TKS ANTI-ICE FLUID TANK COMPONENTS - MAINTENANCE PRACTICES
(Cargo Pod Installation)

1. General

A. This section contains the removal and installation procedures for the TKS anti-ice fluid tank and its equipment pack.

B. The equipment pack includes the access panels, drain valve, check valves, fluid level sender, filter or filter pack, pumps, and switches.

C. After you remove and install or replace the fluid tank, it is necessary to do the panel purge and test procedures. Refer to TKS Leading Edge Porous Panel - Adjustment/Test.

D. After you remove and install or replace the fluid tank, you can calibrate the fluid level sender, if necessary. Refer to TKS Anti-Ice Fluid Tank Components Adjustment/Test.

E. Recommended maintenance to make sure that the TKS system operates correctly is as follows:

- Operate the metering pumps each month, or when necessary, in the HIGH mode to remove the air from the fluid system.
- If the fluid tank is removed and installed or replaced, do the porous panel purge and test procedures.

F. Some Airplanes with the TKS anti-ice system have the G1000 avionic system installed. Table 201 shows the TKS-related circuit breakers and their reference designators.

G. Some Airplanes with the TKS anti-ice system do not have the G1000 avionic system installed. Table 201 shows the TKS-related circuit breakers and their reference designators.

Table 201. TKS Circuit Breakers

Airplanes With G1000		**Airplanes Without G1000**	
TKS Circuit Breaker	Reference Designator	TKS Circuit Breaker	Reference Designator
PRIMARY ANTI-ICE	(HC005)	PRIMARY ANTI-ICE	(CB309)
BACKUP ANTI-ICE	(HC015)	W/S	(CB409)
W/S	(HC016)	BACKUP ANTI-ICE	(CB410)
ENG INTFC	(HI013)	ANTI-ICE GAUGE	(CB310)

2. Tools and Equipment

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

B. For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 202.

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.

Table 202. Aluminum Alloy /Stainless Steel Fittings Torque Values

Aluminum Alloy / Stainless Steel Fittings on Nylon Tubing	
Tube Outside Diameter (OD) In inches	**Tightening Torque (Reference) (+10% or -10%) (lbf-in)**
3/16	28
5/16	48
1/2	63

3. TKS Anti-Ice Fluid Removal

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Anti-Ice Fluid (Refer to Figure 201 and Figure 202).

(1) Find the drain tube outlet in the bottom of the cargo pod below the fluid tank.

(2) Put a container with a capacity of approximately 3 to 5 gallons below the drain tube outlet.

(3) Open the forward-center and aft-center cargo pod doors to get access to the fluid tank and aft bulkhead.

(4) Remove the screw and nut that attaches the bonding jumper to the bulkhead.

(5) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(6) Remove the aft bulkhead from the cargo pod.

(7) Push and turn (lock open) the knurled nut on the drain valve below the fluid tank to release the fluid.

(8) Turn and pull (lock closed) the knurled nut on the drain valve to stop the drain procedure.

(9) Refer to Chapter 12, TKS Anti-Ice System - Servicing for the servicing procedures.

NOTE: You must calibrate the fluid level sender if the MFD (G1000) or the quantity level gage (none G1000) does not read zero when the TKS fluid tank is empty. The calibration procedures are in TKS Anti-Ice Fluid Tank Components - Adjustment/Test.

(10) Put the aft bulkhead in position in the cargo pod.

(11) To install the drip pan, do the step that follows:

(a) Use Type I, Class B sealant to bond the forward edge of the drip pan to the cargo pod.

(12) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

(13) Install the screw and nut that attaches the bonding jumper to the bulkhead.

(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

(14) Install the screws and connect the antenna coaxial cable and conduit, if applicable.

(15) Close the cargo pod doors.

4. TKS Anti-Ice Fluid Tank Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Anti-Ice Fluid Tank (Refer to Figure 201 and Figure 202).

(1) Open the forward-center and aft-center cargo pod doors to get access to the fluid tank and aft bulkhead.

(2) Remove external electrical power from the airplane.

(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.

(4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(6) Remove the anti-ice fluid from the fluid tank. Refer to TKS Anti-Ice Fluid Removal in this section.

(7) Remove the screw and nut that attaches the bonding jumper to the bulkhead.

(8) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(9) Remove the aft bulkhead from the cargo pod.

(10) Identify and disconnect the equipment pack electrical connectors from the airplane fuselage connector.

(11) Loosen, but do not remove the hose clamp at the filler neck on the fluid tank assembly.

(12) Disconnect the filler tube from the filler neck.

(13) Put caps on all openings and tube ends to keep FOD out of the fluid system.

(14) Remove the bottom screws that attach the shear plates to the fluid tank and carefully lower it.

(15) Loosen, but do not remove the hose clamps on the vent tubes at the access panel bushings.

(16) Disconnect the vent tubes at the access panel bushings.

(17) Put caps on all openings and tube ends to keep FOD out of the fluid system.

(18) Loosen, but do not remove the hose clamp on the drain tube at the drain valve.

(19) Disconnect the drain tube from the drain valve.

(20) Put caps on all openings and tube ends to keep FOD out of the fluid system.

(21) Disconnect the airplane supply line from the filter or filter pack and disconnect the windshield supply line from the windshield pump.

(22) Put caps on all openings and tube ends to keep FOD out of the fluid system.

(23) Carefully remove the fluid tank assembly from the cargo pod.

NOTE: You can remove the shear plates and the drip pan from the airplane to increase the space in the cargo pod.

(24) To remove the drip pan, do the steps that follow:

(a) Use a scraper or putty knife to remove the sealant bond that attaches the forward edge of the drip pan to the cargo pod.

(b) Remove the drip pan from the cargo pod.

(c) Remove the sealant from the drip pan and the cargo pod floor.

(25) Make sure that all openings and tube ends have caps installed.

B. Install the Anti-Ice Fluid Tank (Refer to Figure 201 and Figure 202).

(1) Install the shear plates, if applicable.

(2) Put the drip pan in position in the cargo pod, if applicable.

(3) Put the fluid tank assembly in position in the cargo pod.

(4) Remove the caps from the airplane supply line and the windshield line tube ends.

(5) Install new seals in the airplane supply line and the windshield couplings as shown in Figure 203.

(6) Connect the airplane supply line at the filter or filter pack and windshield line.

(a) Safety all the tube couplings. Refer to Chapter 20, Safetying - Maintenance Practices.

(7) Remove the caps from the vent tubes and access panel bushings.

(8) Connect the vent tubes to the access panel bushings.

(9) Tighten the hose clamps on the vent tubes at the access panel bushings.

(10) Carefully lift the fluid tank assembly, align the attach points, and install the bottom screws that attach the shear plates to the fluid tank.

(11) Remove the caps from the drain tube and drain valve.

(12) Connect the drain tube to the drain valve.

(13) Tighten the hose clamp on the drain tube at the drain valve.

(14) Remove the caps from the filler tube and fluid neck.

(15) Connect the filler tube to the filler neck.

(16) Tighten the hose clamp at the filler neck on the fluid tank assembly.

(17) Connect the electrical connectors to the airplane fuselage connector.

(18) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.

(19) Engage the ENG INTFC circuit breaker, if applicable.

(20) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(21) Supply external electrical power to the airplane.

(22) Do the fluid tank servicing. Refer to Chapter 12, TKS Anti-Ice System - Servicing.

