BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 2.14

PRODUCTION PROCESS STANDARD

Installation of Dzus Supersonic Fasteners

Issue 7
- This standard supersedes PPS 2.14, Issue 6.
- 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.

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	Quality	

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1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for installing Dzus Supersonic fasteners.

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 1.01 - Dimpling Aluminum Alloys.

3.2 PPS 1.07 - Dimpling Ferrous, Nickel, and Titanium Alloys.

3.3 PPS 1.09 - Drilling and Reaming.

3.4 PPS 1.33 - Countersinking for Flush Head Fasteners.

3.5 PPS 2.01 - Installation of Solid Rivets.

3.6 PPS 13.26 - General Subcontractor Provisions.

3.7 PPS 18.01 - Limitations on Shearing, Blanking, and Piercing Aluminum and Magnesium Alloy Sheet.

3.8 PPS 18.04 - Limitations on Shearing and Punching Titanium Alloys.

4 Materials and Equipment

4.1 Materials

4.1.1 Dzus Supersonic fasteners as specified on the engineering drawing. Refer to Figure 1 for an exploded view of Dzus Supersonic fasteners. Refer to Figure 2, Figure 3, Figure 4 and Figure 5 for part number breakdowns of Dzus grommets, studs, receptacles and spacers, respectively. Part numbers are stamped on Dzus receptacles and Dzus studs.

