TKS ANTI-ICE PROPORTIONAL UNIT - ADJUSTMENT/TEST

1. General

A. This section contains the procedures to do a test of the wing and tail proportioning units. The procedures apply to the cargo pod and the fairing TKS system installation.

2. Tools and Equipment

A. For a list of tools and equipment, refer to Ice and Rain Protection - General.

NOTE: It is necessary that you have access to clean dry cloths, 30 gallons of approved TKS fluid, a TKS system test cart with connection hardware, 75 psi (517 kPa) filtered shop air (to use with a test cart), and a container with a capacity of three to five gallons.

NOTE: You can fabricate a fluid collector system, which will contain the fluid and keep it off the floor. Recommended materials you can use are plastic sheets, tubing, aluminum tape, and rigid aluminum and/or plastic gutter material.

NOTE: For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to TKS Anti-Ice Fluid Distribution System - Maintenance Practices Nylon Tubing Repair/Replacement.

B. Dual Valve Test Hose Assembly (Figure 501)

(1) Use the materials listed below to assemble a dual valve test hose assembly:

Item	Quantity	Name
1	2	1/2 inch TKS Tubing
2	2	1/4 inch ball valves
3	2	1/2 inch compression to 1/2 inch male pipe fittings
4	4	1/4 inch male national pipe union
5	2	1/2 inch x 1/4 inch female fitting
6	1	1/4 inch female pipe T-fitting
7	1	1/4 inch compression to 1/4 inch male pipe fitting
8	24 inches	1/4 inch translucent tubing
9	2	1/2 inch TKS Nut & Olive
10	2	1/2 inch TKS Cap

3. Proportioning Unit Test

WARNING: For health and environmental data, review the applicable Safety Data Sheet (SDS).

WARNING: Before you disconnect components of the TKS anti-ice system, slowly loosen the coupling that is connected to the component to be removed because it is possible that high pressure is still in the system.

WARNING: Immediately remove (clean) or contain all the TKS fluid that is spilled. TKS fluid on the floor will cause a slip hazard.

WARNING: Discard all unwanted TKS fluid and/or dirty cloths correctly. TKS fluid is a hazardous waste and must be discarded in accordance with approved procedures.

CAUTION: Use only approved TKS fluids in accordance with specification DTD 406B. Fluid density is approximately 9.2 lbs/gal.

CAUTION: Use only clean, filtered fluid in the TKS system. Contamination will cause fluid blockage and/or damage to the porous panel.

CAUTION: Do not use the seals again after you loosen or disconnect a tube coupling. Replace the 3/16-inch and 5/16-inch sealing ring and/or 1/2-inch O-ring, as applicable, when you assemble a tube coupling. Examine the seal for damage and make sure that it is in the correct position in the coupling as shown in Figure 501. This will help to prevent fluid leakage from the coupling. Refer to TKS Anti-Ice Fluid Distribution System - Maintenance Practices for Nylon Tubing Repair/Replacement.

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CAUTION: Do not use the coupling nut to clench the olive to the fluid tubing. Use only specified clenching tools to do the clenching operation. Also, do not torque the couplings too much during the repair or replacement procedure. If the couplings leak, install new seals as necessary.

CAUTION: Clench the olive to the tubing without a sealing ring in position. If you clench the olive with the sealing ring in position, you will prevent correct clench and the sealing ring will be unserviceable.

A. Proportioning Unit Test Preliminary Procedures (Refer to Figure 502).

(1) Remove external electrical power from the airplane.

(2) Disengage the circuit breakers on the left circuit breaker panel that follow:

- PRIMARY ANTI-ICE
- W/S ANTI-ICE
- BACKUP ANTI-ICE.

(3) Make sure the switches that follow are in the OFF position:

SWITCH NAME	SETTING / POSITION
External Power (Bus) Switch (SC006)	OFF
Battery (DC Power) Switch (SC005)	OFF
Fluid Control - Primary (SI022)	OFF
Fluid Control - Max Flow (SI023)	N/A
Fluid Control - Backup (SI024)	OFF
Avionics Bus 1 (SC016) and 2 (SC018)	OFF

(4) To get access to the tail proportioning unit in the tail bracket assembly, remove the tailcone access panel 320A. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(5) To get access to the left wing proportioning unit, remove wing access panels 503AB, and 503BB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(6) To get access to the right wing proportioning unit, remove wing access panels 603AB, and 603BB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

NOTE: On airplanes that have a radome installed on the right wing, you can only remove wing access panel 603BB.

