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FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks (Figure 603 or Figure 604):

(1) Examine the No. 1 windows in the flight compartment.

(2) Examine the No. 2 windows in the flight compartment.

(3) Examine the No. 3 windows in the flight compartment.

(4) Examine the No. 2 windows in the flight compartment for leaks.

C. The definition for the different types of damage are as follows:

(1) Arcing:

(a) Arcing is a discharge or short circuit across a discontinuity in a wire, bus bar, conductive heating film, or other internal window components(Figure 605).

(b) Arcing usually occur near the window bus bars, and is typically the result of moisture ingress.

(c) You can identify the heat damage caused by arcing, as follows:

1) Brown or black burn marks in the interlayer.

2) Brown or black burn marks on the bus bars or sensor wires.

3) Bubbles in the interlayers.

4) Cracks in the windshield face ply.

(d) Arcs in the heating film away from the bus bar can occur as a jagged line and is also known as a line arc.

(2) Bubbles:

(a) Small isolated or irregular shaped voids in the interlayer internal to the window not at the window edge.

(b) Too much window heat can cause small bubbles in the vinyl core.

(c) Bubbles can be a result of a damaged window heat control system.

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

(3) Chips:

(a) Pieces of glass broken from the pane.

1) Minor damages on the face ply are acceptable as long as the visual quality of the flight crew is not affected.

2) Do not usually cause structural failure of the window.

(b) Spall (shell-type) chips:

1) Are circular with many fine ridges.

2) The ridges in the chip follow the outer edge and get smaller and deeper near the center which give it a clamshell appearance.

3) Do not usually cause structural failure of the window.

(c) Vee-shaped chips:

1) These chips have a sharp "V" shape bottom that continues to the surface of the ply.

2) Can cause a window failure.

(4) Crazing (acrylic plies only):

(a) Crazing is many very fine fissures with no visible width or depth at the surface of a ply.

(b) Crazing will start to be noticeable when the depth of the cracks are 0.002 to 0.004 inch.

(c) In dim light, and light normal to the surface, crazing is difficult to see.

(d) In a bright light shown from an angle to the surface, crazing looks frosted and appears to light up.

(e) Crazing often develops into cracks.

(5) Cracks:

(a) Is a fissure that has a visible width or depth.

(b) Can start from a scratch.

(c) Can occur in the interlayers between the glass panes.

(d) Cracks can occur in the interlayer in the window corners.

(e) Cracks in stretched acrylic plastic will occur at a 45 degree angle to the surface of the ply and can become in - plane cracking.

(6) Cracks in 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.)

(a) Non-structural glass panes - Cracks in these non-structural outer glass panes 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 603 or Figure 604).

(b) Structural glass panes – These structural inner glass panes 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 603 or Figure 604).

(c) Interlayers.

1) Urethane. Cracks are usually in a network that does not run parallel to the edges of the window and are usually in random directions. Urethane interlayer cracks usually occur with white or yellow discoloration. Also see moisture ingression (Figure 601).

(7) In-Plane Cracking (acrylic plies only):

(a) In-plane cracking is also identified 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 like delamination but will not have the finger - like projections.

(8) Delamination:

(a) Is the separation of a pane or panes from the interlayer.

(b) Can appear as a flat smooth air bubble with either a circular edge or smooth finger-like projections in the window.

(c) In reflected light, delamination at the coating surface is seen as shiny areas.

(d) In transmitted light, delamination at the coating surface is seen as brown areas.

(e) Is usually not found between the interlayer and the outer glass ply until it moves into the coating area.

(f) Delamination is not a safety concern except when it obstructs vision.

1) If moisture enters the delaminated area, it will become cloudy, can obstruct vision and can promote arcing.

2) Delamination at the coating surface can prevent correct operation of the window heat system.

3) Delamination and window heat can also cause cracks in the outer glass ply.

(9) Moisture Ingression:

(a) Moisture ingression is common due to water/rain migrating past the (hump) seal barrier when it is not properly maintained. If moisture is allowed to reach the Polyvinyl Butyral interlayer, it can affect the bond between the glass panes and the interlayer.

(b) It appears as a cloudy white, milky, or yellow haze internal to the window usually around the peripheral edges of the window.

(c) It can follow wires internal to the window, along the bus bar and also in areas of delamination.

(d) Long exposure to moisture can lead to arching of the heating film and/or bus bar and can result in cracking of the window pane.

(10) Scratches:

(a) A scratch is the linear removal or displacement of material from the surface of a pane.

(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.

1) The depth of a small scratch is 0.001 in. (0.025 mm) - 0.004 in. (0.102 mm).

NOTE: On a small scratch, the material that was removed does not remain on the sides of the scratch.

2) The depth of a large scratch is 0.005 in. (0.127 mm) or more.

NOTE: On a large scratch, the material that was removed remains on the sides of the scratch.

(11) Haze:

(a) Haze appears as white or light blue cloudiness between the panes of glass, it does not have a distinct boundary.

(b) Haze is most likely to appear along inboard and outboard edges where the window is not fully heated by the window heat system.

(c) It is most likely to appear during cold weather operation and will dissipate during warm weather.

D. 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 607).

(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) Window Heat Sensor Contamination

(a) Fine lines/streaks near the temperature sensors or the sensors wires are the result of contamination from the manufacturing process, and is not a cause for the removal of the windshield (Figure 606).

TASK 56-11-00-200-801

2. Flight Compartment No. 1 Window Inspection

(Figure 601 and Figure 602)

A. General

(1) Replacement of a window is only necessary for these reasons:

(a) Heat is inoperable for reasons internal to the window

(b) Arcing in the area of the window bus bars or power wires

(c) Line arcing in the window

(d) Crack in the window

(e) If the damage limits your vision.

(f) If moisture is present in the interlayer

(2) Refer to the general section for the definition of the types of damage.

B. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
56-11-00-350-802	Prepare to Repair the Aerodynamic Sealer (No. 1 and No. 3 Windows) (P/B 801)
56-11-00-390-802	Repair the Moisture Sealant (No. 1, No. 2 and No. 3 Windows) (P/B 801)
56-11-01 P/B 401	NO. 1 WINDOW - REMOVAL/INSTALLATION
SWPM 20-20-00	Standard Wiring Practices Manual
SWPM 20-64-16	Standard Wiring Practices Manual
WDM 20-10-13	REPAIR OF ELECTRICAL WIRE AND CABLE

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 (Min Depth .02 inch and Accuracy +/-.0005 Inch) Part #: 8400K Supplier: 65956 Part #: MODEL 966A1 Supplier: 0ZYB5 Part #: MODEL 966A1 Supplier: 88277 Opt Part #: 8400PCK Supplier: 65956
COM-13454	Roughness and Contour Measurement Tool Part #: HOMMEL-ETAMIC T1000 Supplier: C6026 Part #: SURFTEST SJ-210 Supplier: 01EP7

D. Location Zones

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

E. Prepare for the Inspection

SUBTASK 56-11-00-020-001

WARNING

BEFORE PERFORMING MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF THESE CIRCUIT BREAKERS ARE NOT OPEN DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

(1) Move these switches on the pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L FWD

(b) WINDOW HEAT R FWD

SUBTASK 56-11-00-020-002

(2) Move these switches on the maintenance panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) BACKUP WINDOW HEAT LEFT

(b) BACKUP WINDOW HEAT RIGHT

SUBTASK 56-11-00-860-001

(3) Make sure the FWD L and FWD R WINDOW HEAT INOP lights are ON.

SUBTASK 56-11-00-020-003

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

Left Power Management Panel, P110

Row	Col	Number	Name
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	12	C30414	WDO HT BACKUP 1R
L	8	C30616	WHCU BITE R

SUBTASK 56-11-00-010-002

(5) Remove the No. 1 window shroud upper lining:

(a) Remove the No. 1 window sunshade tracks. (IPC 25-13-01-002).

(b) Remove the No. 1 window upper lining panel assembly (IPC 25-15-01-010).

F. Procedure

SUBTASK 56-11-00-220-001

(1) Use an optical micrometer, micrometer, COM-2039 or roughness and contour measurement tool, COM-13454 to measure the depth of the window damage.

SUBTASK 56-11-00-200-001

(2) Examine the No. 1 Window for these types of damage:

NOTE: Refer to the general section for the definition of these types of damage.

(a) Delamination

(b) Presence of liquid or moisture in the interlayer

(c) Bubbles

(d) Chips

(e) Cracking

(f) Scratches

(g) Haze

(h) Arcing in the area of the window bus bars or power wires

(i) Line arcing

(j) Discoloration of the bus bar.

SUBTASK 56-11-00-300-001

(3) Examine the window for delamination:

(a) Replace the window if the delamination decreases the visual quality.

NOTE: Delamination may result in arcing and pane cracking. It is recommended that windows with delamination extending more than 2.0 in. (50.8 mm) from the edge of the window frame into the clear view area be replaced.

SUBTASK 56-11-00-210-004

(4) Examine the window for moisture ingression.

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

SUBTASK 56-11-00-200-017

(5) Examine the No. 1 window for bubbles.

NOTE: Too much window heat can cause small bubbles in the vinyl interlayer. Small bubbles in the vinyl interlayer are not delaminations nor do they decrease the structural capacity of the window The bubbles can be an indication that there is a problem with the heater control system.

(a) Replace the window if the bubbles limit your vision.

1) Make sure the window heat control unit operates correctly, do this task: Window Heat Control System - Operational Test, TASK 30-41-00-710-801.

SUBTASK 56-11-00-300-002

(6) Replace the window if the glass panes have "V" shaped chips.

SUBTASK 56-11-00-300-006

(7) Replace the window if any of the glass panes have cracks.

SUBTASK 56-11-00-300-005

(8) Examine the windshield for scratches.

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

(b) Replace the window if the inner pane has a scratch deeper than 0.002 in. (0.051 mm).

NOTE: The inner pane is structural.

1) Make sure that the depth of the scratch is less than 0.001 in. (0.025 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.

SUBTASK 56-11-00-210-023

(9) Examine the No. 1 windshield for cracks in the interlayer.

(a) Replace the No. 1 windshield if the interlayer cracks decrease the visual quality. (Example: Figure 601).

NOTE: Cracks in the interlayer do not decrease the windshield structural function and are not a cause to replace the windshield unless they decrease the visual quality.

1) Do these tasks: NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

SUBTASK 56-11-00-300-015

(10) Examine the windshield for haze.

(a) If the haze decreases the visual quality of the windshield, do Method 1 or Method 2 below:

1) Method 1:

a) Replace the windshield (NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

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 the visual quality is still decreased, replace the windshield.

SUBTASK 56-11-00-200-002

(11) Examine the No. 1 window exterior moisture seal and aerodynamic sealant.

(a) Repair the moisture seal if these conditions exist. To repair the moisture seal, do this task: Repair the Moisture Sealant (No. 1, No. 2 and No. 3 Windows), TASK 56-11-00-390-802

1) cracks

2) loose edges

3) deterioration

4) erosion

(b) Repair the aerodynamic smoother if these conditions exist. To repair the smoother, do this task: Prepare to Repair the Aerodynamic Sealer (No. 1 and No. 3 Windows), TASK 56-11-00-350-802

SUBTASK 56-11-00-200-018

(12) Examine the No. 1 window posts, sills, and fasteners.

(a) Do a visual check of the window posts and sills for corrosion, dents, cracks, and other damage.

(b) See the Structural Repair Manual for corrosion and damage limits.

(c) Make sure all the window fasteners are installed.

CAUTION

DO NOT TIGHTEN THE FASTENERS MORE THAN THE MAXIMUM TORQUE. IF YOU TORQUE THE FASTENERS MORE THAN THE MAXIMUM TORQUE, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(d) If you found a leaking window, tighten the fasteners to between 50 to 70 pound-inches (5.65 - 7.90 Nm) torque.

SUBTASK 56-11-00-210-021

(13) Examine the No. 1 window heat system.

(a) Look for electrical arcing damage in the area of the heat bus bars of the window. Example:(Figure 605)

1) Replace the window if there are distinct black or dark brown areas along the bus bars or the power wires.

NOTE: Distinct areas have an abrupt boundary (edge) where the color change occurs.

NOTE: The temperature sensors and sensor wires are not powered to heat the window and do not experience arcing. Small dark spots less than 0.1 in. (2.5 mm) or fine lines/streaks near the temperature sensors or the sensors wires are the result of contamination from the manufacturing process, and is not a cause for the removal of the windshield. (Figure 606)

(b) Look for line arcing in the window: Example:(Figure 605) (“lightning bolt pattern”)

1) Between the window panes and along the length of the top and bottom of the window are the bus bars. A braided electrical wire from the power terminal is soldered to the bus bar, which connects to the conductive heat film that supplies heat or defog power to the window.

2) Replace the window if there is any signs of electrical arc damage.

(c) From the exterior of the airplane, look for discoloration of the anti-ice bus bars at the window.

NOTE: A slight discoloration (browning) of the bus bar is acceptable within 1.0 in. (25.4 mm) of the point where the electrical power braid is soldered. This is satisfactory unless there is bubbling, distinct black or dark brown discoloration, or an other indication of overheating.

(d) Replace the window if there is flaking of pieces of the anti-fog bus bar

SUBTASK 56-11-00-210-026

(14) Do an inspection of the wiring, terminal lug, and cap:

(a) If there is melted or discolored insulation, then repair the wiring (WDM 20-10-13) or replace the wiring as necessary.

1) Do a continuity test of the new wires.

(b) If the terminal lug has melted, cracked, or is distorted or discolored, then replace the terminal lug and windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

(c) If the terminal cap has melted, or is distorted or discolored, then replace the cap, terminal lug and windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

SUBTASK 56-11-00-210-027

(15) Do an inspection of the window terminal blocks:

(a) If the window terminal block has melted, cracked, or is distorted or is discolored, then replace the windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

(b) If the terminal block is not firmly attached to the windshield, then replace the windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

SUBTASK 56-11-00-210-028

(16) Do an inspection of the window heat power connection, J5, for cross-threading:

(a) If the terminal lug is not parallel with the terminal as given in Figure 602, then the screw is cross-threaded. It may be necessary to view the lug and terminal from the exterior side of the window.

(b) If the screw can not be tightened, do as follows:

1) Remove the screw for any damage to the terminal, lug or screw.

2) Clean the terminal block mating surface (SWPM 20-20-00) Cleaning Method (5) as necessary.

3) If the terminal has damages from arcing, bluing , or overheating, then replace the windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

4) If the lug is damaged due to overheating then replace the lug and windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

5) Install the lug, screw, lock, washer, cover, and o-ring (if applicable) on to the terminal (SWPM 20-64-16).

a) Make sure that the screw is aligned correctly.

CAUTION DO NOT TIGHTEN THE TERMINAL-SCREWS TOO MUCH. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE TERMINAL. A DAMAGED TERMINAL CAN CAUSE THE REPLACEMENT OF THE WINDOW.

b) Torque the screw to 25 in-lb (2.82 N·m) to 30 in-lb (3.39 N·m).

c) Repeat the inspection of the terminal lug to make sure the connection is tight.

SUBTASK 56-11-00-210-029

(17) Do an inspection of the terminal lug to make sure the connection is tight:

(a) If the lug moves when light manual pressure is applied to the strain-relief on the lug, then the screw is loose.

NOTE: There are four causes for a loose terminal: The screw is not tightened to the correct torque. The screw is cross threaded. The incorrect screw is installed (SWPM 20-64-16). The terminal is damaged.

CAUTION DO NOT TIGHTEN THE TERMINAL-SCREWS TOO MUCH. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE TERMINAL. A DAMAGED TERMINAL CAN CAUSE THE REPLACEMENT OF THE WINDOW.

(CAUTION PRECEDES)

CAUTION HOLD THE TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(b) Tighten the screw to 25 in-lb (2.82 N·m) to 30 in-lb (3.39 N·m).

1) If the screw cannot be tightened then replace the windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

2) If the screw is already tightened and the lug is still loose, do as follows:

a) Remove the screw and make sure it is the correct screw.

b) Install the correct screw and tighten to 25 in-lb (2.82 N·m) to 30 in-lb (3.39 N·m).

c) Repeat the inspection to determine if the lug is loose.

d) If the lug is still loose then replace the windshield. Do this task NO. 1 WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-01/401.

G. Put the Airplane Back to Its Usual Condition.

SUBTASK 56-11-00-410-001

(1) Install the No. 1 window shroud upper lining:

(a) Install the window upper lining panel assembly (IPC 25-15-01-010).

(b) Install the No. 1 window sunshade tracks (IPC 25-13-01-002).

NOTE: Install the sunshade tracks with the moveable section of track (for installing the sunshade) towards the outboard end, and the open face of the attach brackets facing away from the window.

SUBTASK 56-11-00-860-003

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

Left Power Management Panel, P110

Row	Col	Number	Name
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	12	C30414	WDO HT BACKUP 1R
L	8	C30616	WHCU BITE R

SUBTASK 56-11-00-860-004

(3) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L FWD

(b) WINDOW HEAT R FWD

SUBTASK 56-11-00-860-005

(4) Move these switches on the maintenance panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) BACKUP WINDOW HEAT LEFT

(b) BACKUP WINDOW HEAT RIGHT

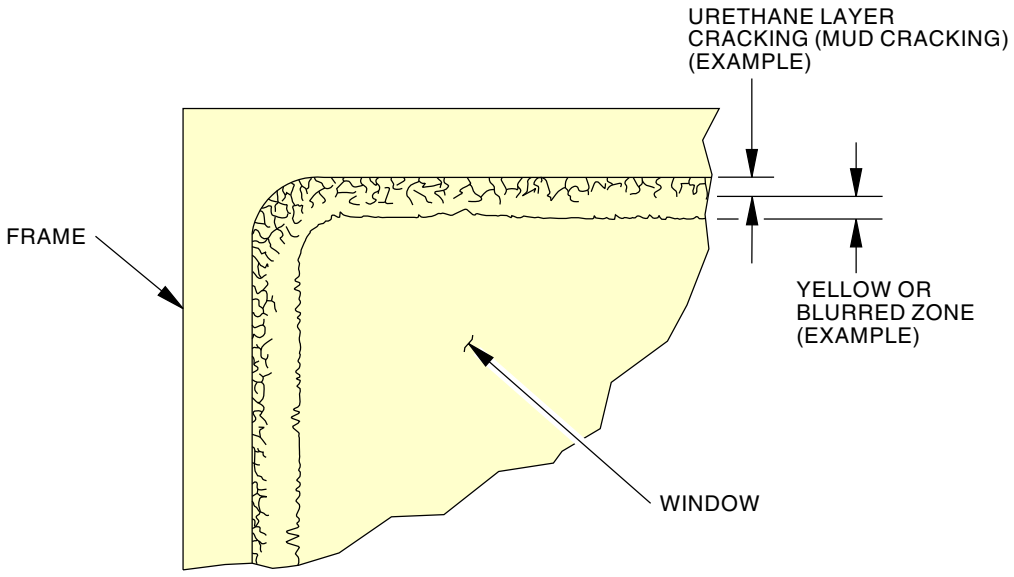
SUBTASK 56-11-00-860-006

(5) Make sure the FWD L and FWD R WINDOW HEAT INOP lights are OFF.

SUBTASK 56-11-00-860-007

(6) Make sure the window heat system operates correctly, do this task: Window Heat Control System - Operational Test, TASK 30-41-00-710-801.

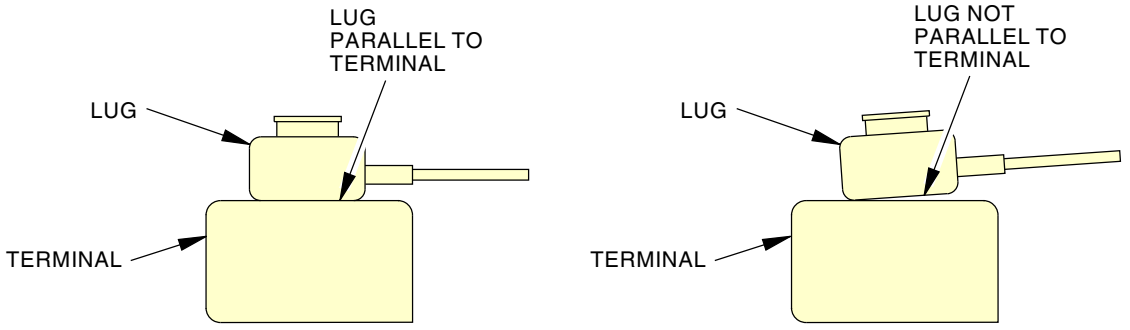
——— END OF TASK ———



URETHANE INTERLAYER CRACKS

2795064 S0000635962_V1

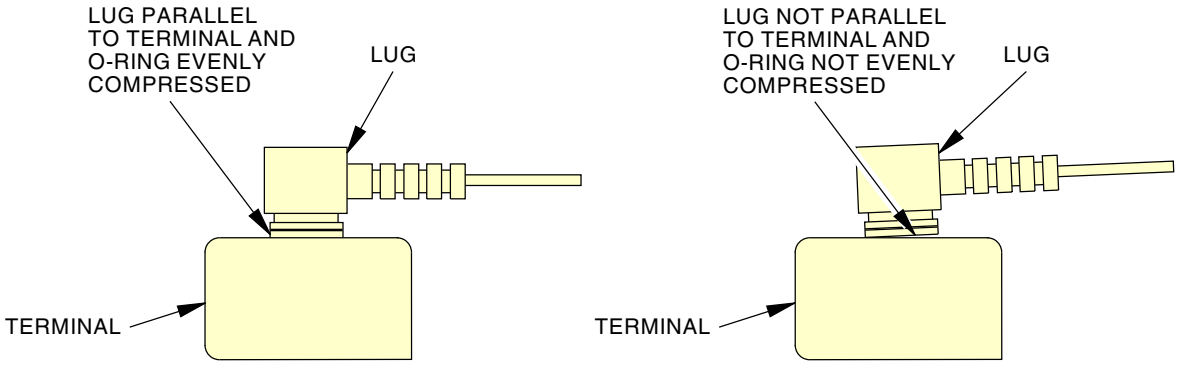
Urethane Interlayer Cracks
Figure 601/56-11-00-990-818



ACCEPTABLE
LUG PARALLEL TO TERMINAL

NOT ACCEPTABLE
LUG NOT PARALLEL TO TERMINAL

WALLACE AND BLACK LUG
(EXAMPLE)



ACCEPTABLE
LUG PARALLEL TO TERMINAL

NOT ACCEPTABLE
LUG NOT PARALLEL TO TERMINAL

CORY / TRI-STAR LUG
(EXAMPLE)

2805758 S0000644533_V1

No. 1 Windshield Terminal Inspection
Figure 602/56-11-00-990-819

TASK 56-11-00-200-802

3. Flight Compartment No. 2 Window Inspection

A. General

(1) Refer to the general section in this procedure for the definition of the different types of damage.

B. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
56-11-00 P/B 801	FLIGHT COMPARTMENT WINDOWS - REPAIRS
56-11-02 P/B 401	NO. 2 OPENABLE WINDOW - REMOVAL/INSTALLATION

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 (Min Depth .02 inch and Accuracy +/-.0005 Inch) Part #: 8400K Supplier: 65956 Part #: MODEL 966A1 Supplier: 0ZYB5 Part #: MODEL 966A1 Supplier: 88277 Opt Part #: 8400PCK Supplier: 65956
COM-13454	Roughness and Contour Measurement Tool Part #: HOMMEL-ETAMIC T1000 Supplier: C6026 Part #: SURFTEST SJ-210 Supplier: 01EP7

D. Location Zones

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

E. Prepare for the Inspection

SUBTASK 56-11-00-860-008

WARNING DISARM THE WINDOW HEAT SYSTEM WHEN YOU INSPECT THE WINDOWS. IF THE WINDOW HEAT 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 pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE

SUBTASK 56-11-00-860-009

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

SUBTASK 56-11-00-860-010

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R

(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

F. Procedure

SUBTASK 56-11-00-010-003

(1) Remove the No. 2 window inner shroud linings: (IPC 25-15-01-011)

(a) Remove the sunshade assembly: (IPC 25-13-52-08).Figure 608 (Sheet 1)

1) Remove the screws that hold the sunshade assembly to the structure.

2) Remove the sunshade assembly away from the airplane.

(b) Remove the No. 2 window sunshade tracks (IPC 25-13-01-002).

(c) Remove the chart holders (IPC 25-13-01-401).

(d) Remove the No. 2 window inner lining panel assemblies.

SUBTASK 56-11-00-200-005

(2) Use an optical micrometer, COM-2039 or roughness and contour measurement tool, COM-13454 to measure the depth of the window damage.

SUBTASK 56-11-00-200-006

(3) Examine the No. 2 windows for these types of damage:

(a) delamination

(b) presence of liquid or moisture in the interlayer.

(c) bubbles

(d) chips

(e) cracks

(f) scratches

(g) erosion

(h) arcing in the area of the bus bars

(i) discoloration of the bus bar

SUBTASK 56-11-00-020-011

(4) Examine the window for delamination:

(a) Replace the window if the delamination decreases the visual quality.

NOTE: Delamination may result in arcing and pane cracking. It is recommended that windows with delamination extending more than 2.0 inches (50.8 mm) from the edge of the window frame into the clear view area be replaced.

SUBTASK 56-11-00-210-012

(5) Examine the No. 2 window (Acrylic)

(a) Replace the window if the depth of the damage is more than 0.05 in. (1.27 mm)

NOTE: The window is structurally damaged when the depth is more than 0.05 inch.

(b) Multiply the acrylic plastic index of refraction (1.49) by the micrometer value, to calculate the depth of the damage.

SUBTASK 56-11-00-350-008

(6) Repair (acrylic windows only) superficial scratches, if they limit your visual capacity. FLIGHT COMPARTMENT WINDOWS - REPAIRS, PAGEBLOCK 56-11-00/801

SUBTASK 56-11-00-210-013

(7) Examine the No. 2 window (acrylic windows only) for edge chips. Figure 604 (Sheet 2)

(a) Replace the window if the depth of a chip is greater than the limits shown in the figure.

(b) Replace the window if there is more than one chip in a cross section area less than one inch from the centerline of the bolt.

SUBTASK 56-11-00-210-014

(8) Examine the No. 2 window (acrylic windows only) for in - plane cracking (delamination).

(a) Repair in - plane cracks that are parallel to the window edge.

(b) Repair in - plane cracks that are in the rabbet radius (Figure 604 (Sheet 2)) as specified in the component maintenance manual.

NOTE: The in - plane cracking between the extended acrylic panes and the vinyl interlayer is not a structural problem.

SUBTASK 56-11-00-300-003

(9) Examine the window for moisture ingression.

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

SUBTASK 56-11-00-200-009

(10) Examine the No. 2 windows for bubbles.

NOTE: Too much window heat can cause small bubbles in the vinyl interlayer. Small bubbles in the vinyl interlayer are not delaminations nor are they structurally dangerous. The window The bubbles can be an indication that there is a problem with the heater control system.

(a) Replace the window if the bubbles limit your vision.

1) Make sure the window heat control unit operates correctly, do this task: Window Heat Control System - Operational Test, TASK 30-41-00-710-801.

SUBTASK 56-11-00-300-007

(11) Replace the window if the glass plies have "V" shaped chips.

SUBTASK 56-11-00-300-008

(12) Replace the window if the glass panes have cracks.

SUBTASK 56-11-00-300-009

(13) Examine the windshield for scratches.

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

(b) Replace the window if the inner glass pane has a scratch deeper than 0.002 in. (0.051 mm).

NOTE: The inner pane is structural.

1) Make sure that the depth of the scratch is less than 0.001 in. (0.025 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.

SUBTASK 56-11-00-210-024

(14) Examine the No. 2 window for cracks in the interlayer.

(a) Replace the window if interlayer cracks decrease the visual quality (Figure 601).

NOTE: Cracks in the urethane or vinyl interlayer do not decrease the window structural function and are not a cause to replace the window unless they decrease the visual quality.

SUBTASK 56-11-00-200-010

(15) Examine the No. 2 window moisture seal.

(a) Repair all moisture seal areas that have cracks or loose edges (FLIGHT COMPARTMENT WINDOWS - REPAIRS, PAGEBLOCK 56-11-00/801).

SUBTASK 56-11-00-200-011

(16) Examine the No. 2 window posts, sills, and fasteners.

NOTE: Window movement while the aircraft is in operation/pressurized - During pressurization the outboard side of the transparency makes hard contact with the inboard side of the stationary window frame, which can cause the transparency frame to impart screw head impressions in the surface finish of the fuselage window frame. This is considered normal for these installations and is an acceptable condition.

(a) Visually check the window posts and sills for corrosion, dents, cracks, and other damage.

(b) See the Structural Repair Manual for corrosion and damage limits.

CAUTION

DO NOT TIGHTEN THE FASTENERS MORE THAN THE MAXIMUM TORQUE. IF YOU TORQUE THE FASTENERS MORE THAN THE MAXIMUM TORQUE, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(c) Make sure the fasteners for the No. 2 window have between 30 to 50 pound-inches of torque (maximum).

SUBTASK 56-11-00-200-012

(17) Examine the No. 2 window heat system.

(a) Do a check for loose or damaged window heat terminal blocks.

1) Replace the window if the heat terminal blocks are loose or damaged (NO. 2 OPENABLE WINDOW - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-02/401).

(b) Look for line arcing in the window.

1) Between the window panes and along the length of the top and bottom of the window are the bus bars. A braided electrical wire from the power terminal is soldered to the bus bar, which connects to the conductive heat film that supplies heat or defog power to the window.

2) Replace the window if there is any signs of electrical arc damage.

(c) Look for discoloration of the bus bars.

(d) From the exterior of the airplane, look for discoloration of the anti-ice bus bars at the window.

NOTE: A slight discoloration (browning) of the bus bar is acceptable within one inch (25.39 mm) of point where the electrical power braid is soldered (due to the solder flux used in mfg). Discoloration at the solder joint is acceptable unless there is blistering, black discoloration or any other evidence of overheating.

(e) Replace the window if the bus bar has an uneven browning or is black in color. Uneven or dark discoloration of the bus bar is a sign of an aging or damage.

NOTE: Discoloration of a bus bar may result in failure of the window an/or window heat system It is recommended that the window be replaced at the next convenient maintenance opportunity. FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK, 56-11-00/601

G. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-00-410-002

(1) Install the No. 2 window inner shroud linings (IPC 25-15-01-011).

(a) Install the window inner lining panel assemblies.

(b) Install the chart holders (AMM 25-13-01/401).

(c) Install the No 2 window sunshade tracks (IPC 25-13-01-002).

NOTE: Install the sunshade tracks with the rounded end of the track facing forward, and the open face of the attach brackets facing toward the window.

(d) Install the window shade assembly (IPC 25–13–52–08).Figure 608 (Sheet 1)

1) Install the sunshade in its position.

2) Install the two screws that hold the sunshade to the structure.

SUBTASK 56-11-00-860-011

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-00-860-012

(3) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-00-860-013

(4) Make sure the SIDE L and SIDE R WINDOW HEAT INOP lights are OFF.

SUBTASK 56-11-00-860-014

(5) Make sure the window heat system operates correctly, do this task: Window Heat Control System - Operational Test, TASK 30-41-00-710-801.

——— END OF TASK ———

TASK 56-11-00-200-803

4. Flight Compartment No. 3 Window Inspection

A. General

(1) Refer to the general section in this procedure for the definition of the different types of damage.

B. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
56-11-00 P/B 801	FLIGHT COMPARTMENT WINDOWS - REPAIRS
56-11-00-390-801	Apply the Aerodynamic Sealer (P/B 801)
56-11-03 P/B 401	NO. 2 WINDOW INDICATION SYSTEM SWITCH - REMOVAL/INSTALLATION

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 (Min Depth .02 inch and Accuracy +/-.0005 Inch) Part #: 8400K Supplier: 65956 Part #: MODEL 966A1 Supplier: 0ZYB5 Part #: MODEL 966A1 Supplier: 88277 Opt Part #: 8400PCK Supplier: 65956
COM-13454	Roughness and Contour Measurement Tool Part #: HOMMEL-ETAMIC T1000 Supplier: C6026 Part #: SURFTEST SJ-210 Supplier: 01EP7

D. Location Zones

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

E. Prepare for the Inspection

SUBTASK 56-11-00-860-015

WARNING DISARM THE WINDOW HEAT SYSTEM WHEN YOU INSPECT THE WINDOWS. IF THE WINDOW HEAT 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 pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE

SUBTASK 56-11-00-860-016

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

SUBTASK 56-11-00-860-017

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

F. Procedure

SUBTASK 56-11-00-010-004

(1) Remove the No. 3 window inner shroud linings: (IPC 25-15-01-016 and IPC 25-15-01-017).

(a) Remove the sliding window track brush cover assemblies.

(b) Remove the No. 3 window inner lining panel assemblies.

SUBTASK 56-11-00-200-019

(2) Use an optical micrometer, COM-2039 or roughness and contour measurement tool, COM-13454 to measure the depth of the window damage.

SUBTASK 56-11-00-200-020

(3) Examine the No. 3 windows for these types of damage:

(a) delamination

(b) presence of liquid or moisture in the interlayer

(c) bubbles

(d) chips

(e) cracks

(f) scratches

(g) erosion

(h) arcing in the area of the bus bars

(i) discoloration of the bus bar

(j) scratches

SUBTASK 56-11-00-210-015

(4) Examine the No. 3 window (Acrylic)

(a) Replace the window if the depth of the damage is more than 0.05 in. (1.27 mm)

NOTE: The window is structurally damaged when the depth is more than 0.05 inch.

(b) Multiply the acrylic plastic index of refraction (1.49) by the micrometer value, to calculate the depth of the damage.

SUBTASK 56-11-00-350-009

(5) Repair (acrylic windows only) superficial scratches, if they limit your visual capacity. FLIGHT COMPARTMENT WINDOWS - REPAIRS, PAGEBLOCK 56-11-00/801

SUBTASK 56-11-00-210-016

(6) Examine the No. 3 window (acrylic windows only) for edge chips. (Figure 604 (Sheet 2))

(a) Replace the window if the depth of a chip is greater than the limits shown in the figure.

(b) Replace the window if there is more than one chip in a cross section area less than one inch from the centerline of the bolt.

SUBTASK 56-11-00-210-017

(7) Examine the No. 3 window (acrylic windows only) for in - plane cracking (delamination).

(a) Repair in - plane cracks that are parallel to the window edge.

(b) Repair in - plane cracks that are in the rabbet radius (Figure 604 (Sheet 2)) as specified in the component maintenance manual.

NOTE: The in - plane cracking between the extended acrylic panes and the vinyl interlayer is not a structural problem.

SUBTASK 56-11-00-020-012

(8) Examine the window for delamination:

(a) Replace the window if the delamination decreases the visual quality.

NOTE: Delamination may result in arcing and pane cracking. It is recommended that windows with delamination extending more than 2.0 inches (50.8 mm) from the edge of the window frame into the clear view area be replaced.

SUBTASK 56-11-00-300-010

(9) Examine the window for moisture ingression.

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

SUBTASK 56-11-00-200-021

(10) Examine the No. 3 windows for bubbles.

NOTE: Too much window heat can cause small bubbles in the vinyl interlayer. Small bubbles in the vinyl interlayer are not delamination nor do they decrease the structural capacity of the window. The bubbles indicate that there may be a problem with the heater control system.

(a) Replace the window if the bubbles limit your vision.

1) Make sure the window heat control unit operates correctly, do this task: Window Heat Control System - Operational Test, TASK 30-41-00-710-801.

SUBTASK 56-11-00-300-011

(11) Replace the window if the glass panes have "V" shaped chips.

SUBTASK 56-11-00-300-012

(12) Replace the window if the glass panes have cracks.

SUBTASK 56-11-00-300-013

(13) Examine the windshield for scratches.

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

(b) Replace the window if the inner pane has a scratch deeper than 0.002 in. (0.051 mm).

NOTE: The inner pane is structural.

1) Make sure that the depth of the scratch is less than 0.001 in. (0.025 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.

SUBTASK 56-11-00-210-025

(14) Examine the No. 3 window for cracks in the interlayer.

(a) Replace the window if interlayer cracks decrease the visual quality (Figure 601).

NOTE: Cracks in the urethane or vinyl interlayer do not decrease the window structural function and are not a cause to replace the window unless they decrease the visual quality.

SUBTASK 56-11-00-200-022

(15) Examine the No. 3 window aerodynamic smoother and moisture seal.

(a) Repair all aerodynamic smoother and moisture seal areas that have cracks or loose edges (TASK 56-11-00-390-801).

SUBTASK 56-11-00-200-023

(16) Examine the No. 3 window posts, sills, and fasteners.

(a) Visually check the window posts and sills for corrosion, dents, cracks, and other damage.

(b) See the Structural Repair Manual for corrosion and damage limits.

(c) Make sure all the fasteners are installed. Only retorque the fasteners if the window has leaks.

NOTE: Silicone sealant continues to compress ("creep") long after initial installation, with subsequent loss of initial torque force. This is normal and not cause for retorque.

CAUTION

DO NOT TIGHTEN THE FASTENERS MORE THAN THE MAXIMUM TORQUE. IF YOU TORQUE THE FASTENERS MORE THAN THE MAXIMUM TORQUE, YOU CAN CAUSE DAMAGE TO THE WINDOW.

(d) If the window has leaks, tighten the fasteners to 50 - 70 pound-inches (5.65 - 7.90 N·m).

SUBTASK 56-11-00-200-024

(17) Examine the No. 3 window heat system.

(a) Do a check for loose or damaged window heat terminal blocks.

1) Replace the window if the window heat terminal blocks are loose or damaged NO. 2 WINDOW INDICATION SYSTEM SWITCH - REMOVAL/INSTALLATION, PAGEBLOCK 56-11-03/401.

(b) Look for damage from electrical arcs in the area of the heat bus bars on the window.

1) Between the window panes and along the length of the top and bottom of the window are the bus bars. A braided electrical wire from the power terminal is soldered to the bus bar, which connects to the conductive heat film that supplies heat or defog power to the window.

2) Replace the window of there is any signs of electrical arc damage.

(c) Look for discoloration of the bus bars.

1) From inside the Flight Deck, check the visible areas of the bus bars for brown or black discoloration.

NOTE: A slight discoloration (browning) of the bus bar is acceptable within one inch (23.99 mm) of the point where the electrical power braid is soldered (due to the solder flux used in mfg). Some discoloration at the solder joint is acceptable unless there is blistering, black discoloration or other evidence of overheating.

(d) Replace the window if the bus bar has an uneven browning or is black in color, which is a sign or arcing.

NOTE: Discoloration of a bus bar may result in failure of the window and/or window heat system. It is recommended that the window be replaced at the next convenient maintenance opportunity. FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK, 56-11-00/601

G. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-00-410-003

(1) Install the No. 3 window inner shroud linings (IPC 24-15-01-16 and IPC 25-15-01-017).

(a) Install the No. 3 window inner lining panel assemblies.

(b) Install the sliding window track brush cover assemblies.

SUBTASK 56-11-00-860-018

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-00-860-019

(3) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

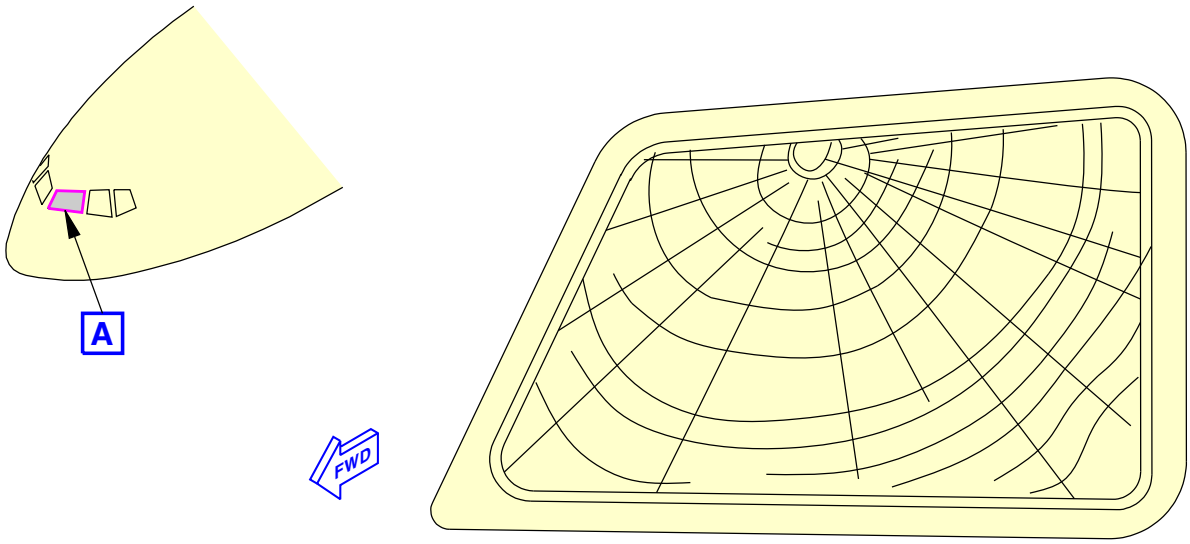
SUBTASK 56-11-00-860-020

(4) Make sure the SIDE L and SIDE R WINDOW HEAT INOP lights are OFF.

SUBTASK 56-11-00-860-021

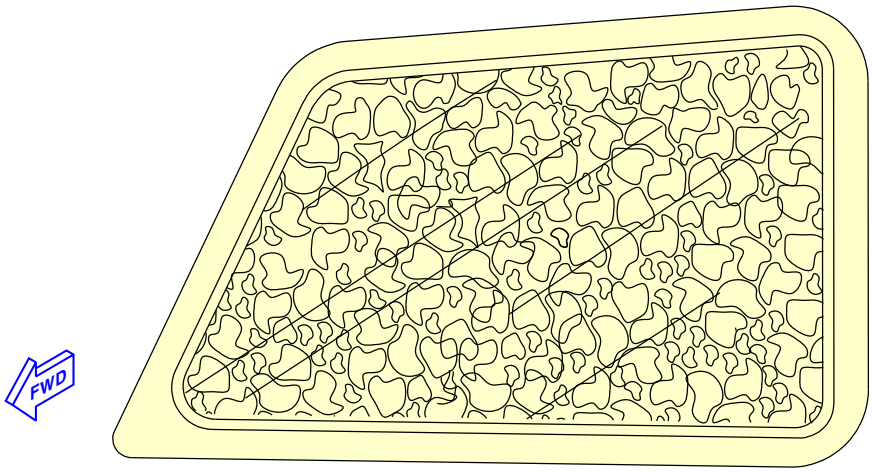
(5) Make sure the window heat system operates correctly, do this task: Window Heat Control System - Operational Test, TASK 30-41-00-710-801.

END OF TASK



GLASS PANE CRACKS
(NON-STRUCTURAL)

A

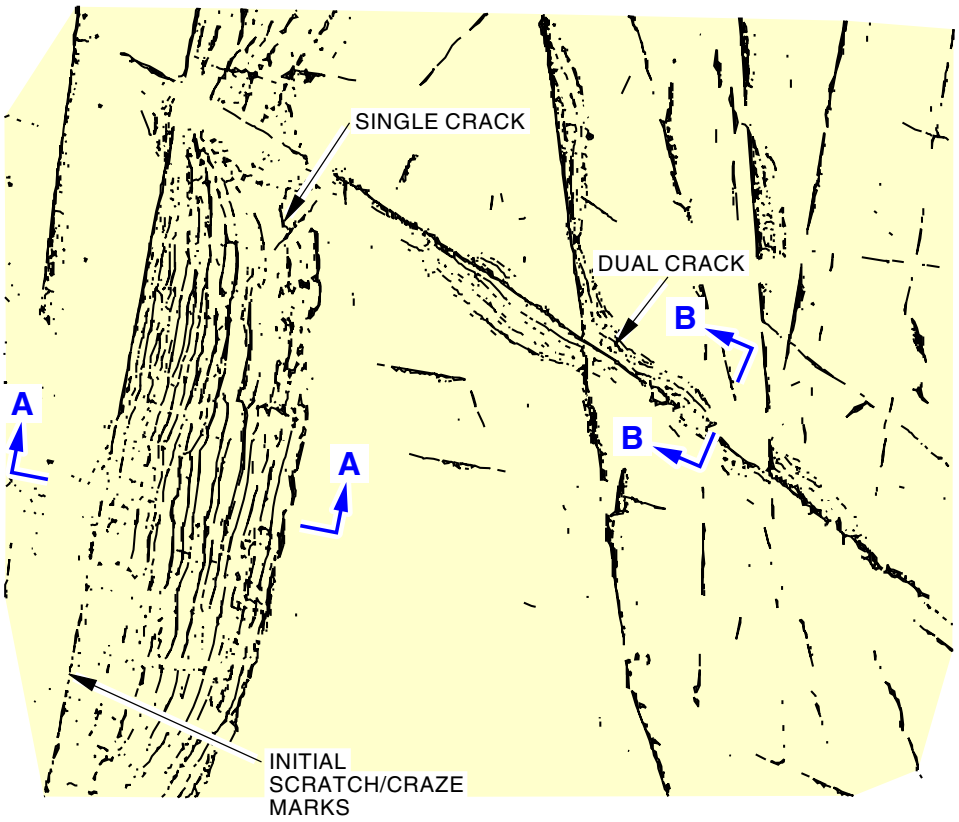


GLASS PANE CRACKS
(STRUCTURAL)

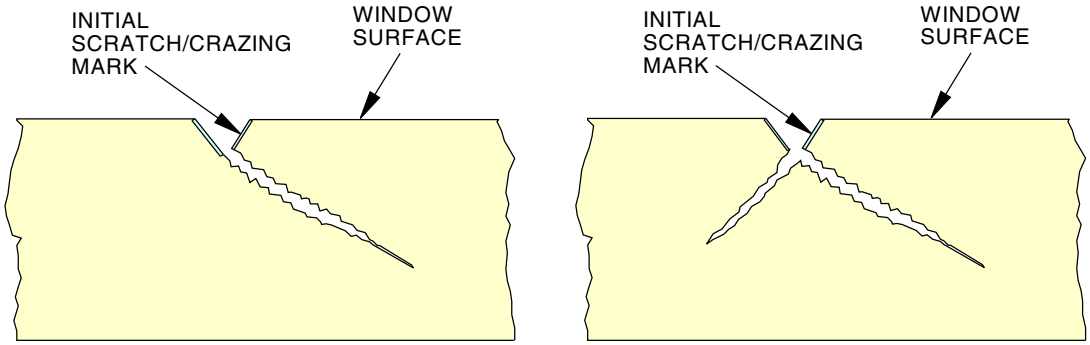
A

1548255 S0000283388_V2

Glass Pane Cracks (Typical)
Figure 603/56-11-00-990-815



WINDOW SURFACE DAMAGE

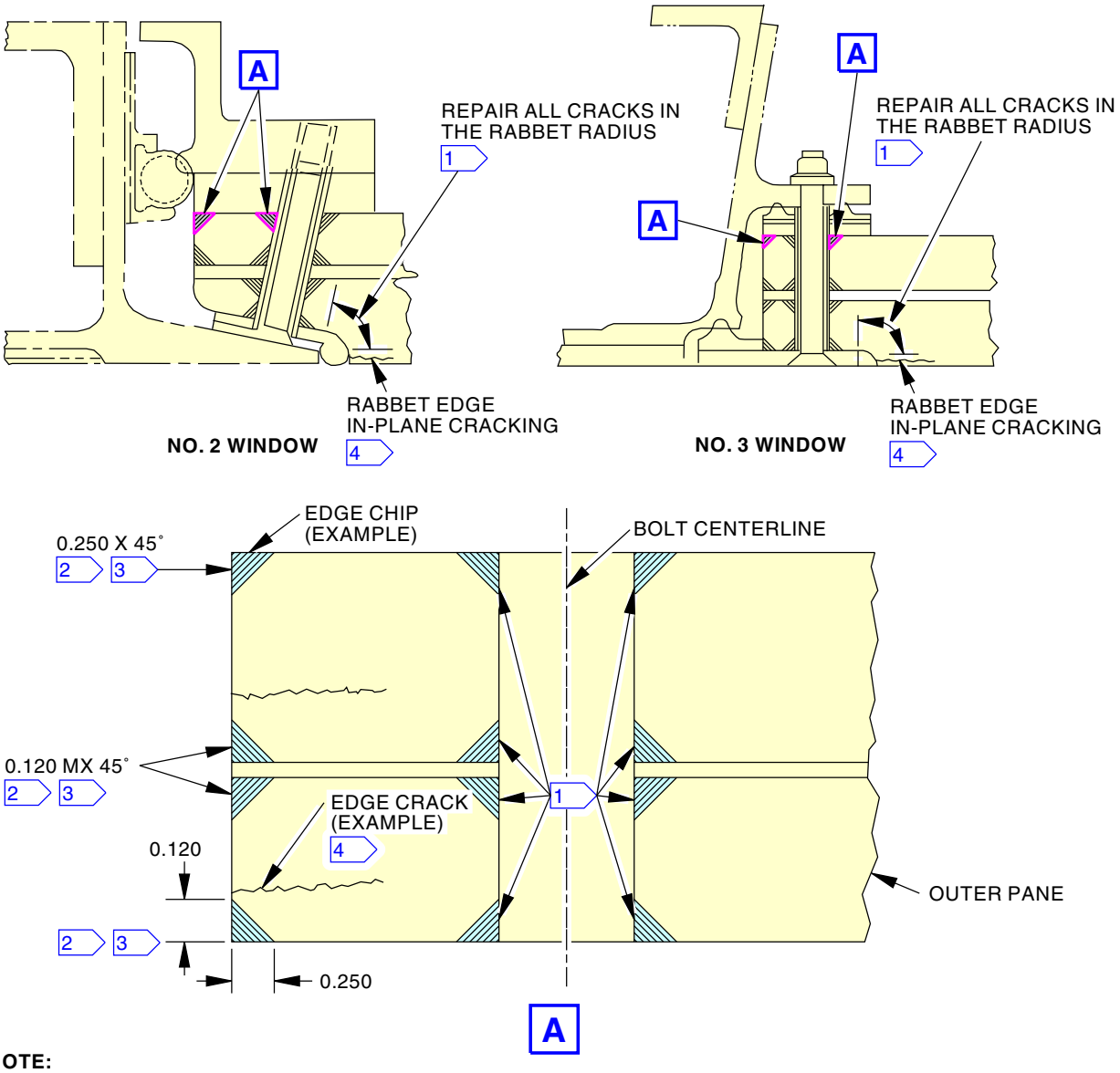


SINGLE CRACK
A-A

DUAL CRACK
B-B

C37845 S0006428660_V2

Outer Window Pane Surface Damage
Figure 604/56-11-00-990-801 (Sheet 1 of 2)



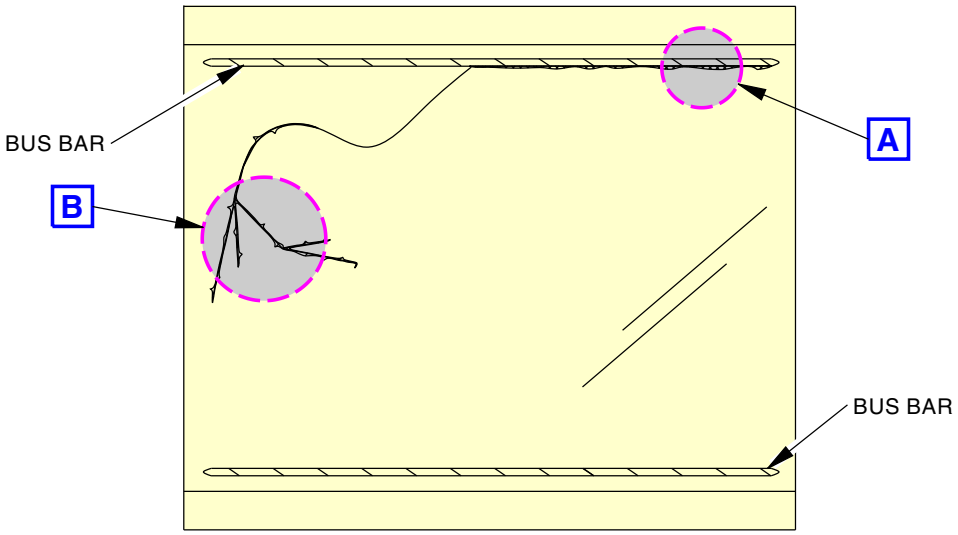
NOTE:

ALL DIMENSIONS ARE IN INCHES.