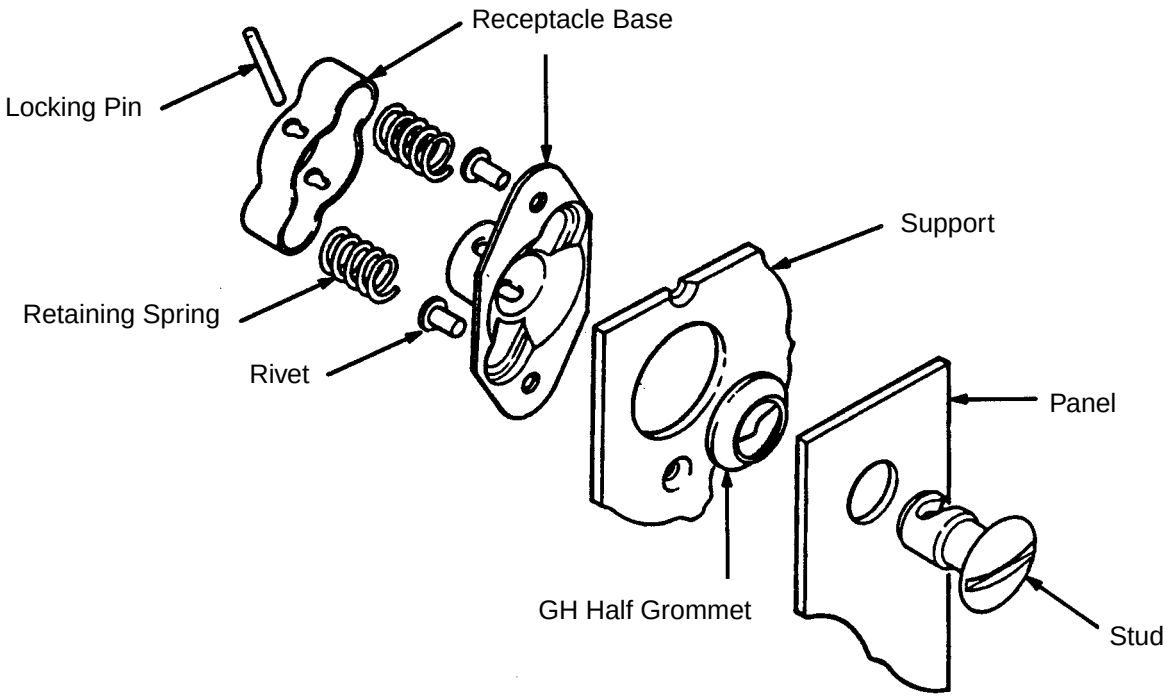

Figure 1 - Exploded View of Dzus Supersonic Fastener

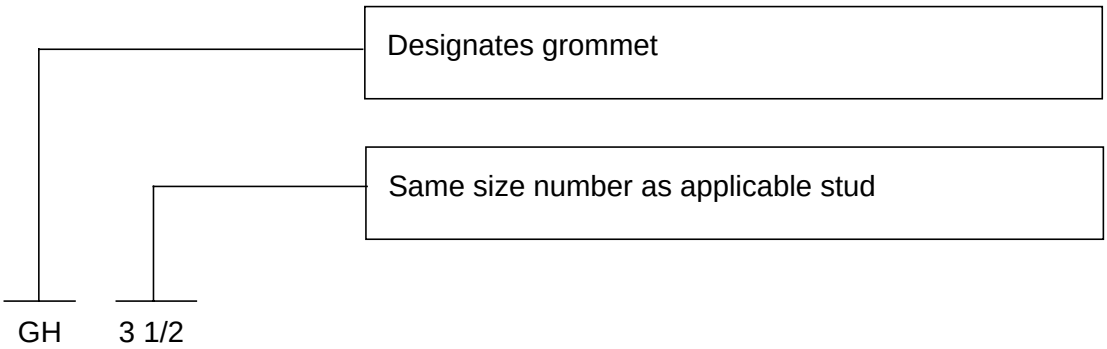

Figure 2 - Part Number Breakdown of Dzus Grommets

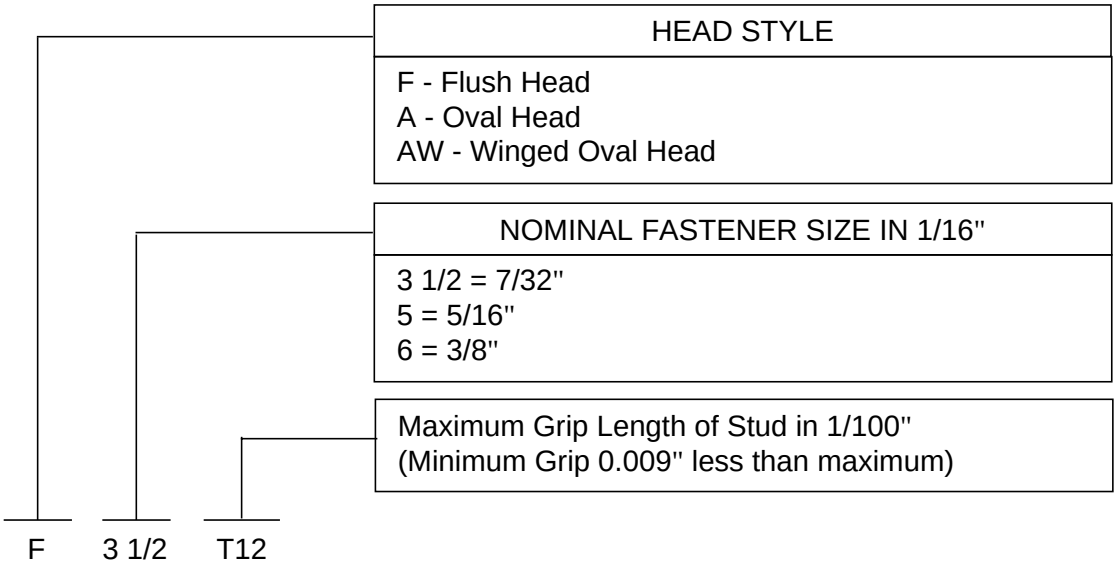

Figure 3 - Part Number Breakdown of Dzus Studs

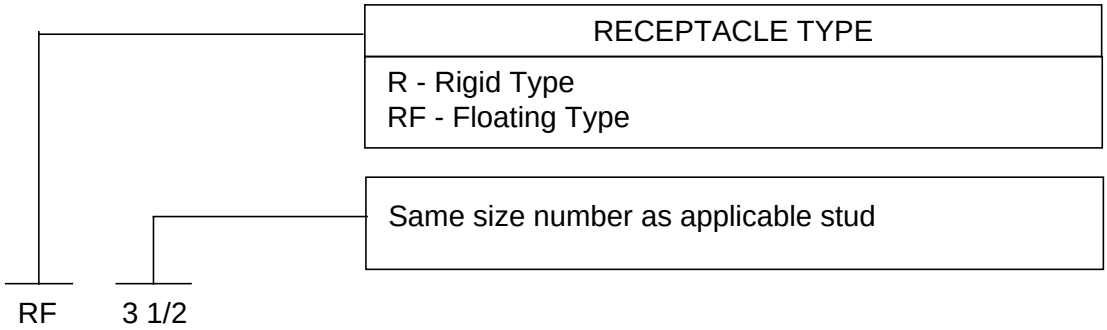

Figure 4 - Part Number Breakdown of Dzus Receptacles

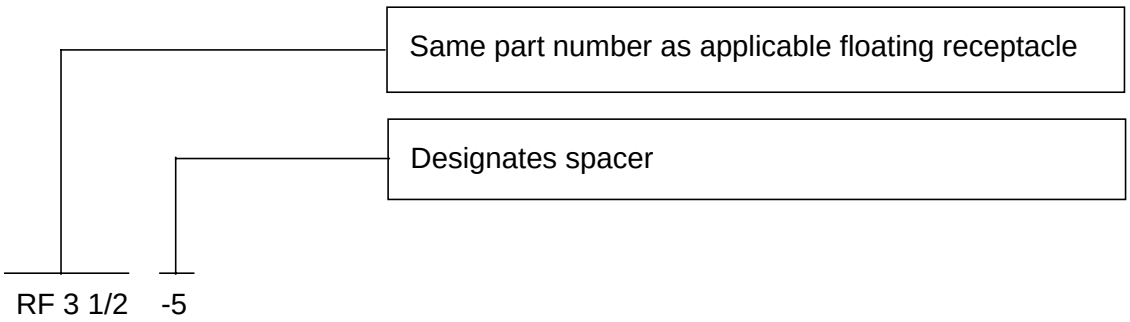

Figure 5 - Part Number Breakdown of Dzus Spacers

4.2 Equipment

4.2.1 Receptacle drill jigs (e.g., as listed in Table 2).

4.2.2 Dzus installation tools: FH tools for flush head fasteners; No. 5 tools for oval head fasteners and Block No. 1. Do not rework or modify Dzus fastener installation tools without proper authorization.

5 Procedure

5.1 General

5.1.1 Dzus Supersonic fasteners are spring loaded, quick release fasteners used to attach internal panels, external panels, and quick detachable plates which do not carry primary structural stress.

5.1.2 For the purpose of this standard, the part of the assembly in which the fastener stud is installed is termed the *panel*, while the part to which the receptacle is riveted is termed the *support*.

5.1.3 Perform all pre-drilling and drilling of holes according to PPS 1.09.

5.2 Preparation of Parts

5.2.1 For flush head fastener installations, prepare holes in panels as follows.

Step 1. If flush head fasteners are to be installed, pre-drill the stud holes for dimpling as specified in Table 1.

Step 2. If flush head are to be installed, ram coin dimple the stud holes in the panel according to PPS 1.01 or PPS 1.07, as applicable.

Step 3. Drill the stud holes to final size specified in Table 1.

Table 1 - Drill Data for Panel Preparation

FASTENER SIZE	PRE-DRILL FOR DIMPLING	PANEL FINAL DRILL
3 1/2 (7/32")	# 24	7/32"
5 (5/16")	19/64"	5/16"
6 (3/8")	23/64"	3/8"

5.2.2 For oval head or wing head stud installations, drill the stud hole in the panel using the final drill specified in Table 2. Alternatively, holes may be punched according to PPS 18.01 or PPS 18.04, as applicable.

5.2.3 Prepare holes in supports as follows:

Step 1. Pre-drill the stud hole (e.g., 0.098").

Step 2. Drill the receptacle rivet holes according to PPS 2.01. Use a drill jig (e.g., as specified in Table 2) to locate the holes.

