BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 4.12

PRODUCTION PROCESS STANDARD

Pressure Testing DASH 8 Series 100 and Series 300 Aircraft Fuel Systems

Issue 15
- This standard supersedes PPS 4.12, Issue 14.
- Vertical lines in the left hand margin indicate technical changes over the previous issue.
- Direct PPS related questions to PPS.Group@aero.bombardier.com or (416) 375-4365.
- This PPS is effective as of the distribution date.

Prepared By:	(Michael Wright)	April 22, 2014
	Production Process Standards (PPS)	
Approved By:	(L.K. John)	April 22, 2014
	Materials Technology	
	(Adam Gordon)	April 24, 2014
	Quality	

Table of Contents

Sections **Page**

Figures

Tables

Flow Charts

1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for pressure testing DASH 8 Series 100 and Series 300 aircraft fuel systems.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction. The procedure specified in this PPS must be followed to ensure compliance with all applicable specifications. In general, if this PPS conflicts with the engineering drawing, follow the engineering drawing. The requirements specified in this PPS are necessary to fulfil the engineering design and reliability objectives.

1.1.2 Refer to PPS 13.26 for the subcontractor provisions applicable to this PPS.

1.1.3 Procedure or requirements specified in a Bombardier BAPS, MPS, LES or P. Spec. **do not** supersede the procedure or requirements specified in this PPS.

2 Hazardous Materials

2.1 Before receipt at Bombardier Toronto (de Havilland), all materials must be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Toronto (de Havilland) Environment, Health and Safety Department. Refer to the manufacturer's MSDS for specific safety data on any of the materials specified in this PPS. If the MSDS is not available, contact the Bombardier Toronto (de Havilland) Environment, Health and Safety Department.

3 References

3.1 PPS 4.13 - Leak Testing DASH 8 Fuel Tank Collector Bays.

3.2 PPS 13.26 - General Subcontractor Provisions.

4 Materials and Equipment

4.1 Materials

4.1.1 Leak detector solution (e.g., Turco Leak Detector, Sigma-Aldrich Leak-Tec, MIL-L-25567, etc.). When using Turco Leak Detector solution, mix 5 oz. with water to make up 1 imp. gallon of solution. Use Leak-Tec leak detector solution as received (i.e., do not thin with water).