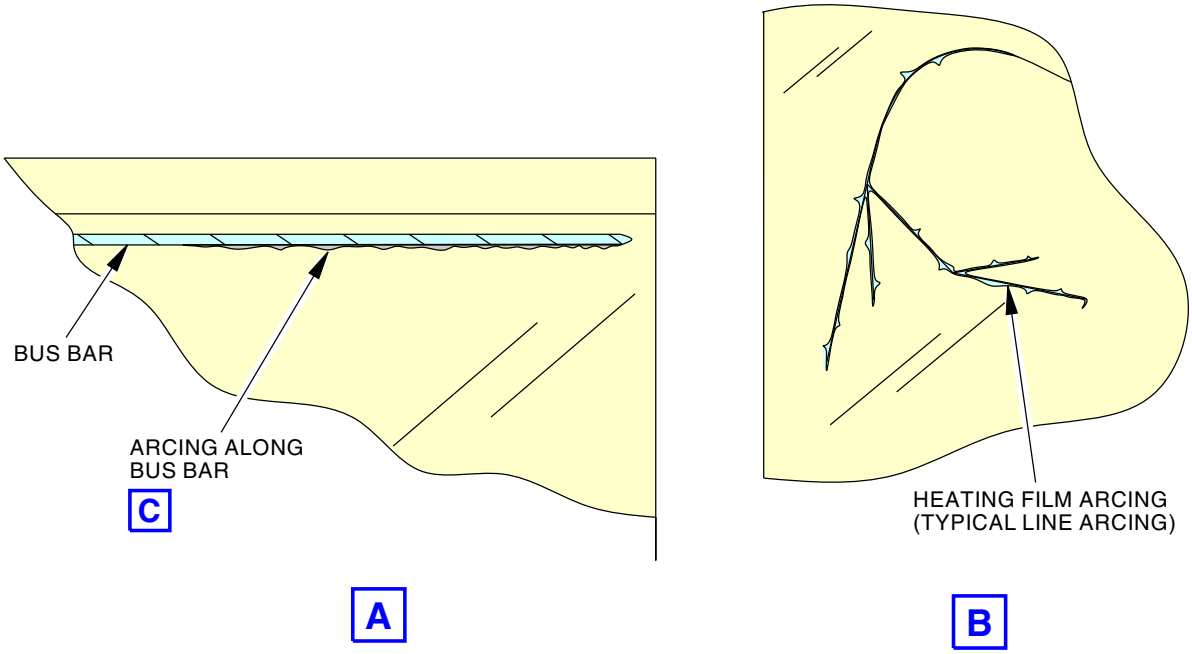
1. YOU MUST REPAIR THE DAMAGE IN THIS AREA AS SPECIFIED IN THE COMPONENT MAINTENANCE MANUAL
2. MAY BE SMOOTHER TO 62RMS FINISH
3. ONLY ONE DEFECT IS PERMITTED IN A CROSS SECTION OF THE INNER OR OUTER PANE WHEN THE DEFECT IS ONE INCH OR LESS FROM THE MOUNTING HOLE CENTERLINE. THIS LIMITATION DOES NOT APPLY TO DEFECTS MORE THAN ONE INCH FROM THE MOUNTING BOLT HOLE CENTERLINE.
4. YOU MUST REPAIR THE EDGE CRACKS (INPLANE CRACKS) THAT ARE PARALLEL TO THE PANE FACE

J66359 S0000174044_V2

Outer Window Pane Surface Damage
Figure 604/56-11-00-990-801 (Sheet 2 of 2)

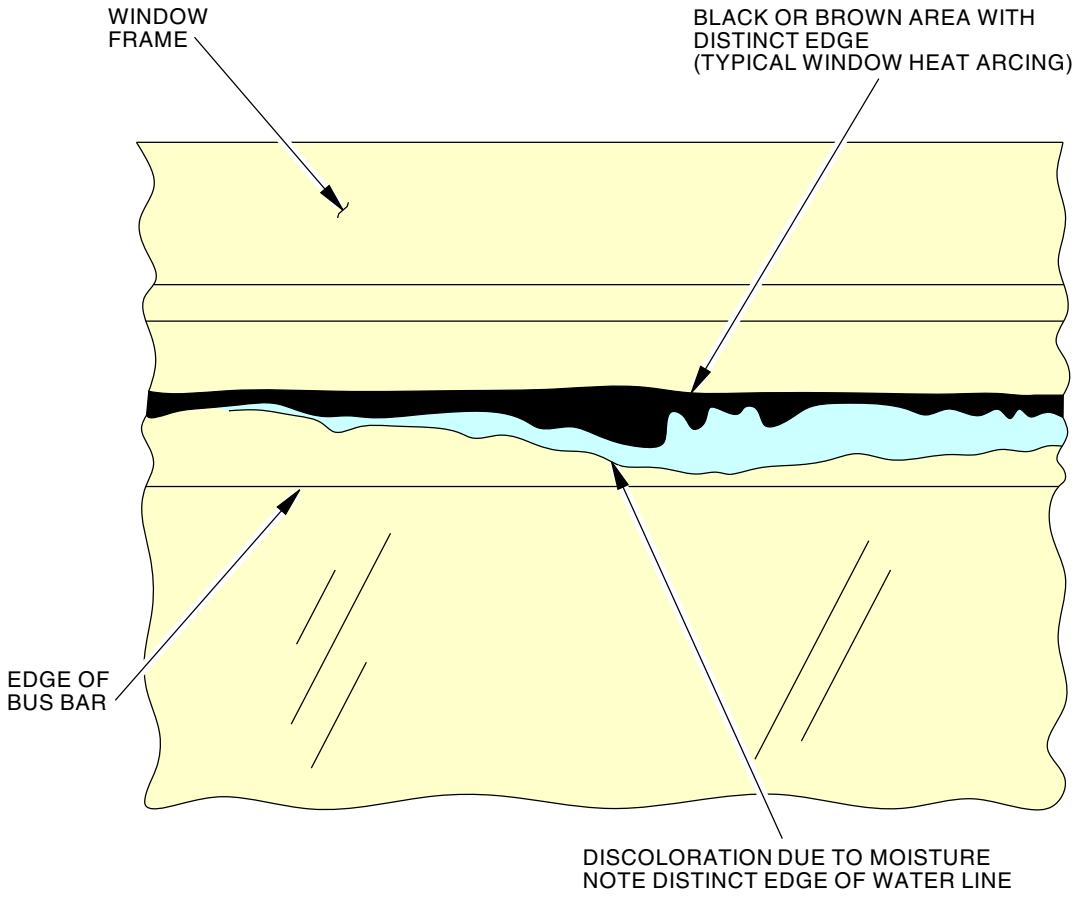


WINDOW HEAT ARCING



1364458 S0000246490_V2

Window Heat Arcing
Figure 605/56-11-00-990-809 (Sheet 1 of 2)

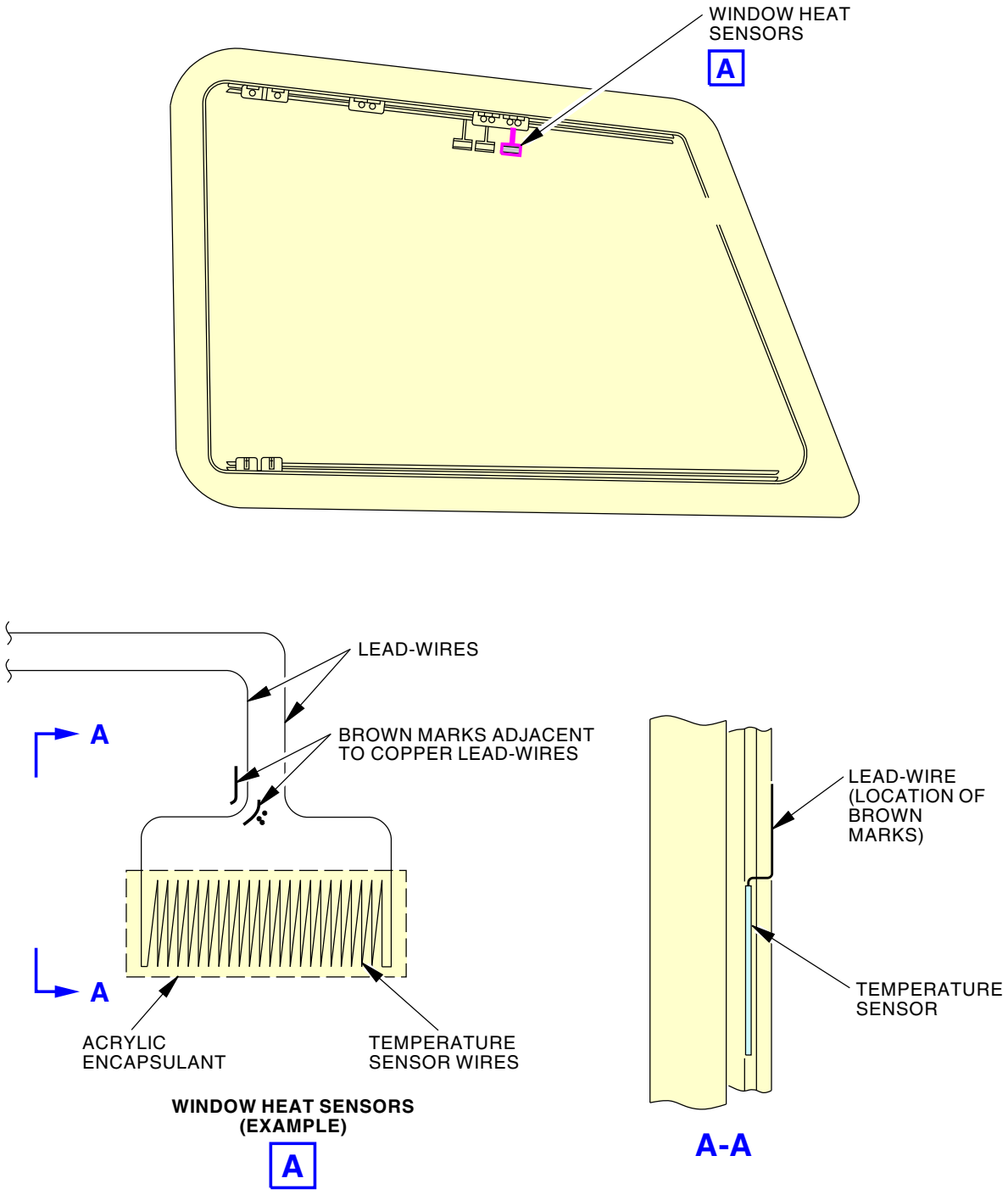


ARCING ALONG BUS BAR

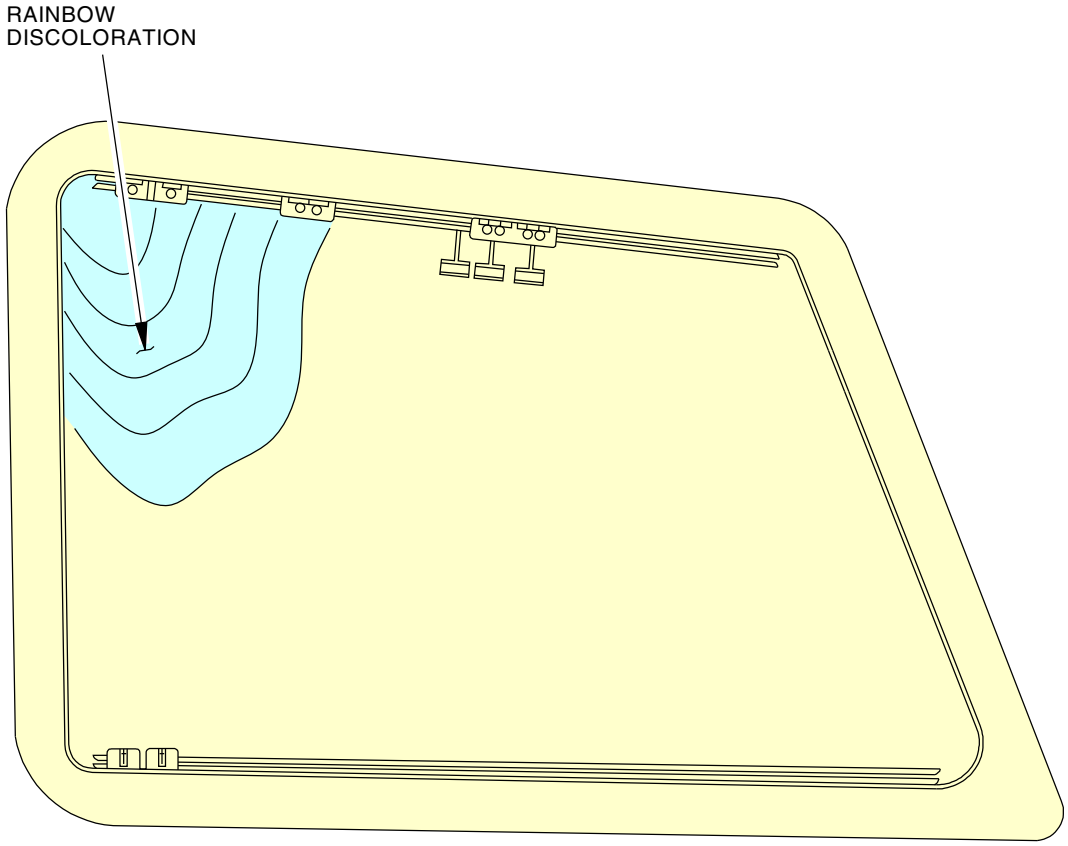
C

1364510 S0000246494_V2

Window Heat Arcing
Figure 605/56-11-00-990-809 (Sheet 2 of 2)



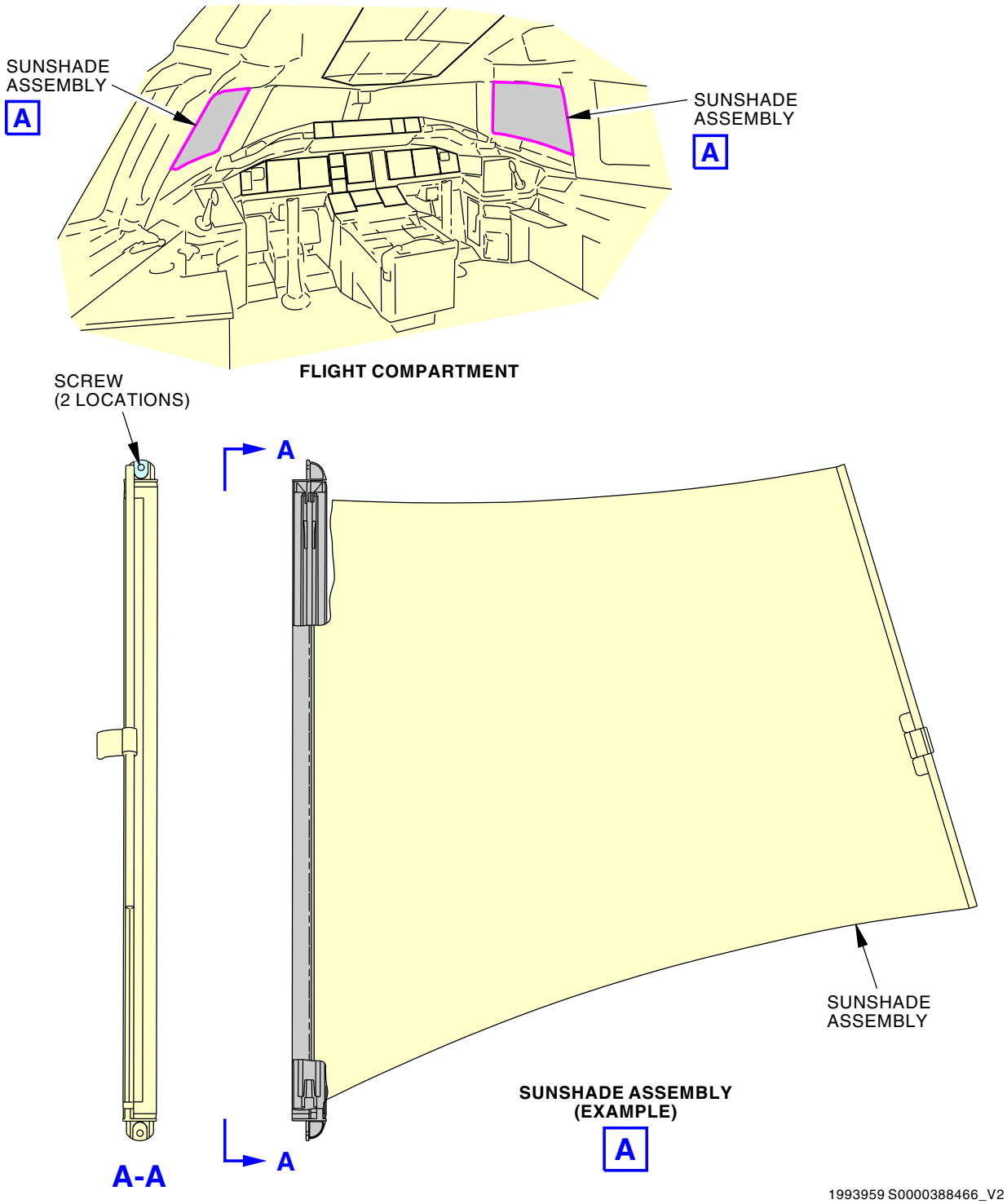
Window Heat Sensor Contamination
Figure 606/56-11-00-990-810



**WINDOW
(EXAMPLE)**

1438127 S0000258844_V2

**Rainbow Color Like Discoloration
Figure 607/56-11-00-990-812**



Sunshade Removal and Installation
Figure 608/56-11-00-990-817

TASK 56-11-00-200-804

5. Flight Compartment No. 2 Window Leak Inspection

(Figure 51-11-00-990-801)

A. General

(1) This task is for the right and left No. 2 openable windows.

NOTE: The No. 2 window leak test is the recommended best procedure. The No. 2 window leak test task is not a mandatory requirement for dispatch of the aircraft after the No. 2 window replacement.

B. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
51-11-00-990-801	Figure: Window No. 2 Vacuum Blanket Check (P/B 601)
56-11-02-700-801	No. 2 Window Bracket Adjustments (P/B 501)
56-11-02-820-801	No. 2 Window Adjustments (P/B 501)
56-11-03-710-801	No. 2 Window Indication System - Operational Test (P/B 501)

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-1472	Bag - Assembly, Window Vacuum Part #: J51004-1 Supplier: 81205 Opt Part #: ST6760 Supplier: 81205
SPL-1473	Probe - Kit, Ultrasonic Leak Part #: ST6760A-1 Supplier: 81205
SPL-1474	Generator - Vacuum Part #: ST9999-VBA-201 Supplier: 81205

D. Location Zones

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

E. Procedure

SUBTASK 56-11-00-212-001

(1) Do a visual check of the No. 2 openable window seal for rips, tears, cuts, or other types of damage.

NOTE: The bulb seals may appear partially collapsed and/or have a crease where the window seal bead travels across the surface of the bulb seal during window operation. This is considered as an acceptable condition as long as an air leak does not occur. If there are any abrasions to the surface of the bulb seal, replacement may be necessary.

SUBTASK 56-11-00-040-001

(2) Do the steps that follow to prepare for a leak check of the No. 2 openable window:

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.

(a) Move these switches on the pilot's overhead panel to the OFF position and attach DO-NOT-OPERATE tags:

1) WINDOW HEAT L SIDE

2) WINDOW HEAT R SIDE.

(b) Make sure the SIDE L and SIDE R WINDOW HEAT lights are OFF.

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

(d) Remove the window padding from the window:

1) Remove the latch handle cover.

2) Remove the covers from all sides of the window.

(e) Remove the protective tape around the window opening.

(f) Loosen the protective tape in the corners of the window.

(g) Plug the window interior lining holes in the No. 2 openable window frame.

(h) Plug the window fluid drain line on the airplane structure at the lower aft side of the No. 2 openable window.

SUBTASK 56-11-00-211-001

(3) Do the steps to prepare the window vacuum bag, SPL-1472:

(a) Calibrate the ultrasonic leak probe, SPL-1473:

1) Use the white noise generator to set the pass/fail indication to 40dB.

(b) Connect the vacuum generator, SPL-1474 to the window vacuum bag, SPL-1472.

(c) Connect the vacuum generator, SPL-1474 to a compressed air source.

SUBTASK 56-11-00-280-001

(4) Install the window vacuum bag, SPL-1472 over the No. 2 openable window (Figure 51-11-00-990-801).

(a) Place the vacuum port over the lower aft outside corner of the window.

(b) Make sure the window vacuum bag, SPL-1472 covers the entire window and the gap between the window and the fuselage.

(c) Remove all bubbles and creases in the window vacuum bag, SPL-1472.

(d) Make sure that the vacuum gauge indicates 18 to 20 inch (Hg) of vacuum when the window vacuum bag, SPL-1472 is attached to the window.

SUBTASK 56-11-00-280-002

(5) Do a check of the noise levels around the interior of the No. 2 openable window:

(a) Hold the ultrasonic leak probe, SPL-1473 approximately 2 inches from the window.

(b) Move the ultrasonic leak probe, SPL-1473 around the edge of the window.

(c) Use the headphones and watch the noise scale on the ultrasonic leak probe, SPL-1473.

SUBTASK 56-11-00-360-001

(6) If the noise levels exceed 40dB do the steps that follow:

(a) Determine the exact location of the noise with a stethoscope.

(b) Remove the window vacuum bag, SPL-1472 from the window.

(c) Adjust the No. 2 openable window:

1) Do this task: No. 2 Window Adjustments, TASK 56-11-02-820-801 (method 1).

2) Do this task: No. 2 Window Bracket Adjustments, TASK 56-11-02-700-801 (method 2).

(d) Install the window vacuum bag, SPL-1472 again and check for leaks.

NOTE: You will have to repeat the installation of the window vacuum bag, SPL-1472 to make sure you have fixed all of the leaks.

SUBTASK 56-11-00-400-001

(7) Put the airplane back to its usual condition:

(a) Install the window padding as follows:

NOTE: You must install the window padding to hold the window sensor terminals in their correct position.

1) Install the covers on all sides of the window.

2) Install the latch handle cover.

(b) Do this task: No. 2 Window Indication System - Operational Test, TASK 56-11-03-710-801.

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

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

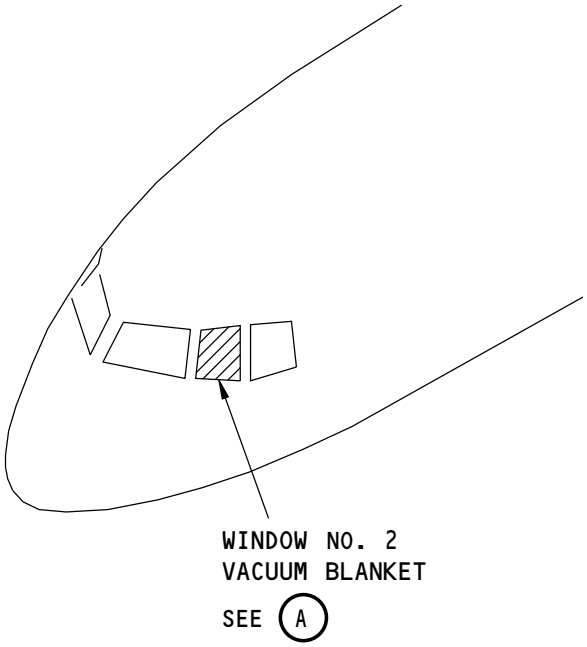
(e) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

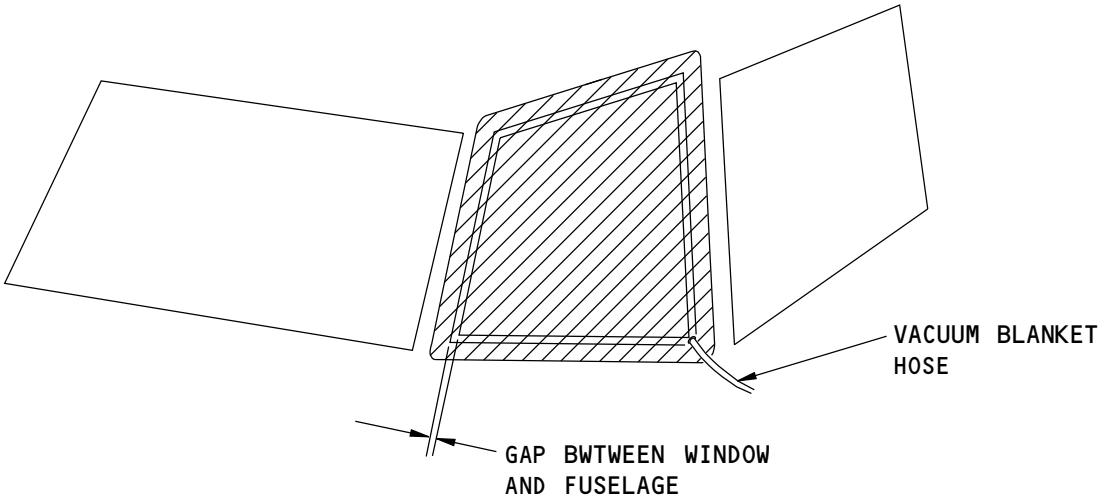
1) WINDOW HEAT L SIDE

2) WINDOW HEAT R SIDE.

(f) Make sure the SIDE L and SIDE R WINDOW HEAT INOP lights are OFF.

——— END OF TASK ———





WINDOW NO. 2 VACUUM BLANKET

A

NOTE: THE VACUUM BLANKET COVERS THE ENTIRE WINDOW AND THE GAP BETWEEN THE WINDOW AND THE FUSELAGE.

F51055 S0006424221_V1

Window No. 2 Vacuum Blanket Check
Figure 609/56-11-00-990-814

FLIGHT COMPARTMENT WINDOWS - REPAIRS

1. General

A. This procedure has these tasks:

(1) Repair the aerodynamic sealant (No. 1 and No. 3 Windows).

(2) Repair the moisture sealant (No. 1, No. 2 and No. 3 Windows).

(3) Repair leaks in the bulb seal (No. 2 Window).

(4) Repair seal buildup window windshield wiper (No. 1 Windows)

(5) Put the airplane back to its usual condition.

B. You can do these repairs with the windows installed in the airplane.

C. The repair instructions that are in this procedure are based on the inspection data and damage limits in Flight Compartment No. 1 Window Inspection, FLIGHT COMPARTMENT WINDOWS - INSPECTION/CHECK, PAGEBLOCK 56-11-00/601, and Flight Compartment No. 2 Window Inspection, NO. 2 OPENABLE WINDOW - INSPECTION/CHECK, PAGEBLOCK 56-11-02/601.

TASK 56-11-00-350-801

2. Prepare the Flight Compartment Windows for Repair

(Figure 802, Figure 803, Figure 804, Figure 805)

A. Location Zones

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

B. Procedure

SUBTASK 56-11-00-020-004

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU REPAIR 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 pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L FWD

(b) WINDOW HEAT R FWD

(c) WINDOW HEAT L SIDE

(d) WINDOW HEAT R SIDE

SUBTASK 56-11-00-020-005

(2) Move these switches on the maintenance panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) BACKUP WINDOW HEAT LEFT

(b) BACKUP WINDOW HEAT RIGHT

SUBTASK 56-11-00-020-006

(3) Make sure the four WINDOW HEAT INOP lights are ON.

SUBTASK 56-11-00-020-007

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
C	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
C	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

——— END OF TASK ———

TASK 56-11-00-350-802

3. Prepare to Repair the Aerodynamic Sealer (No. 1 and No. 3 Windows)

A. References

Reference	Title
51-31-01-160-801	Prepare For Sealing (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)

C. Location Zones

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

D. Procedure

SUBTASK 56-11-00-100-001

(1) Do this task: Prepare the Flight Compartment Windows for Repair, TASK 56-11-00-350-801.

SUBTASK 56-11-00-100-002

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.

(2) Remove loose sealant (Prepare For Sealing, TASK 51-31-01-160-801).

SUBTASK 56-11-00-100-003

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.

(3) Remove aerodynamic sealant that has cracks (Prepare For Sealing, TASK 51-31-01-160-801).

SUBTASK 56-11-00-100-004

WARNING

BE CAREFUL WHEN YOU USE ALIPHATIC NAPHTHA. ALIPHATIC NAPHTHA IS A FLAMMABLE MATERIAL WHICH CAN CAUSE INJURY OR DAMAGE.

(4) Use a cotton wiper, G00034 that is moist with solvent, B00083 to clean the clearance between the fuselage skin and the window.

SUBTASK 56-11-00-100-005

(5) Remove the solvent, B00083 with a clean cotton wiper, G00034 before it dries.

NOTE: Make sure you do not cause damage to the adjacent seal when you clean the window.

SUBTASK 56-11-00-950-001

(6) Apply Scotch Flatback Masking Tape 250, G00270 on the edge of the clearance that is between the fuselage skin and the window.

——— END OF TASK ———

TASK 56-11-00-390-801

4. Apply the Aerodynamic Sealer

A. References

Reference	Title
51-31-01-160-801	Prepare For Sealing (P/B 201)

B. Tools/Equipment

Reference	Description
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

C. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A01056	Sealant - Aerodynamic - PR 1829	
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)	
A50408	Promoter - Adhesion, PR-148, Conductive Filler	BAC5010 Type 118
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)

D. Location Zones

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

E. Procedure

SUBTASK 56-11-00-390-001

(1) Apply the sealing compound as follows:

NOTE: Make sure you do these steps in less than 2.5 hours.

(a) Use a hardwood or plastic fillet smoothing spatula, STD-810 or flow gun to apply the sealing compound into the clearance that is between the fuselage skin and the window structure.

NOTE: Use a spatula to apply the compound when the use of a flow gun is not possible.

(b) Add the sealant, A00247 (recommended), P/S 860 B-1/6 sealant, A50084 (alternative), PR 1829 sealant, A01056 (alternative) or PR-1425 sealant, A00103 (alternative) compound slowly.

NOTE: Add a little more compound than necessary to fill the clearances.

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.

(c) Remove the unwanted sealant, A00247 until it is at the level of the outer surface of the fuselage skin and the window (Prepare For Sealing, TASK 51-31-01-160-801).

SUBTASK 56-11-00-000-001

(2) Remove the Scotch Flatback Masking Tape 250, G00270 from the edges of the clearance.

SUBTASK 56-11-00-390-020

(3) Prior to sealant application, apply primer PR-142 adhesion promoter, A50205 for glass components and/ or PR-148 adhesion promoter, A50408 for metal components.

SUBTASK 56-11-00-390-002

(4) Use a hardwood or plastic fillet smoothing spatula, STD-810 to make the sealant, A00247, PR-1425 sealant, A00103, PR 1829 sealant, A01056, or Pro Seal 860 smooth with the surface of the airplane.

SUBTASK 56-11-00-840-001

(5) Do this task: Put the Airplane Back to Its Usual Condition, TASK 56-11-00-840-801.

——— END OF TASK ———

TASK 56-11-00-390-802

5. Repair the Moisture Sealant (No. 1, No. 2 and No. 3 Windows)

A. References

Reference	Title
51-31-01-160-801	Prepare For Sealing (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	

(Continued)

Reference	Description	Specification
A01056	Sealant - Aerodynamic - PR 1829	
A50164	Sealant - PR-1784 Windshield and Canopy Sealant (Sully Windshields)	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00116	Sponge - Synthetic	
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)

C. Location Zones

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

D. Prepare to repair the window

SUBTASK 56-11-00-840-002

(1) Do this task: Prepare the Flight Compartment Windows for Repair, TASK 56-11-00-350-801.

SUBTASK 56-11-00-010-005

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.

(2) Remove unwanted sealant above the z-bar with an approved sealant removal tool (Prepare For Sealing, TASK 51-31-01-160-801)(Figure 802).

NOTE: The z-bar will come into view as an embedded flat metal strip along the periphery of the window laminate.

NOTE: If you are not sure of the sealant's quality, remove approximately 0.12 in. (3.05 mm) of sealant from the edge.

SUBTASK 56-11-00-100-006

WARNING

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

(3) Use a clean cotton wiper, G00034 that is moist with solvent, B00083 to clean the seal and the adjacent glass surface.

(a) Trim all eroded, damaged or contaminated moisture seal material.

SUBTASK 56-11-00-000-003

(4) Remove the solvent, B00083 with a clean cotton wiper, G00034 before it dries.

SUBTASK 56-11-00-000-004

(5) Apply Scotch Flatback Masking Tape 250, G00270 on the window and the window retaining ring.

E. Procedure

SUBTASK 56-11-00-390-003

(1) Use a flow gun to smoothly apply a layer of sealant:

ARO ALL; WINDSHIELDS MANUFACTURED BY PPG

(a) Apply a layer of PR-1425 sealant, A00103 or alternative PR 1829 sealant, A01056 on the seal.

ARO ALL; WINDSHIELDS MANUFACTURED BY SULLY

(b) Apply a layer of PR-1784 sealant, A50164 Class B sealant on the seal.

ARO ALL

SUBTASK 56-11-00-390-005

(2) Use a sponge, G00116 that is wet with solvent, B00083 to shape the sealant smooth.

ARO ALL; WINDSHIELDS MANUFACTURED BY PPG

(a) Shaping tools may be fabricated for the moisture seals on the No. 1 window (Figure 805).

1) The upper and outboard moisture seals on the No. 1 window may be made wider to provide increased erosion protection (Figure 805).

2) See Figure 805 for moisture seal configuration on the No. 2 and No. 3 windows.

ARO ALL; WINDSHIELDS MANUFACTURED BY SULLY

(b) Shaping tools may be fabricated for the moisture seals on the No. 1 window (Figure 802Figure 805).

1) See Figure 805 for moisture seal configuration on the No. 2 and No. 3 windows.

ARO ALL

SUBTASK 56-11-00-000-005

(3) Carefully remove the Scotch Flatback Masking Tape 250, G00270.

SUBTASK 56-11-00-100-007

(4) Use a cotton wiper, G00034 that is moist with solvent, B00083 to remove unwanted sealant from the window or window retaining ring.

SUBTASK 56-11-00-390-016

(5) Let the sealant dry:

ARO ALL; WINDSHIELDS MANUFACTURED BY PPG

(a) Let the PR-1425 sealant, A00103 or alternative PR 1829 sealant, A01056 dry before you touch the seal. Figure 802

ARO ALL; WINDSHIELDS MANUFACTURED BY SULLY

(b) Let the PR-1784 sealant, A50164 dry before you touch the seal. Figure 802

ARO ALL

SUBTASK 56-11-00-840-004

(6) Do this task: Put the Airplane Back to Its Usual Condition, TASK 56-11-00-840-801.

END OF TASK

TASK 56-11-00-350-804

6. Repair the Bulb Seal Leak (No. 2 Window)

A. General

(1) Do the rigging procedure carefully before you use this procedure to correct the pressure seal leak.

B. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00706	Sealant - Fast Curing for Integral Fuel Tanks and General Purpose, Intermittent Use to 400 F (204 C)	AMS3277 (Supersedes MIL-S-29574)
B00137	Abrasive - Garnet Coated Paper	

C. Location Zones

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

D. Procedure

SUBTASK 56-11-00-840-006

(1) Do this task: Prepare the Flight Compartment Windows for Repair, TASK 56-11-00-350-801.

SUBTASK 56-11-00-010-001

(2) Open the No. 2 window to get access to the leak location.

SUBTASK 56-11-00-000-006

(3) Use abrasive, B00137 paper to remove the teflon paint at the location of the leak.

SUBTASK 56-11-00-390-008

(4) Apply PR-1425 sealant, A00103 (alternatively, sealant, A00706) to the window edge.

NOTE: The thickness of the sealant must be approximately 0.07 inch.

SUBTASK 56-11-00-800-002

(5) Let the PR-1425 sealant, A00103 dry for eight hours before you close the window.

NOTE: If the sealant, A00706 is used, the window can be closed after 2 hours.

SUBTASK 56-11-00-840-007

(6) Do this task: Put the Airplane Back to Its Usual Condition, TASK 56-11-00-840-801.

——— END OF TASK ———

TASK 56-11-00-350-808

7. Seal Buildup No. 1 Window

A. General

(1) Use this procedure to repair fluttering and unparked window windshield wipers (Figure 801).

B. Consumable Materials

Reference	Description	Specification
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B

(Continued)

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

C. Location Zones

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

D. Prepare to repair the window windshield wipers.

SUBTASK 56-11-00-350-007

(1) Do this task: Prepare the Flight Compartment Windows for Repair, TASK 56-11-00-350-801

SUBTASK 56-11-00-100-012

(2) Use a clean cotton wiper, G00034 to clean the area around the skin and window assembly.

E. Procedure

SUBTASK 56-11-00-390-015

(1) Apply the PR-1826 sealant, A50052 around the wiper arm/wiper blade attach point.

SUBTASK 56-11-00-800-005

(2) Let the sealant dry.

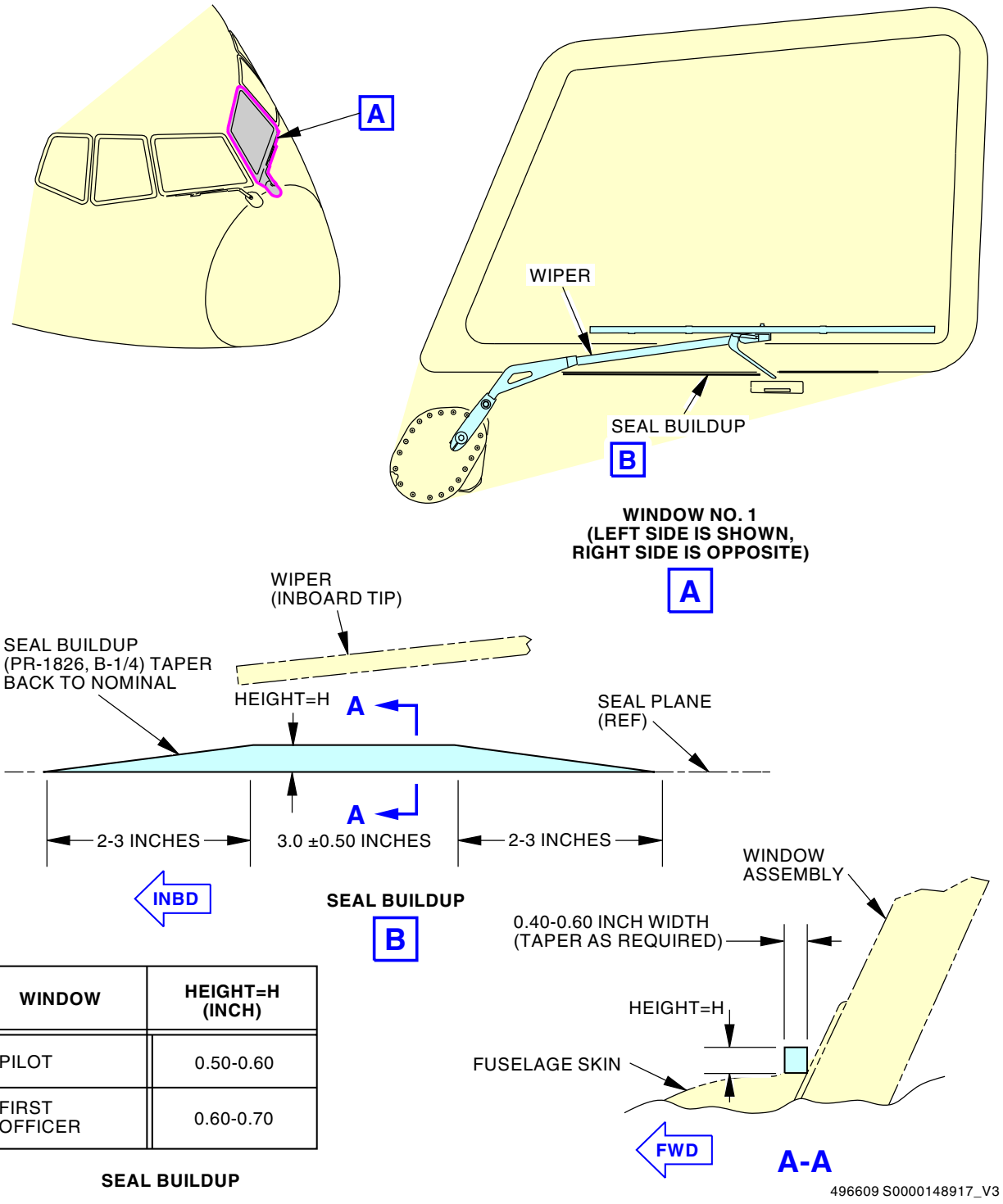
SUBTASK 56-11-00-840-016

(3) Do this task: Put the Airplane Back to Its Usual Condition, TASK 56-11-00-840-801

SUBTASK 56-11-00-370-001

(4) Apply topcoat enamel finish over the sealant.

——— END OF TASK ———



WINDOW	HEIGHT=H (INCH)
PILOT	0.50-0.60
FIRST OFFICER	0.60-0.70

SEAL BUILDUP

Seal Buildup Wiper Window No. 1
Figure 801/56-11-00-990-807

ARO ALL; AIRPLANES WITH 141T4001-1 THROUGH -32 WINDOWS

TASK 56-11-00-300-801

8. Repair Air Leaks Between the No.2 Window Laminate and Frame Assembly

A. General

(1) Apply sealant to the joint around the inner window assembly. This will stop pressure leaks between the No. 2 window laminate and frame assembly.

B. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A01056	Sealant - Aerodynamic - PR 1829	
A50084	Sealant - P/S 860 Class B-1/6 Quick Repair Fuel Tank Sealant	AMS-S-83318 Class B

C. Location Zones

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

D. Prepare the No.2 Window for Repair:

SUBTASK 56-11-00-860-022

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 pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE

SUBTASK 56-11-00-860-023

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

SUBTASK 56-11-00-860-024

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

ARO ALL; AIRPLANES WITH 141T4001-1 THROUGH -32 WINDOWS (Continued)

E. Repair the No.2 Window:

SUBTASK 56-11-00-110-002

ARO ALL

WARNING

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

ARO ALL; AIRPLANES WITH 141T4001-1 THROUGH -32 WINDOWS

(1) Use a clean cheesecloth that is moist with aliphatic naptha to clean the area around the window assembly.

SUBTASK 56-11-00-110-003

(2) Use a clean dry cheesecloth to remove the aliphatic naptha before it dries.

SUBTASK 56-11-00-390-017

(3) Apply the P/S 860 B-1/6 sealant, A50084, PR 1829 sealant, A01056, or PR-1425 sealant, A00103 around the inner area of the window assembly.

NOTE: Make sure that you apply the sealant around the window perimeter.

SUBTASK 56-11-00-390-018

(4) Look for spaces between the laminate edge band and the laminate assembly (acrylic windows only), and between the laminate band edge and the aluminum frame assembly (Figure 806).

(a) If spaces are found, apply sealant to the areas with spaces.

SUBTASK 56-11-00-390-019

(5) Let the sealant dry.

F. Put the Airplane Back to Its Usual Condition:

SUBTASK 56-11-00-840-017

(1) Do this task: Put the Airplane Back to Its Usual Condition, TASK 56-11-00-840-801

ARO ALL

——— END OF TASK ———

TASK 56-11-00-840-801

9. Put the Airplane Back to Its Usual Condition

A. Location Zones

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

B. Procedure

SUBTASK 56-11-00-840-013

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
C	16	C30418	WDO HT 3R

(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
C	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-00-840-014

(2) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L FWD

(b) WINDOW HEAT R FWD

(c) WINDOW HEAT L SIDE

(d) WINDOW HEAT R SIDE

SUBTASK 56-11-00-840-015

(3) Move these switches on the maintenance panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) BACKUP WINDOW HEAT LEFT

(b) BACKUP WINDOW HEAT RIGHT

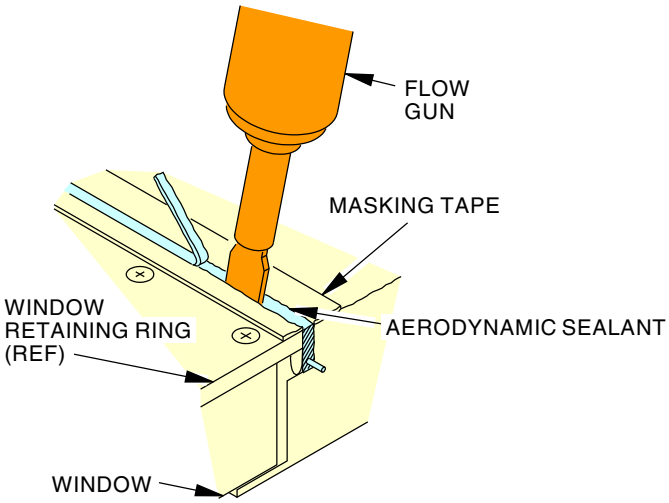
SUBTASK 56-11-00-210-002

(4) Make sure the four WINDOW HEAT INOP lights are OFF.

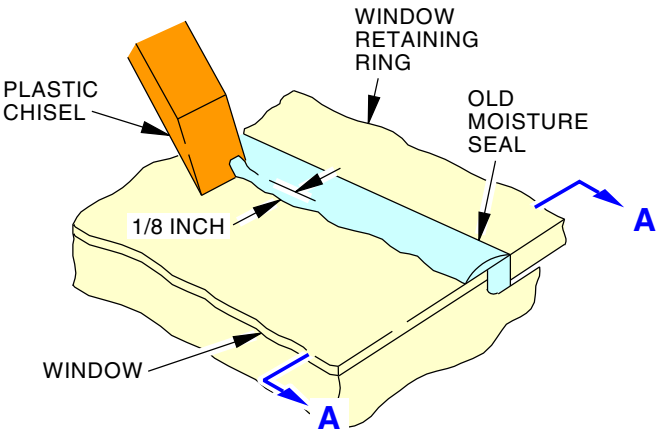
SUBTASK 56-11-00-210-003

(5) Make sure the window heat system operates correctly.

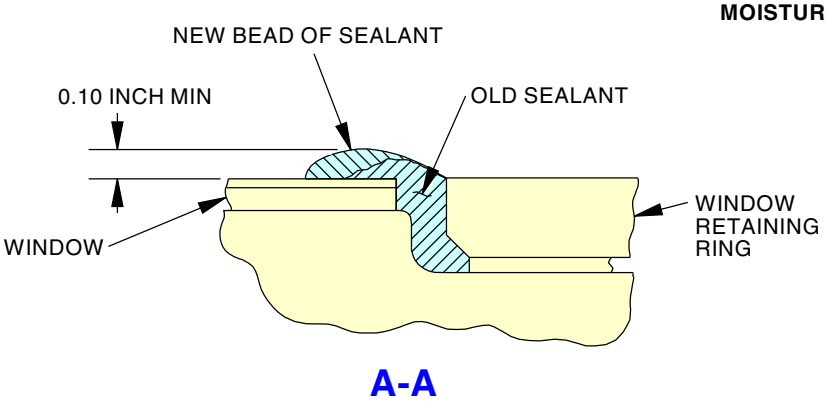
——— END OF TASK ———



AERODYNAMIC SEALANT REPAIR

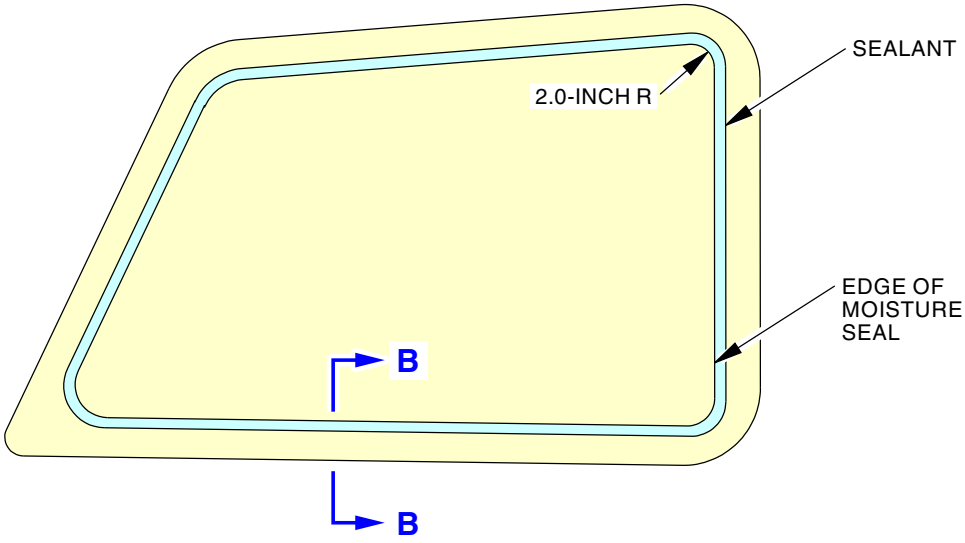


MOISTURE SEALANT REPAIR

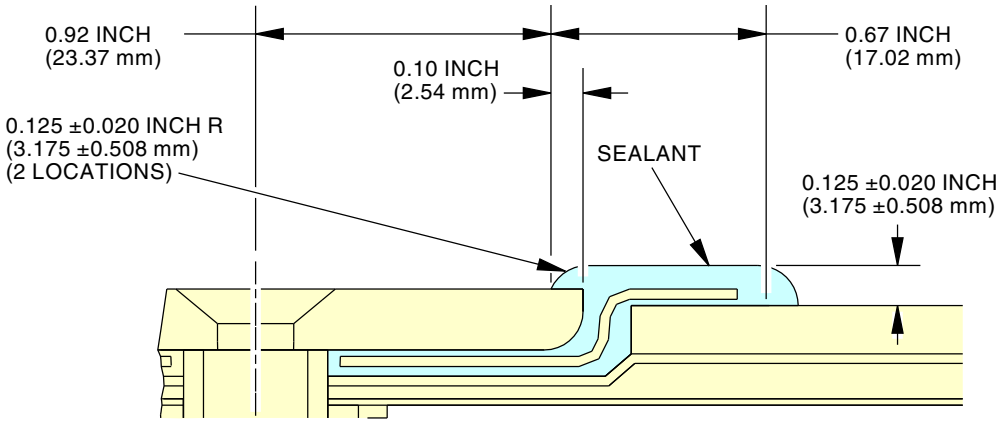


C52403 S0006428670_V2

Aerodynamic Sealant and Moisture Sealant Repair
Figure 802/56-11-00-990-813 (Sheet 1 of 4)



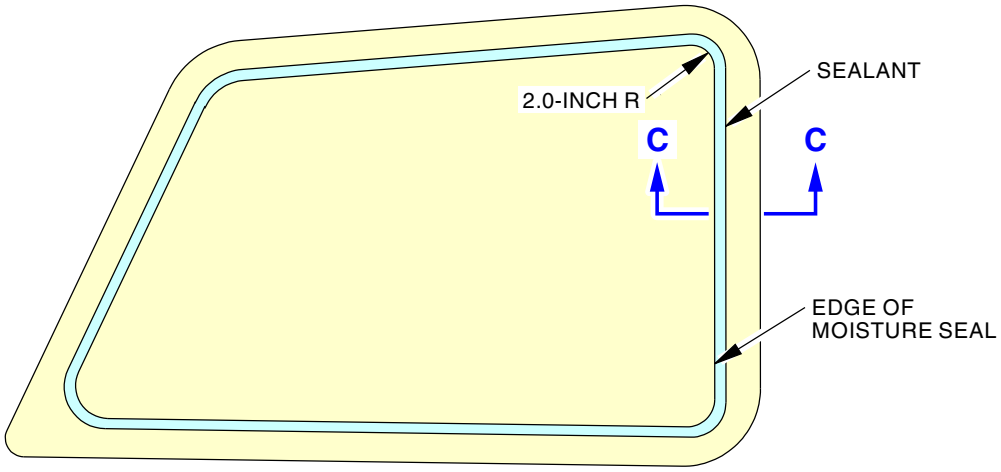
NO. 1 WINDOW



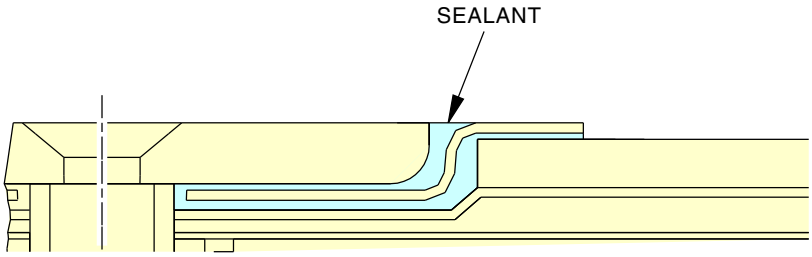
B-B

U89634 S0000222336_V3

Aerodynamic Sealant and Moisture Sealant Repair
Figure 802/56-11-00-990-813 (Sheet 2 of 4)



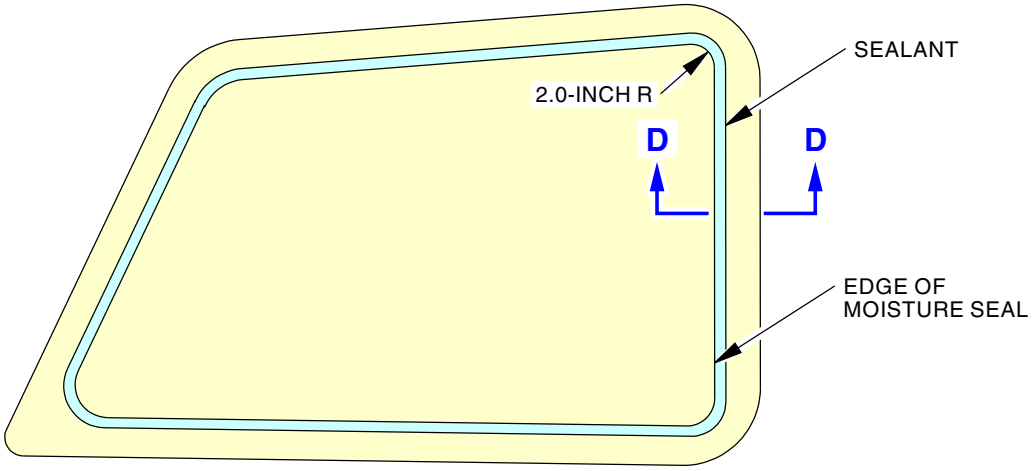
NO. 1 WINDOW



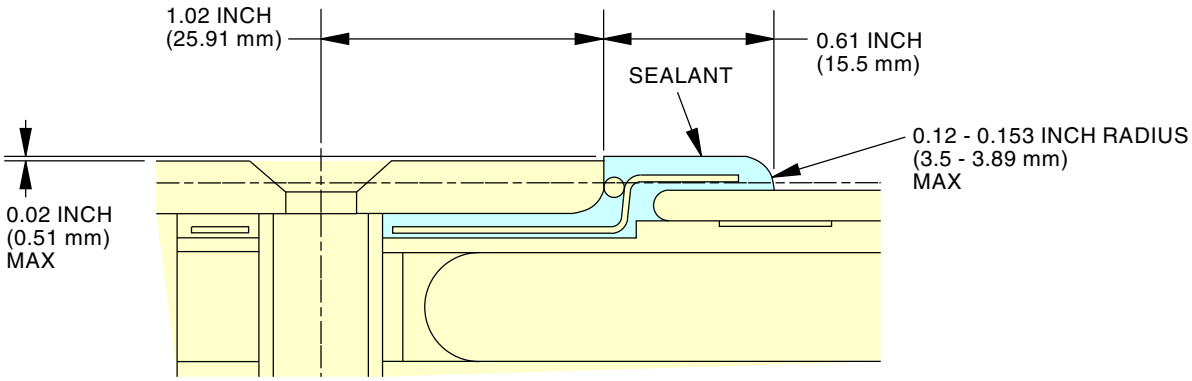
C-C

1441115 S0000260291_V2

Aerodynamic Sealant and Moisture Sealant Repair
Figure 802/56-11-00-990-813 (Sheet 3 of 4)



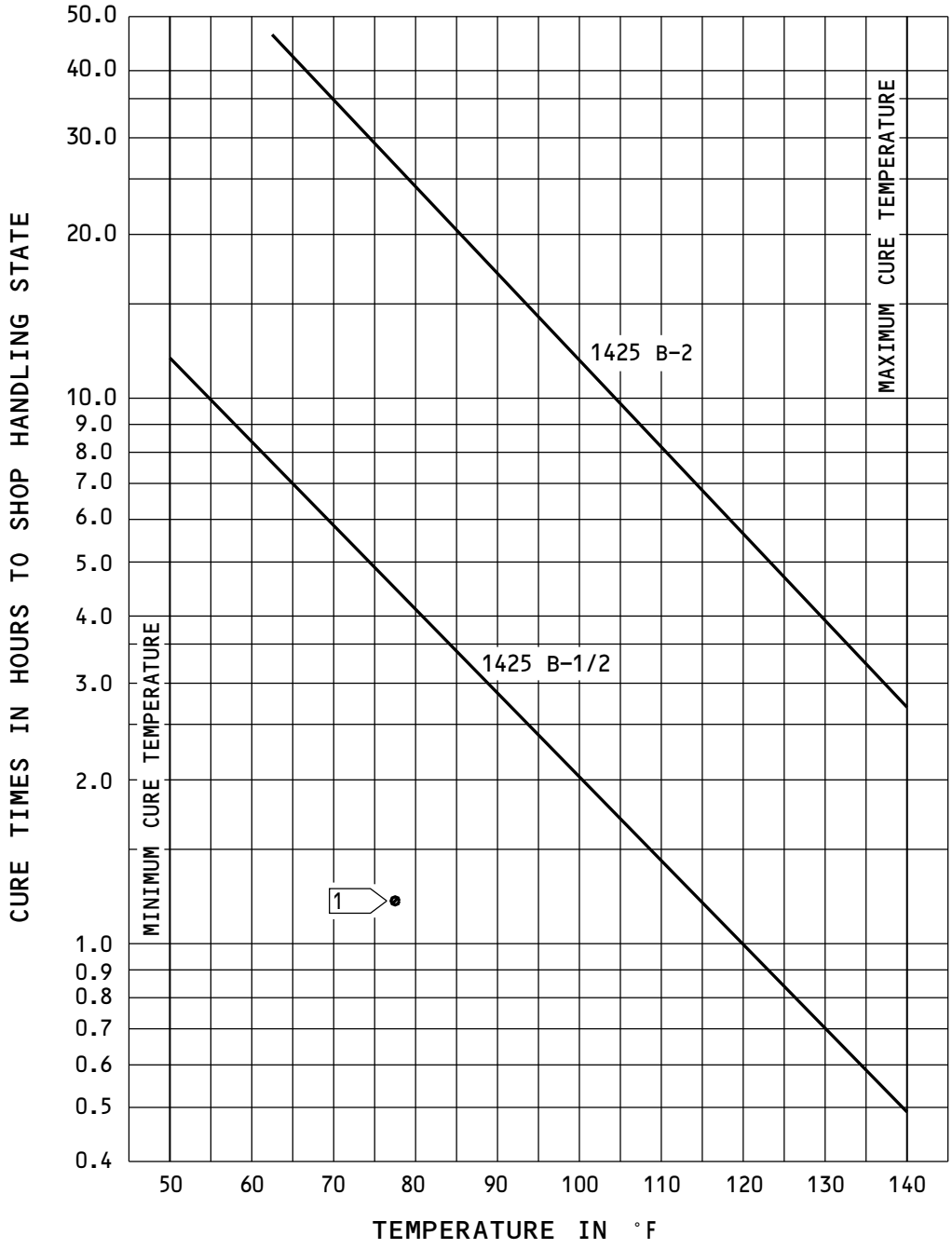
NO. 1 WINDOW



D-D

1417783 S0000255860_V2

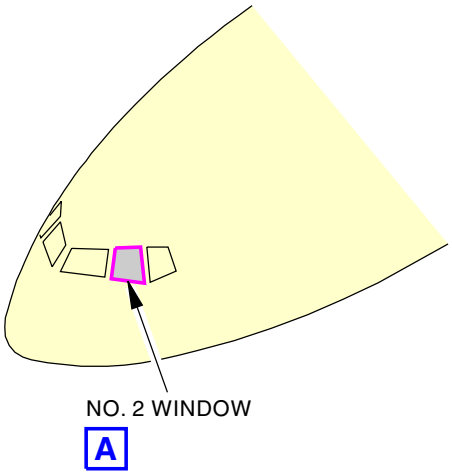
Aerodynamic Sealant and Moisture Sealant Repair
Figure 802/56-11-00-990-813 (Sheet 4 of 4)

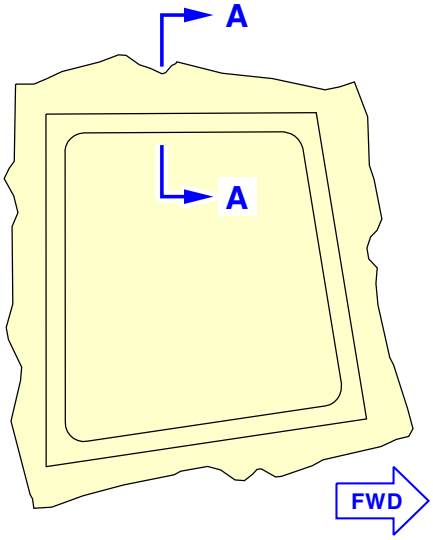


1 CURE TIME FOR PRO SEAL 860 CLASS B

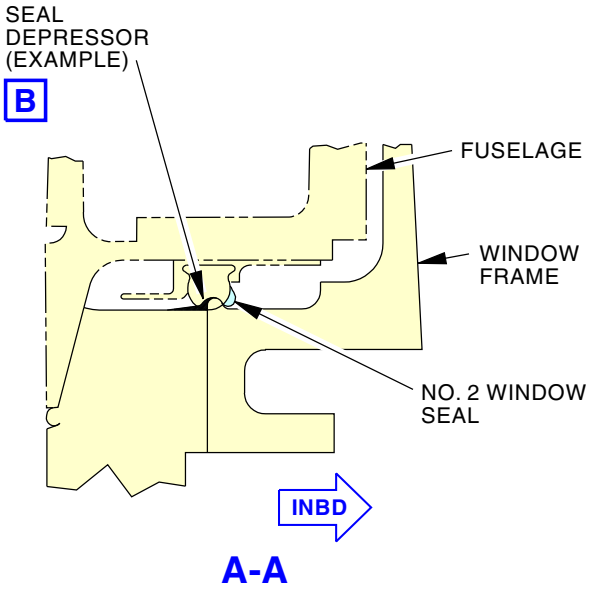
C52408 S0006428672_V1

Moisture Seal Repair - Curing Time
Figure 803/56-11-00-990-804

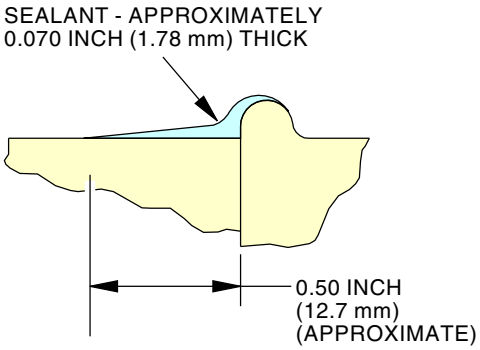




NO. 2 WINDOW
A



A-A

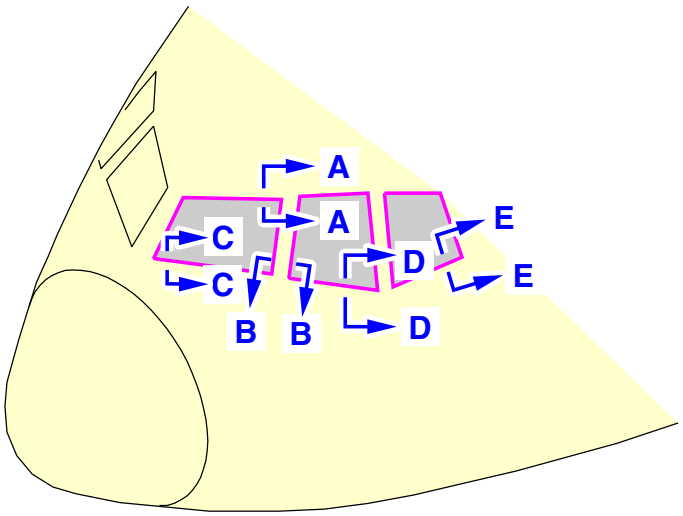


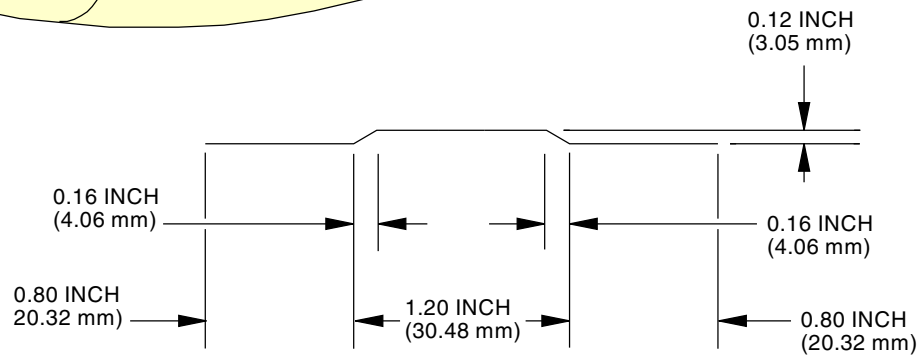
SEAL DEPRESSOR
B 1

1 THE SEALANT MUST BE COMPLETELY AROUND THE WINDOW

C52420 S0006428673_V2

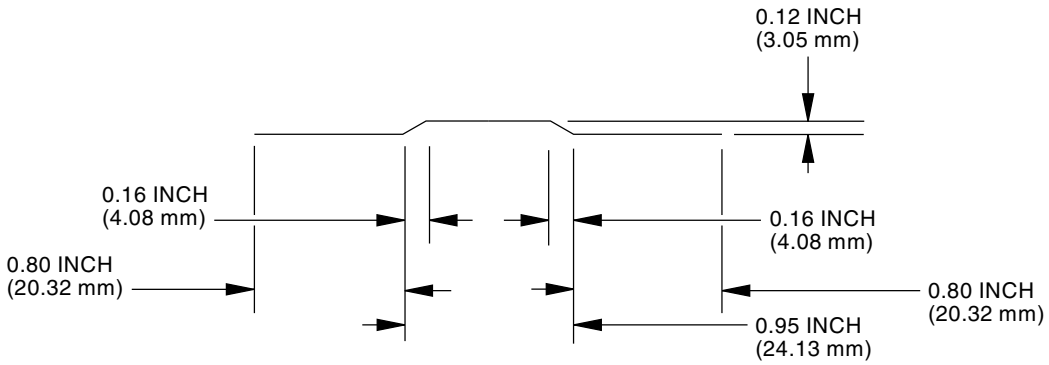
Bulb Seal Leak Repair
Figure 804/56-11-00-990-805





TOOL FOR UPPER MOISTURE SEAL - MAXIMUM WIDTH (OPTIONAL)

A-A

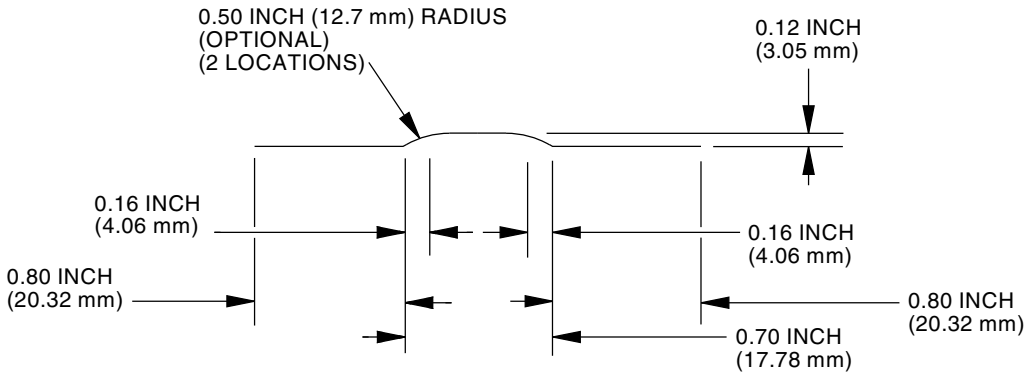


TOOL FOR OUTBOARD MOISTURE SEAL - MAXIMUM WIDTH (OPTIONAL)

B-B

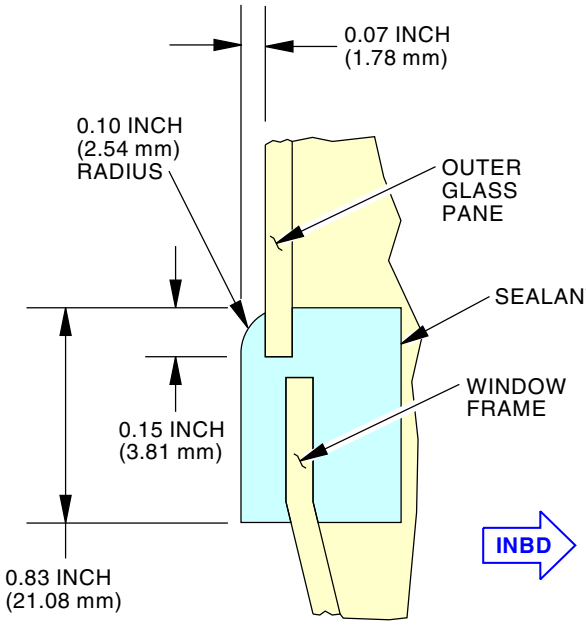
M98811 S0006428674_V2

Bulb Seal Forming Tools Windows No. 1, 2, 3
Figure 805/56-11-00-990-806 (Sheet 1 of 2)

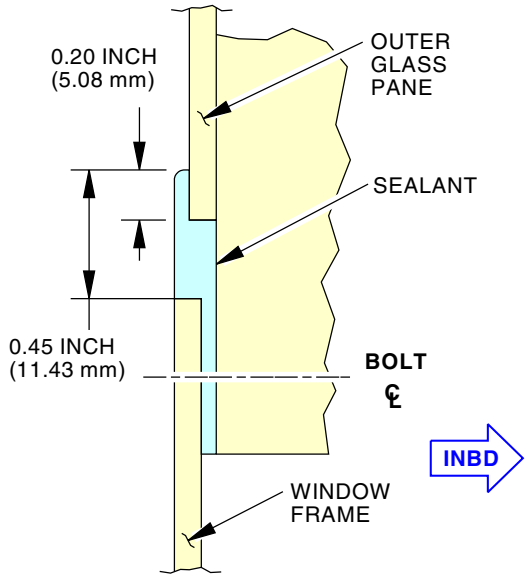


MOISTURE SEAL SHAPING TOOL - INBOARD LOWER SEAL

C-C 1



D-D

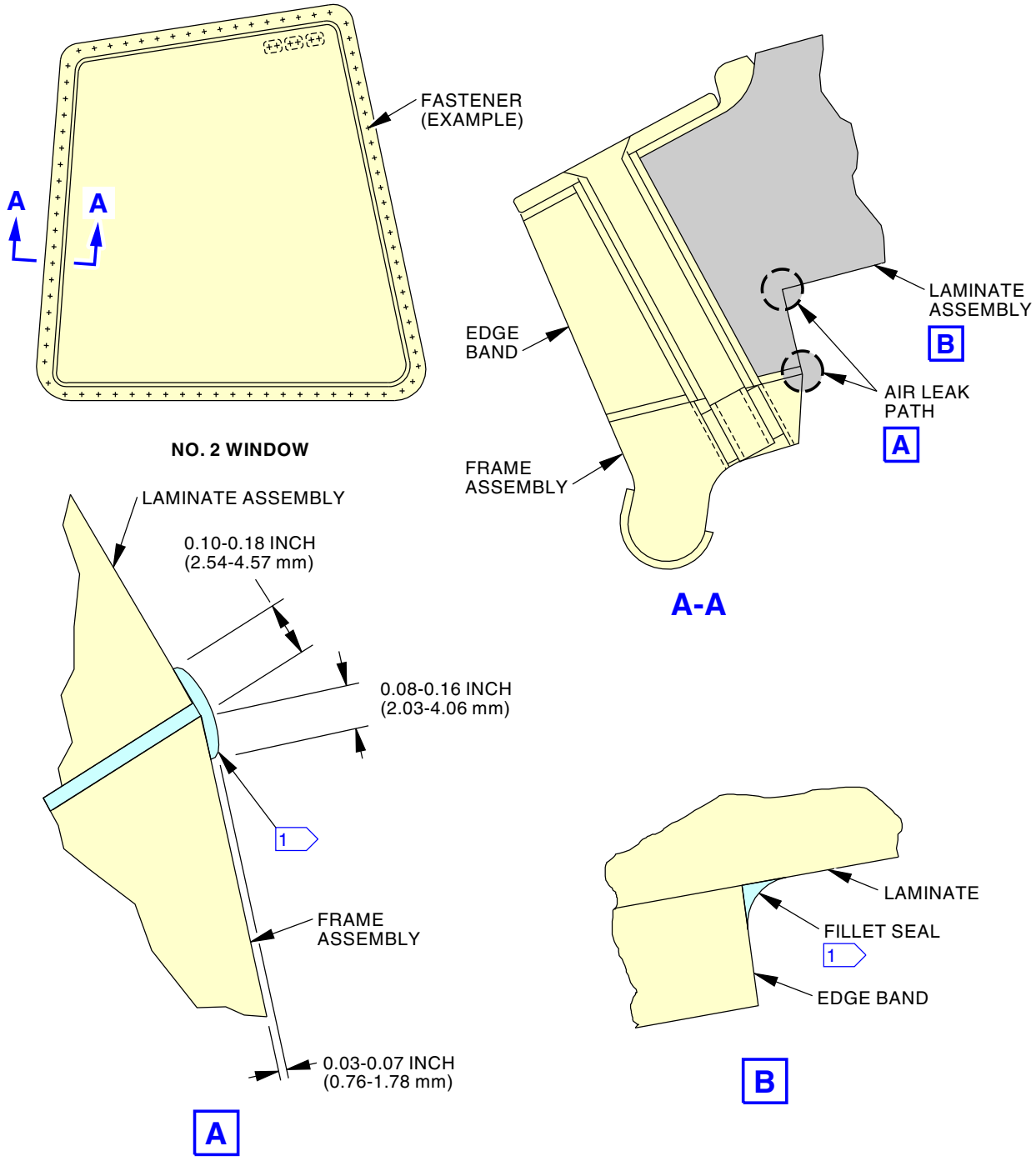


E-E

1 TOOL FOR NO. 1 WINDOW LOWER AND INBOARD MOISTURE SEAL.
OPTIONAL FOR OUTBOARD AND UPPER MOISTURE SEAL

M98895 S0006428675_V2

Bulb Seal Forming Tools Windows No. 1, 2, 3
Figure 805/56-11-00-990-806 (Sheet 2 of 2)



No.2 Window Assembly Repair - Inner Seal
Figure 806/56-11-00-990-811

NO. 1 WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the No. 1 window.

