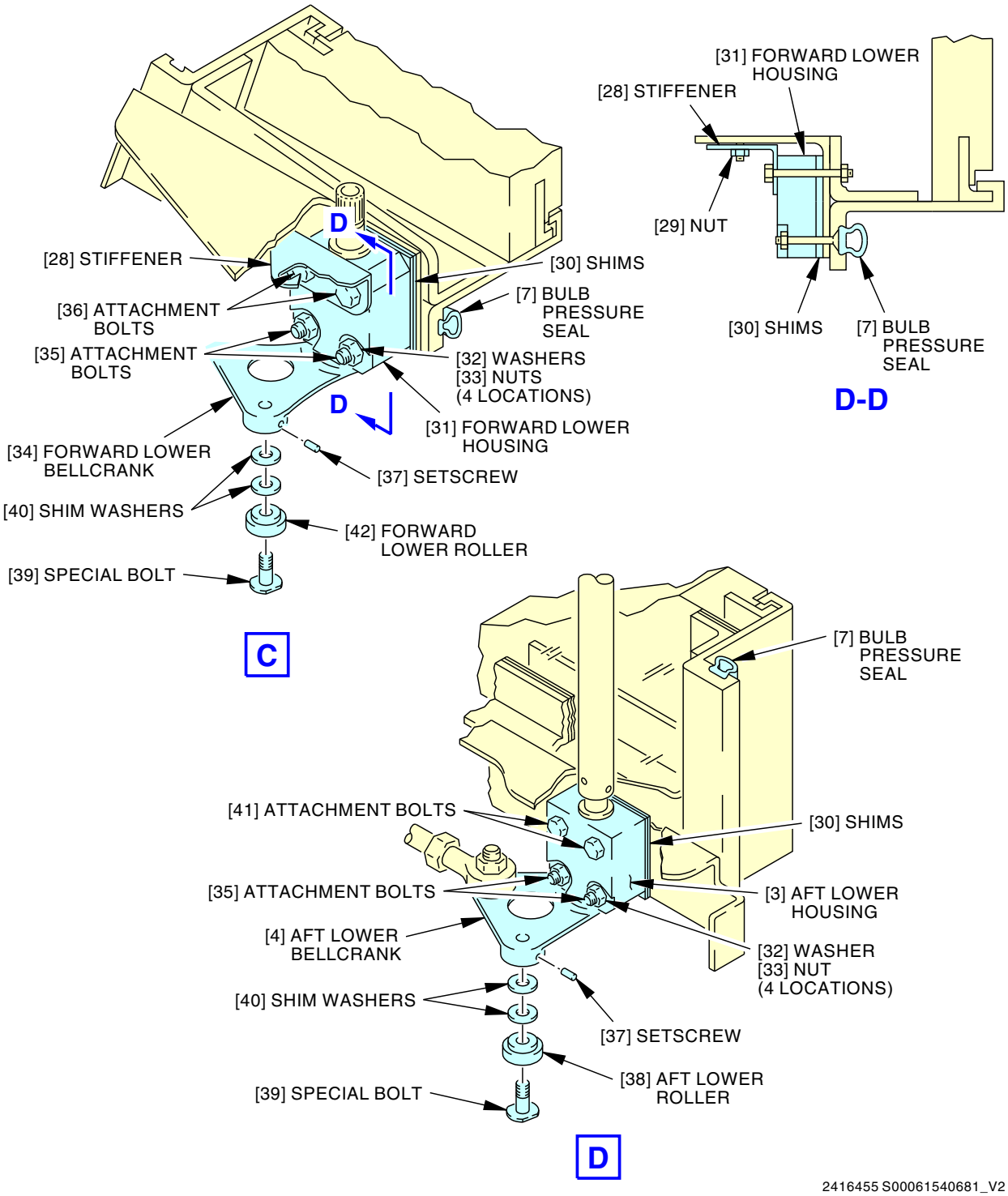
No. 2 Window Adjustment
Figure 501/56-12-11-990-821 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



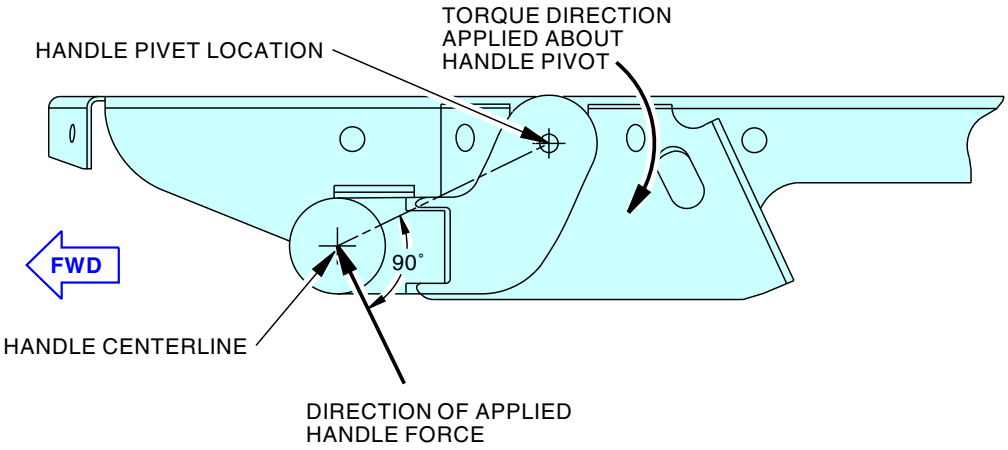
No. 2 Window Adjustment
Figure 501/56-12-11-990-821 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



No. 2 Window Adjustment
Figure 501/56-12-11-990-821 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

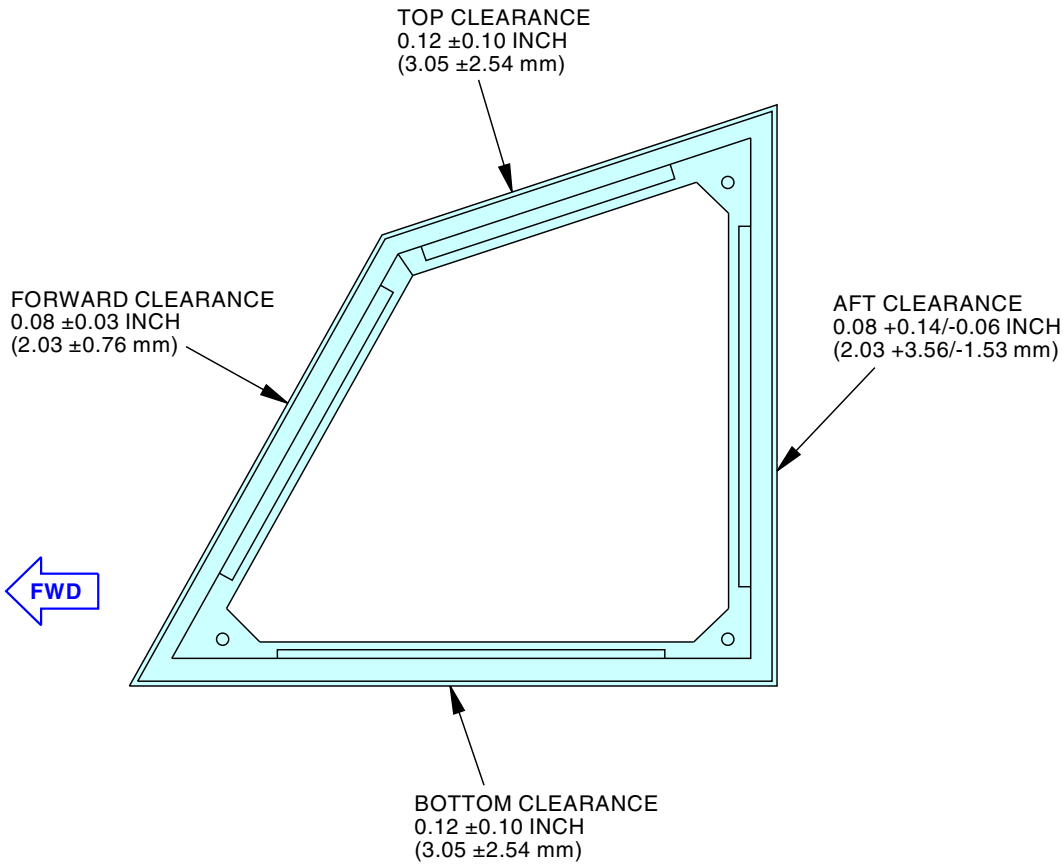


E-E

2416456 S00061540682_V1

No. 2 Window Adjustment
Figure 501/56-12-11-990-821 (Sheet 5 of 5)

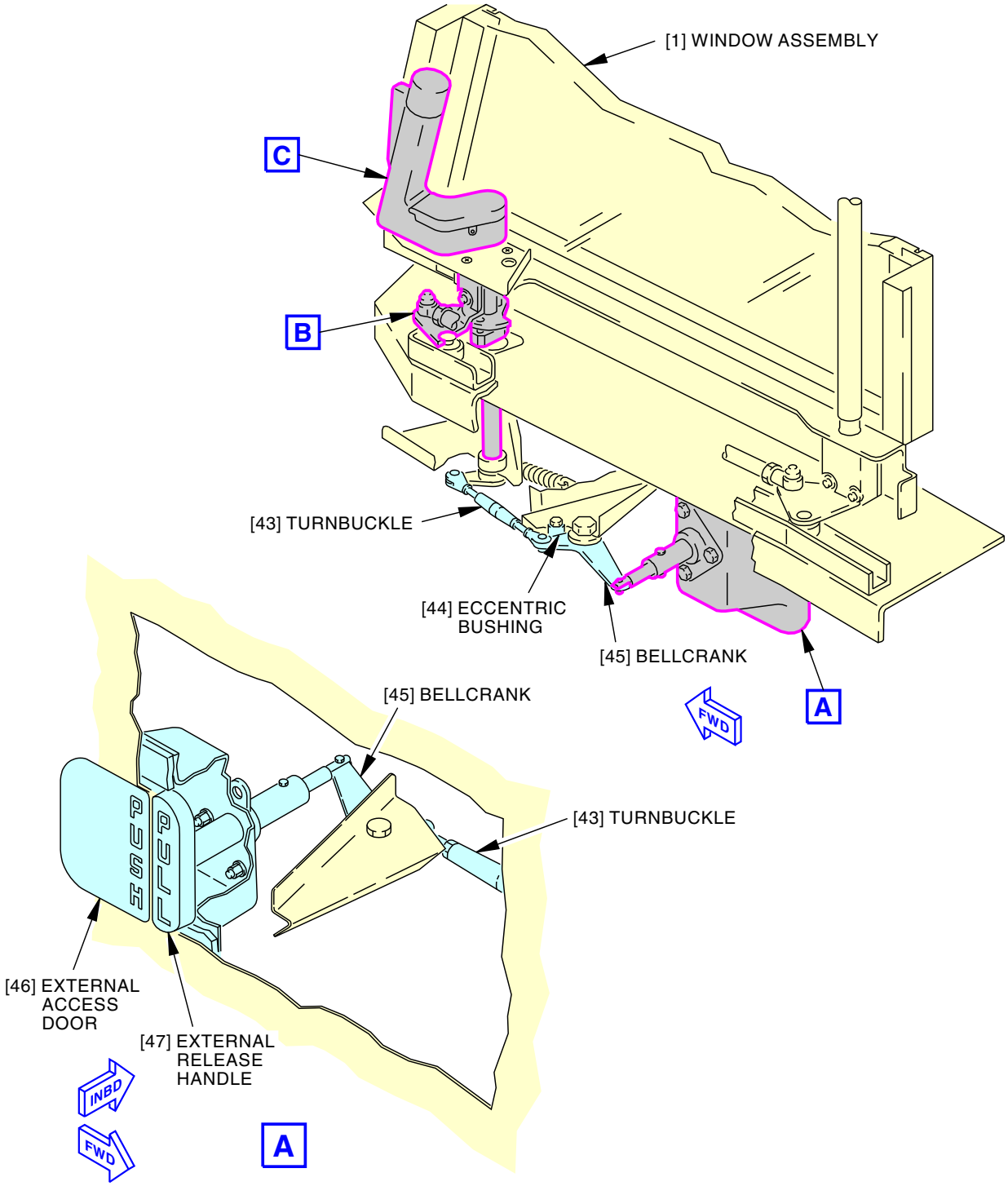
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2416457 S00061540683_V1

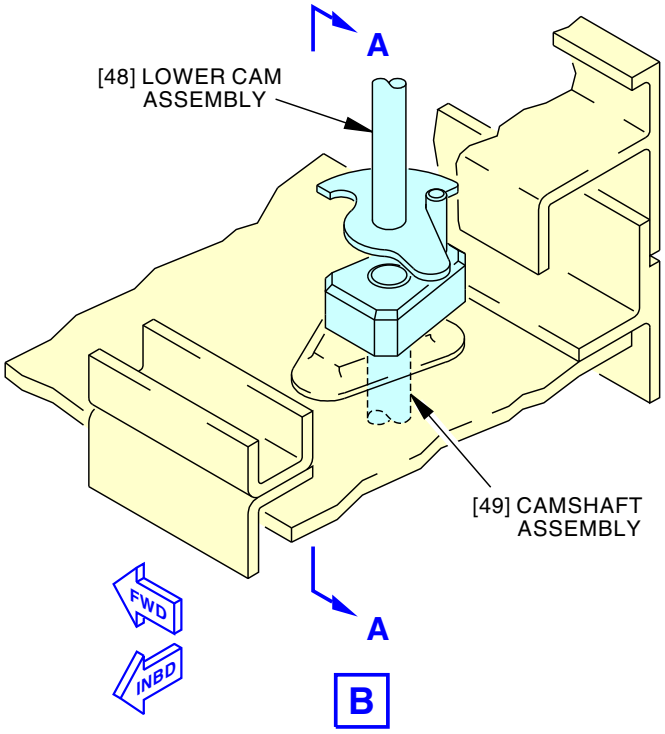
No. 2 Window Clearance
Figure 502/56-12-11-990-822

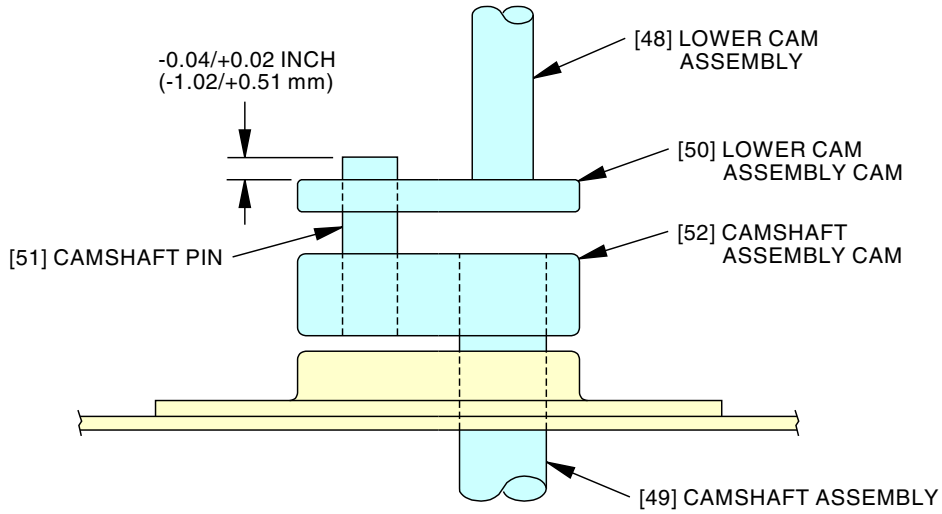
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Emergency Exit Release Adjustment
Figure 503/56-12-11-990-823 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



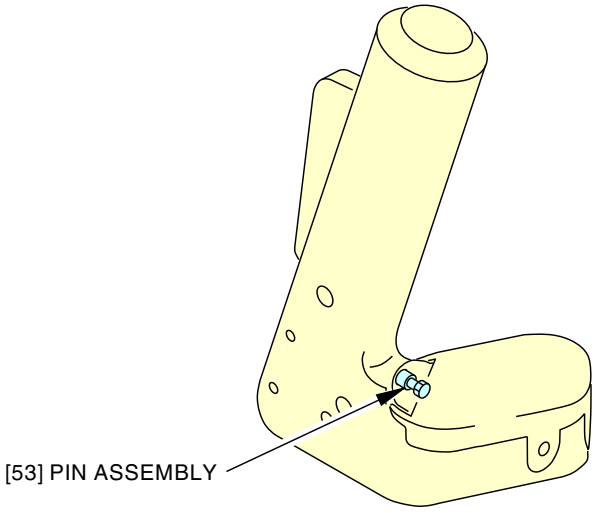


A-A

2416459 S00061540685_V2

Emergency Exit Release Adjustment
Figure 503/56-12-11-990-823 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



C

2416460 S00061540686_V2

Emergency Exit Release Adjustment
Figure 503/56-12-11-990-823 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-710-801

3. No. 2 Openable Window Operational Check

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
56-12-11-300-801	Replace the No. 2 Window Handle Trigger Return Spring (P/B 201)

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 No. 2 Window Operational Check

SUBTASK 56-12-11-710-004

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, STD-858:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-12-11-710-005

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

E. No. 2 Openable Window Operational Check

SUBTASK 56-12-11-710-006

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) 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 bolt on the handle fully engages the lock plate (View A-A, 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 the window handle operation is not effected, the clearance can be greater than 0.020 in. (0.508 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 56-12-11-300-801).