NOTE: You must calibrate the fluid level sender if the MFD (G1000) or the quantity level gage (none G1000) does not read zero when the TKS fluid tank is empty. The calibration procedures are in TKS Anti-Ice Fluid Tank Components - Adjustment/Test.

(23) Do a test of the fluid tank components. Refer to TKS Anti-Ice Fluid Tank Components - Adjustment/Test.

(24) Do the panel purge and test procedures. Refer to TKS Anti-Ice Leading Edge Porous Panel - Adjustment/Test.

(25) Remove external electrical power from the airplane.

(26) Put the aft bulkhead in position in the cargo pod.

(27) To install the drip pan, do the step that follows:

(a) Use Type I, Class B sealant to bond the forward edge of the drip pan to the cargo pod.

(28) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

(29) Install the screw and nut that attaches the bonding jumper to the bulkhead.

(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

(30) Install the screws and connect the antenna coaxial cable and conduit, if applicable.

(31) Close the cargo pod doors.

5. Filter and Filter Pack Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Filter Pack (Refer to Figure 201 and Figure 202).

(1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.

(2) Remove external electrical power from the airplane.

(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.

(4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(6) Remove the screw and nut that attaches the bonding jumper to the bulkhead.

(7) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(8) Remove the aft bulkhead from the cargo pod.

(9) Slowly loosen and disconnect the manifold couplings from the filter pack.

(10) Put caps on all openings and tube ends to keep FOD out of the fluid system.

(11) Remove the screws that attach the filter pack to the tank bracket.

(12) Remove the filter pack from the cargo pod.

B. Install the Filter Pack (Refer to Figure 201 and Figure 202).

(1) Put the filter pack in position on the tank bracket.

(2) Install the screws that attach the filter pack to the tank bracket.

(3) Remove the caps from the tube ends.

(4) Install new seals in the couplings as shown in Figure 203.

(5) Connect the manifold couplings to the filter pack.

(a) For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 201.

(6) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.

(7) Engage the ENG INTFC circuit breaker, if applicable.

(8) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(9) Supply external electrical power to the airplane.
(10) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(11) Put the EXTERNAL POWER switch on the pilot's switch panel to the ON position.
(12) Put the PRIMARY switch on the ANTI-ICE switch panel to the HIGH position.
(a) Make sure that there is no fluid leakage from the couplings.
(13) Put the PRIMARY switch on the ANTI-ICE switch panel to the OFF position.
(14) Put the EXTERNAL POWER switch on the pilot's switch panel to the OFF position.
(15) Remove external electrical power from the airplane.
(16) Put the aft bulkhead in position in the cargo pod.
(17) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.
(18) Install the screw and nut that attaches the bonding jumper to the bulkhead.
(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.
(19) Install the screws and connect the antenna coaxial cable and conduit, if applicable.
(20) Close the cargo pod door.

C. Remove the Filter (Refer to Figure 201 and Figure 202).
(1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.
(2) Remove external electrical power from the airplane.
(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
(4) Disengage the ENG INTFC circuit breaker, if applicable.
(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(6) Remove the screw and nut that attaches the bonding jumper to the bulkhead.
(7) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.
NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.
(8) Remove the aft bulkhead from the cargo pod.
(9) Slowly loosen and disconnect the filter inlet and outlet tube assemblies from the filter.
(10) Put caps on all openings and tube ends to keep FOD out of the fluid system.
(11) Loosen the clamps that attach the filter to the tank bracket.
(12) Remove the filter from the cargo pod.

D. Install the Filter (Refer to Figure 201 and Figure 202).
(1) Put the filter in position on the tank bracket.
(2) Tighten the clamps that attach the filter to the tank bracket.
(3) Remove the caps from the tube ends.
(4) Install new seals in the couplings as shown in Figure 203.
(5) Connect the manifold couplings to the filter pack.
(a) For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 201.
(6) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(7) Engage the ENG INTFC circuit breaker, if applicable.
(8) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(9) Supply external electrical power to the airplane.
(10) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(11) Put the EXTERNAL POWER switch on the pilot's switch panel to the ON position.
(12) Put the PRIMARY switch on the ANTI-ICE switch panel to the HIGH position.

(a) Make sure that there is no fluid leakage from the couplings.

(13) Put the PRIMARY switch on the ANTI-ICE switch panel to the OFF position.

(14) Put the EXTERNAL POWER switch on the pilot's switch panel to the OFF position.

(15) Remove external electrical power from the airplane.

(16) Put the aft bulkhead in position in the cargo pod.

(17) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

(18) Install the screw and nut that attaches the bonding jumper to the bulkhead.

(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

(19) Install the screws and connect the antenna coaxial cable and conduit, if applicable.

(20) Close the cargo pod door.

E. Remove the Single Filter Element (Refer to Figure 202).

(1) Remove the filter from the airplane and put it on a bench. Refer to the filter removal procedure in this section.

CAUTION: The filter is full of fluid. To prevent a fluid spill, remove the filter element over a container.

(2) Hold the filter over a container and do as follows:

(a) Lift the bottom of the clip and turn the filter bowl 45 degrees.

(b) Remove the filter bowl from the filter head.

(3) Examine the O-ring.

(a) If necessary, discard it.

(4) Remove the filter element from the filter bowl.

F. Install the Single Filter Element (Refer to Figure 202).

(1) Install the filter element in the filter bowl.

(2) If necessary, install a new O-ring in the filter head.

(3) Install the filter head on the filter bowl.

(4) Make sure that the clip is correctly installed in the filter bowl slot.

(5) Install the filter in the airplane. Refer to the filter installation procedure in this section.

(6) Bleed the filter as follows:

(a) Put a container below the filter.

(b) Remove the air bleed screw from the filter head.

(c) Operate the system in HIGH mode until a steady stream of fluid comes out of the air bleed screw hole.

(d) Install the air bleed screw as follows:

1 Examine the air bleed screw and the O-ring.

2 If the air bleed screw or the O-ring are unserviceable, replace the screw.

3 Carefully install the air bleed screw to the filter head.

a Make sure that you do not cross thread the screw.

CAUTION: If you tighten the air bleed screw too much, you can damage the O-ring.

4 Carefully tighten the screw it installs tightly with the O-ring.

(e) Operate the system in HIGH mode and examine the air bleed screw for leaks.

(f) If the air bleed screw leaks, carefully tighten the screw.

6. Metering Pump Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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.

NOTE: The removal and installation of metering pump 1 and metering pump 1 are typical.

A. Remove the Metering Pump (Refer to Figure 201 and Figure 202).

(1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.

(2) Remove external electrical power from the airplane.

(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.

(4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(6) Remove the anti-ice fluid from the fluid tank. Refer to TKS Anti-Ice Fluid Removal in this section.

(7) Remove the screw and nut that attaches the bonding jumper to the bulkhead.

(8) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(9) Remove the aft bulkhead from the cargo pod.

(10) Identify and disconnect the electrical connector from the pump.

(11) Slowly loosen and disconnect the tube couplings that are attached to the pump.

(12) Put caps on all openings and tube ends to keep FOD out of the fluid system.

(13) Remove the screws that attach the pump to the tank bracket.

(14) Remove the pump from the cargo pod.

B. Install the Metering Pump (Refer to Figure 201 and Figure 202).

(1) Apply a light layer of TKS fluid on the seals between the tank and the pump.