(2) Installation of the No. 1 window.

TASK 56-11-01-000-801

2. No. 1 Window Removal

(Figure 401, Figure 402, Figure 404)

A. General

(1) This procedure is for the left and right side windows.

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-4796	Power Terminal Wire Removal Tool Part #: RRX-16RA Supplier: 1EG24
COM-4798	Power Terminal Wire Removal Tool Part #: RRX-12RA Supplier: 1EG24
SPL-2038	Set - Sling, Number 1 and 3 windshields Part #: A56001-15 Supplier: 81205
STD-4781	Crane - Lift, 300lb Minimum Capacity

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00130	Alcohol - Isopropyl	TT-I-735
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)

D. Location Zones

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

E. Prepare to remove the window assembly.

SUBTASK 56-11-01-020-005

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU REMOVE 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 pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L FWD

(b) WINDOW HEAT R FWD

SUBTASK 56-11-01-020-006

(2) Move these switches on the maintenance panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) BACKUP WINDOW HEAT LEFT,

(b) BACKUP WINDOW HEAT RIGHT.

SUBTASK 56-11-01-200-005

(3) Make sure the WINDOW HEAT INOP lights are ON.

SUBTASK 56-11-01-020-007

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

Left Power Management Panel, P110

Row	Col	Number	Name
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	Col	Number	Name
E	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	Col	Number	Name
C	12	C30414	WDO HT BACKUP 1R
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	Number	Name
ARO 005-999			
A	4	C30300	WDO HTR 1R
ARO 001-004			
B	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 56-11-01-020-009

(5) Remove the window lining to obtain access to the power/sensor terminals.

(6) Disconnect the electrical wires to the power terminals and the sensor terminals

(a) Use the Russtech RRX-16A Wire Removal Tool, COM-4796 and the Russtech RRX-12A Wire Removal Tool, COM-4798 to disconnect the electrical wires.

NOTE: Apply the isopropyl alcohol, B00130 on the Russtech RRX-16RA Wire Removal Tool, COM-4796 and the Russtech RRX-12RA Wire Removal Tool, COM-4798 to act as lubrication and to lessen the potential damage to the grommets.

SUBTASK 56-11-01-400-008

(7) Install a protective wrapping paper, G02173 cover with Scotch Flatback Masking Tape 250, G00270 to both sides of the window assembly [1].

NOTE: Do not attach the Scotch Flatback Masking Tape 250, G00270 to glass or plastic surfaces.

F. Procedure

SUBTASK 56-11-01-000-001

(1) Remove the nylon cord [3] from around the window assembly [1] (Figure 401), as follows:

(a) Carefully remove the aerodynamic sealant, A00247 at the top forward corner of the window assembly [1] to get access to the nylon cord [3].

(b) Pull the outboard end of the nylon cord [3] away from the window assembly [1].

(c) Fold the nylon cord [3] and slowly pull it completely away from the window assembly [1].

SUBTASK 56-11-01-400-002

(2) Attach the windshield sling number 1 and 3, SPL-2038, slings [5] to the window assembly [1] as follows:

(a) Remove the plugs from the three sling attach bolt holes in the window assembly [1].

(b) Attach the slings [5] to the three sling attach bolt holes (Figure 404).

(c) Tighten the three sling attach bolt [4] to 20 in-lb (2 N·m) - 30 in-lb (3 N·m).

(d) Attach the slings [5] to the 300lb min. lift crane, STD-4781.

(e) Raise the 300lb min. lift crane, STD-4781 to tighten the slings [5].

SUBTASK 56-11-01-000-002

(3) Disengage the window assembly [1] from the fuselage, as follows:

(a) Remove the 71 window attach bolts [2] from the window assembly [1].

(b) Hold the window assembly [1] to make sure it does not move accidentally.

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

(d) Carefully lower the window assembly [1] to the ground.

SUBTASK 56-11-01-000-003

(4) Remove the slings [5] from the window assembly [1].

SUBTASK 56-11-01-400-003

(5) Install the three plugs in the slings [5] to the sling attach bolt holes in the window assembly [1].

(a) Tighten the plugs to 5.0 in-lb (0.6 N·m)—20.0 in-lb (2.3 N·m).

——— END OF TASK ———

TASK 56-11-01-400-801

3. No. 1 Window Installation

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

A. General

(1) This procedure is for the left and right side windows.

B. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
30-42-00-700-801	Windshield Wiper System - Operational Test (P/B 501)
51-31-01-390-806	Aerodynamic Smoother Application (P/B 201)
56-11-00-200-801	Flight Compartment No. 1 Window Inspection (P/B 601)

C. Tools/Equipment

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

Reference	Description
COM-4127	Durometer Part #: H-1000-X Supplier: 30878
COM-4795	No. 1 Terminal Wire Insertion Tool Part #: RIT-16A Supplier: 1EG24 Part #: RIT-16RA Supplier: 1EG24
COM-4801	Power Terminal Wire Insertion Tool (12 gage) Part #: RIT-12A Supplier: 1EG24 Part #: RIT-12RA Supplier: 1EG24
SPL-2038	Set - Sling, Number 1 and 3 windshields Part #: A56001-15 Supplier: 81205
STD-4781	Crane - Lift, 300lb Minimum Capacity

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
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B00130	Alcohol - Isopropyl	TT-I-735
C00308	Compound - Corrosion Preventive, Petrolatum Hot Application	MIL-C-11796
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

(Continued)

Reference	Description	Specification
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, Scotch 425	AMS-T-23397 / L-T-80
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 to install the window assembly.

SUBTASK 56-11-01-700-004

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU INSTALL 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) Make sure these switches on the pilots overhead panel to the INOP position and DO-NOT-OPERATE tags are attached:

(a) WINDOW HEAT L FWD,

(b) WINDOW HEAT R FWD.

SUBTASK 56-11-01-700-005

(2) Make sure these switches on the maintenance panel to the OFF position and DO-NOT-OPERATE tags are attached:

(a) BACKUP WINDOW HEAT LEFT,

(b) BACKUP WINDOW HEAT RIGHT.

SUBTASK 56-11-01-700-006

(3) Make sure the WINDOW HEAT INOP lights are ON.

SUBTASK 56-11-01-010-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	Col	Number	Name
E	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	Col	Number	Name
C	12	C30414	WDO HT BACKUP 1R
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	Number	Name
ARO 005-999			
A	4	C30300	WDO HTR 1R
ARO 001-004			
B	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 56-11-01-100-002

(5) Prepare the window frame on the fuselage, as follows:

(a) Do a visual check of the windshield posts and sills for cracks and corrosion; do this task: Flight Compartment No. 1 Window Inspection, TASK 56-11-00-200-801.

(b) Install new nutplates in all positions where a nutplate is gone or damaged.

(c) Fully clean these faying surfaces with a cotton wiper, G00034, that is moist with solvent, B00083:

1) rubber pressure seal,

2) window frame,

3) window center post.

(d) Dry the parts with a clean cotton wiper, G00034.

SUBTASK 56-11-01-840-004

(6) Prepare the window assembly [1] as follows:

(a) Check the resistance measurement of the window heater and sensor per Figure 406

NOTE: The window resistance check is optional for old windows. If you install a new window, 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.

(b) Use Scotch Flatback Masking Tape 250, G00270 to apply a protective wrapping paper, G02173 cover to the two window surfaces.

NOTE: Do not attach the Scotch Flatback Masking Tape 250, G00270 to the glass or the plastic surfaces.

(c) Remove the three plugs from the window assembly [1] the sling attach bolt holes.

(d) Attach the windshield sling number 1 and 3, SPL-2038, slings [5] to the window assembly [1] (Figure 404).

(e) Tighten the sling attach bolts [4] at each sling [5] attach point to 20 in-lb (2 N·m) - 30 in-lb (3 N·m).

(f) Attach the slings [5] to the 300lb min. lift crane, STD-4781.

(g) Raise the 300lb min. lift crane, STD-4781 to tighten the sling [5].

G. Procedure

SUBTASK 56-11-01-400-004

(1) Put the window assembly [1] in position on the fuselage.

SUBTASK 56-11-01-400-005

(2) Attach the window assembly [1] to the fuselage, as follows:

(a) Install attach bolts [2] into positions 10, 47, 65, and 28 (Figure 402) but do not fully tighten them.

NOTE: This will help align the window assembly [1].

(b) Install the remaining attach bolts [2], but do not fully tighten them.

NOTE: MAXIMUM OF ELEVEN RETAINING BOLTS (2) CAN BE KEPT OUT. A MINIMUM OF THREE BOLTS MUST BE INSTALLED BETWEEN EACH LOCATION WITH NO BOLT INSTALLED. AT LOCATIONS WITH NO BOLTS INSTALLED, REPLACE THE NUTPLATES AND BOLTS AT THE NEXT WINDOW CHANGE.

(c) If you cannot install the old attach bolts [2], install new bolts [2].

(d) Alternatively, you can install a temporary spanning strap [6]] (Figure 405) on the empty bolt hole, as follows:

1) Make sure there are at least 3 attach bolts [2] installed on each side of the empty bolt hole.

2) Make sure there will not be more than 11 attach bolts [2] missing.

3) Fill the bolt hole with sealant, A00247.

4) Make a spanning strap [6] (Figure 405).

5) Install the spanning strap [6] on top of the bolt hole as shown in (Figure 405).

(e) Replace a temporary spanning strap [6] with a new attach bolt [2] and nutplate as soon as possible.

CAUTION DO NOT APPLY TOO MUCH TORQUE TO THE ATTACH BOLTS. TOO MUCH TORQUE CAN CAUSE DAMAGE TO THE NUTS AND THE NUTPLATES.

(f) Tighten the attach bolts [2].

1) Tighten each attach bolt [2] up to 40.0 in-lb (4.5 N·m) in the sequence shown in (Figure 403).

2) Tighten each attach bolt [2] (a second time) to 50.0 in-lb (5.6 N·m) -70.0 in-lb (7.9 N·m) in the sequence shown in (Figure 403).

NOTE: After tightening the fasteners a second time, the silicone pressure seal will continue to set ("creep"), with subsequent loss of initial torque force. This is normal and not cause for retorque of fasteners. Only retorque if the window leaks.

NOTE: It is recommended to tighten the bolts [2] with a manual torque wrench.

a) If a screw gun is used, it is recommended to torque the bolts [2] (a third time) to 50.0 in-lb (5.6 N·m) - 70.0 in-lb (7.9 N·m) in the sequence shown in (Figure 403).

NOTE: After tightening the fasteners a third time, the silicone pressure seal will continue to set ("creep"), with subsequent loss of initial torque force. This is normal and not cause for retorque of fasteners. Only retorque if the window leaks.

(g) Make sure the window assembly [1] is less than 0.03 in. (0.76 mm) out from the external surface or less than 0.08 in. (2.03 mm) in from the external surface.

SUBTASK 56-11-01-400-006

(3) Remove the slings [5] as follows:

(a) Remove the sling attach bolts [4] to disengage the slings [5].

(b) Apply a layer of corrosion preventive compound, C00308 to the plugs that will go in the three window assembly [1] sling attach bolt holes.

(c) Install the plugs in the three window assembly [1] sling attach bolt holes.

1) Tighten the plugs to 5.0 in-lb (0.6 N·m)—20.0 in-lb (2.3 N·m).

(d) Make sure the flushness between each plug and the window frame is less than 0.01 in. (0.25 mm).

SUBTASK 56-11-01-400-007

(4) Seal the window assembly [1] with these aerodynamic sealants:

(a) Preferred: sealant, A00247.

(b) Alternative:

1) PR-1826 sealant, A50052

2) P/S 860 B-1/6 sealant, A50084

3) PR-1828 sealant, A00708

4) PR-1425 sealant, A00103

5) PR 1829 sealant, A01056

NOTE: Use the PR 1829 sealant, A01056 if rapid cure is required for dispatch.

(5) Seal the window assembly [1]:

(a) Install a nylon cord, G00039, nylon cord [3] into the space between the window assembly [1] and the fuselage (Figure 401).

(b) Make sure the nylon cord [3] is tight and deep.

(c) Do this task: Aerodynamic Smoother Application, TASK 51-31-01-390-806.

(d) Put the mixed aerodynamic sealant, A00247 into the clearance. Apply it slowly to make sure the clearance is fully filled.

(e) Make sure the sealant, A00247 is smooth with the external surface of fuselage skin and the window frame.

(f) Remove the protective wrapping paper, G02173 from the window assembly [1].

NOTE: If the aerodynamic sealant, A00247 is not sufficiently cured, (at least 30A durometer, as mesured using durometer, COM-4127), but is tack free, the airplane may be dispached by applying Scotch 425 Aluminum Foil Tape, G00291 pressure sensitive aluminum tape. Remove the tape as soon as possible after the minimum cure time.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-01-420-003

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

(a) Use the Russtech RIT-16A wire Insertion Tool, COM-4795 and the Russtech RIT-12A Wire Insertion Tool, COM-4801 to connect the electrical wires to the power terminals.

NOTE: Apply the isopropyl alcohol, B00130 on the Russtech RIT-16A wire Insertion Tool, COM-4795 and the Russtech RIT-12A Wire Insertion Tool, COM-4801 to act as lubricant and to lessen the potential damage to the grommets.

(b) Make sure electrical wires are connected tightly.

CAUTION

HOLD THE TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(c) Connect the window terminals, as follows:

1) Connect the electrical wires to the J14 sensor terminals.

a) Tighten the screw to 25.0 in-lb (2.8 N·m) - 30.0 in-lb (3.4 N·m).

2) Connect the electrical wires to the J2 and J3 sensor terminals.

a) Tighten the screws to 12.0 in-lb (1.4 N·m) - 15.0 in-lb (1.7 N·m).

SUBTASK 56-11-01-420-004

(2) Install the window lining.

SUBTASK 56-11-01-860-002

(3) Close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	Col	Number	Name
E	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	Col	Number	Name
C	12	C30414	WDO HT BACKUP 1R
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	Number	Name
ARO 005-999			
A	4	C30300	WDO HTR 1R
ARO 001-004			
B	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 56-11-01-840-005

(4) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L FWD,

(b) WINDOW HEAT R FWD.

SUBTASK 56-11-01-840-006

(5) Move these switches on the maintenance panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) BACKUP WINDOW HEAT LEFT,

(b) BACKUP WINDOW HEAT RIGHT.

SUBTASK 56-11-01-200-006

(6) Make sure the WINDOW HEAT INOP lights are OFF.

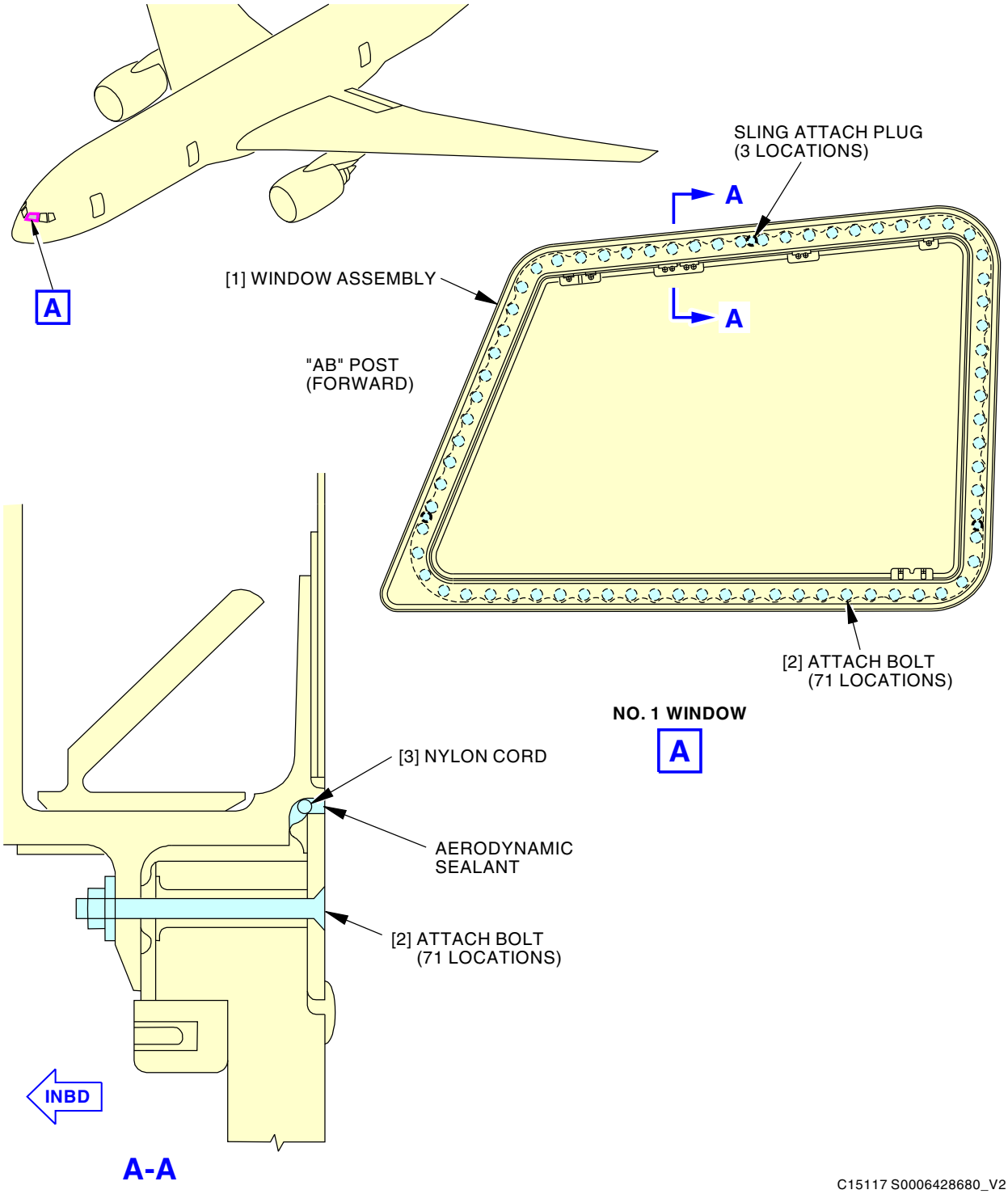
SUBTASK 56-11-01-200-007

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

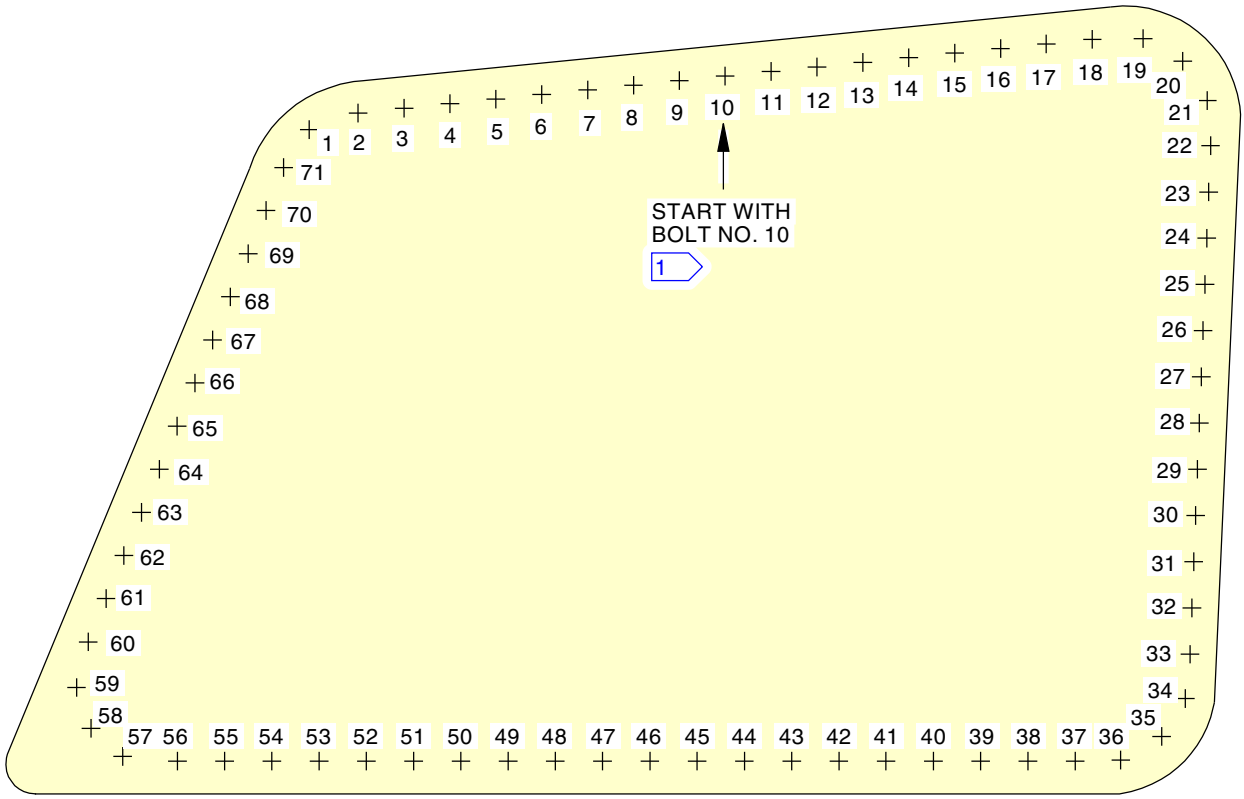
SUBTASK 56-11-01-200-008

(8) Do this task: Windshield Wiper System - Operational Test, TASK 30-42-00-700-801.

——— END OF TASK ———



No. 1 Window Installation
Figure 401/56-11-01-990-801



**ATTACH BOLT LOCATIONS - WINDOW NO. 1
(LEFT NO. 1 WINDOW SHOWN, RIGHT NO. 1
WINDOW OPPOSITE)**

1 TIGHTEN THE BOLTS IN THE ORDER SHOWN IN THE TABLE ON FIGURE 403.

C15121 S0006428681_V2

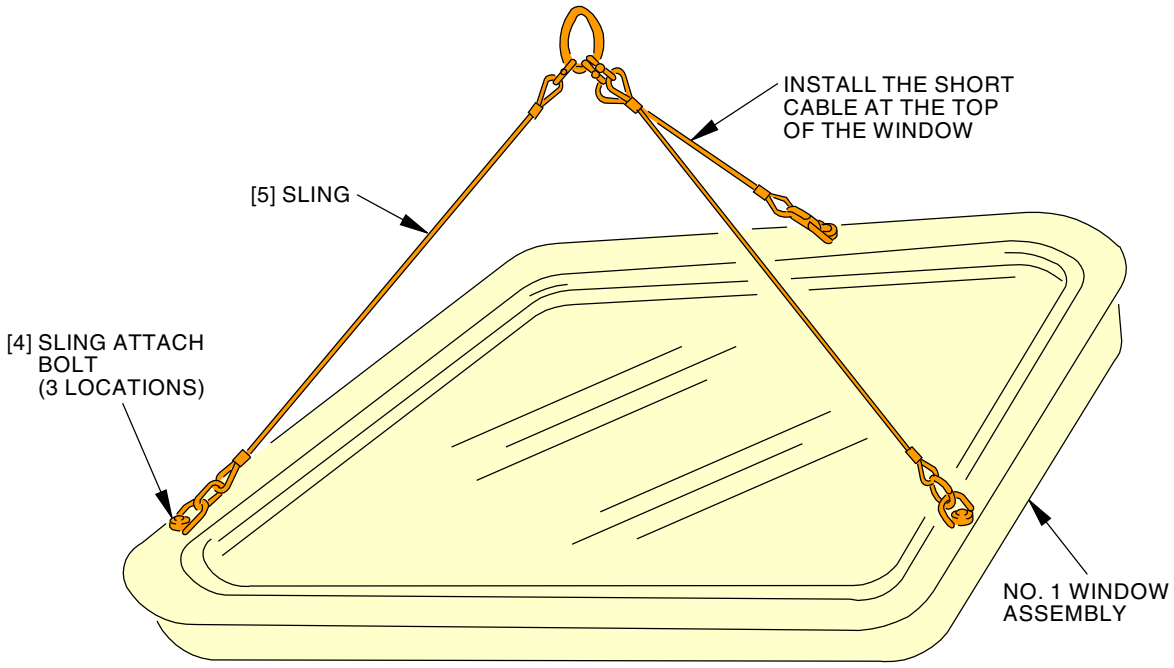
**Attach Bolt Locations - Window No. 1
Figure 402/56-11-01-990-802**

SEQUENCE NUMBER	BOLT NUMBER	SEQUENCE NUMBER	BOLT NUMBER	SEQUENCE NUMBER	BOLT NUMBER
1	10	25	39	49	64
2	47	26	4	50	27
3	65	27	21	51	46
4	28	28	58	52	9
5	2	29	30	53	55
6	37	30	67	54	18
7	19	31	12	55	36
8	56	32	49	56	1
9	69	33	22	57	48
10	33	34	59	58	11
11	51	35	5	59	66
12	14	36	41	60	29
13	60	37	13	61	3
14	23	38	50	62	38
15	42	39	68	63	20
16	6	40	32	64	57
17	54	41	7	65	31
18	17	42	43	66	62
19	35	43	61	67	40
20	71	44	24	68	16
21	45	45	70	69	53
22	8	46	34	70	25
23	26	47	52	71	44
24	63	48	15		

ATTACH BOLT TORQUE SEQUENCE

C51883 S0006428682_V1

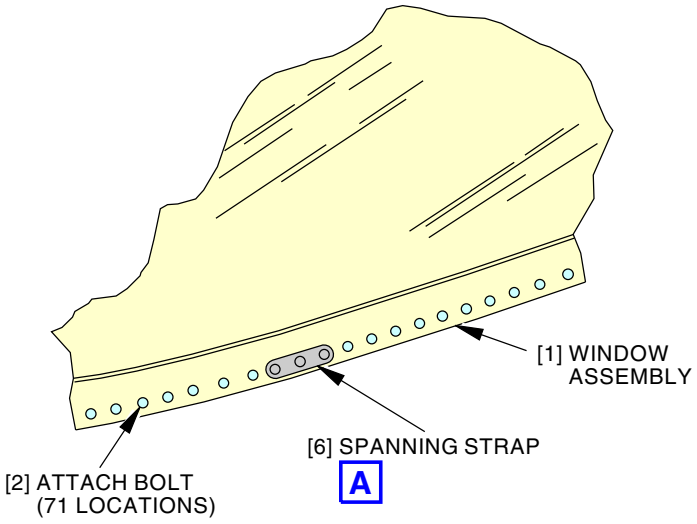
Attach Bolt Installation Sequence - Window No. 1
Figure 403/56-11-01-990-803

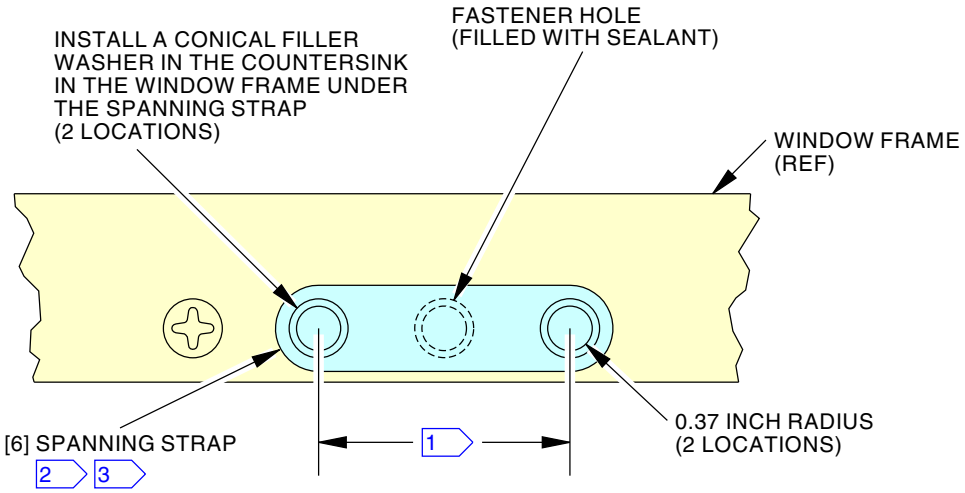


WINDOW HANDLING SLING - A56001-2

C15122 S0006428683_V2

No. 1 Window Handling Sling
Figure 404/56-11-01-990-804





SPANNING STRAP

A

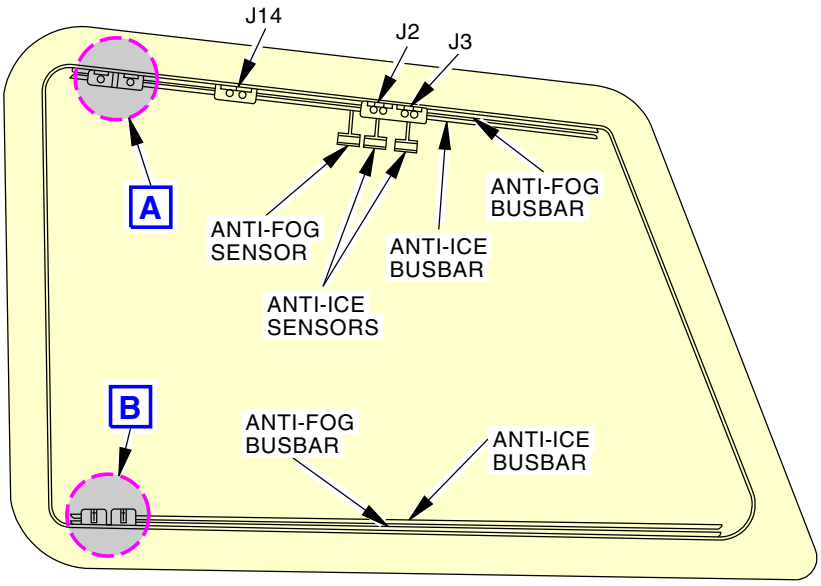
1 THIS DIMENSION IS NOT THE SAME AT ALL LOCATIONS

2 USE 0.040 INCH THICK 2024-T3/T4 ALUMINUM ALLOY, 0.75 INCH WIDE. DRILL AND COUNTERSINK FOR TWO 100˚ COUNTERSUNK HEAD BACB30NN4K39 BOLTS. OPTIONAL: DIMPLE THE SPANNING STRAP FOR THE 100˚ BOLT AND OMIT THE CONICAL FILLER WASHER.

3 REMOVE SHARP EDGES TO PREVENT DAMAGE TO THE WINDSHIELD WIPERS

C15125 S0006428684_V2

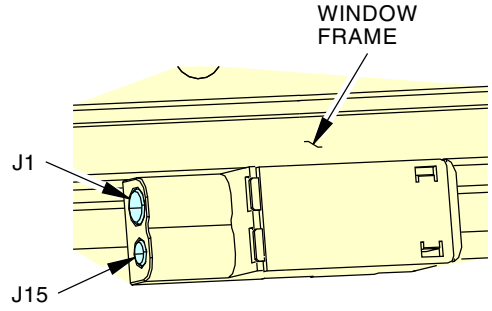
Spanning Strap Fabrication
Figure 405/56-11-01-990-805



LEFT WINDOW
(RIGHT WINDOW IS OPPOSITE)

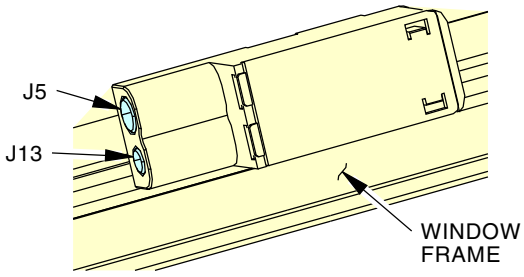
TERMINAL	RESISTANCE (OHM)	
	MIN	MAX
BETWEEN J1 AND J5	9.12	11.15
J2	1	1
J3	1	1
BETWEEN J13 AND J15	20.20 2	24.70 2
J14	1	1

TABLE A



J1, J15 TERMINAL LOCATIONS

A 3



J5, J13 TERMINAL LOCATIONS

B 3

NOTE:

J1, J5, J13, J15: POWER TERMINALS.
J2, J3, J14: SENSOR TERMINALS.

1 SEE SENSOR RESISTANCE ON TABLE B.

2 ANTI-FOG (BACK-UP) POWER TERMINALS.

3 RIGHT WINDOW POWER TERMINALS ARE OPPOSITE LOCATION OF LEFT WINDOW.

D47544 S0000157881_V5

No. 1 Windshield Resistance Values
Figure 406/56-11-01-990-806 (Sheet 1 of 2)

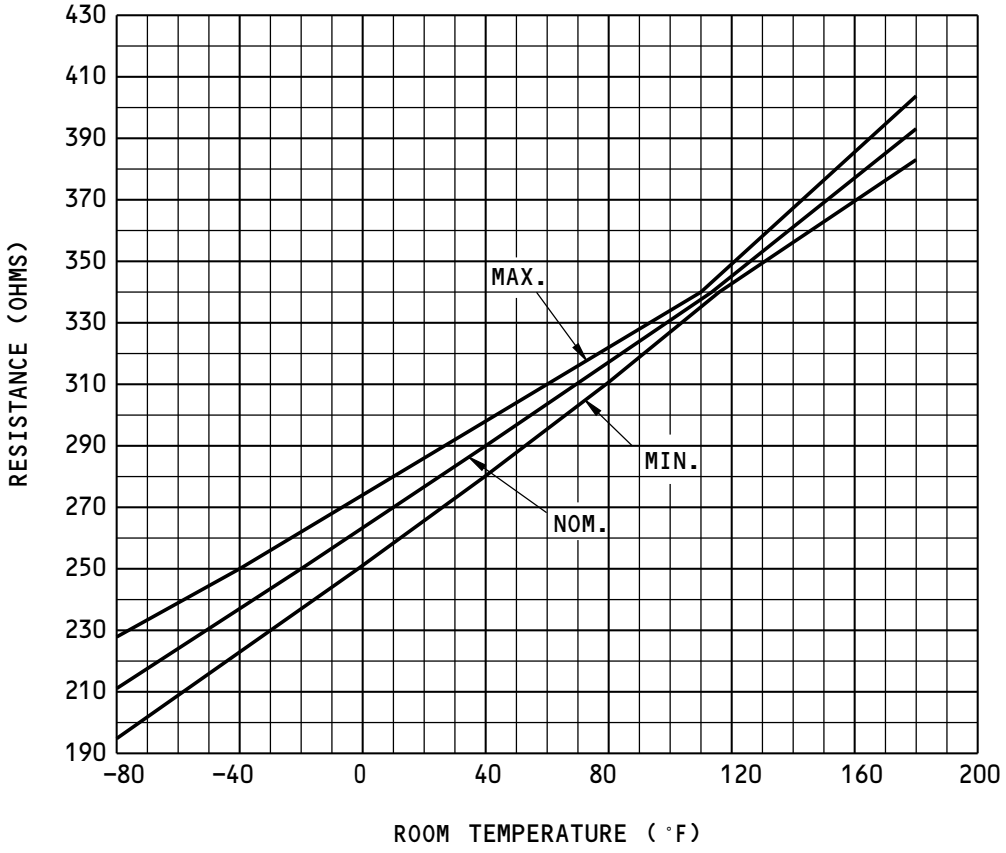


TABLE B

NOTE: CHARACTERISTICS SHOWN EQUIVALENT
TO WESTINGHOUSE AVK 1160.

K44445 S0006428686_V1

No. 1 Windshield Resistance Values
Figure 406/56-11-01-990-806 (Sheet 2 of 2)

NO. 2 OPENABLE WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the No. 2 openable window.

(2) Installation of the No. 2 openable window.

(3) Removal of the No. 2 window bearing.

(4) Installation of the No.2 window bearing.

TASK 56-11-02-000-801

2. No. 2 Openable Window Removal

(Figure 401, Figure 402)

A. General

(1) This procedure is for the two No. 2 openable windows.

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
SPL-2040	Cover - Protective, Maintenance Access Terminal Part #: J56001-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Location Zones

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

E. Prepare for the Removal

SUBTASK 56-11-02-020-001

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 pilots overhead panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE,

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-02-200-001

(2) Make sure that the SIDE L and SIDE R WINDOW HEAT lights are OFF.

SUBTASK 56-11-02-860-001

CAUTION

DO NOT USE THE APU FOR POWER WHEN THE L AND R OPAS CIRCUIT BREAKERS ARE OPEN AT THE SAME TIME. IN THIS CONDITION, THE APU BLEED VALVE AND THE ISOLATION VALVES CAN OPEN. THIS CAN CAUSE THE DUCT PRESSURE TO INCREASE. HIGH PRESSURE CAN CAUSE DAMAGE TO THE AIR CONDITIONING EQUIPMENT.

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-02-420-017

(4) Attach the maintenance access terminal protective cover, SPL-2040.

SUBTASK 56-11-02-010-003

(5) Remove the emergency equipment stowage panel and emergency equipment.

(a) Remove the lining trim that connects between the forward emergency equipment stowage panel and the lining.

(b) Remove the emergency equipment from the equipment stowage area.

(c) Remove the screws holding the equipment stowage panel to the forward closet wall.

(d) Remove the screws holding the equipment stowage panel to the suitcase stowage panel.

(e) Remove the forward equipment panel assembly.

SUBTASK 56-11-02-020-002

CAUTION

HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(6) If the No. 2 openable window is going to be replaced, disconnect the wires to power terminal and sensor terminal.

SUBTASK 56-11-02-020-021

(7) If the No. 2 openable window is not going to be replaced, disconnect the electrical connectors from the top of the window.

SUBTASK 56-11-02-420-015

(8) Remove the switch from the window assembly [5].

F. Procedure

SUBTASK 56-11-02-020-003

(1) Remove the window padding from the window assembly [5], as follows:

(a) Remove the latch handle [28] cover.

(b) Remove the covers from all sides of the window.

SUBTASK 56-11-02-020-004

(2) Disconnect the window assembly [5], as follows:

(a) Open the window assembly [5], but not fully.

(b) Remove the bolt [10], washer [11], washer [12], and nut [13] to disconnect the link arm [27] from the carriage [25].

SUBTASK 56-11-02-020-005

(3) Remove the window assembly [5] from the aft track [21] and forward track [22], as follows:

(a) Remove the nut [19], washer [18], spacer [17], and stop bolt [16] from the aft track [21].

WARNING YOU MUST GIVE FULL SUPPORT TO THE WINDOW WEIGHT WHEN THE FORWARD AND AFT ROLLERS DISENGAGE WITH THEIR TRACKS. THE WINDOW IS HEAVY. YOU CAN CAUSE DAMAGE TO EQUIPMENT AND INJURY TO PERSONS IF YOU DO NOT FULLY SUPPORT IT.

(b) Give support for the full weight of the window.

(c) Move the window aft until the top rollers are clear of the forward and aft tracks.

(d) Move the top of the window assembly [5] inboard.

SUBTASK 56-11-02-020-006

(4) Remove the roller cluster [20], as follows:

NOTE: It is necessary to remove the roller cluster [20] because it catches on the aft wall.

(a) Remove the MS20995NC32 lockwire, G50347.

(b) Hold the window assembly [5] while you remove the lock nuts [35], washers [34], and bolt [36].

(c) Remove the roller cluster [20].

SUBTASK 56-11-02-020-007

(5) Remove the window assembly [5], as follows:

(a) Move the window assembly [5] until the roller [29] in the drive track [24] aligns with the slot [26] on the drive track [24].

(b) Lift the window assembly [5] until the roller [29] is clear of the drive track [24].

(c) Move the window assembly [5] to a safe location.

END OF TASK

TASK 56-11-02-400-801

3. No. 2 Openable Window Installation

(Figure 401)

A. General

(1) This procedure is for the left and right No. 2 openable windows.

B. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
56-11-02-700-801	No. 2 Window Bracket Adjustments (P/B 501)
56-11-02-700-802	No. 2 Window Check (P/B 601)
56-11-03-710-801	No. 2 Window Indication System - Operational Test (P/B 501)

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-2040	Cover - Protective, Maintenance Access Terminal Part #: J56001-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Location Zones

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

F. Prepare to Install

SUBTASK 56-11-02-200-002

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) Make sure these switches on the pilots overhead panel are in the OFF position and DO-NOT-OPERATE tags are attached:

(a) WINDOW HEAT L SIDE,

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-02-200-003

(2) Make sure that the SIDE L and SIDE R WINDOW HEAT lights are OFF.

SUBTASK 56-11-02-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3

(Continued)

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-02-200-004

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

SUBTASK 56-11-02-760-001

(5) Measure the resistance of the window heater and sensor. Refer to Figure 402

NOTE: The window resistance check is optional for old windows. If you install a new window, it is not necessary to do a resistance check. The resistance of the heater layer on the windshield window can change after time.

G. Procedure

SUBTASK 56-11-02-400-004

(1) Install the lock nut [35], washers [34], and bolt [36] in the roller cluster [20].

(a) Safety the lock nuts [35] with the MS20995NC32 lockwire, G50347.

SUBTASK 56-11-02-400-001

(2) Put the window assembly [5] in its correct position, as follows:

(a) Move the carriage [25] to the aft end of the drive track [24].

(b) Turn the latch handle [28] aft to the open position.

1) Make sure that the latch handle [28] clicks into the open position.

WARNING YOU MUST GIVE FULL SUPPORT TO THE WINDOW WEIGHT WHEN THE FORWARD AND AFT ROLLERS DISENGAGE WITH THEIR TRACKS. THE WINDOW IS HEAVY. YOU CAN CAUSE DAMAGE TO EQUIPMENT AND INJURY TO PERSONS IF YOU DO NOT FULLY SUPPORT IT.

(c) Supply support for the full weight of the window assembly [5].

(d) Lift the window assembly [5] and engage the roller [29] into the drive track [24] through the slot [26].

NOTE: Hold the window assembly [5] inboard at the top, but keep the forward roller [23] near the forward track [22] when possible.

SUBTASK 56-11-02-420-001

(3) Engage the forward roller [23] and roller cluster [20] in their tracks, as follows:

(a) Move the window assembly [5] forward to engage the roller cluster [20] at the aft end of the aft track [21].

(b) Hold the top aft part of the window assembly [5] inboard while you move the window assembly [5] forward.

(c) Engage the forward roller [23] with the forward track [22].

(d) Install the stop bolt [16], spacer [17], washer [18], and the nut [19], at the end of the aft track [21].

SUBTASK 56-11-02-420-002

(4) Connect the window assembly [5] to the drive track [24], as follows:

(a) Move the window assembly [5] until the end of the link arm [27] aligns with the carriage [25].

(b) Attach the link arm [27] to the carriage [25] with the bolt [10], washer [11], washer [12], and the nut [13].

NOTE: Put one washer adjacent to the bolt head.

SUBTASK 56-11-02-420-003

CAUTION

DO NOT USE FORCE TO CLOSE OR LATCH THE WINDOW BEFORE IT IS FULLY ADJUSTED. IF THE WINDOW DOES NOT CLOSE CORRECTLY, YOU CAN CAUSE DAMAGE TO IT.

(5) Do this task: No. 2 Window Bracket Adjustments, TASK 56-11-02-700-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-02-420-004

(1) Install the switch with, the key washer, lock washer, and nut into its position.

(a) Make sure that the distance between the latch and the switch is 0.020 +0.005 / -0.015 in. (0.508 +0.127 / -0.381 mm).

(b) Adjust the nut to put the switch into tolerance.

SUBTASK 56-11-02-420-016

CAUTION

HOLD THE WINDOW-HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN, OR LOOSEN THE SCREWS. THIS WILL PREVENT DAMAGE TO THE TERMINALS ON THE WINDOW.

(2) If the No. 2 openable window was replaced, connect the window heat terminals, as follows:

(a) Connect the electrical wires to the power terminal.

(b) Tighten the screws to 25 +5 / -0 in-lb (29 +6 / -0 kg-cm).

(c) Connect the electrical wires to the sensor terminals.

(d) Tighten the screws to 12 +3 / -0 in-lb (14 +4 / -0 kg-cm).

SUBTASK 56-11-02-420-018

(3) If the No. 2 openable window was not replaced, connect the electrical connectors to the top of the window.

SUBTASK 56-11-02-860-003

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-02-860-004

(5) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE,

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-02-200-005

(6) Make sure that the SIDE L and SIDE R WINDOW HEAT INOP lights are OFF.

SUBTASK 56-11-02-020-020

(7) Remove the maintenance access terminal protective cover, SPL-2040.

SUBTASK 56-11-02-420-005

(8) Install the window padding to the window assembly [5], as follows:

NOTE: You must install the window padding to hold the window sensor terminals in their correct position.

(a) Install the covers on all sides of the window.

(b) Install the latch handle [28] cover.

(9) For an acrylic window, do not let the internal hard fiberglass sections touch the acrylic sections. Cut if necessary.

SUBTASK 56-11-02-200-012

(10) If you installed a new window, do this task: No. 2 Window Check, TASK 56-11-02-700-802

SUBTASK 56-11-02-410-002

(11) Install the emergency equipment and equipment panel assembly.

(a) Put the forward emergency equipment panel assembly in its position.

(b) Install the screws holding the emergency equipment panel to the forward closet wall.

(c) Install the screws holding the equipment stowage panel to the suitcase stowage panel.

(d) Install the emergency equipment into the emergency equipment stowage area.

(e) Install the trim that attaches between the forward emergency equipment stowage panel and the adjacent linings.

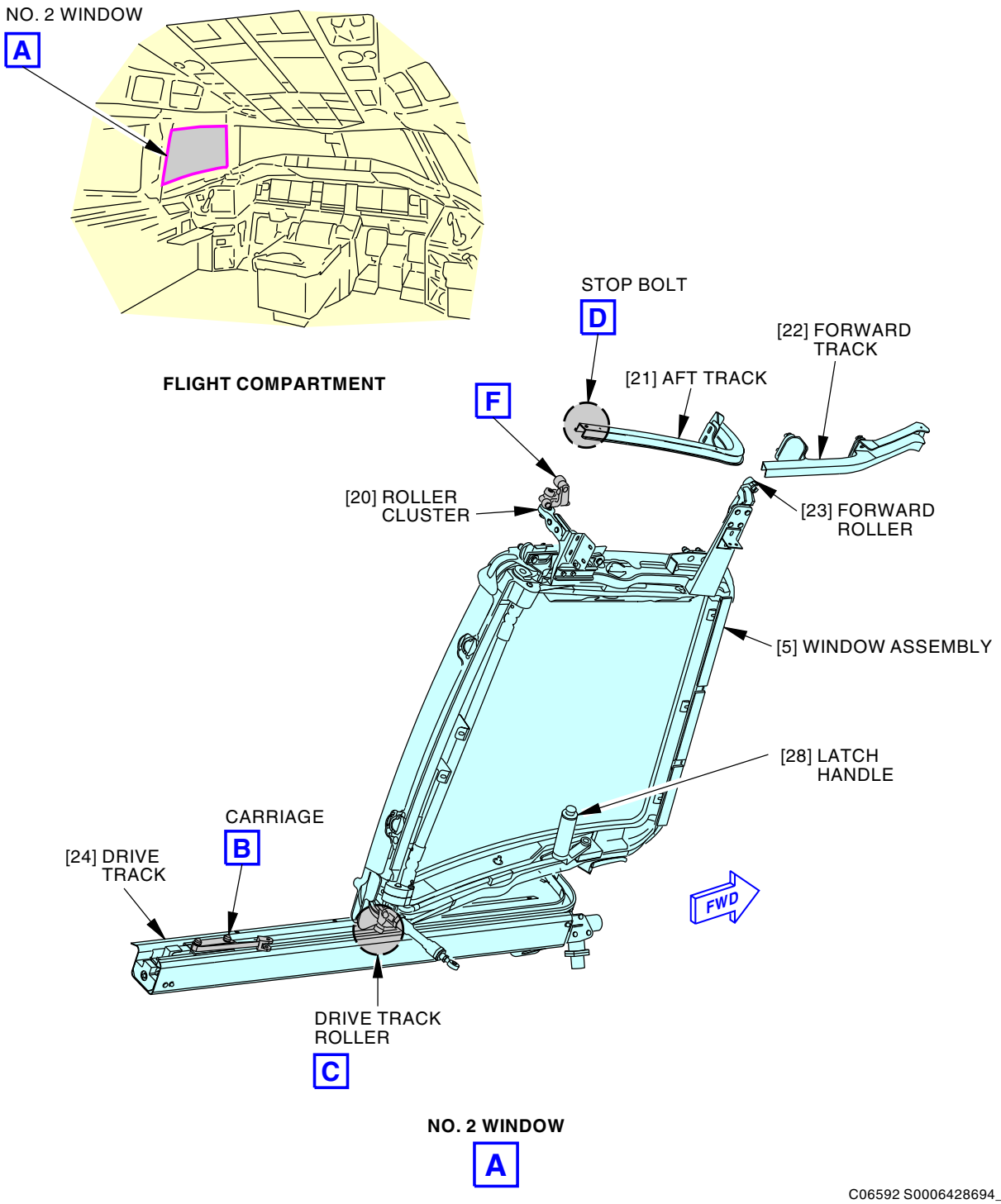
SUBTASK 56-11-02-200-006

(12) Do this task: No. 2 Window Indication System - Operational Test, TASK 56-11-03-710-801.

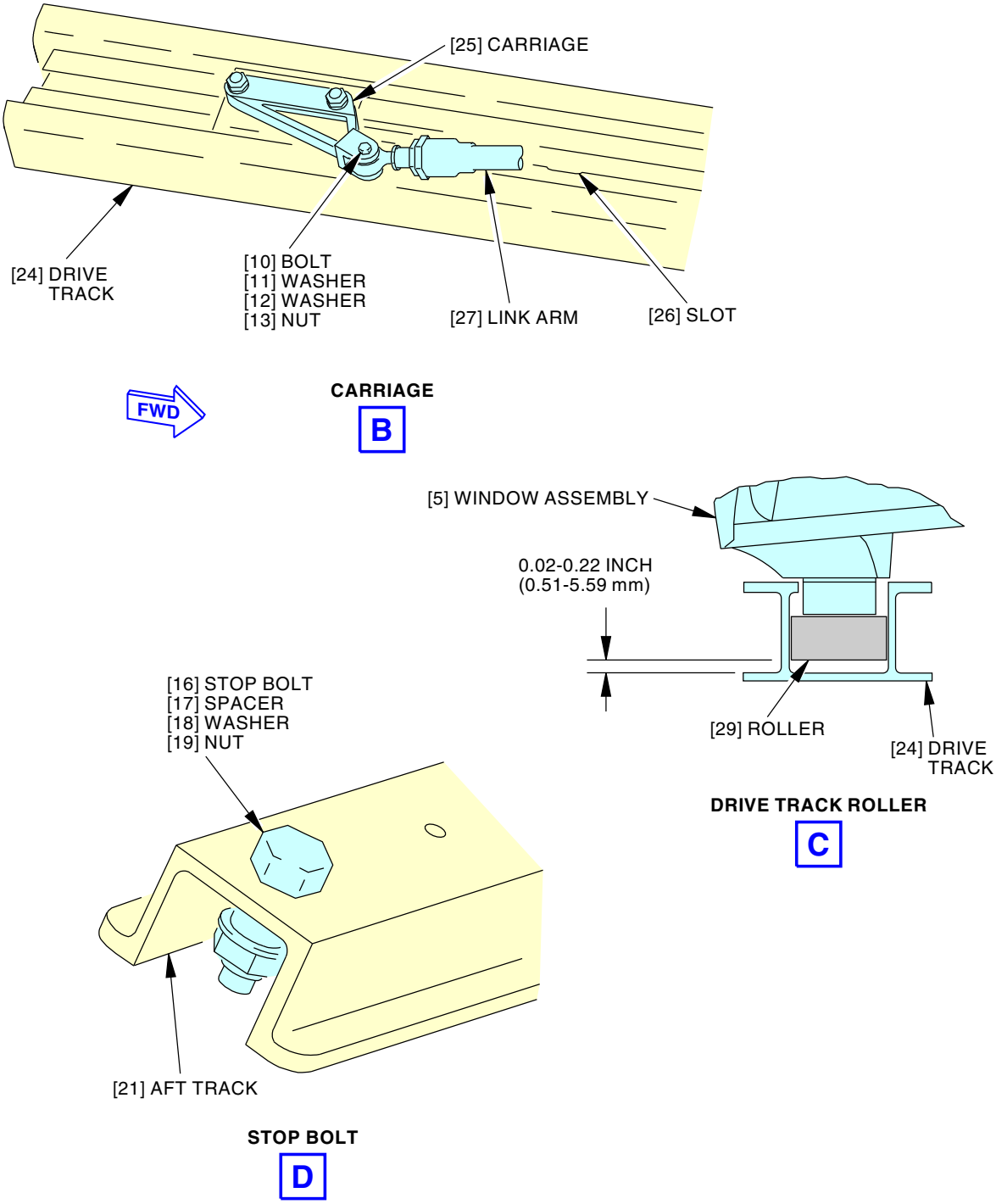
SUBTASK 56-11-02-200-007

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

END OF TASK

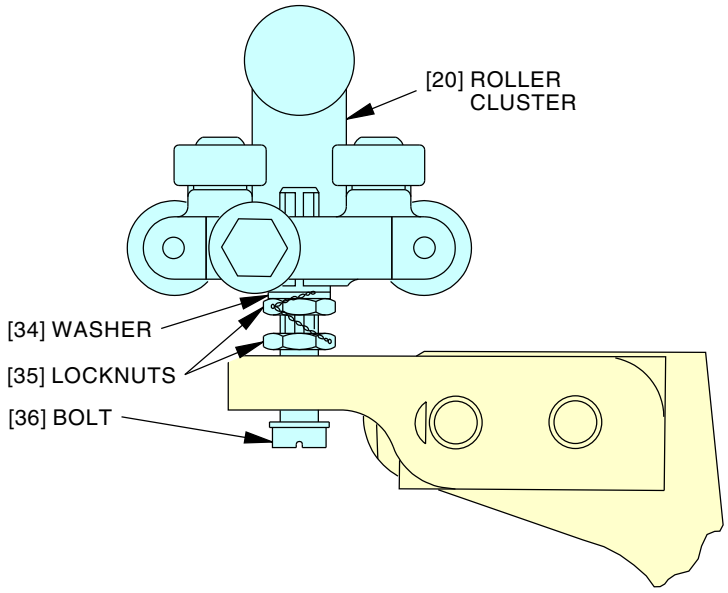


No. 2 Openable Window Installation
Figure 401/56-11-02-990-801 (Sheet 1 of 3)



C24273 S0006428695_V4

No. 2 Openable Window Installation
Figure 401/56-11-02-990-801 (Sheet 2 of 3)

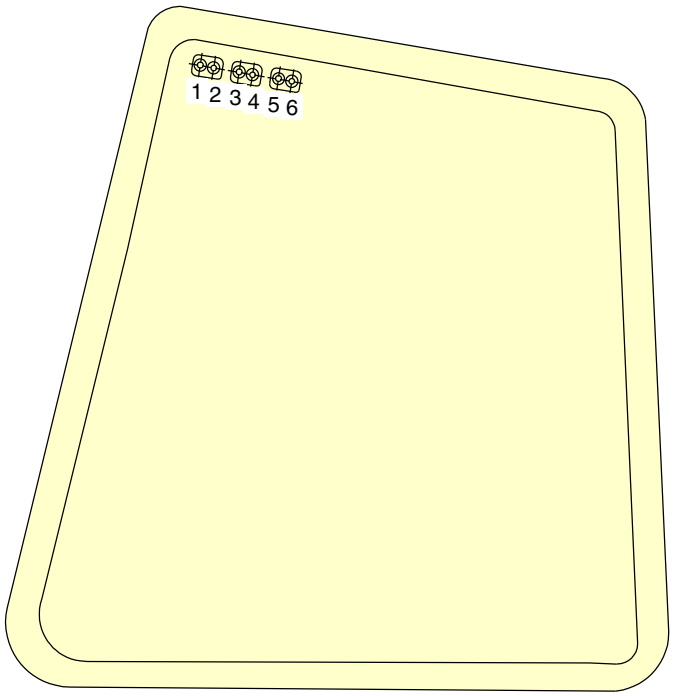


ROLLER CLUSTER

F

2818031 S0000650328_V1

No. 2 Openable Window Installation
Figure 401/56-11-02-990-801 (Sheet 3 of 3)



TERMINAL LOCATION	RESISTANCE (OHM)	
	MIN	MAX
5-6	1	1
3-4	1	1
1-2	16.60	20.28

TABLE A

1 INTERPRET SENSOR RESISTANCE FROM TABLE B.

5-6: SENSOR TERMINAL (CONTROL)
3-4: SENSOR TERMINAL (SPARE)
1-2: POWER TERMINAL

K44378 S0006428696_V3

No. 2 Window Resistance Values
Figure 402/56-11-02-990-827 (Sheet 1 of 2)

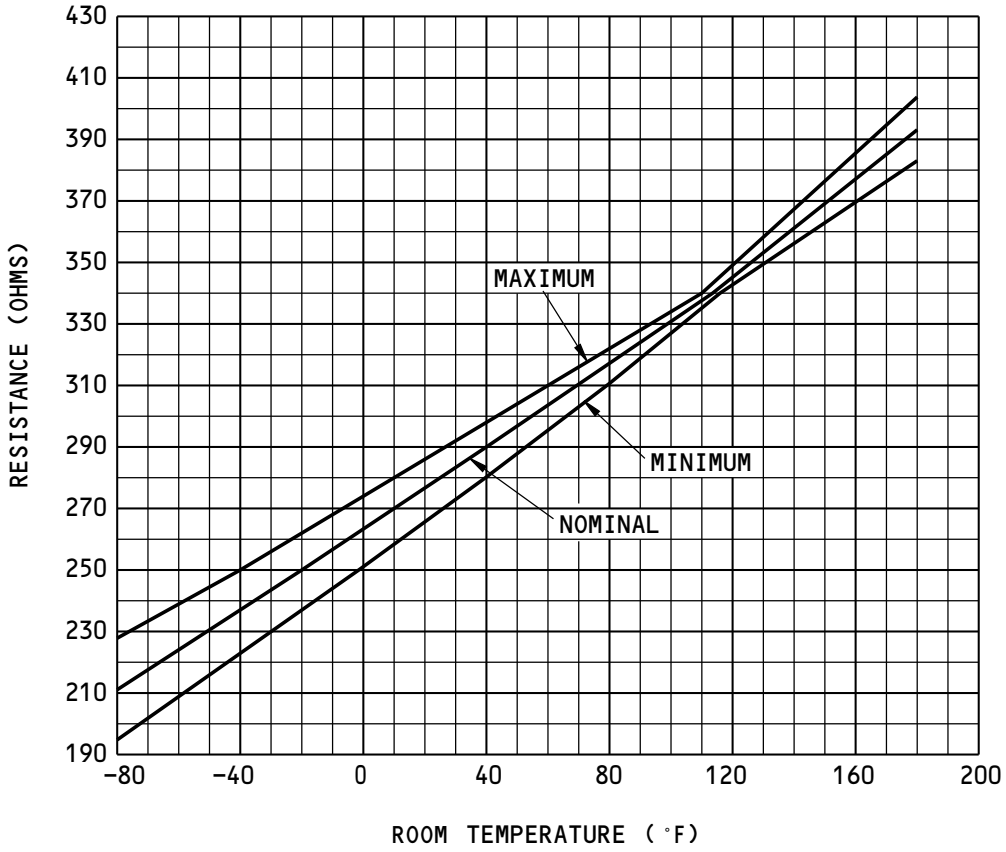


TABLE B

K44380 S0006428697_V1

No. 2 Window Resistance Values
Figure 402/56-11-02-990-827 (Sheet 2 of 2)

TASK 56-11-02-000-802

4. No.2 Window Bearing Removal

(Figure 403)

A. General

(1) This task includes the steps to remove the No.2 window bearing.

