BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 13.18

PRODUCTION PROCESS STANDARD

Installation and Removal of DASH 8 Cockpit Wind Shields and Side Windows

Issue 6
- This standard supersedes PPS 13.18, Issue 5.
- Vertical lines in the left hand margin indicate 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)	October 30, 2012
	Production Process Standards (PPS)	
Approved By:	(L.K. John)	October 30, 2012
	Materials Technology	
	(B. DeVreede)	October 30, 2012
	Quality	

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1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for fluid tight installation of DASH 8 cockpit wind shields and side windows.

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. Similarly, the procedure and requirements specified in this PPS are not applicable when use of a BAPS, MPS, LES or P. Spec. is specified.

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 10.01 - Handling, Care and Finishing of Transparent Parts.

3.2 PPS 13.26 - General Subcontractor Provisions.

3.3 PPS 14.01 - Torquing Method and Identification.

3.4 PPS 21.16 - Aircraft Weather/Pressure Sealing.

3.5 PPS 21.21 - General Sealing Practices.

3.6 PPS 31.17 - Solvent Usage.

4 Materials and Equipment

4.1 Materials

4.1.1 Masking tape, 1" width.

4.2 Equipment

4.2.1 White lint-free cotton gloves (e.g. DSC 422-1).

4.2.2 Polyester protective film (e.g., Protex 8216 -2 (without backing), -2L (with backing)).

5 Procedure

5.1 General

5.1.1 The procedure specified herein must be strictly adhered to as cleanliness is extremely important for proper adhesion of sealant which prevents fluid leakage around wind shields and side windows.

5.2 Preparation of Aircraft Structure

5.2.1 All drilling, reaming and countersinking operations for the installation of cockpit wind shields and side windows shall be carried out prior to cleaning of the structural recesses which hold the windows.

5.2.2 Remove all metal chips and swarf from wind shield and side window recesses. Pay careful attention to gaps and butt joints which are to be sealed as specified on the engineering drawing.

5.2.3 Seal gaps and butt joints in the window recesses which are to be sealed as specified on the engineering drawing, but will be inaccessible with wind shields, side windows and window retainers in place, according to PPS 21.16. Following curing, sealant in gaps and butt joints in window recesses must protrude no more than flush with the surrounding recess structure.

5.2.4 Immediately before installing wind shields and side windows, solvent clean the window recesses according to PPS 31.17.

5.3 Handling of Cockpit Wind Shields and Side Windows

5.3.1 Solvent clean side window retainers according to PPS 31.17. Take extreme care to prevent solvent from contacting side window acrylic surfaces.

5.3.2 Wear clean white cotton gloves at all times when handling and installing wind shields and side windows.

5.3.3 Refer to PPS 10.01 for the handling requirements for cockpit wind shields and side windows.

5.4 Installation of Cockpit Wind Shields and Side Windows

5.4.1 Install wind shields and side windows according to the engineering drawing and assembly manual instructions. Do not use lever bars or similar to set in place or remove the wind shield or side windows as this could cause damage. Set in place or remove side windows or the wind shield by hand only.

5.4.2 Initially torque wind shield and side window retainer fasteners to 30 inch pounds. After initial torquing, allow the wind shield and side windows to “relax” for a minimum of 24 hours before final torquing fasteners to 35 inch pounds. Perform all torquing according to PPS 14.01 in the torquing sequence specified on the engineering drawing. Do not torque stripe mark torqued fasteners.

5.4.3 Seal the gaps between the wind shield and side window retainers and the surrounding cockpit structure, as specified on the engineering drawing, according to PPS 21.16. If sealing is not performed immediately after the window installations, cover the gap with 1" wide masking tape to prevent the ingression of contaminants such as metal chips, swarf, etc. before sealing. Sealant may be applied after initial torquing (i.e., it is not necessary to delay sealing until after final torquing.

5.5 Post-Installation Procedure

5.5.1 After the final test flight and before delivery of the aircraft, all wind shield and side window retainer fasteners must receive a final torque to 35 inch pounds, in the torquing sequence specified on the engineering drawing, to offset any loosening of the fasteners during test flights.

5.6 Removal of Cockpit Wind Shields and Side Windows

5.6.1 Removal of wind shields or side windows must be authorized by Liaison Engineering. Unless alternate specific instructions are specified by Liaison Engineering, remove cockpit wind shields as follows:

Step 1. Apply polyester protective film (see Equipment section, paragraph 4.2.2) to the outer face of the wind shield.

Step 2. Open the wind shield sensor circuit breakers. If in doubt as to which circuit breakers to open, refer to Liaison Engineering.

Step 3. Remove the covers from the pilot and co-pilot's wind shield terminal blocks.

Step 4. Disconnect the wind shield sensor wires from the pilot and co-pilot's wind shield terminal blocks.

Step 5. Remove the wind shield wiper arm and the wiper blade.

Step 6. Remove the bolts and retaining clamp that hold the wind shield.

Step 7. Loosen the bolts that hold the side window retainer at the rear edge of the wind shield and the bolts at the top and bottom edges of the side window as necessary to give a clearance of 0.070" - 0.100".

Step 8. Carefully remove the wind shield along with the seal from the frame. Do not use lever bars or similar to lift the wind shield from the frame as this could cause damage to the wind shield. Lift the wind shield from the frame by hand only.

5.6.2 If specified by Liaison Engineering, remove cockpit side windows as follows:

Step 1. Apply polyester protective film (see Equipment section, paragraph 4.2.2) to the outer face of the side window.

Step 2. For removal of the pilot's side window, open the applicable side window sensor circuit breakers. If in doubt as to which circuit breakers to open, refer to Liaison Engineering.

Step 3. For removal of the pilot's side window, remove the cover from the pilot's side window terminal block.

Step 4. For removal of the pilot's side window, disconnect the side window sensor wires from the terminal block.

Step 5. Remove the bolts that hold the side window.

Step 6. Carefully remove the side window along with the seal and the retainer from the frame. Do not use lever bars or similar to lift the side window from the frame as this could cause damage to the side window. Lift the side window from the frame by hand only.

6 Requirements

6.1 Before wind shield and side window installations, applicable structural recesses must meet the cleanliness requirements specified in PPS 31.17 and areas to be sealed must meet the cleanliness requirements specified in PPS 21.21.

6.2 Cured sealant applied to gaps and butt joints in window recesses must be flush with the surrounding recess structure (i.e., no protrusion allowed).

6.3 Torqued window retainer fasteners must meet the requirements specified in PPS 14.01.

7 Safety Precautions

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

7.2 Refer to PPS 31.17 for the safety precautions for handling and using solvents.

7.3 Refer to PPS 21.21 for the safety precautions relevant to the handling and application of sealants.

8 Personnel Requirements

8.1 Personnel responsible for the installation of DASH 8 wind shields and side windows must have a good working knowledge of the procedure and requirements as specified herein and must have exhibited their competency to their supervisor.