(2) Put the pump in position in the pump bracket.

(3) Install the screws that attach the pump to the tank bracket.

(4) Remove the caps from the tube ends.

(5) Install new seals in the couplings as shown in Figure 203.

(6) Connect the tube couplings that are attached to the pump.

(a) For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 201.

(b) Safety all the tube couplings. Refer to Chapter 20, Safetying - Maintenance Practices.

(7) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.

(8) Engage the ENG INTFC circuit breaker, if applicable.

(9) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(10) Supply external electrical power to the airplane.

(11) Do the fluid tank servicing. Refer to Chapter 12, TKS Anti-Ice System - Servicing.

(12) Do a test of the pump. Refer to TKS Anti-Ice Fluid Tank Components - Adjustment/Test.

(13) Remove external electrical power from the airplane.

(14) Put the aft bulkhead in position in the cargo pod.

(15) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

(16) Install the screw and nut that attaches the bonding jumper to the bulkhead.

(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

(17) Install the screws and connect the antenna coaxial cable and conduit, if applicable.

(18) Close the cargo pod door.

7. Windshield Pump Removal/Installation

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

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Windshield Pump (Refer to Figure 201 and Figure 202).

(1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.

(2) Remove external electrical power from the airplane.

(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.

(4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(6) Remove the anti-ice fluid from the fluid tank. Refer to TKS Anti-Ice Fluid Removal in this section.

(7) Remove the screw and nut that attaches the bonding jumper to the bulkhead.

(8) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(9) Remove the aft bulkhead from the cargo pod.

(10) Identify and disconnect the electrical connector from the pump.
(11) Slowly loosen and disconnect the tube couplings that are attached to the pump.
(12) Put caps on all openings and tube ends to keep FOD out of the fluid system.
(13) Remove the screws and washers that attach the pump to the tank bracket.
(14) Remove the pump from the cargo pod.

B. Install the Windshield Pump (Refer to Figure 201 and Figure 202).
(1) Put the pump in position in the pump bracket.
(2) Install the screws and washers that attach the pump to the tank bracket.
(3) Remove the caps from the tube ends.
(4) Install new seals in the couplings as shown in Figure 203.
(5) Connect the tube couplings that are attached to the pump.
(a) For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 201.
(b) Safety all the tube couplings. Refer to Chapter 20, Safetying - Maintenance Practices.
(6) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(7) Engage the ENG INTFC circuit breaker, if applicable.
(8) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(9) Supply external electrical power to the airplane.
(10) Do the fluid tank servicing. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(11) Do a test of the pump. Refer to TKS Anti-Ice Fluid Tank Components - Adjustment/Test.
(12) Remove external electrical power from the airplane.
(13) Put the aft bulkhead in position in the cargo pod.
(14) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.
(15) Install the screw and nut that attaches the bonding jumper to the bulkhead.
(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.
(16) Install the screws and connect the antenna coaxial cable and conduit, if applicable.
(17) Close the cargo pod door.

8. Fluid Level Sender Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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.

A. Remove the Fluid Level Sender (Refer to Figure 201 and Figure 202).
(1) Open the forward-center cargo pod door to get access to the sender.
(2) Remove external electrical power from the airplane.
(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
(4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(6) Identify and disconnect the electrical wiring leads from the sender electrical posts.
(7) Remove the screws that attach the sender to the access panel.
(8) Carefully remove the sender from the access panel.
(a) Do not damage the sensor.

NOTE: You can remove the screws that attach the access panel to the fluid tank and move the access panel to help you to prevent damage to the sender.

(9) Remove the screws that attach the access panel to the fluid tank, if necessary.

NOTE: If you remove the access panel screws it is necessary to replace the access panel gasket.

(10) Put a cover on the opening to keep FOD out of the fluid system.
(11) Discard the gasket(s).
(12) Remove the sender from the cargo pod.

B. Install the Fluid Level Sender (Refer to Figure 201 and Figure 202).
(1) Remove the cover from the access panel opening.
(2) Put the sender and a new gasket in position on the access panel.
(a) Do not damage the sensor.
(3) Install the screws that attach the sender to the access panel.

NOTE: If you removed the access panel screws it is necessary to replace the access panel gasket.

(4) Carefully put the access panel and new gasket in position on the fluid tank, if applicable.
(5) Install the screws that attach the access panel to the fluid tank, if applicable.
(6) Connect the electrical wiring leads to the sender electrical posts.
(7) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(8) Engage the ENG INTFC circuit breaker, if applicable.
(9) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(10) Supply external electrical power to the airplane.
(11) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.

NOTE: You must calibrate the fluid level sender if it does not read zero when it is empty. The calibration procedures are in TKS Anti-Ice Fluid Tank Components - Adjustment/Test.

(12) Do a test of the sender. Refer to TKS Anti-Ice Fluid Tank Components - Adjustment/Test.
(13) Remove external electrical power from the airplane.
(14) Close the cargo pod door.

9. Low Level Switch Removal/Installation

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

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Low Level Switch (Refer to Figure 201 and Figure 202).

(1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.

(2) Remove external electrical power from the airplane.

(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.

(4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(6) Remove the anti-ice fluid from the fluid tank. Refer to TKS Anti-Ice Fluid Removal in this section.

(7) Remove the screw and nut that attaches the bonding jumper to the bulkhead.

(8) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(9) Remove the aft bulkhead from the cargo pod.

(10) Identify and disconnect the electrical connector from the switch.

(11) Remove the low level switch from the fluid tank.

(12) Put a cover over the switch opening to keep FOD out of the fluid system.

(13) Remove the switch from the cargo pod.

B. Install the Low Level Switch (Refer to Figure 201 and Figure 202).

(1) Remove the cover from the low level switch opening.

(2) Apply a shank seal to the Low Level Switch using Type 1, Class B sealant. Refer to Chapter 20, Fuel, Weather, and High Temperature Sealing.

(3) Install the switch in the fluid tank.

(4) Connect the electrical connector to the switch.

(5) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.

(6) Engage the ENG INTFC circuit breaker, if applicable.

(7) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(8) Supply external electrical power to the airplane.

(9) Do a test of the switch. Refer to TKS Anti-Ice Fluid Tank Components - Maintenance Practices.

(10) Do the fluid tank servicing. Refer to Chapter 12, TKS Anti-Ice System - Servicing.

(11) Remove external electrical power from the airplane.

(12) Put the aft bulkhead in position in the cargo pod.

(13) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

(14) Install the screw and nut that attaches the bonding jumper to the bulkhead.

(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

(15) Install the screws and connect the antenna coaxial cable and conduit, if applicable.

(16) Close the cargo pod door.

10. High Pressure Switch Removal/Installation

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

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the High Pressure Switch (Refer to Figure 201 and Figure 202).
   (1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.
   (2) Remove external electrical power from the airplane.
   (3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
   (4) Disengage the ENG INTFC circuit breaker, if applicable.
   (5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
   (6) Remove the screw and nut that attaches the bonding jumper to the bulkhead.
   (7) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

   NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

   (8) Remove the aft bulkhead from the cargo pod.
   (9) Identify and disconnect the electrical connector from the switch.
   (10) Slowly loosen and disconnect the tube couplings that are connected to the switch.
   (11) Put caps on all openings and tube ends to keep FOD out of the fluid system.
   (12) Remove the screws that attach the switch to the tank bracket.
   (13) Remove the switch from the cargo pod.