SUBTASK 56-12-11-710-007

(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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 56-12-11-860-005

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

SUBTASK 56-12-11-800-001

(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

(Figure 504)

A. 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 (View A-A, Figure 504).

NOTE: The window is in the closed/locked position at this point.

(f) Make sure that the clearance between the lower surface of the lock bolt and the stiffener is within +0.020 in. (0.508 mm)/-0.000 in. (0.000 mm). Adjust the handle mechanism, if necessary.

NOTE: If the window handle operation is not affected, the clearance 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 up or down through the slot holes until the clearance is within +0.020 in. (0.508 mm)/-0.000 in. (0.000 mm).

3) Tighten the bolts, washers and nuts until the lock bolt protrusion is within the noted range.

NOTE: The stiffener flange between the lockplate 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 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 lbf (200 ±67 N).

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 lbf (489 N).

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(b) Make sure that the external release handle is aligned with the skin when the handle is in the flight position.

B. Put the Airplane Back to its Usual Condition

SUBTASK 56-12-11-860-006

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

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

SUBTASK 56-12-11-800-002

(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 ———

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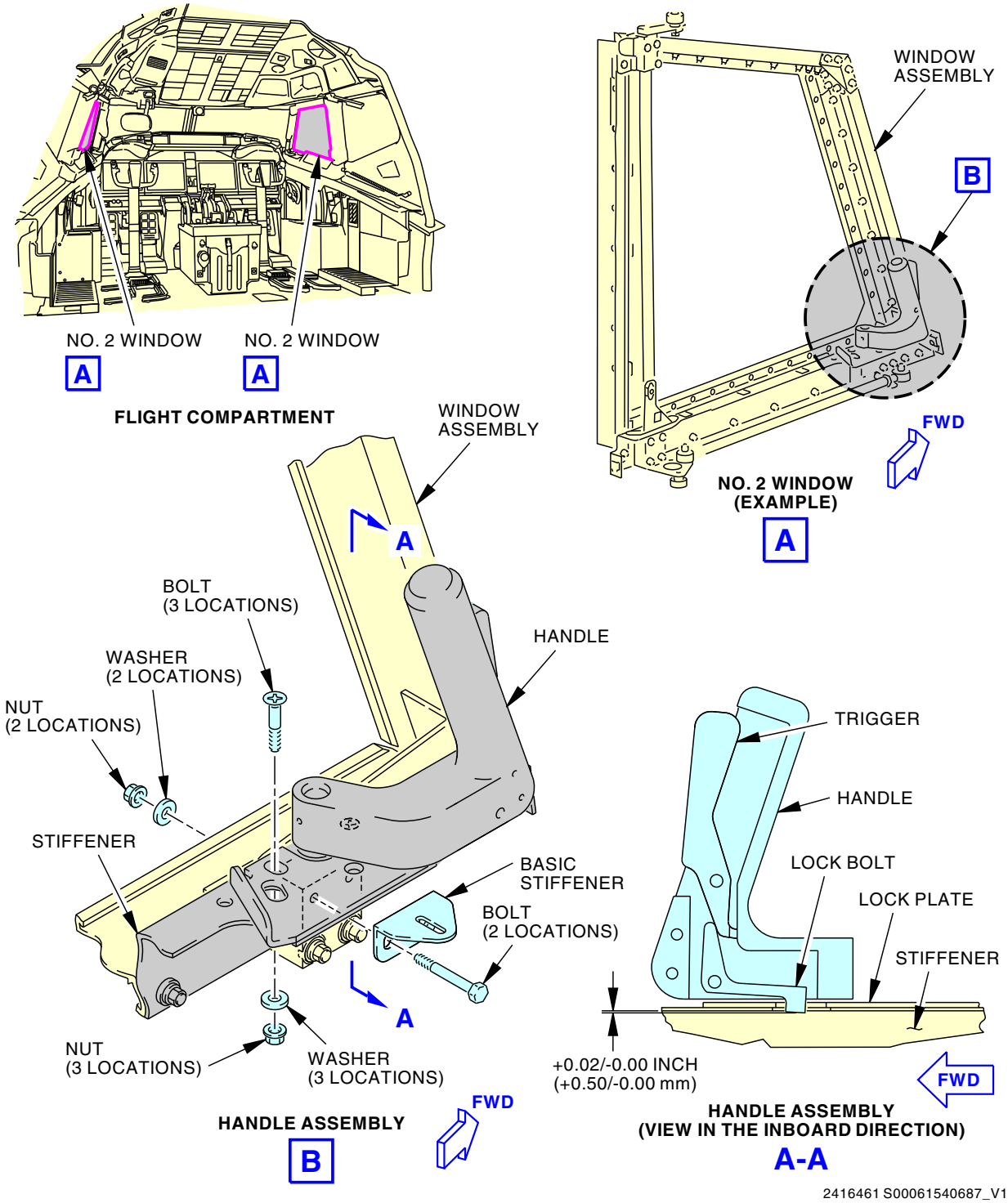

Emergency Exit Release Handle Clearance
Figure 504/56-12-11-990-808

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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)

A. General Flight Deck Windows Vocabulary

(1) Window Components

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

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

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

(d) Metal Insert: A thin piece of metal around the periphery of the window used to transfer failsafe pressure or bird impact loads from the interlayer to the window frame.

(e) Pane: One layer of glass in a window.

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

(g) Structural Pane: A glass pane that holds the structural loads of the window.

(h) Urethane: A type of interlayer material.

(i) Vinyl (Polyvinyl Butyral - PVB): A type of interlayer material.

(j) 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.

(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.

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(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) 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).

(b) Interlayers:

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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.

(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) Haze: A white or light blue cloudiness between the panes of glass, it 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. Haze is most likely to appear during cold weather operation and will dissipate during warm weather.

(9) 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.

C. 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)
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)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. 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

E. Location Zones

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

F. Prepare for the Inspection of the No. 2 Window

SUBTASK 56-12-11-860-007

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:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

SUBTASK 56-12-11-110-002

(3) If it is necessary, clean the window (FLIGHT COMPARTMENT WINDOWS - SERVICING, PAGEBLOCK 12-16-02/301).

NOTE: Clean windows are necessary to do the inspection.

G. No. 2 Window - Inspection/Check

SUBTASK 56-12-11-210-009

(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.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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

SUBTASK 56-12-11-210-010

(2) Examine the window for delamination.

(a) Replace the window if the delamination decreases the visual quality (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 56-12-11-210-011

(3) 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) Replace the window if there are indications of arcing (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

SUBTASK 56-12-11-210-012

(4) 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 56-12-11-000-801 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 56-12-11-210-013

(5) Examine window for scratches.

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

(b) The glass inner 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) or if it decreases the visual quality.

1) Use 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 56-12-11-210-014

(6) Examine the window for cracks in the vinyl interlayer (Figure 607).

(a) Replace the window if you find cracks that follow the long edges of the metal insert (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

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.

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(b) 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 (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

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.

(c) Vinyl interlayer cracks in the forward upper corner are permitted as defined below.

1) 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.

(d) Cylindrical vinyl interlayer cracks at the metal insert holes are permitted.

SUBTASK 56-12-11-210-015

(7) Examine the window for cracks (Figure 603).

(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: 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 Window Heat System (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 56-12-11-210-019

(8) Examine the window for haze.

(a) If the haze decreases the visual quality of the window, do one of the following steps:

1) Method 1:

a) Replace the window (TASK 56-12-11-000-801 and TASK 56-12-11-400-801).

2) Method 2:

a) Turn the window heat on to remove the haze from the window.

NOTE: The window 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, do Method 1.

SUBTASK 56-12-11-210-016

(9) Examine the mechanism for worn areas (Figure 601).

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Table 601/56-12-11-993-801 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 56-12-11-210-017

(10) Examine the window frame drain (TASK 56-12-11-200-802).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 56-12-11-860-008

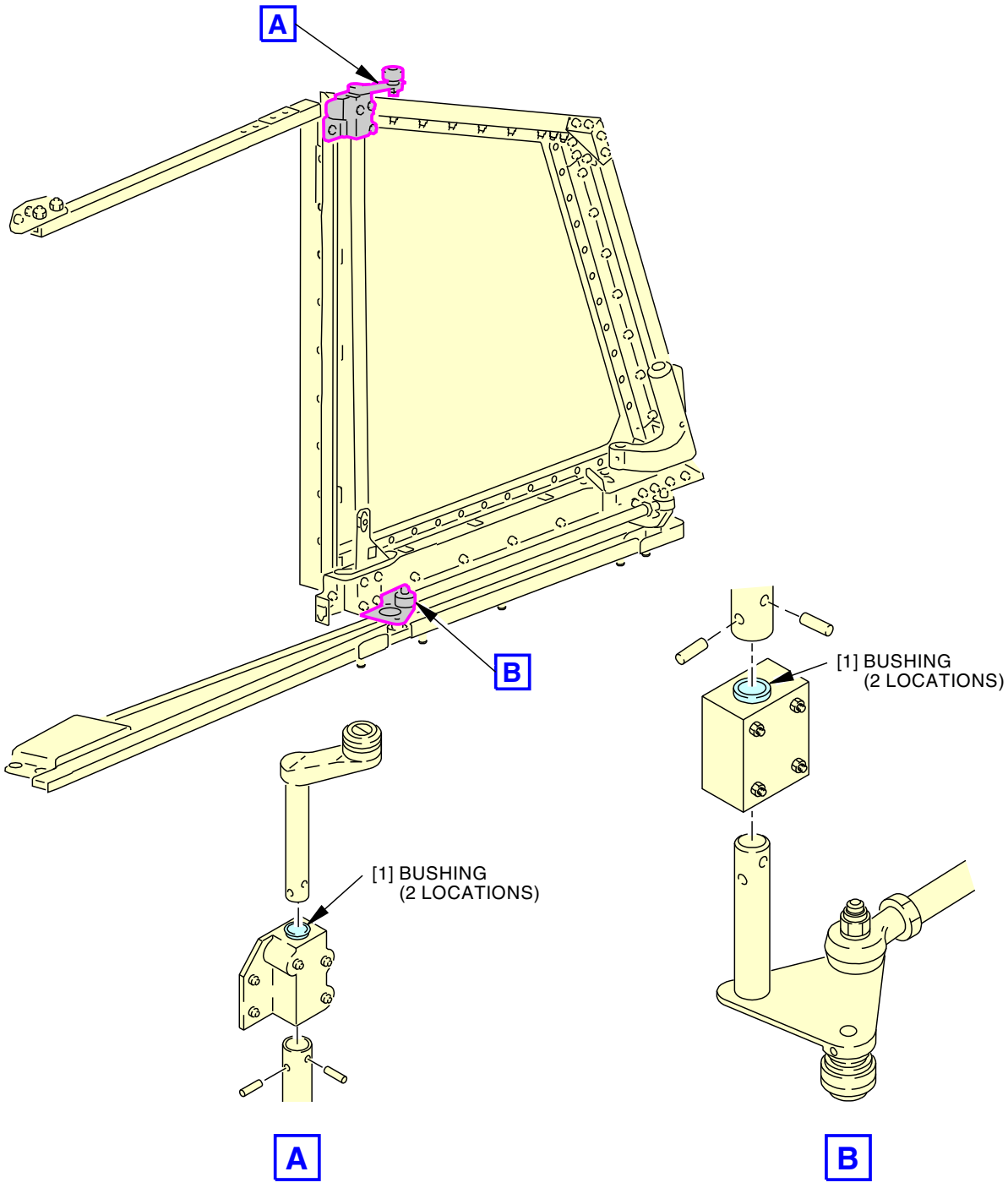
(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

——— END OF TASK ———

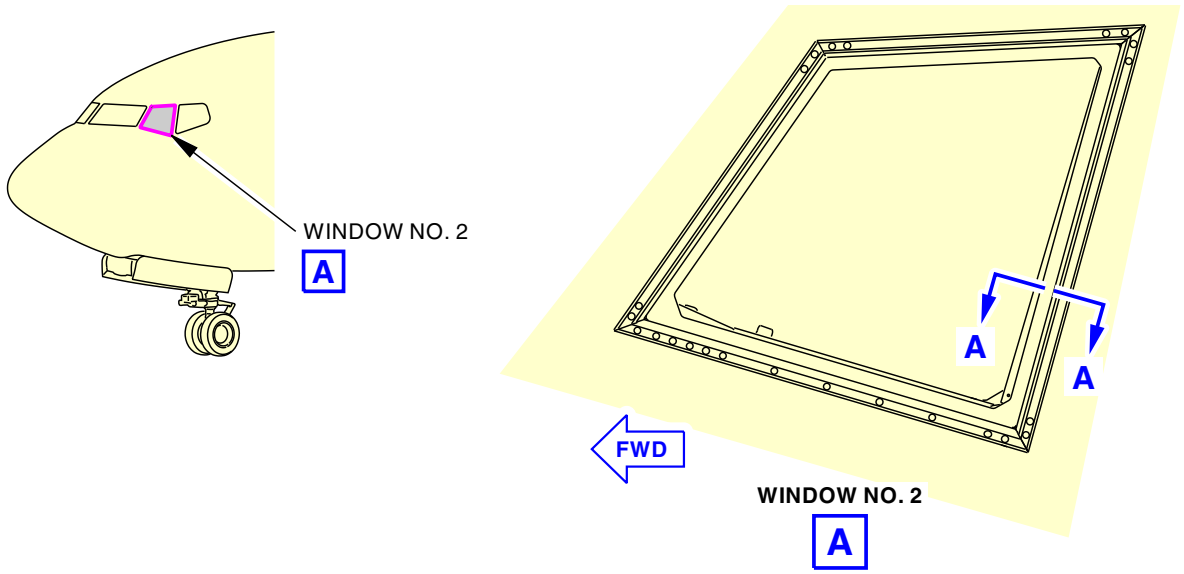
ECCN 9E991 BOEING PROPRIETARY - See title page for details