Step 3. Countersink the rivet holes according to PPS 2.01 on the side of the support which is to mate with the panel.

Step 4. Drill the stud hole to the final size specified in Table 2.

Table 2 - Drill Data for Support Preparation

FASTENER SIZE	DRILL JIG NUMBER	FINAL DRILL FOR RECEPTACLE STUD HOLE
3 1/2 (7/32")	TS.519.11.20 MK27	15/32"
5 (5/16")	TS.519.11.20 MK31	45/64"
6 (3/8")	TS.519.11.20 MK32	13/16"

5.3 Installation of Studs and Receptacles

5.3.1 Install flush head studs as follows (see Figure 6):

Step 1. Insert the stud into the prepared hole in the panel.

Step 2. Support the head of the stud with a flat surface plate.

Step 3. Place the correct size grommet over the cam end of the stud.

Step 4. Select the proper size FH type tool and place it over the stud and the grommet.

Step 5. Firmly push the installation tool against the panel and use a soft faced mallet to strike the plunger with sufficient force to flatten the grommet.

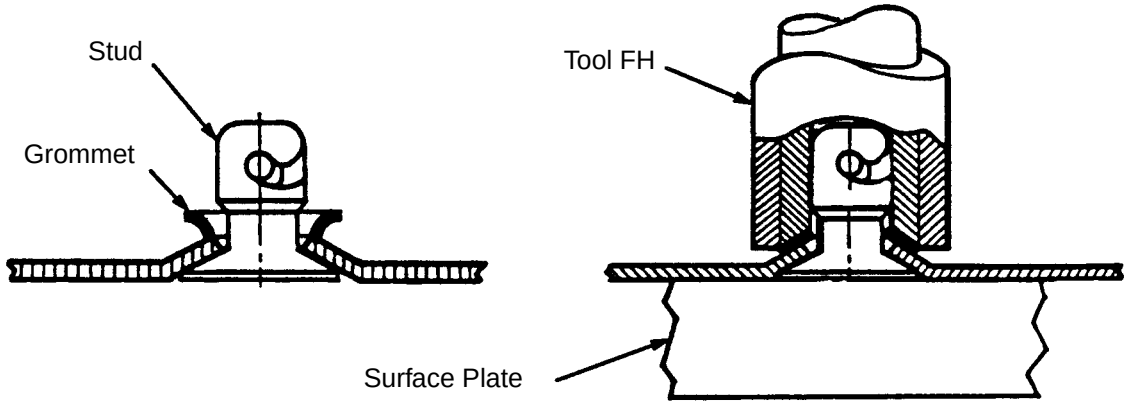

Figure 6 - Installation of Flush Head Studs

5.3.2 Install oval head studs as follows (see Figure 7):

Step 1. Insert the stud into the prepared hole in the panel.

Step 2. Support the head of the stud with Block No. 1, side C.

Step 3. Place the correct size grommet over the cam end of the stud.

Step 4. Select the proper size No. 5 type tool and place it over the stud and grommet.

Step 5. Firmly push the installation tool against the panel. Using a soft faced mallet, strike the tool end with sufficient force to flatten the grommet.