B. Install the High Pressure Switch (Refer to Figure 201 and Figure 202).
   (1) Put the switch in position in the switch bracket.
   (2) Install the screws that attach the switch to the tank bracket.
   (3) Remove the caps from the tube ends.
   (4) Connect the tube couplings that are connected to the switch.
      (a) For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 201.
      (b) Safety all the tube couplings. Refer to Chapter 20, Safetying - Maintenance Practices.
   (5) Connect the electrical connector to the switch.
   (6) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
   (7) Engage the ENG INTFC circuit breaker, if applicable.

(8) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(9) Supply external electrical power to the airplane.
(10) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(11) Do a test of the switch. Refer to TKS Anti-Ice Fluid Tank Components - Adjustment/Test.
(12) Remove external electrical power from the airplane.
(13) Put the aft bulkhead in position in the cargo pod.
(14) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.
(15) Install the screw and nut that attaches the bonding jumper to the bulkhead.
(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.
(16) Install the screws and connect the antenna coaxial cable and conduit, if applicable.
(17) Close the cargo pod door.

11. Timer Box and/or Wire Bundle Removal/Installation

A. Remove the Timer Box and/or Wire Bundle (Refer to Figure 201 and Figure 202).
(1) Open the aft-center cargo pod door to get access to the aft bulkhead.
(2) Remove external electrical power from the airplane.
(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
(4) Disengage the ENG INTFC circuit breaker, if applicable.
(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(6) Remove the screw and nut that attaches the bonding jumper to the bulkhead.
(7) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.
NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.
(8) Remove the aft bulkhead from the cargo pod.
(9) To remove the wire bundle, identify and disconnect the equipment pack electrical connectors from the equipment pack components and airplane fuselage connector.
NOTE: It is not necessary to remove the wire bundle to remove the timer box.
(10) Identify and disconnect the electrical connector from the timer box.
(11) Remove the screws that attach the timer box to the tank bracket.
(12) Remove the timer box from the cargo pod.

B. Install the Timer Box and/or Wire Bundle (Refer to Figure 201 and Figure 202).
(1) Put the timer box in position in the timer box bracket.
(2) Install the screws that attach the timer box to the tank bracket.
(3) Connect the electrical connector to the timer box.
(4) Identify and connect the equipment pack electrical connectors to the equipment pack components and airplane fuselage connector as applicable.
(5) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(6) Engage the ENG INTFC circuit breaker, if applicable.
(7) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(8) Supply external power to the airplane.
(9) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(10) Do a test of the fluid tank components. Refer to TKS Anti-Ice Fluid Tank Components - Adjustment/Test.
(11) Remove external electrical power from the airplane.
(12) Put the aft bulkhead in position in the cargo pod.
(13) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

(14) Install the screw and nut that attaches the bonding jumper to the bulkhead.

(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

(15) Install the screws and connect the antenna coaxial cable and conduit, if applicable.

(16) Close the cargo pod doors.

12. Solenoid Valve Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Solenoid Valve (Refer to Figure 201 and Figure 202).

(1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.

(2) Remove external electrical power from the airplane.

(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.

(4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.

(6) Remove the anti-ice fluid from the fluid tank. Refer to TKS Anti-Ice Fluid Removal in this section.

(7) Remove the screw and nut that attaches the bonding jumper to the bulkhead.

(8) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(9) Remove the aft bulkhead from the cargo pod.

(10) Identify and disconnect the electrical connector from the valve.

(11) Slowly loosen and disconnect the tube couplings from the valve.

(12) Put caps on all openings and tube ends to keep FOD out of the fluid system.

(13) Remove the screws that attach the valve to the tank bracket.

(14) Remove the valve from the cargo pod.

B. Install the Solenoid Valve (Refer to Figure 201 and Figure 202).

(1) Put the valve in position in the valve bracket.

(2) Install the screws that attach the valve to the tank bracket.
(3) Remove the caps from the tube ends.
(4) Install new seals in the couplings as shown in Figure 203.
(5) Connect the electrical connector to the valve.
(6) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(7) Engage the ENG INTFC circuit breaker, if applicable.
(8) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(9) Supply external electrical power to the airplane.
(10) Do the fluid tank servicing. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(11) Put the EXTERNAL POWER switch on the pilot's switch panel to the ON position.
(12) Put the PRIMARY switch on the ANTI-ICE switch panel to the HIGH position.
(a) Make sure that there is no fluid leakage from the couplings.
(13) Put the PRIMARY switch on the ANTI-ICE switch panel to the OFF position.
(14) Put the EXTERNAL POWER switch on the pilot's switch panel to the OFF position.
(15) Remove external electrical power from the airplane.
(16) Put the aft bulkhead in position in the cargo pod.
(17) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.
(18) Install the screw and nut that attaches the bonding jumper to the bulkhead.
(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.
(19) Install the screws and connect the antenna coaxial cable and conduit, if applicable.
(20) Close the cargo pod door.

13. Check Valve Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Check Valve (Refer to Figure 201 and Figure 202).
(1) Open the aft-center cargo pod door to get access to the equipment pack and aft bulkhead.

(2) Remove external electrical power from the airplane.
(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
(4) Disengage the ENG INTFC circuit breaker, if applicable.
(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(6) Remove the screw and nut that attaches the bonding jumper to the bulkhead.
(7) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.

NOTE: On airplanes that have the TAS antenna installed, it is necessary to disconnect the coaxial cable and remove the screws and conduit.

(8) Remove the aft bulkhead from the cargo pod.
(9) Slowly loosen and disconnect the tube couplings that are attached to the check valve.
(10) Put caps on all openings and tube ends to keep FOD out of the fluid system.
(11) Remove the screws that attach the check valve to the tank bracket.
(12) Remove the check valve from the cargo pod.

B. Install the Check Valve (Refer to Figure 201 and Figure 202).
(1) Put the valve in position in the valve bracket.
(2) Install the screws that attach the valve to the tank bracket.
(3) Remove the caps from the tube ends.
(4) Install new seals in the couplings as shown in Figure 203.
(5) Connect the tube couplings to the valve.
(a) Make sure that the fluid flow direction is correct.
(b) For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 201.
(c) Safety all the tube couplings. Refer to Chapter 20, Safetying - Maintenance Practices.
(6) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(7) Engage the ENG INTFC circuit breaker, if applicable.
(8) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(9) Supply external electrical power to the airplane.
(10) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(11) Put the EXTERNAL POWER switch on the pilot's switch panel to the ON position.
(12) Put the PRIMARY switch on the ANTI-ICE switch panel to the HIGH position.
(a) Make sure that there is no fluid leakage from the couplings.
(13) Put the PRIMARY switch on the ANTI-ICE switch panel to the OFF position.
(14) Put the EXTERNAL POWER switch on the pilot's switch panel to the OFF position.
(15) Remove external electrical power from the airplane.
(16) Put the aft bulkhead in position in the cargo pod.
(17) Turn the quarter-turn fasteners that attach the aft bulkhead to the drip pan and the cargo pod.
(18) Install the screw and nut that attaches the bonding jumper to the bulkhead.
(a) Make sure that there is a good electrical bond. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.
(19) Install the screws and connect the antenna coaxial cable and conduit, if applicable.
(20) Close the cargo pod door.

14. Sight Glass Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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.