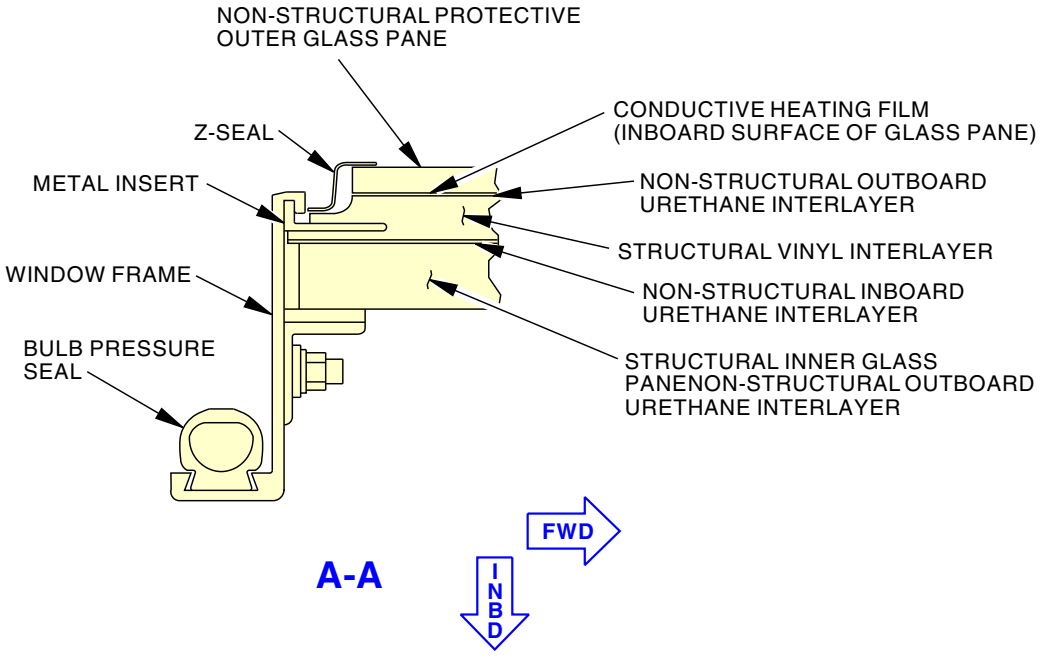


2416462 S00061540690_V1

No. 2 Window Mechanism Wear Limits
Figure 601/56-12-11-990-809

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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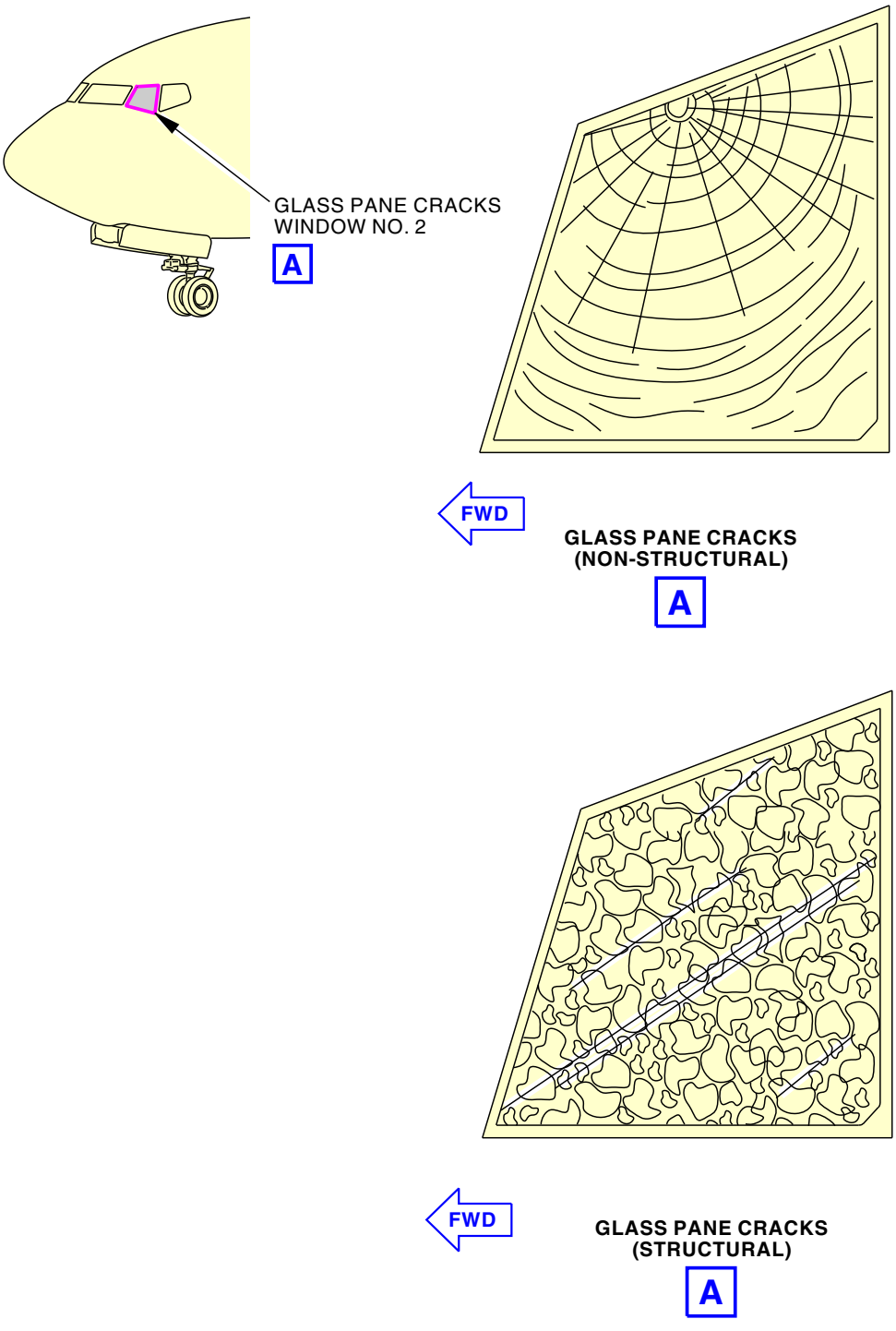
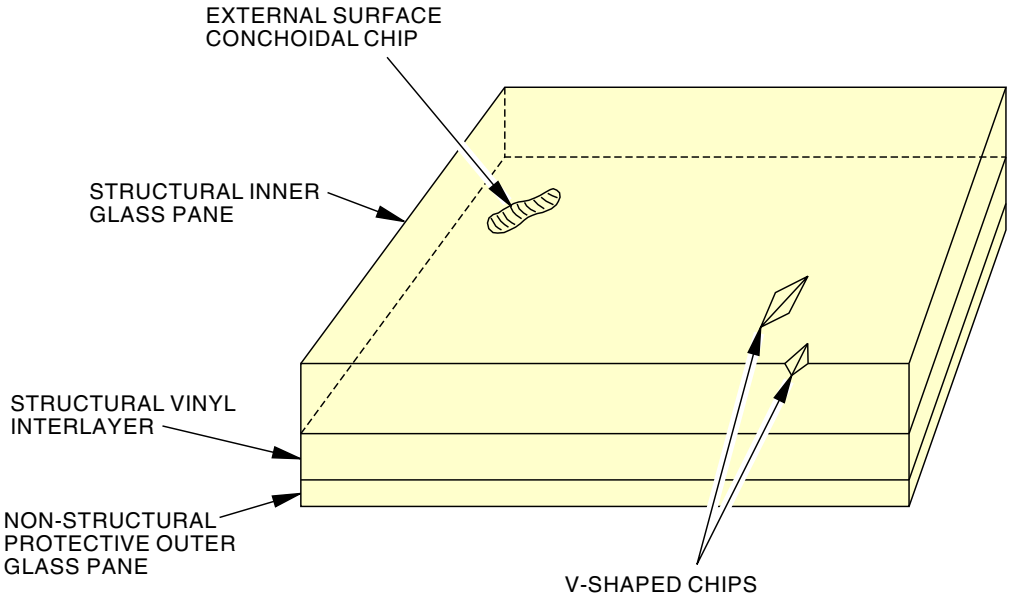
Control Cabin Window Cross Sections
Figure 602/56-12-11-990-810

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Glass Pane Cracks
Figure 603/56-12-11-990-811

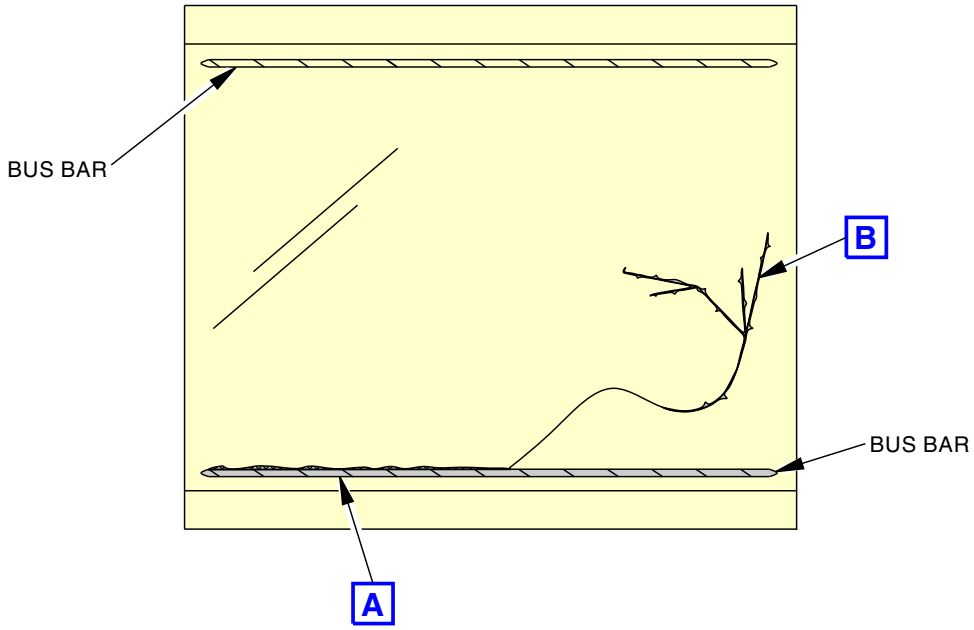
ECCN 9E991 BOEING PROPRIETARY - See title page for details



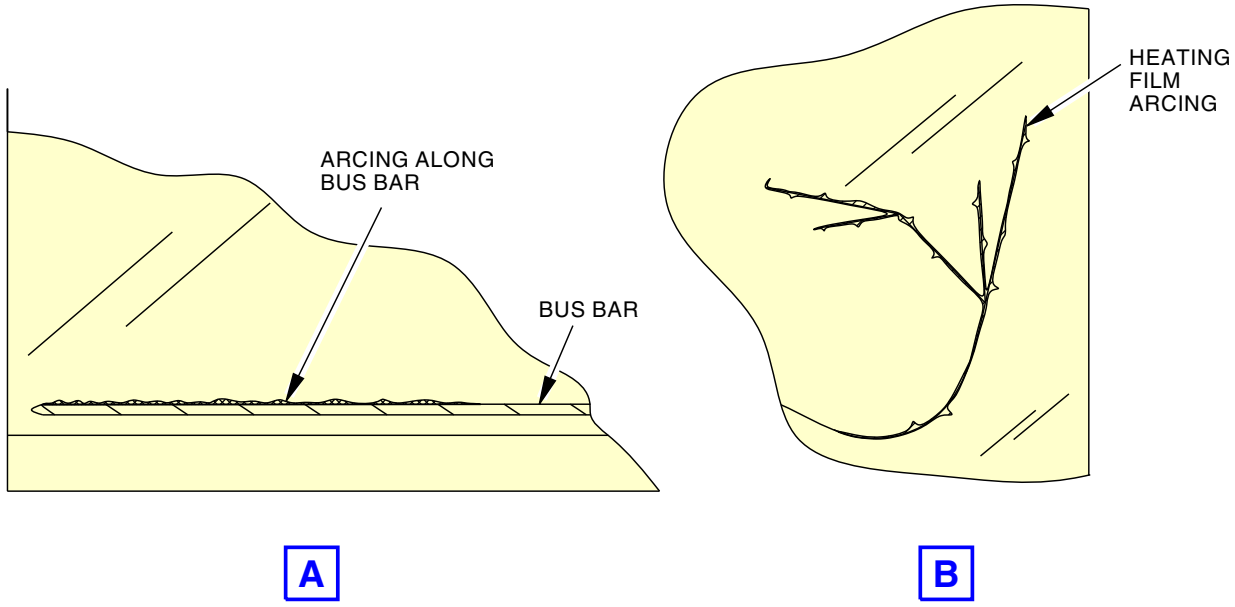
2416422 S00061540619_V1

Glass Pane Chips
Figure 604/56-12-11-990-812

ECCN 9E991 BOEING PROPRIETARY - See title page for details



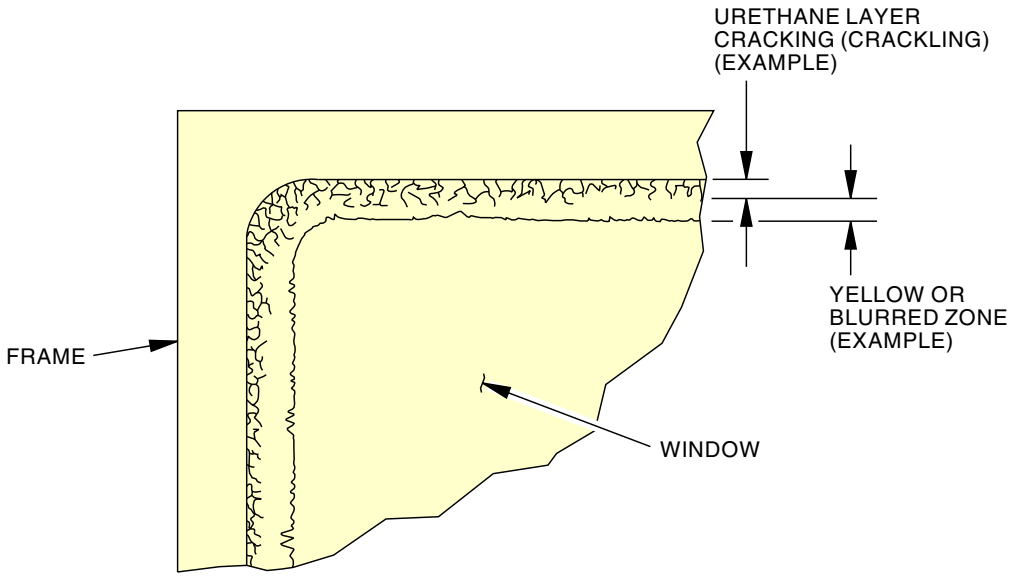
WINDOW HEAT ARCING



2416424 S00061540621_V1

Window Heat Arcing
Figure 605/56-12-11-990-813

ECCN 9E991 BOEING PROPRIETARY - See title page for details

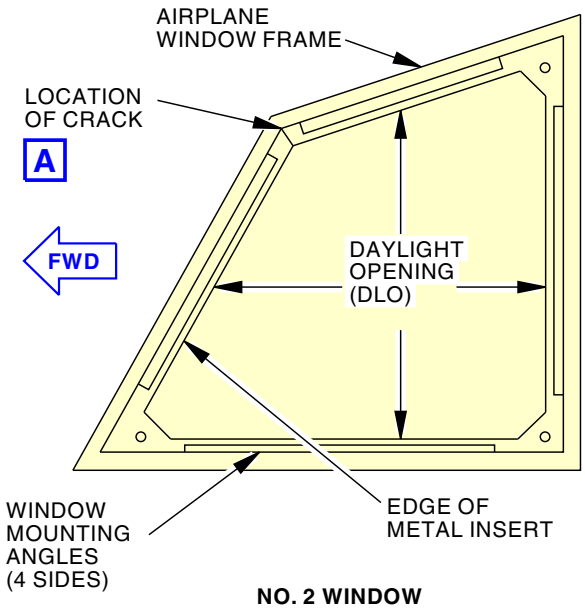


URETHANE INTERLAYER CRACKS

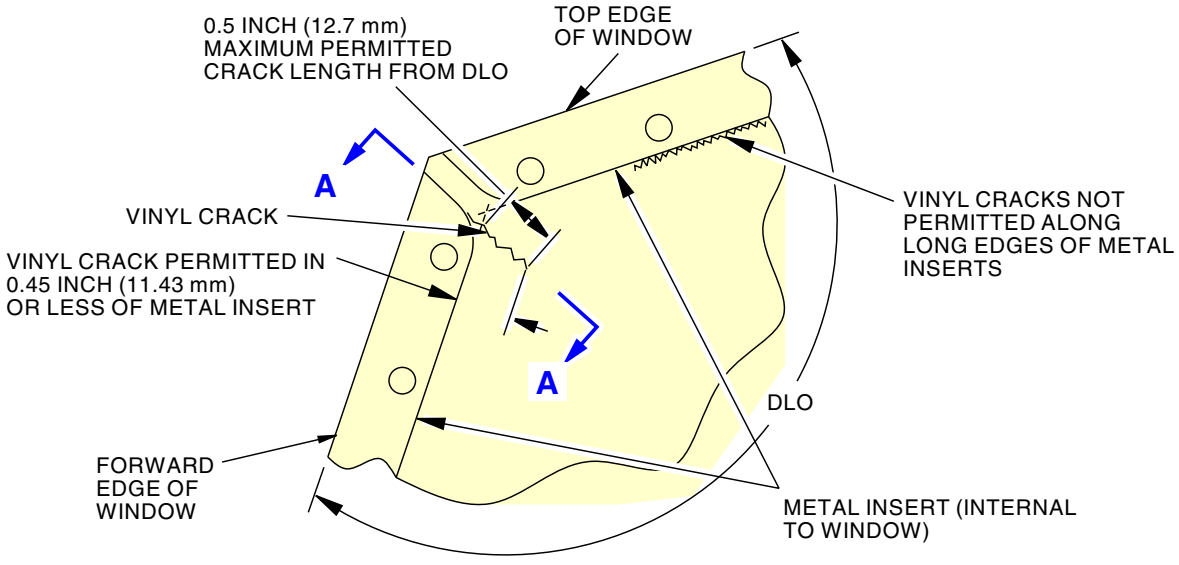
2416425 S00061540622_V1

Urethane Interlayer Cracks
Figure 606/56-12-11-990-814

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NO. 2 WINDOW
(RIGHT SIDE)
(VIEW IN THE OUTBOARD DIRECTION)



