BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 4.13

PRODUCTION PROCESS STANDARD

Leak Testing DASH 8 Series 100 & 300 Fuel Tank Collector Bays

Issue 7
- This standard supersedes PPS 4.13, Issue 6.
- 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.

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Signed original on file. Validation of paper prints is the responsibility of the user.

Table of Contents

Sections **Page**

Figures

Tables

1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for wet leak testing the fuel tank collector bays of Dash 8, Series 100 and Series 300, standard and extended range aircraft.

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 13.26 - General Subcontractor Provisions.

3.2 PPS 21.21 - General Sealing Practices.

4 Materials and Equipment

4.1 Materials

4.1.1 DHMS S3.01-B2 integral fuel tank sealing compound.

4.2 Equipment

4.2.1 Leak testing kit (e.g., SD7494) consisting of fill and drain hoses, hose stands and drain tanks.

4.2.2 Fuel function test kit 82820005-001-141C.

5 Procedure

5.1 General

5.1.1 Carry out leak testing of the collector bays after the installation and sealing of all components penetrating the bay walls is complete. Allow all previously applied sealants to cure according to the corresponding PPS.

5.2 Preparation of the Aircraft

5.2.1 Ensure that the aircraft is approximately level.

5.2.2 Remove the fuel tank over-wing access covers if installed.

5.2.3 Disconnect and blank off all fuel lines using caps, plugs, etc., from the Fuel Function Test Kit, as follows (see Figure 1). Use only approved mechanical sealing devices and do not use unauthorized materials such as putty, plasticine or similar products in the wing fuel tanks.

Step 1. Remove the fuel inlet elbow and in its place install the S/A 15 elbow blank off casting.

Step 2. Disconnect and blank off the engine feed line from the ejector pump with an AN806-12D plug for Series 100 aircraft or an AN806-16D plug for Series 300 aircraft. Blank off the high pressure motive line from the ejector pump with an AN806-6D plug.

Step 3. Disconnect the low pressure warning line from the boost pump. Plug the line using an AN806-4D plug and cap the inlet adapter on the pump housing with an AN929-4 cap.

Step 4. Disconnect the engine feed line at the boost pump. Plug the line with an AN919-16D reducer fitted with an AN929-4 cap.

Step 5. Blank off the engine feed exit on the boost pump with an AN929-16 cap.

Step 6. Blank off the two lower scavenge lines (collector bay feeds). Firmly insert #2 rubber stoppers S/A 13 into the open ends of the tubes.