A. Remove the Sight Glass (Refer to Figure 201 and Figure 202).
   (1) Open the forward-center cargo pod door to get access to the sight glass.
   (2) Remove the anti-ice fluid from the fluid tank. Refer to TKS Anti-Ice Fluid Removal in this section.
   (3) Remove external electrical power from the airplane.
   (4) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
   (5) Disengage the ENG INTFC circuit breaker, if applicable.
   (6) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
   (7) Slowly open the tube clamps that are connected to the sight glass.
   (8) Remove the sight glass (and ball) from the airplane.
   (9) Put caps on all openings and tube ends to keep FOD out of the fluid system.

B. Install the Sight Glass (Refer to Figure 201 and Figure 202).
   (1) Remove the caps from the tube ends.
   (2) Put the sight glass (and ball) in position in the sight glass brackets.
   (3) Crimp the tube clamps.
   (4) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
   (5) Engage the ENG INTFC circuit breaker, if applicable.
   (6) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
   (7) Supply external electrical power to the airplane.
   (8) Do the fluid tank servicing. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
   (9) Put the EXTERNAL POWER switch on the pilot's switch panel to the ON position.
   (10) Put the PRIMARY switch on the ANTI-ICE switch panel to the HIGH position.
      (a) Make sure that there is no fluid leakage from the tube clamps.
   (11) Put the PRIMARY switch on the ANTI-ICE switch panel to the OFF position.
   (12) Put the EXTERNAL POWER switch on the pilot's switch panel to the OFF position.
   (13) Clean the floor and the airplane surfaces as necessary.
   (14) Close the cargo pod door.
   (15) Remove external electrical power from the airplane.

15. Drain Valve Removal/Installation

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

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

WARNING: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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.

A. Remove the Drain Valve (Refer to Figure 201 and Figure 202).
   (1) Open the forward-center cargo pod door to get access to the drain valve below the fluid tank.
   (2) Remove the anti-ice fluid from the fluid tank. Refer to TKS Anti-Ice Fluid Removal in this section.
   (3) Loosen, but do not remove the hose clamp on the drain tube.
   (4) Pull the drain tube off the drain valve.
   (5) Disconnect the drain valve from the fluid tank.
   (6) Remove the drain valve from the cargo pod.

B. Install the Drain Valve (Refer to Figure 201 and Figure 202).
   (1) Put the drain valve in position on the fluid tank.
   (2) Connect the drain valve to the fluid tank.
   (3) Connect the drain tube to the drain valve.
      (a) For the torque values for aluminum alloy and stainless steel fittings on nylon tubing refer to Table 201.
   (4) Tighten the hose clamp on the drain tube.
   (5) Do the fluid tank servicing. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
   (6) Make sure that there is no fluid leakage from the valve.
   (7) Clean the floor and the airplane surfaces as necessary.
   (8) Close the cargo pod door.

16. Fluid Filler Removal/Installation

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 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: Before you operate the TKS system during this procedure put plastic sheets or absorbent cloths under the porous panels to keep the TKS fluid off the floor. This will help to prevent injury to personnel.

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 203. This will help to prevent fluid leakage from the coupling.

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. Remove the Filler Tube Duct (Refer to Figure 201 and Figure 202).
   (1) Open the forward-center cargo pod door to get access to the fluid tank.
   (2) Remove external electrical power from the airplane.
   (3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
   (4) Disengage the ENG INTFC circuit breaker, if applicable.

(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(6) Loosen, but do not remove the hose clamps at the filler neck and filler internal flange.
(7) Disconnect the filler tube duct from the filler neck and filler internal flange.
(8) Remove the filler tube from the cargo pod.
(9) Put caps on all openings to keep FOD out of the fluid system.

B. Install the Filler Tube Duct (Refer to Figure 201 and Figure 202).
(1) Remove the caps from the openings.
(2) Put the filler tube duct in position on the filler neck and filler internal flange.
(3) Tighten the hose clamps at the filler neck and filler internal flange.
(4) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(5) Engage the ENG INTFC circuit breaker, if applicable.
(6) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(7) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(8) Clean the floor and the airplane surfaces as necessary.
(9) Close the cargo pod door.

C. Remove the Filler Assembly (Refer to Figure 201 and Figure 202).
(1) Open the forward-center cargo pod door to get access to the fluid tank.
(2) Remove external electrical power from the airplane.
(3) Disengage the ANTI-ICE GAUGE circuit breaker, if applicable.
(4) Disengage the ENG INTFC circuit breaker, if applicable.
(5) Disengage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(6) Open the filler cap.
(7) Loosen, but do not remove the hose clamp at the filler internal flange.
(8) Disconnect the filler tube duct from the filler internal flange.
(9) Remove the screws, nuts, and washers that attach the filler cap flange, filler internal flange, and gaskets to the cargo pod skin.
(10) Put caps on all openings to keep FOD out of the fluid system.

D. Install the Filler Tube Assembly (Refer to Figure 201 and Figure 202).
(1) Remove the caps from the openings.
(2) Install the screws, nuts, and washers that attach the filler cap flange, filler internal flange, and gaskets to the cargo pod skin.
(3) Connect the filler tube duct to the filler internal flange.
(4) Tighten the hose clamp at the filler internal flange.
(5) Close the filler cap.
(6) Engage the ANTI-ICE GAUGE circuit breaker, if applicable.
(7) Engage the ENG INTFC circuit breaker, if applicable.
(8) Engage the PRIMARY ANTI-ICE, W/S, and BACKUP ANTI-ICE circuit breakers.
(9) Do the fluid tank servicing as necessary. Refer to Chapter 12, TKS Anti-Ice System - Servicing.
(10) Clean the floor and the airplane surfaces as necessary.
(11) Close the cargo pod door.