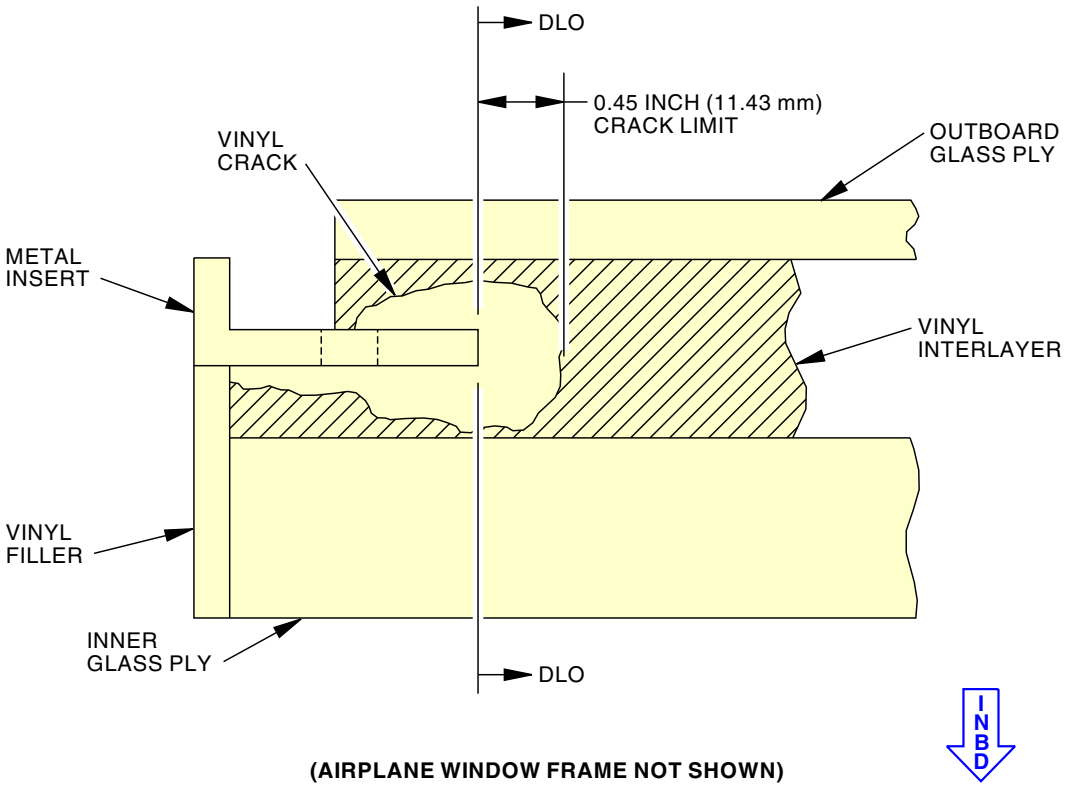
LOCATION OF CRACK
(AIRPLANE WINDOW FRAME NOT SHOWN)

A

2416466 S00061540694_V1

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-815 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



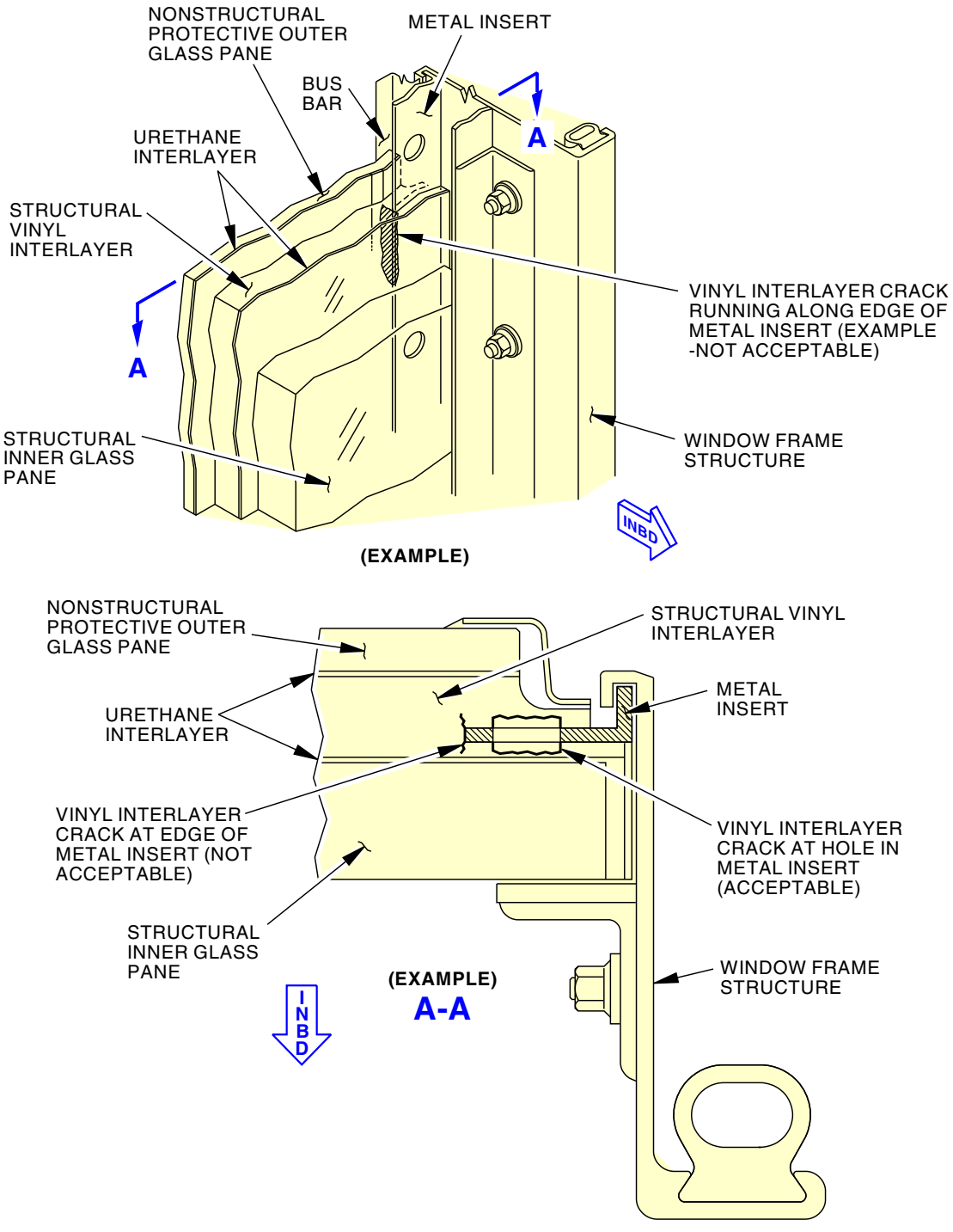
(AIRPLANE WINDOW FRAME NOT SHOWN)

A-A

2416467 S00061540695_V2

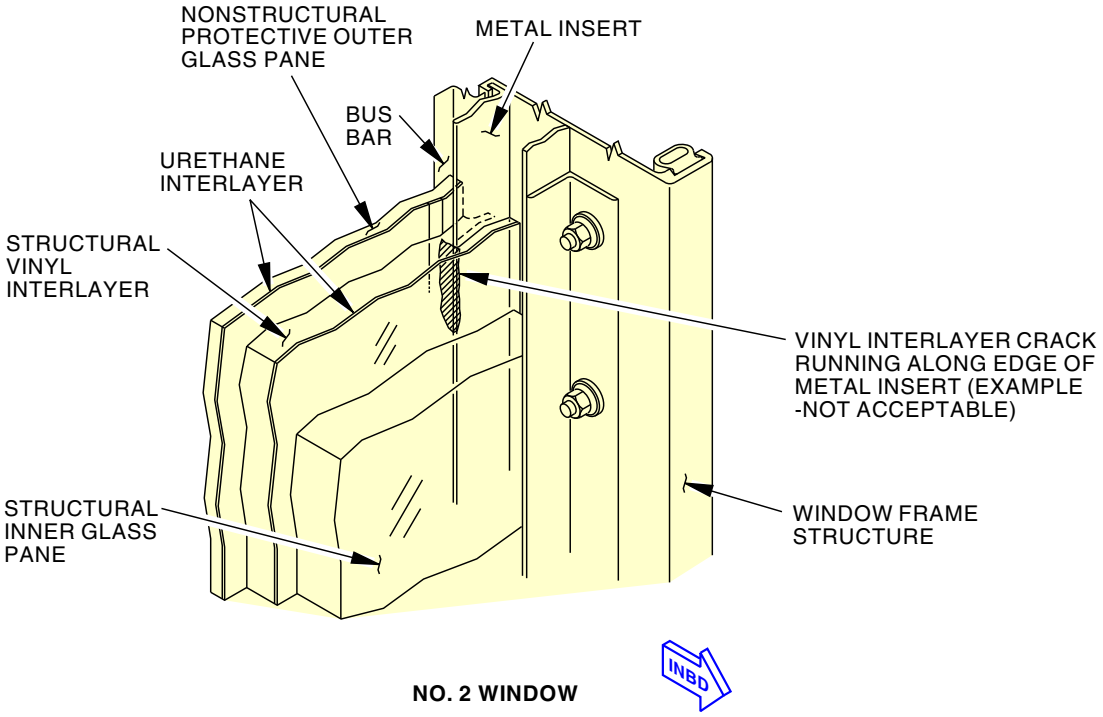
No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-815 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-815 (Sheet 3 of 5)

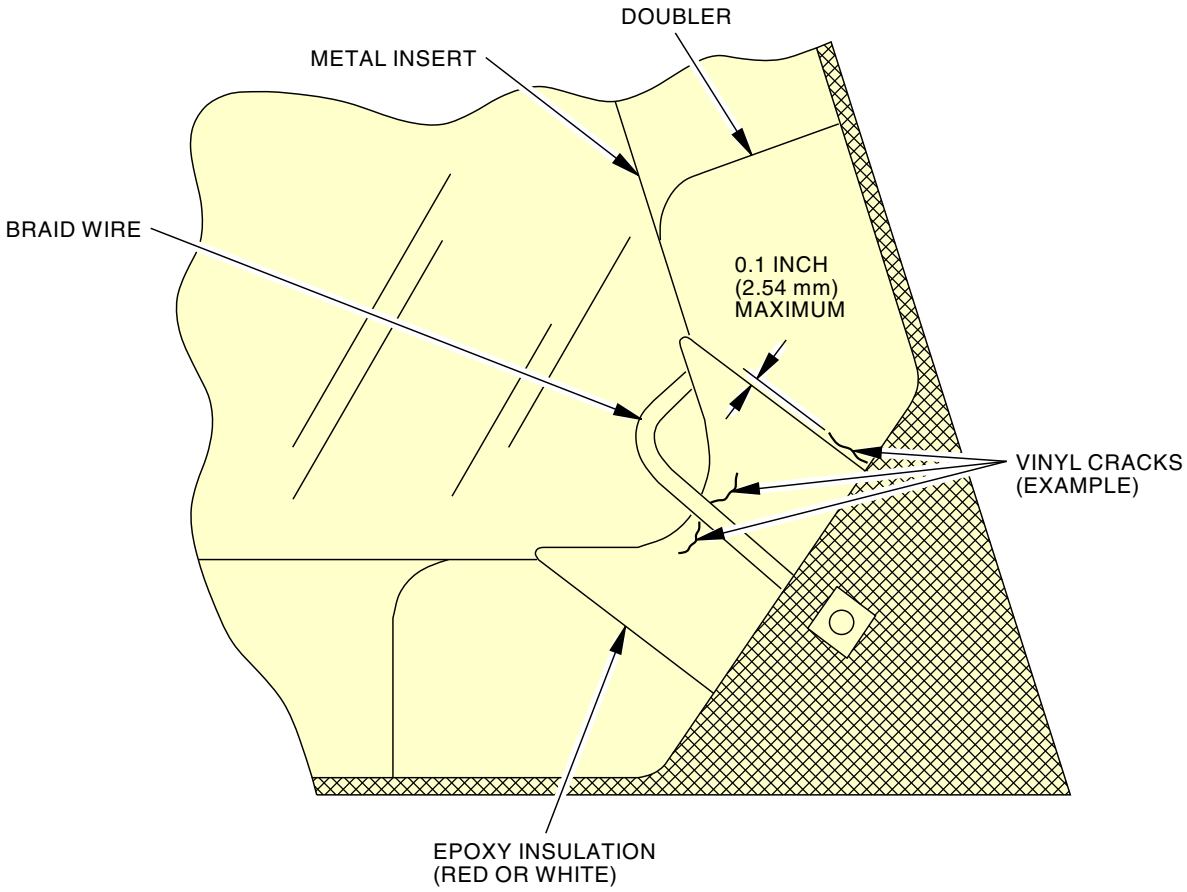
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2416469 S00061540697_V1

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-815 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



WINDOW NO. 2 CORNER-TYPE VINYL CRACK (EXAMPLE)

2416470 S00061540698_V1

No. 2 Window Vinyl Interlayer Crack Limits
Figure 607/56-12-11-990-815 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-12-11-200-802

3. No. 2 Openable Window Sill Drain Inspection

(Figure 608)

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 drain for obvious damage, clogging, condition and security.

SUBTASK 56-12-11-200-002

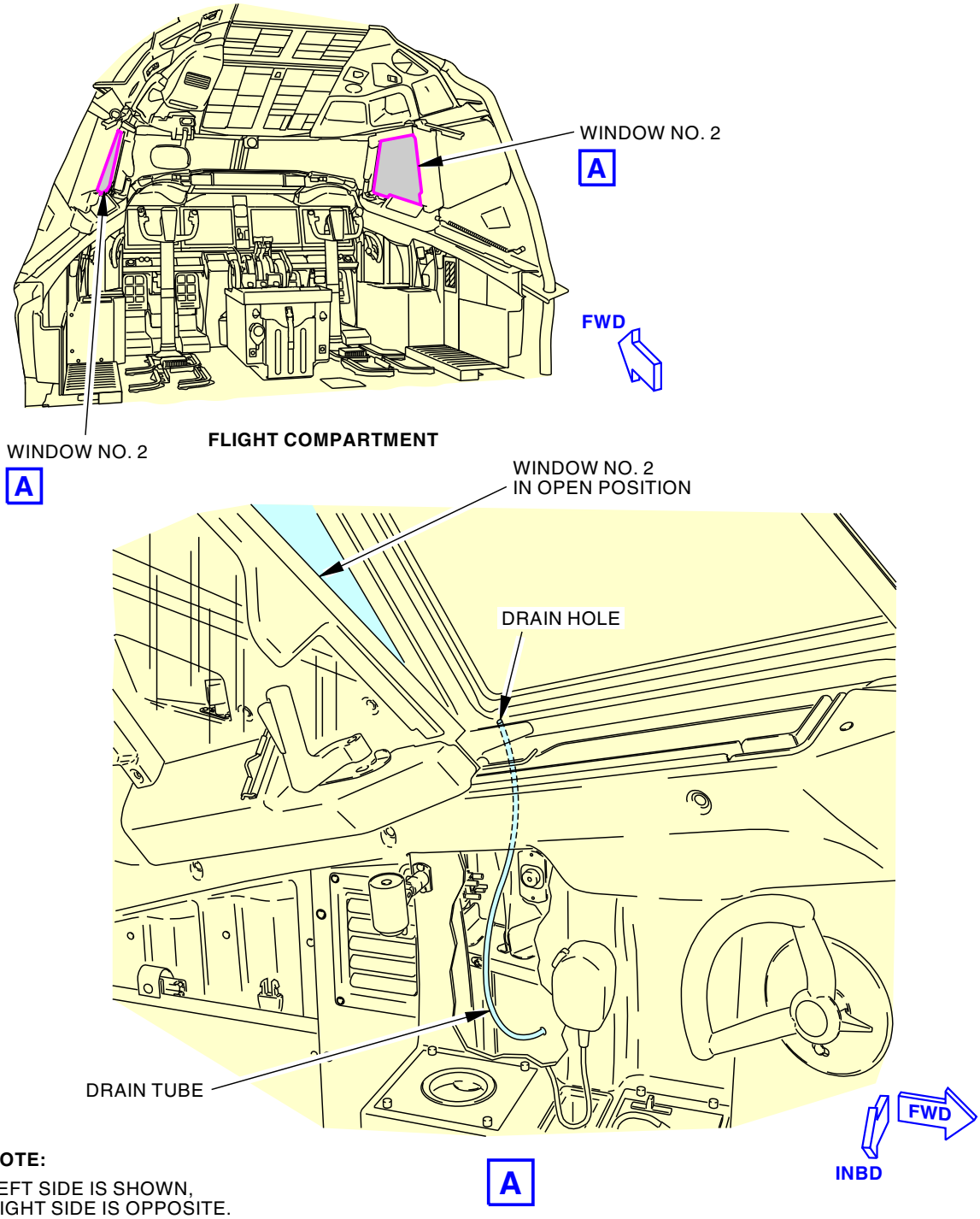
(1) Examine no. 2 openable window sill drain.

(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.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



No. 2 Openable Window Sill Drain Inspection
Figure 608/56-12-11-990-816

ECCN 9E991 BOEING PROPRIETARY - See title page for details

NO. 2 OPENABLE WINDOW - REPAIRS

1. General

A. This procedure has this task:

(1) The repair of the fillet seal for the No. 2 openable window.

B. There is aerodynamic smoother (sealant) around the No. 2 windows. The aerodynamic smoother can erode and have cracks.

TASK 56-12-11-300-803

2. No. 2 Openable Window Fillet Seal Repair

(Figure 801 and Figure 802)

A. References

Reference	Title
51-22-00-160-801	Prepare For Sealing (P/B 201)

B. Tools/Equipment

Reference	Description
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
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

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E. General

SUBTASK 56-12-11-000-001

(1) This task includes steps to repair left and right No.2 openable windows fillet seals.

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) Move these switches, on the P5 overhead panel, to the OFF position and attach the 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, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

G. No. 2 Openable Window Fillet Seal Repair

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 51-22-00-160-801):

(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 Scotch Flatback Masking Tape 250, G00270, on the glass window where you will apply the new fillet seal.