B. Location Zones

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

C. No.2 Window Bearing Removal

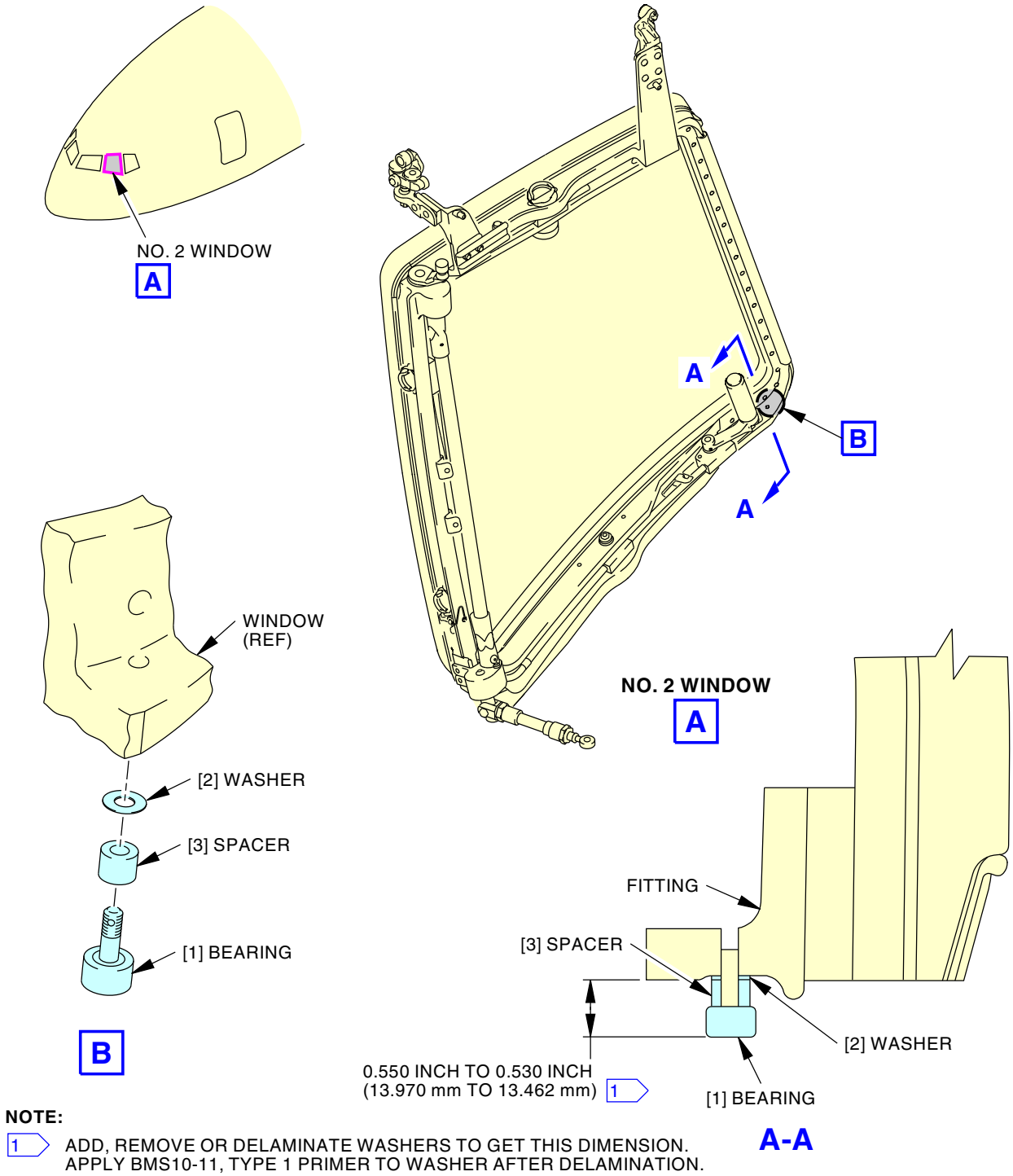
SUBTASK 56-11-02-010-004

(1) Remove the bearing [1] from the No.2 window.

(a) Remove the washers [2].

(b) Remove the spacer [3].

——— END OF TASK ———



NOTE:

1 ADD, REMOVE OR DELAMINATE WASHERS TO GET THIS DIMENSION. APPLY BMS10-11, TYPE 1 PRIMER TO WASHER AFTER DELAMINATION.

2571342 S0000616781_V1

No.2 Window Bearing Installation
Figure 403/56-11-02-990-833

TASK 56-11-02-400-802

5. No.2 Window Bearing Installation

(Figure 403)

A. General

(1) This task includes the steps to install the bearing to the No.2 window.

B. Consumable Materials

Reference	Description	Specification
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C50088	Primer - Adhesive (MIL-S-46163 Grade F)	MIL-S-46163

C. Location Zones

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

D. No.2 Window Bearing Installation

SUBTASK 56-11-02-420-019

(1) Install the bearing [1] to the No.2 window.

(a) Apply adhesive primer, C50088 to the bearing [1].

(b) Install the spacer [3].

(c) Apply one layer of primer, C00259 to each delaminated washer [2].

(d) Install the necessary washers [2] and adjust bearing [1] to the dimension shown in (Figure 403).

(e) Tighten the bearing [1] to a run-on torque of 10 in-lb (1 N·m) to 15 in-lb (2 N·m).

——— END OF TASK ———

NO. 2 OPENABLE WINDOW - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Prepare to adjust the No. 2 window.

(2) Adjustments of the No. 2 window.

NOTE: Major No. 2 window adjustments should only be performed by personal knowledgeable with the No. 2 window.

(3) Operational test of the No. 2 window.

(4) Put the Airplane Back to its Usual Condition.

TASK 56-11-02-840-801

2. Prepare to Adjust the No. 2 Window

(Figure 510)

A. Location Zones

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

B. Procedure

SUBTASK 56-11-02-020-008

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-02-020-009

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

SUBTASK 56-11-02-020-010

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 56-11-02-020-011

(4) Move these switches on the pilots overhead panel to the OFF position and install DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE,

(b) WINDOW HEAT R SIDE.

——— END OF TASK ———

TASK 56-11-02-820-801

3. No. 2 Window Adjustments

(Figure 501, Figure 502, Figure 503, Figure 504, Figure 505, Figure 506, Figure 507, Figure 508, Figure 509, Figure 510)

A. General

(1) This task has these parts:

(a) Forward/Aft Adjustments - Top Half of the Window,

(b) Vertical Adjustments - Forward Side of the Window,

(c) Vertical Adjustments - Aft Side of the Window,

(d) Inboard/Outboard Adjustments - Bottom Aft Corner of the Window,

(e) Inboard/Outboard Adjustments - Top Aft Corner of the Window,

(f) Latch Handle Force Adjustment.

(g) Window Crank Position Adjustment.

B. References

Reference	Title
56-11-02-700-803	No. 2 Openable Window Operational Check (P/B 601)
AIPC 25-15-01-11	LINING INSTL-NO. 2 WINDOW

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Location Zones

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

E. Forward/Aft Adjustments - Top Half of the Window

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

NOTE: Too much inboard adjustment can move the window aft. Too much outboard adjustment can move the window forward. This may cause the window to leak

SUBTASK 56-11-02-820-001

(1) Adjust the guide roller, as follows:

NOTE: It is acceptable that the guide roller make a clunking noise when it leaves the clevis fitting.

(a) Open the window.

(b) Loosen the two fasteners that attach the guide roller bracket to the window until you can move the bracket along the serrations.

NOTE: Make a mark across the bracket and the serrated plate with a pencil before loosening the fasteners. This will give you a reference of how much you move the window up or down.

(c) Close the window and hold it in the correct position with the drive handle.

(d) Move the guide roller bracket over its serrations until the roller lightly touches the aft inside part of the clevis.

NOTE: If it is necessary, guide rollers can be adjusted to lightly pull the window assembly forward.

(e) Tighten the two fasteners.

F. Vertical Window Adjustment - Forward Side of the Window.

WARNING

THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

SUBTASK 56-11-02-820-002

(1) Adjust the upper forward roller bracket, as follows:

NOTE: This adjustment will change the clearance between the lower forward roller and the lower forward track.

NOTE: It is acceptable for a clunking noise to occur when opening or closing the window as the forward edge engages or disengages the fuselage frame.

(a) Open the window.

(b) Use a support to hold the window.

(c) Loosen the four fasteners on the upper forward roller bracket until you can move the bracket over the serrations.

NOTE: Make a mark across the bracket and the serrated plate with a pencil before loosening the fasteners. This will give you a reference of how much you move the window up or down.

(d) Move the roller bracket up or down along the serrations.

NOTE: One serration is 0.036 inch.

(e) Tighten the four fasteners.

G. Vertical Adjustments - Aft Side of the Window.

> **WARNING** THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

SUBTASK 56-11-02-820-003

(1) Adjust the roller cluster, as follows:

NOTE: This adjustment will change the clearance along the full length of the lower aft track.

(a) Open the window.

(b) Remove the lockwire.

(c) Loosen the top nut until you can disengage the locking device.

(d) Disengage the locking device.

(e) Turn the adjustment bolt to move the window vertically.

1) Turn the bolt clockwise to move the window up.

2) Turn the bolt counterclockwise to move the window down.

(f) Engage the locking device.

(g) Tighten the top nut.

(h) Install the MS20995C32 lockwire, G01048.

H. Inboard/Outboard Adjustment - Bottom Aft Corner of the Window.

> **WARNING** THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

NOTE: Too much inboard adjustment can move the window aft. Too much outboard adjustment can move the window forward. This may cause the window to leak.

SUBTASK 56-11-02-820-004

(1) Adjust the link arm length, as follows:

NOTE: The object of this adjustment is to get a minimum closing force while still maintaining less than a 5 pound latching force.

(a) Open the window.

(b) Loosen the jamnut at the base of the rod end on the link arm.

(c) Use a wrench on the piston flats to turn the piston and change the length of the link arm.

NOTE: One full turn changes the length 0.042 inch.

1) Turn the piston clockwise to increase the length.

2) Turn the piston counterclockwise to decrease the length.

(d) Tighten the jamnut on the link arm to 60-95 pound-inches.

I. Inboard/Outboard Adjustment - Top Aft Corner of the Window.

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

NOTE: Too much inboard adjustment can move the window aft. Too much outboard adjustment can move the window forward. This may cause the window to leak.

SUBTASK 56-11-02-820-005

(1) Adjust the cam block, as follows:

(a) Open the window.

NOTE: The cam block should make a pop sound when the window is opened. The window should be adjusted to make the pop sound as low as possible.

(b) Remove the three fasteners that attach the cam block to the fuselage.

(c) Add or remove shims between the dripshield and the cam block.

(d) Operate the window to make sure the crank roller only touches the inner camming surface.

NOTE: It is acceptable that the crank roller make a popping noise as the mechanism is relieved from the over center latched condition.

1) If the crank roller hits the entry lip and rolls inboard of the cam block, do these steps:

a) Remove the upper and lower retaining rings (Figure 507).

b) Lift the crank roller.

c) Turn the crank inboard 18 degrees (one gear tooth).

d) Install the upper and lower snap rings.

J. Latch Handle Force Adjustment

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. IF THE WINDOW POWER IS ON, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW. THE SHOCK CAN CAUSE INJURY TO PERSONS.

SUBTASK 56-11-02-820-006

(1) Adjust the latch handle force, as follows:

(a) Do the applicable adjustments determined in (TASK 56-11-02-700-803) to decide the adjustment direction that will decrease the latch handle forces.

CAUTION DO NOT GRIND THE LATCH STUDS.

1) Do the applicable adjustments.

(b) Continue to check and adjust the window until the latch handle force is satisfactory as shown in (Table 503).

1) If it is necessary, add washers (AIPC 25-15-01-11) below the lining for the window sill.

a) Add a maximum total thickness of 0.098 in. (2.489 mm) for the window sill washers (Figure 511).

NOTE: If the window has the permitted latch handle forces before liner installation, but too much force after liner installation, then adjust height of window washers. The window lining can bind with the latch handle if the lining is to high. Washers can be added if there is a ridding condition between the window surround and the retainer washer. The addition of a washer at the two locations between the lining and the window assembly can decrease the force on the latch handle.

K. Window Crank Position.

SUBTASK 56-11-02-820-007

(1) Adjust the crank handle direction, as follows:

(a) Use your notes from (TASK 56-11-02-700-803) to decide the adjustment needed.

(b) Close and latch the window:

1) Turn the window operating handle to close the window until a sudden and firm resistance is felt.

NOTE: A 0.25 turn of the latch handle because of spring back is permitted.

2) With the button on the window latch handle pushed, turn the window latch handle forward to latch the window.

(c) Push and hold the button in the center of the crank hub.

(d) Turn the handle until it points aft.

(e) Release the button.

1) Make sure the button returns to its usual position.

L. Link Arm / Cam Block Position

SUBTASK 56-11-02-820-010

(1) Make sure that the link arm position is over center (Figure 512):

(a) Do the No.2 window adjustment steps again until the link arm is over center.

SUBTASK 56-11-02-820-011

(2) Make sure that the crank roller is fully forward and is over-center in the cam block (Figure 507):

(a) Do the No.2 window adjustment steps again until the link arm is over center.

——— END OF TASK ———

TASK 56-11-02-700-801

4. No. 2 Window Bracket Adjustments

(Figure 501, Figure 502, Figure 503)

A. General

(1) Major window adjustments should only be performed by personnel knowledgeable with the No. 2 window.

(2) This task has these parts.

(a) Bracket Adjustments - Upper Aft Track of the Window

(b) Put the Airplane Back to its Usual Condition

B. Location Zones

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

C. Bracket Adjustments - Upper Aft Track of the Window

SUBTASK 56-11-02-820-008

CAUTION THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU ADJUST THE WINDOW. 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) Adjust the brackets on the upper aft track, as follows:

NOTE: This adjustment will change the roller clearance at one point along the lower aft track.

(a) Determine which bracket you will adjust:

1) The forward bracket changes the lower aft track roller and crank roller clearances with the window in the closed position.

2) The middle bracket changes the lower aft track roller clearance when the window is open 10 to 15 inches.

3) The aft bracket changes the lower aft track roller clearance when the window is fully open.

(b) If you adjust the aft two brackets, close the window.

(c) If you adjust the forward bracket, do these steps:

1) Open the window.

2) Loosen the fasteners on the middle bracket to permit full adjustment of the forward bracket.

NOTE: Make a mark across the bracket and the serrated plate with a pencil before loosening the fasteners. This will give you a reference of how much you move the window up or down.

(d) Loosen the two fasteners on the bracket until you can move the bracket along the serrations.

NOTE: Make a mark across the bracket and the serrated plate with a pencil before loosening the fasteners. This will give you a reference of how much you move the window up or down.

(e) Move the track up or down along the serrations.

NOTE: One serration is 0.036 inch.

(f) Tighten the fasteners.

D. Put the Airplane Back to its Usual Condition

SUBTASK 56-11-02-840-002

(1) Do this task: Put the Airplane Back to its Usual Condition, TASK 56-11-02-840-802.

END OF TASK

TASK 56-11-02-840-802

5. Put the Airplane Back to its Usual Condition

A. General

(1) Use this task after you do a check or adjustment of the No. 2 window.

B. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
56-11-02-700-803	No. 2 Openable Window Operational Check (P/B 601)

C. Location Zones

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

D. Put the Airplane Back to its Usual Condition

SUBTASK 56-11-02-840-001

(1) Install the interior window lining.

(a) Do a check of the window latch handle force (No. 2 Openable Window Operational Check, TASK 56-11-02-700-803).

SUBTASK 56-11-02-860-005

(2) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE,

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-02-210-001

(3) Make sure the SIDE L and SIDE R WINDOW HEAT INOP lights are OFF.

SUBTASK 56-11-02-420-007

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-02-420-008

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

SUBTASK 56-11-02-420-009

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 56-11-02-700-001

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

SUBTASK 56-11-02-800-001

(8) These conditions must exist to adjust windows for airplanes in this table (Table 501):

Table 501/56-11-02-993-813 Necessary Conditions - Position #1: Window Moving Along The Lower Aft Track

ADJUSTMENT		NECESSARY CONDITION	
NAME	FIG.		
Vertical Adjustment (Aft Side of the Window)	503	1.	The lower aft track roller must be 0.02 to 0.22 inch from the bottom of the lower aft track at all times.
		2.	The window frame must clear the lower aft track at all times.
		3.	The crank roller must be more than 0.04 inch below the top of the cam block.
Vertical Adjustment (Forward Side of the Window)	504	4.	The lower forward roller must engage the forward lower forward track.
		5.	The lower forward roller must be 0.010 inch minimum from the bottom of the lower forward track.
		6.	The window frame must clear the lower forward track at all times.

SUBTASK 56-11-02-800-002

(9) These conditions must exist to adjust windows for airplanes in this table (Table 502):

Table 502/56-11-02-993-814 Necessary Conditions - Position #2: Window Moving to the Closed and Sealed Position

ADJUSTMENT or TEST		NECESSARY CONDITION	
NAME	FIG.		
Forward/Aft Adjustment (Top Half of the Window)	505	7.	The guide roller must not hit the entry edge of the clevis.
		8.	The guide roller must touch the aft side of the clevis when the window is fully closed.
Inboard/Outboard Adjustment (Bottom Aft Corner of the Window)	506	9.	The exposed piston length when the link arm is fully compressed must be more than 0.48 inch.

Table 502/56-11-02-993-814 Necessary Conditions - Position #2: Window Moving to the Closed and Sealed Position (Continued)

ADJUSTMENT or TEST		NECESSARY CONDITION	
NAME	FIG.		
Inboard/Outboard Adjustment (Top Aft Corner of the Window)	507	10.	The crank roller must only touch the inner surface of the cam block.
Do the Pry Test or the Scuff Mark Test to find the correct direction to adjust the window.	502	11.	The torque to operate the drive handle must be less than 45.50 pound-inches.

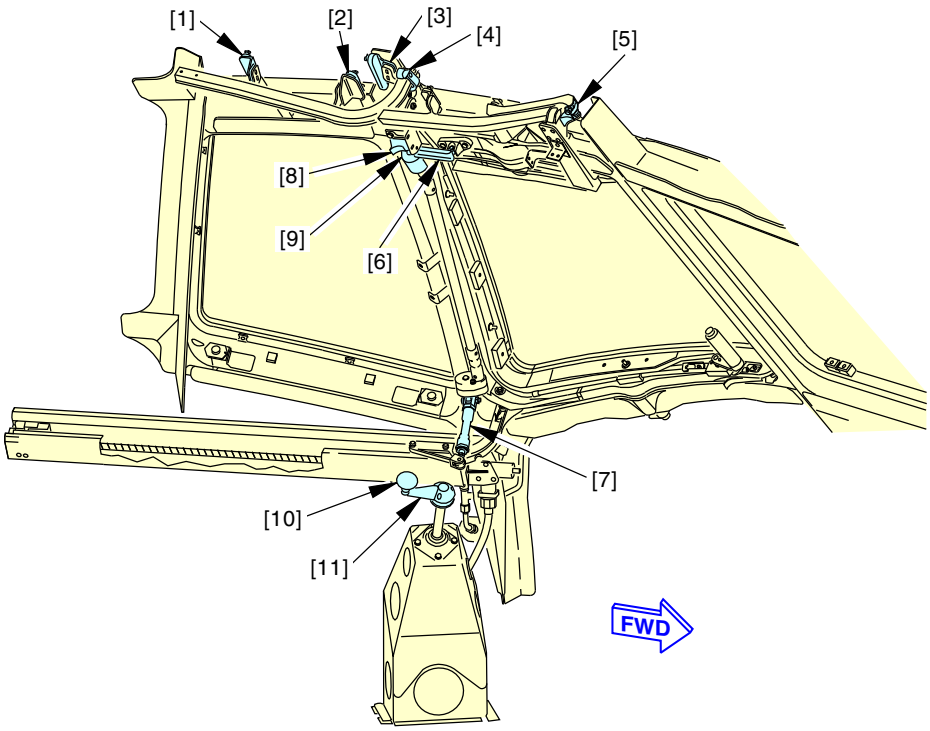
SUBTASK 56-11-02-800-003

(10) These conditions must exist to adjust windows for airplanes in this table (Table 503):

Table 503/56-11-02-993-815 Necessary Conditions - Position #3: Window Closed, Latched, and Locked

ADJUSTMENT or TEST		NECESSARY CONDITION	
NAME	FIG.		
Do the Pry Test or the Scuff Mark Test to find the correct direction to adjust the window.	502	12.	The force to operate the latch handle must be 5 pounds or less.
Vertical Adjustment	504 505	13.	The clearances around the window inside the airplane must be within the tolerances shown in Fig. 509.
Inboard/Outboard Adjustment	506 507	14.	The flushness around the window must be within the tolerances shown in Fig. 510.
Drive Handle Adjustment	508	15.	The drive handle must be less than 15 degrees from the horizontal centerline.

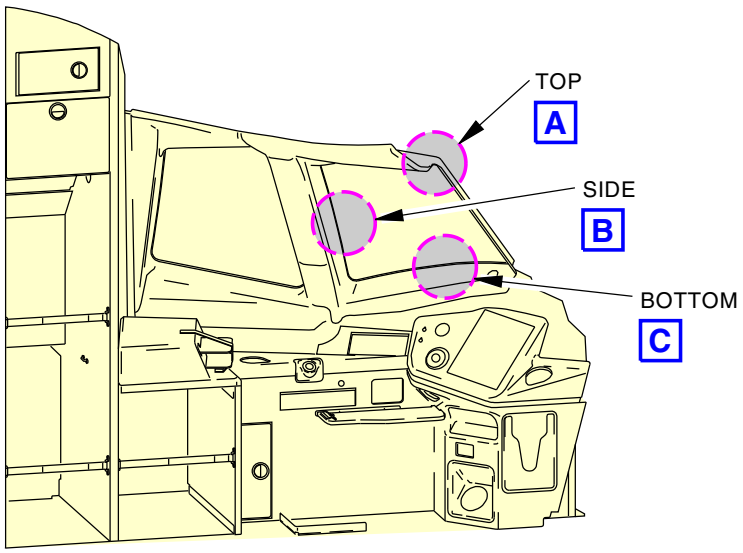
END OF TASK



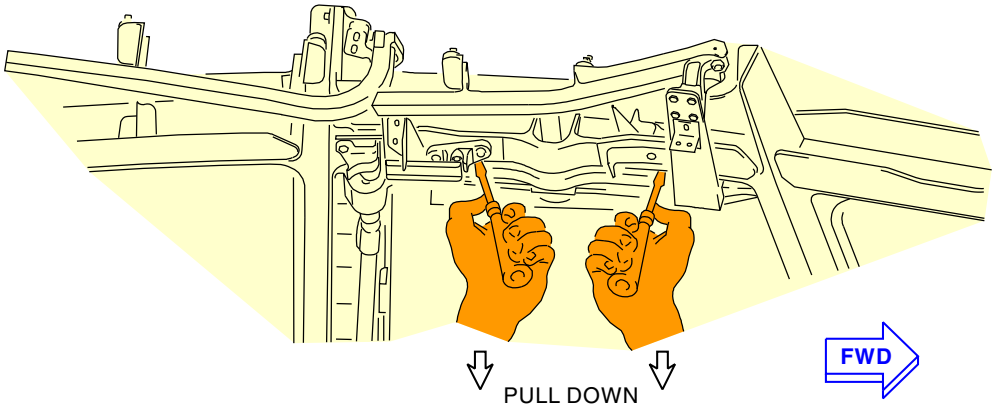
[X]	COMPONENT	ADJUSTMENT	FIGURE
[1]	AFT SUPPORT BRACKET	VERTICAL ADJUSTMENT (AFT SIDE OF THE WINDOW)	503
[2]	MIDDLE SUPPORT BRACKET		
[3]	FORWARD SUPPORT BRACKET		
[4]	AFT ROLLER CLUSTER		
[5]	FORWARD ROLLER CLUSTER	VERTICAL ADJUSTMENT (FORWARD SIDE OF THE WINDOW)	504
[6]	GUIDE ROLLER	FORWARD/AFT ADJUSTMENT (TOP HALF OF THE WINDOW)	505
[7]	LINK ARM	INBOARD/OUTBOARD ADJUSTMENT (BOTTOM AFT CORNER OF THE WINDOW)	506
[8]	CAM BLOCK		
[9]	CRANK ROLLER	INBOARD/OUTBOARD ADJUSTMENT (TOP AFT CORNER OF THE WINDOW)	507
[10]	DRIVE HANDLE KNOB	HANDLE	508
[11]	DRIVE HANDLE		

C56163 S0006428707_V2

No. 2 Window Adjustments
Figure 501/56-11-02-990-802



PRY TEST
(5 PRY POINTS)



TOP PRY POINTS 1

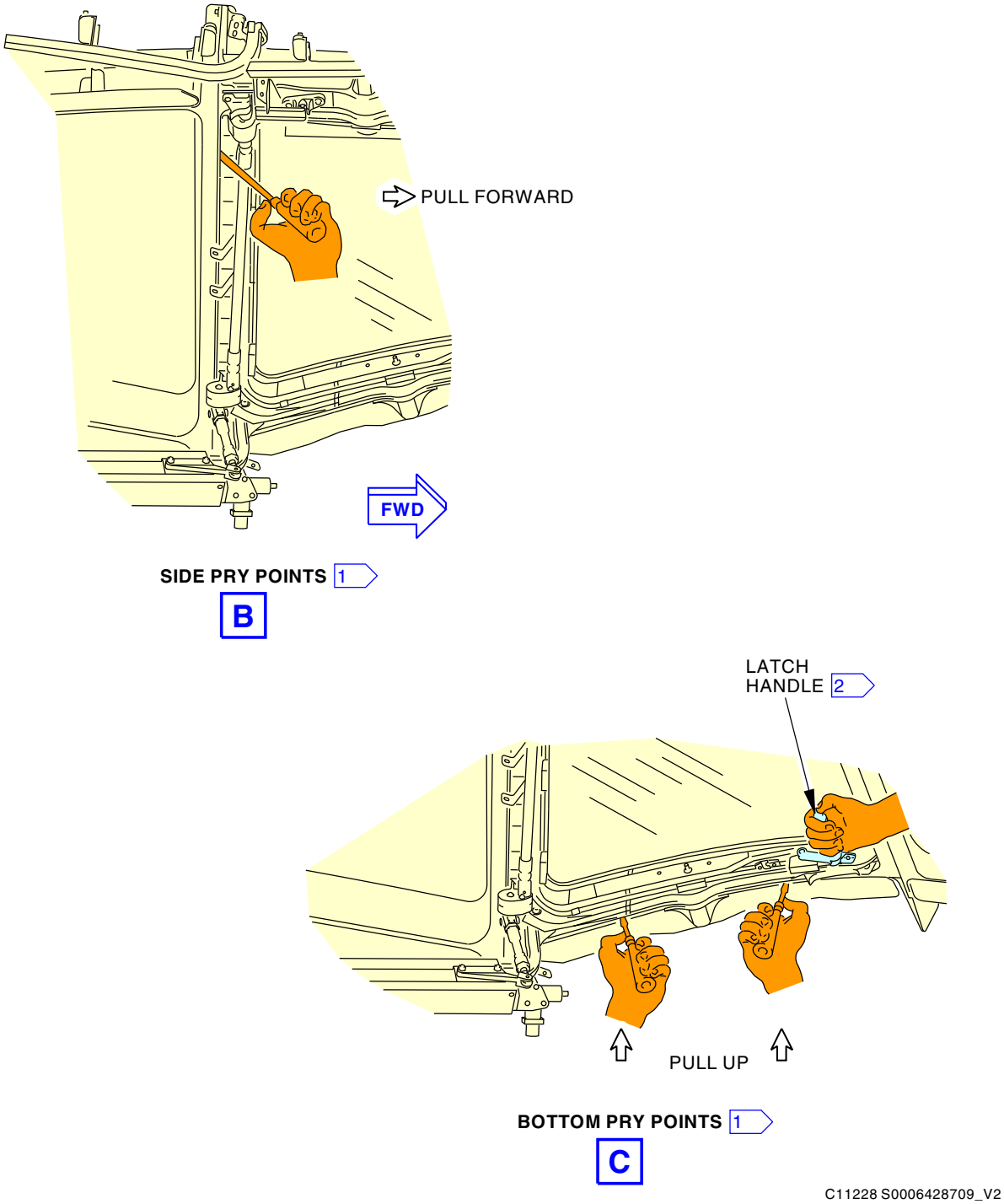
A

1 DO THE PRY TEST WITH THE WINDOW CLOSED.
DO NOT APPLY MORE THAN 50 POUNDS OF FORCE TO THE PRY TOOL.

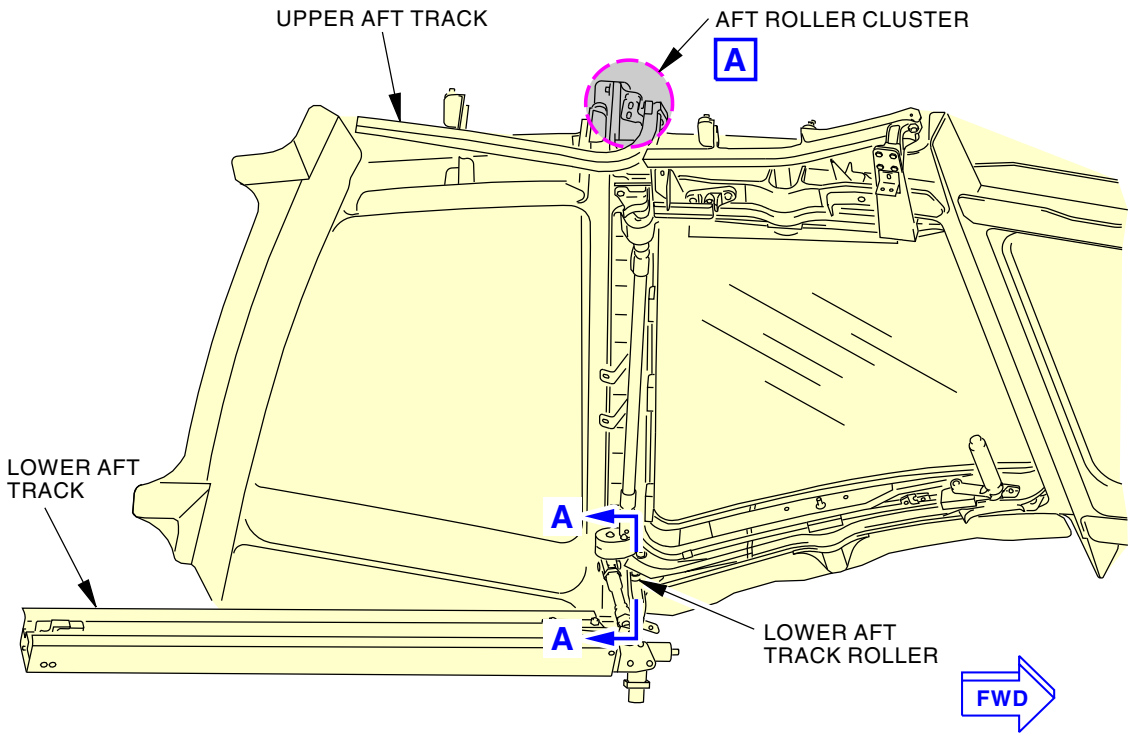
2 OPERATE THE LATCH HANDLE TO DO A CHECK OF THE HANDLE FORCE WHILE YOU APPLY FORCE AT EACH PRY POINT.

C11222 S0006428708_V2

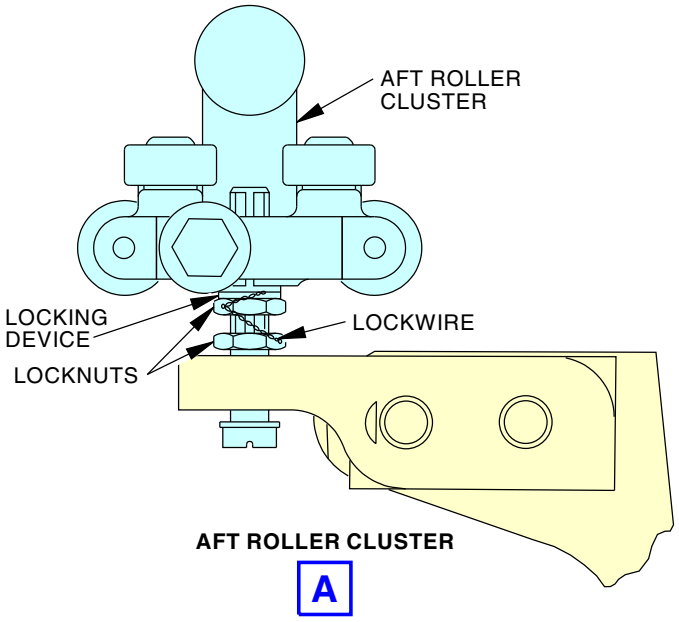
Pry Test for the No. 2 Window
Figure 502/56-11-02-990-803 (Sheet 1 of 2)



Pry Test for the No. 2 Window
Figure 502/56-11-02-990-803 (Sheet 2 of 2)

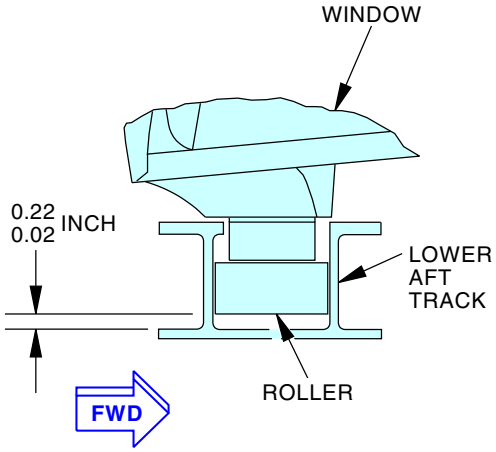


AFT ROLLER CLUSTER



AFT ROLLER CLUSTER

A

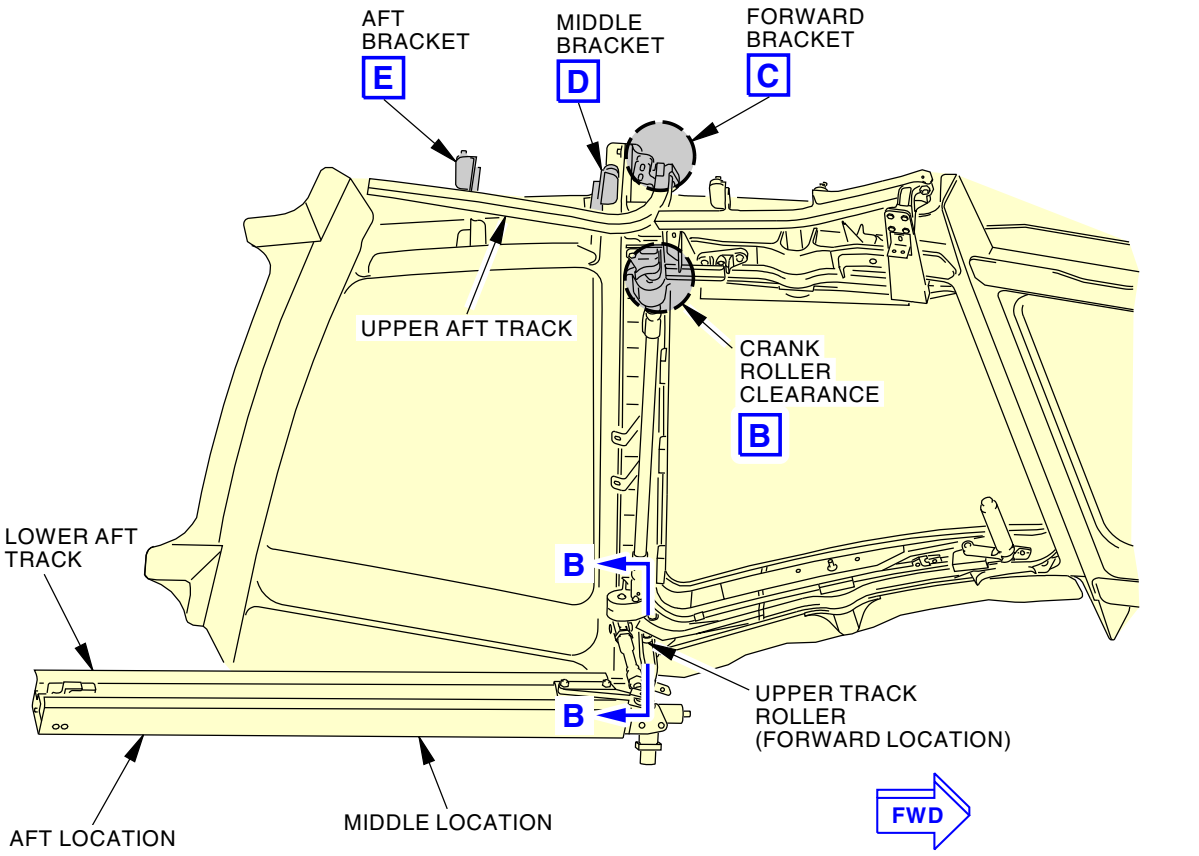


LOWER AFT TRACK ROLLER (ALL LOCATIONS) (NECESSARY CONDITIONS)

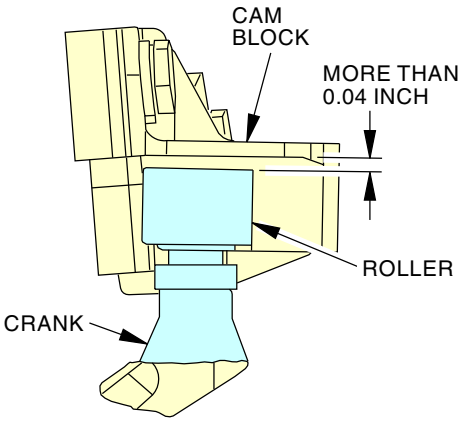
A-A

C08883 S0006428710_V2

Vertical Adjustment (Aft Side of the Window)
Figure 503/56-11-02-990-804 (Sheet 1 of 3)

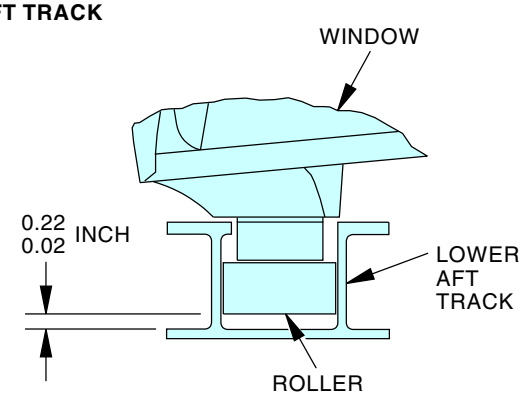


UPPER AFT TRACK



CRANK ROLLER CLEARANCE (NECESSARY CONDITION)

B

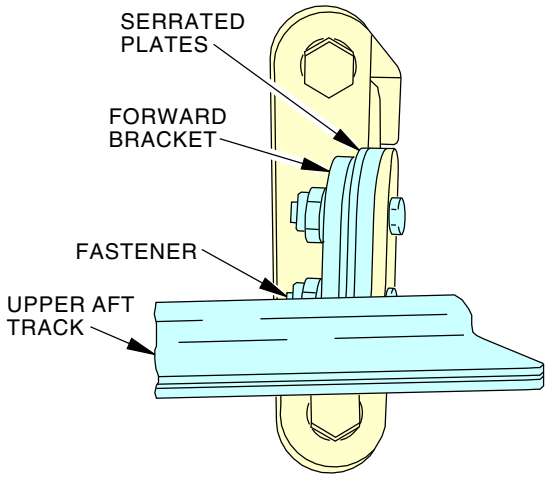


LOWER AFT TRACK ROLLER (FORWARD, MIDDLE, AND AFT LOCATIONS) (NECESSARY CONDITION)

B-B

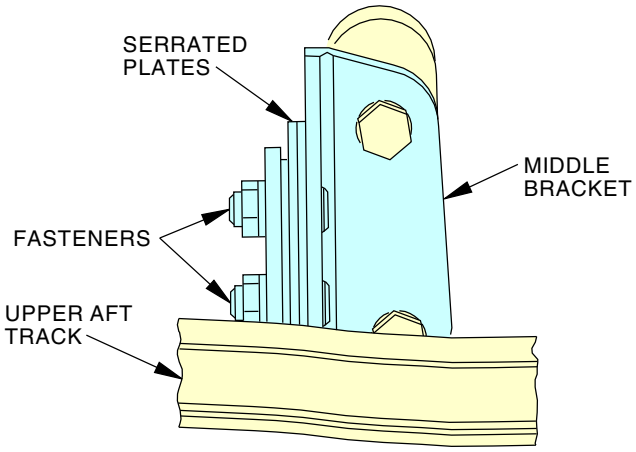
C08890 S0006428711_V2

Vertical Adjustment (Aft Side of the Window)
Figure 503/56-11-02-990-804 (Sheet 2 of 3)



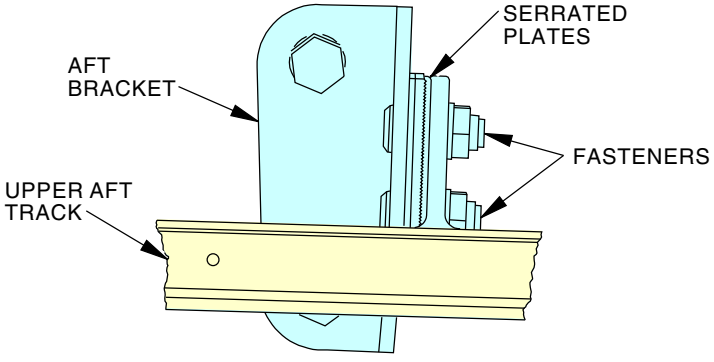
FORWARD BRACKET

C



MIDDLE BRACKET

D

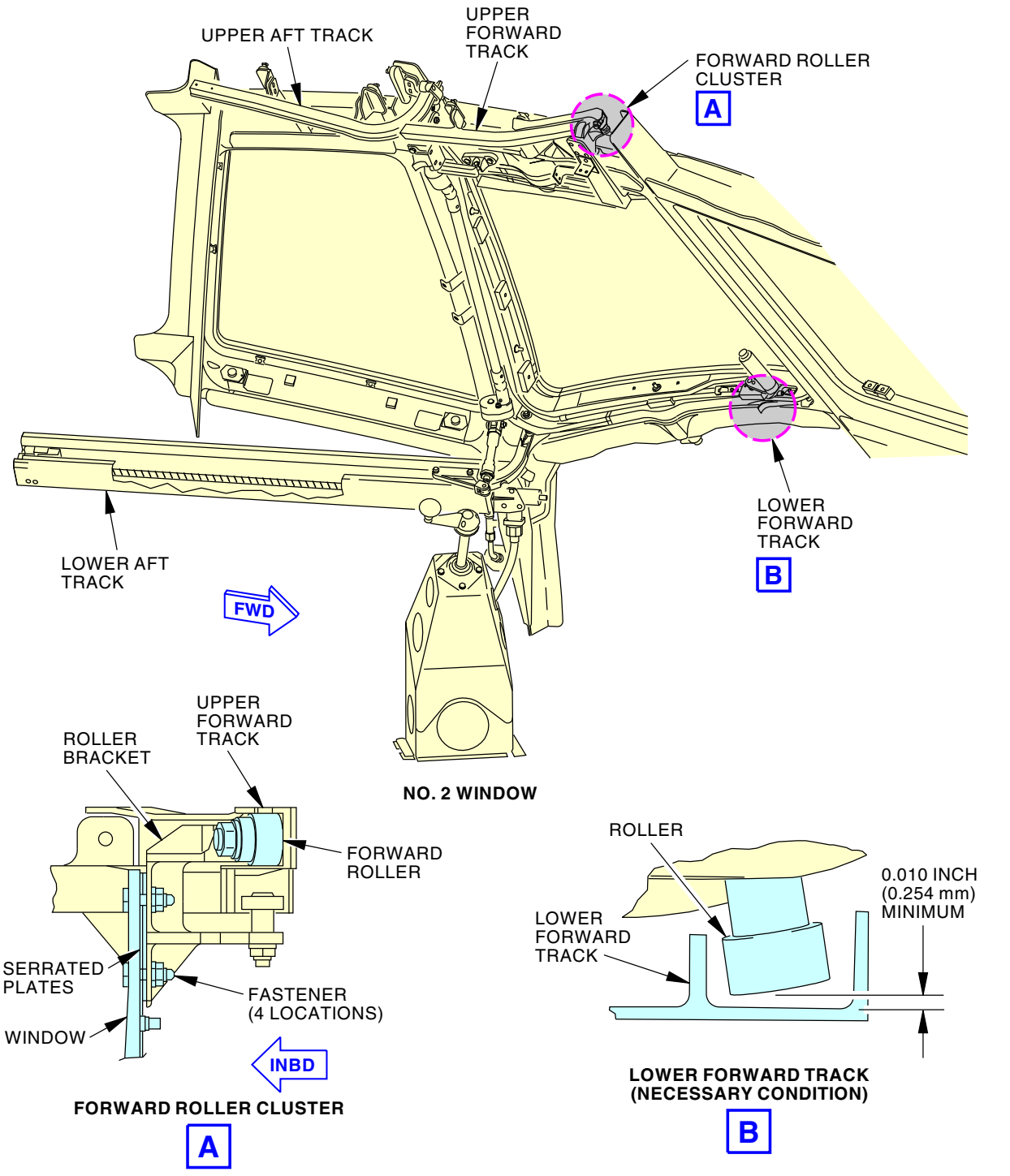


AFT BRACKET

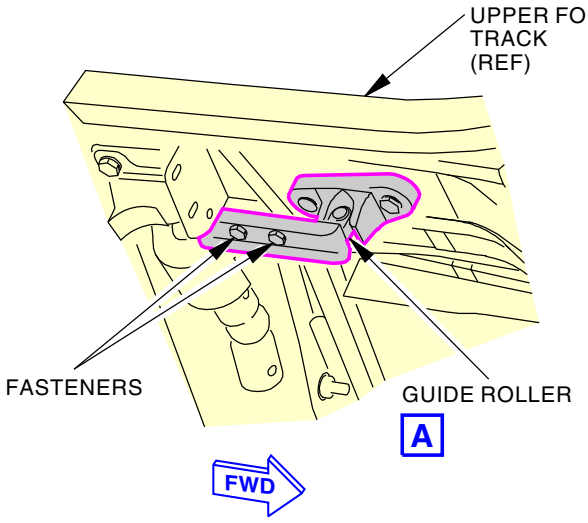
E

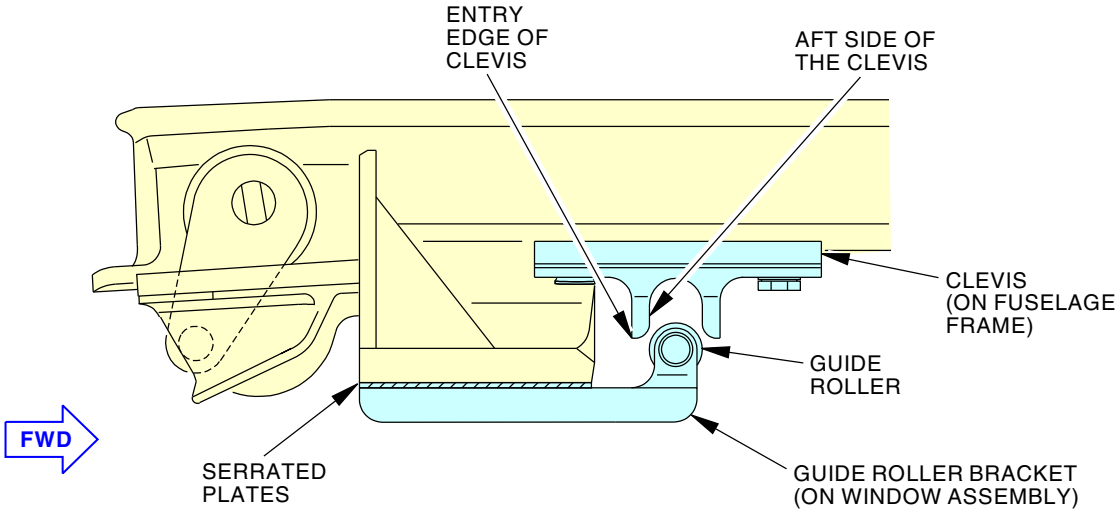
C08892 S0006428712_V2

Vertical Adjustment (Aft Side of the Window)
Figure 503/56-11-02-990-804 (Sheet 3 of 3)



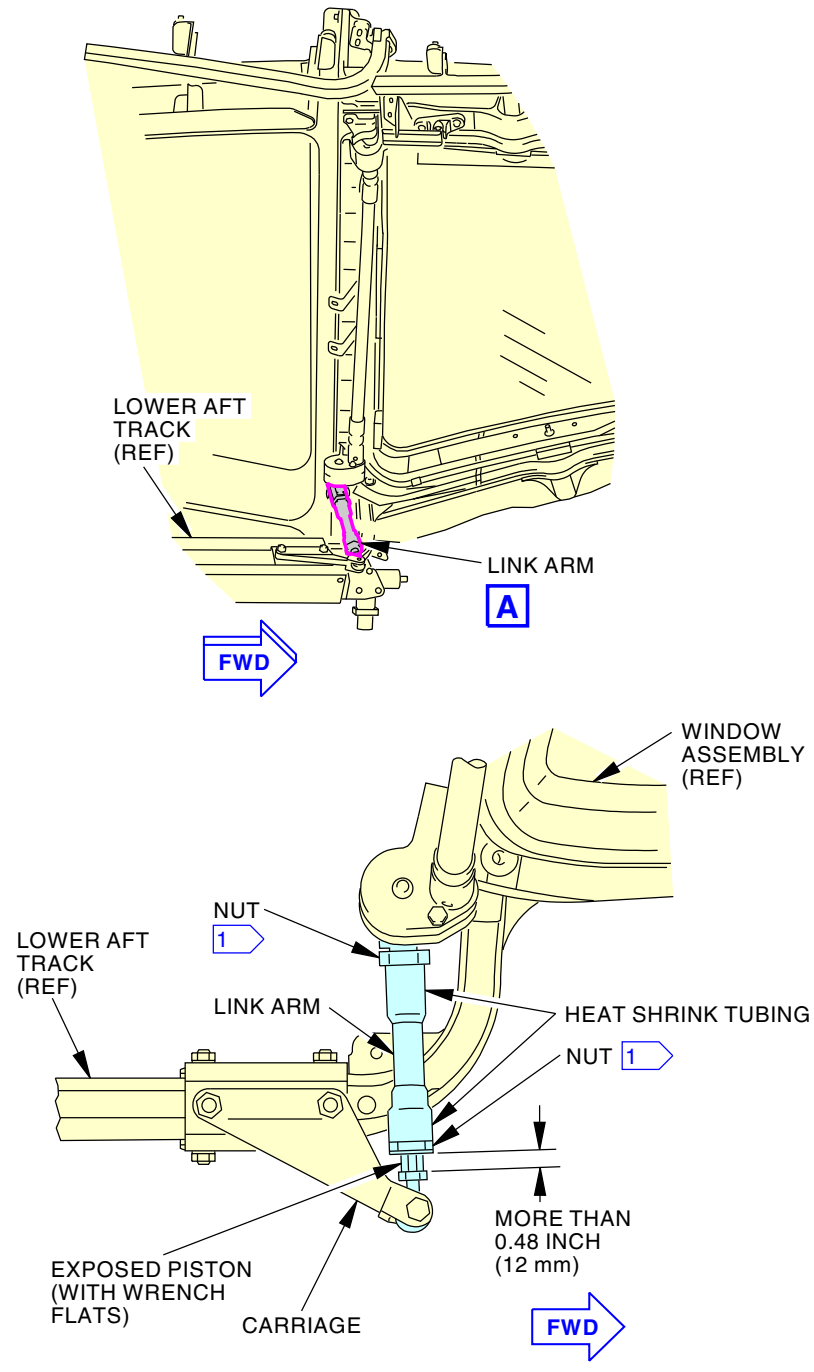
Vertical Adjustment (Forward Side of the Window)
Figure 504/56-11-02-990-805





C10453 S0006428714_V3

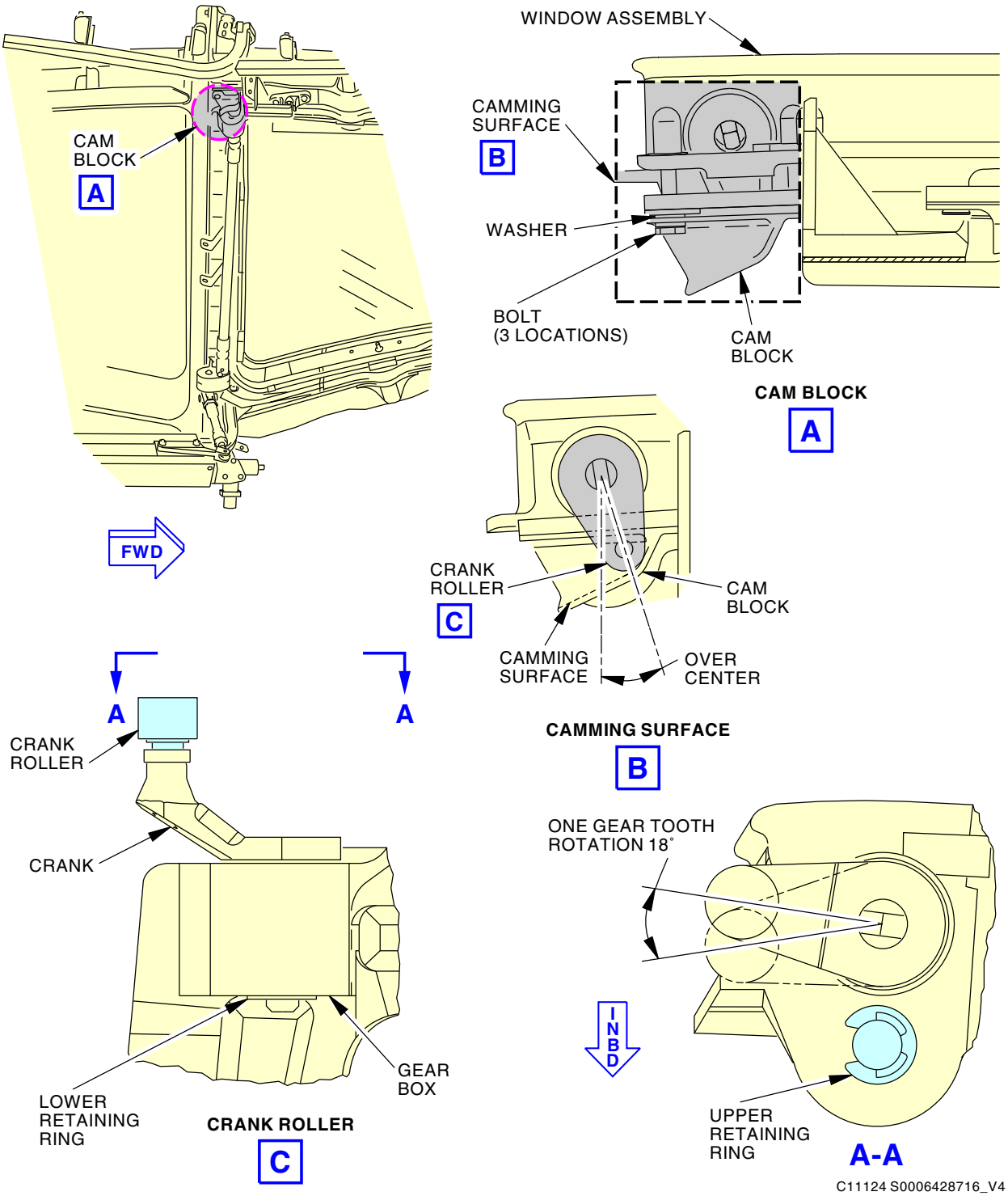
Forward/Aft Adjustment (Top Half of the Window)
Figure 505/56-11-02-990-806



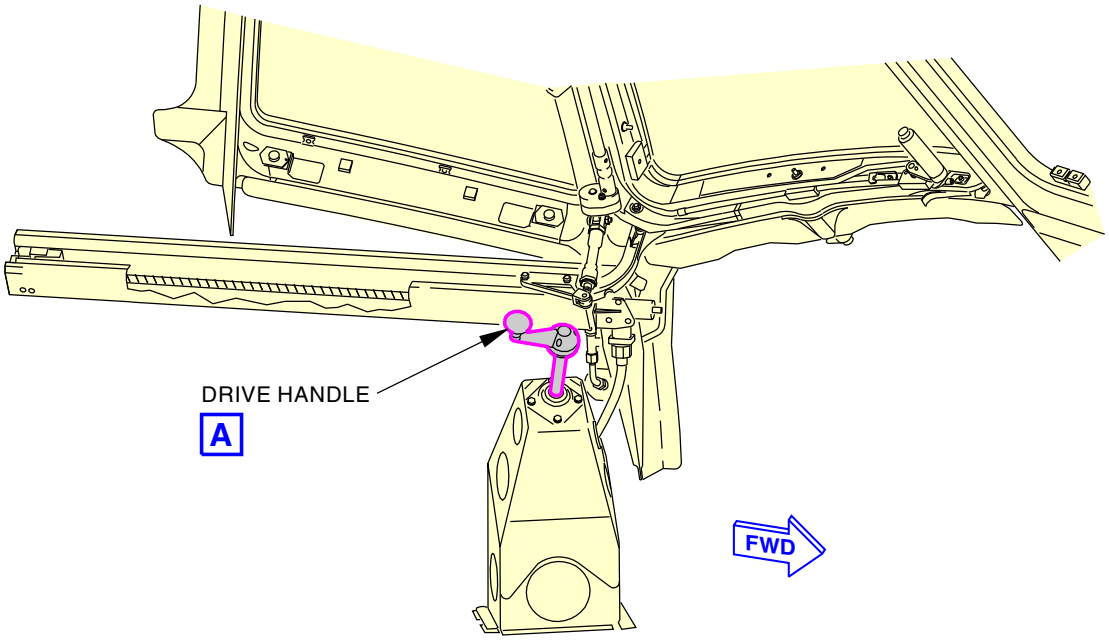
1 DO NOT LOOSEN.