4.2 Equipment

4.2.1 DSC 378-3 lint free wiping cloths.

4.2.2 Pressure test rig (e.g., tool #85000001-001-141 as shown in Figure 1).

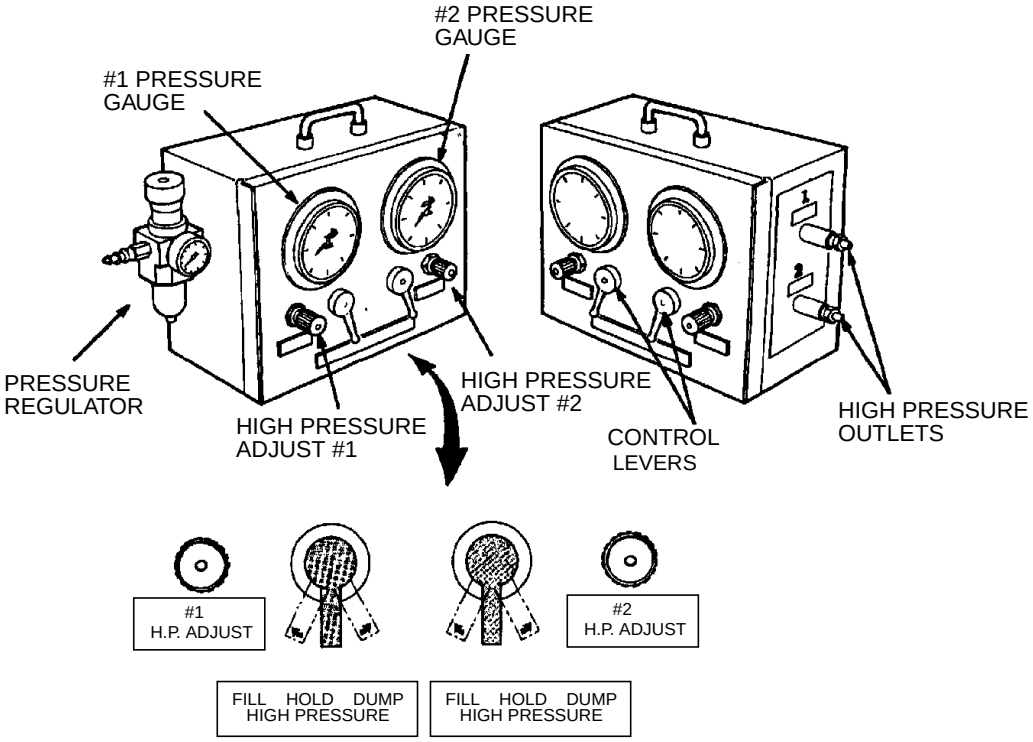


Figure 1 - Pressure Test Rig

4.2.3 Fuel function test kit (e.g., #82820005-001-141B).

4.2.4 Coveralls, lint-free cotton or 65/35 polyester/cotton blend. Use of 100% cotton coveralls which are not qualified as lint-free is **not** acceptable.

5 Procedure

5.1 General

5.1.1 Before pressure testing, ensure pressure test rig gauge and relief valve calibration stickers are valid and have not expired. Do not use a pressure test rig if the gauge and/or relief valve calibration stickers are not valid or have expired.

5.1.2 All personnel working within the fuel tank must wear clean coveralls (ref. para. 4.2.4).

5.1.3 Carry out pressure testing only on completely installed, empty fuel systems.

5.1.4 The pressure test rig may be used to test two fuel line systems simultaneously, using #1 and #2 high pressure test systems.

5.2 Pressure Testing

5.2.1 Pressure test each line of the fuel system according to Flow Chart I.

5.2.2 After pressure testing all of the fuel system lines within the fuel tanks, leak test the fuel tank collector bays according to PPS 4.13. It is not necessary to remove any of the pressure test blanking kit components before performing this leak test.

5.2.3 Upon completion of leak testing, remove all blanking plugs, caps and adaptors that were installed for pressure testing. Re-connect all lines and fittings. Torque all re-connected joints according to PPS 6.03.

6 Requirements

6.1 Pressure testing of all fuel system lines in the integral fuel tanks must be performed according to Flow Chart I. There must not be any pressure drop during the 15 minute isolation test.

7 Safety Precautions

7.1 Take extreme care at all times when pressurizing the fuel system to ensure the test rig lines are kept clear of structures, stands, etc. and free of kinks or loops which may restrict air flow.

7.2 Observe general shop safety precautions when performing the procedure specified herein.

7.3 Do not leave the pressure test rig unattended while connected to the shop air supply.

8 Personnel Requirements

8.1 Personnel must have a good working knowledge of the applicable procedure and requirements as specified herein and must have exhibited their competency to their supervisor.

9 Maintenance

9.1 At least once every 4 months: (a) calibrate the pressure test rig; (b) check the test rig system for leaks and security of joints; and (c) check gauges and pressure relief valves for accuracy.

Flow Chart I - DASH 8 Series 100 and Series 300 Fuel System Line Pressure Testing Procedure