(7) Attach the fluid collector system below the area of the panels that will be purged.

(8) At the left, right and tail proportioning units, disconnect the inlet tube. For access to the proportioning units and tube installation and removal procedures refer to TKS Anti-Ice Fluid Distribution System - Maintenance Practices.

(9) Attach the dual valve test hose to the tail proportioning unit inlet port.

(10) Attach the remaining end of the test hose to the 5/16 inch test cart feed line.

(11) Set the feed ball valve to the open position.

(12) Set the drain ball valve to the closed position.

B. Do the Proportioning Unit Test (Refer to Figure 502).

NOTE: The proportioning unit test procedures for airplanes with the cargo pod installation and with the fairing installation are identical.

(1) Operate the test cart at 20 psi (137 kPa) and allow the panels to become fully wetted.

(a) Open the drain ball valve. Flow TKS fluid through the drain line to expel all air bubbles.

(b) Close the drain ball valve.

(2) Close the feed ball valve.

(3) Set the test cart to 0 psi.

(4) Open the drain ball valve.

(a) Make sure the 24.25 inch (615.95 mm) diameter drain line remains in the vertical position during the test. Make sure no air bubbles travel up the drain line during the test.

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(5) Make sure there is not more than five milliliters of fluid collected.

(6) If more than five milliliters of fluid is collected do the test two more times.

(7) If more than five milliliters of fluid is collected each time, replace the proportioning unit. Refer to TKS Anti-Ice Fluid Distribution System - Maintenance Practices.

(8) Do the same checks again at the wing proportioning units.

(a) Connect the test hose to the test cart 1/2 inch feed line.

(b) Make sure there is not more than five milliliters of fluid collected.

(9) If more than five milliliters of fluid is collected each time, replace the proportioning unit. Refer to TKS Anti-Ice Fluid Distribution System - Maintenance Practices.

(10) Remove the dual valve test hose from the proportioning unit.

(11) Remove the test cart connection from the airplane.

(12) Connect the inlet tubing to the proportioning units.

(a) Leak check the tube connection after reinstallation prior to panel installation.

(13) Install the access panels.

(a) Install the tailcone access panel 320A. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(b) Install the left wing access panels 503AB, and 503BB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(c) Install the right wing access panels 603AB, and 603BB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

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Figure 501 : Sheet 1 : Dual Valve Test Hose Assembly

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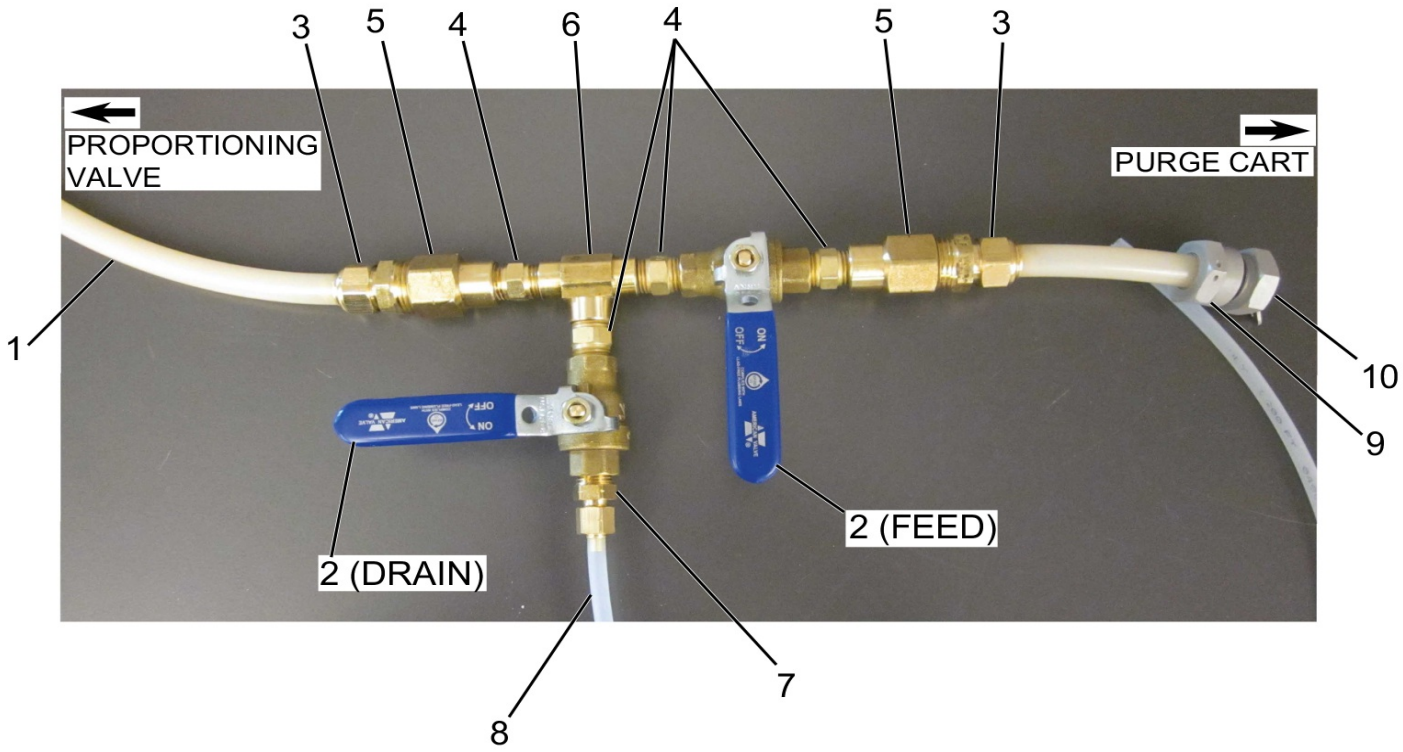