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)

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(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.

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 56-12-11-400-006

(7) Smooth the aerodynamic smoother to the necessary shape (Figure 801).

SUBTASK 56-12-11-000-003

(8) Remove Scotch Flatback Masking Tape 250, G00270, before the aerodynamic smoother starts to get hard.

SUBTASK 56-12-11-400-007

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

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 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

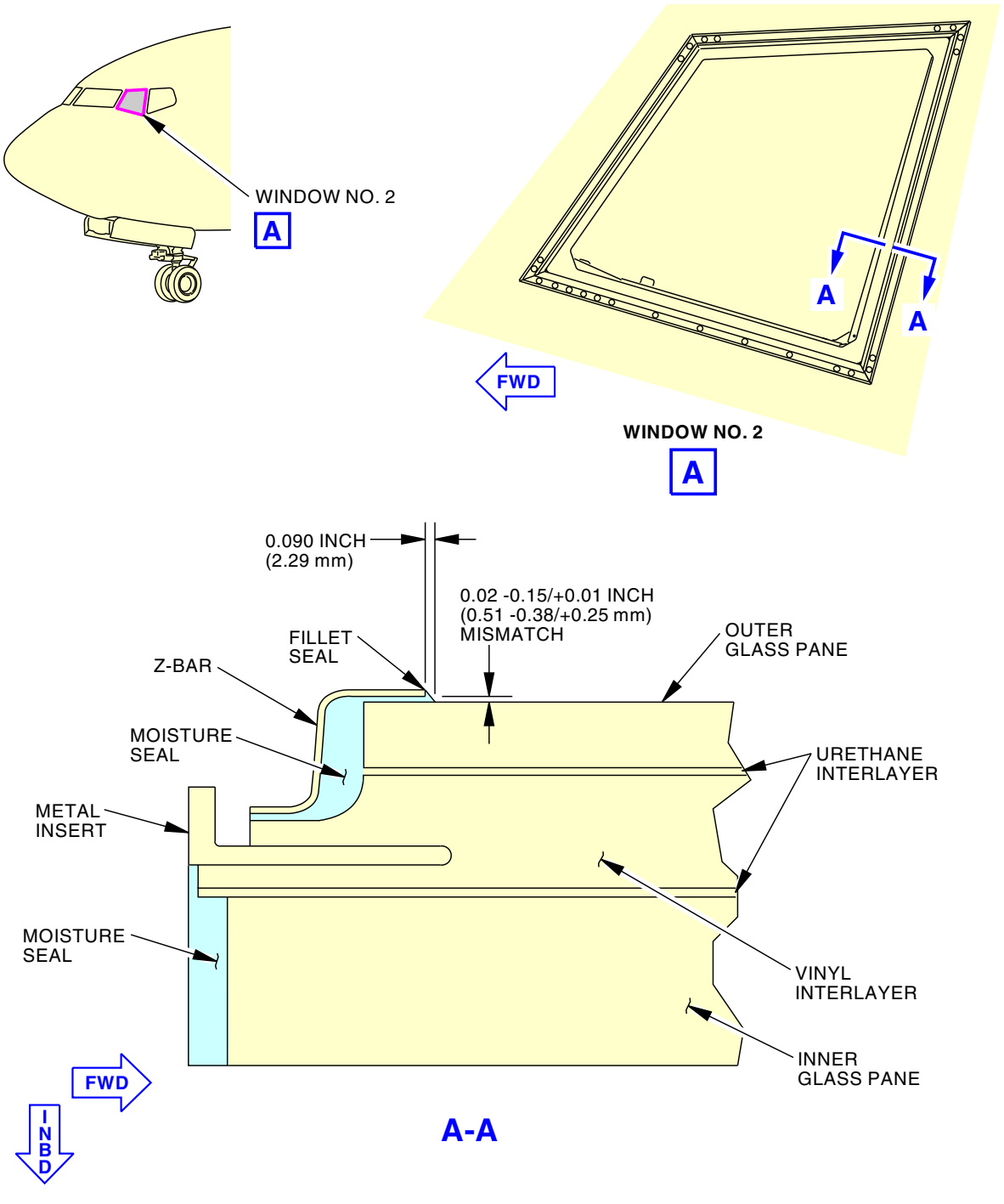
(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Fillet Seal Application
Figure 801/56-12-11-990-817

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 FOR ACCELERATED CURING TIMES SEE TECHNICAL DATA SHEET FOR THE SEALANT

2845694 S0000665110_V3

Cure Times vs Temperatures for Sealants
Figure 802/56-12-11-990-818

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PASSENGER CABIN WINDOWS - 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 56-21-00-600-801

2. CORROSION PREVENTION

A. References

Reference	Title
SRM 737-MAX	D000534530

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 56-21-00-610-001

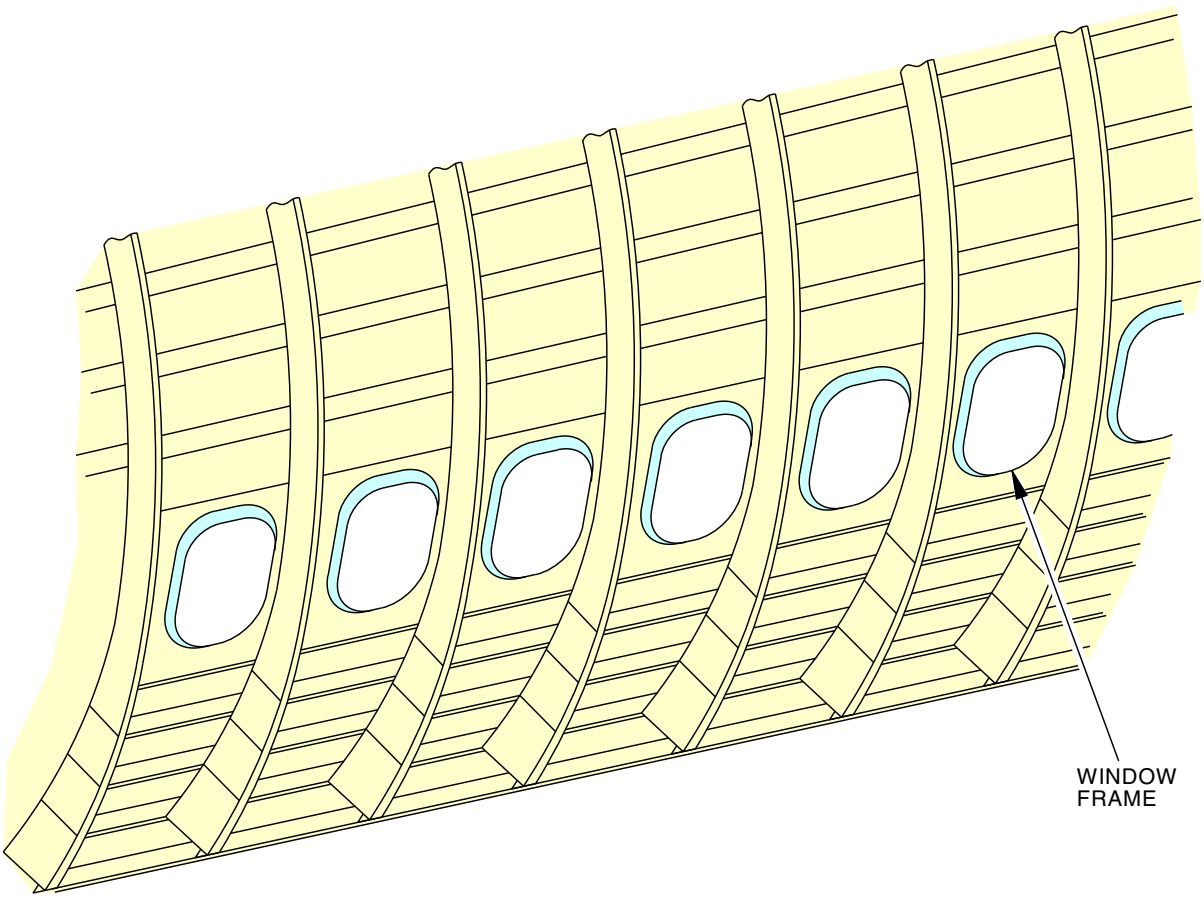
(1) Make periodic inspections of the window frames internally and externally for evidence of corrosion or deterioration of finish.

(2) Where minor corrosion is evident or the finish is broken, refer to SRM 737-MAX 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

2416479 S00061540727_V1

Passenger Cabin Window Frames
Figure 201/56-21-00-990-801

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)

A. References

Reference	Title
25-21-12-000-801	Snap In 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. Procedure

SUBTASK 56-21-00-010-001

(1) To remove the window shade and reveal, do this task: Snap In Window Shade and Reveal Assembly Removal, TASK 25-21-12-000-801.

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].

(b) Remove the rigid window retaining clips [4], if installed.

(c) Remove the spring window retaining clips [7], if installed.

(d) Remove the window assembly from the window frame [1].

NOTE: The window assembly has an outer pane [2], seal [6], stiffener ring [10], airflow damper [9], middle pane [3], and clamping ring [8].

SUBTASK 56-21-00-700-001

(4) Look for damage on the window seal [6].

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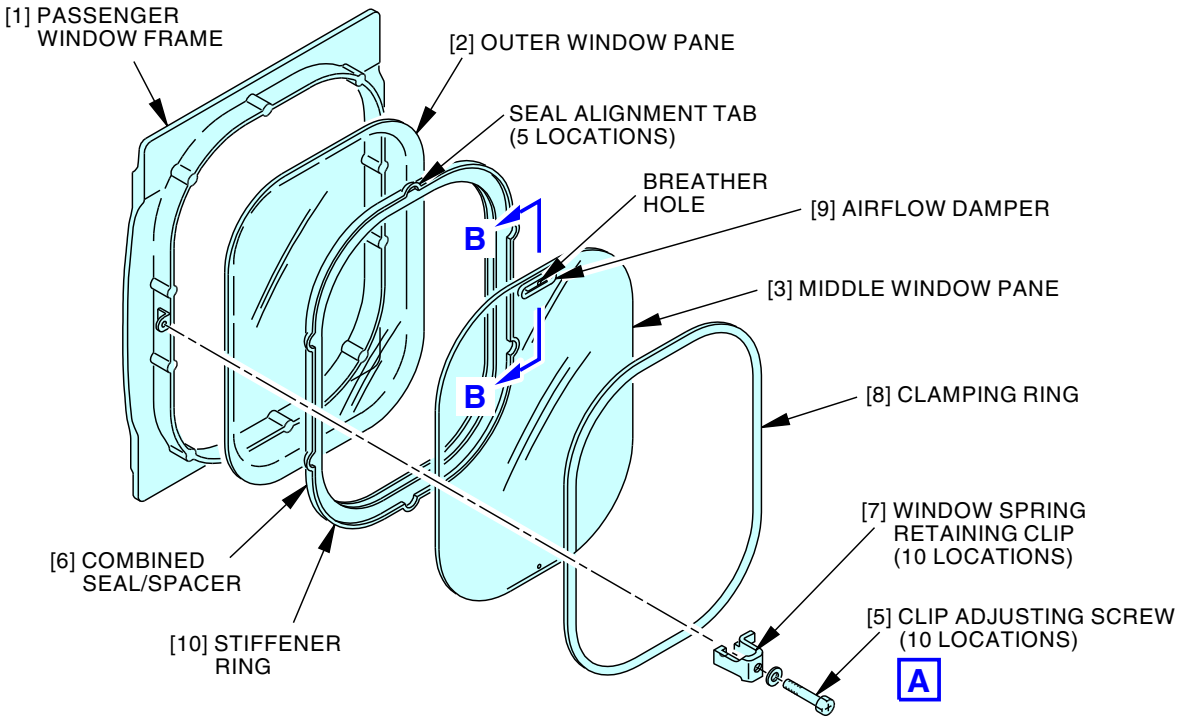
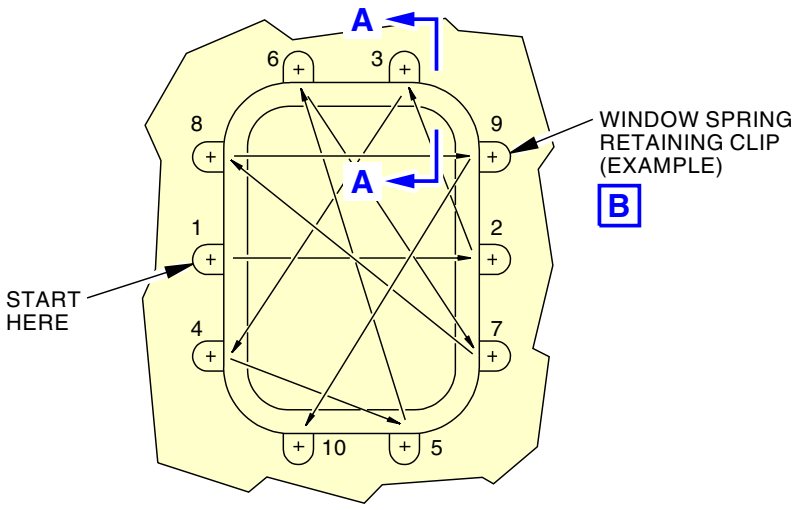
SUBTASK 56-21-00-960-001

(5) Replace the window seal [6] if it has damage.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





SEQUENCE DIAGRAM TO TIGHTEN THE SCREWS

A 1

NOTE:

1 USE THIS DIAGRAM AS AN EXAMPLE ONLY. ANY SIMILAR PATTERN TO TIGHTEN THE SCREWS IS SATISFACTORY.

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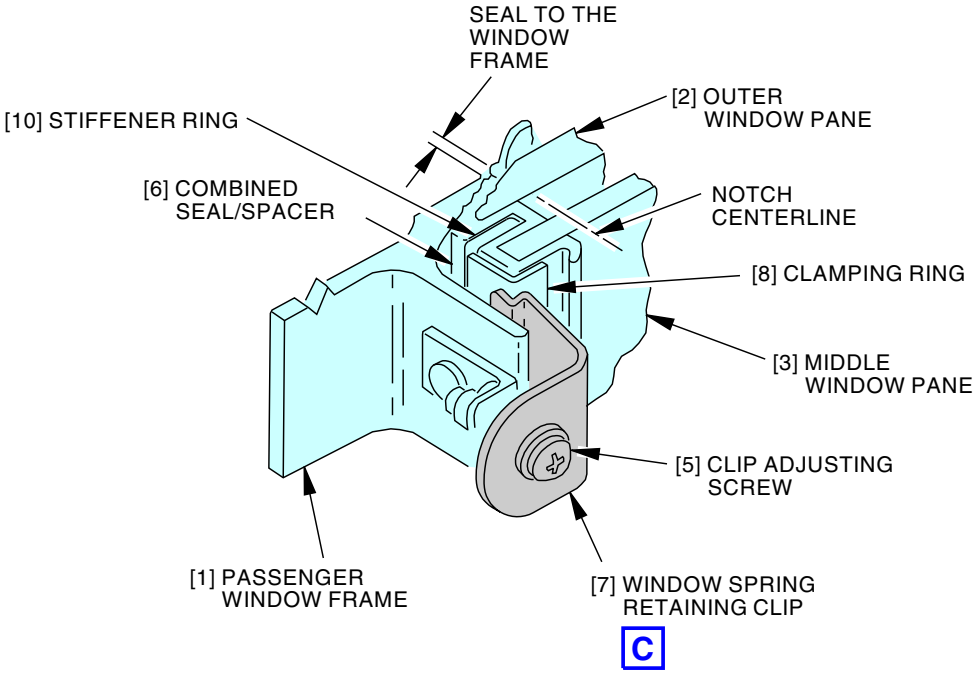
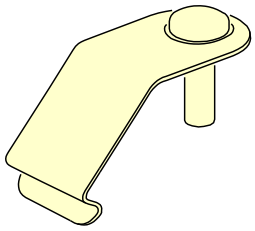
Passenger Cabin Window Installation
Figure 401/56-21-00-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



WINDOW SPRING RETAINING CLIP (AS INSTALLED) (EXAMPLE)

B



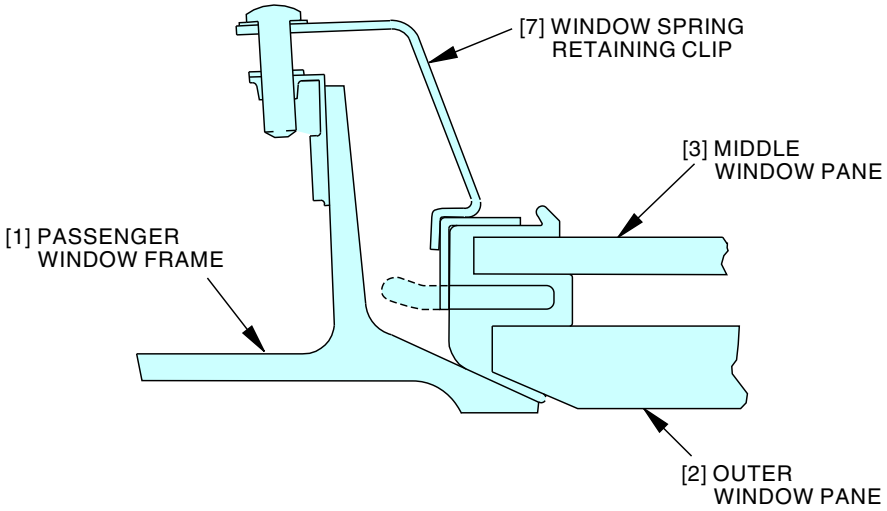
WINDOW SPRING RETAINING CLIP

C

2416474 S00061540710_V1

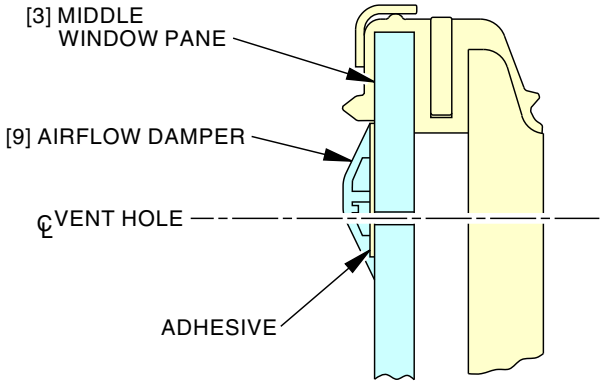
Passenger Cabin Window Installation
Figure 401/56-21-00-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



WINDOW SPRING RETAINING CLIP
(TOP/BOTTOM OF WINDOW)
(EXAMPLE)

A-A 2



B-B

NOTE:

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.