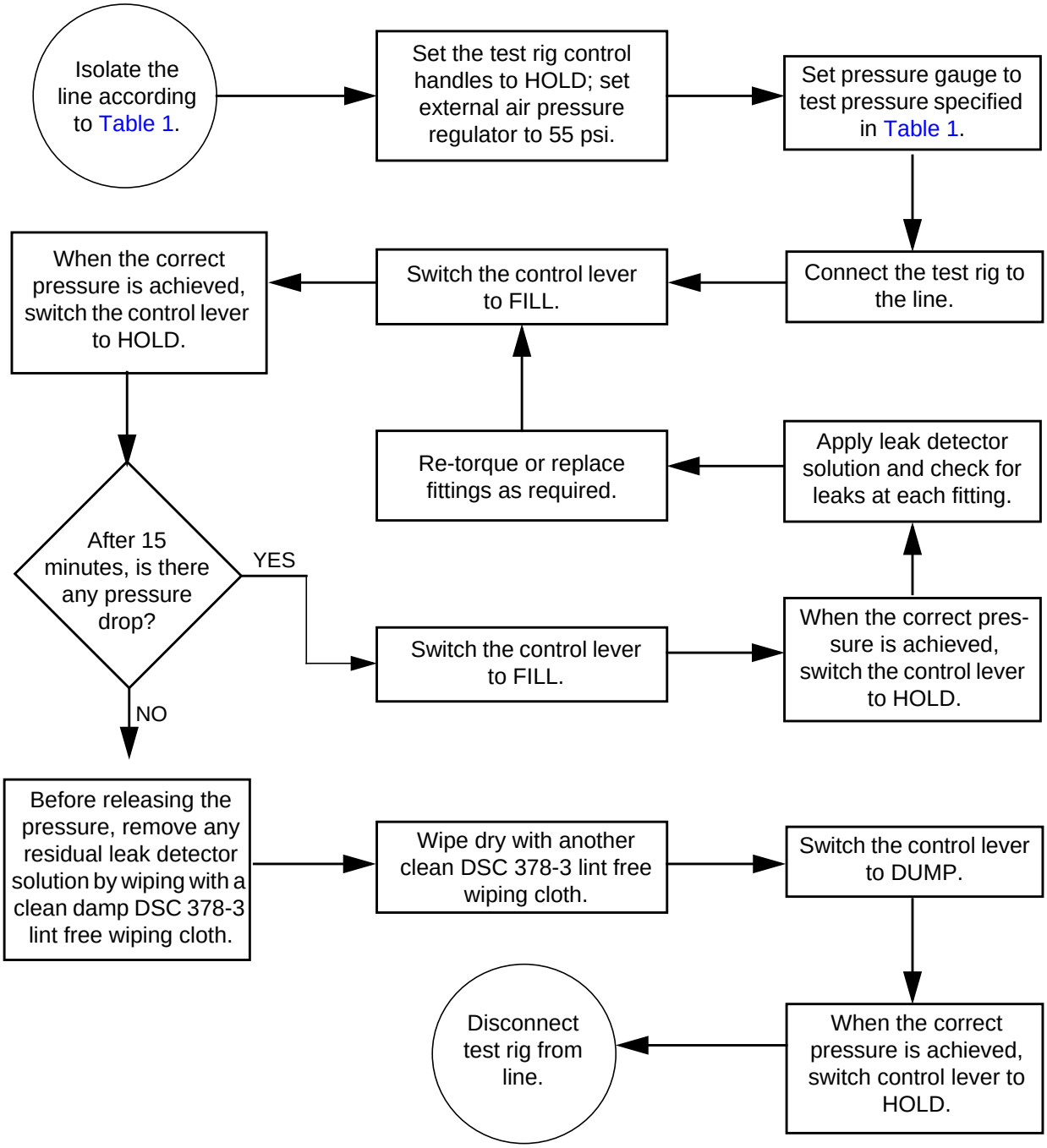
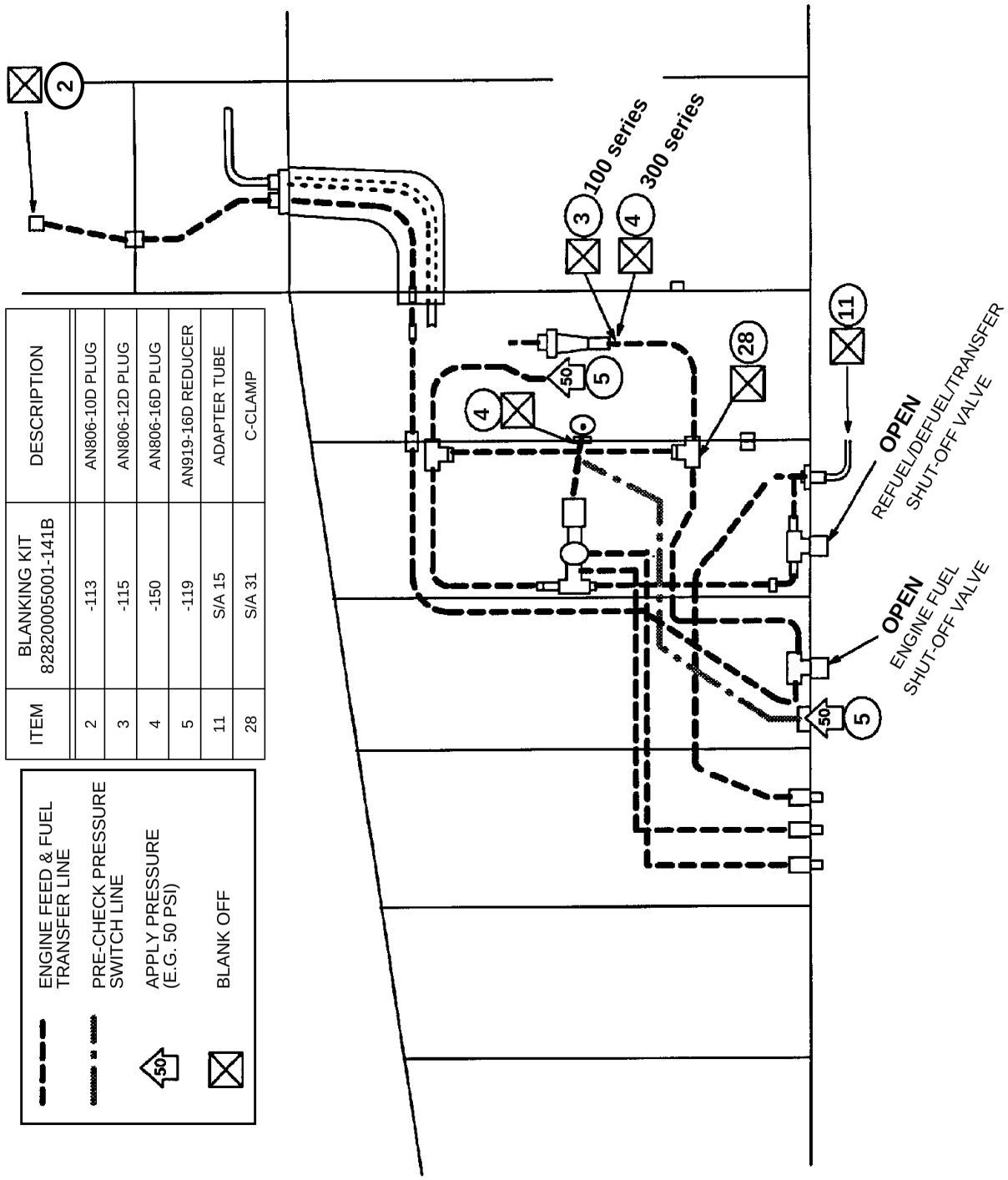