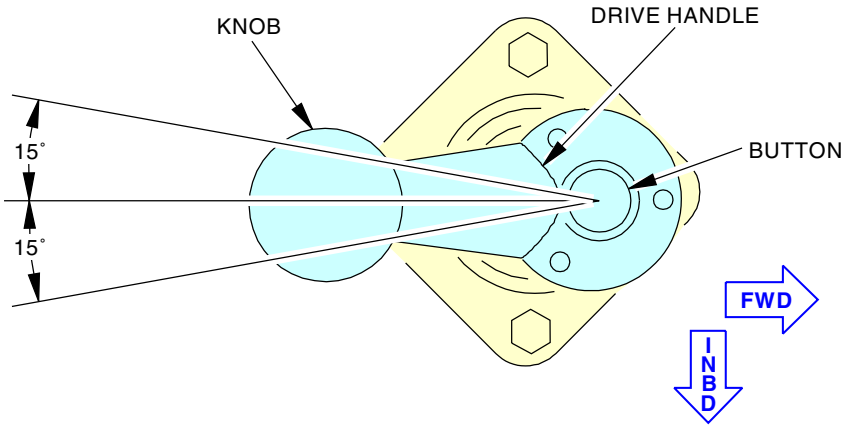
C10468 S0006428715_V2

Inboard/Outboard Adjustment (Bottom Aft Corner of the Window)
Figure 506/56-11-02-990-807



Inboard/Outboard Adjustment (Top Aft Corner of the Window)
Figure 507/56-11-02-990-808

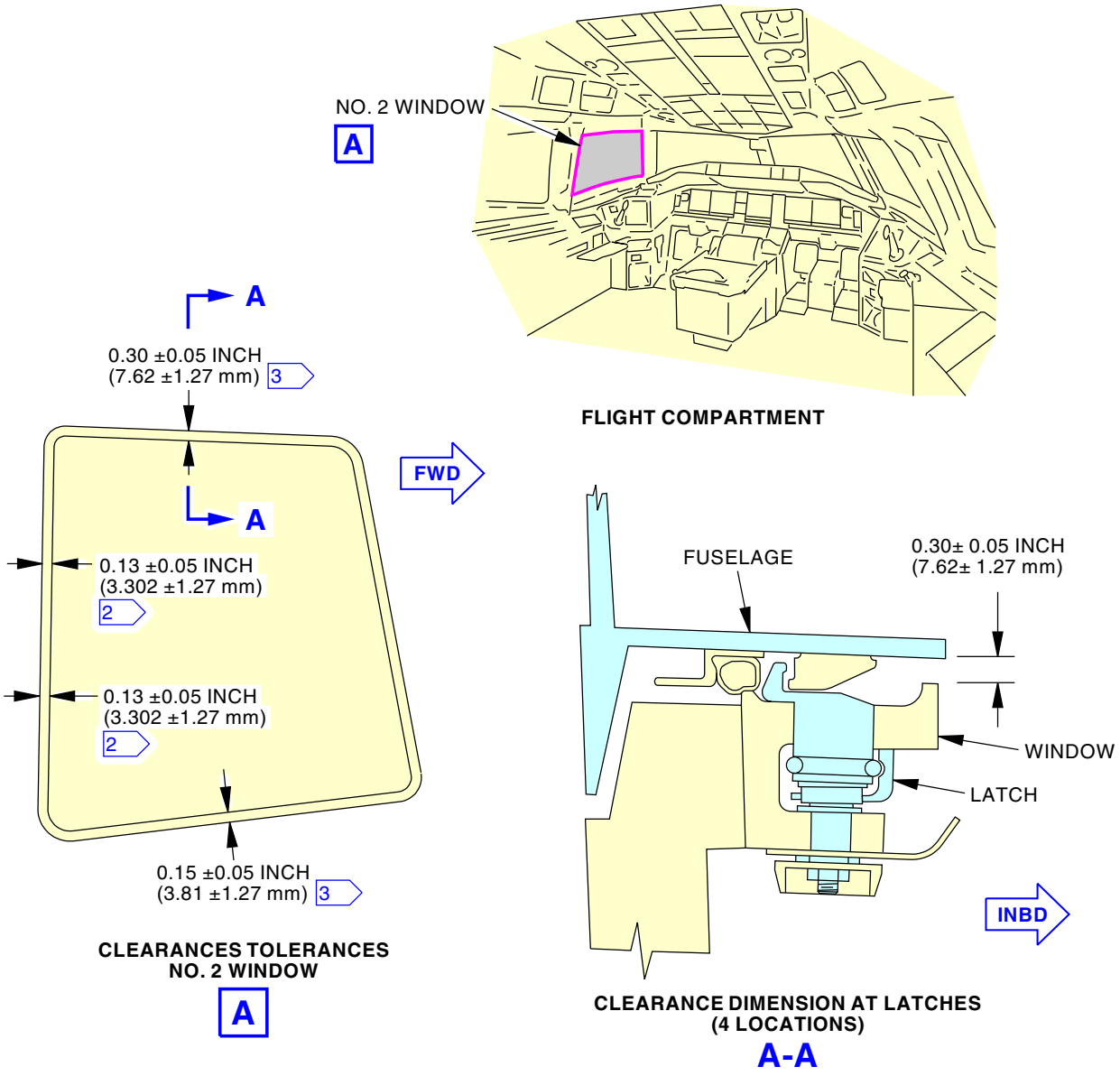




DRIVE HANDLE
A

C11102 S0006428717_V2

Drive Handle Adjustment
Figure 508/56-11-02-990-809



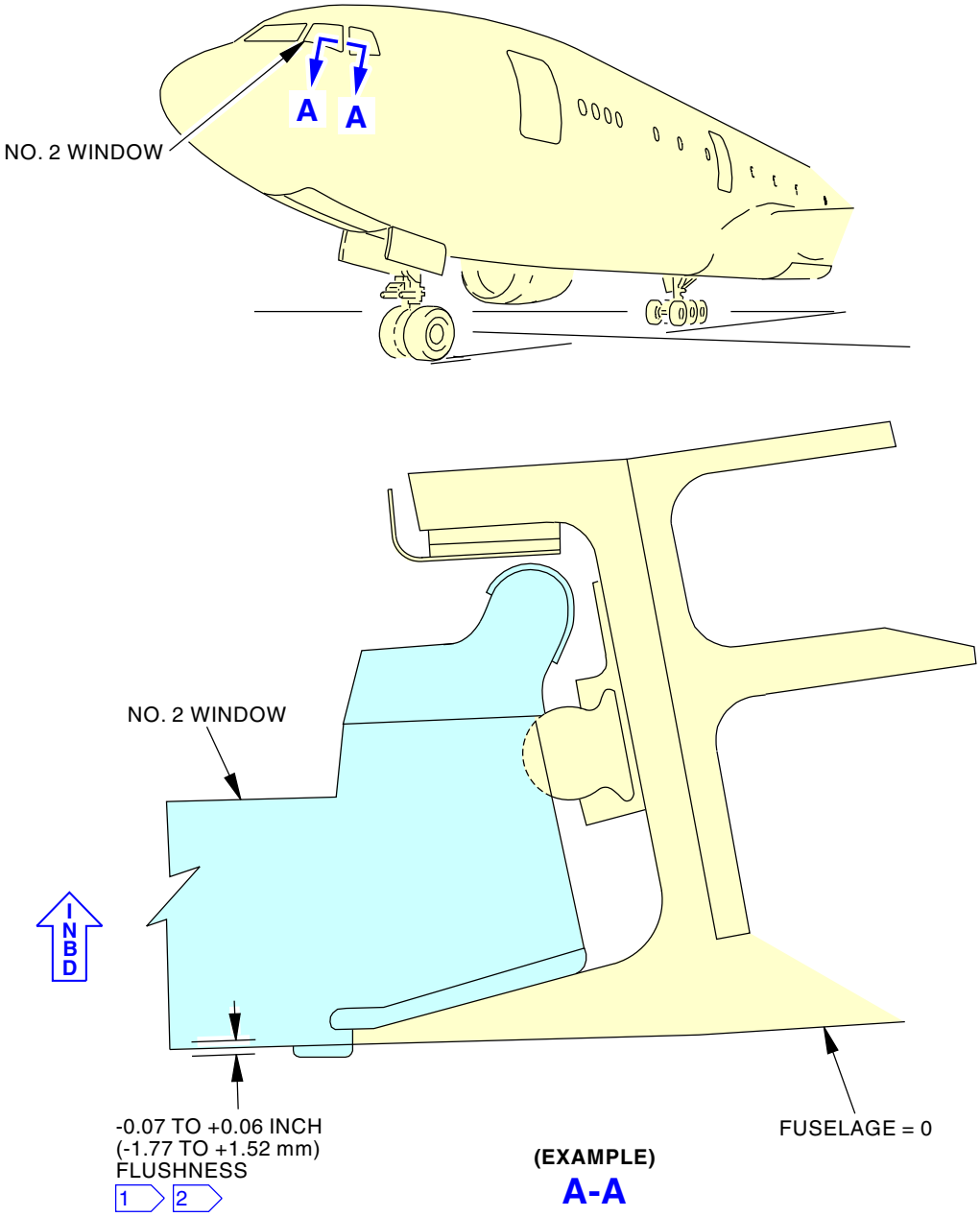
1 MEASURE THE CLEARANCES AT THE TOP, AFT AND BOTTOM LATCHES

2 THE CLEARANCES AT THE AFT LATCHES MUST ALSO BE WITHIN 0.02 INCH (0.508 mm) OF EACH OTHER.

3 THESE ARE NOMINAL DIMENSIONS. IF YOUR AIRPLANE HAS DIFFERENT NOMINAL DIMENSIONS, ADD OR SUBTRACT THE DIFFERENCE EQUALLY BETWEEN THE TOP AND BOTTOM CLEARANCE.

E07705 S0006428718_V3

Internal Window Clearance
Figure 509/56-11-02-990-810

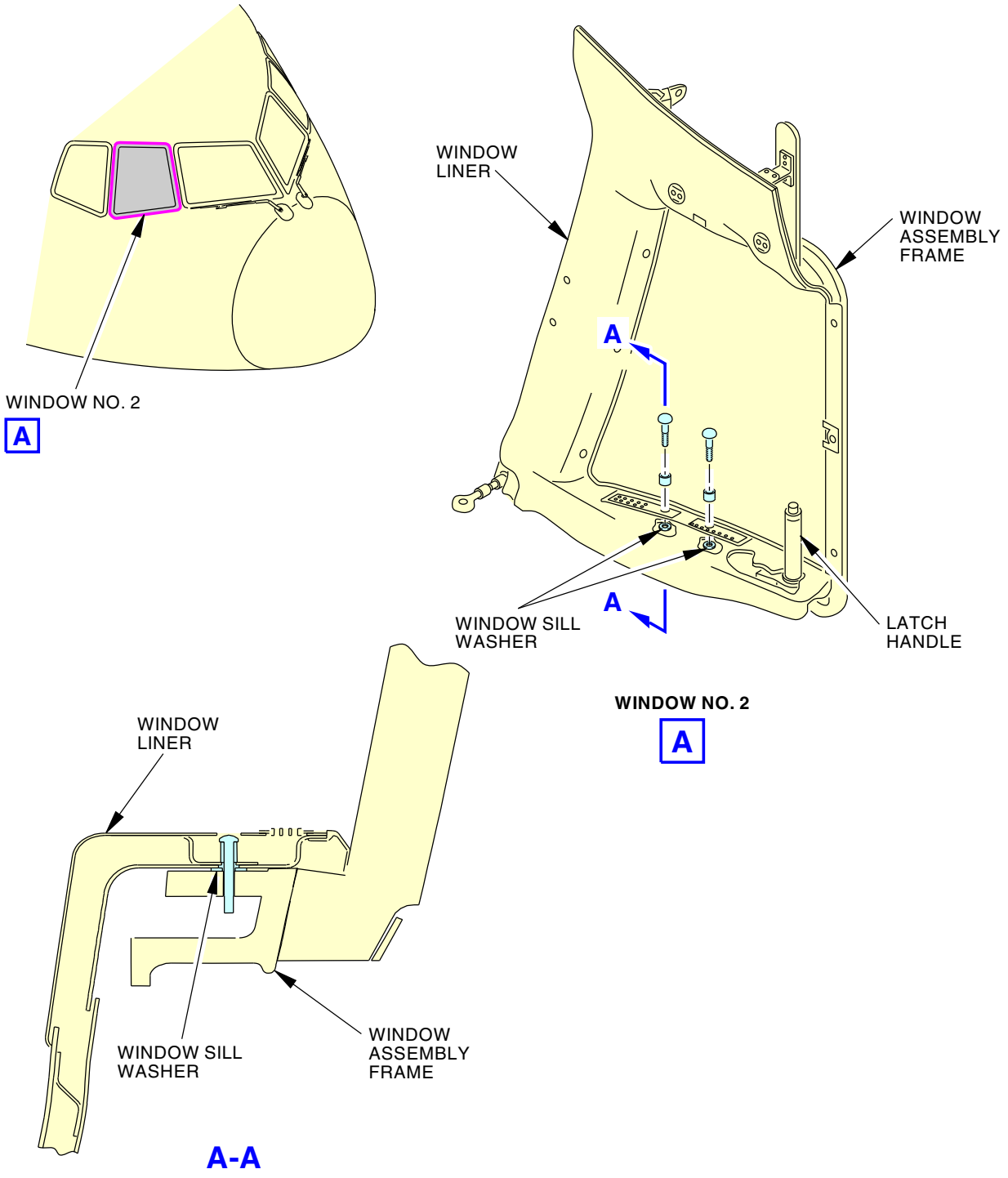


1 A NEGATIVE FLUSHNESS SHOWS THE WINDOW IS INBOARD OF THE FUSELAGE CONTOUR.
A POSITIVE FLUSHNESS SHOWS THE WINDOW IS OUTBOARD OF THE FUSELAGE CONTOUR.

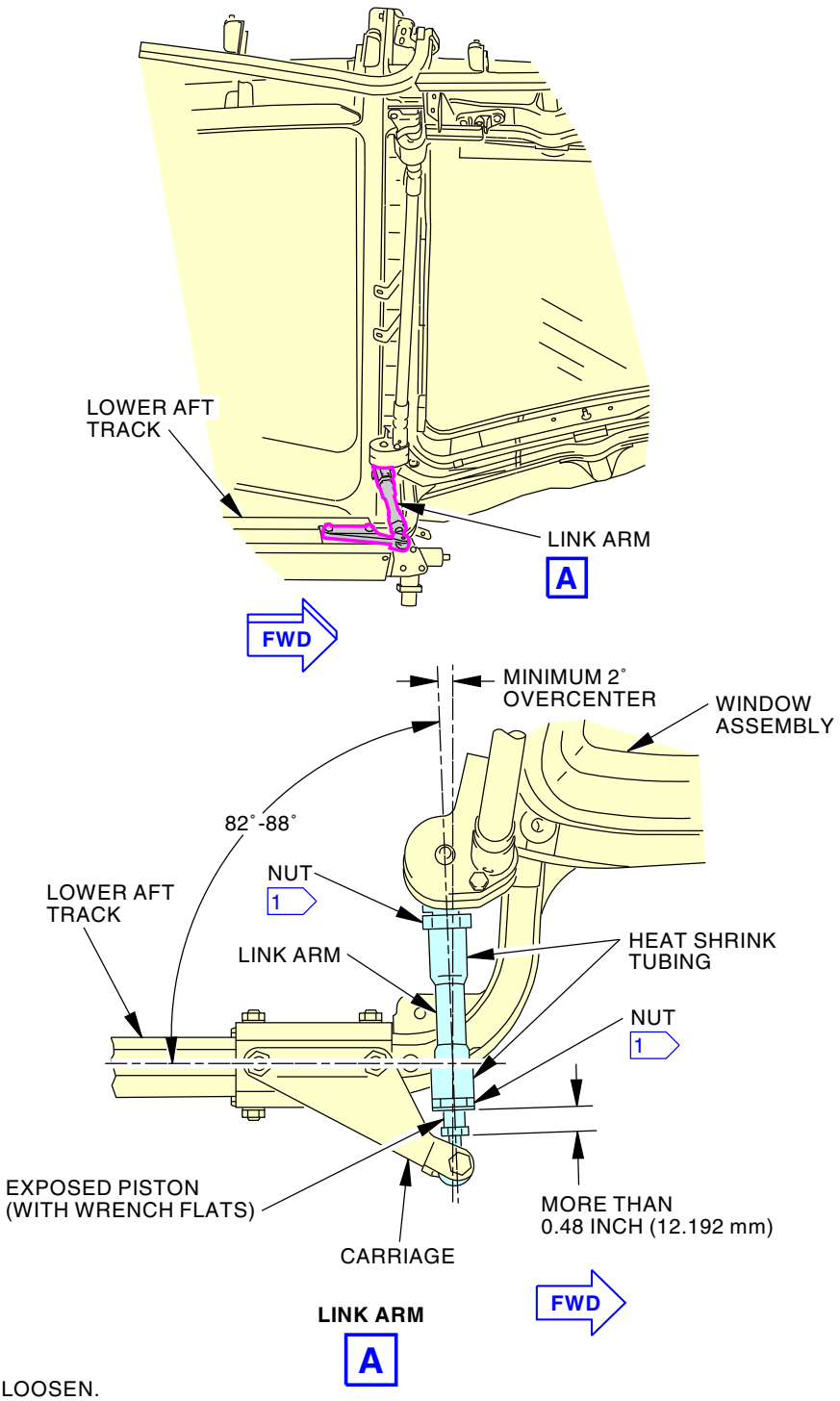
2 THE FLUSHNESS TOLERANCE IS FOR ALL SIDES OF THE WINDOW.

E07703 S0006428719_V3

External Window Flushness
Figure 510/56-11-02-990-811



Window Sill Washers
Figure 511/56-11-02-990-831



Window Assembly Link Arm Over-Center
Figure 512/56-11-02-990-832

NO. 2 OPENABLE WINDOW - INSPECTION/CHECK

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Prepare to Check the No. 2 Window,

(2) A Check of the No. 2 window,

(3) A Pry Check,

(4) A Scuff Mark Check,

(5) An Operational Check of the No. 2 Window,

(6) Put the Airplane Back to its Usual Condition, and

(7) Window Sealant Check and Reapplication.

TASK 56-11-02-840-803

2. Prepare to Check the No. 2 Window

A. Location Zones

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

B. Procedure

SUBTASK 56-11-02-020-012

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-02-020-013

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

SUBTASK 56-11-02-020-014

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 56-11-02-020-015

(4) Move these switches on the pilots overhead panel to the OFF position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE,

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-02-020-016

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 connectors from the top of the window [5].

C. Removal

SUBTASK 56-11-02-010-001

(1) Remove the window padding from the window [5], as follows:

(a) Remove the latch handle cover.

(b) Remove the covers from all sides of the window.

——— END OF TASK ———

TASK 56-11-02-700-802

3. No. 2 Window Check

(Figure 601)

A. General

(1) This task gives checks of the window at these positions:

(a) Position #1: This is where the window moves along the lower aft track.

(b) Position #2 - Window movement to the closed and sealed position.

(c) Position #3 - Window closed, latched, and locked.

(2) The check at position #3 is the most important because it shows the squareness of the window in the frame.

(a) A window that is square in the frame when it is closed will likely have low latching forces and good seal compression.

B. References

Reference	Title
56-11-02-700-801	No. 2 Window Bracket Adjustments (P/B 501)
56-11-02-820-801	No. 2 Window Adjustments (P/B 501)

C. Consumable Materials

Reference	Description	Specification
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

(Continued)

Reference	Description	Specification
D00020	Grease - Aircraft Oscillating Bearing	MIL-G-25537 (NATO G-365)

D. Location Zones

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

E. Window Check at Position #1: Window Movement Along the Lower Aft Track

SUBTASK 56-11-02-700-002

(1) Make sure the window can move along the track as follows:

(a) Open the window fully.

(b) Use the crank to move the window along the lower aft track until the window is almost closed.

SUBTASK 56-11-02-700-003

(2) Do a check of these clearances:

NOTE: You can feel binding condition through the drive handle when there is not smooth operation of the window.

(a) Clearance between the window frame and the lower aft track.

(b) Clearance between the crank roller and the cam block.

(c) clearance between the forward guide roller and its lower forward track.

SUBTASK 56-11-02-700-004

(3) Compare these clearances to the necessary conditions in the table below (Table 601):

(a) Make a note of the window adjustments that will help you get the necessary conditions.

NOTE: You can wait until you see the window in the closed and locked position before you make these adjustments.

1) If the window will not move to the almost closed position, adjust the window vertically (Figure 603, Figure 604).

NOTE: You can wait until you put the window in the closed and locked position before you make these adjustments.

Table 601/56-11-02-993-823 Position #1: Window Movement Along the Lower Aft Track

ADJUSTMENT		NECESSARY CONDITION	
NAME	FIG.		
Vertical Adjustment (Aft Side of the Window)	603	1.	The lower aft track roller must be 0.02 to 0.22 inch from the bottom of the lower aft track at all times.
		2.	The window frame must clear the lower aft track at all times.
		3.	The crank roller must be more than 0.04 inch below the top of the cam block.

Table 601/56-11-02-993-823 Position #1: Window Movement Along the Lower Aft Track (Continued)

ADJUSTMENT		NECESSARY CONDITION	
NAME	FIG.		
Vertical Adjustment (Forward Side of the Window)	604	4.	The lower forward roller must engage the forward lower forward track.
		5.	The lower forward roller must be 0.010 inch minimum from the bottom of the lower forward track.
		6.	The window frame must clear the lower forward track at all times.

F. Window Check at Position #2: Window Movement to the Closed and Sealed Position

SUBTASK 56-11-02-700-005

(1) Do a check of the motion of these components as the window closes:

(a) The forward/aft guide roller must not hit the entry edge of the clevis.

(b) The crank roller must only touch the inner cam surface.

1) If the crank roller hits the entry lip and rolls inboard of the cam block, do this task: No. 2 Window Adjustments, TASK 56-11-02-820-801.

SUBTASK 56-11-02-700-006

(2) Do a check of these conditions when the window is fully closed:

(a) The guide roller must touch the aft side of the clevis.

(b) The exposed piston length must be more than 0.48 inch.

1) Add or remove shims when necessary.

NOTE: Shim thickness must not be more than 0.180 in. (4.572 mm).

SUBTASK 56-11-02-700-007

(3) Make sure you can latch the window:

(a) Close the window with the crank:

1) Do not move the latch handle out of the unlatched position.

2) Turn the window operating handle to close the window until a sudden and firm resistance is felt.

NOTE: Latch indicator at the top of the window should show OPEN.

(b) Push the latch button on the top of the latch handle, and rotate the handle forward to the latched position.

1) Make sure the operating force is not more than 5 pounds at any position of the handle.

(c) Rotate the latch handle aft to the unlatched position and open the window.

1) Make sure no scuff marks show on the upper edges or surfaces of any of the four latch studs.

(d) If the window will not latch, adjust the window to reduce interference between the cams and the studs.

NOTE: You can use the Pry Check and Scuff Mark Check to find the correct direction to adjust the window.

SUBTASK 56-11-02-700-008

(4) Compare these actual conditions to the necessary conditions in the table below (Table 602):

(a) Make a note of the window adjustments that will help you get the necessary conditions (Figure 602, Figure 605, Figure 606, Figure 607).

NOTE: You can wait until you see the window in the closed and locked position before you make these adjustments.

Table 602/56-11-02-993-824 Position #2: Window Movement to the Closed and Sealed Position

ADJUSTMENT or TEST		NECESSARY CONDITION	
NAME	FIG.		
Forward/Aft Adjustment (Top Half of the Window)	605	7.	The guide roller must not hit the entry edge of the clevis.
		8.	The guide roller must touch the aft side of the clevis when the window is fully closed.
Inboard/Outboard Adjustment (Bottom Aft Corner of the Window)	606	9.	The exposed piston length when the link arm is fully compressed must be more than 0.48 inch.
Inboard/Outboard Adjustment (Top Aft Corner of the Window)	607	10.	The crank roller must only touch the inner surface of the cam block.
Do the Pry Test or the Scuff Mark Test to find the correct direction to adjust the window.	602	11.	The torque to operate the drive handle must be less than 45.50 pound-inches.

G. The Pry Check

NOTE: This method uses a prying action at five different positions on the window. This action releases the window crank handle loads while the window moves into the closed position. This action also releases the latch handle loads after the window is in the closed position.

SUBTASK 56-11-02-200-008

CAUTION LIMIT FORCE ON THE PRY TOOL TO 50 POUNDS MAXIMUM. HANDLE PRY TOOL WITH CARE TO GUARD AGAINST SCARRING THE SURROUNDING STRUCTURE.

(1) Use a rounded pry tool to pry at each of the five positions in (Figure 602) while you operate the latch handle from the open to the locked position.

SUBTASK 56-11-02-800-004

(2) Make a note which pry positions make the latch operation easier.

NOTE: You must adjust the window in the direction of the pry force that permits easier operation.

SUBTASK 56-11-02-700-009

(3) Open and close the window three times to position the window into a stable position.

NOTE: You must adjust the window in the direction of the pry force that permits easier operation.

SUBTASK 56-11-02-700-010

(4) If the pry positions along the lower sill make the window latch easier, adjust the window up in the vertical direction:

(a) Do this task: No. 2 Window Adjustments, TASK 56-11-02-820-801.

(b) If the latch handle force continues to be too high, do this task: No. 2 Window Bracket Adjustments, TASK 56-11-02-700-801.

SUBTASK 56-11-02-700-011

(5) If the pry positions along the aft side of the window make the window latch easier, adjust the window forward.

(a) If necessary, loosen the roller brackets when prying the side pry points.

SUBTASK 56-11-02-700-012

(6) If the latch handle operation is easier when you manually push the window outboard, adjust the window outboard.

SUBTASK 56-11-02-700-013

(7) If the pry positions along the upper sill make the window latch easier, adjust the window down in the vertical direction.

(a) Do this task: No. 2 Window Adjustments, TASK 56-11-02-820-801.

(b) If the latch handle force continues to be too high, do this task: No. 2 Window Bracket Adjustments, TASK 56-11-02-700-801.

SUBTASK 56-11-02-700-014

(8) If a combination of pry positions on different sides improve the latch handle performance, do an angular adjustment of the window.

NOTE: You can do this if you adjust the forward and aft roller clusters.

H. Scuff Mark Check

SUBTASK 56-11-02-200-009

(1) Prepare for the Check, as follows:

(a) Open the window.

(b) Apply a thin coat of primer, C00259 (primer) or grease, D00020 to the studs.

SUBTASK 56-11-02-200-010

(2) Do the Check as follows:

(a) Closed and latch the window.

(b) Open the window.

(c) Make a note of the scuff marks on the studs.

(d) The primer, C00259 (primer) or grease, D00020 on the studs will show contact points caused by cam/stud misalignment, and aid in the adjustment of the window. The location and severity of the scuff marks on the studs will indicate the adjustments necessary for proper cam/stud clearance.

(e) Do the window adjustments that will move the latch cams away from the scuff marks on the studs.

I. Window Check at Position #3: Window Closed, Latched, and Locked

SUBTASK 56-11-02-010-002

(1) Put the window in the correct position as follows:

(a) Open and close the window three times to let the window move into a stable position.

(b) Latch the window.

(c) Lock the window.

SUBTASK 56-11-02-700-015

(2) Find the actual condition of the window as follows:

(a) Measure the exterior window flushness (Figure 610).

(b) Measure the interior window clearance.

(c) Measure the latch handle forces, as follows:

1) Do the latch check in the No. 2 window - Operational Check.

NOTE: A smooth operating latch does not completely indicate proper rig.

2) If the latch force is too high, do the Pry Check or the Scuff Mark Check to determine the necessary adjustment direction.

(d) Do a check of the window crank, as follows:

1) Close, latch, and lock the window:

a) Turn the window operating handle to close the window until a sudden and firm resistance is felt.

b) With the button on the window latch handle pushed, turn the window latch handle forward to latch the window.

2) With your hands on the window crank knob, see if the crank handle points aft within 15 degrees.

3) Make sure crank knob turns freely around its own axis.

SUBTASK 56-11-02-700-016

(3) Compare these actual conditions to the necessary adjustments that will help you get the necessary conditions (Figure 602, Figure 604, Figure 605, Figure 606, Figure 607, Figure 608, Figure 609):

Table 603/56-11-02-993-825 Position #3: Window Closed, Latched, and Locked

ADJUSTMENT or TEST		NECESSARY CONDITION	
NAME	FIG.		
Vertical Adjustment	604 605	13.	The clearances around the window inside the airplane must be within the tolerances shown in Figure 609.
Inboard/Outboard Adjustment	606 607	14.	The flushness around the window must be within the tolerances shown in Figure 610.
Drive Handle Adjustment	608	15.	The drive handle must be less than 15 degrees from the horizontal centerline.

END OF TASK

TASK 56-11-02-840-804

4. Put the Airplane Back to its Usual Condition

A. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)

B. Location Zones

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

C. Put the Airplane Back to its Usual Condition

SUBTASK 56-11-02-840-003

(1) Install the interior window lining.

SUBTASK 56-11-02-860-006

(2) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-02-210-002

(3) Make sure the SIDE L and SIDE R WINDOW HEAT INOP lights are off.

SUBTASK 56-11-02-420-010

(4) Install the window padding to the window, as follows:

NOTE: You must install the window padding to hold the window sensor terminals in their correct position.

(a) Install the covers on all sides of the window.

(b) Install the latch handle cover.

SUBTASK 56-11-02-420-011

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	16	C30416	WDO HT 2R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
C	11	C30417	WDO HT 2L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-02-420-012

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

SUBTASK 56-11-02-420-013

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 56-11-02-700-017

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

END OF TASK

TASK 56-11-02-700-803

5. No. 2 Openable Window Operational Check

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
56-11-13-400-801	Install the No. 2 Window Seal (P/B 401)

B. Tools/Equipment

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

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-010 Supplier: 92456 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

C. Location Zones

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

D. Latch System Check

SUBTASK 56-11-02-840-004

(1) Close and latch the window.

SUBTASK 56-11-02-700-018

(2) Visually make sure the window is closed, latched and locked:

(a) The placard, WINDOW NOT CLOSED, on the inner side of the window must not be visible.

(b) The latch handle must be fully forward and not in the position indicated by the UNLOCK arrow.

(c) The orange color on the lock button at the top of the handle must not be visible.

SUBTASK 56-11-02-700-019

(3) Do this check of the lock button with the handle in the LOCK position, as follows:

(a) Push and release the lock button on the top of the latch handle.

(b) Make sure the button quickly moves up.

(c) Try to move the latch handle without depressing the lock button.

(d) Make sure the handle is firmly in position and does not move out of its position.

(e) Push and hold the lock button on the latch handle.

(f) Turn the latch handle to the other position.

NOTE: Release the lock button as you turn the latch handle.

(g) Do these steps again in the UNLOCK position.

SUBTASK 56-11-02-700-020

(4) Do a check of the latch force, as follows:

(a) Attach the spring force gauge, COM-1557 to the latch handle.

(b) Measure the force necessary to move the latch handle from the LOCK to the UNLOCK position.

(c) Measure the force necessary to move the latch handle from the UNLOCK to the LOCK position.

(d) Make sure the force to move the latch handle in the two directions is less than 5 pounds.

(e) Make sure the latch handle moves smoothly.

(f) Make sure the force to move the latch handle is approximately the same when the window is in the open position.

NOTE: Hold the latch hook to allow you to move the latch handle with the window in the open position.

SUBTASK 56-11-02-700-021

(5) Make sure the latch handle grip rotates easily and smoothly about its axis.

E. Window check

SUBTASK 56-11-02-700-022

(1) Do a check of the window in the closed position, as follows:

(a) Close the window.

(b) Move the latch handle to the LOCK position.

1) Make sure the knob on the window crank is forward of and slightly above the horizontal centerline of the crank.

(c) Move the latch handle to the UNLOCK position.

1) Make sure the window stays closed without movement after you release the latch handle.

(d) Turn the window crank handle to open the window.

NOTE: Some windows may continue to move towards the open position without aid from the window crank. This is because of the friction difference between the windows and is satisfactory.

1) Make sure you hear a pop when the crank roller leaves the cam block detent.

2) Make sure the window moves inboard.

3) Make sure the lower forward roller does not touch the forward lip of the guide track.

SUBTASK 56-11-02-700-023

(2) Do a check of the window crank forces, as follows:

(a) Attach a spring force gauge, COM-1557 to the window crank handle.

(b) Alternately, attach a torque wrench to the window crank shaft of the window crank handle assembly.

(c) Measure the force necessary to move the window to the fully open position.

(d) Measure the force necessary to move the window to the fully closed position.

NOTE: The crank loads will increase as the window closes.

1) Make sure the window moves smoothly with no sudden changes in the crank load.

2) If you use the spring force gauge, COM-1557, make sure the crank load is not more than 30 pounds.

3) If you use a torque wrench, make sure the crank torque is not more than 100 in-lb (11 N·m).

SUBTASK 56-11-02-700-024

(3) Do a check of the window crank handle, as follows:

(a) Move the window to the fully closed position and hold the window crank handle:

1) Turn the window operating handle to close the window until a sudden and firm resistance is felt.

(b) Make sure the crank movement after you release the window crank handle is less than half of a turn.

(c) Make sure the window crank handle knob turns freely about its axis.

(d) Move the latch handle to the LOCK position.

(e) Make sure you can not read the WINDOW NOT CLOSED decal located on the lower window frame.

(f) Make sure the window lining is smooth with the frame.

SUBTASK 56-11-02-200-013

(4) Do this check of the window sealant:

(a) Observe all areas of applied sealant for:

1) Signs of cracks, peeled, loose sections.

2) Evidence of wear and erosion of applied sealant.

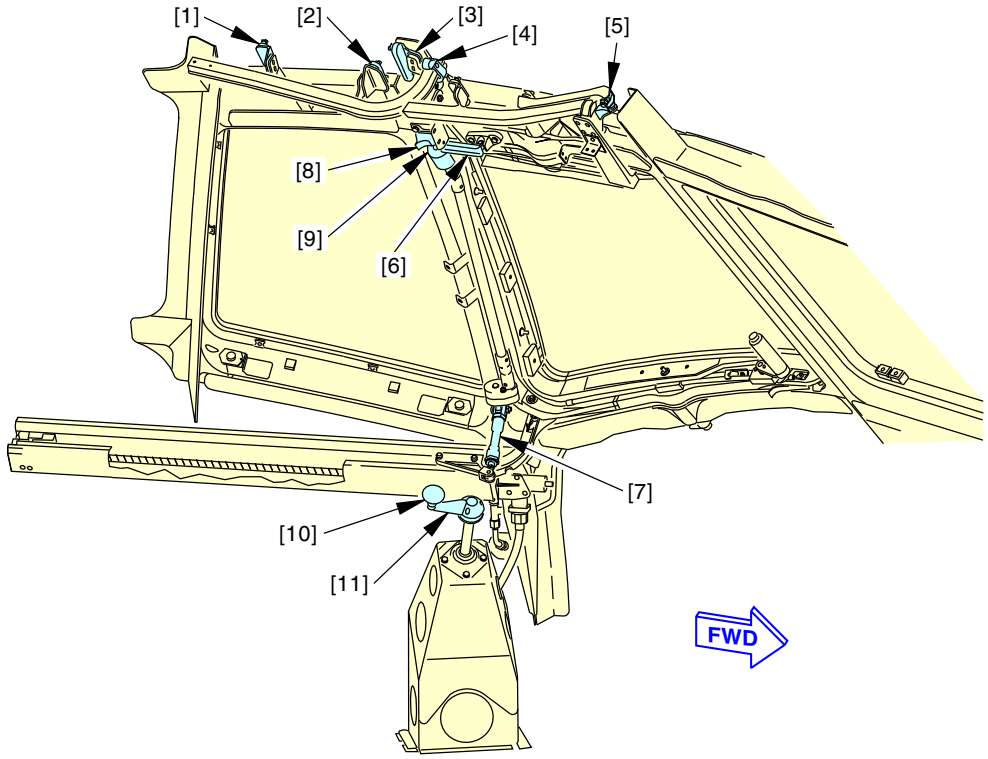
(b) Reapply sealant, as required, refer to Install the No. 2 Window Seal, TASK 56-11-13-400-801.

(c) Allow sealant application to cure.

(d) Clean up areas of remnant sealant.

(e) Return window to in-service condition.

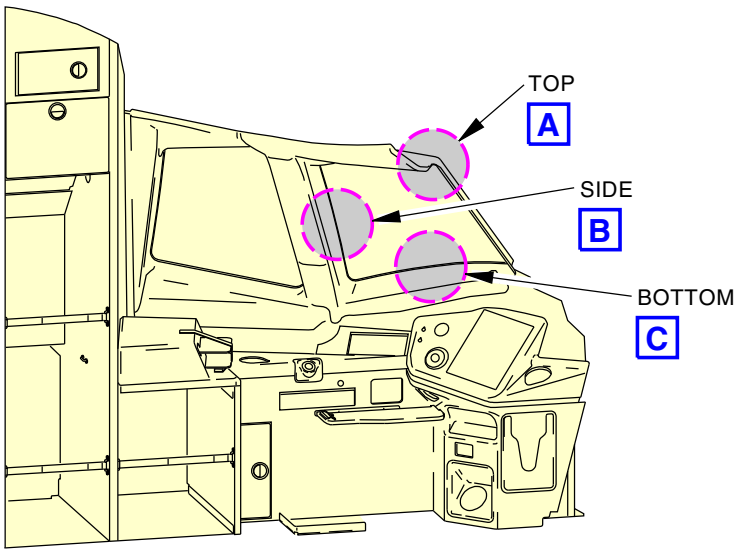
——— END OF TASK ———



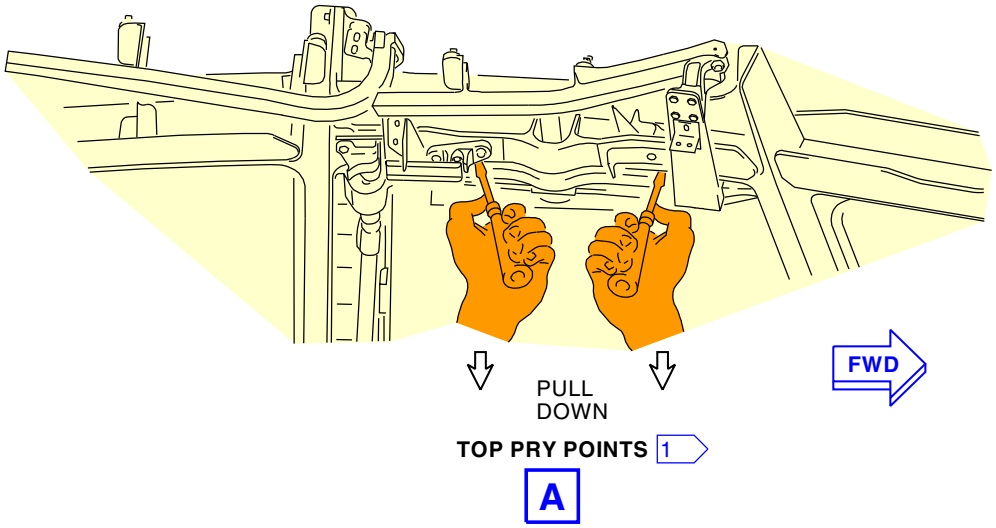
[X]	COMPONENT	CHECK	FIGURE
[1]	AFT SUPPORT BRACKET	VERTICAL CHECK (AFT SIDE OF THE WINDOW)	603
[2]	MIDDLE SUPPORT BRACKET		
[3]	FORWARD SUPPORT BRACKET		
[4]	AFT ROLLER CLUSTER		
[5]	FORWARD ROLLER CLUSTER	VERTICAL CHECK (FORWARD SIDE OF THE WINDOW)	604
[6]	GUIDE ROLLER	FORWARD/AFT CHECK (TOP HALF OF THE WINDOW)	605
[7]	LINK ARM	INBOARD/OUTBOARD CHECK (BOTTOM AFT CORNER OF THE WINDOW)	606
[8]	CAM BLOCK	INBOARD/OUTBOARD CHECK (TOP AFT CORNER OF THE WINDOW)	607
[9]	CRANK ROLLER		
[10]	WINDOW CRANK HANDLE KNOB	HANDLE	608
[11]	WINDOW CRANK HANDLE		

E67641 S0006428728_V3

No. 2 Window Checks
Figure 601/56-11-02-990-816



PRY TEST
(5 PRY POINTS)

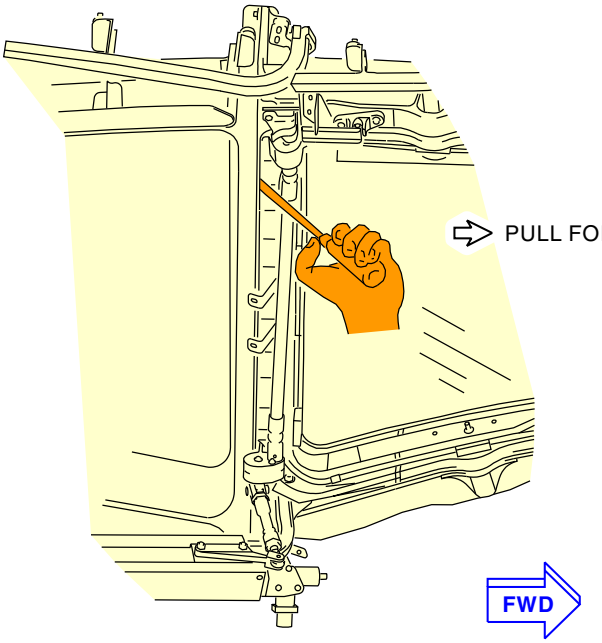


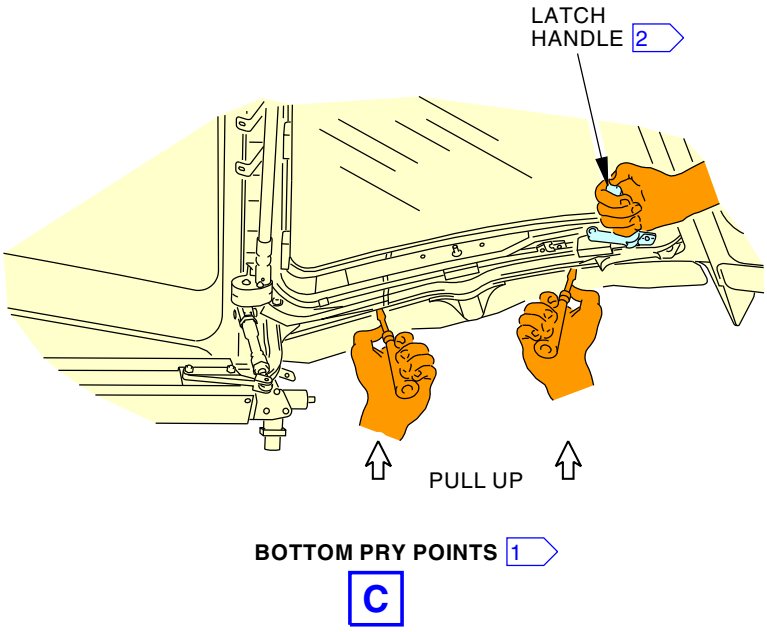
1 DO THE PRY TEST WITH THE WINDOW CLOSED.
DO NOT APPLY MORE THAN 50 POUNDS OF FORCE TO THE PRY TOOL.

2 OPERATE THE LATCH HANDLE TO DO A CHECK OF THE HANDLE FORCE WHILE YOU APPLY FORCE AT EACH PRY POINT.

E67650 S0006428729_V2

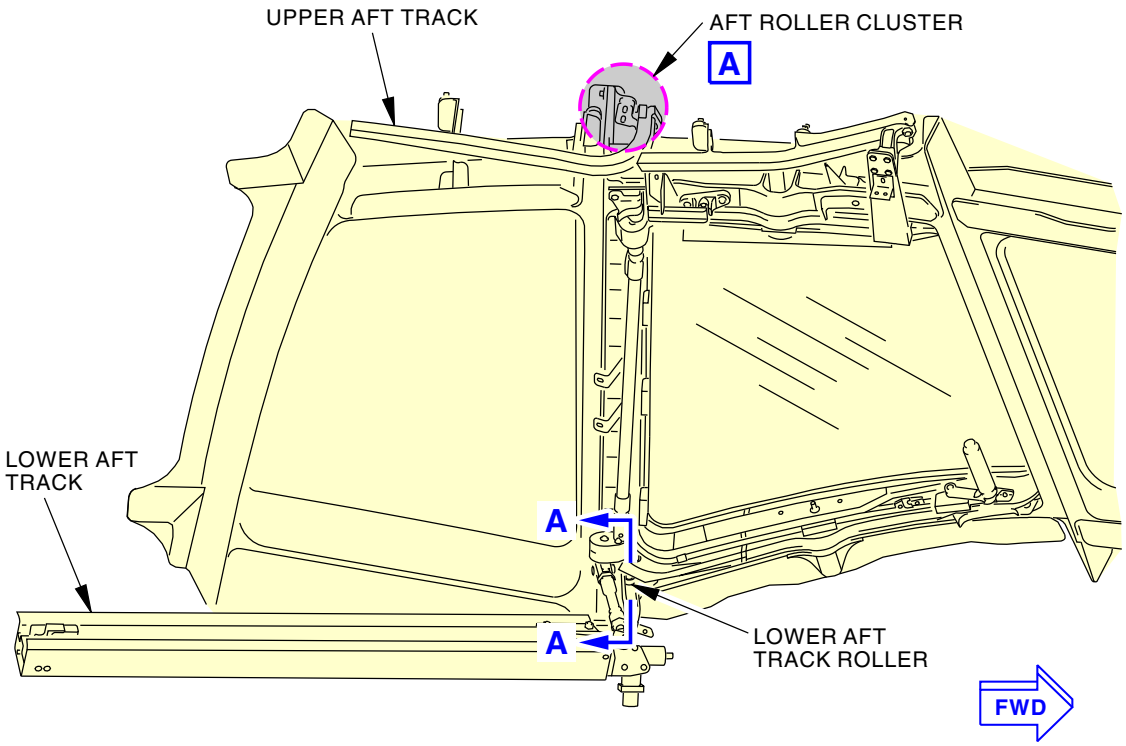
Pry Test for the No. 2 Window
Figure 602/56-11-02-990-825 (Sheet 1 of 2)



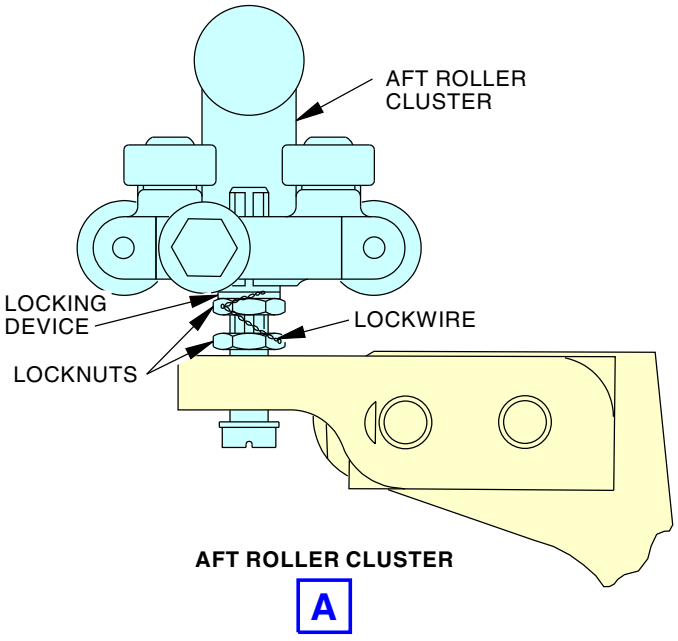


E67643 S0006428730_V2

Pry Test for the No. 2 Window
Figure 602/56-11-02-990-825 (Sheet 2 of 2)

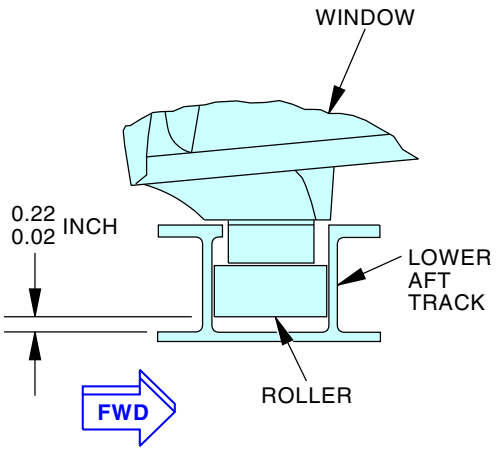


AFT ROLLER CLUSTER



AFT ROLLER CLUSTER

A

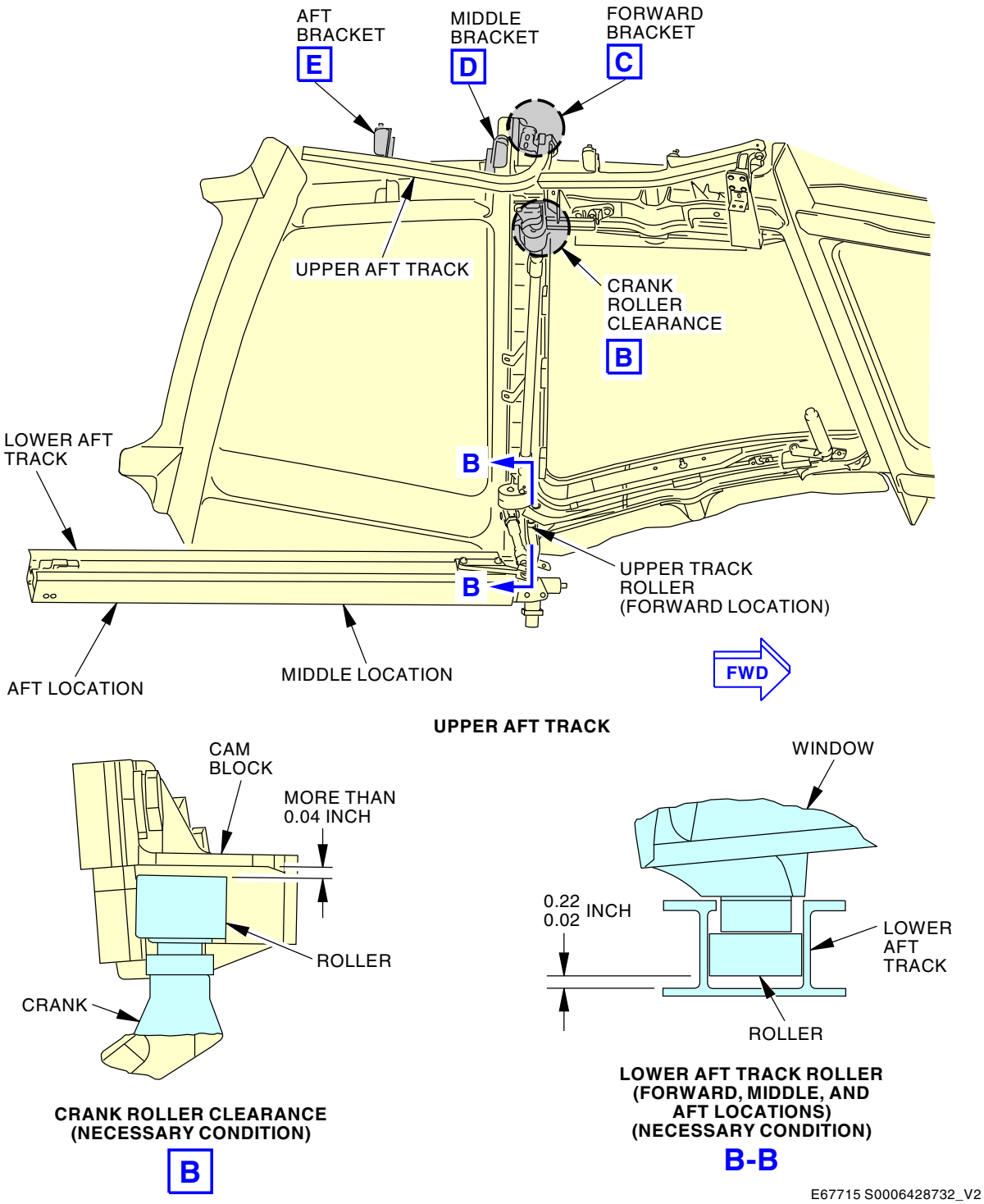


LOWER AFT TRACK ROLLER (ALL LOCATIONS) (NECESSARY CONDITIONS)

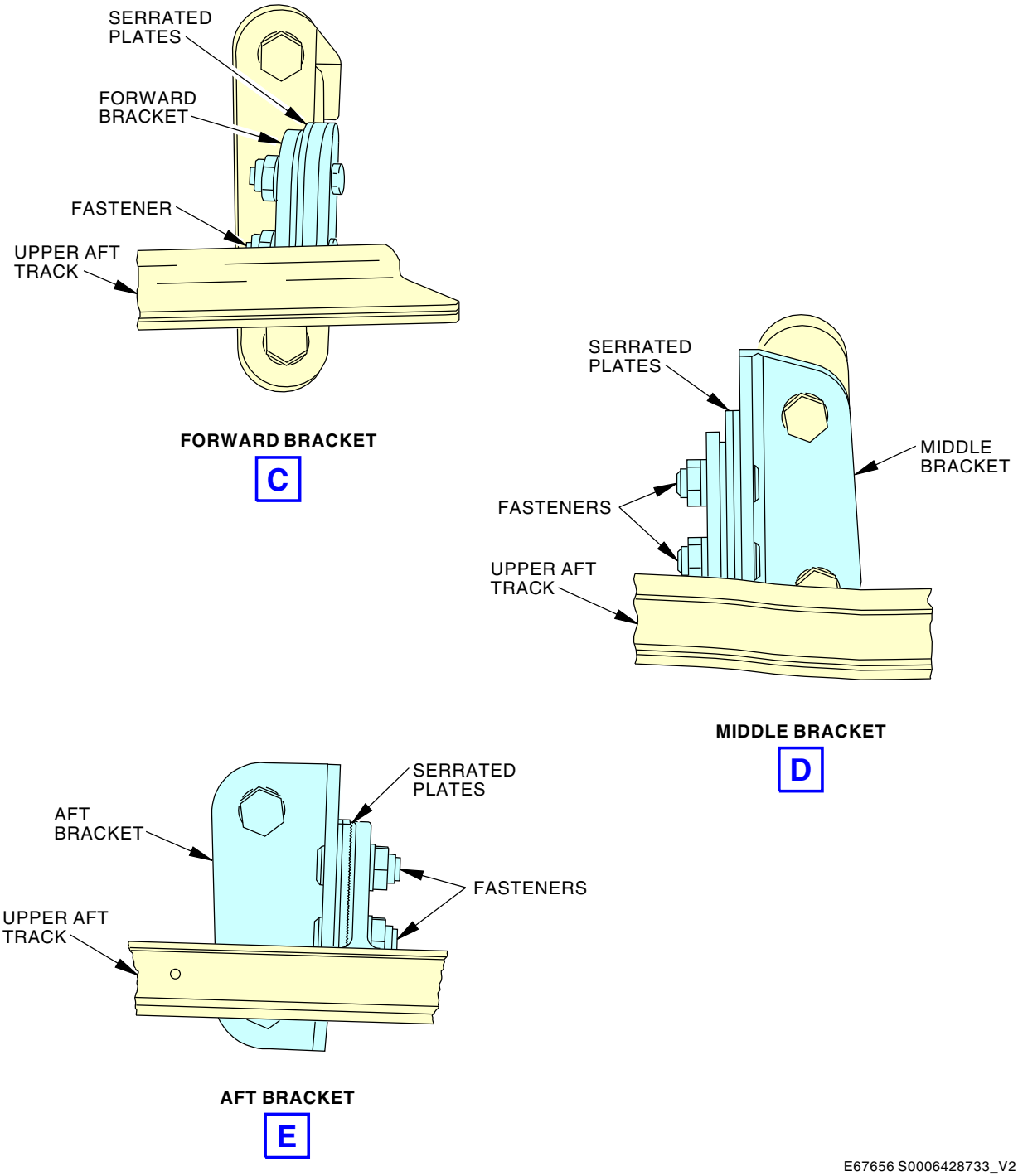
A-A

E67655 S0006428731_V2

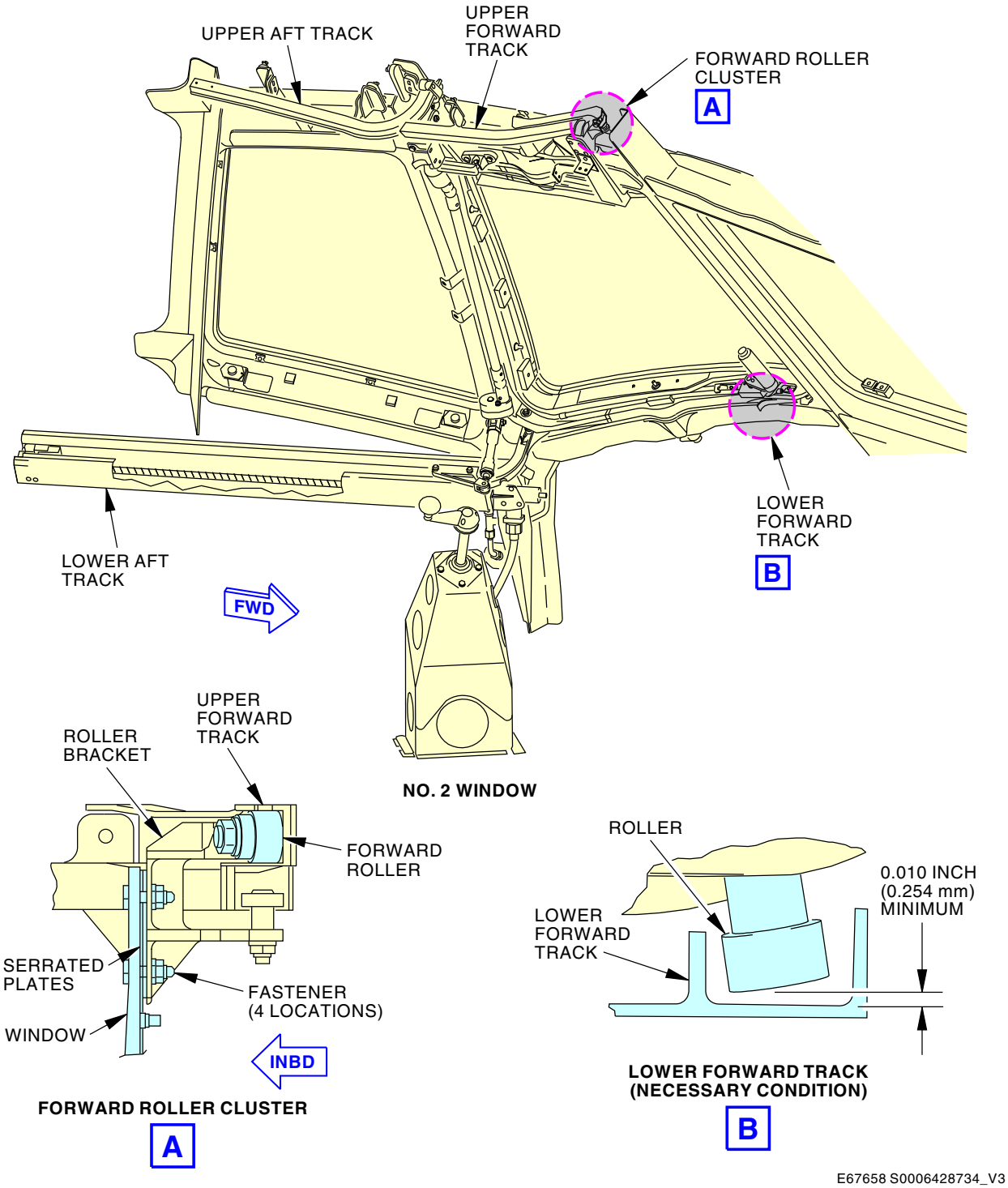
Vertical Check (Aft Side of the Window)
Figure 603/56-11-02-990-826 (Sheet 1 of 3)