2416475 S00061540711_V1

Passenger Cabin Window Installation
Figure 401/56-21-00-990-802 (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)

A. References

Reference	Title
25-21-12-400-802	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
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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Outer pane	56-21-00-04B-090	SIA ALL
		56-21-00-30-090	SIA 001-014
3	Middle pane	56-21-00-04B-095	SIA ALL
		56-21-00-30-095	SIA 001-014
6	Seal	56-21-00-04B-070	SIA ALL
		56-21-00-30-070	SIA 001-014

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 Installation

SUBTASK 56-21-00-420-001

(1) 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 the window frame [1] with a cotton wiper, G00034, and solvent, B00083.

(b) Make sure that the part number on the outer 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 [6] is to be on the inner edge of the stiffener ring [10].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Install the middle pane [3] in the seal [6] with the breather hole at the top of the assembly.

SUBTASK 56-21-00-420-002

(2) 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 pane [3] with a 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 pane [3].

NOTE: The vent hole must not be blocked with adhesive tape, G50397. There must not be space between the adhesive tape, G50397, and the middle pane. Do not put the edge of adhesive tape, G50397, nearer than 0.42 in. (10.7 mm) from the edge of the middle pane.

(d) Remove the backing of the adhesive tape, G50397, on the middle pane [3].

(e) Apply the airflow damper [9] directly to the adhesive tape, G50397, above the breather hole.

(f) Put the clamping ring [8] on the window assembly on the edge of the seal that covers the middle pane [3].

SUBTASK 56-21-00-160-001

(3) 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 pane [2] or the middle pane [3], do the step that follows:

1) Use a 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.

SUBTASK 56-21-00-420-003

(4) Install the passenger window:

(a) Put the window assembly in the window frame [1].

(b) Install the window retaining clips:

NOTE: It is recommended that the applicable window assembly be installed with either rigid window retaining clips [4] or spring window retaining clips [7] only. The AIPC will list the applicable window retaining clips for the window assembly.

NOTE: For windows with airflow dampers [9], the spring window retaining clips [7] will contact the clamping ring [8] and not the seal [6] or the edge of the middle pane [3].

1) To install rigid window retaining clips [4], do the steps that follow:

a) Install the window clip adjustment screws [5] and tighten enough to hold the window in position.

NOTE: During this step, it is not necessary to fully tighten the screws.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Tighten the window clip adjustment screws [5] to 13.5 ±1.5 in-lb (1.5 ±0.2 N·m).

NOTE: The torque sequence as shown in Figure 401.

c) If the rigid window retaining clips [4] are loose, you may increase the torque in 5 in-lb (0.56 N·m) increments to no more than 20 in-lb (2 N·m).

NOTE: Bowing of the clip on installation is acceptable.

d) If the seal [6] gets wrinkles in it, apply light pressure to the location of the wrinkles.

e) If the seal [6] still has wrinkles in it, loosen the clip adjustment screws [5], adjust the rigid window retaining clips [4] and seal [6] as needed and re-tighten the clip adjustment screws [5].

2) To install spring window retaining clips [7], do the steps that follow:

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.

a) Slowly tighten the window.

NOTE: Only tighten the window clip adjustment screws [5] sufficiently to keep the window seal [6] in its correct location.

NOTE: For windows with airflow dampers [9], the spring window retaining clips [7] will contact the clamping ring [8] and not the seal [6] or the edge of the middle pane [3].

<1> Use the tightening sequence shown in Figure 401.

b) For all ten spring window retaining clips [7], the spring window retaining clip [7] may contact the nutplate but should not be fully tightened down to the nutplate. A clearance of 0.02 in. (0.51 mm) is permitted between the clip adjustment screw [5] head, washer, and flange of the spring window retaining clip [7].

<1> Tighten the screws until the fastener head and washer are flush with the deflected flange of the spring window retaining clip [7].

<a> Do not use more than 20 in-lb (2 N·m) when you install the screw.

c) If the seal [6] gets wrinkles in it, apply light pressure to the location of the wrinkles.

d) If the seal [6] continues to have wrinkles in it, do these steps:

<1> Remove the clip adjustment screws [5], and spring window retaining clips [7].

<2> Remove the window assembly from the window frame [1].

<3> Adjust the spring window retaining clips [7] and seal [6] where it is necessary.

<4> Tighten the clip adjustment screws [5].

<5> If the seal [6] continues to have wrinkles in it, repeat these steps.

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SUBTASK 56-21-00-110-001

(5) Clean the inside surface of the middle pane [3].

SUBTASK 56-21-00-420-004

(6) Do this task: Snap In Window Shade and Reveal Assembly Installation, TASK 25-21-12-400-802.

SUBTASK 56-21-00-110-002

(7) Use a mixture of warm water, castile soap, G01989, and a lint-free cloth, G00834, to clean the out side of the outer pane [2].

SUBTASK 56-21-00-110-003

(8) Use a damp chamois cloth, B00106, to dry the window.

——— 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.

3) Cracks can be single or dual.

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 is sometimes referred to as delamination.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) In-plane cracking is a crack that grows parallel to the surface of the ply from an edge or crack.

3) In-plane cracking looks shiny in reflected light.

(f) If the window is damaged as specified in this task, 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 damaged 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 the window surfaces.

NOTE: During aircraft flight, or cold weather ground operations, the moisture may freeze on the window panes and appear as frost or ice crystals.

2) Fogging can be caused by a seal that leaks or excessive humidity due to changes in climate and location.

3) Fogging is categorized as minor or severe:

a) Minor fogging:

<1> Appears as a very light mist, or fog, on the window surfaces.

<2> Has few or no visible water droplets in the main viewing 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 normal aircraft operation or continue to worsen and become severe fogging.

b) Severe fogging:

<1> Appears as a dense mist, or fog, on the window surfaces that prevents clear vision through large areas of the window typically 1/3 or more.

<2> Has many easily visible water droplets in the main viewing areas of the window.

<3> Continues to worsen during normal aircraft operations and can result in water pooling at the bottom of the window.

(b) Warping (deformation):

1) Warping is defined as visible deformation of a window pane from its original shape.

NOTE: The ‘original’ or normal shape of the window panes should match the shape (curvature) of the aircraft structure. Panes on a normal window will not have warping and will have a uniform air gap between the panes.

2) Warping can be caused by long-term exposure of the panes to moisture from severe fogging or exposure to temperatures greater than 200°F (93°C).

3) Minor warping may occur at the edge of the window panes where the attachment clips contact the window panes.

(c) Peeled or worn coating:

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1) The hard, protective finish on the outer pane is peeling or wearing away.

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)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation 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-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, to measure damaged areas in the window.

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

NOTE: Other accurate methods can be used to find the crack depth.

(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 IMMEDIATELY REPLACE THE MIDDLE PANE IF THE DAMAGE IS NOT IN THE SPECIFIED LIMITS. A CRACK MAY PREVENT THE MIDDLE PANE FROM CARRYING PRESSURE IF OUTER PANE FAILS WHEN IN FLIGHT. THIS IS CRITICAL FOR THE SAFETY OF THE PASSENGERS. IF YOU DO NOT REPLACE, IT CAN CAUSE INJURY.

(a) Replace the middle pane if it has any crack (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 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).

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) (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 (Figure 602) (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

NOTE: The outer pane original thickness is 0.350 in. (8.890 mm).

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 edge is more than 0.030 in. (0.762 mm) (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 cracking is more than 0.55 in. (13.97 mm) from the edge.

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 and 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) The depth of a chip is more than 0.05 in. (1.27 mm).

2) The maximum diameter of an area of in-plane cracking is more than 0.40 in. (10.16 mm).

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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).

NOTE: The outer pane original thickness is 0.350 in. (8.890 mm).

SUBTASK 56-21-00-200-008

(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 56-21-00-200-009

(9) Examine the window for warping (deformation).

(a) Make sure that the middle pane vent hole is open.

NOTE: A window that is warped or deformed with no visible damage beyond allowable limits is structurally satisfactory even if the middle and outer panes touch when the airplane is not pressurized. Window panes that have warping can be replaced during usual maintenance to prevent possible leakage.

(b) If warping (deformation) is found, repair it (TASK 56-21-00-300-801 or TASK 56-21-00-300-802).

SUBTASK 56-21-00-200-010

(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 56-21-00-200-011

(11) Examine the windows for visual distortion.

(a) Replace 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 56-21-00-210-001

(12) Examine the window for fogging between the middle and outer panes.

NOTE: Windows that have fogging with no other visible damage beyond allowable limits are considered structurally satisfactory and may remain in service. Windows with severe fogging can be replaced as desired by the operator during a future scheduled maintenance check.

(a) If severe fogging is found, refer to IFIM and do the applicable procedure(s) (IFIM TASK 25-21-00-810-801).

(b) If severe fogging causes water to pool at the bottom of the window or block the vent hole, the window and/or seal must be replaced (TASK 56-21-00-000-801 and TASK 56-21-00-400-801).

(c) Windows with severe fogging should be examined for signs of leaks.

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SUBTASK 56-21-00-200-012

(13) Examine the windows for leaks between the middle and 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) If water has pooled at the bottom of the window or blocks the vent hole, the window or seal must be repaired or replaced.

2) Brown stains show near the seal or in the vent hole in the middle pane.

3) A seal that is observed to be out of place, rolled back, or damaged.

NOTE: Provided no other damage beyond allowable limits is visible, a seal that is out of place, rolled back, or damaged, may remain in service. The seal may be repaired or replaced as desired by the operator during a future scheduled maintenance check.

——— END OF TASK ———

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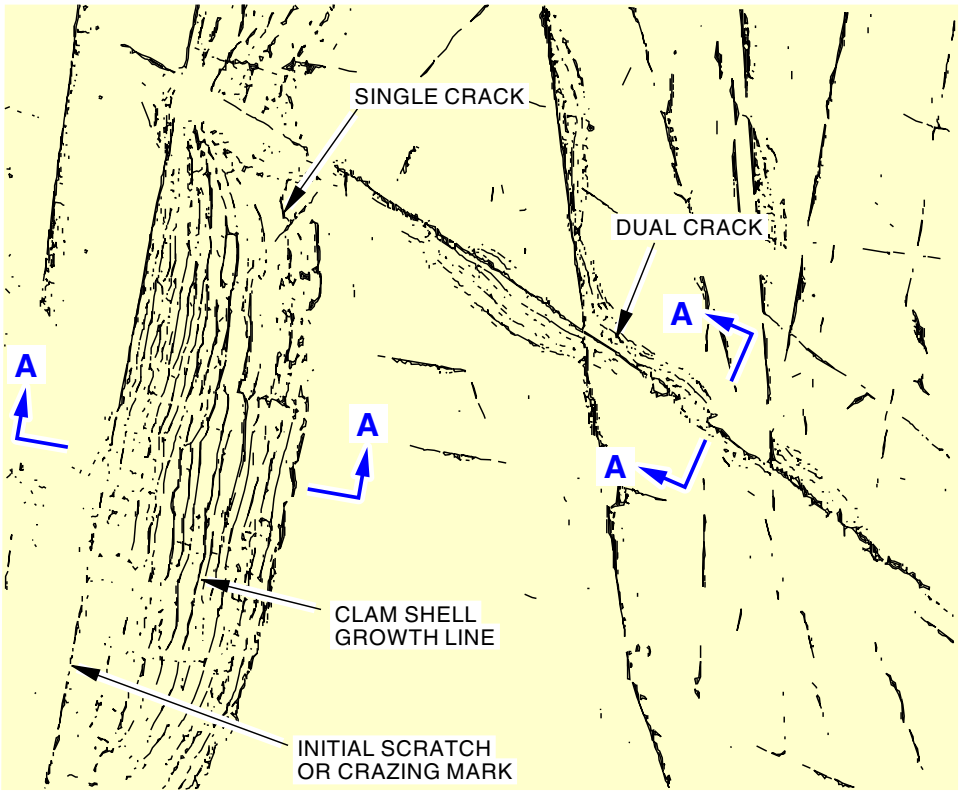
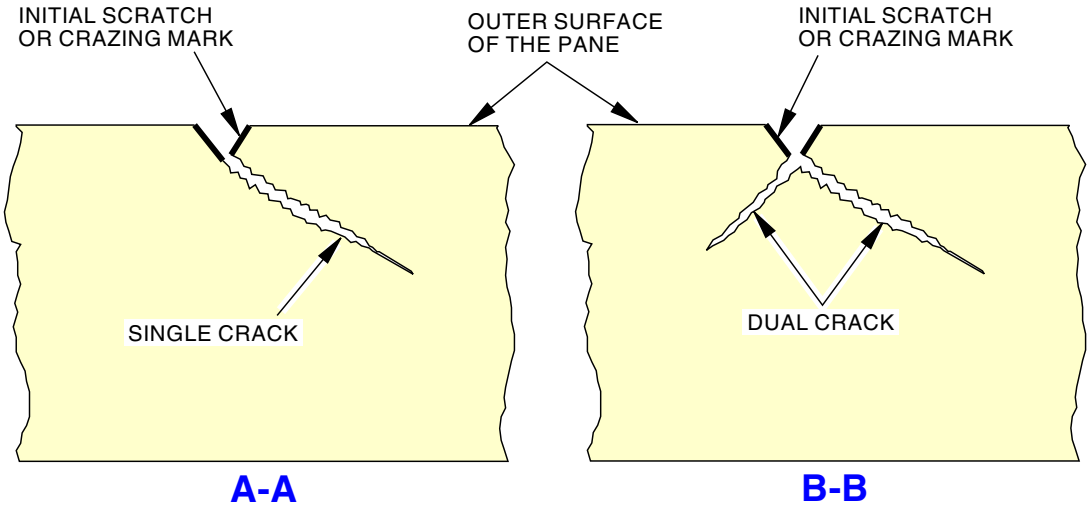


WINDOW SURFACE
(EXAMPLE)



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Example of Window Surface Cracks that Develop (Outer Pane Stretched Acrylic)
Figure 601/56-21-00-990-803