Table 1 - Pressure Testing the DASH 8 Series 100 and Series 300 Fuel System

SUB-SYSTEM	PRESSURE TEST DETAILS (Note 1)	TEST PRESSURE
Engine Feed and Fuel Transfer Line (see Figure 2)	1. Disconnect and plug the engine feed line at the engine with an AN806-10D plug. 2. Open the engine feed shut-off valve. 3. Open the refuel/defuel/transfer shut-off valve. 4. Blank off the refuel/defuel/transfer line at the flexible coupling outside the rear spar using a S/A 15 adapter tube. 5. Blank off the fuel inlet (without removing the elbow) with an AN806-16D plug (item 4). 6. Disconnect and blank off the engine feed line at the outlet side of the ejector boost pump using an AN806-12D plug for Series 100 aircraft or an AN806-16D plug for Series 300 aircraft. 7. Blank off the bleed hole on the modified tee fitting (rear spar, STN Yw189) outboard of the collector bay, using a S/A 31 clamp. 8. Disconnect the engine feed line at the electric pump outlet and connect the pressure test rig to the line using an AN919-16D reducer.	50 psi
Pre-Check Pressure Switch Line (see Figure 2)	1. Disconnect the pre-check pressure switch line at the rear spar and connect the pressure test rig to the line.	50 psi
Pilot and Pre-Check Line (see Figure 3)	1. Disconnect the pilot and pre-check lines at the pilot valve and connect the pressure test rig to each line using an AN804-D4 “Y” connector. The pilot line requires an AN919-6D reducer.	30 psi
Electric Boost Pump Low Pressure Line (see Figure 3)	1. Disconnect the line at the electric pump and connect the pressure test rig to the line.	30 psi
High Pressure Motive Line (see Figure 3)	1. Disconnect and blank off high pressure motive lines (as shown in Figure 3) at the scavenge ejector pump and also at the ejector boost pump using an AN806-6D reducer. 2. Disconnect the engine line at the fitting on the engine and connect the pressure test rig to the line using an AN919-6D reducer.	50 psi
Note 1. Open all motorized valves manually.		