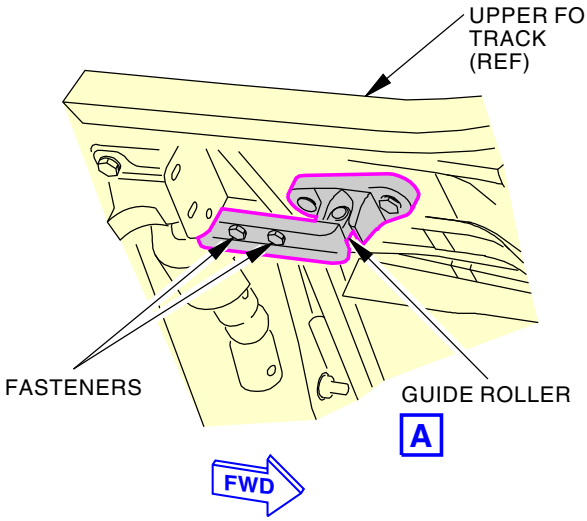
Vertical Check (Aft Side of the Window)
Figure 603/56-11-02-990-826 (Sheet 2 of 3)

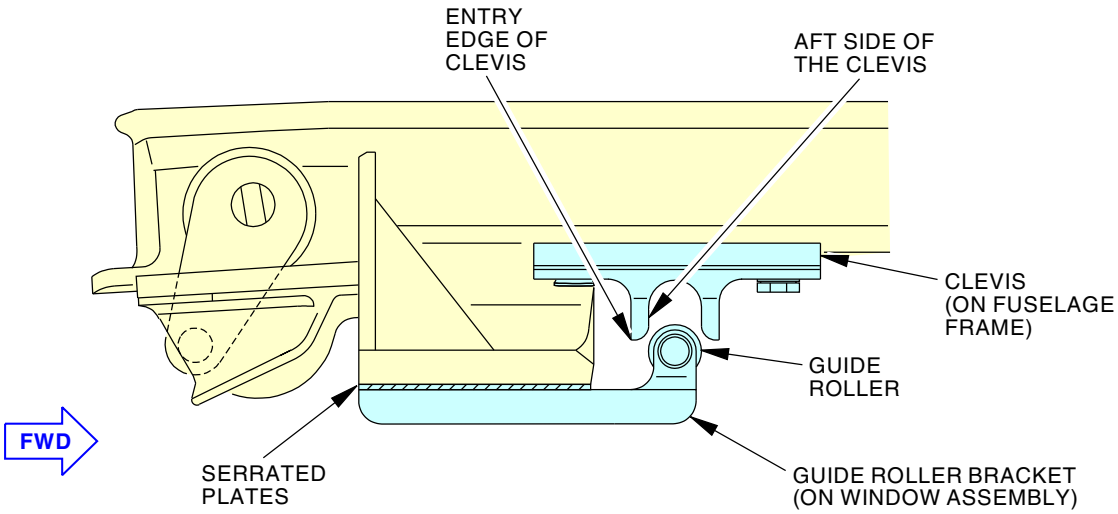


Vertical Check (Aft Side of the Window)
Figure 603/56-11-02-990-826 (Sheet 3 of 3)



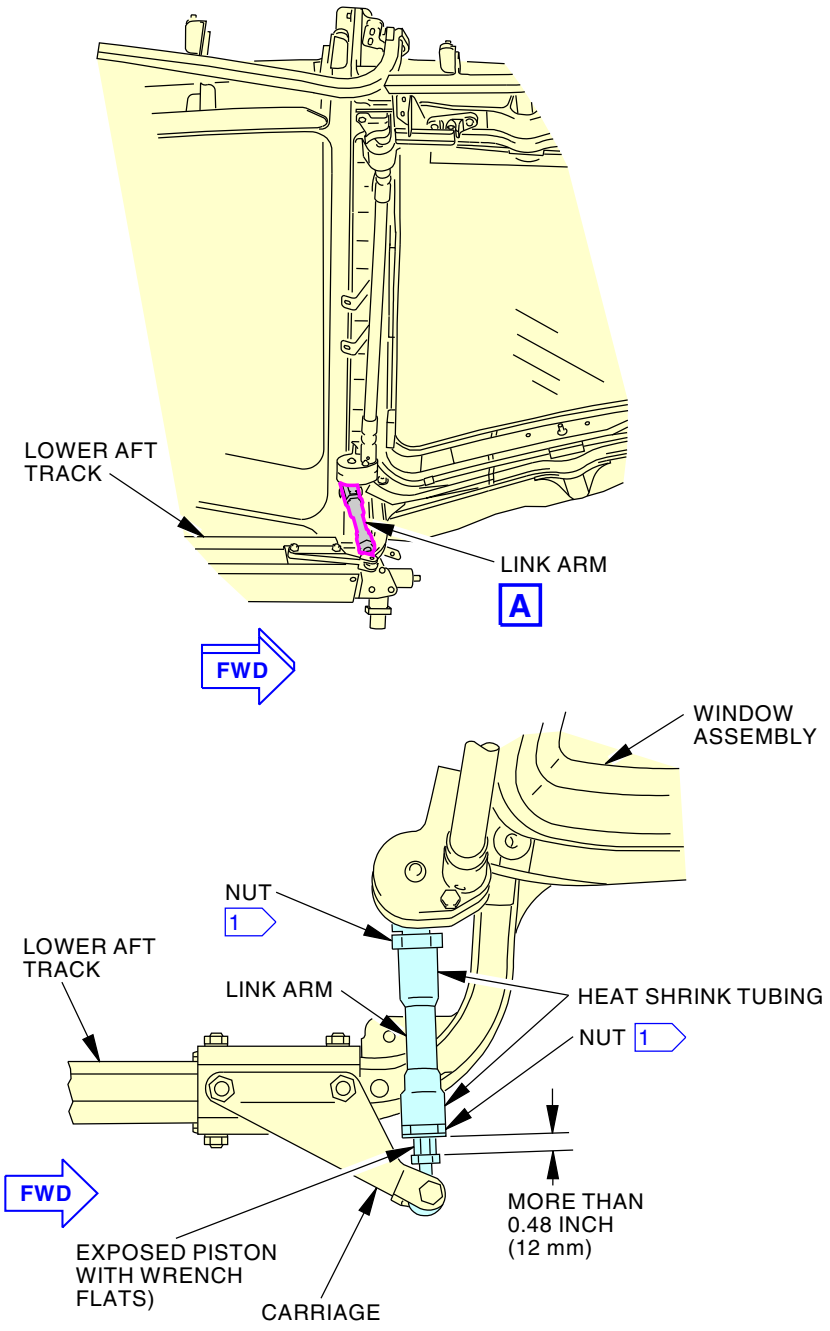
Vertical Check (Forward Side of the Window)
Figure 604/56-11-02-990-817





E67660 S0006428735_V3

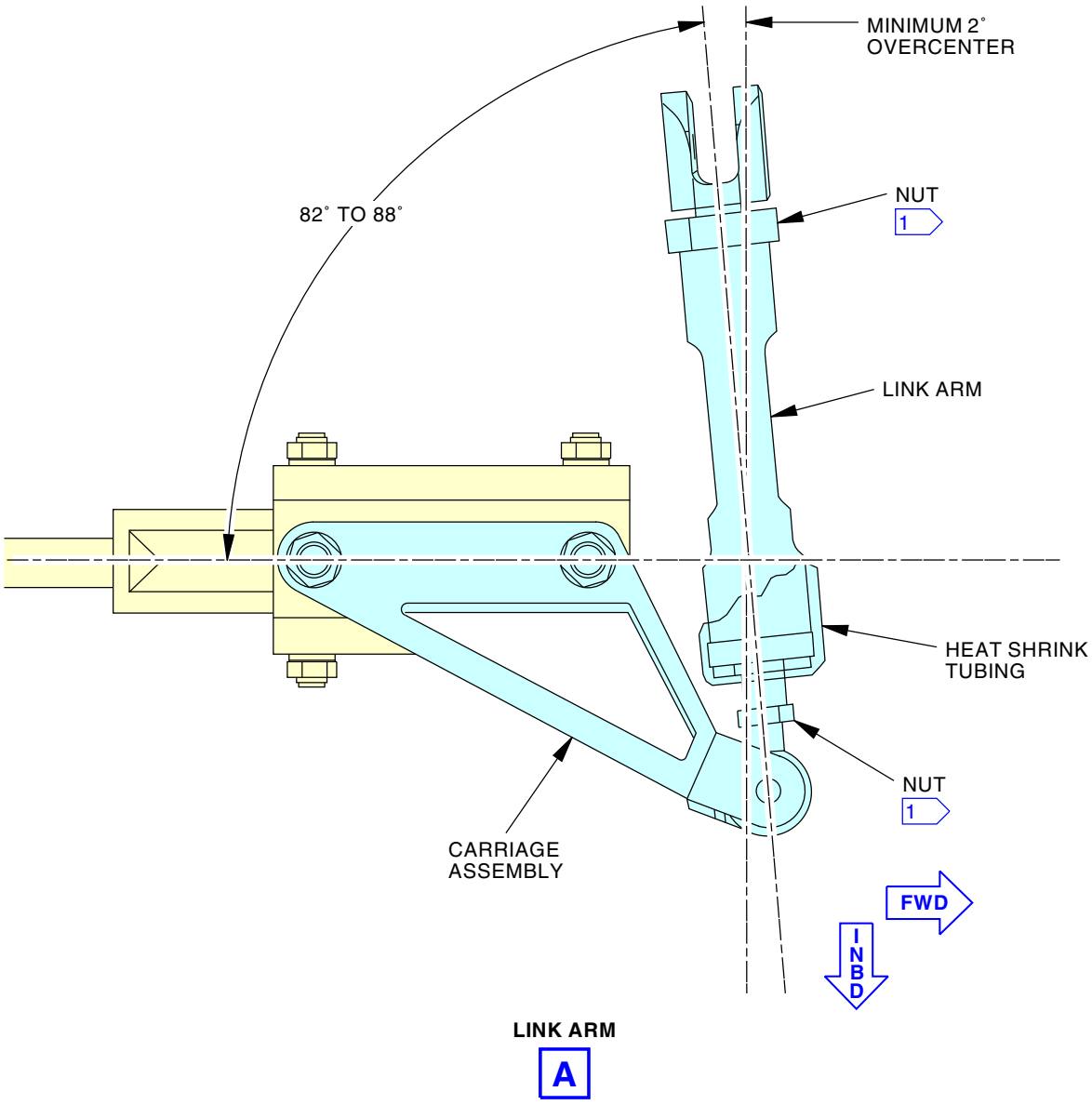
Forward/Aft Check (Top Half of the Window)
Figure 605/56-11-02-990-818



1 DO NOT LOOSEN.

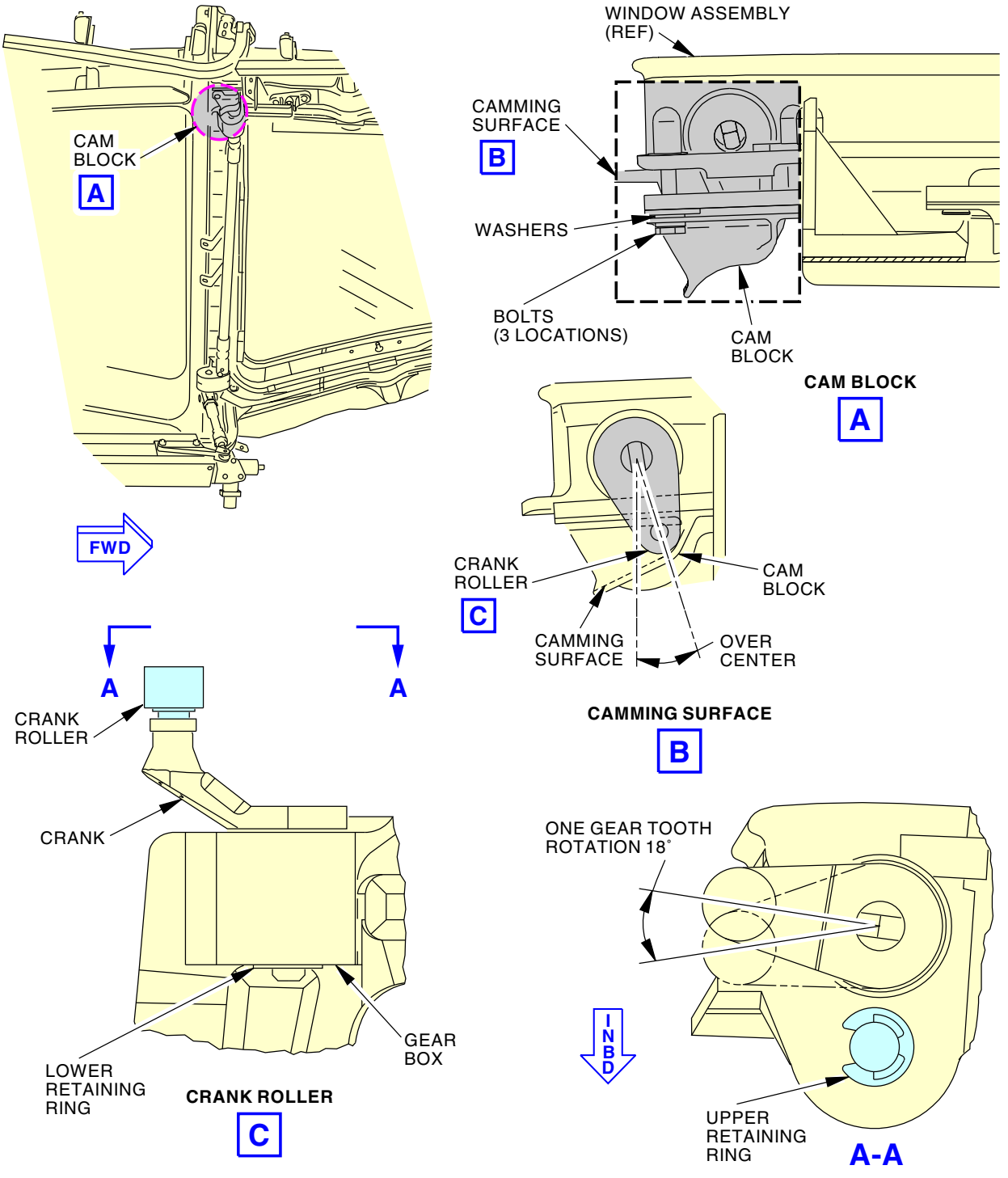
E67717 S0006428736_V3

Inboard/Outboard Check (Bottom Aft Corner of the Window)
Figure 606/56-11-02-990-819 (Sheet 1 of 2)

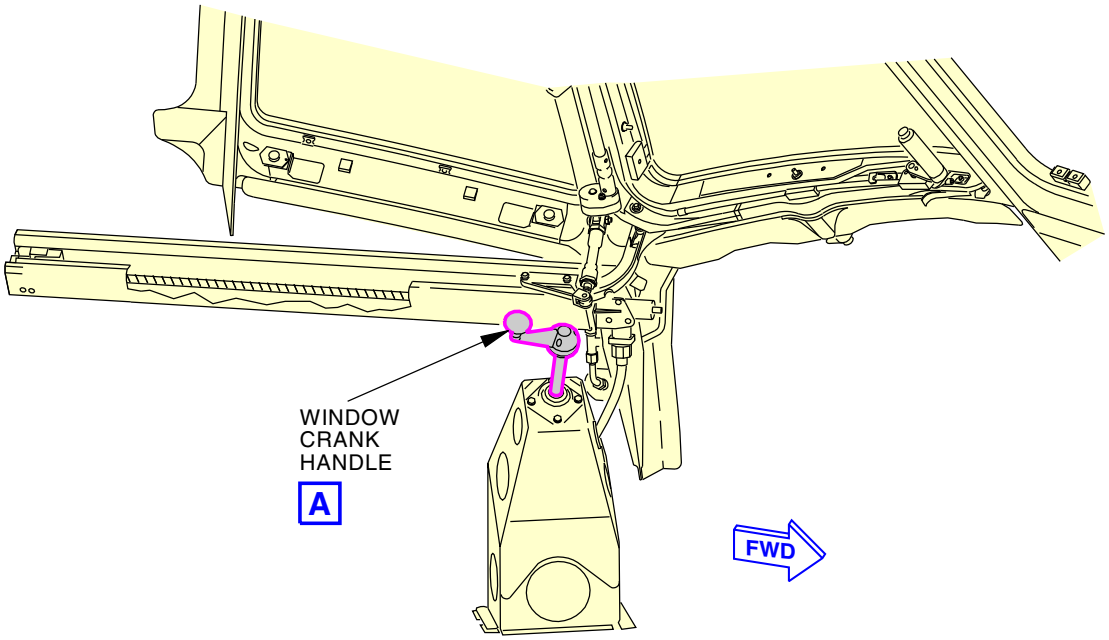


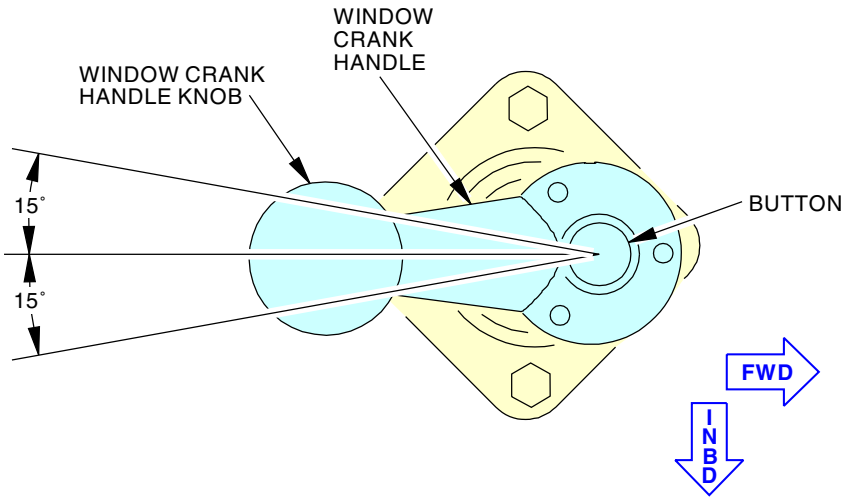
2115519 S0000452981_V2

Inboard/Outboard Check (Bottom Aft Corner of the Window)
Figure 606/56-11-02-990-819 (Sheet 2 of 2)



Inboard/Outboard Check (Top Aft Corner of the Window)
Figure 607/56-11-02-990-820



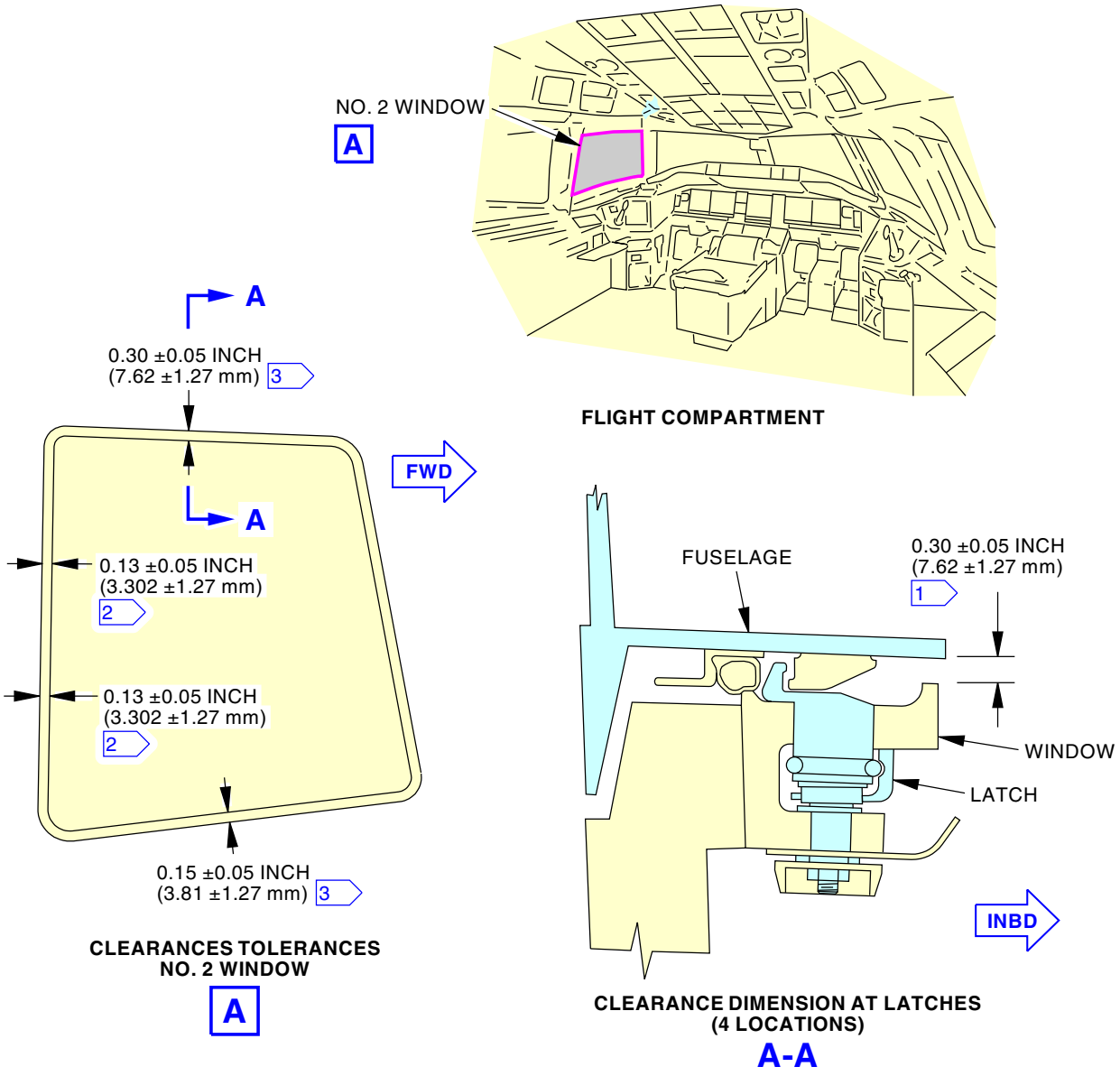


WINDOW CRANK HANDLE

A

E67720 S0006428738_V3

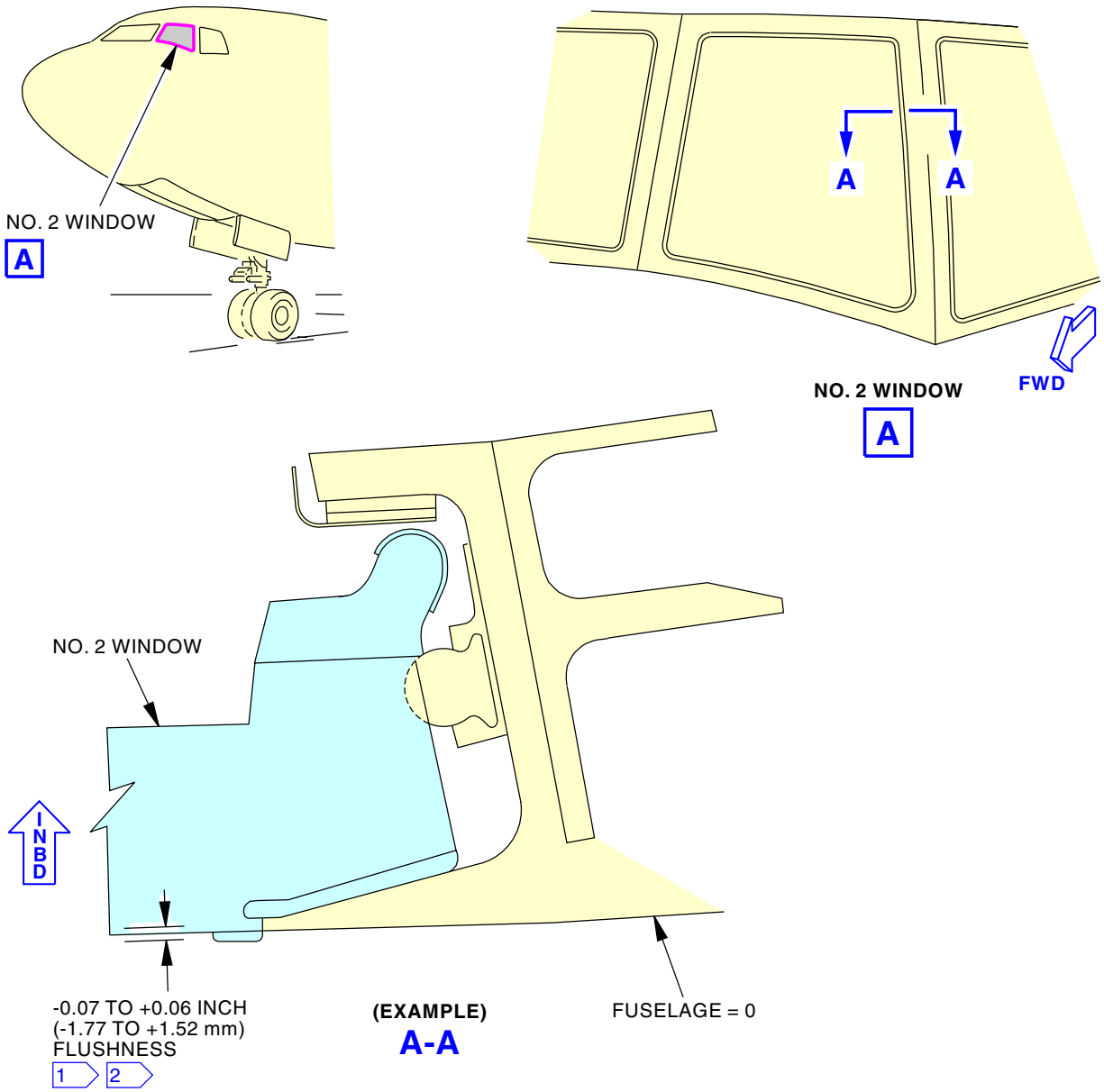
Window Crank Handle Check
Figure 608/56-11-02-990-821



1. MEASURE THE CLEARANCES AT THE TOP, AFT AND BOTTOM LATCHES
2. THE CLEARANCES AT THE AFT LATCHES MUST ALSO BE WITHIN 0.02 INCH (0.508 mm) OF EACH OTHER.
3. THESE ARE NOMINAL DIMENSIONS. IF YOUR AIRPLANE HAS DIFFERENT NOMINAL DIMENSIONS, ADD OR SUBTRACT THE DIFFERENCE EQUALLY BETWEEN THE TOP AND BOTTOM CLEARANCE.

E67871 S0006428739_V3

Internal Window Clearance
Figure 609/56-11-02-990-822



1 A NEGATIVE FLUSHNESS SHOWS THE WINDOW IS INBOARD OF THE FUSELAGE CONTOUR. A POSITIVE FLUSHNESS SHOWS THE WINDOW IS OUTBOARD OF THE FUSELAGE CONTOUR.

2 THE FLUSHNESS TOLERANCE IS FOR ALL SIDES OF THE WINDOW.

E67869 S0006428740_V3

External Window Flushness
Figure 610/56-11-02-990-829

NO. 2 WINDOW INDICATION SYSTEM SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Removal of the No. 2 Window Alert Microswitch

(2) Installation of the No. 2 Window Alert Microswitch.

B. This procedure can be used on the left or right No. 2 window switch.

TASK 56-11-03-000-801

2. No. 2 Window System Switch Removal

(Figure 401)

A. Location Zones

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

B. Prepare for the Removal

SUBTASK 56-11-03-010-001

CAUTION

DO NOT USE THE APU FOR POWER WHEN THE L AND R OPAS CIRCUIT BREAKERS ARE OPEN AT THE SAME TIME. IN THIS CONDITION, THE APU BLEED VALVE AND THE ISOLATION VALVES CAN OPEN. THIS CAN CAUSE THE DUCT PRESSURE TO INCREASE. HIGH PRESSURE CAN CAUSE DAMAGE TO THE AIR CONDITIONING EQUIPMENT.

(1) Make sure these circuit breakers are open:

(a) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3

(b) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
D	6	C23603	OPAS 1

(c) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
G	20	C23602	OPAS 2

SUBTASK 56-11-03-010-002

(2) If not already done, remove the interior window lining and padding from the window as follows:

(a) Remove the latch handle cover.

(b) Remove the covers from all sides of the window.

C. Procedure

NOTE: The Alert Switch installation is shown on Fig.401.

SUBTASK 56-11-03-020-002

(1) Trace the two wires from the switch to the harness connection points.

SUBTASK 56-11-03-020-003

(2) Disconnect the switch wires by cutting the swaged connections out of the harness.

NOTE: Cut the wire as close to the swaged connections as possible to preserve the service loop of wire. Cut the wire on the harness side of the swaged connection.

NOTE: If this switch is being replaced based on a fault indication from the EICAS, and the switch position has already been adjusted it is suggested that one last check be made prior to removing the switch. After the wires have been cut, using an ohmmeter, check for continuity across the switch leads with the window latch open and closed. If there is none, continue with this procedure. If the switch appears to be OK, reconnect it as shown below and check the EICAS system.

SUBTASK 56-11-03-020-004

(3) Remove the lock wire from the two mounting/adjusting nuts on the switch body.

SUBTASK 56-11-03-020-005

(4) Loosen the two nuts around the switch body and remove the one closest to the roller.

SUBTASK 56-11-03-020-006

(5) Slide the switch out of the mounting bracket.

SUBTASK 56-11-03-020-007

(6) Cut the tie-wraps as necessary to remove the switch leads from the harness.

——— END OF TASK ———

TASK 56-11-03-400-801

3. No. 2 Window System Switch Installation

(Figure 401)

A. References

Reference	Title
56-11-03-710-802	No. 2 Window Indication System - Alert Switch Adjustment (P/B 501)

B. Procedure

SUBTASK 56-11-03-020-008

(1) Remove the nut around the body of the new switch at the roller end.

SUBTASK 56-11-03-420-004

(2) Slide the switch into the mounting bracket and finger tighten the nut to hold the switch in place.

NOTE: The switch position will be adjusted below.

SUBTASK 56-11-03-420-005

(3) Connect the two wires leading from the switch to the window heater wiring harness by swaging them into new crimp connection terminals.

NOTE: Connect like colored wire to like colored wire.

SUBTASK 56-11-03-410-002

(4) Adjust and test the No. 2 Openable Window Alert Switch, do this task: No. 2 Window Indication System - Alert Switch Adjustment, TASK 56-11-03-710-802.

SUBTASK 56-11-03-980-011

(5) Install the lockwire, use the double twist method.

SUBTASK 56-11-03-410-003

(6) Route the wires in the harness and secure them with tie-wraps.

C. Put the Airplane Back in Its Usual Condition.

SUBTASK 56-11-03-410-004

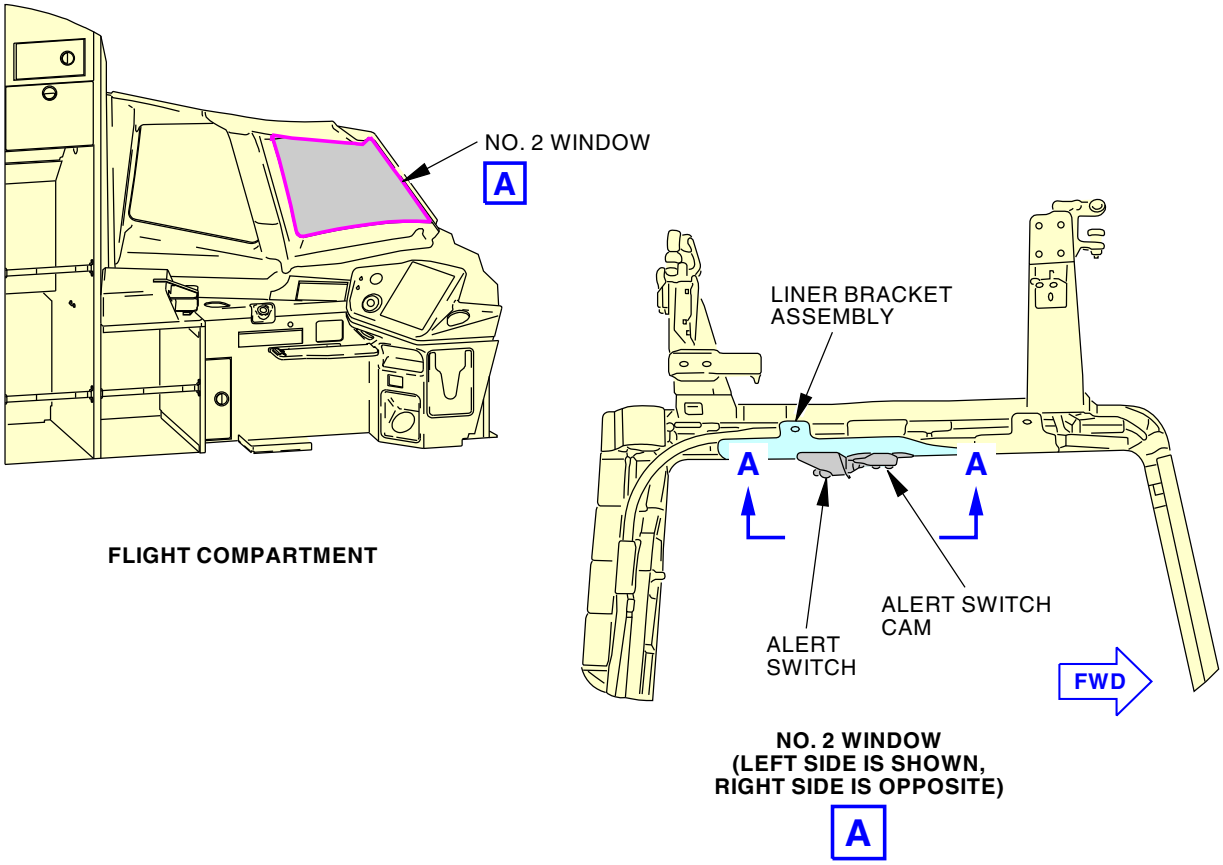
(1) Install the window padding to the window as follows:

NOTE: You just install the window padding to hold the window sensor terminals in their correct position.

(a) Install the covers on all sides of the window.

(b) Install the latch handle cover.

——— END OF TASK ———



No. 2 Openable Window - Alert Switch Removal/Installation
Figure 401/56-11-03-990-803

NO. 2 WINDOW INDICATION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Operational test of the No. 2 window indication system

(2) Adjustment of the No. 2 window Alert Switch position.

C. You can use this task on the left No. 2 window and on the right No. 2 window.

TASK 56-11-03-710-801

2. No. 2 Window Indication System - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
23-93-00-730-802	Overhead Panel Interface Card - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)
56-11-03-000-801	No. 2 Window System Switch Removal (P/B 401)

B. Location Zones

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

C. Prepare For The Test

SUBTASK 56-11-03-940-001

(1) If there is no power on the airplane, (TASK 24-22-00-860-805) .

SUBTASK 56-11-03-860-001

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

D. Left No. 2 Window Indication Test

SUBTASK 56-11-03-420-001

(1) Make sure both flight deck windows (window No. 2 left and window No. 2 right) are fully closed, latched and locked.

SUBTASK 56-11-03-980-001

(2) Slowly turn the latch handle for the left No. 2 window to the OPEN position.

SUBTASK 56-11-03-860-002

(3) Make sure the EICAS advisory message "WINDOW FLT DECK L" is shown on the EICAS display.

NOTE: This message must be shown before or at the same time the latch handle comes off the latched striker bracket.

(a) If the EICAS message is not displayed, latch and lock the window and go to the Alert Switch Adjustment task below.

NOTE: If the switch has already been adjusted, go to the Remove/Replace procedure for this switch, (TASK 56-11-03-000-801).

(b) If the EICAS message is not displayed and the switch was replaced, go to (TASK 23-93-00-730-802).

(c) If the correct EICAS message was displayed, return the handle to the fully CLOSED position.

1) Make sure the window is latched and locked.

SUBTASK 56-11-03-860-003

(4) Make sure the EICAS advisory message "WINDOW FLT DECK L" is not shown on the EICAS display.

E. Right No. 2 Window Indication Test

SUBTASK 56-11-03-860-004

(1) Make sure both flight deck windows (window No. 2 left and window No. 2 right) are fully closed, latched and locked.

SUBTASK 56-11-03-980-003

(2) Slowly turn the latch handle for the right No. 2 window to the OPEN position.

SUBTASK 56-11-03-860-005

(3) Make sure the EICAS advisory message "WINDOW FLT DECK R" is shown on the EICAS display.

NOTE: This message must be shown before or at the same time the latch handle comes off the latched striker bracket.

(a) If the EICAS message is not displayed, latch and lock the window and go to the Alert Switch Adjustment task below.

NOTE: If the switch has already been adjusted, go to the Remove/Replace procedure for this switch, (TASK 56-11-03-000-801).

(b) If the EICAS message is not displayed and the switch replaced, go to Overhead Panel ARINC 629 System Adjustment/Test, (TASK 23-93-00-730-802).

(c) If the correct EICAS message was displayed, return the handle to the fully CLOSED position.

1) Make sure the window is latched and locked.

SUBTASK 56-11-03-860-006

(4) Make sure the EICAS advisory message "WINDOW FLT DECK R" is not shown on the EICAS display.

F. Return the Airplane to Normal

SUBTASK 56-11-03-860-007

(1) If the switches were adjusted, install the window padding to the window as follows:

NOTE: You must install the window padding to hold the window sensor terminals in their correct position.

(a) Install the covers on all sides of the windows

(b) Install the latch handle cover.

END OF TASK

TASK 56-11-03-710-802

3. No. 2 Window Indication System - Alert Switch Adjustment

A. Location Zones

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

B. Prepare For The adjustment

SUBTASK 56-11-03-860-008

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	7	C23605	OPAS 3
D	6	C23603	OPAS 1
G	20	C23602	OPAS 2

SUBTASK 56-11-03-860-009

(2) Remove the interior window lining and padding from the window as follows:

(a) Remove the latch handle cover.

(b) Remove the covers from all sides of the windows.

C. Alert Switch Adjustment

NOTE: The No. 2 openable window alert switch installation is shown on (Figure 501).

SUBTASK 56-11-03-420-003

(1) Remove the lockwire from the alert switch mounting/adjusting nuts.

SUBTASK 56-11-03-980-005

(2) Loosen the nuts.

SUBTASK 56-11-03-980-006

(3) Using a feeler gauge, position the Alert Switch roller within 0.020 +0.005 / -0.015 in. (0.508 +0.127 / -0.381 mm) from the Alert Switch Cam, (Figure 501).

SUBTASK 56-11-03-980-007

(4) Adjust the nut closest to the cam so it is snug against the Alert Switch mounting bracket.

SUBTASK 56-11-03-980-008

(5) Tighten the other nut to lock the Alert Switch in position.

SUBTASK 56-11-03-980-009

(6) Using feeler gauges, verify that the switch roller position is within the adjustment range above.

NOTE: If tightening the nuts has moved the switch outside the adjustment limits, loosen them and repeat the above steps until the switch is positioned correctly.

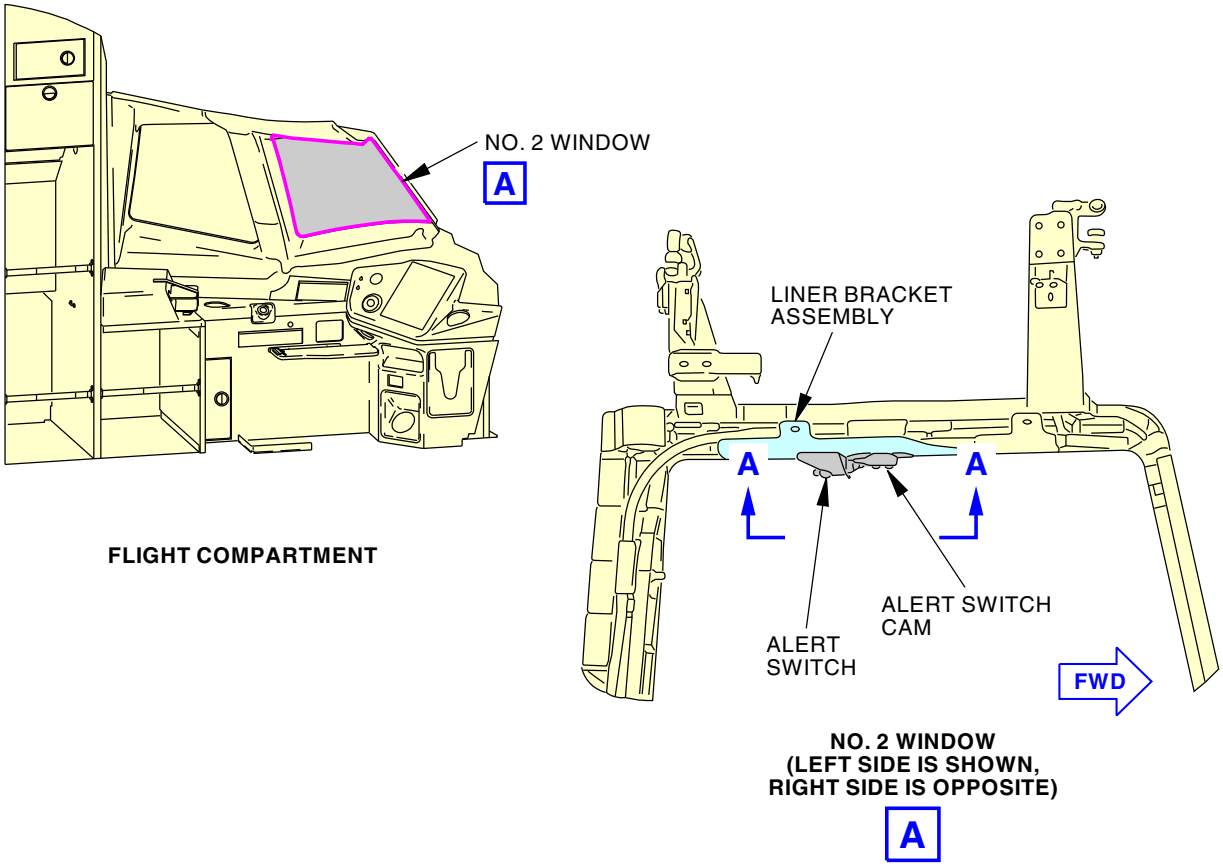
SUBTASK 56-11-03-980-010

(7) Install the lockwire, use the double twist method.

SUBTASK 56-11-03-760-001

(8) Perform the, do this task: No. 2 Window Indication System - Operational Test, TASK 56-11-03-710-801 procedure above.

END OF TASK



No. 2 Openable Window - Alert Switch Adjustment
Figure 501/56-11-03-990-802

NO. 2 WINDOW OPERATING MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the No. 2 Window operating mechanism

(2) Installation of the No. 2 Window operating mechanism.

TASK 56-11-04-000-801

2. No. 2 Window Operating Mechanism Removal

(Figure 401)

A. Location Zones

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

B. Prepare for the Removal

SUBTASK 56-11-04-010-001

(1) Remove lining to get access to the area below the forward end of the drive track [15] and the area below the window knob assy [2].

C. Removal

SUBTASK 56-11-04-020-001

(1) Remove the flexible drive shaft [5] as follows:

(a) Remove the lockwire from the nut [8] at the top of the flexible drive shaft [5].

(b) Loosen the nut [8].

(c) Pull the flexible drive shaft [5] from the 90 degree gear box [4].

(d) Remove the lockwire from the nut [8] on the bottom of the flexible drive shaft [5].

(e) Loosen the nut [8].

(f) Pull the flexible drive shaft [5] from the primary gearbox [7].

(g) Remove the flexible drive shaft [5] from the support structure [6].

SUBTASK 56-11-04-020-002

(2) Remove the crank assembly as follows:

(a) Remove the bolt [11] from the fitting assy [10].

(b) Pull the crank assembly from the support structure [6] and the primary gearbox [7].

(c) Remove the knob assy [2] from the shaft, if it is necessary to remove the bolt [11] from the shaft.

(d) Bend the lockwasher [13] until it does not engage the nut [14].

(e) Remove the nut [14].

(f) Remove the lockwasher [13].

(g) Pull the bearing [12] and the fitting assy [10] from the crank assy [3].

SUBTASK 56-11-04-020-003

(3) Remove the 90 degree gear box [4] as follows:

(a) Remove the three bolt [17] that hold the 90 degree gear box [4] to the fitting below the drive track.

(b) Pull the 90 degree gear box [4] forward from the fitting.

NOTE: The forward coupling [24] and aft coupling [25] will disengage.

——— END OF TASK ———

TASK 56-11-04-400-801

3. No. 2 Window Operating Mechanism Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Knob assembly	56-11-04-02-080	ARO ALL
10	Fitting assembly	56-11-04-02-150	ARO ALL

B. Location Zones

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

C. Installation

SUBTASK 56-11-04-420-001

(1) Install the 90 degree gear box [4] as follows:

(a) Align the 90 degree gear box [4] with the fitting below the drive track.

(b) Push the 90 degree gear box [4] aft until the bolt holes are aligned.

(c) Make sure the spacer [22] is between the forward coupling [24] and the aft coupling [25].

(d) Install the three bolt [17].

SUBTASK 56-11-04-420-002

(2) Install the crank assy [3] as follows:

(a) Put the fitting assembly [10] with the bearing [12] on theshaft [3] if you removed them.

(b) Put the lockwasher [13] and the nut [14] on the shaft if you removed them.

(c) Push the fitting assy [10] and the lockwasher [13] down the shaft [3] until the lockwasher [13] is in the groove on the shaft [3].

(d) Tighten the nut [14] to 200-240 pound-inches.

(e) Bend the tabs of the lockwasher [13] up to safety the nut [14].

(f) Attach the knob assembly [2] on the end of the shaft [3].

(g) Lubricate the splines on the end of the shaft [3] with grease.

(h) Put the shaft [3] through the support structure [6].

(i) Put the end of the shaft [3] in the primary gearbox [7].

(j) Install the bolt [11] to attach the fitting assy [10] to the support structure [6].

SUBTASK 56-11-04-420-003

(3) Install the flexible drive shaft [5] as follows:

(a) Put the flexible drive shaft [5] through the support structure [6].

(b) Put the bottom end of the drive shaft [5] in the primary gearbox [7].

(c) Tighten the nut [8] to 55-60 pound-inches.

(d) Safety the nut [8] to the primary gearbox [7] with a lockwire.

(e) Put the top end of the flexible drive shaft [5] in the 90 degree gear box [4].

(f) Tighten the nut [8] to 55-60 pound-inches.

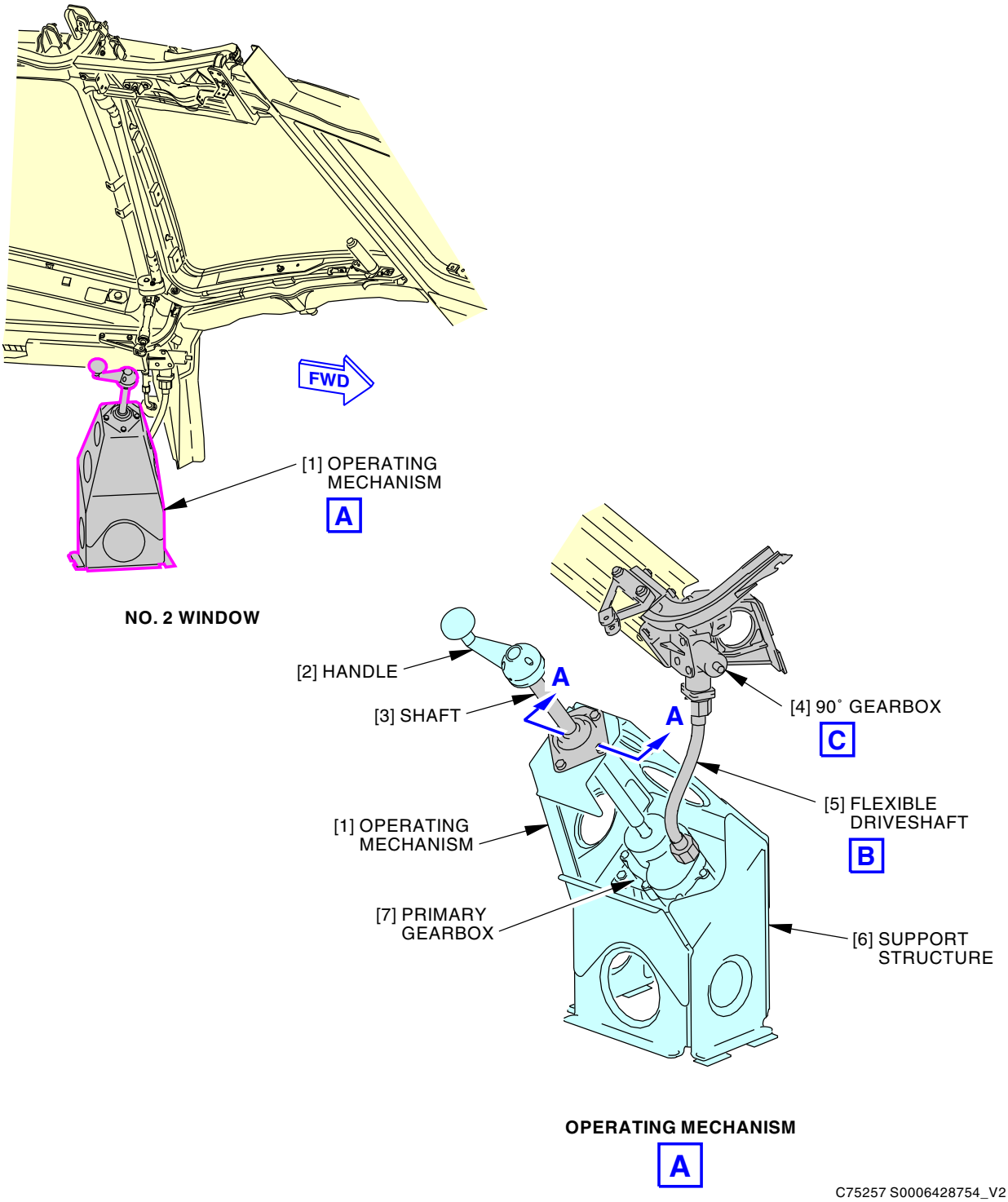
(g) Safety the nut [8] to the 90 degree gear box [4] with a lockwire.

D. Put the Airplane Back in Its Usual Condition:

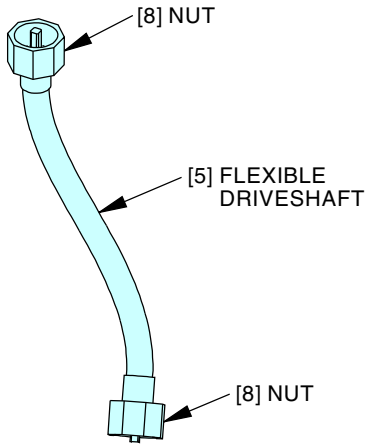
SUBTASK 56-11-04-410-001

(1) Install the lining below the forward end of the drive track [15] and the area below the window knob assy [2].

——— END OF TASK ———

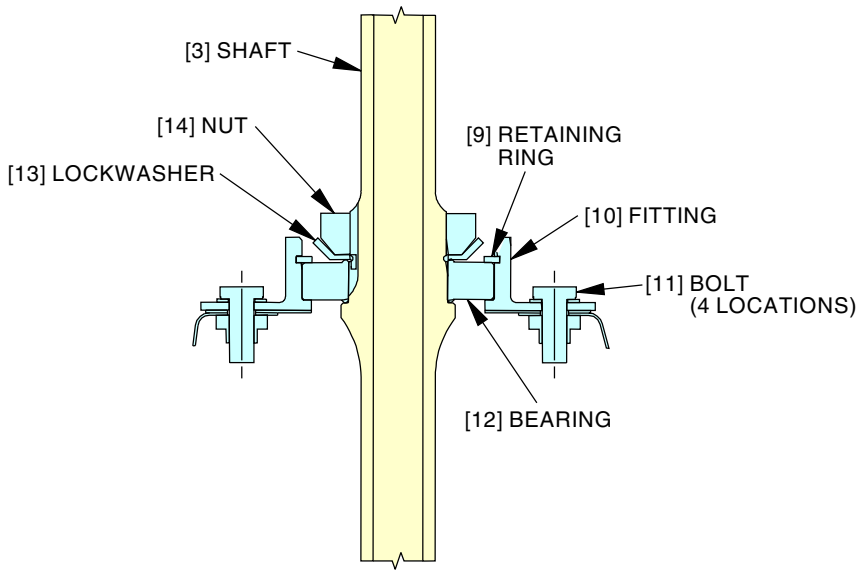


No. 2 Window Operating Mechanism Installation
Figure 401/56-11-04-990-801 (Sheet 1 of 3)



FLEXIBLE DRIVESHAFT

B

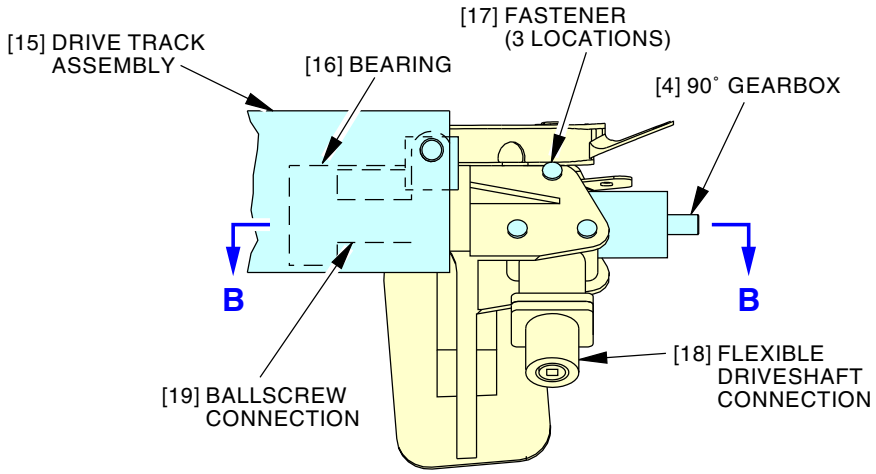


CRANK ASSEMBLY

A-A

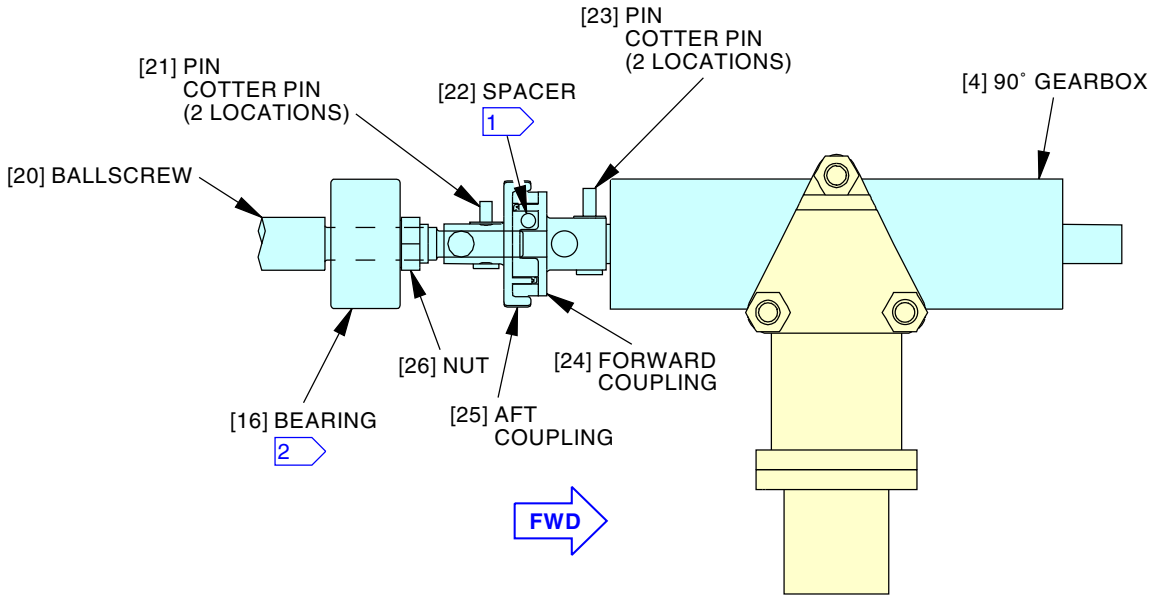
C75263 S0006428755_V2

No. 2 Window Operating Mechanism Installation
Figure 401/56-11-04-990-801 (Sheet 2 of 3)



90˚ GEARBOX

C



BALLSCREW CONNECTION

B-B

1 OPTIONAL:
YOU CAN BOND THE SPACER TO THE FORWARD COUPLING

2 THE BEARING SUPPORT IS NOT SHOWN

C76680 S0006428756_V2

No. 2 Window Operating Mechanism Installation
Figure 401/56-11-04-990-801 (Sheet 3 of 3)

NO. 2 WINDOW SEAL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the No. 2 window seal

(2) Installation of the No. 2 window seal.

TASK 56-11-13-000-801

2. Remove the No. 2 Window Seal

(Figure 401)

A. General

(1) This procedure is for the left and right No. 2 openable windows.

B. Location Zones

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

C. Removal

SUBTASK 56-11-13-010-001

(1) Open the No. 2 window as far as possible.

SUBTASK 56-11-13-020-002

CAUTION

MAKE SURE YOU DO NOT DAMAGE THE ADJACENT STRUCTURE.

(2) Carefully pull the seal [2] from the seal retainer:

NOTE: Leaks can occur if the bulb seal retainer is damaged.

(a) Carefully cut across the bulb area of the seal [2].

(b) Use the opening you created as a finger hold to pull the seal [2] from the retainer.

(c) Discard the used bulb seal.

NOTE: The bulb seal is used for one installation only.

END OF TASK

TASK 56-11-13-400-801

3. Install the No. 2 Window Seal

(Figure 401)

A. General

(1) This procedure is for the left and right No. 2 openable windows.

B. References

Reference	Title
05-51-24-720-801	EXCESSIVE CABIN PRESSURE LEAKAGE TEST (P/B 201)
20-30-90-910-801	Final Cleaning of Solvent Resistant Organic Coatings Prior to Non-structural Bonding (Series 90) (P/B 201)

(Continued)

Reference	Title
51-11-00-790-801	Leak Check of the No. 2 Window (P/B 601)
51-31-01-390-801	Non-Removable Faying (Mated) Surface Seal Application (P/B 201)
51-31-01-390-804	Fillet Seal Application (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-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: $0855 Part #: 234350 Supplier: $0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: $0856 Part #: DFD5019 Supplier: $0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: $0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5
COM-14296	Sealant Gun, 2.5 oz. Part #: 250B-2.5 Supplier: $0857
COM-14297	Hose, Sealant Gun - Universal Part #: 232649 Supplier: $0857
COM-14298	Sealant Cartridge - 2.5 oz Part #: 220316 Supplier: $0857
COM-14299	Sealant Nozzle Part #: 220544 Supplier: $0857
SPL-11813	Installation Tool - Window Seal Roller Part #: ST1066-1 Supplier: 81205 Part #: ST1742C-A Supplier: 81205
SPL-14295	Installation Tool - Window Seal Edge Part #: ST1066-3 Supplier: 81205
STD-14294	Styren Round Rod - .100 Inch Diameter and 1.5 Inch Long

D. Consumable Materials

Reference	Description	Specification
A00161	Adhesive - Epoxy-Amine Adhesive For Non-Structural Bonding	BMS5-25
A01049	Sealant - Pressurized Fillet - Dow Corning Q3-6093	
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
A50057	Adhesive - Silicone Rubber, RTV157	BAC5010 Type 60

(Continued)

Reference	Description	Specification
A50067	Adhesive - Silicone Rubber - RTV 102 (White)	MIL-A-46106, BAC5010 Type 60, Grade 1
A50126	Primer - Adhesive Bonding (Formerly Dow Corning 1204 Clear)	
A50420	Sealant - Silicone, Quick Cure - DC 983	
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
B01010	Final Cleaning Before Non-Structural Bonding To Solvent Resistant Organic Coatings - Series 90	
C50242	Primer - Dow Corning PR-1204 RTV Prime Coat	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Seal	56-11-13-02-360	ARO ALL
		56-11-13-02-365	ARO ALL

F. Location Zones

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

G. Prepare for installation.

SUBTASK 56-11-13-010-002

(1) Open the No. 2 window to the fully open position.