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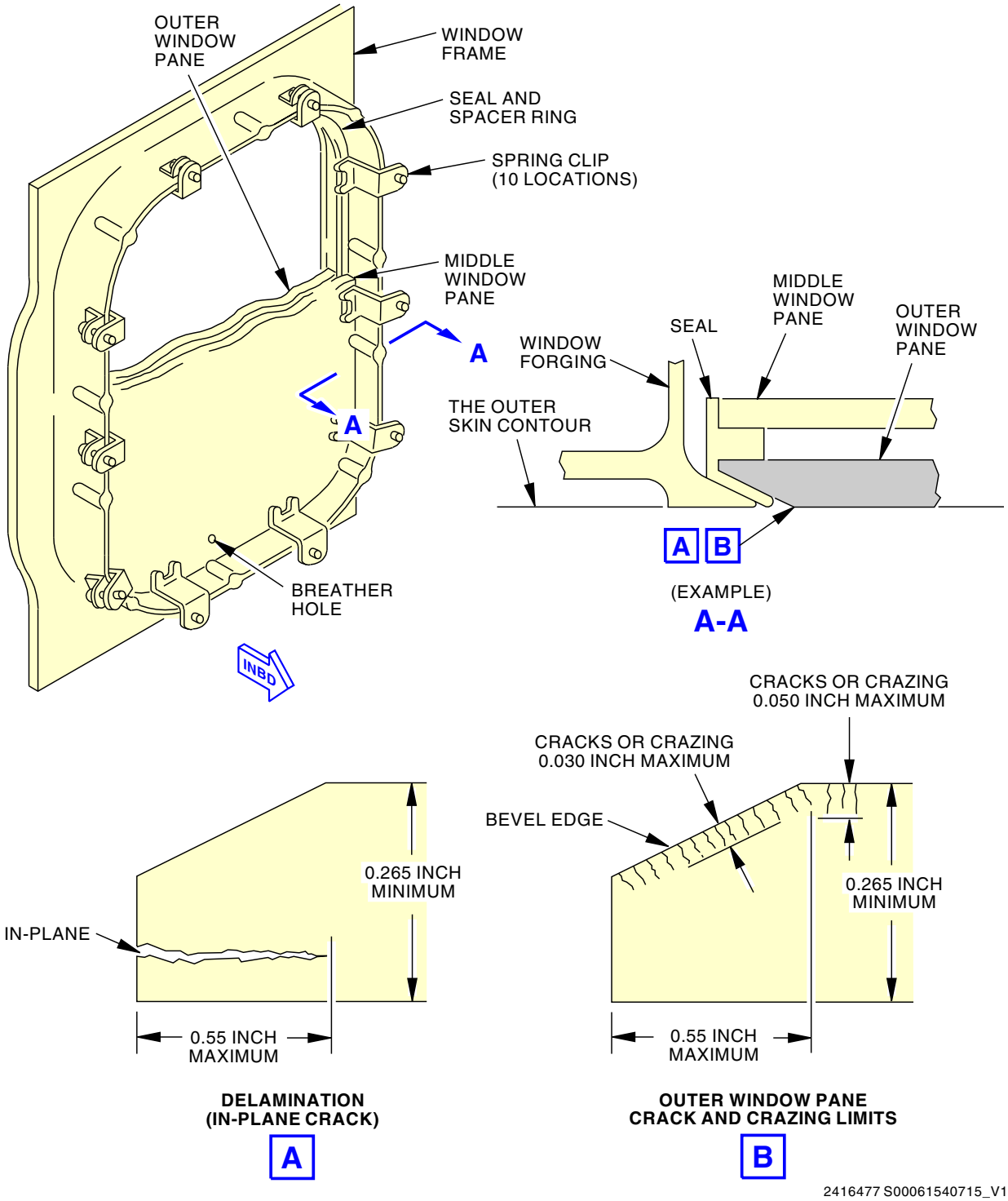

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Passenger Compartment Window Inspection
Figure 602/56-21-00-990-804

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, PAGEBLOCK 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 56-21-00-160-002

(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 56-21-00-350-001

(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 56-21-00-160-003

(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 56-21-00-350-002

(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 56-21-00-350-003

(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. 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) Passenger compartment window plug removal

(2) Passenger compartment window plug installation.

TASK 56-21-11-000-801

2. Passenger Cabin Window Plug Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the passenger cabin window plug.

B. References

Reference	Title
25-21-12-000-801	Snap In Window Shade and Reveal Assembly Removal (P/B 401)

C. Consumable Materials

Reference	Description	Specification
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00834	Cloth - Lint-free Cotton	

D. Location Zones

Zone	Area
200	Upper Half of Fuselage

E. Passenger Cabin Window Plug Removal

SUBTASK 56-21-11-010-001

(1) Do this task: Snap In Window Shade and Reveal Assembly Removal, TASK 25-21-12-000-801.

SUBTASK 56-21-11-010-002

(2) Remove the insulation pillow.

SUBTASK 56-21-11-020-001

(3) Remove the window clip adjustment screws [1] and washers [2].

SUBTASK 56-21-11-020-002

(4) Remove the window retaining clips [3].

SUBTASK 56-21-11-020-003

(5) Disconnect the grounding strap [4] from the window plug [5].

SUBTASK 56-21-11-010-003

(6) Remove the window plug [5] and seal.

NOTE: You do not have to remove the seal from the window plug [5] if the seal is not damaged.

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SUBTASK 56-21-11-950-001

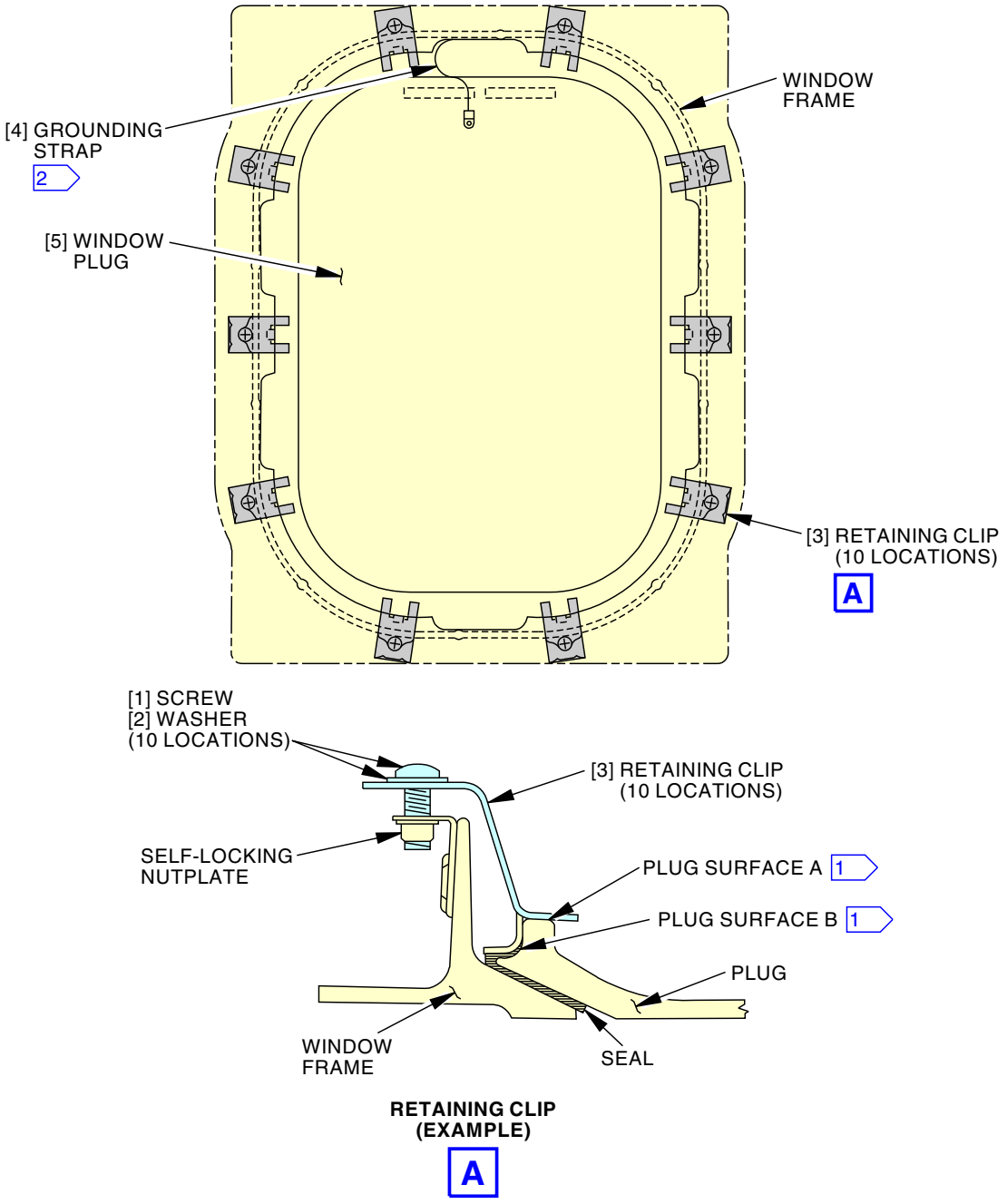
CAUTION

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 [5] surfaces.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RETAINING CLIP (EXAMPLE)

A

NOTE:

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

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Passenger Cabin Window Plate (Plug) Installation
Figure 401/56-21-11-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-21-11-400-801

3. Passenger Cabin Window Plug Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the passenger cabin window plug.

B. References

Reference	Title
25-21-12-400-802	Snap In Window Shade and Reveal Assembly Installation (P/B 401)

C. 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
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G00834	Cloth - Lint-free Cotton	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Window plug	56-21-11-01-040	SIA 015-999
		56-21-11-02-040	SIA 015-999
		56-21-11-11-040	SIA ALL
		56-21-11-12-040	SIA ALL
		56-21-11-12-145	SIA ALL
		56-21-11-12-245	SIA ALL

E. Location Zones

Zone	Area
200	Upper Half of Fuselage

F. Prepare for the Installation

SUBTASK 56-21-11-950-002

(1) Remove the Scotch Flatback Masking Tape 250, G00270, and the lint-free cloth, G00834, from the window plug [5] 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 OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

(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.

G. Passenger Cabin Window Plug Installation

SUBTASK 56-21-11-420-001

(1) Install the seal on the window plug [5].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 56-21-11-410-001

(2) Install the window plug [5] and seal in the window frame where it is necessary.

SUBTASK 56-21-11-420-002

(3) Install the window retaining clips [3].

(a) Install the clip adjusting screws [1] and washers [2].

(b) Tighten each clip adjusting screws [1] to 12 in-lb (1.4 N·m) - 15 in-lb (1.7 N·m).

NOTE: If the window retaining clip [3] does not contact the window plug [5], 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 [4] to the window plug [5].

SUBTASK 56-21-11-410-002

(5) Install the insulation pillow.

SUBTASK 56-21-11-410-003

(6) Do this task: Snap In Window Shade and Reveal Assembly Installation, TASK 25-21-12-400-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AUTOMATIC OVERWING EXIT WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Automatic overwing exit window removal

(2) Automatic overwing exit window installation.

TASK 56-22-00-000-801

2. Automatic Overwing Exit Window Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the automatic overwing exit window.

B. References

Reference	Title
52-22-51-000-801	Emergency Exit Door Lining Removal (P/B 401)

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
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

E. Automatic Overwing Exit Window Removal

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 DAMAGED.

(2) Remove the automatic overwing exit door window assembly as follows:

(a) Remove the screws [4] and the window spring retaining clips [3] that hold the window assembly in the window frame.

(b) Remove the window assembly.

NOTE: The window assembly has an outer window pane [1], seal [5], stiffener ring [6], inner window pane [2], and clamping ring [7].

(c) If necessary, remove the seal [5] from the window assembly.

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(d) Apply a protective cover of wrapping paper, G02173 with Scotch Flatback Masking Tape 250, G00270 to the inner and outer surfaces of the outer window pane [1] and inner window pane [2].

END OF TASK

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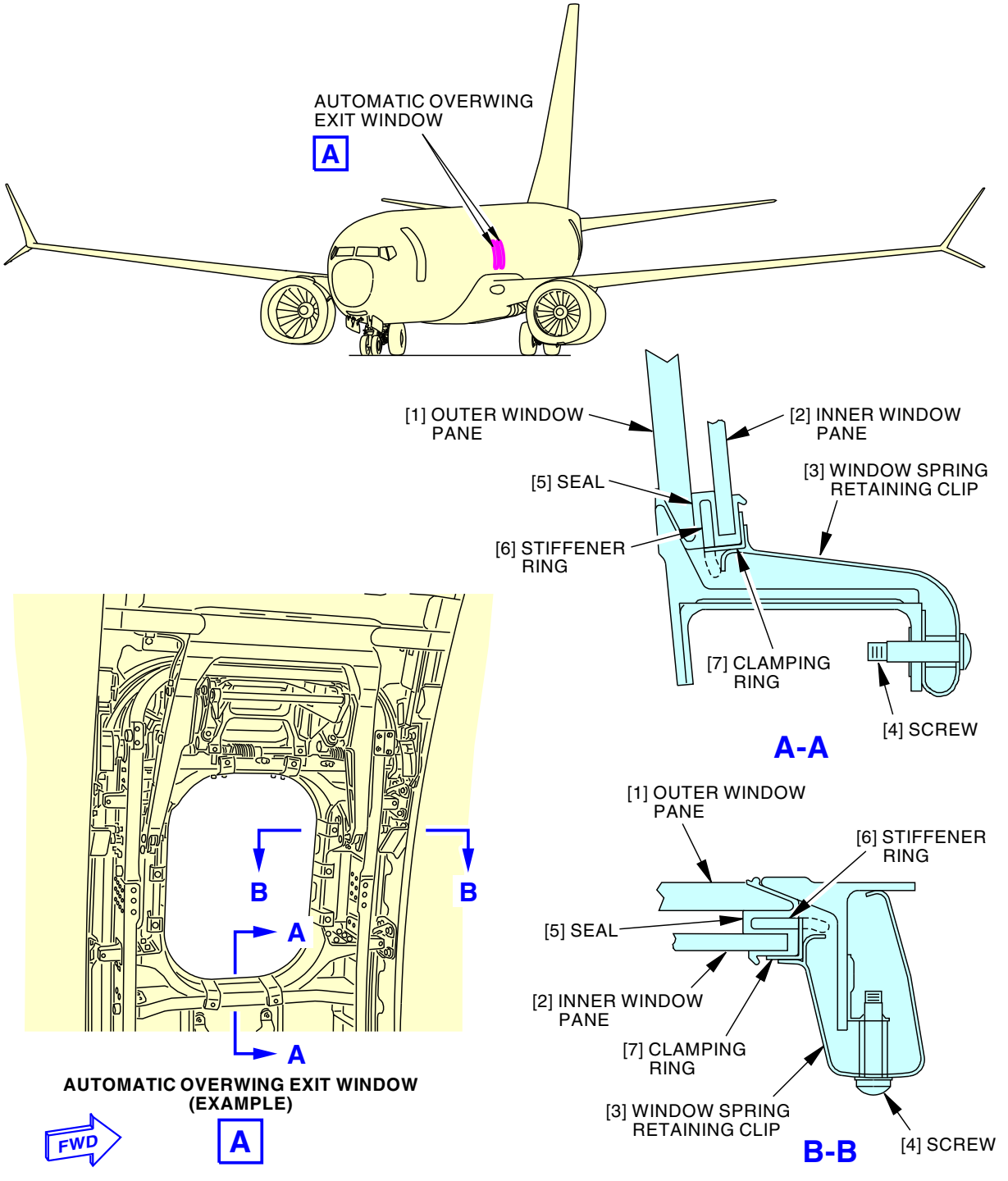

Automatic Overwing Exit Window Installation
Figure 401/56-22-00-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 56-22-00-400-801

3. Automatic Overwing Exit Window Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the automatic overwing exit window.

B. 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)

C. 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)	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Outer window pane	56-22-00-04-065	SIA ALL
		56-22-00-05-065	SIA ALL
2	Inner window pane	56-22-00-04-070	SIA ALL
		56-22-00-05-070	SIA ALL
5	Seal	56-22-00-04-080	SIA ALL
		56-22-00-05-080	SIA ALL

E. 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)

F. 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].

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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 DAMAGED.

(3) Remove the protective paper cover and tape from the window panes.

SUBTASK 56-22-00-100-003

CAUTION

DO NOT RUB THE SURFACES WITH A DRY CLOTH. YOU WILL CAUSE SCRATCHES AND STATIC ELECTRICITY. DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Clean the outer window pane [1] and inner window 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.

G. Automatic Overwing Exit Window Installation

SUBTASK 56-22-00-420-001

(1) Put the parts of the window assembly together as follows:

(a) Install the window seal [5] on the inner edge of the stiffener ring [6].

(b) Put the seal [5] around the outer window pane [1].

1) Make sure that the serial number of the outer window pane [1] is at the top of the assembly.

(c) Put the inner window pane [2] in position so the seal is around the edges and also between the two panes.

1) Make sure that the breather hole in the inner window pane [2] is at the top of the assembly.

(d) Put the clamping ring [7] on the window assembly on the edge of the seal [5] that covers the inner window pane [2].

SUBTASK 56-22-00-420-002

(2) 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 that the window is correctly aligned in the center of the frame.

SUBTASK 56-22-00-420-003

(3) Install the window spring retaining clip [3] to attach the window assembly to the frame.

(a) Loosely install the screws [4] on the frame.

(b) Tighten the screw [4] until the clip foot is flat against the pane:

(c) Tighten these top and bottom screws [4] to 27 in-lb (3.1 N·m) - 38 in-lb (4.3 N·m):

1) Top aft

2) Bottom forward

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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 spring retaining clip [3] to increase the pressure on the seal [5] in the area where the 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.

H. 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.

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 SURFACES WITH A DRY CLOTH. YOU WILL CAUSE SCRATCHES AND STATIC ELECTRICITY. DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Dry the outer surface with a clean cotton wiper, G00034 moist with water.

——— END OF TASK ———

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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
52-11-31-000-801	Forward Entry Door Lining Removal (P/B 401)
52-13-31-000-801	Aft Entry Door Lining Removal (P/B 401)
52-41-31-000-801	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. Procedure

SUBTASK 56-31-00-010-001

(1) If it is necessary to get access to the window, do the applicable task:

(a) Forward Entry Door Lining Removal, TASK 52-11-31-000-801,

(b) Aft Entry Door Lining Removal, TASK 52-13-31-000-801,

(c) Or Galley Service Door Lining Removal, TASK 52-41-31-000-801.