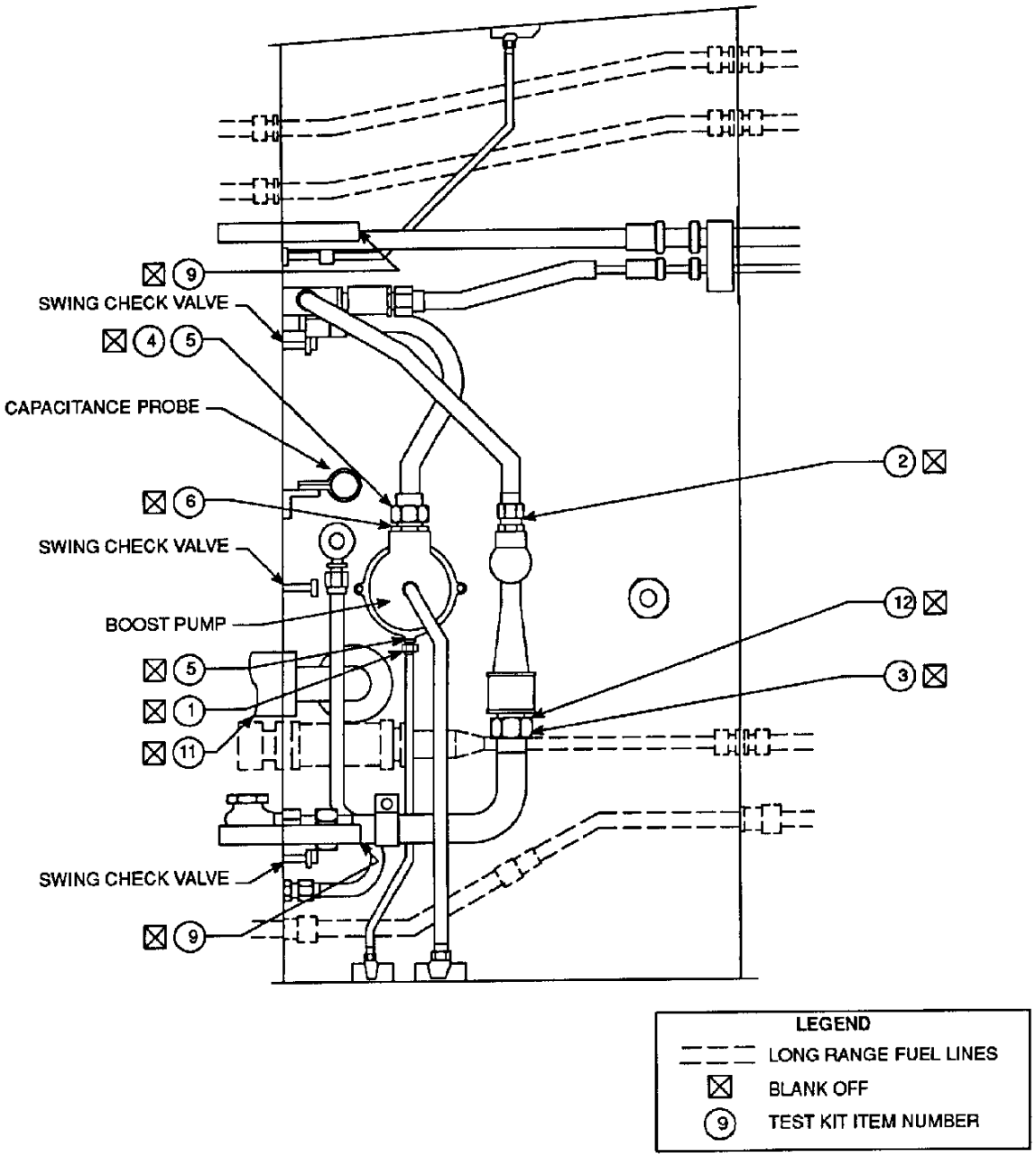

Figure 1 - Collector Bay (Top View)

Table 1 - Fuel Function Test Kit Parts List

FUEL FUNCTION TEST KIT 8282005-001-141-C					
ITEM	**PART NUMBER 8282005-001-141C**	**DESCRIPTION**	**ITEM**	**PART NUMBER 8282005-001-141C**	**DESCRIPTION**
1	111	AN806-4D plug	6	121	AN929-16 cap
2	113	AN806-6D plug	7	S/A 13	stopper assembly
3	115	AN806-12D plug	8	S/A 11	scale
4	117	AN919-16D reducer	9	S/A 15	blank off casting
5	119	AN929-4 cap	10	153	AN806-16D plug

5.2.4 Finish setting up for the test as follows:

Step 1. Remove the ejector from the collector bay.

Step 2. Disconnect and remove the capacitance probe from the outboard bulkhead.

Step 3. Check that the three swing check-valves on the outboard bulkhead are free and functional.

Step 4. Remove the boost pump cover from the lower wing skin. Rotate the lockplate and remove the pump motor from the wing.

5.3 Preliminary Leak Check

5.3.1 Fill the collector bay with water to a depth of approximately 6". Carefully observe the exterior of the bay during filling for evidence of structural leakage or excessive swing check valve leakage.

5.3.2 If there is structural leakage or excessive swing check valve leakage, shut off the water, drain the collector bay and tighten, re-seal, or replace parts as necessary.

5.3.3 If there is no evidence of structural leakage or excessive swing check valve leakage, proceed with the leak rate test according to section 5.4.

5.4 Leak Rate Testing

5.4.1 Perform the leak rate test as follows:

Step 1. Fill the collector bay to just above the scavenger ejector tube grommet (see Figure 2).