SUBTASK 56-11-13-020-003

(2) Remove old sealant using non-metallic scrapers or sealant removal tool, COM-2481:

NOTE: It is necessary that the area is as clean as possible. Areas that are not cleaned to the maximum possible conditions can become leaks.

(a) Make sure that all the sealant is removed.

(b) Remove grease, oil, dirt and all unwanted material from the seal retainer and adjacent area with a clean cotton wiper, G00034 and Series 90 solvent, B01010 (TASK 20-30-90-910-801).

1) Make sure all slots and recesses have been cleaned and that all old sealant has been removed.

(c) Do the steps again to clean until the window is as clean as possible.

NOTE: This is necessary to prevent window leaks.

SUBTASK 56-11-13-210-002

(3) Make sure that the bulb seal retainer is sealed with a fillet seal to the fuselage structure (Figure 401).

(a) If it is necessary, use adhesive, A00161 to make a fillet seal between the fuselage structure and the bulb seal retainer.

H. Installation

SUBTASK 56-11-13-400-001

CAUTION

DO NOT INSTALL THE WINDOW SEAL WITH A SCREWDRIVER OR OTHER SHARP TOOL DAMAGE TO THE WINDOW SEAL CAN OCCUR IF A SHARP TOOL IS USED TO INSTALL THE WINDOW SEAL.

(1) Install the seal [2], as follows:

CAUTION

DO NOT GET SEALANT IN THE BULB SEAL BREATHER HOLES. IF THE BREATHER HOLES HAVE SEALANT IN THEM, DAMAGE TO THE WINDOW BULB SEAL CAN OCCUR.

(a) Lightly mark the seal at breather hole locations and plug breather holes with styren round rod, STD-14294 to keep sealant out of the breather holes.

NOTE: This will allow the holes to be located if they are covered with sealant.

(b) Fill all gaps between the seal retainer segments with sealant, A02315 (Figure 402). Apply additional sealant if required to smooth the steps between seal retainer segments. Do this task: Non-Removable Faying (Mated) Surface Seal Application, TASK 51-31-01-390-801.

NOTE: PR 1204 primer, A50126 or Dow Corning PR-1204 prime coat, C50242 can help to make the bond of the sealant stronger.

NOTE: A pneumatic seal installation tool (sealant gun) should be used to install the fillet seal. This will make the installation easier and provide a better quality seal. The sealant gun, COM-14296, sealant gun hose, COM-14297, sealant cartridge, COM-14298, and sealant nozzle, COM-14299 are recommended.

NOTE: Use adhesive, A50057, RTV 102 adhesive, A50067, or Dow Corning Q3-6093 sealant, A01049, or quick cure DC 983, A50420.

NOTE: You must apply the sealant correctly for a good pressure seal installation. You can cause air bubbles under the sealant if you pull the sealant gun when you apply the sealant. You should push the sealant gun when you apply the sealant. Refer to manufacturer's instructions for specific cure times based on local conditions of where the product is used.

(c) Allow a minimum of 1 hour for the sealant to set prior to installation of the seal [2].

(d) Install the seal with breather holes inboard.

(e) Install the seal [2] in the bulb seal retainer:

1) Push the seal [2] into the bulb seal retainer at the center of the top of the window opening.

NOTE: The window seal installation tool, SPL-11813 and window seal edge installation tool, SPL-14295 are recommended for installation of the seal [2].

a) Install the inboard lip of the seal first.

b) Then push the outboard lip in the track with the seal installation tool.

2) Push the seal [2] into the bulb seal retainer at the center of the bottom of the window opening.

3) Push the seal [2] into the bulb seal retainer at the center of the sides of the window opening.

4) Push the seal [2] into the bulb seal retainer at the corners of the window opening.

(f) Even out the slack at each side of the seal [2] by sliding the corner of the seal.

(g) Push the seal [2] into the retainer, starting from the corners.

1) Install approximately 4 in. (102 mm) of seal at a time. Install both sides of each corner and complete all 4 corners before installing the next 4 in. (102 mm). Continue moving from corner to corner until the seal is completely installed.

2) Make sure the seal is not kinked, wrinkled or otherwise damaged particularly in the crown area. Seals have a solid foam insert in the bulb seal common to the corner marks. Make sure the foam inserts are in the corner region by feeling for changes in the flexibility of the seal.

SUBTASK 56-11-13-100-001

(2) Lightly clean the seal [2] with a small amount of solvent, B00148.

SUBTASK 56-11-13-200-001

(3) Make sure the seal [2] is installed correctly.

SUBTASK 56-11-13-390-001

CAUTION

DO NOT GET SEALANT IN THE BULB SEAL BREATHER HOLES. IF THE BREATHER HOLES HAVE SEALANT IN THEM, DAMAGE TO THE WINDOW BULB SEAL CAN OCCUR.

(4) Fillet seal around the edge of the window seal where the bulb seal and touches the outer portion of the seal retainer. To apply this seal, do this task: Non-Removable Faying (Mated) Surface Seal Application, TASK 51-31-01-390-801

NOTE: A pneumatic seal installation tool (sealant gun) should be used to install the fillet seal. This will make the installation easier and provide a better quality seal. The sealant gun, COM-14296, sealant gun hose, COM-14297, sealant cartridge, COM-14298, and sealant nozzle, COM-14299 are recommended.

NOTE: Use adhesive, A50057, RTV 102 adhesive, A50067, or Dow Corning Q3-6093 sealant, A01049, or sealant, A02315, or quick cure sealant DC 983, A50420.

NOTE: You must apply the sealant correctly for a good pressure seal installation. You can cause air bubbles under the sealant if you pull the sealant gun when you apply the sealant. You should push the sealant gun when you apply the sealant. Apply sealant above 50 degrees Fahrenheit and above 40 percent humidity. Under these conditions, the sealant will be sufficiently set in a minimum of 4 hours. Do not close the window until the sealant is fully set.

(a) Do not close the window until the sealant has cured fully.

NOTE: It is critical to make sure the sealant is installed correctly and allowed to cure.

SUBTASK 56-11-13-390-002

CAUTION DO NOT GET SEALANT IN THE BULB SEAL BREATHER HOLES. IF THE BREATHER HOLES HAVE SEALANT IN THEM, DAMAGE TO THE WINDOW BULB SEAL CAN OCCUR.

(5) Apply a fillet seal between the inboard and outboard sides of the bulb seal to the full periphery. Apply the pressure seal at the four latch stud locations (Figure 403). To apply fillet seal, do this task: Fillet Seal Application, TASK 51-31-01-390-804

NOTE: A pneumatic seal installation tool (sealant gun) should be used to install the fillet seal. This will make the installation easier and provide a better quality seal. The sealant gun, COM-14296, sealant gun hose, COM-14297, sealant cartridge, COM-14298, and sealant nozzle, COM-14299 are recommended.

NOTE: Use adhesive, A50057, RTV 102 adhesive, A50067 or Dow Corning Q3-6093 sealant, A01049, or quick cure DC 983, A50420.

NOTE: You must apply the sealant correctly for a good pressure seal installation. You can cause air bubbles under the sealant if you pull the sealant gun when you apply the sealant. You should push the sealant gun when you apply the sealant. Apply sealant above 50 degrees Fahrenheit and above 40 percent humidity. Under these conditions, the sealant will be fully set in a minimum of 4 hours. Do not close the window until the sealant is fully set.

(a) Allow a minimum of 4 hours for the sealant to set before closing the window.

SUBTASK 56-11-13-210-001

(6) Examine the breathe holes to ensure they are not blocked with sealant.

SUBTASK 56-11-13-210-003

(7) Visually examine the pressure seal for damage.

SUBTASK 56-11-13-410-001

(8) Close the No. 2 window when the sealant has dried.

SUBTASK 56-11-13-790-001

(9) Make sure that the windows installation and sealing are correct.

NOTE: Boeing provides a leak check procedure for the No. 2 Window, in AMM TASK 51-11-00-790-801 for operator use, as deemed necessary. In addition, it is acceptable to do a 4.0 psi pressure check on-ground as a confidence check in lieu of the leak check procedure in AMM TASK 51-11-00-790-801. Both of these leak checks are NOT mandatory checks required before dispatch of the aircraft after a No. 2 Window replacement or No. 2 Window Seal replacement.

If operators decide that a leak check is necessary, they may use either Option 1 or Option 2 for this purpose:

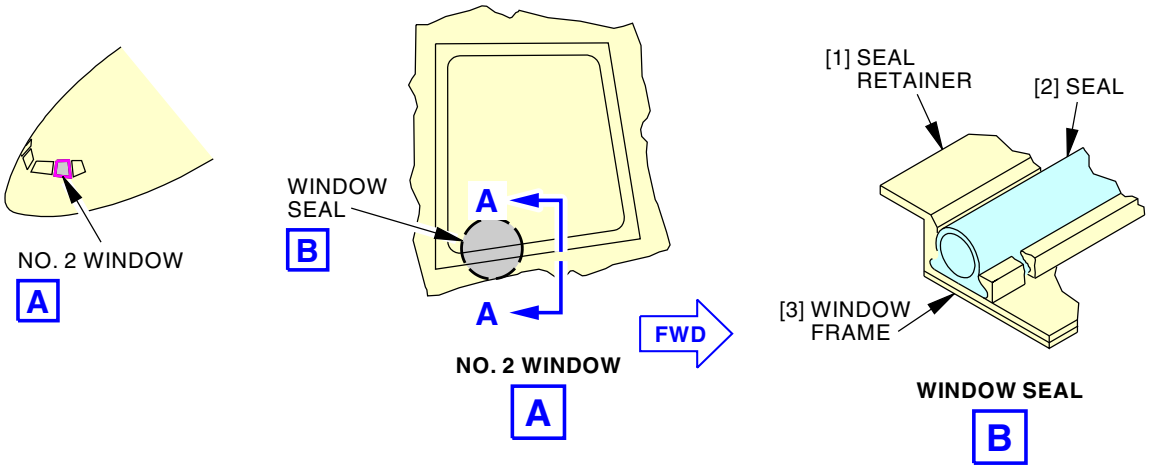
(a) Option 1 - Do task: No. 2 Windows Leak Check, TASK 51-11-00-790-801.

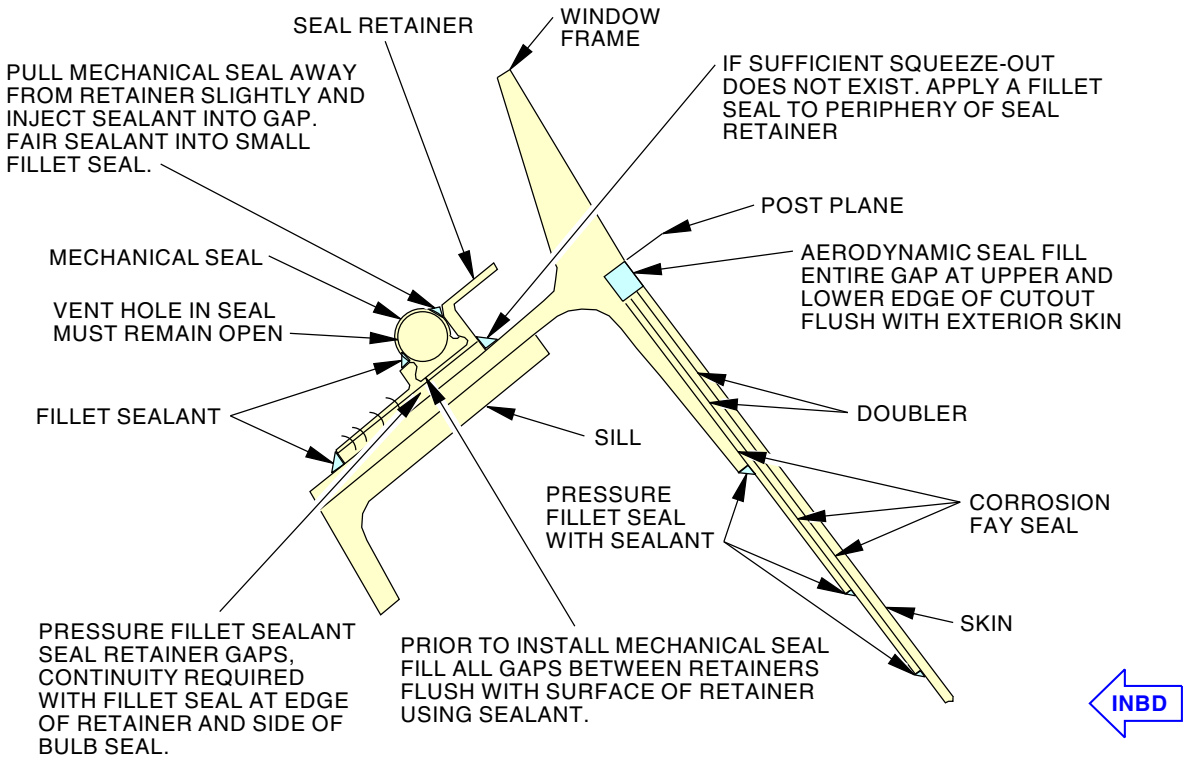
(b) Option 2 - Do task: No. 2 Windows Confidence Check of pressure at 4.0 psi (on-ground), TASK 05-51-24-720-801.

1) Make sure the window seals correctly.

2) Make sure that there are no air leaks or noise during confidence check.

END OF TASK





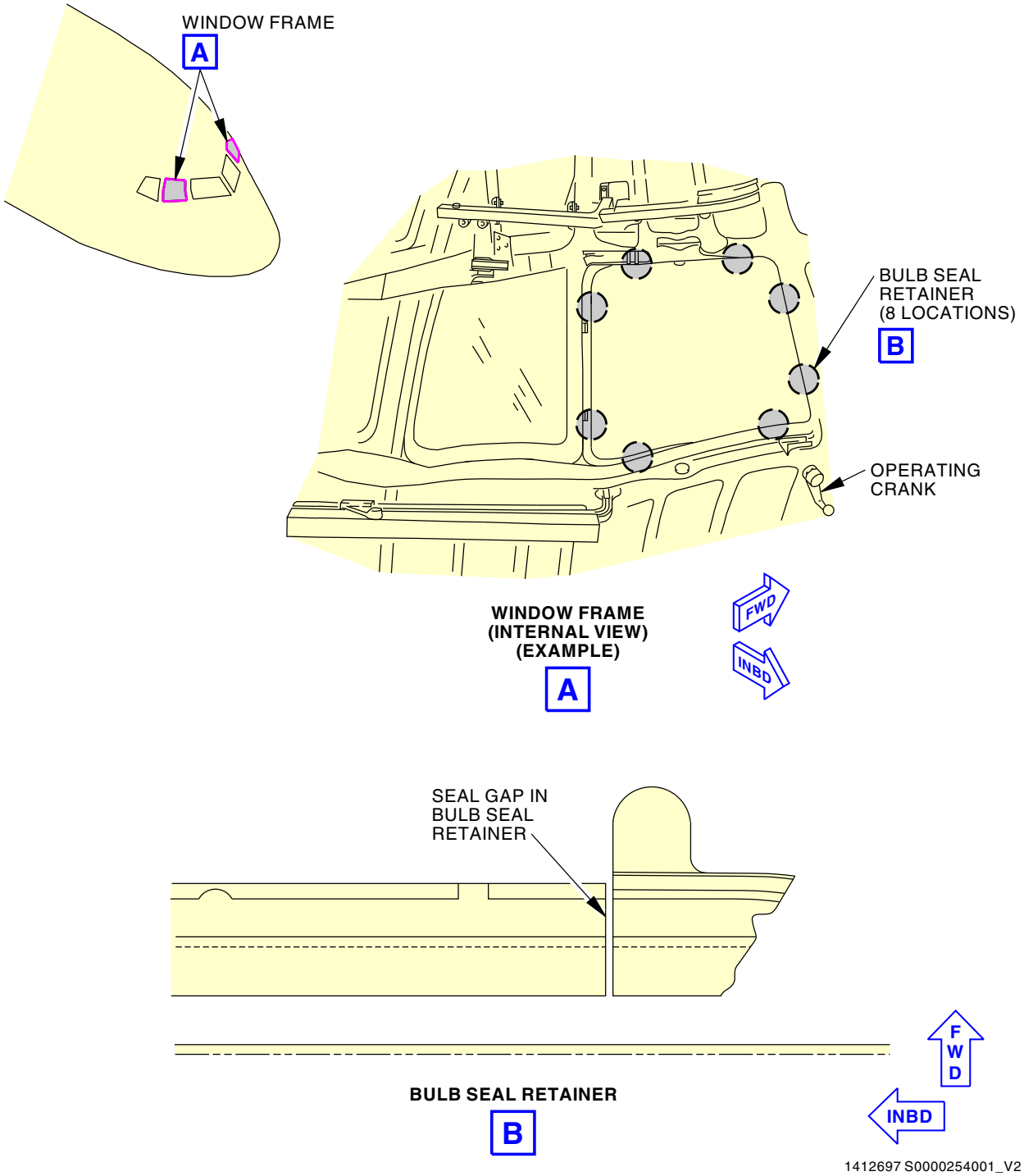
SEALING FOR ENTIRE PERIPHERY OF RETAINER
(VIEW IN THE AFT DIRECTION)
(EXAMPLE)

A-A 1

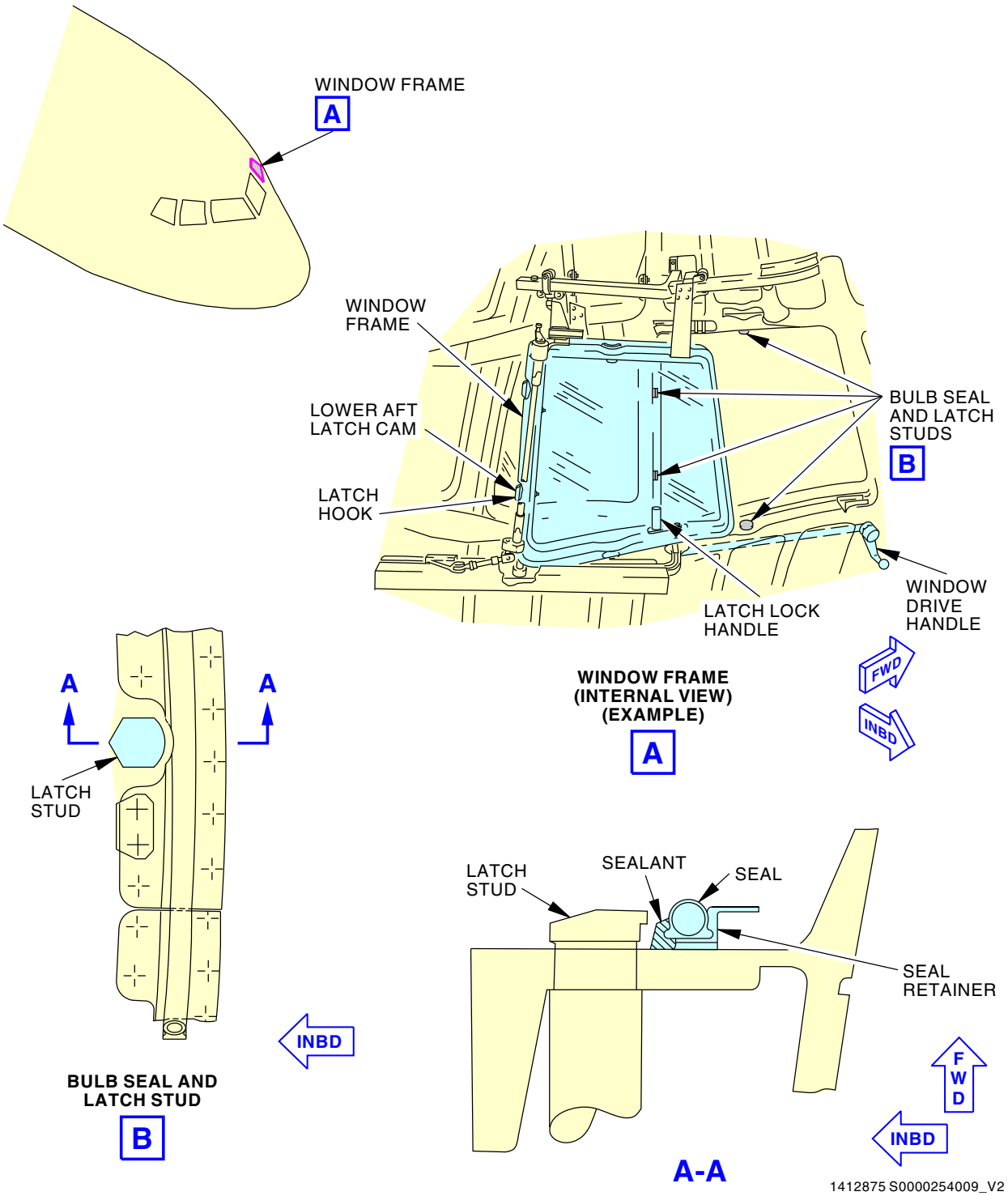
1 THE SEALANT MUST BE COMPLETELY AROUND THE WINDOW

M63872 S0006428761_V4

No. 2 Window Seal Installation
Figure 401/56-11-13-990-801



Bulb Seal Retainer
Figure 402/56-11-13-990-802



Latch Cams
Figure 403/56-11-13-990-803

NO. 3 WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Remove the No. 3 window.

(2) Install the No. 3 window.

TASK 56-11-21-400-801

2. No. 3 Window Removal

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406)

A. 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-2038	Set - Sling, Number 1 and 3 windshields Part #: A56001-15 Supplier: 81205
STD-4781	Crane - Lift, 300lb Minimum Capacity

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G00039	Cord - Fibrous, Nylon (100 Lb Strength)	MIL-C-5040 Type IA
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)

C. Location Zones

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

D. Prepare for the Removal

SUBTASK 56-11-21-200-010

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU REMOVE THE WINDOW. 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 pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-21-200-011

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

SUBTASK 56-11-21-200-012

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-21-020-003

(4) Remove the window lining panel assembly and brush assembly from the window.

SUBTASK 56-11-21-200-013

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 [7] and the sensor terminals [8].

SUBTASK 56-11-21-200-014

(6) Install the protective wrapping paper, G02173 to the two sides of the window assembly [1] with the Scotch Flatback Masking Tape 250, G00270.

NOTE: Do not attach Scotch Flatback Masking Tape 250, G00270 to the glass or the plastic surfaces.

E. Procedure

SUBTASK 56-11-21-000-001

(1) Remove the nylon cord, G00039, nylon cord [3] from around the window assembly [1] (Figure 401), as follows:

(a) Carefully remove some aerodynamic sealant, A00247 at the top aft corner of the window assembly [1] to get access to the nylon cord [3].

(b) Pull the outboard end of the nylon cord [3] away from the corner of the window assembly [1].

(c) Fold the nylon cord [3] and slowly pull it completely away from the window assembly [1].

SUBTASK 56-11-21-000-002

(2) Attach the windshield sling number 1 and 3, SPL-2038, sling [5] to the window assembly [1], as follows:

(a) Remove the three plugs from the sling attach bolt holes in the window assembly [1].

(b) Attach the sling [5] to the three sling attach bolt holes (Figure 403).

(c) Tighten the three sling attach bolts [4] to 20 in-lb (2 N·m) - 30 in-lb (3 N·m).

(d) Attach the sling [5] to the 300lb min. lift crane, STD-4781.

(e) Raise the 300lb min. lift crane, STD-4781 to tighten the sling [5].

SUBTASK 56-11-21-000-003

(3) Disengage the window assembly [1] from the fuselage, as follows:

(a) Remove the 50 window attach bolts [2] from the window assembly [1].

(b) Hold the window assembly [1] to make sure it does not move accidentally.

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

(d) Carefully lower the window assembly [1] to the ground.

SUBTASK 56-11-21-020-001

(4) Remove the sling [5] from the window assembly [1].

SUBTASK 56-11-21-420-005

(5) Install the three plugs in the sling attach bolt holes.

——— END OF TASK ———

TASK 56-11-21-400-803

3. No. 3 Window Installation

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406)

A. References

Reference	Title
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)
51-31-01-390-806	Aerodynamic Smoother Application (P/B 201)
56-11-00-200-803	Flight Compartment No. 3 Window Inspection (P/B 601)

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
SPL-2038	Set - Sling, Number 1 and 3 windshields Part #: A56001-15 Supplier: 81205
STD-4781	Crane - Lift, 300lb Minimum Capacity

C. Consumable Materials

Reference	Description	Specification
A00103	Sealant - Windshield And Window - PR-1425	
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
A01056	Sealant - Aerodynamic - PR 1829	
A50052	Sealant - PR-1826 Class B Rapid Curing Fuel Tank Sealant	SAE AMS3277 Class B
A50084	Sealant - P/S 860 Class B-1/6 Quick Repair Fuel Tank Sealant	AMS-S-83318 Class B
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class 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)

(Continued)

Reference	Description	Specification
G00291	Tape - Aluminum Foil, Scotch 425	AMS-T-23397 / L-T-80
G02173	Paper - Wrapping, Chemically Neutral (Non-Corrosive)	MIL-DTL-17667 (Supersedes MIL-P-17667)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Window assembly	56-11-21-01-015	ARO ALL
		56-11-21-01-020	ARO ALL

E. Location Zones

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

F. Prepare for the Installation

SUBTASK 56-11-21-200-015

WARNING THE WINDOW HEAT SYSTEM MUST BE DISARMED WHEN YOU REMOVE THE WINDOW. 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 pilots overhead panel to the INOP position and attach DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

SUBTASK 56-11-21-200-016

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

SUBTASK 56-11-21-200-017

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-21-840-004

(4) Prepare the window frame on the fuselage, as follows:

(a) Do this task: Flight Compartment No. 3 Window Inspection, TASK 56-11-00-200-803.

(b) Install new nutplates in all positions where a nutplate is gone or damaged.

(c) Fully clean these faying surfaces with a cotton wiper, G00034 that is moist with solvent, B00083:

1) rubber pressure seal
2) window frame
3) window center post.

(d) Dry the parts with a clean cotton wiper, G00034 before the solvent, B00083 dries.

SUBTASK 56-11-21-840-005

(5) Prepare the window assembly [1], as follows:

(a) Check the resistance measurement of the window heater and sensor per Figure 406

NOTE: The window resistance check is optional for old windows. If you install a new window, 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.

(b) Use Scotch Flatback Masking Tape 250, G00270 to apply the protective wrapping paper, G02173 cover to both window surfaces.

NOTE: Do not attach the Scotch Flatback Masking Tape 250, G00270 to glass or plastic surfaces.

(c) Remove the plugs from the sling attach bolt holes.

(d) Attach the windshield sling number 1 and 3, SPL-2038, sling [5] to the window frame (Figure 403).

(e) Tighten the sling attach bolts [4] at each sling attach bolt holes to 20 in-lb (2 N·m) - 30 in-lb (3 N·m).

(f) Attach the sling [5] to the 300lb min. lift crane, STD-4781.

(g) Raise the 300lb min. lift crane, STD-4781 to tighten the sling [5].

G. Procedure

SUBTASK 56-11-21-400-001

(1) Put the window assembly [1] in position on the fuselage.

SUBTASK 56-11-21-400-002

(2) Attach the window assembly [1] to the fuselage, as follows:

(a) Install the attach bolts [2] into positions 5, 15, 27 and 43 (Figure 402) but do not make them fully tight.

NOTE: This will help align the window.

(b) Install the remaining attach bolts [2] but do not make them fully tight.

(c) If you cannot install the old attach bolts [2], install new bolts [2] and nutplates.

(d) Alternatively, you can install a temporary spaning strap [6] on the empty attach bolt hole as follows (Figure 404, Figure 405):

1) Make sure there are not less than 3 attach bolts [2] installed on each side of the empty attach bolt hole.
2) Make sure there are no more than 7 attach bolts [2] missing.
3) Fill the attach bolt hole with sealant, A00247.
4) Make a spaning strap [6] (Figure 405)..
5) Install the spaning strap [6] on top of the attach bolt hole as shown in (Figure 404, Figure 405).

(e) Replace a temporary spaning strap [6] with a new attach bolt [2] and nutplate as soon as possible.

CAUTION DO NOT APPLY TOO MUCH TORQUE TO THE ATTACH BOLTS. TOO MUCH TORQUE CAN CAUSE DAMAGE TO THE NUTS AND THE NUTPLATES.

(f) Tighten the attach bolts [2].

NOTE: To prevent wind noise and leaks because of seal movement, you must tighten the bolts three times, as follows:

1) Tighten the attach bolts [2] to 10 in-lb (1 N·m) - 15 in-lb (2 N·m) in the sequence shown in (Figure 403).
2) Tighten the attach bolts [2] to 50 in-lb (6 N·m) - 70 in-lb (8 N·m) in the sequence shown in (Figure 403).
3) Repeat the above step.

NOTE: Silicone pressure seal continues to compress long after initial installation, with subsequent loss of torque force. This is normal and not cause for retorque. Only retorque if the window leaks.

(g) Make sure the window assembly [1] is less than 0.03 in. (0.76 mm) out from the external surface or less than 0.08 in. (2.03 mm) in from the external surface.

SUBTASK 56-11-21-000-004

(3) Remove the windshield sling number 1 and 3, SPL-2038, sling [5] as follows:

(a) Remove the sling attach bolts [4] to disengage the sling [5].

(b) Apply a layer of sealant, A00247 to the plugs that will go into the three sling attach bolt holes.

(c) Install the plugs in the sling attach bolt holes.

(d) Make sure the flushness between each plug and the window frame is less than 0.01 in. (0.25 mm).

SUBTASK 56-11-21-200-006

(4) Seal the window assembly [1] with these aerodynamic sealants:

(a) Preferred: sealant, A00247.

(b) Alternative:

1) PR-1826 sealant, A50052
2) P/S 860 B-1/6 sealant, A50084
3) PR-1828 sealant, A00708
4) PR-1425 sealant, A00103
5) PR 1829 sealant, A01056

NOTE: Use the PR 1829 sealant, A01056 if rapid cure is required for dispatch.

(5) Seal the window assembly [1]:

(a) Install a nylon cord, G00039, nylon cord [3] into the space between the window assembly [1] and the fuselage (Figure 401).

(b) Make sure the nylon cord [3] is tight and deep.

(c) Do this task: Aerodynamic Smoother Application, TASK 51-31-01-390-806.

(d) Put the mixed aerodynamic sealant, A00247 into the clearance.

NOTE: Apply it slowly to make sure the clearance is fully filled.

(e) Make sure the sealant, A00247 is smooth with the external surface of the fuselage skin and the window frame.

(f) Remove the protective wrapping paper, G02173 from the window assembly [1].

NOTE: If the aerodynamic smoother is not sufficiently cured, the airplane may be dispatched by overlaying pressure sensitive aluminum tape such as Scotch 425 Aluminum Foil Tape, G00291 or equivalent. Tape should be removed as soon as possible after airplane use and minimum cure is attained.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 56-11-21-420-007

(1) Connect the window heat terminals, as follows:

CAUTION

HOLD THE WINDOW HEAT TERMINAL BLOCKS WHEN YOU TIGHTEN OR LOOSEN THE SCREWS. YOU CAN CAUSE DAMAGE TO THE TERMINALS ON THE WINDOW IF YOU DO NOT HOLD THEM.

(a) Connect the wires to the power terminals [7].

(b) Tighten the screws to 25 in-lb (3 N·m) - 30 in-lb (3 N·m).

(c) Connect the wires to the sensor terminals [8].

(d) Tighten the screws to 12 in-lb (1 N·m) - 15 in-lb (2 N·m).

SUBTASK 56-11-21-420-008

(2) Install the window lining assembly and brush assembly around the window.

(3) For an acrylic window, do not let the internal hard fiberglass sections touch the acrylic sections. Trim if necessary.

SUBTASK 56-11-21-420-009

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	16	C30418	WDO HT 3R
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	Col	Number	Name
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 56-11-21-420-010

(5) Move these switches on the pilots overhead panel to the ON position and remove the DO-NOT-OPERATE tags:

(a) WINDOW HEAT L SIDE

(b) WINDOW HEAT R SIDE.

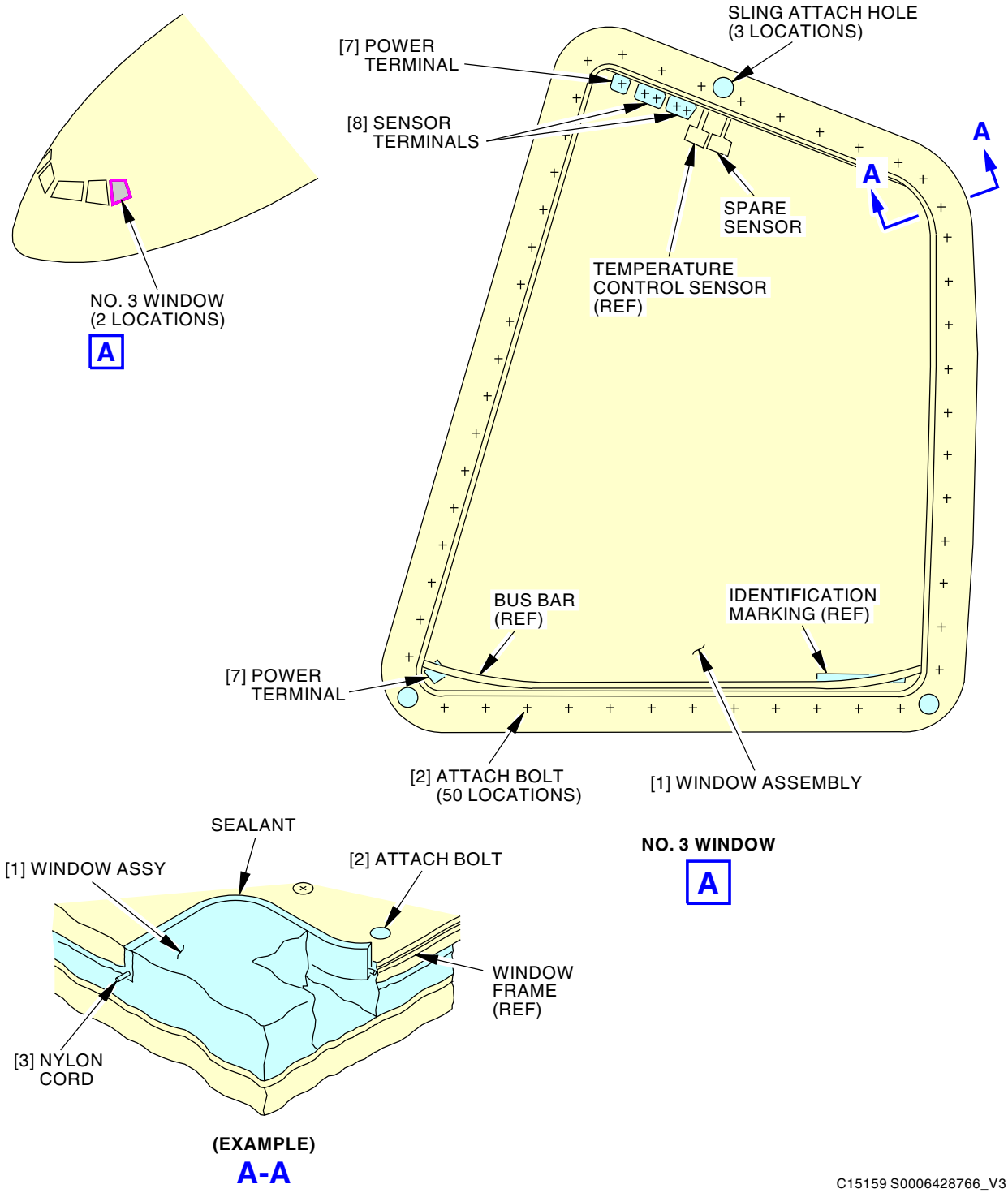
SUBTASK 56-11-21-420-011

(6) Make sure the SIDE L and SIDE R WINDOW HEAT INOP lights are off.

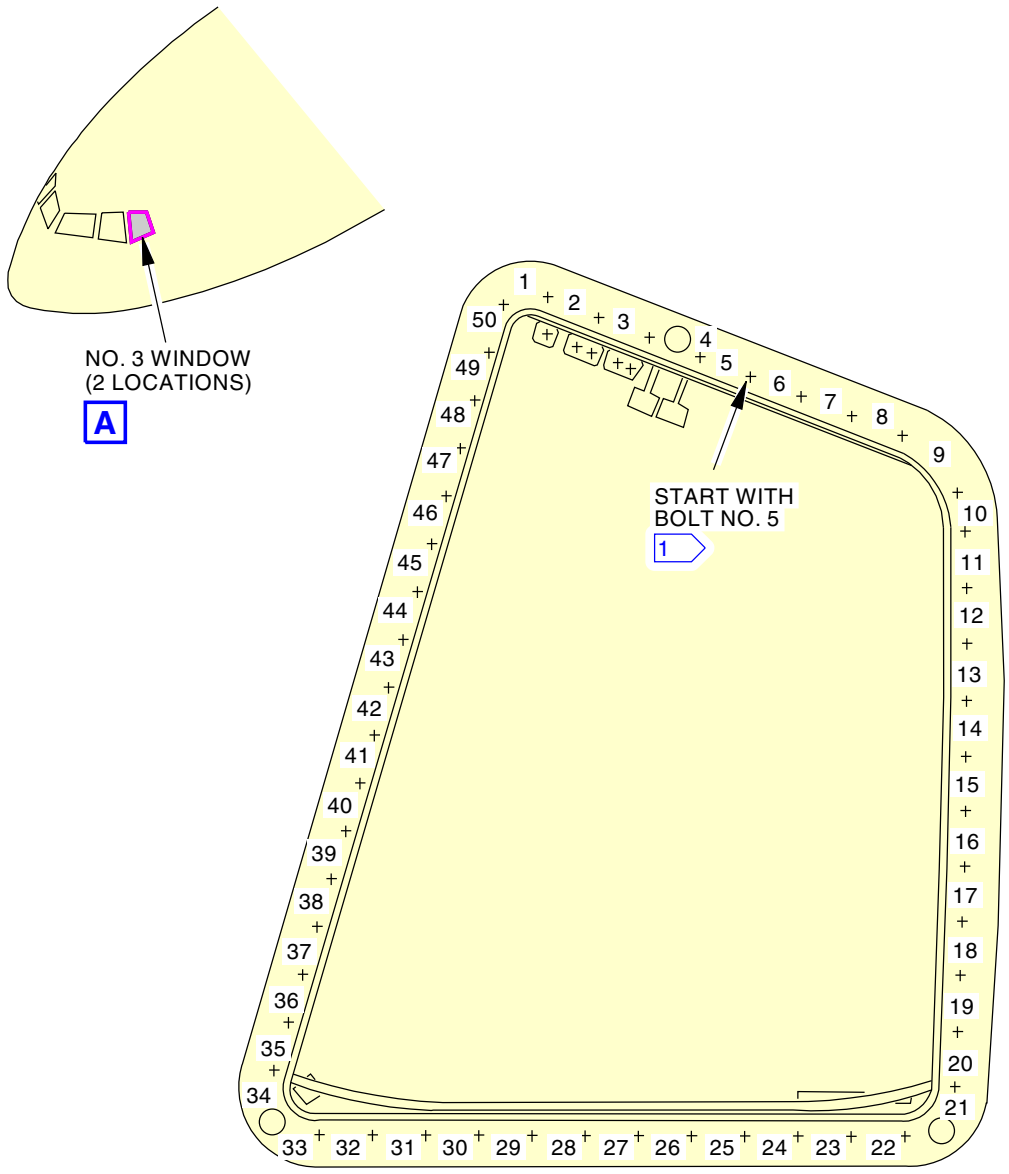
SUBTASK 56-11-21-710-002

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

——— END OF TASK ———



No. 3 Window Installation
Figure 401/56-11-21-990-801



ATTACH BOLT LOCATIONS - NO. 3 WINDOW
(LEFT NO. 3 WINDOW IS SHOWN,
RIGHT NO. 3 WINDOW IS OPPOSITE)

A

1 TIGHTEN THE BOLTS IN THE ORDER SHOWN IN THE TABLE ON FIGURE 403.

C15137 S0006428767_V2

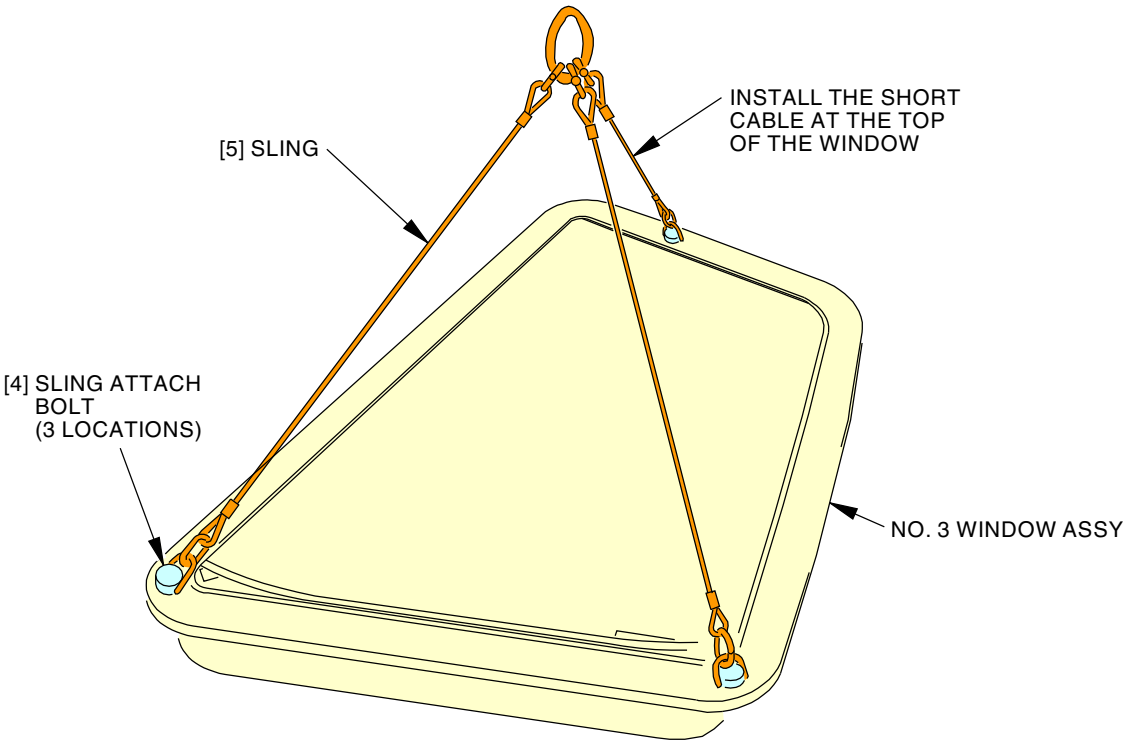
Attach Bolt Locations - No. 3 Window
Figure 402/56-11-21-990-802

SEQUENCE NUMBER	BOLT NUMBER	SEQUENCE NUMBER	BOLT NUMBER
1	5	26	6
2	27	27	28
3	43	28	42
4	15	29	16
5	41	30	38
6	7	31	4
7	29	32	26
8	45	33	46
9	17	34	18
10	39	35	36
11	3	36	2
12	25	37	24
13	37	38	48
14	13	39	20
15	47	40	34
16	9	41	8
17	31	42	30
18	49	43	12
19	19	44	32
20	35	45	50
21	1	46	22
22	23	47	10
23	44	48	33
24	11	49	14
25	40	50	21

ATTACH BOLT TORQUE SEQUENCE

C51919 S0006428768_V1

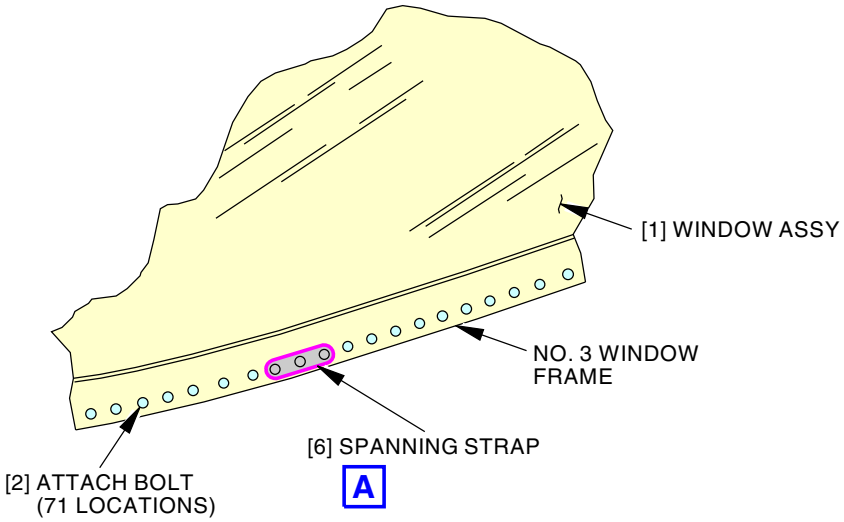
Attach Bolt Installation Sequence - No. 3 Window
Figure 403/56-11-21-990-803

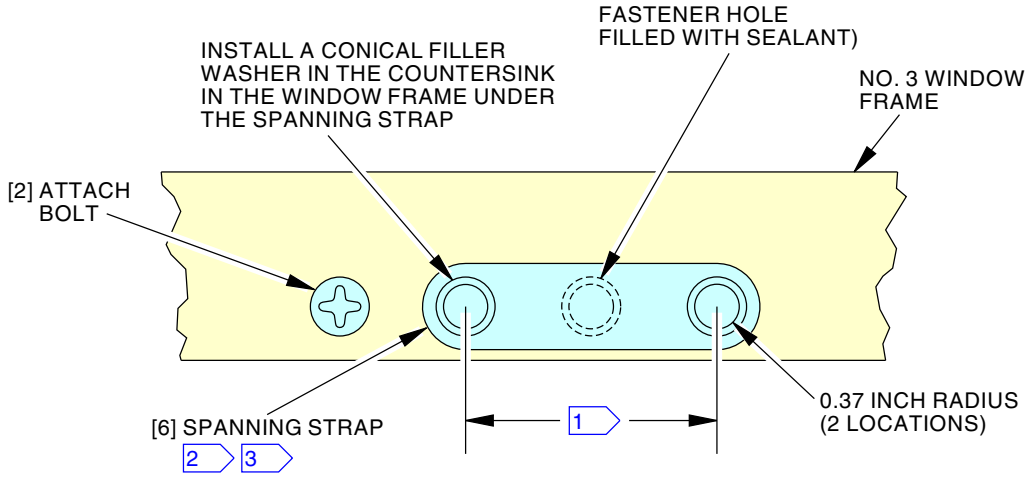


WINDOW HANDLING SLING

C15163 S0006428769_V3

No. 3 Window Handling Sling
Figure 404/56-11-21-990-804





SPANNING STRAP

A

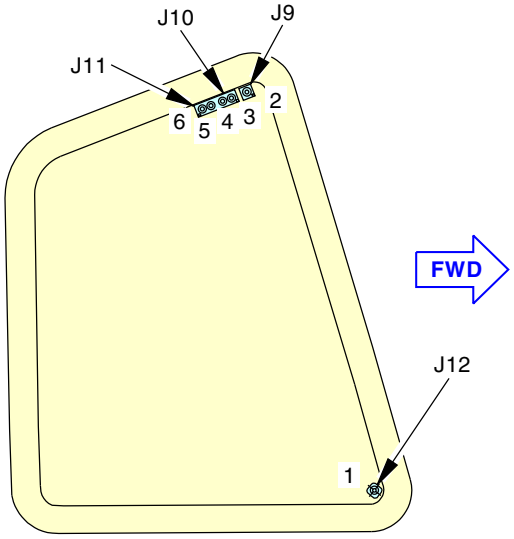
1 THIS DIMENSION IS NOT THE SAME AT ALL LOCATIONS

2 USE 0.040 INCH THICK 2024-T3/T4 ALUMINUM ALLOY, 0.75 INCH WIDE. DRILL AND COUNTERSINK FOR TWO 100‘ COUNTERSUNK HEAD BACB30NN4K39 BOLTS. OPTIONAL: DIMPLE THE SPANNING STRAP FOR THE 100‘ BOLT AND OMIT THE CONICAL FILLER WASHER.

3 REMOVE SHARP EDGES FOR AERODYNAMIC SMOOTHNESS

C15167 S0006428770_V3

Spanning Strap Fabrication
Figure 405/56-11-21-990-805



TERMINAL	TERMINAL LOCATION	RESISTANCE (OHM)	
		MIN	MAX
J9, J12	1-2	19.48	26.35
J10	3-4	1	1
J11	5-6	1	1

TABLE A

J9: POWER TERMINAL
J10: SENSOR TERMINAL (SPARE)
J11: SENSOR TERMINAL (CONTROL)
J12: POWER TERMINAL

1 INTERPRET SENSOR RESISTANCE FROM TABLE B.

K44446 S0006428771_V2

No. 3 Window Resistance Values
Figure 406/56-11-21-990-806 (Sheet 1 of 2)

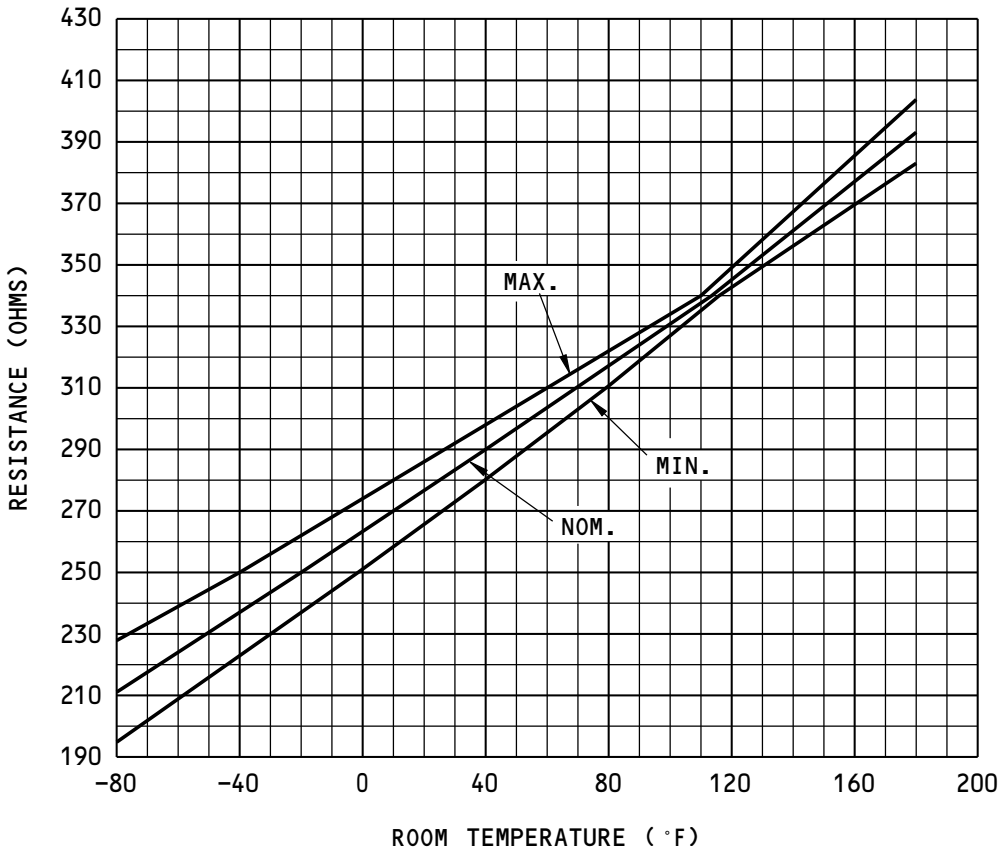


TABLE B

NOTE: CHARACTERISTICS SHOWN EQUIVALENT TO
WESTINGHOUSE AVK 1160

K44448 S0006428772_V1

No. 3 Window Resistance Values
Figure 406/56-11-21-990-806 (Sheet 2 of 2)

PASSENGER COMPARTMENT WINDOWS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the passenger compartment windows.

(2) An installation of the passenger compartment windows.

B. You can replace the window reveal with the sidewall panels installed.

TASK 56-21-01-000-801

2. Passenger Compartment Window Removal

(Figure 401)

A. References

Reference	Title
25-21-01-000-801	Sidewall Panel - Removal (P/B 401)
25-25-01 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Prepare for the Removal

SUBTASK 56-21-01-020-002

(1) If necessary, remove the passenger seat, or seat unit adjacent to your target window.

NOTE: It is not always necessary to remove the seat from the airplane fully. It can be sufficient to disconnect the seat from the seat tracks and move it away from the wall. It may be possible to leave the electrical wires connected to the seat, but make sure you do not pull on, or cause damage to the wires.

(a) Do the applicable task for the specific type of seat or seat unit (PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-25-01/401).

SUBTASK 56-21-01-020-001

(2) For windows with manually-operated shades, remove the window reveal assembly as follows:

(a) Pull the window shade down.

(b) Install an allen wrench through the access hole to release the reveal assembly latch.

(c) Hold down the outboard side of the window reveal assembly and pull inboard until the full reveal assembly is out of the window opening.

SUBTASK 56-21-01-020-003

(3) If necessary, do this task: Sidewall Panel - Removal, TASK 25-21-01-000-801.

NOTE: Remove the sidewall panels to provide maximum access to the passenger window.

D. Removal

SUBTASK 56-21-01-020-004

(1) Remove the screw [7] and the spring clip [6] that hold the window assembly in the window frame [1].

SUBTASK 56-21-01-020-005

(2) Remove the window assembly.

NOTE: The window assembly has a seal [2], an outer pane [3], and a middle pane [4].

SUBTASK 56-21-01-020-006

(3) If necessary, remove the seal [2] from the window assembly.

SUBTASK 56-21-01-020-007

(4) Put a protective coating or tape on the window panes to protect them.

SUBTASK 56-21-01-980-001

(5) Identify the window assembly to make sure you install it in the correct window frame [1].

——— END OF TASK ———

TASK 56-21-01-400-801

3. Passenger Compartment Window Installation

(Figure 401)

A. References

Reference	Title
25-21-01-400-801	Sidewall Panel - Installation (P/B 401)
25-25-01 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Seal	56-21-01-02J-085	ARO 001-013
		56-21-01-02J-105	ARO 001-013
		56-21-01-02J-125	ARO 001-013
		56-21-01-02J-145	ARO 001-013
		56-21-01-02J-165	ARO 001-013
4	Pane	56-21-01-02J-080	ARO 001-013
		56-21-01-02J-100	ARO 001-013
		56-21-01-02J-120	ARO 001-013
		56-21-01-02J-140	ARO 001-013
		56-21-01-02J-160	ARO 001-013
		56-21-01-02J-185	ARO 001-013
		56-21-01-02J-205	ARO 001-013

D. Location Zones

Zone	Area
200	Upper Half of Fuselage

E. Prepare for the Installation

SUBTASK 56-21-01-100-001

(1) Clean the window frame [1] and the seal [2] with solvent, B00083 on a clean, oil-free cotton wiper, G00034.

SUBTASK 56-21-01-100-002

(2) Use a clean, dry cotton wiper, G00034 to remove the solvent, B00083 before it dries on the window frame [1] and the seal [2].

SUBTASK 56-21-01-020-008

(3) Remove the protective coating or tape from the window panes.

SUBTASK 56-21-01-100-003

(4) Clean the pane [3] and pane [4].

F. Installation

SUBTASK 56-21-01-420-001

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

(a) Put the seal [2] around the outer pane [3].

1) Make sure the serial number of the outer pane [3] is at the top of the assembly.

(b) Put the middle pane [4] in position so the seal is around the edges and also between the two panes (Figure 401).

1) Make sure the breather hole in the middle pane [4] is at the bottom of the assembly.

SUBTASK 56-21-01-420-002

CAUTION

ONLY INSTALL THE CORRECT WINDOW ASSEMBLY IN THE FRAME. IF THE WINDOW ASSEMBLY IS INCORRECT, IT WILL FIT BADLY AND HAVE LEAKS.

(2) Install the window assembly in the window frame [1] as follows:

(a) Align the window assembly with the window frame [1].

(b) Push at the edges on opposite sides of the assembly to move it into the window frame [1].

NOTE: If the window assembly will not slide into the window frame [1] apply a soap and water solution to the outer edge of the seal [2] on the window assembly.

(c) Make sure the window is correctly aligned in the center of the window frame [1].

SUBTASK 56-21-01-420-003

(3) Install the spring clip [6] to attach the window assembly to the window frame [1].

NOTE: The AIPC provides the applicable spring clip for the applicable window assembly at a specific location.

(a) Loosely install the screw [7] with the washer [8] on the window frame [1].

CAUTION

DO NOT OVER TIGHTEN SCREWS. OVER TIGHTENING THE SCREWS MAY CAUSE DAMAGE TO THE WINDOW.

(b) Tighten the screw [7] until the washer [8] seats on face of clip [6]. (Figure 401).

1) A gap between the screw [7] head, washer [8] and clip [6] face of up to 0.03 in. (0.76 mm) at the side of the clip [6] that faces the inboard surface of the window is acceptable (Figure 401).

(c) Tighten these top and bottom screws [7]:

1) Top aft

2) Bottom forward
3) Bottom aft
4) Top forward.

(d) Tighten these above and below the middle screws [7]:
1) Aft above
2) Forward below
3) Aft below
4) Forward above.

(e) Tighten these screws [7] in the middle:
1) Forward middle
2) Aft middle.

(f) Tighten the spring clips [6].

G. Put the Airplane To Its Usual Condition.

SUBTASK 56-21-01-410-001

(1) If you removed the sidewall panels, do this task: Sidewall Panel - Installation, TASK 25-21-01-400-801.

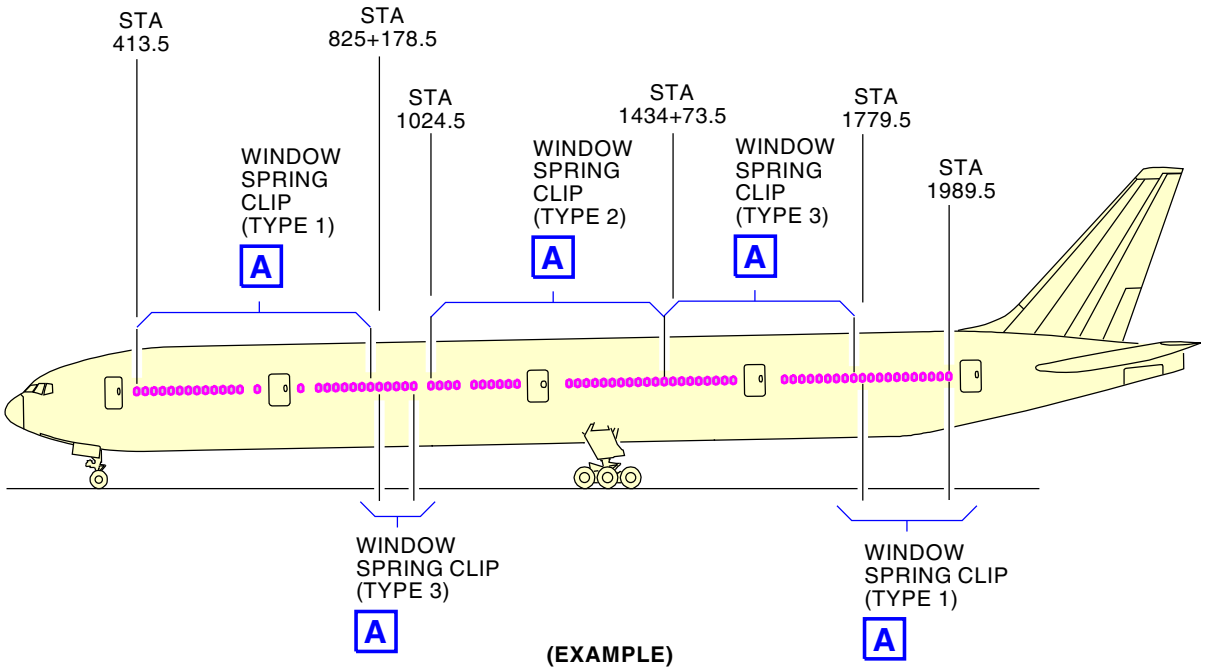
SUBTASK 56-21-01-420-005

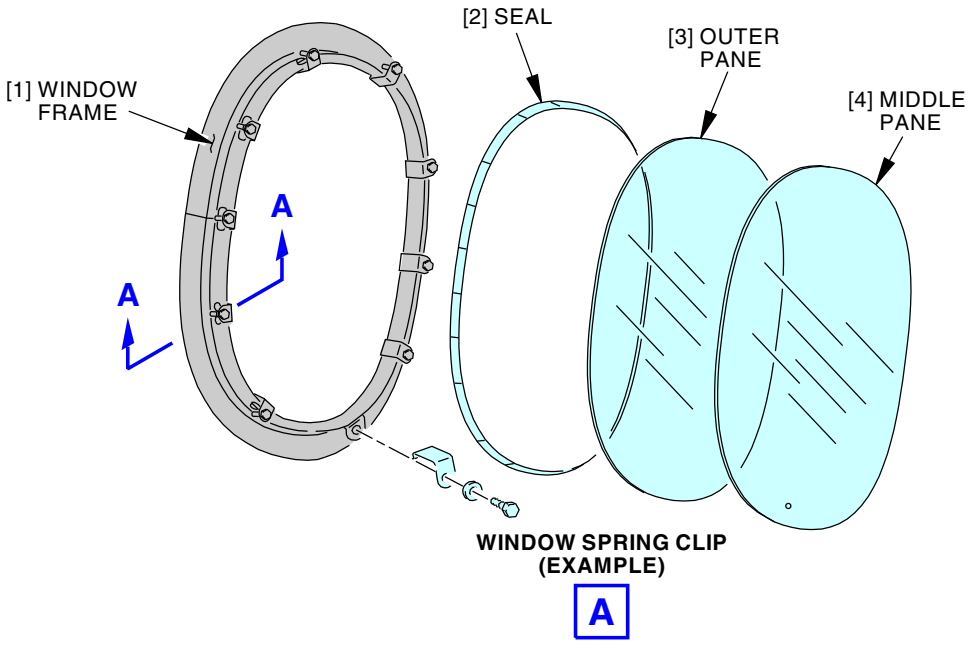
(2) For windows with manually-operated window shades, install the window reveal as follows:
(a) Pull the window shade down.
(b) Put the bayonets on the bottom inside of the window reveal into the slots in the bottom support brackets of the window.
(c) Push down on the window reveal and move the window reveal into the window opening.
(d) Push around the edge of the window reveal until it is in its correct position.