SUBTASK 56-31-00-020-001

(2) Remove the three bolts [1] that hold the window assembly in the door.

SUBTASK 56-31-00-020-002

(3) Remove the seal [3] on the retainer assembly.

SUBTASK 56-31-00-020-003

(4) Remove the window assembly.

SUBTASK 56-31-00-020-004

(5) Lift the edge of the outer seal [5] to remove the outer pane [7].

SUBTASK 56-31-00-020-005

(6) Do the steps that follow to remove the middle pane [6]:

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SIA ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8.

(a) Remove the three clips [9] that hold the middle pane [6] in position.

SIA ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 141A6570-1.

(b) Remove the six clips [9] that hold the middle pane [6] in position.

SIA 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 ———

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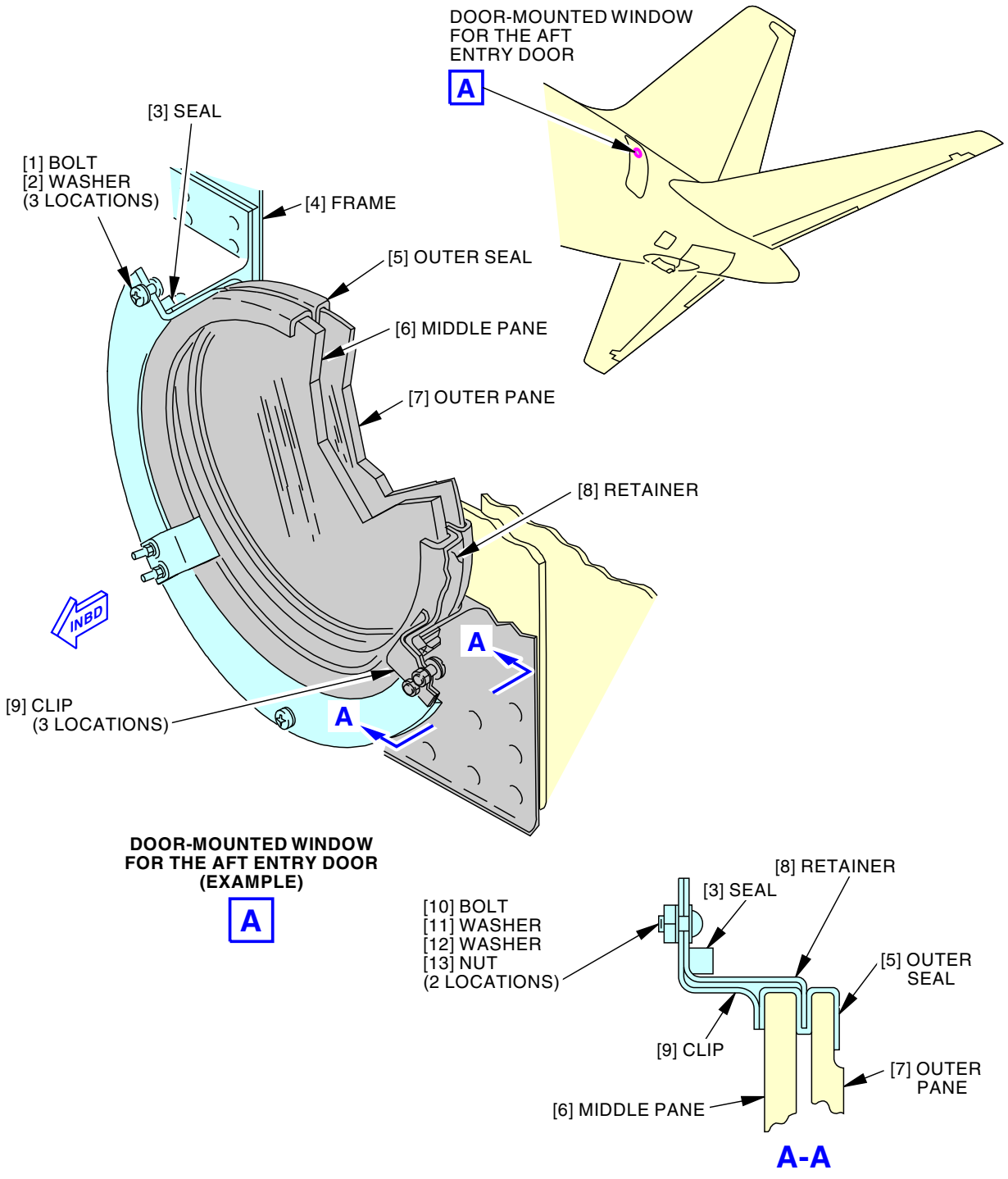
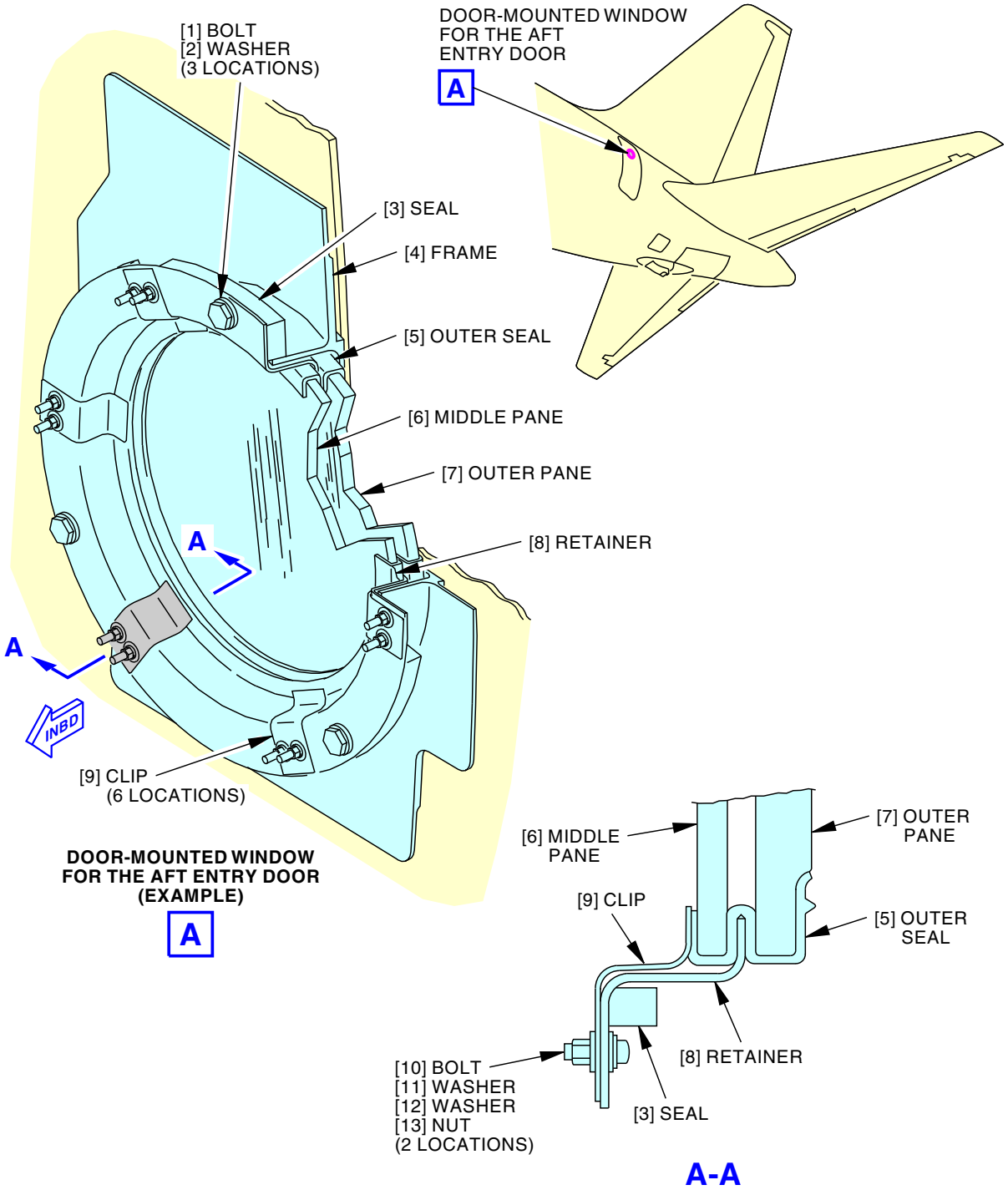


Door-mounted Window Installation
Figure 401/56-31-00-990-801 (Sheet 1 of 2)

EFFECTIVITY
SIA ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8.

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Door-mounted Window Installation
Figure 401/56-31-00-990-801 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 141A6570-1.

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
52-11-31-400-801	Forward Entry Door Lining Installation (P/B 401)
52-13-31-400-801	Aft Entry Door Lining Installation (P/B 401)
52-41-31-400-801	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. Procedure

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.

SUBTASK 56-31-00-420-001

(4) Install the pane or panes in the outer seal [5].

SIA ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8.

(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.

NOTE: The clock position is defined as you looking from inboard to outboard.

(b) Make sure that the vent hole is located at the 5:00 o'clock position for the FWD Entry door.

NOTE: The clock position is defined as you looking from inboard to outboard.

SIA ALL

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(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.

NOTE: The clock position is defined as you looking from inboard to outboard.

(d) For the FWD Galley door, AFT Galley 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.

NOTE: The clock position is defined as you looking from inboard to outboard.

SUBTASK 56-31-00-420-005

SIA ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 65-2863-8.

(5) Install the three clips [9].

SIA ALL; AIRPLANES WITH WINDOW ASSEMBLY P/N 141A6570-1.

SUBTASK 56-31-00-420-002

(6) Install the six clips [9].

SIA ALL

SUBTASK 56-31-00-020-006

(7) Install seal [3] on to the retainer assembly.

SUBTASK 56-31-00-420-003

(8) Put the window assembly in the door and install the three bolts [1].

SUBTASK 56-31-00-420-004

(9) Tighten the bolts [1] to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).

SUBTASK 56-31-00-140-003

(10) Rub the surfaces of the window assembly with a cotton wiper, G00034.

SUBTASK 56-31-00-010-003

(11) If you removed the door lining to get access to the window, do the applicable task:

(a) Forward Entry Door Lining Installation, TASK 52-11-31-400-801,

(b) Aft Entry Door Lining Installation, TASK 52-13-31-400-801,

(c) Or Galley Service Door Lining Installation, TASK 52-41-31-400-801.

——— 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.

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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, (Remove the Door-Mounted Windows, 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 NOT STRUCTURALLY PERMITTED.

(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.

SUBTASK 56-31-00-210-006

(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 0.05 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.

SUBTASK 56-31-00-210-007

(7) 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

Table 601/56-31-00-993-801 Scratch Limits

Scratch Depth	Max. Length One Scratch	Max. Total Length
0.01 Inch 0.254 Mm	0.50 Inch 1.27 Cm	2.50 Inches 6.35 Cm
0.005 Inch 0.127 Mm	1.50 Inches 3.81 Cm	4.00 Inches 10.16 Cm

SUBTASK 56-31-00-210-008

(8) 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) Replace the window if the chip is larger than the limits that follow (DOOR-MOUNTED WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-31-00/401):

1) The depth of the chip is 0.05 in. (1.27 mm).

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2) The delamination is 0.25 in. (6.35 mm) in diameter or greater.

3) The distance between delaminations is 0.50 in. (12.70 mm) or greater.

SUBTASK 56-31-00-210-009

(9) 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 56-31-00-020-007

(10) 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.

(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 56-31-00-210-010

(11) 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	
B00701	Polish - Brilliant Shine	
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 YOU USE THE CORRECT METHODS TO CLEAN THE WINDOW AND THE CORRECT CLEANING AGENTS. IF YOU USE INCORRECT METHODS 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 GETS 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 Brilliant Shine polish, B00701.

NOTE: Move the buffing wheel in a constant motion on the window to keep from over heating the window.

(b) Measure the repaired window pane to make sure it has a minimum thickness of 0.265 in. (6.731 mm) (Figure 801).

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.

(b) Sand the window with No. 400 abrasive cloth, G02373 and water.

NOTE: If you sand an area approximately 4 in. (102 mm) 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.

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CAUTION

BE CAREFUL NOT TO CAUSE AN OVERHEAT OF THE WINDOW WITH THE BUFFING WHEEL. IF THE WINDOW GETS 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: Move the buffing wheel in a constant motion on the window to keep from over heating the window.

NOTE: If you buff the area too much with Learok 119 compound, B00026 you can cause optical distortion.

(e) Use a buffing cotton cloth buffer wheel, STD-1205 and Learok 884E compound, B00027 to polish the window surface to a high gloss.

(f) Measure the repaired window pane to make sure it has a minimum thickness of 0.265 in. (6.731 mm) (Figure 801).

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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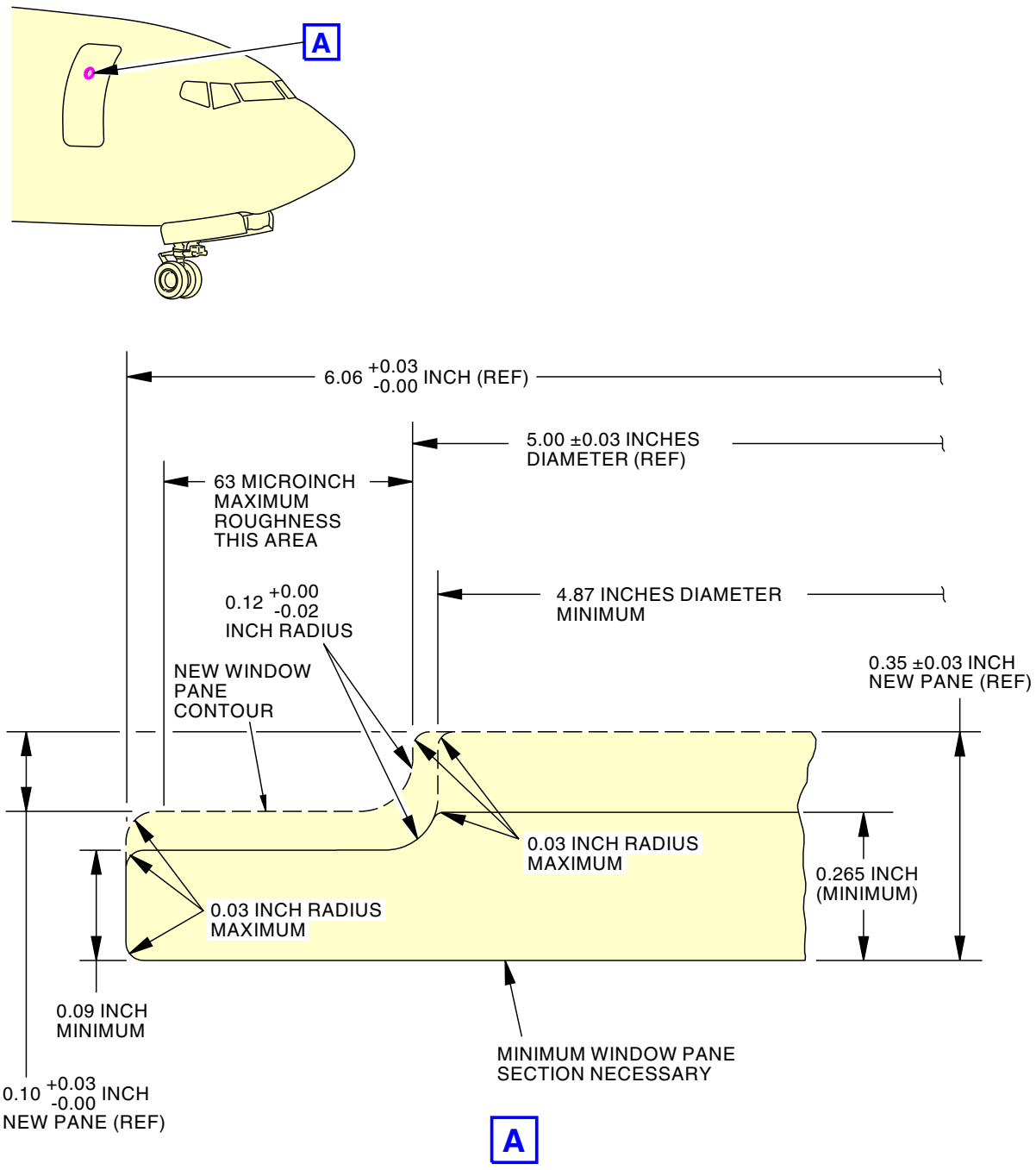

NOTE:

ALL DIMENSIONS ARE FOR MINIMUM WINDOW THICKNESS.

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Entry and Galley Service Window Outer Panel Allowable Rework Limits
Figure 801/56-31-00-990-802

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