ITEM	QTY	NAME
1	2	1/2 INCH TKS TUBING
2	2	1/4 INCH BALL VALVES
3	2	1/2 INCH COMPRESSION TO 1/2 INCH MALE PIPE FITTINGS
4	4	1/4 INCH MALE NATIONAL PIPE UNION
5	2	1/2 INCH X 1/4 INCH FEMALE FITTING
6	1	1/4 INCH FEMALE PIPE T-FITTING
7	1	1/4 INCH COMPRESSION TO 1/4 INCH MALE PIPE FITTINGS
8	24 INCHES	1/4 INCH TRANSLUCENT TUBING
9	2	1/2 INCH TKS NUT AND OLIVE
10	2	1/2 INCH TKS CAP

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Figure 502 : Sheet 1 : TKS Proportioning Units

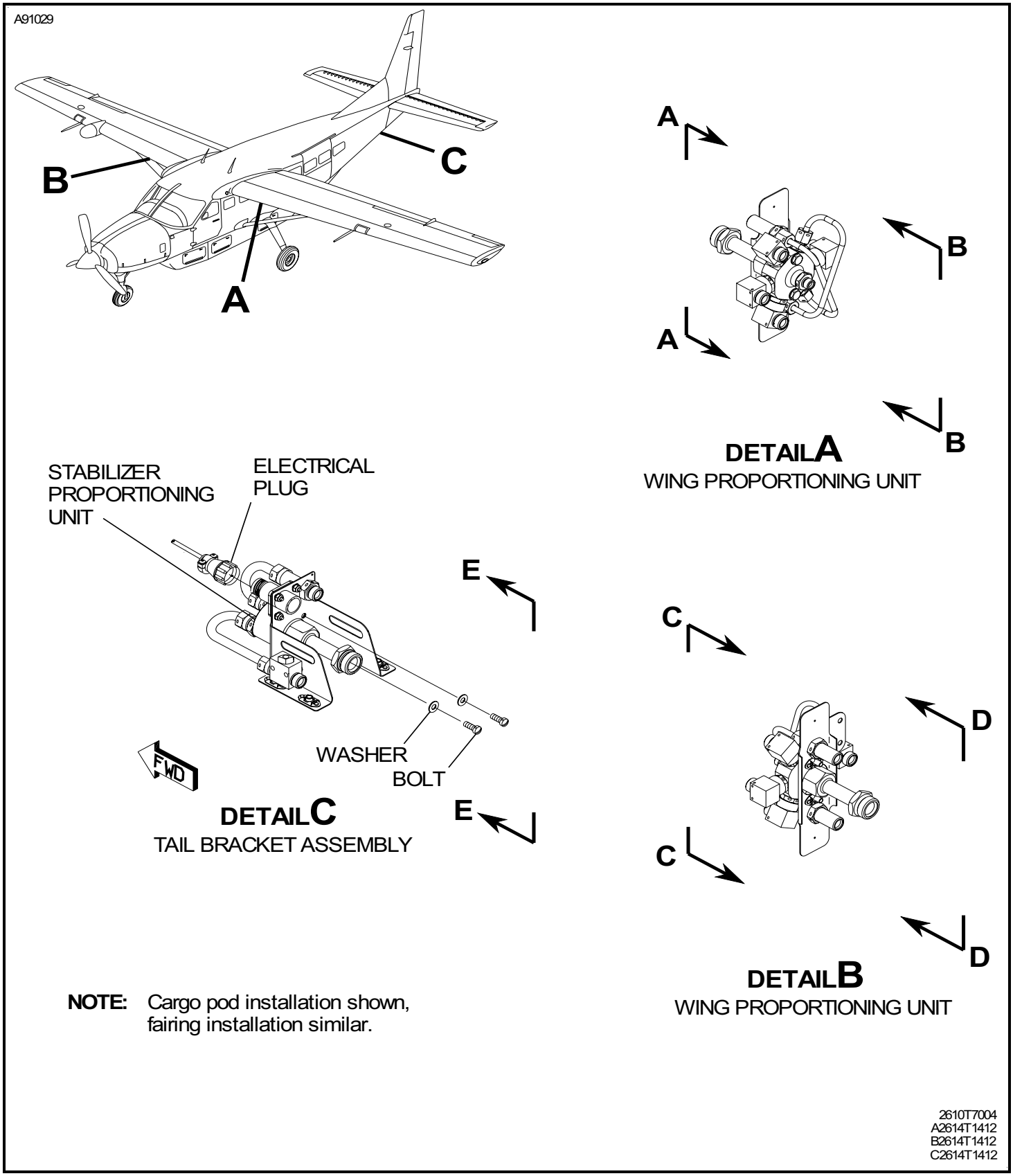

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Figure 502 : Sheet 2 : TKS Proportioning Units

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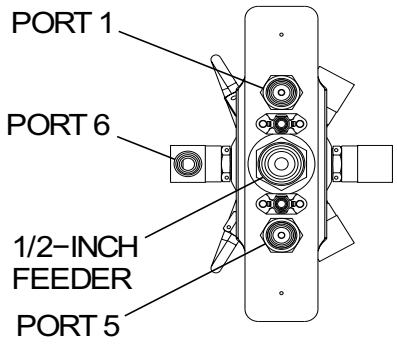
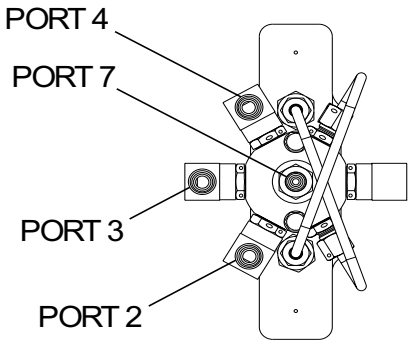
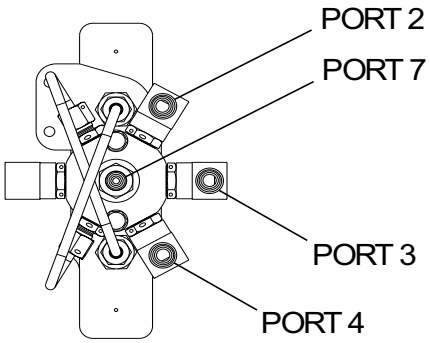