Table 1 - Pressure Testing the DASH 8 Series 100 and Series 300 Fuel System

SUB-SYSTEM	PRESSURE TEST DETAILS (Note 1)	TEST PRESSURE
Pressure Relief Valve Line (see Figure 4)	1. Disconnect the line at the pressure relief valve and connect the pressure test rig.	30 psi
Ejector Return Line (Outboard) (see Figure 4)	1. Disconnect the high pressure motive line at the outboard fuel scavenge ejector pump and blank off the ejector using an AN929-6 cap. 2. Plug the outboard end of the ejector return line using a #2 rubber stopper. 3. Connect the pressure test rig to the inboard end of the return line in the collector bay using an S/A 17 adapter tube.	5 psi
Refuel/Defuel/ Transfer Line (see Figure 5)	1. Close the left hand and right hand refuel/defuel/transfer shut-off valves. 2. Open the master refuel shut-off valve (ensure selector switch is set to defuel). 3. Disconnect the pressure relief line at the refuel/defuel tap-off connection and connect the pressure test rig to the tap-off connection.	50 psi
Waste Fuel Return Line (see Figure 6)	1. Disconnect and blank off the waste fuel return line using a #7 rubber stopper. 2. Disconnect the waste fuel return line at the fitting on the engine and connect the pressure test rig to the line.	30 psi
Vent Line (see Figure 6)	1. Plug the outboard end of the vent line (in the surge bay) using a #2 rubber stopper. 2. Blank off the inboard end of the vent line using an S/A 19 adapter tube and connect the pressure test rig to the adapter.	5 psi
Note 1. Open all motorized valves manually.		



ITEM	BLANKING KIT 8282000500 1-141B	DESCRIPTION
2	-113	AN806-10D PLUG
3	-115	AN806-12D PLUG
4	-150	AN806-16D PLUG
5	-119	AN919-16D REDUCER
11	S/A 15	ADAPTER TUBE
28	S/A 31	C-CLAMP

