# TKS INDIVIDUAL PANEL MINIMUM PRESSURE FLOW TEST - ADJUSTMENT/TEST

## 1. General

A. This section contains the procedures to do a test of the wing, horizontal, vertical stabilizer and wing strut leading edges panels at minimum pressure to make sure that there is correct fluid flow. 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. Pressure Gage Assembly

**NOTE: Equivalent substitutes may be used for the following listed items.**

(1) Use the materials that follow to assemble the pressure gage with a nylon hose:

- 5/16 Nylon Tubing (TKS) part number H610025 (approximately 3 ft)
- Nut ZN4855
- Sleeve ZN101-20
- Sealing Ring S2800-942.

## 3. Individual Panel Minimum Pressure Flow Pressure 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.**

**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. Test Preliminary Procedures.

(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 that the switches that follow are in the OFF position:

- External Power (Bus) Switch (SC006)
- Battery (DC Power) Switch (SC005)
- Fluid Control - Primary (SI022)
- Fluid Control - Backup (SI024)
- Avionics Bus 1 (SC016)
- Avionics Bus 2 (SC018).

(4) To get access to the left wing panel fittings, remove wing access panels 501BB, 501EB, 503AB, 503DB, and 503HB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(5) To get access to the right wing panel fittings, remove wing access panels 601BB, 601EB, 5603AB, 603DB, and 603HB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(6) To get access to the aft proportional unit remove the tailcone access panel 320A.. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(7) To get access to the horizontal panel ports. Remove the access panels 373BL and 374BR. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(8) Attach the fluid collector system below the area of the panels that will be purged and pressure tested to collect fluid if necessary.

(9) Assemble the nylon tubing with the pressure gage on one end and the nut, sleeve and sealing ring on the other end.

(10) At the left wing inboard panel inlet remove and cap the supply line.

**NOTE: The inboard and outboard wing panels have two supply tubes. The supply tubing not being tested must be capped.**

(11) Install the 5/16 tee pressure gage assembly at the inboard panel inlet connection port.

(12) Connect the test cart supply line to the tee assembly.

(13) Make sure that the TKS fluid is at 32°F (0°C) or warmer before you continue with the Individual Panel Minimum Pressure Flow Pressure Test.

(14) Set the test cart to get the correct fluid flow on the porous panel. For an example of the correct porous panel flow refer to TKS Anti-Ice Leading Edge Porous Panel - Adjustment/Test Figure 502.

(a) Make sure that the test flow pressure necessary to get the correct flow is less than 60 psi.

(15) Reduce the test cart to 0.0 psi.

(16) Wipe the porous panel with a clean cloth to remove fluid from the surface.

(17) Set the test cart so the digital pressure gage at the panel tee assembly reads 5 psi.

(a) Continue the 5 psi setting for 2 minutes.

(18) Make sure that the fluid flows evenly on the porous panel surfaces. For an example of the correct porous panel flow refer to TKS Anti-Ice Leading Edge Porous Panel - Adjustment/Test Figure 502.

(19) Make sure that the panel does not need more than 5 psi of pressure to have the correct fluid flow on the panel.

(a) If the panels needs more than 5 psi for correct flow it must be replaced.

(20) When the test at the first inlet port is complete:

(a) Remove the 5/16 tee assembly from the panel port.

(b) Connect the panel line to its correct proportioning unit port.

(c) Connect the 5/16 tee assembly to the second panel inlet port line.

(21) Do the pressure test again for the second panel inlet port.

(22) When the panel test is complete remove the 5/16 tee assembly from the panel port.

(23) Remove the cap and connect the supply line and panel line to the correct panel port.

(24) Do the panel purge and pressure test at each of the 5 remaining wing porous panels, 2 on the left wing and 3 on the right wing.

**NOTE: Make sure that you a pressure test at each panel inlet port on the panels with two ports.**

(25) Do the port pressure test at each of the wing struts.

(a) Get access for the strut panels at the wing proportioning unit.

**NOTE: The strut panel has two membranes, an upper and a lower.**

(b) When the test is complete connect the supply and panel lines to the correct port on the proportioning unit.

(26) Do a check of the vertical panel.

**NOTE: To do a check of the vertical panel get access to the tubing at the aft proportioning unit.**

(a) When the test is complete connect the panel tubing and feed tubing to the correct ports of the proportioning unit.

(b) After a leak test of the system is complete install the tailcone access panel 320A. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(27) Do the port check of the left and right horizontal panels.

(a) When test at the panel is complete connect the panel tubing and feed tubing to the correct ports of the proportioning unit.

(b) After a leak test of the system is complete install the access panels 373BL and 374BR Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation as applicable.

(28) Install the access panels.

(a) Install the left wing access panels 501BB, 501EB, 503AB, 503DB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(29) Install the right wing access panels 601BB, 601EB, 603AB, 603DB, and 603HB right as applicable. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

(30) If necessary install the aft fairing section. Refer to TKS Anti-Ice System - Maintenance Practices (Fairing Installation) Install the Aft Fairing.

(31) Engage the circuit breakers on the left circuit breaker panel that follow:

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