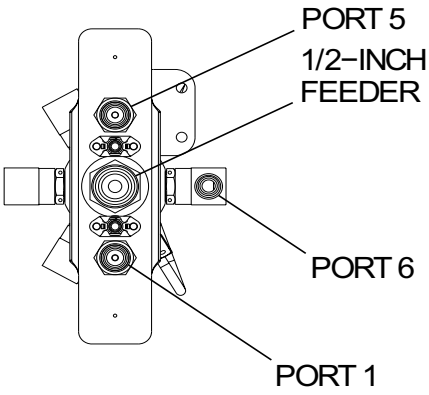
VIEW A−A
LEFT LOOKING OUTBOARD



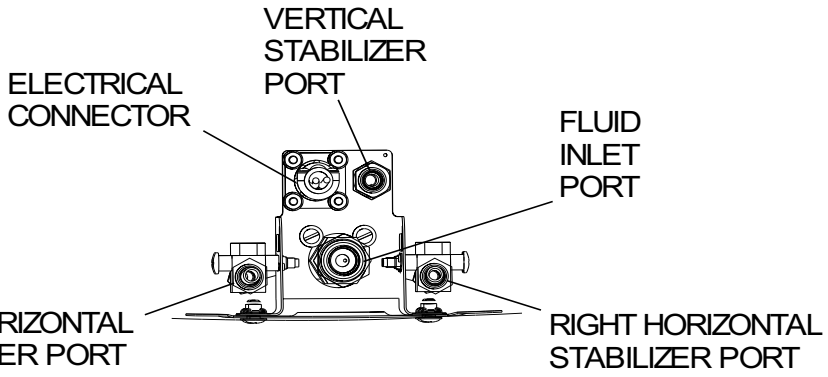
VIEW B−B
LEFT LOOKING INBOARD



VIEW C−C
RIGHT LOOKING INBOARD



VIEW D−D
RIGHT LOOKING OUTBOARD



VIEW E−E
VIEW LOOKING FORWARD

AA2614T1412
BB2614T1412
CC2614T1412
DD2614T1412
EE2698T182

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Figure 501 : Sheet 1 : TKS Nylon Tubing Assembly