Figure 201 : Sheet 1 : TKS Anti-Ice System Flow Diagram

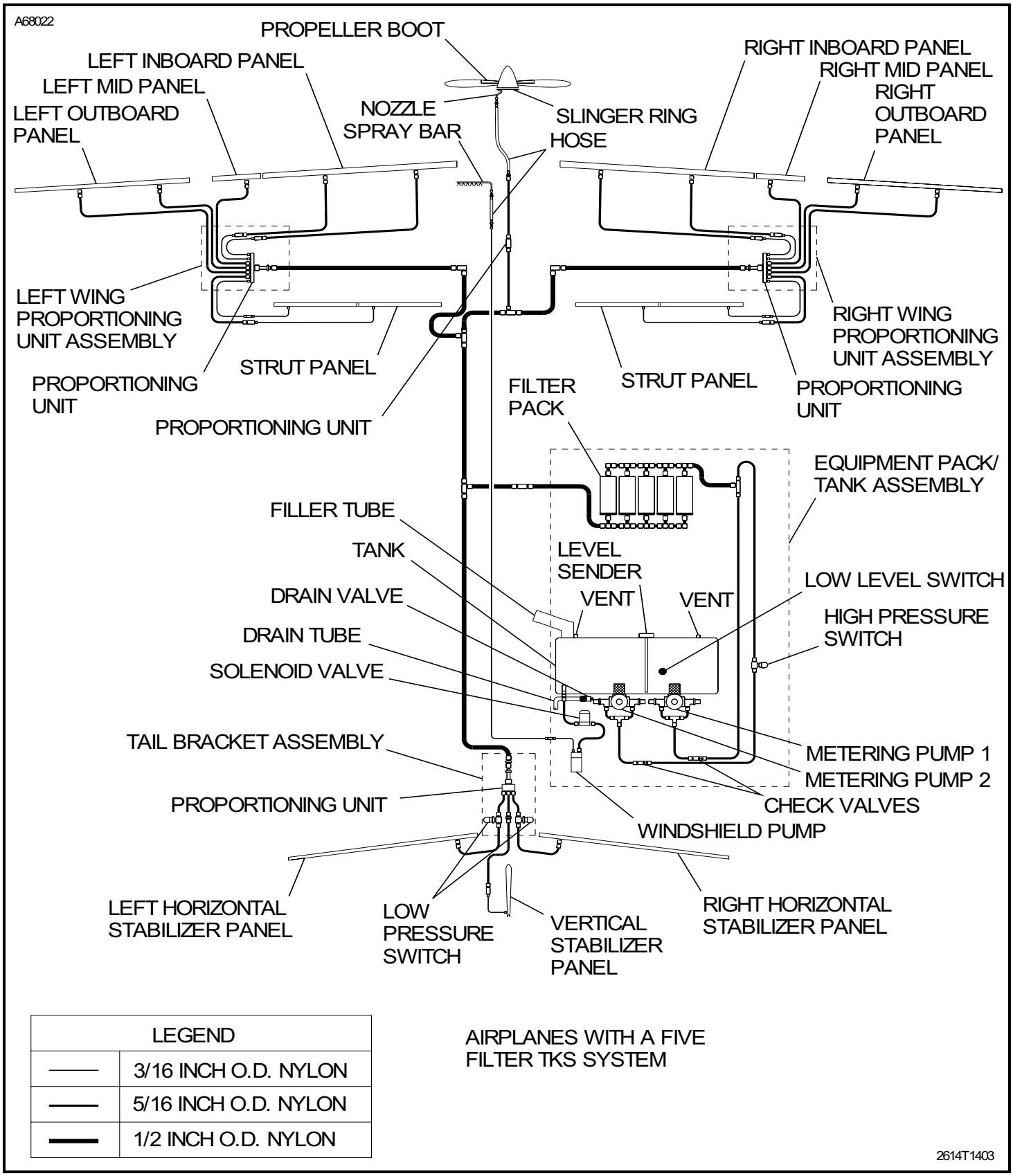

Figure 201 : Sheet 2 : TKS Anti-Ice System Flow Diagram

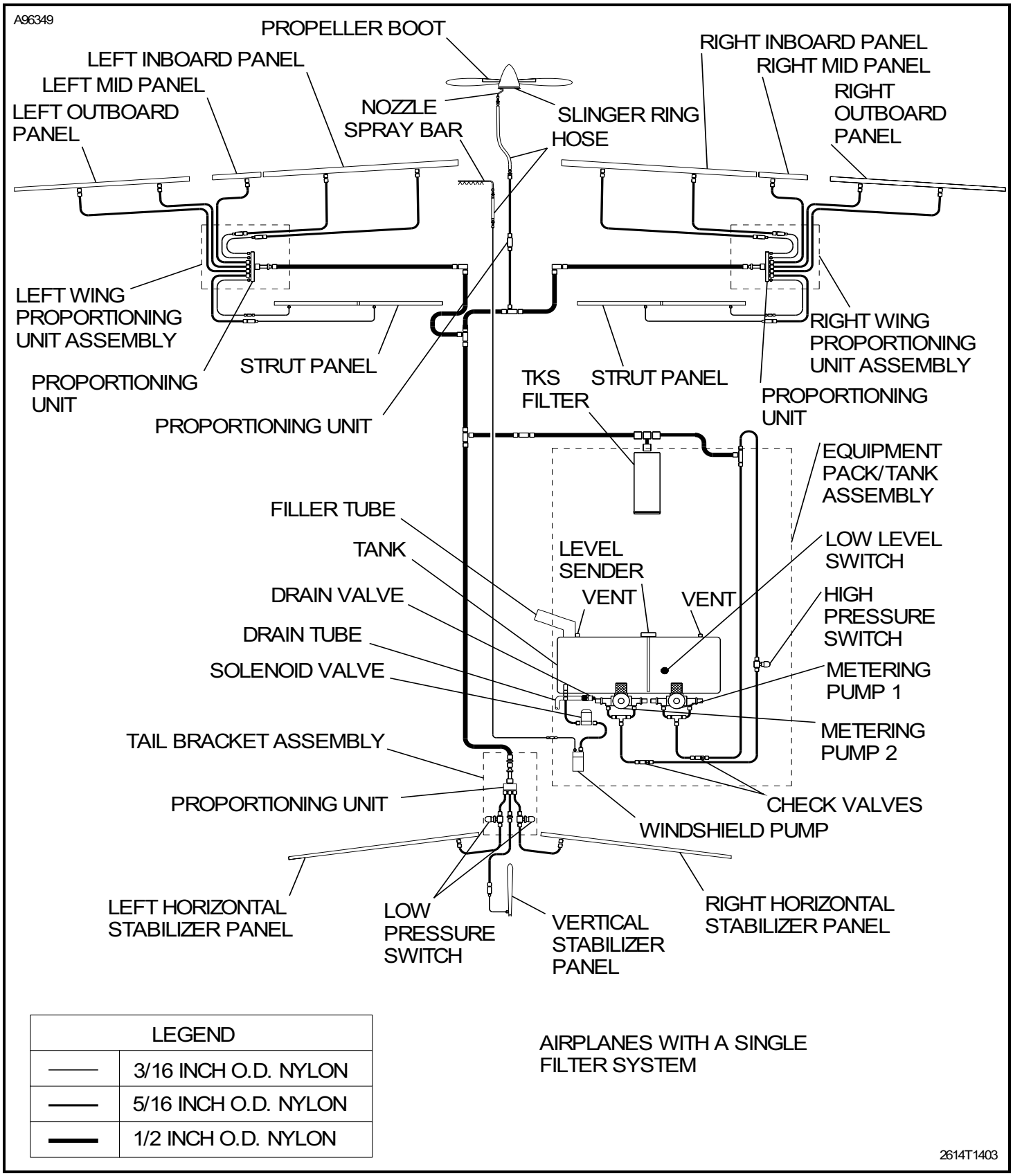