Figure 2 - Engine Feed & Fuel Transfer Line and Pre-Check Pressure Switch Line

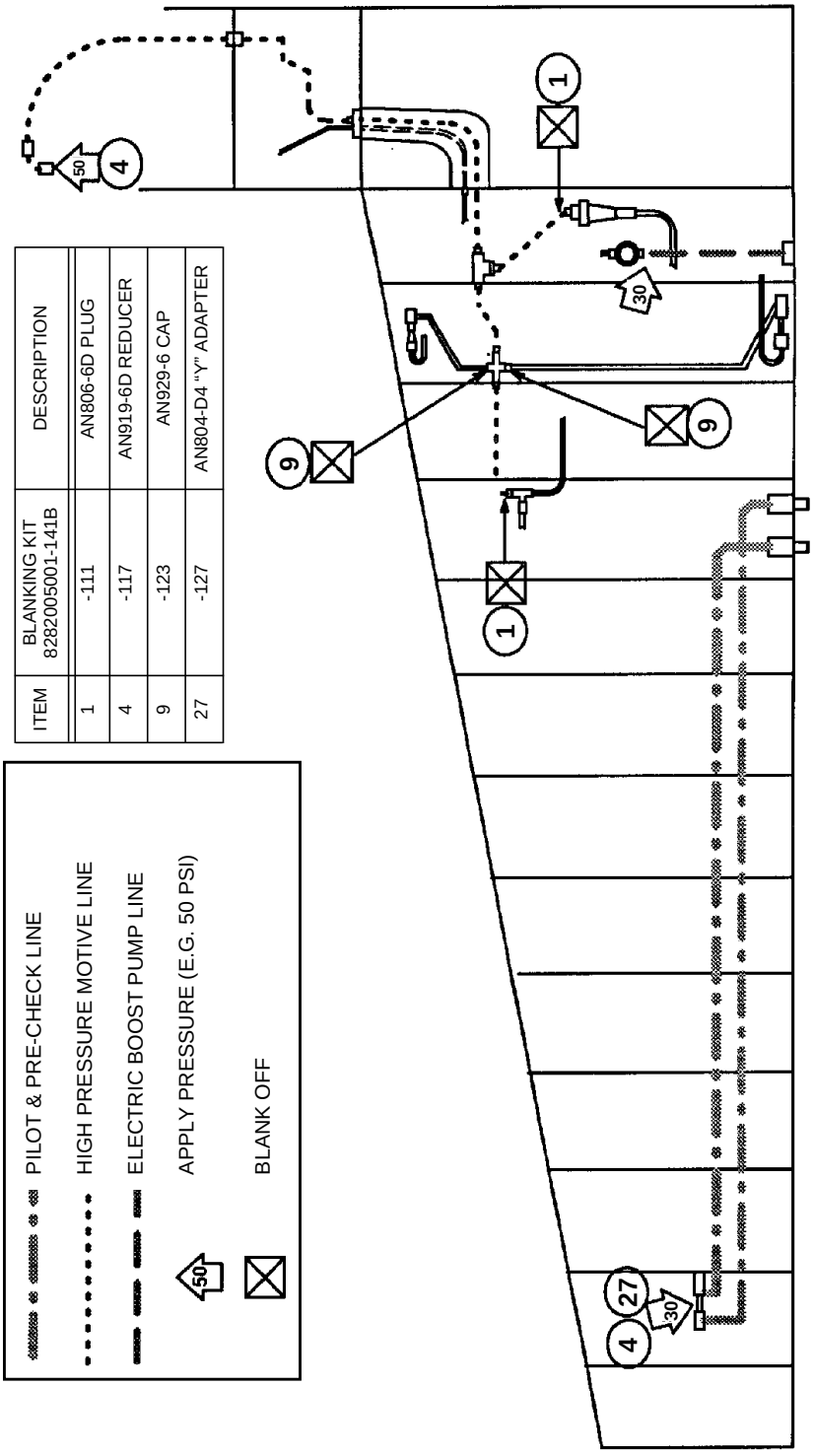


Figure 3 - Pilot & Pre-Check Lines, Electric Boost Pump Low Pressure Warning Line & High Pressure Motive Line