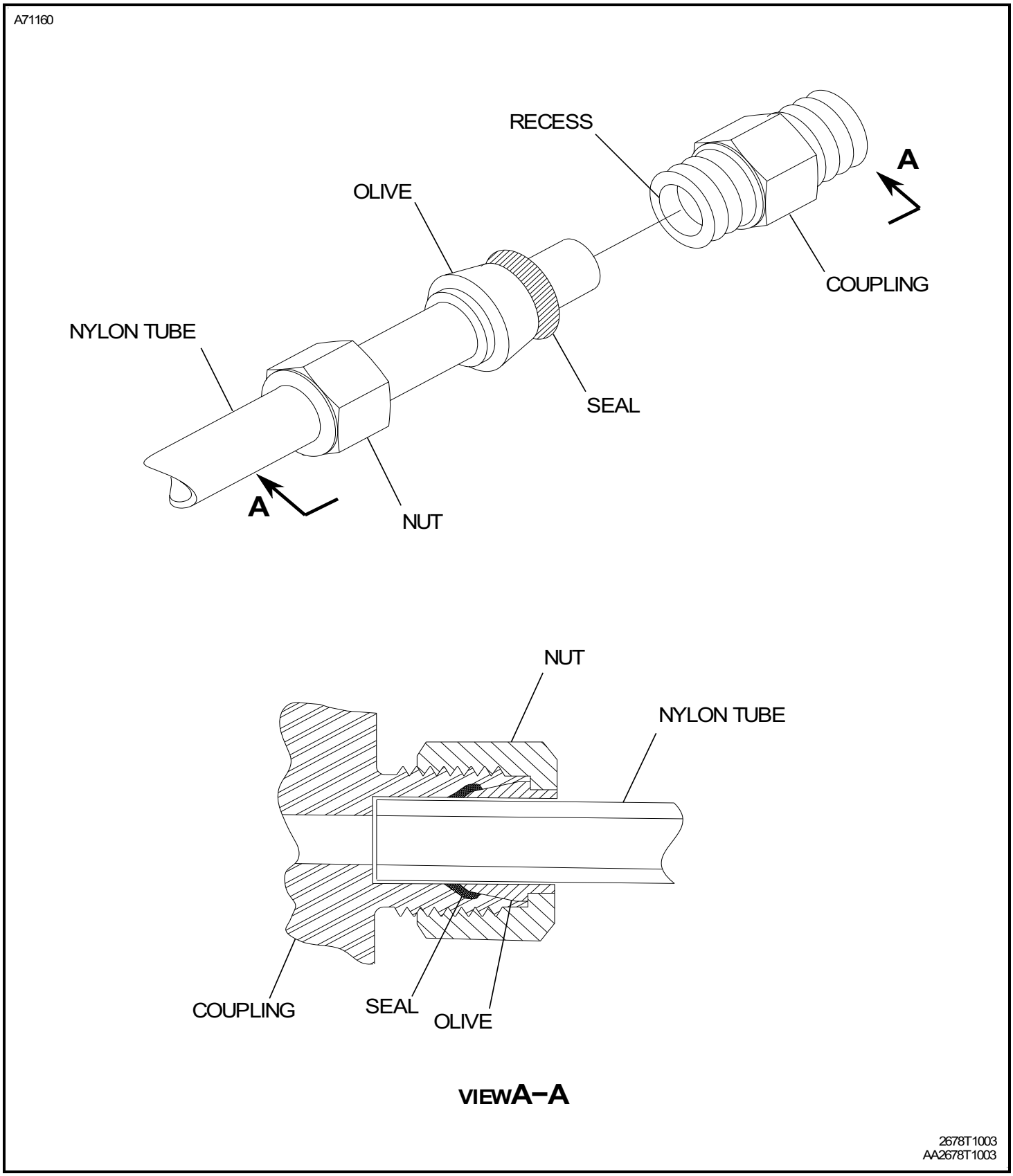

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Figure 501 : Sheet 2 : TKS Nylon Tubing Assembly