SUBTASK 56-21-01-410-002

(3) Install the passenger seats or seat units if they were removed, moved or disconnected.
(a) Do the applicable task for the specific type of seat or seat unit (PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-25-01/401).

——— END OF TASK ———





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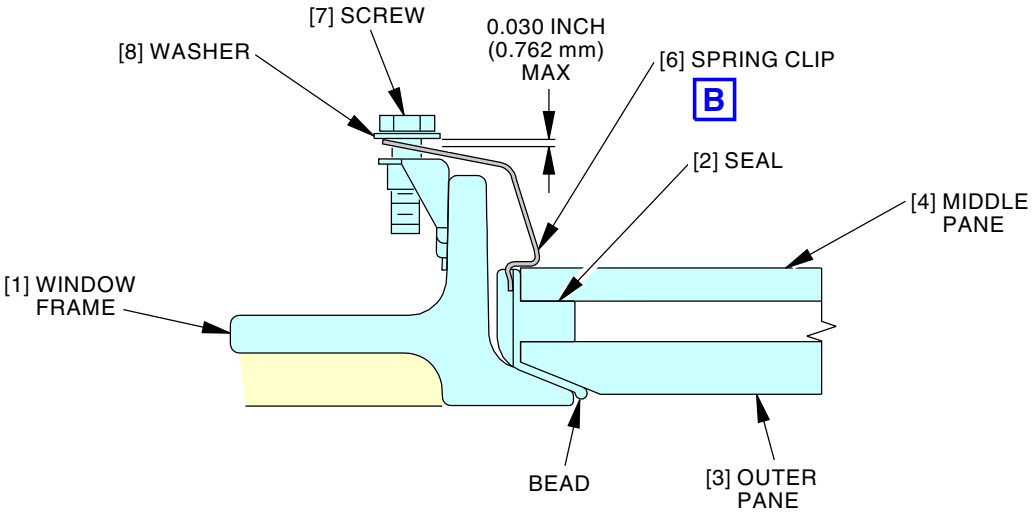
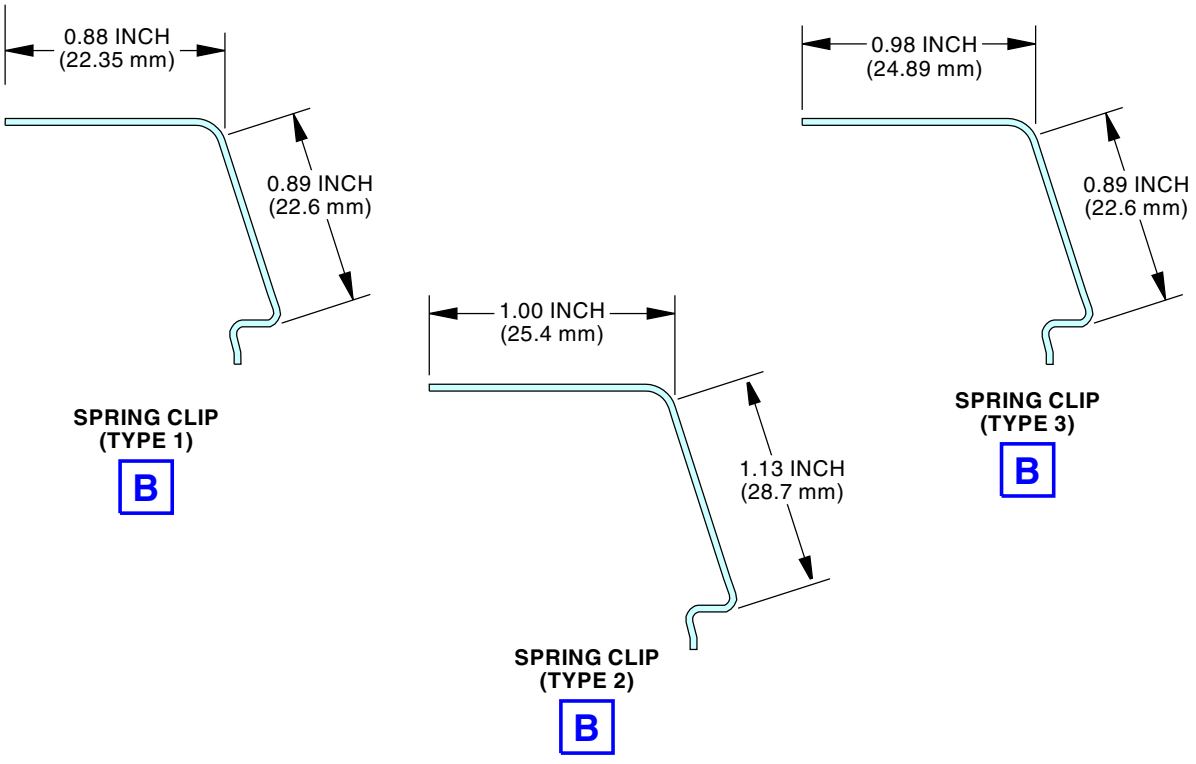
Passenger Window Installation
Figure 401/56-21-01-990-804 (Sheet 1 of 2)



A-A



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Passenger Window Installation
Figure 401/56-21-01-990-804 (Sheet 2 of 2)

PASSENGER COMPARTMENT WINDOWS - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) An inspection of the passenger compartment windows.

B. The types of damage to acrylic windows are as follows:

NOTE: For airplanes with over-wing exit hatches, windows for the over-wing exit hatches are also considered to be passenger windows.

NOTE: For window panes with Polysiloxane hard coating, the purpose of the coating is to prevent crazing and to decrease mechanical damage to the panes.

- It is not necessary to examine the panes for coating damage. They are certified for service without the coating.
- The coating cannot be repaired by the operator. The only repair is to remove and replace the coating which can only be done by the vendor.
- There are no in-service limits for coating damage. The only limits that apply are the AMM limits for the underlying acrylic pane.

CAUTION

APPLICATION OF PAINT OR OTHER UNAPPROVED OR NON-TRANSPARENT MATERIAL TO THE ACRYLIC PASSENGER WINDOW PANES ARE PROHIBITED. SOLVENT IN PAINT WILL CAUSE STRUCTURAL DAMAGE TO THE ACRYLIC AND THE PAINT WILL PREVENT DAMAGE DETECTION.

(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 (Figure 601).

(c) Cracks can be single or dual (Figure 601).

(d) Cracks in stretched acrylic plastic that occur in the direction of the applied force can become in-plane cracks.

(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.

(6) If the window is damaged as specified in this procedure, remove the window and replace or repair the damaged components (PASSENGER COMPARTMENT WINDOWS - REMOVAL/INSTALLATION, PAGEBLOCK 56-21-01/401).

C. Other conditions that may be seen on acrylic windows are as follows:

(1) Fogging:

(a) 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.

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

(c) Fogging is categorized as minor or severe:

1) Minor fogging:

a) Appears as a very light mist, or fog, on the window surfaces.

b) 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.

c) May dry during normal aircraft operation or continue to worsen and become severe fogging.

2) Severe fogging:

a) 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.

b) Has many easily visible water droplets in the main viewing areas of the window.

c) Continues to worsen during normal aircraft operations and can result in water pooling at the bottom of the window.

(2) Warping (deformation):

(a) 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.

(b) 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).

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

(3) Peeled or worn coating:

(a) 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.

NOTE: 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.

(4) Moisture Accumulation and/or Icing between Window Panes:

(a) Moisture (streaking) and/or icing may occur between window panes caused by excessive humidity (i.e., high density seating, changes in climate or location, etc.). Light amounts of moisture can be eliminated by running the air conditioning packs at High Temperature to evaporate the excessive moisture.

(b) Evidence of this condition may occur primarily around the vent hole in the middle structural pane and appear as moisture streaking outward from the vent hole. Moisture if present, may freeze at altitude and have an ice crystal (star burst pattern) appearance.

(c) Single window locations with light amounts of moisture and icing may result from seal leaks. Seals may be out of place, rolled back or damaged allowing moisture egress. Seals should be checked and reinstalled, repaired, or replaced as necessary at convenient maintenance interval for the aircraft.

NOTE: The presence of moisture or icing between the window panes, is not a cause for concern with respect to structural integrity of the window panes.

NOTE: This condition can best be addressed by maintenance action, at some convenient interval for the aircraft, and DOES NOT require replacement of the window panes unless other damage is found on the windows panes as noted in PASSENGER COMPARTMENT WINDOWS, SUBJECT 56-21-01 General inspection section.

TASK 56-21-01-200-801

2. Passenger Windows Inspection

(Figure 601, Figure 602)

A. References

Reference	Title
12-16-03-100-801	Clean the Passenger Windows (P/B 301)
56-21-01-000-801	Passenger Compartment Window Removal (P/B 401)
56-21-01-300-801	Repair the Passenger Windows (P/B 801)
56-21-01-400-801	Passenger Compartment Window Installation (P/B 401)

B. Tools/Equipment

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

Reference	Description
COM-2039	Micrometer, Optical (Min Depth .02 inch and Accuracy +/-.0005 Inch) Part #: 8400K Supplier: 65956 Part #: MODEL 966A1 Supplier: 0ZYB5 Part #: MODEL 966A1 Supplier: 88277 Opt Part #: 8400PCK Supplier: 65956

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 56-21-01-110-001

(1) Clean the windshields if necessary: Clean the Passenger Windows, TASK 12-16-03-100-801

NOTE: Clean windshields are necessary to do the inspection.

SUBTASK 56-21-01-200-001

(2) Use an optical micrometer, COM-2039 to measure damaged areas in the window.

NOTE: You can use other accurate methods 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 56-21-01-200-002

(3) Examine the middle pane for damage.

WARNING IMMEDIATELY REPLACE THE MIDDLE PANE IF THE DAMAGE IS NOT IN THE SPECIFIED LIMITS. THE DAMAGE WILL CAUSE INCORRECT PRESSURIZATION OF THE FUSELAGE. CORRECT PRESSURIZATION OF THE FUSELAGE IS VERY IMPORTANT FOR THE SAFETY OF THE PASSENGERS.

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

NOTE: Middle pane cracks that start from the vent hole and are 0.062 inch or less in length do not need to be replaced.

SUBTASK 56-21-01-200-003

(4) Examine the outer pane for cracks.

(a) Replace the outer pane if the depth of the crack is more than 0.05 in. (1.27 mm).

(b) If the depth of the crack is less than 0.05 in. (1.27 mm), replace the outer pane at next convenient maintenance interval when parts are available.

1) If the outer pane is left installed, monitor the crack growth at next scheduled C-check interval.

NOTE: The cracks in the outer pane can start from scratches or crazing, see (Figure 601).

NOTE: The depth of a crack is measured with a micrometer, COM-2039. To get a correct measurement multiply the micrometer reading by the index of refraction (1.49) for the acrylic plastic.

NOTE: You can use other accurate methods to find the crack depth for this procedure.

SUBTASK 56-21-01-200-004

(5) Examine the outer pane for crazing.

(a) Replace the outer pane if the depth of the crazing on the edge is more than 0.03 in. (0.76 mm) as shown in (Figure 602).

SUBTASK 56-21-01-200-005

(6) Examine the edges of the outer pane for in-plane cracking.

(a) Replace the outer pane if it has this damage:

1) With the window installed, you can see in-plane cracking at the edges.

2) With the window removed, the in-plane cracking is more than 0.55 inch from the edge.

3) There is less than 0.14 inch between damaged areas, 0.10 inch from the edge of the window as shown in (Figure 602).

SUBTASK 56-21-01-200-006

(7) Examine the outer pane at the areas other than the edges for chips and cracking.

(a) Replace the outer pane if it has this damage:

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).

3) The distance between damaged areas must be more than two times the diameter of the damaged area.

SUBTASK 56-21-01-200-007

(8) Examine the windows for scratches.

(a) If you find scratches, examine the scratches for cracks along the scratch length.

NOTE: Cracks will frequently form at the base of a scratch.

1) If you find a crack, replace the outer pane if the depth of the crack is more than 0.05 in. (1.27 mm).

a) If the depth of the crack is less than 0.05 in. (1.27 mm), replace the outer pane at next convenient maintenance interval when parts are available.

<1> If the outer pane is left installed, monitor the crack growth at next scheduled C-check interval.

NOTE: The depth of a crack is measured with a micrometer, COM-2039. To get a correct measurement multiply the micrometer reading by the index of refraction (1.49) for the acrylic plastic.

NOTE: You can use other accurate methods to find the crack depth for this procedure.

(b) If you only find scratches, do this task: (Repair the Passenger Windows, TASK 56-21-01-300-801).

SUBTASK 56-21-01-200-009

(9) Examine the windows for deterioration.

SUBTASK 56-21-01-200-010

(10) If you find deterioration, do this task: Repair the Passenger Windows, TASK 56-21-01-300-801.

SUBTASK 56-21-01-200-011

(11) Examine the window for concavity.

NOTE: "Concavity" is the contour of the window panes. The outer pane bends inward and the middle pane bends outward. A window that is bent is structurally satisfactory even if the middle and outer panes touch when the airplane is not pressurized.

SUBTASK 56-21-01-200-012

(12) If you find a window that is bent, repair it.

NOTE: It may be possible to repair the window if you remove the window from the airplane and dry it.

SUBTASK 56-21-01-200-013

(13) Examine the windows for visual distortion.

SUBTASK 56-21-01-200-014

(14) Replace windows that have bad visual distortion, or window thickness that is not constant.

NOTE: High temperatures can cause this damage.

SUBTASK 56-21-01-200-015

(15) Examine the windows for leaks between the middle and the outer panes.

(a) Replace the seals if these signs of leaks show on the window: (do this task: Passenger Compartment Window Removal, TASK 56-21-01-000-801 and, do this task: Passenger Compartment Window Installation, TASK 56-21-01-400-801)

1) Fog and concavity show on the window.

NOTE: If multiple adjacent windows near doors contain light amounts of fog, seal replacement is not necessary. This can be caused by excessive humidity due to high density seating, changes in climate or location.

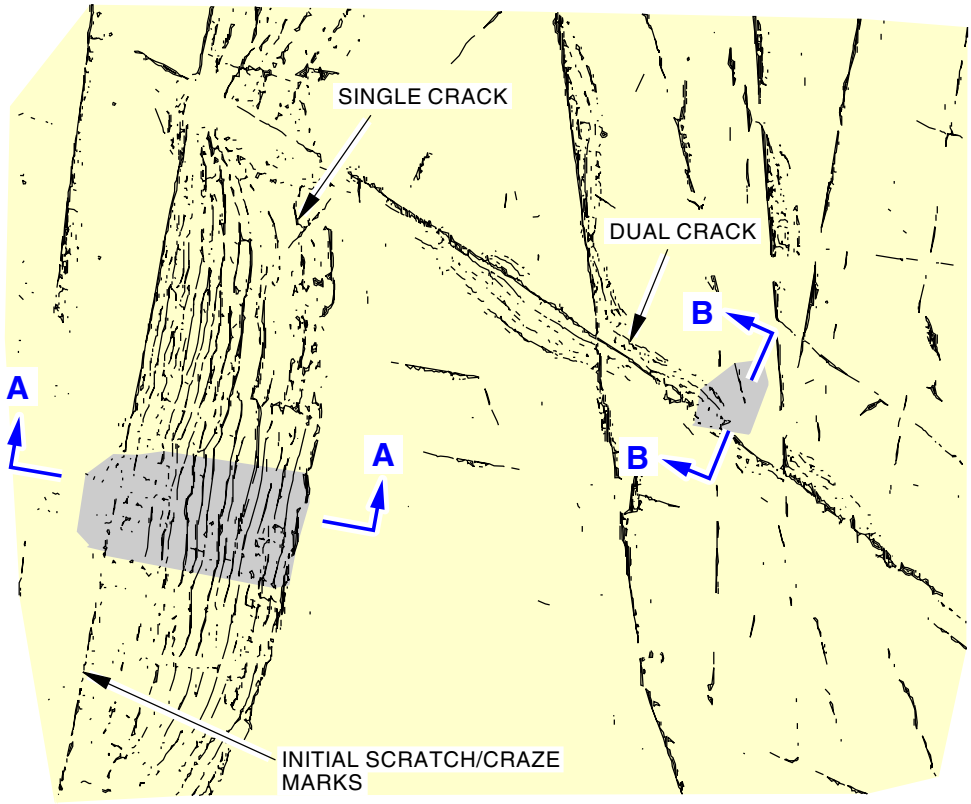
NOTE: Light fogging can be eliminated by running the air conditioning packs at High Temperature to evaporate excessive moisture.

NOTE: Single windows with light amounts of fog may be caused by seal leaks and should be replaced.

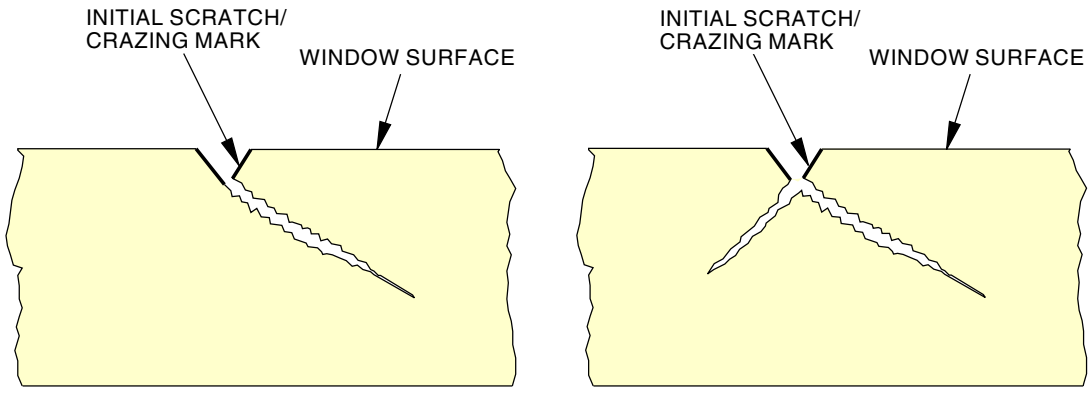
2) Brown stains show near the seal or in the vent hole in the middle pane.

3) Seals are out of place, rolled back, or damaged.

——— END OF TASK ———



WINDOW SURFACE DAMAGE



SINGLE CRACK
A-A

DUAL CRACK
B-B

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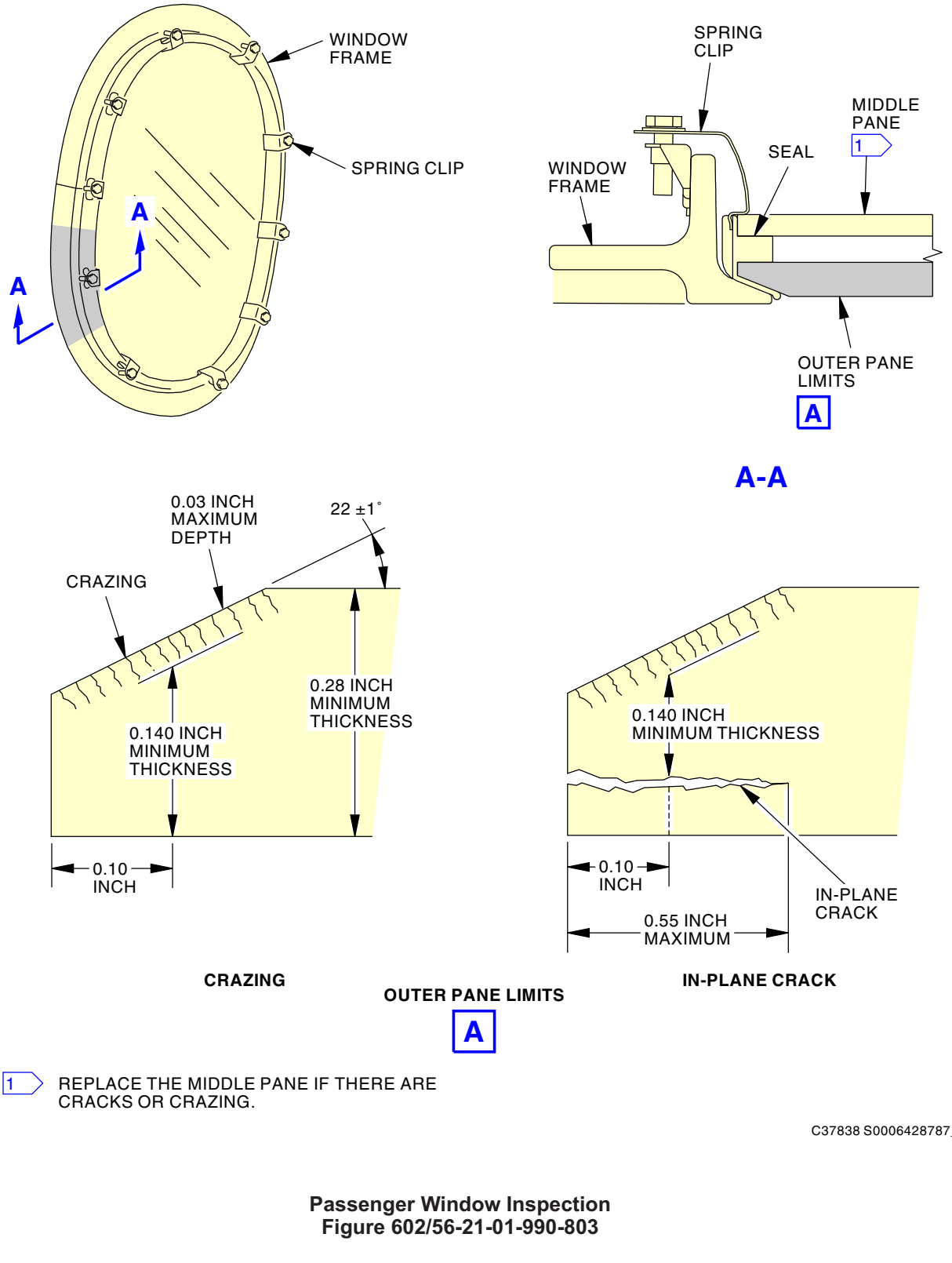
Outer Window Pane Surface Damage
Figure 601/56-21-01-990-802



1 REPLACE THE MIDDLE PANE IF THERE ARE CRACKS OR CRAZING.

C37838 S0006428787_V2

Passenger Window Inspection
Figure 602/56-21-01-990-803

PASSENGER COMPARTMENT WINDOWS - REPAIRS

1. General

A. This procedure has this task:

(1) A repair of the external surface of the outer passenger window.

B. You can do this task with the windows installed on the airplane.

C. The damage limits for the windows are given in (AMM TASK 56-21-01-200-801 p601).

D. Use clean cotton gloves, (commercially available) when you touch the windows to prevent more damage.

E. Use only approved materials.

F. Do not damage the window surface with finger rings or other sharp objects.

TASK 56-21-01-300-801

2. Repair the Passenger Windows

A. General

(1) You can remove clamshell surface chips, scratches, and surface crazing from acrylic windows with an abrasive paper or polish.

NOTE: If the installed window has an exterior protective hard coating, Boeing recommends replacing the window. Hard coating removal will occur during the repair procedure and make the repair process more difficult. The repaired window will have a shorter service life because the repair will remove the exterior protective hard coating.

(2) Do these steps to prevent accidental damage to the window when you work near it:

(a) Put tape on the window and seal to protect them.

(b) Use clean cotton lint-free gloves, G01306 when you touch the polished window panes.

(c) Make sure you use the correct materials.

(d) Keep sharp objects away from the window surface.

B. References

Reference	Title
56-21-01-990-803	Figure: Passenger Window Inspection (P/B 601)

C. Tools/Equipment

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

Reference	Description
COM-2039	Micrometer, Optical (Min Depth .02 inch and Accuracy +/-.0005 Inch) Part #: 8400K Supplier: 65956 Part #: MODEL 966A1 Supplier: 0ZYB5 Part #: MODEL 966A1 Supplier: 88277 Opt Part #: 8400PCK Supplier: 65956
STD-1207	Sander/Polisher - Orbital, Air Driven

D. Consumable Materials

Reference	Description	Specification
B00137	Abrasive - Garnet Coated Paper	
B00138	Abrasive - Silicon Carbide Coated Cloth	

(Continued)

Reference	Description	Specification
B50189	Polish - Clear Plastic, Meguiar's Mirror Glaze 10 - (Formerly Meguiar's MGH-10)	
G01111	Tape - Aluminum Foil, Pressure Sensitive, Heat Reflective, Adhesive	A-A-59258
G01306	Gloves - Lint-free	

E. Location Zones

Zone	Area
200	Upper Half of Fuselage

F. Prepare for the Window Repair

SUBTASK 56-21-01-220-001

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

(a) Make sure the window thickness will be serviceable after the repair.

1) Use an optical micrometer, COM-2039 to measure the thickness of the outer window pane.

a) Replace the outer pane if the window, after the repair, is or will be less than 0.28 in. (7.11 mm) (Figure 56-21-01-990-803).

(b) If the window has too much damage, you must replace it.

SUBTASK 56-21-01-950-001

(2) Apply protective tape, G01111 to the window frame.

SUBTASK 56-21-01-950-002

(3) Apply protective tape, G01111 to the seal.

SUBTASK 56-21-01-160-001

(4) Use a water spray to clean the window.

SUBTASK 56-21-01-160-002

(5) Remove loose dirt with your bare hand.

G. Procedure

SUBTASK 56-21-01-940-001

(1) Select the grade of abrasive, B00137 paper.

(a) Use 60-100 grit for deep scratches and bad crazing.

(b) Use above 100 grit for minor scratches and crazing.

SUBTASK 56-21-01-120-001

(2) Use rough grit abrasive, B00137 paper for two to five minutes to remove the damage (approximately 0.005 inches of acrylic), as follows:

(a) Use a sander/polisher, STD-1207 that moves at approximately 8000 opm.

NOTE: The sander speed can be approximate. It can be less than or more than 8000 opm. More importantly, the operator should use the sander speed setting that will not overheat the window.

(b) Sand a large area of the window even if the damage is small.

NOTE: A local repair will cause visual distortion.

(c) Use water to keep the window surface cool and to flush away grit and acrylic material.

(d) Sand in the horizontal direction then in the vertical direction.

(e) Change the abrasive, B00137 paper frequently.

(f) Repeat the procedure until all surface damage is removed and the surface has a constant thickness.

1) Make sure you have removed all the damage.

SUBTASK 56-21-01-120-002

(3) Use fine grit abrasive, B00137 paper with a vibrating sander until the surface of the window is smooth.

NOTE: Use continuous flow of water when you rub the window surface.

(a) Sand in the horizontal and then the vertical directions.

(b) Change to a finer grade of abrasive, B00137 paper every 2 to 3 minutes, in this order:

1) 100-600 grit abrasive, B00137 paper

2) 1600-8000 grit abrasive, B00138 cloth.

SUBTASK 56-21-01-220-002

(4) Make sure the window pane thickness is more than the limit.

(a) Use an optical micrometer, COM-2039 to measure the thickness of the outer window pane.

1) Replace the outer pane if the window, after the repair, is or will be less than 0.28 in. (7.11 mm) (Figure 56-21-01-990-803).

SUBTASK 56-21-01-350-001

(5) Use a clean muslin or a wool pad and a buffing compound to polish the window.

(a) Use a rough and then a fine buffing clear plastic polish, B50189, if necessary.

(b) If you use a rotary buffer, the wheel surface speed must be 3200 fpm for rough clear plastic polish, B50189 and 4200 fpm for fine clear plastic polish, B50189.

SUBTASK 56-21-01-210-001

(6) Visually examine the window for optical quality.

SUBTASK 56-21-01-350-002

(7) If there is remaining damage, repeat the repair process.

——— END OF TASK ———

PASSENGER/CREW ENTRY DOOR WINDOW - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the passenger entry door window.

(2) Installation of the passenger entry door window.

TASK 56-31-01-000-801

2. Passenger/Crew Entry Door Window Removal

(Figure 401)

A. References

Reference	Title
52-12-25-000-803	Upper Liner Removal (P/B 201)
56-31-01-200-802	Inspect the Passenger/Crew Entry Door Windows (P/B 601)

B. Location Zones

Zone	Area
831	Left No. 1 Passenger Entry Door - Section 41
832	Left No. 2 Passenger Entry Door - Section 43
833	Left No. 3 Overwing Door - Section 44
834	Left No. 4 Passenger Entry Door - Section 46
835	Left No. 5 Passenger Entry Door - Section 47
841	Right No. 1 Passenger Entry Door - Section 41
842	Right No. 2 Passenger Entry Door - Section 43
843	Right No. 3 Overwing Door - Section 44
844	Right No. 4 Passenger Entry Door - Section 46
845	Right No. 5 Passenger Entry Door - Section 47

C. Prepare for the Removal

SUBTASK 56-31-01-010-001

(1) Do this task: Upper Liner Removal, TASK 52-12-25-000-803.

D. Removal

SUBTASK 56-31-01-020-001

(1) Remove these parts from each of the eight locations on the window assembly [7]:

(a) screw [5].

(b) washer [4].

(c) clip [6].

SUBTASK 56-31-01-020-002

(2) Remove the window assembly [7] from the window frame [3].

NOTE: The window assembly [7] has two panes and a seal.

SUBTASK 56-31-01-200-001

(3) If the entry door window is crazed, cracked, scratched, or chipped, do this task: Inspect the Passenger/Crew Entry Door Windows, TASK 56-31-01-200-802.

SUBTASK 56-31-01-940-001

(4) If you use the window assembly [7] again, apply protective tape to the window surfaces.

——— END OF TASK ———

TASK 56-31-01-400-801

3. **Passenger/Crew Entry Door Window Installation**

(Figure 401)

A. References

Reference	Title
52-12-25-400-803	Upper Liner Installation (P/B 201)

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)	BMS15-5 Class A
G01061	Water - Distilled	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Window assembly	56-31-01-01A-055	ARO ALL
		56-31-01-01A-060	ARO ALL
		56-31-01-01A-065	ARO ALL
		56-31-59-02-050	ARO ALL

D. Location Zones

Zone	Area
831	Left No. 1 Passenger Entry Door - Section 41
832	Left No. 2 Passenger Entry Door - Section 43
833	Left No. 3 Overwing Door - Section 44
834	Left No. 4 Passenger Entry Door - Section 46
835	Left No. 5 Passenger Entry Door - Section 47
841	Right No. 1 Passenger Entry Door - Section 41
842	Right No. 2 Passenger Entry Door - Section 43
843	Right No. 3 Overwing Door - Section 44
844	Right No. 4 Passenger Entry Door - Section 46
845	Right No. 5 Passenger Entry Door - Section 47

E. Prepare to Install the window assembly [7].

SUBTASK 56-31-01-160-001

(1) Clean the window frame [3] as follows:

(a) Apply solvent, B00083 to the window frame [3].

(b) Use a clean cotton wiper, G00034 to remove the solvent, B00083 before it dries.

SUBTASK 56-31-01-940-002

(2) Remove the protective coverings from the window assembly [7].

SUBTASK 56-31-01-160-002

(3) Clean the surfaces of the window assembly [7] as follows:

(a) Apply a solution of warm water and castile soap with a soft, clean cotton wiper, G00034 until the window surfaces are clean.

(b) Remove the soap with demineralized or distilled water, G01061.

(c) Dry the window surfaces with a clean, moist chamois cloth, B00106.

F. Installation

SUBTASK 56-31-01-420-001

(1) Put the window assembly [7] in the frame.

(a) Make sure the vent holes are at the bottom of the window assembly [7].

(b) Hold the window assembly [7] at the edges in the middle of the long sides.

(c) Hold the seal tightly against the edges of the window assembly [7].

(d) Put the window assembly [7] into the window frame [3].

(e) Make sure the corners are aligned and the window assembly [7] is not skewed.

(f) Push at each side of the window assembly [7] at the seal to move it fully into the window frame [3] without skewing.

1) If the window assembly [7] is too tight against the window frame [3], put a solution of water and pure bar soap (castile or ivory) on the window frame [3].

SUBTASK 56-31-01-420-002

(2) Install each clip [6] as follows:

(a) Put the clip [6], washer [4], and screw [5] in position.

(b) Tighten the screw [5] until the washer [4] touches the clip [6].

(c) Make sure the edge of the clip [6] is parallel with the edge of the inboard surface of the window assembly [7].

(d) The clip [6] should be tight against the window assembly [7] and should have a slight bend as a result.

(e) A gap of 0.02 inch between the screw [5], washer [4], and the clip [6] is permitted.

SUBTASK 56-31-01-220-001

(3) Make sure the flushness between the outboard surface of the window assembly [7] and the door is +0.02 and -0.16 inch around the entire window.

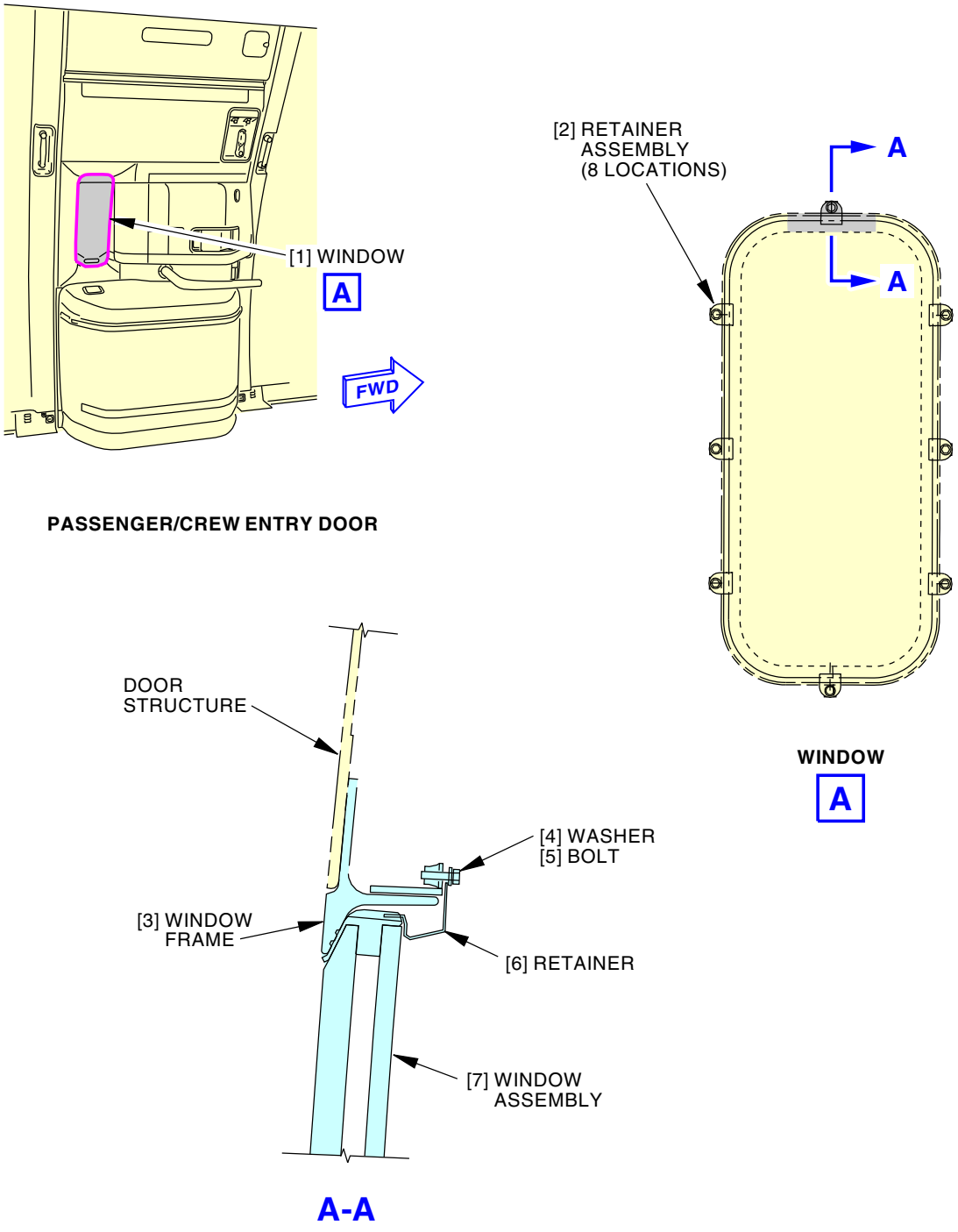
NOTE: A positive flushness is outboard. A negative flushness is inboard.

G. Put the Airplane Back in Its Usual Condition.

SUBTASK 56-31-01-410-001

(1) Do this task: Upper Liner Installation, TASK 52-12-25-400-803.

——— END OF TASK ———



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Passenger/Crew Entry Door Window Installation
Figure 401/56-31-01-990-801

PASSENGER/CREW ENTRY DOOR WINDOW - INSPECTION/CHECK

1. General

A. This procedure has this task:

(1) An inspection of the passenger entry door windows.

B. The types of anomalies notable on acrylic windows are as follows:

WARNING

USE ONLY APPROVED TRANSPARENT MATERIALS ON THE ACRYLIC WINDOW PANES. PAINT, MATERIALS THAT ARE NOT TRANSPARENT, AND TRANSPARENT MATERIALS THAT ARE NOT APPROVED CAN PREVENT DETECTION OF DAMAGE. THESE MATERIALS CAN ALSO CAUSE DAMAGE TO THE STRUCTURE OF ACRYLIC WINDOWS. THIS CAN MAKE FLIGHT DANGEROUS.

(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 (Figure 601).

(c) Cracks can be single or dual (Figure 601).

(d) Cracks in stretched acrylic plastic that occur in the direction of the applied force can become in-plane cracks.

(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.

(6) Moisture Accumulation and/or Icing between Window Panes:

(a) Moisture (streaking) and/or icing may occur between window panes caused by excessive humidity (i.e., high density seating, changes in climate or location, etc.). Light amounts of moisture can be eliminated by running the air conditioning packs at High Temperature to evaporate the excessive moisture.

(b) Evidence of this condition may occur primarily around the vent hole in the middle structural pane and appear as moisture streaking outward from the vent hole. Moisture if present, may freeze at altitude and have an ice crystal (star burst pattern) appearance.

(c) Single window locations with light amounts of moisture and/or icing may result from seal leaks. Seals may be out of place, rolled back or damaged allowing moisture egress. Seals should be checked and reinstalled, repaired, or replaced as necessary at convenient maintenance interval for the aircraft.

NOTE: The presence of moisture and/or icing between the window panes, is not a cause for concern with respect to structural integrity of the window panes.

NOTE: This condition can best be addressed by maintenance action, at some convenient interval for the aircraft, and DOES NOT require replacement of the window panes unless other damage is found on the windows panes as noted in Inspect the Passenger/Crew Entry Door Windows, TASK 56-31-01-200-802.

TASK 56-31-01-200-802

2. Inspect the Passenger/Crew Entry Door Windows

(Figure 601, Figure 602)

A. References

Reference	Title
56-31-01-000-801	Passenger/Crew Entry Door Window Removal (P/B 401)
56-31-01-300-803	Repair the Passenger/Crew Entry Door Windows (P/B 801)
56-31-01-400-801	Passenger/Crew Entry Door Window Installation (P/B 401)

B. Tools/Equipment

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

Reference	Description
COM-2039	Micrometer, Optical (Min Depth .02 inch and Accuracy +/-.0005 Inch) Part #: 8400K Supplier: 65956 Part #: MODEL 966A1 Supplier: 0ZYB5 Part #: MODEL 966A1 Supplier: 88277 Opt Part #: 8400PCK Supplier: 65956

C. Location Zones

Zone	Area
831	Left No. 1 Passenger Entry Door - Section 41
832	Left No. 2 Passenger Entry Door - Section 43
834	Left No. 4 Passenger Entry Door - Section 46
835	Left No. 5 Passenger Entry Door - Section 47
841	Right No. 1 Passenger Entry Door - Section 41
842	Right No. 2 Passenger Entry Door - Section 43
844	Right No. 4 Passenger Entry Door - Section 46
845	Right No. 5 Passenger Entry Door - Section 47

D. Procedure

SUBTASK 56-31-01-200-004

(1) Use an optical micrometer, COM-2039 to measure damaged areas in the window.

NOTE: You can use other accurate methods 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 56-31-01-200-005

(2) Examine the middle pane for damage.

WARNING IMMEDIATELY REPLACE THE MIDDLE PANE IF THE DAMAGE IS NOT IN THE SPECIFIED LIMITS. THE DAMAGE WILL CAUSE INCORRECT PRESSURIZATION OF THE FUSELAGE. CORRECT PRESSURIZATION OF THE FUSELAGE IS VERY IMPORTANT FOR THE SAFETY OF THE PASSENGERS.

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

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.

SUBTASK 56-31-01-200-006

(3) Examine the outer pane for cracks.

(a) Replace the outer pane if the depth of the crack is more than 0.05 in. (1.27 mm).

(b) Replace the outer pane at the next scheduled maintenance if the depth of the crack is less than 0.05 in. (1.27 mm).

NOTE: It is recommended to do this task at the next scheduled maintenance.

SUBTASK 56-31-01-200-007

(4) Examine the outer pane for crazing.

(a) Replace the outer pane if the depth of the crazing on the edge is more than 0.03 in. (0.76 mm) as shown in (Figure 602).

SUBTASK 56-31-01-200-008

(5) Examine the edges of the outer pane for in-plane cracking.

(a) Replace the outer pane if it has this damage:

1) With the window installed, you can see in-plane cracking at the edges.

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, 0.1 in. (2.5 mm) from the edge of the window as shown in (Figure 602).

SUBTASK 56-31-01-200-009

(6) Examine the outer pane at the areas other than the edges for chips and cracking.

(a) Replace the outer pane if it has this damage:

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 0.4 in. (10.2 mm).

3) The distance between damaged areas must be more than two times the diameter of the damaged area.

SUBTASK 56-31-01-200-010

(7) Examine the windows for scratches.

SUBTASK 56-31-01-211-001

(8) If you find scratches, examine the scratches for cracks along the scratch length.

NOTE: Cracks will frequently form at the base of a scratch.

(a) Replace the outer pane if the depth of the crack is more than 0.05 in. (1.27 mm).

(b) Replace the outer pane at the next scheduled maintenance if the depth of the crack is less than 0.05 in. (1.27 mm).

NOTE: It is recommended to do this task at the next scheduled maintenance.

SUBTASK 56-31-01-200-011

(9) If you find scratches, do this task: Repair the Passenger/Crew Entry Door Windows, TASK 56-31-01-300-803.

NOTE: It is recommended to do this task at the next scheduled maintenance.

SUBTASK 56-31-01-200-012

(10) Examine the windows for deterioration.

SUBTASK 56-31-01-200-013

(11) If you find deterioration, do this task: Repair the Passenger/Crew Entry Door Windows, TASK 56-31-01-300-803.

SUBTASK 56-31-01-200-014

(12) Examine the window for concavity.

NOTE: "Concavity" is the contour of the window panes. The outer pane bends inward and the middle pane bends outward. A window that is bent is structurally satisfactory even if the middle and outer panes touch when the airplane is not pressurized.

SUBTASK 56-31-01-200-018

(13) If you find a window that is bent, repair it.

NOTE: It may be possible to repair the window if you remove the window from the airplane and dry it.

SUBTASK 56-31-01-200-019

(14) You can repair a window that is concave/deformed by removing the window from the airplane and let them dry.

SUBTASK 56-31-01-200-015

(15) Examine the windows for visual distortion.

SUBTASK 56-31-01-200-016

(16) Replace windows that have bad visual distortion, or window thickness that is not constant.

NOTE: High temperatures can cause this damage.

SUBTASK 56-31-01-200-017

(17) Examine the windows for leaks between the middle and the outer panes.

(a) Replace the seals if these signs of leaks show on the window: (do this task: Passenger/Crew Entry Door Window Removal, TASK 56-31-01-000-801 and, do this task: Passenger/Crew Entry Door Window Installation, TASK 56-31-01-400-801).

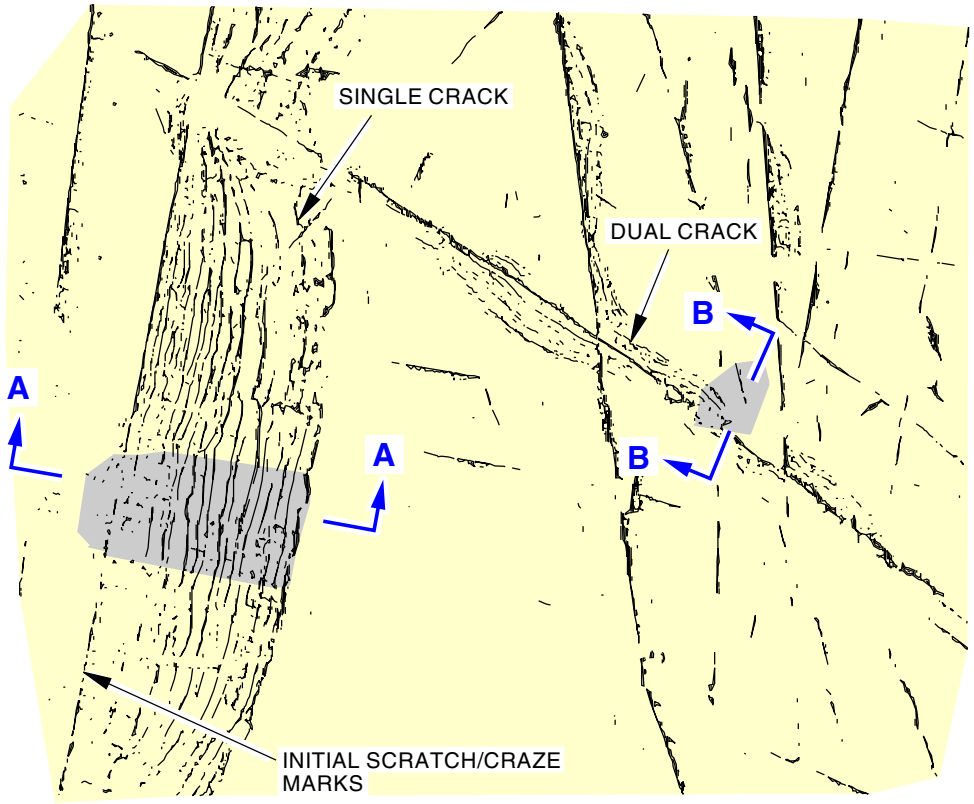
1) Fog and concavity show on the window.

   NOTE: If multiple adjacent windows near doors contain light amounts of fog, seal replacement is not necessary. This can be caused by excessive humidity due to high density seating, changes in climate or location. Light fogging can be eliminated by running the air conditioning packs at High Temperature to evaporate excessive moisture. Single windows with light amounts of fog may be caused by seal leaks and should be replaced.

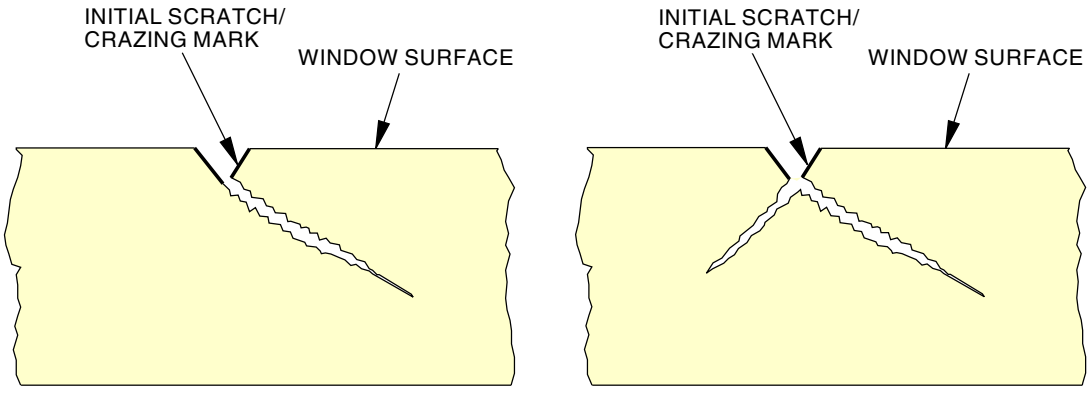
2) Brown stains show near the seal or in the vent hole in the middle pane.

3) Seals are out of place, rolled back, or damaged.

——— END OF TASK ———



WINDOW SURFACE DAMAGE



SINGLE CRACK
A-A

DUAL CRACK
B-B

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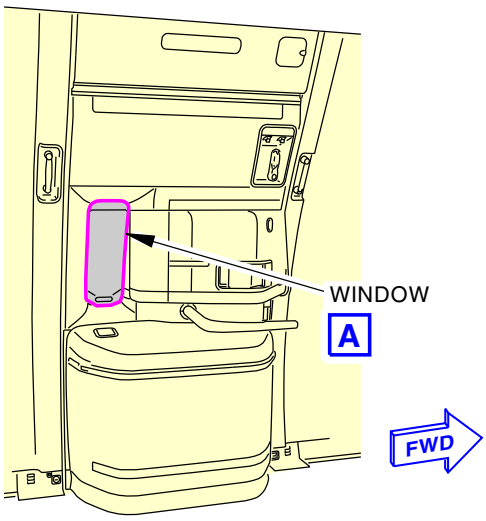
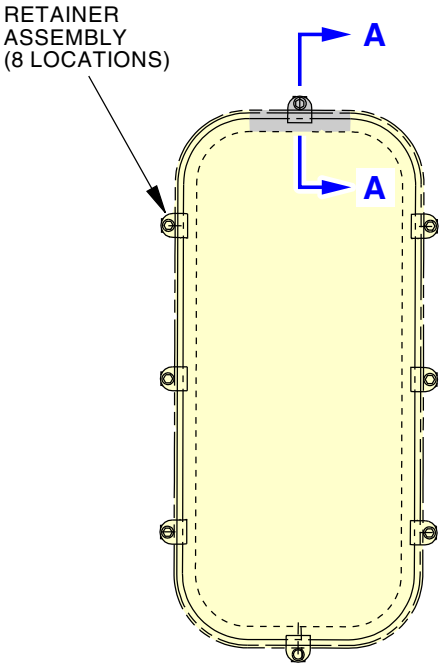
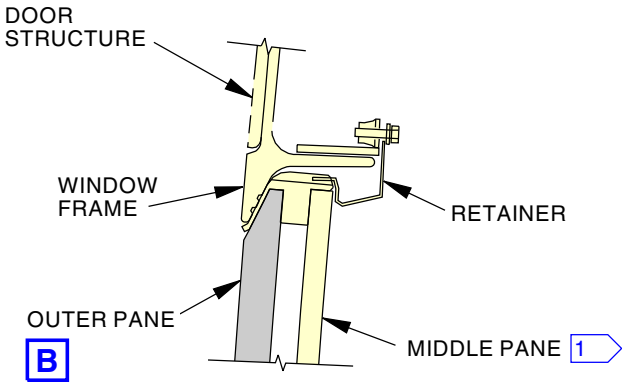
Outer Window Pane Surface Damage
Figure 601/56-31-01-990-802



PASSENGER/CREW ENTRY DOOR



WINDOW
A



A-A

1 REPLACE THE MIDDLE PANE IF THERE ARE CRACKS OR CRAZING.

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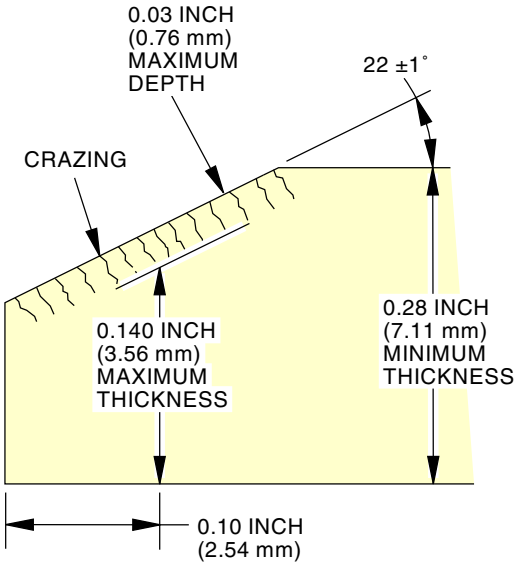
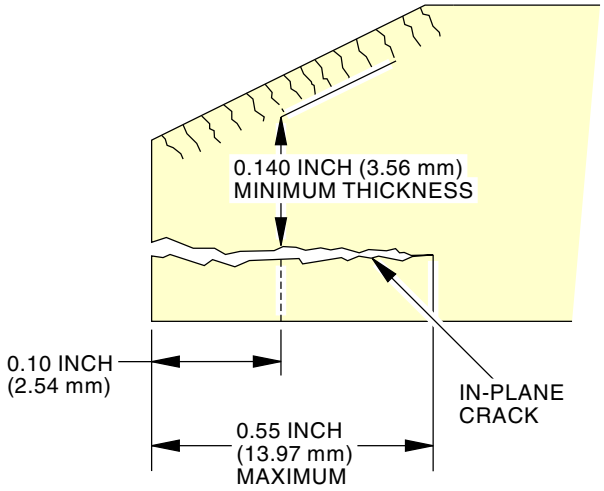
Passenger/Crew Entry Door Window Inspection
Figure 602/56-31-01-990-803 (Sheet 1 of 2)



OUTER PANE LIMITS
(CRAZING)

B



OUTER PANE LIMITS
(IN-PLANE CRACK)

B

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Passenger/Crew Entry Door Window Inspection
Figure 602/56-31-01-990-803 (Sheet 2 of 2)

PASSENGER/CREW ENTRY DOOR WINDOW - REPAIRS

1. General

A. The damage limits for the windows are given in (Inspect the Passenger/Crew Entry Door Windows, TASK 56-31-01-200-802)

B. Use clean cotton gloves (commercially available when you touch the windows to prevent additional damage).

C. Use only approved materials.

D. Do not damage the window surface with finger rings or other sharp objects.

TASK 56-31-01-300-803

2. Repair the Passenger/Crew Entry Door Windows

A. General

(1) You can remove clamshell surface chips, scratches, and surface crazing from acrylic windows with an abrasive paper or cloth.

NOTE: If the installed window has an exterior protective hard coating, Boeing recommends replacing the window. Hard coating removal will occur during the repair procedure and make the repair process more difficult. The repaired window will have a shorter service life because the repair will remove the exterior protective hard coating.

(2) Do these steps to prevent accidental damage to the window when you work near it:

(a) Put tape on the window and seal to protect them.

(b) Use clean cotton lint-free gloves, G01306 when you touch the polished window panes.

(c) Make sure you use the correct materials.

(d) Keep sharp objects away from the window surface.

B. References

Reference	Title
56-31-01-990-803	Figure: Passenger/Crew Entry Door Window Inspection (P/B 601)

C. Tools/Equipment

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

Reference	Description
COM-2039	Micrometer, Optical (Min Depth .02 inch and Accuracy +/-.0005 Inch) Part #: 8400K Supplier: 65956 Part #: MODEL 966A1 Supplier: 0ZYB5 Part #: MODEL 966A1 Supplier: 88277 Opt Part #: 8400PCK Supplier: 65956
STD-1207	Sander/Polisher - Orbital, Air Driven

D. Consumable Materials

Reference	Description	Specification
B00137	Abrasive - Garnet Coated Paper	
B00138	Abrasive - Silicon Carbide Coated Cloth	
B00703	Compound - Plastic Polish	P-P-560

(Continued)

Reference	Description	Specification
G01111	Tape - Aluminum Foil, Pressure Sensitive, Heat Reflective, Adhesive	A-A-59258
G01306	Gloves - Lint-free	

E. Location Zones

Zone	Area
831	Left No. 1 Passenger Entry Door - Section 41
832	Left No. 2 Passenger Entry Door - Section 43
834	Left No. 4 Passenger Entry Door - Section 46
835	Left No. 5 Passenger Entry Door - Section 47
841	Right No. 1 Passenger Entry Door - Section 41
842	Right No. 2 Passenger Entry Door - Section 43
844	Right No. 4 Passenger Entry Door - Section 46
845	Right No. 5 Passenger Entry Door - Section 47

F. Prepare for the Window Repair

SUBTASK 56-31-01-220-002

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

(a) Make sure the window thickness will be serviceable after the repair.

1) Use an optical micrometer, COM-2039 to measure the thickness of the outer window pane.

a) Replace the outer pane if the window, after the repair, is or will be less than 0.28 in. (7.11 mm) (Figure 56-31-01-990-803).

(b) If the window has excessive damage, you must replace it.

SUBTASK 56-31-01-950-001

(2) Apply protective tape, G01111 to the window frame.

SUBTASK 56-31-01-950-002

(3) Apply protective tape, G01111 to the seal.

SUBTASK 56-31-01-160-003

(4) Use a water spray to clean the window.

SUBTASK 56-31-01-160-004

(5) Remove loose dirt with your bare hand.

G. Procedure

SUBTASK 56-31-01-940-003

(1) Select the grade of abrasive, B00137 paper.

(a) Use 60-100 grit for deep scratches and bad crazing.

(b) Use above 100 grit for minor scratches and crazing.

SUBTASK 56-31-01-120-001

(2) Use rough grit abrasive, B00137 paper for two to five minutes to remove the damage (approximately 0.005 inches of acrylic), as follows:

(a) Use a sander/polisher, STD-1207 that moves at approximately 8000 opm.

NOTE: The sander speed can be approximate. It can be less than or more than 8000 opm. More importantly, the operator should use the sander speed setting that will not overheat the window.

(b) Sand a large area of the window even if the damage is small.

NOTE: A local repair will cause visual distortion.

(c) Use water to keep the window surface cool and to flush away grit and acrylic material.

(d) Sand in the horizontal direction then in the vertical direction.

(e) Change the abrasive, B00137 paper frequently.

(f) Repeat the procedure until all surface damage is removed and the surface has a constant thickness.

1) Make sure you have removed all the damage.

SUBTASK 56-31-01-120-002

(3) Use fine grit abrasive, B00137 paper with a vibrating sander until the surface of the window is smooth.

NOTE: Use continuous flow of water when you rub the window surface.

(a) Sand in the horizontal and then the vertical directions.

(b) Change to a finer grade of abrasive, B00137 paper every 2 to 3 minutes, in this order:

1) 100-600 grit abrasive, B00137 paper.

2) 1600-8000 grit abrasive, B00138 cloth.

SUBTASK 56-31-01-220-003

(4) Make sure the window pane thickness is more than the limit.

(a) Use an optical micrometer, COM-2039 to measure the thickness of the outer window pane.

1) Replace the outer pane if the window, after the repair, is or will be less than 0.28 in. (7.11 mm) (Figure 56-31-01-990-803).

SUBTASK 56-31-01-350-001

(5) Use a clean muslin or a wool pad and a buffing compound to polish the window.

(a) Use a rough and then a fine buffing compound, B00703, if necessary.

(b) If you use a rotary buffer, the wheel surface speed must be 3200 fpm for rough compound, B00703 and 4200 fpm for fine compound, B00703.

SUBTASK 56-31-01-210-001

(6) Visually examine the window for optical quality.

SUBTASK 56-31-01-350-002

(7) If there is remaining damage, repeat the repair process.

——— END OF TASK ———