Figure 202 : Sheet 1 : TKS Anti-Ice System Installation

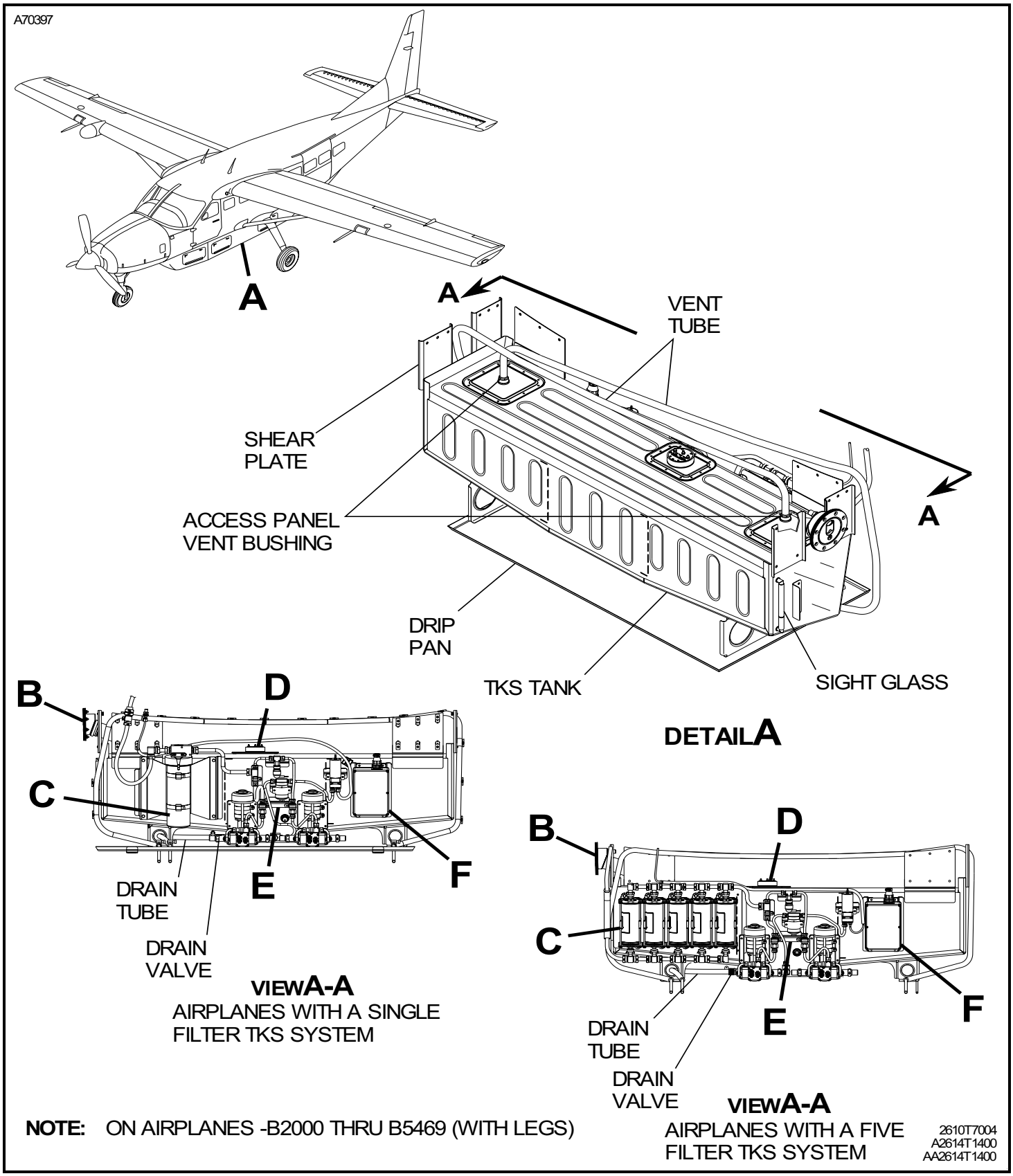

Figure 202 : Sheet 2 : TKS Anti-Ice System Installation

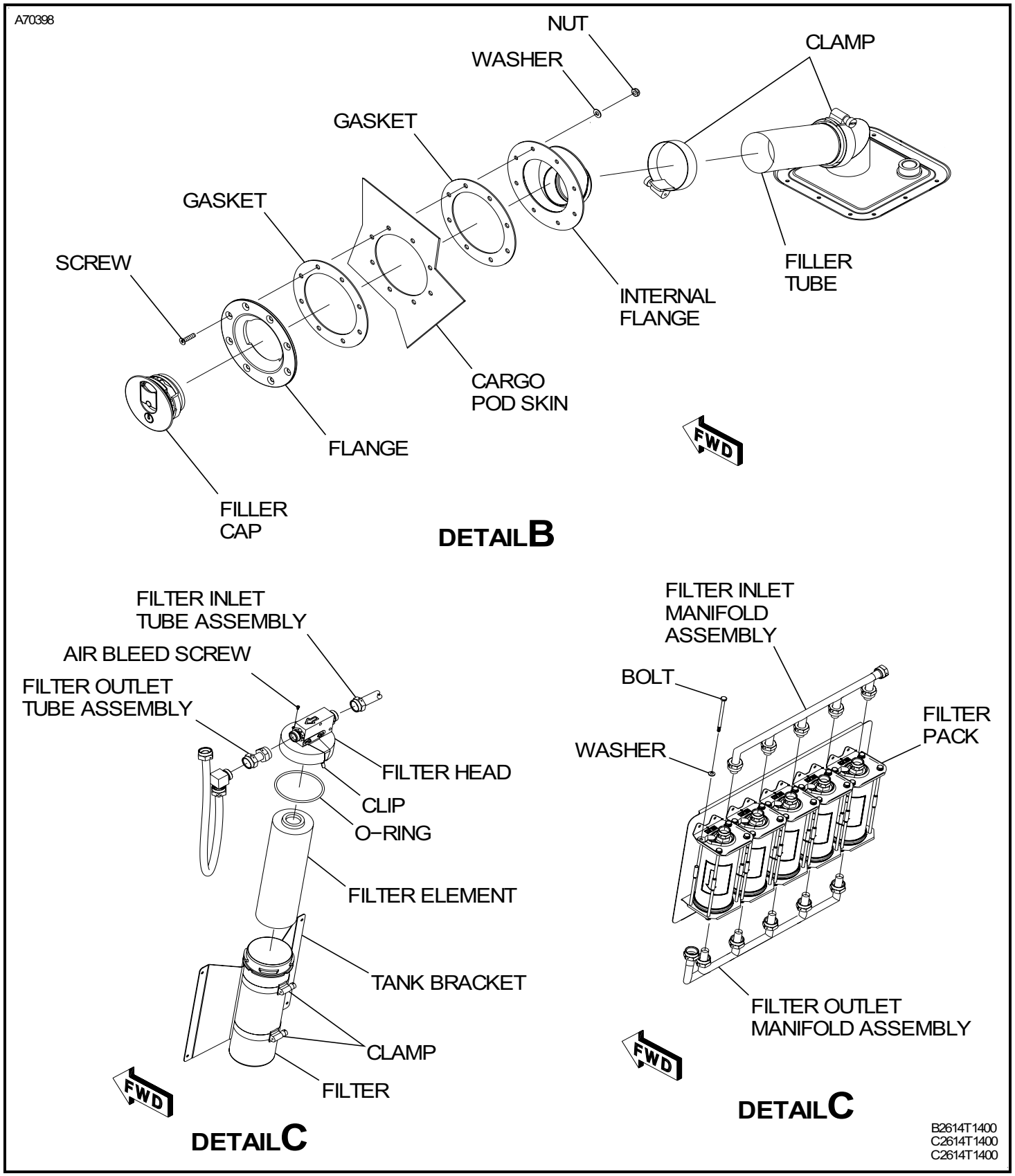

Figure 202 : Sheet 3 : TKS Anti-Ice System Installation