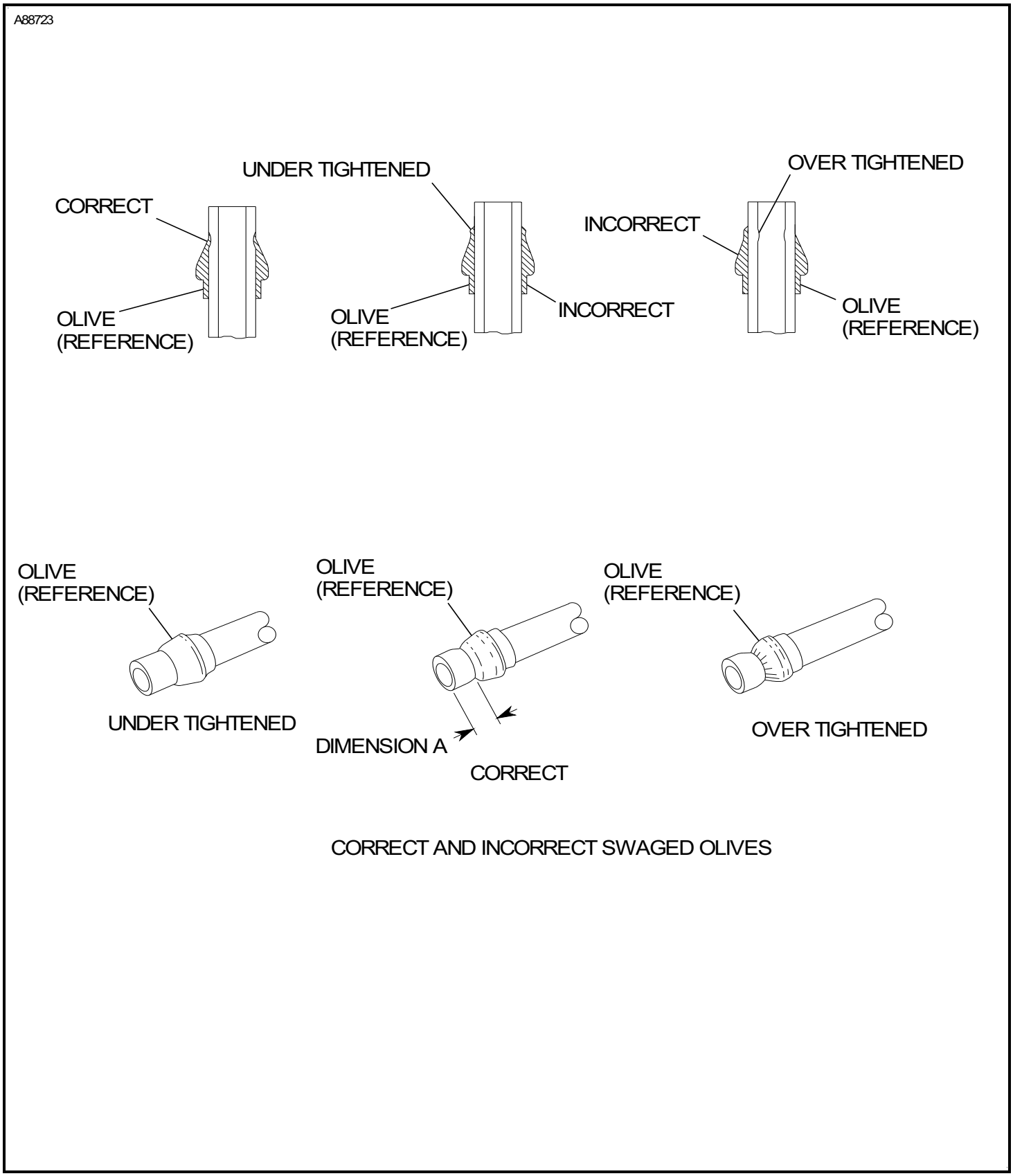

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Figure 9 : Sheet 1 : Aft Fuselage, Horizontal and Vertical Stabilizer Panels