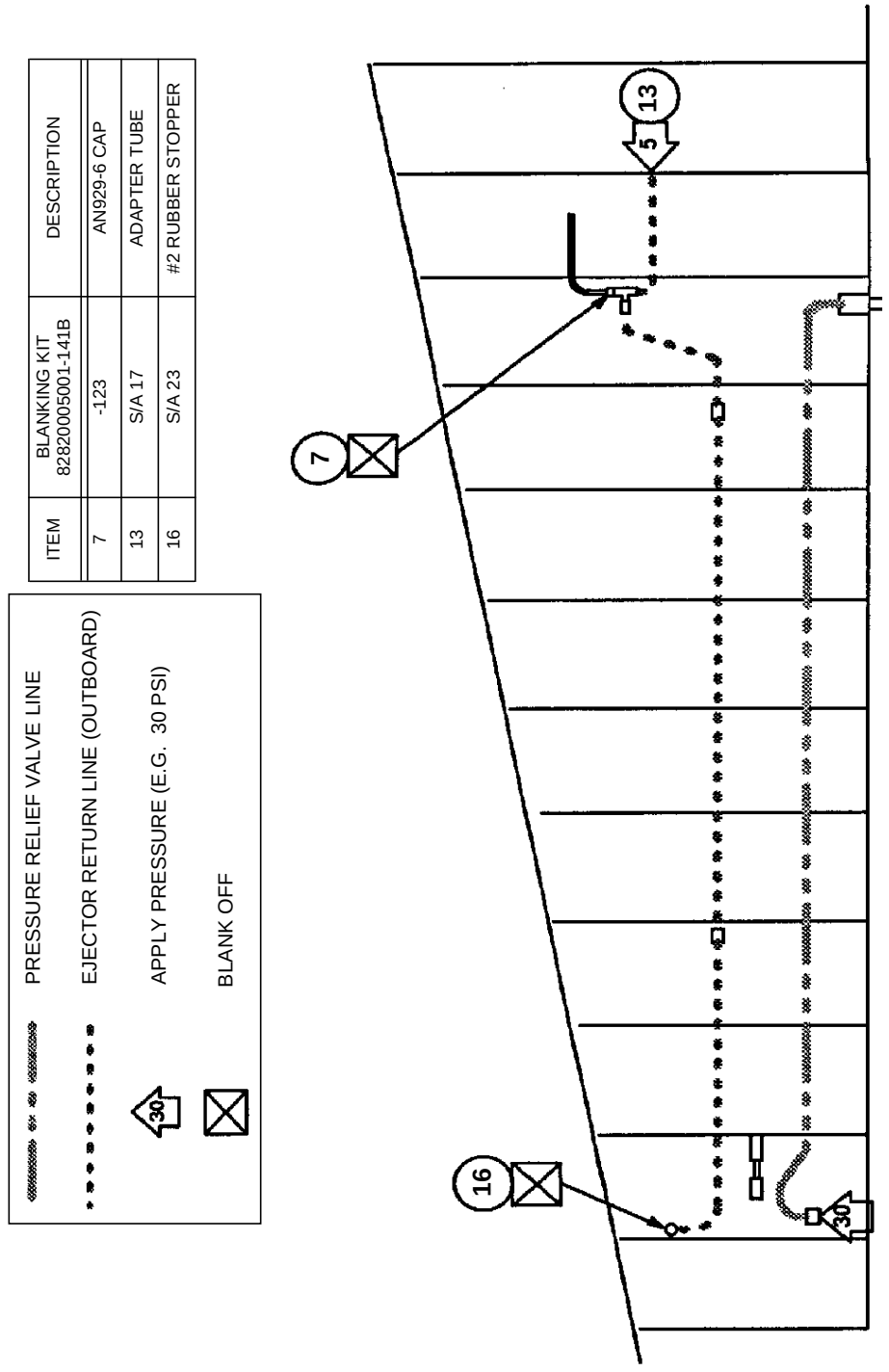


Figure 4 - Pressure Relief Valve Line & Ejector Return Line

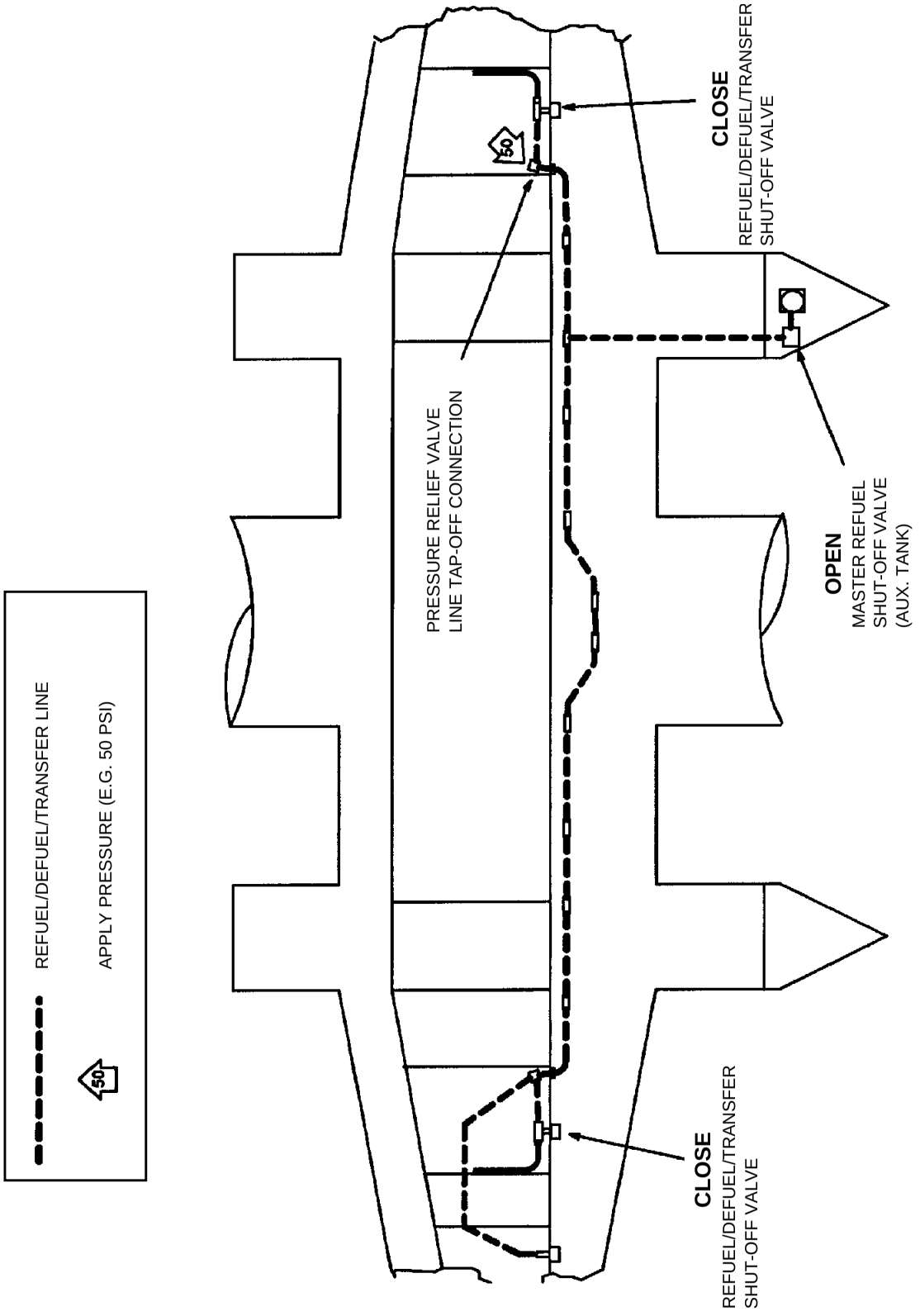
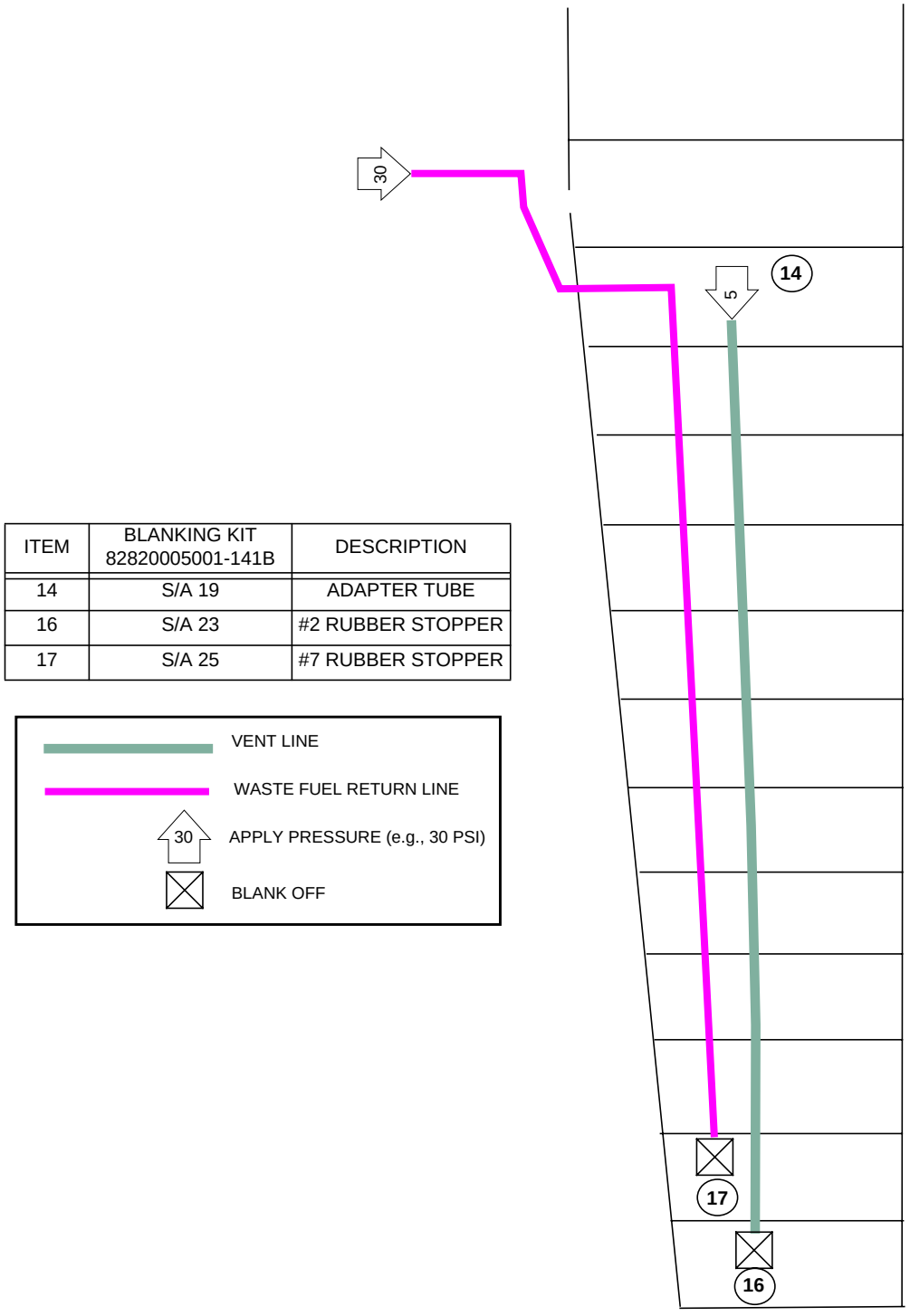


Figure 5 - Refuel/Defuel Transfer Line



ITEM	BLANKING KIT 82820005001-141B	DESCRIPTION
14	S/A 19	ADAPTER TUBE
16	S/A 23	#2 RUBBER STOPPER
17	S/A 25	#7 RUBBER STOPPER

Figure 6 - Waste Fuel Return Line & Vent Line