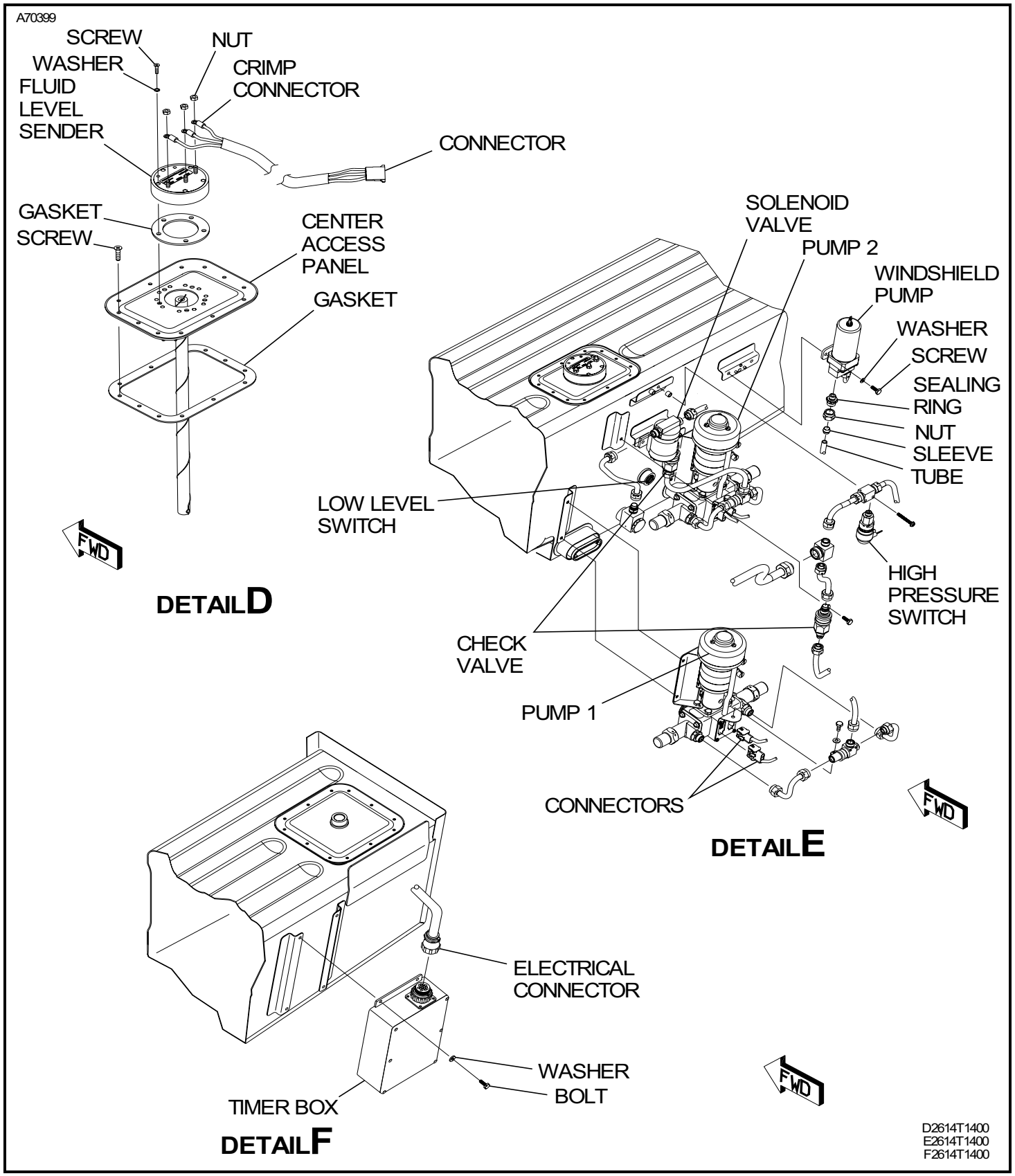

Figure 202 : Sheet 4 : TKS Anti-Ice System Installation

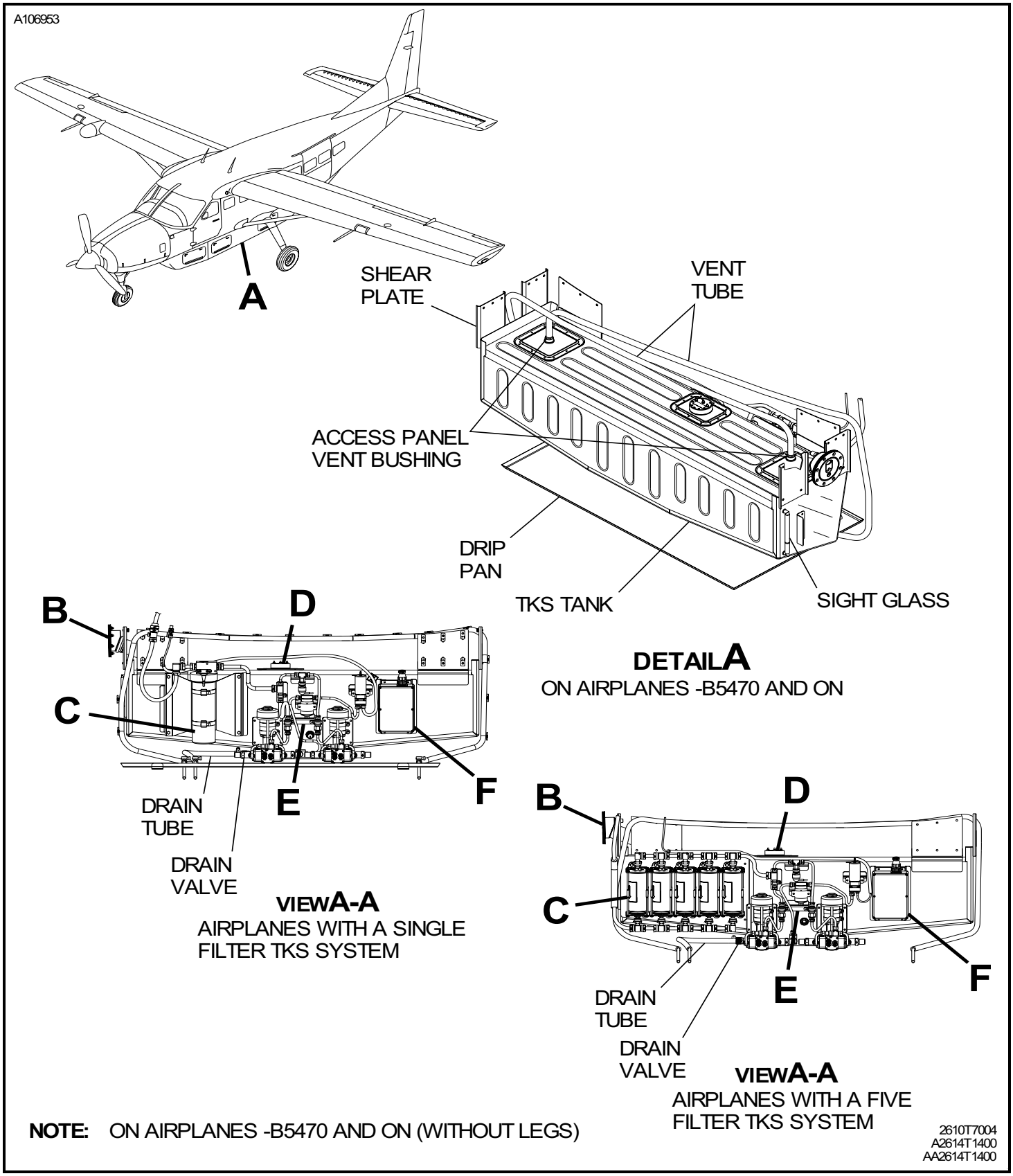

Figure 203 : Sheet 1 : TKS Nylon Tubing Assembly