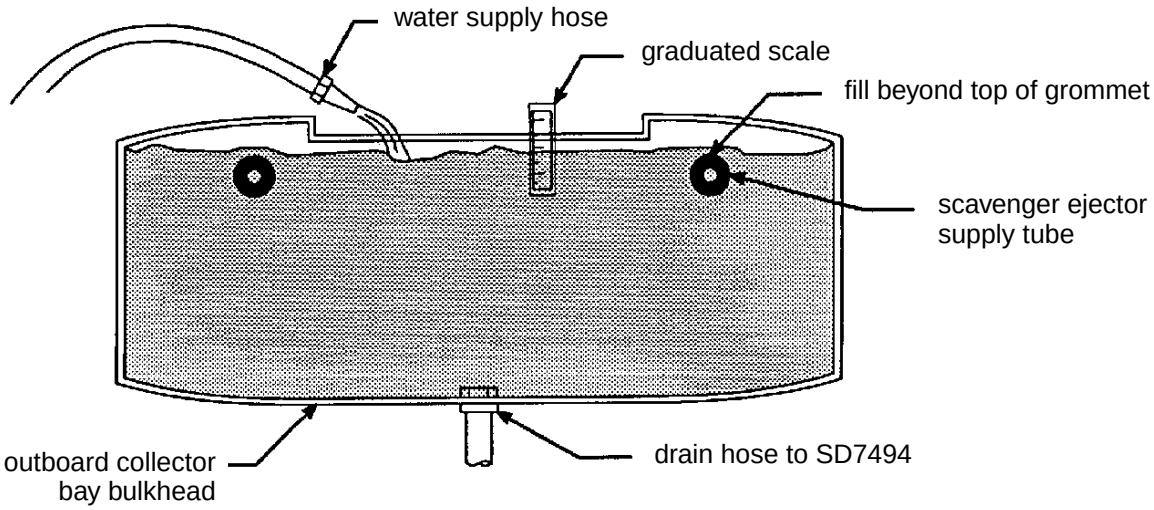

Figure 2 - Leak Test Schematic

Step 2. Observe and record the indicated water mark on the graduated scale.

Step 3. Visually check all exterior surfaces of the bay for leaks.

Step 4. After 15 minutes observe the water level and record the graduation from the scale.

Step 5. Calculate the water leakage from the recorded water levels. If the water level has dropped 1/2" or less in the 15 minute period, the leak rate is considered acceptable. Changes in the water level greater than 1/2" are not acceptable. Repair the collector bay according to section 5.5.

5.5 Repair

5.5.1 Repair collector bays that have failed the leak rate test in section 5.4 as follows:

Step 1. Check adjacent bays and the surrounding areas for obvious leaks and tighten or replace parts as necessary.

Step 2. Check the SD7494 test rig tank for water. Ensure that the drain line valve was closed during the test.

Step 3. Ensure that all of the tube connections below the original water line are tight. Notify Liaison Engineering of all loose tube connections below the original water line.

Step 4. If necessary, re-seal the collector bay areas according to PPS 21.21.

5.5.2 After performing the necessary repairs, retest the bay according to section 5.4.

5.6 Post Test Procedure

5.6.1 On completion of a successful leak rate test, proceed as follows

Step 1. Drain the collector bay by siphoning out the water. Empty any remaining water by opening the drain valve. Collect the water in a gallon container.

Step 2. Remove all of the blanking caps, plugs, etc., and re-install the fuel inlet elbow, ejector and capacitance probe.

Step 3. Reconnect the lines to the fuel ejector and boost pump.

Step 4. Lining up the keyway on the boost pump motor (red marks on the motor and the structure), insert the motor fully and lock in place by rotating the lockplate.

Step 5. Re-install the standby boost pump covers.

Step 6. Close the drain valve.

Step 7. Check that the collector bay swing check valves are free and functional.

6 Requirements

6.1 All fuel tank collector bays must meet the leak rate requirements specified in section 5.4.

6.2 On completion of a successful leak rate test all fuel tanks and collector bays must be thoroughly dried.

6.3 All collector bay swing check valves must be free and functional.

6.4 All fuel lines must be re-installed according to the engineering drawing.

7 Safety Precautions

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

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.