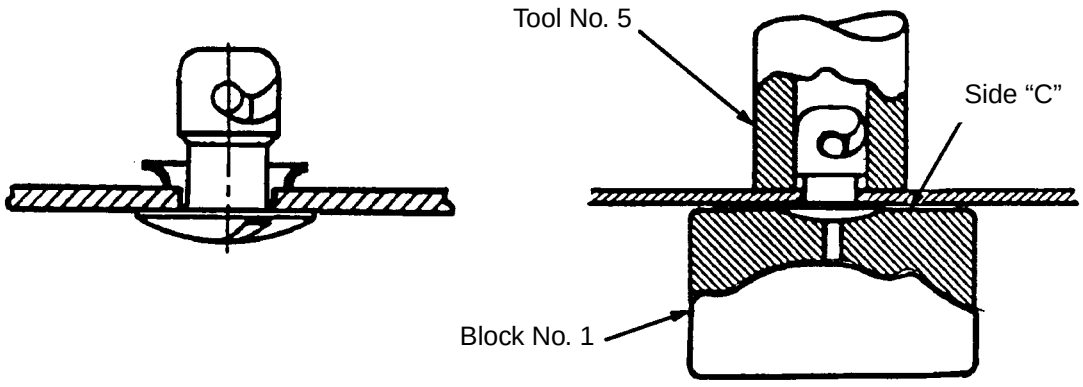

Figure 7 - Installation of Oval Head Studs

5.3.3 Install receptacles as follows (see Figure 8):

Step 1. In the case of floating receptacles, ensure that the spacers have been installed in the spacer holes before inserting the rivets.

Step 2. Rivet receptacles to the support according to PPS 2.01 using the rivets specified by the engineering drawing. Orient the rivets so that the **shop** head will be formed on the countersunk side of the support which is to mate with the panel.

Step 3. On the side of the support which is to mate with the panel, shave the **shop** heads of installed rivets flush with the surface to obtain proper seating of the panel.

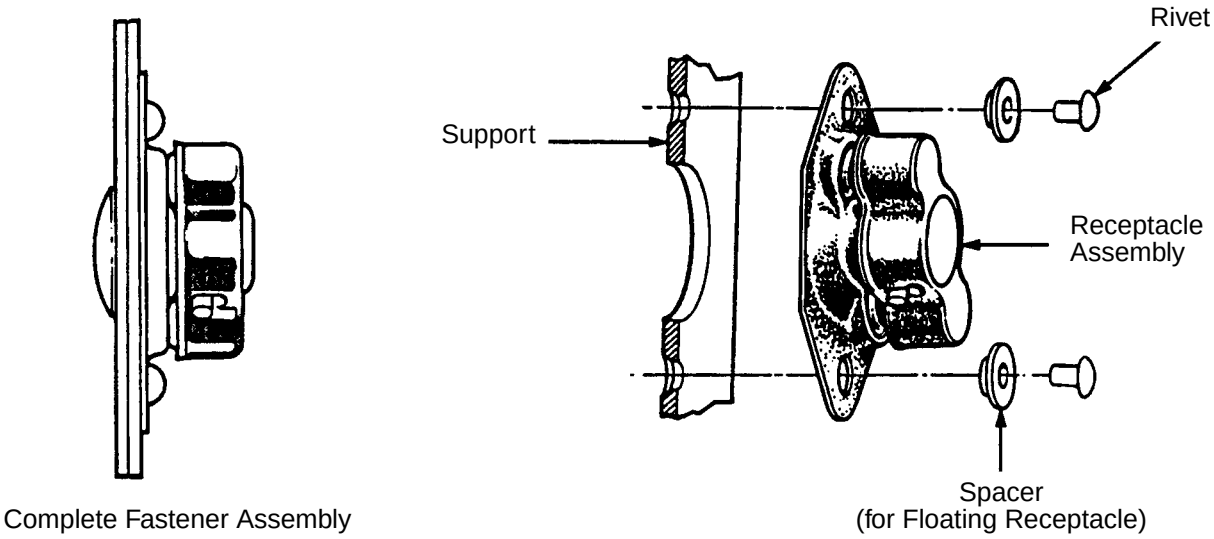

Figure 8 - Installation of Receptacle

6 Requirements

6.1 In the locked position, Dzus fasteners must be seated tightly without radial or axial play.

6.2 Heads of F type fasteners must be flush with the panel within ±0.015".

6.3 Locking or unlocking of slotted head fasteners must be possible without excessive force. Winged fasteners must be readily locked and unlocked by hand without the use of any tool.

7 Safety Precautions

7.1 The procedures specified herein present no specific safety hazards when performed according to accepted plant safety regulations.

8 Personnel Requirements

8.1 Personnel responsible for installation of Dzus Supersonic fasteners must have a good working knowledge of the procedure and requirements as specified herein and must have exhibited their familiarity to their supervisor.