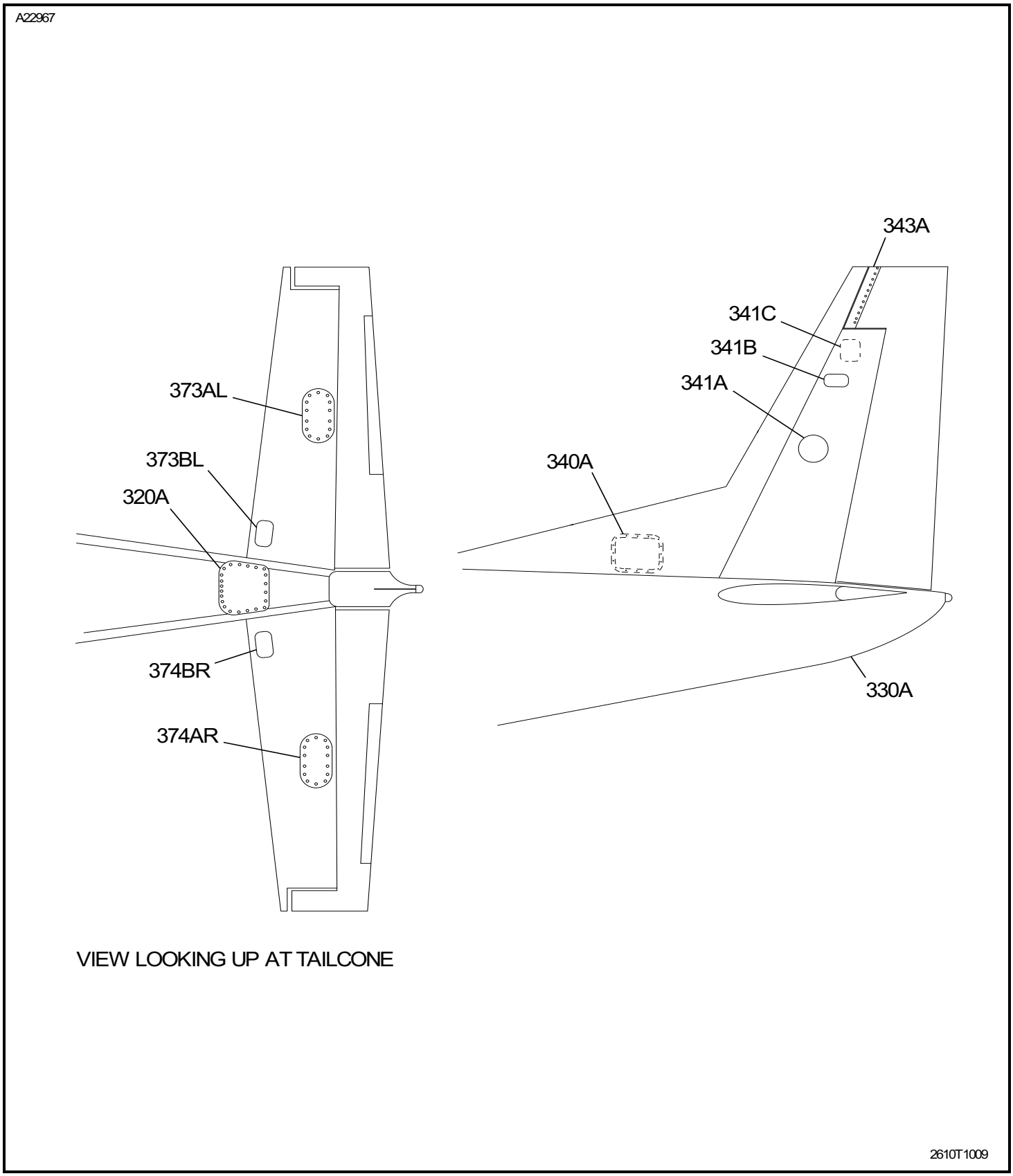

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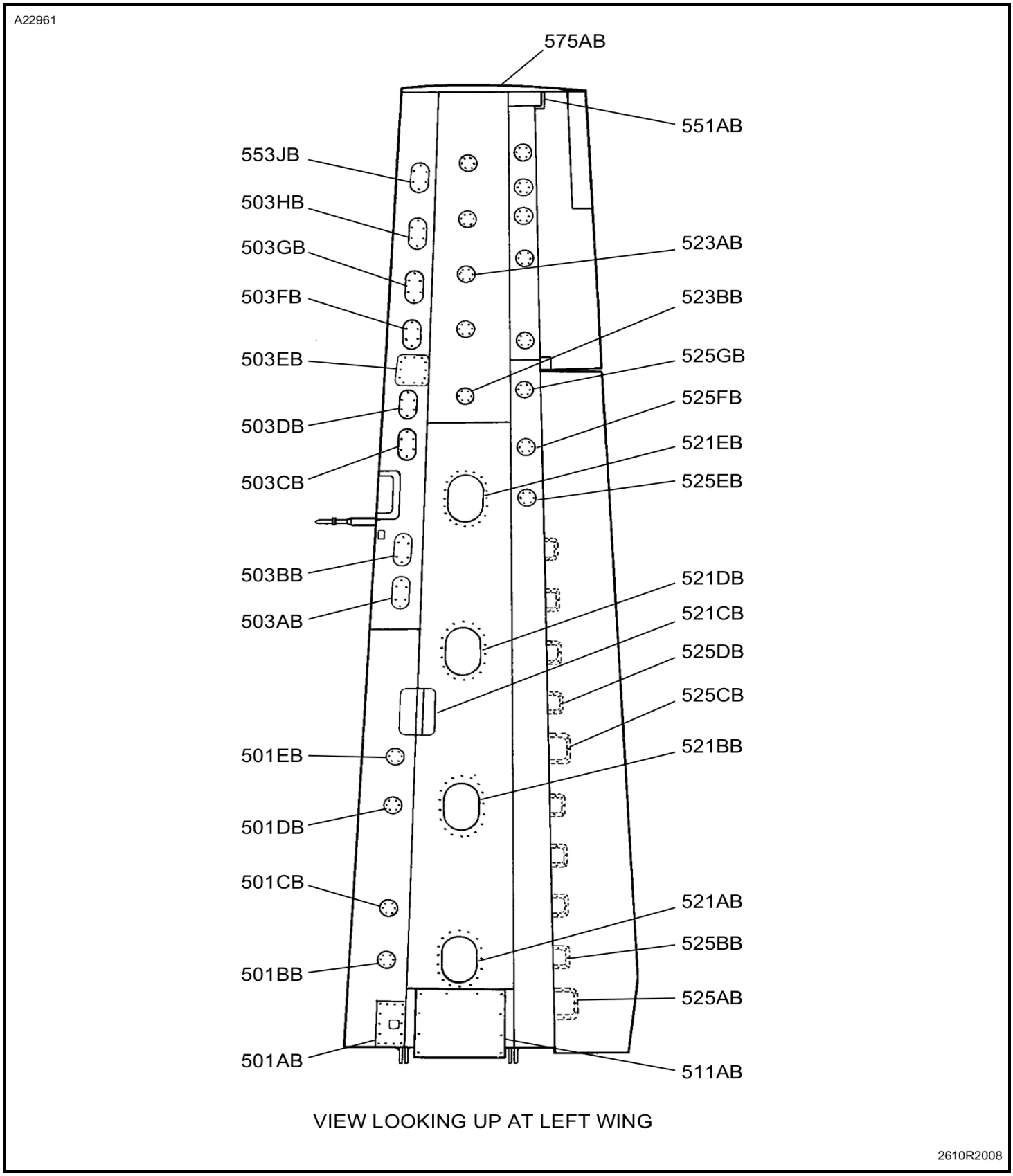
Figure 7 : Sheet 1 : Left Lower Wing Panels



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