**BOMBARDIER**
Toronto (de Havilland)
**PROPRIETARY INFORMATION**

# PPS 1.48

**PRODUCTION PROCESS STANDARD**

## Set-Up and Operation of Rivet Shavers

Issue 3
- This standard supersedes PPS 1.48, Issue 2.
- 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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|---|---|---|
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## 1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the set-up, adjustment and operation of rivet shavers.

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 13.26 - General Subcontractor Provisions.

## 4 Materials and Equipment

### 4.1 Materials

4.1.1 No materials required.

### 4.2 Equipment

4.2.1 Rivet shavers (e.g., as listed in Table 1). Refer to Table 1 for a listing of the rivet shavers available at Bombardier Toronto (de Havilland). Refer to Figure 1 for a general description of a rivet shaver.

4.2.2 Cutters and foot pieces (e.g., as listed in Table 2).

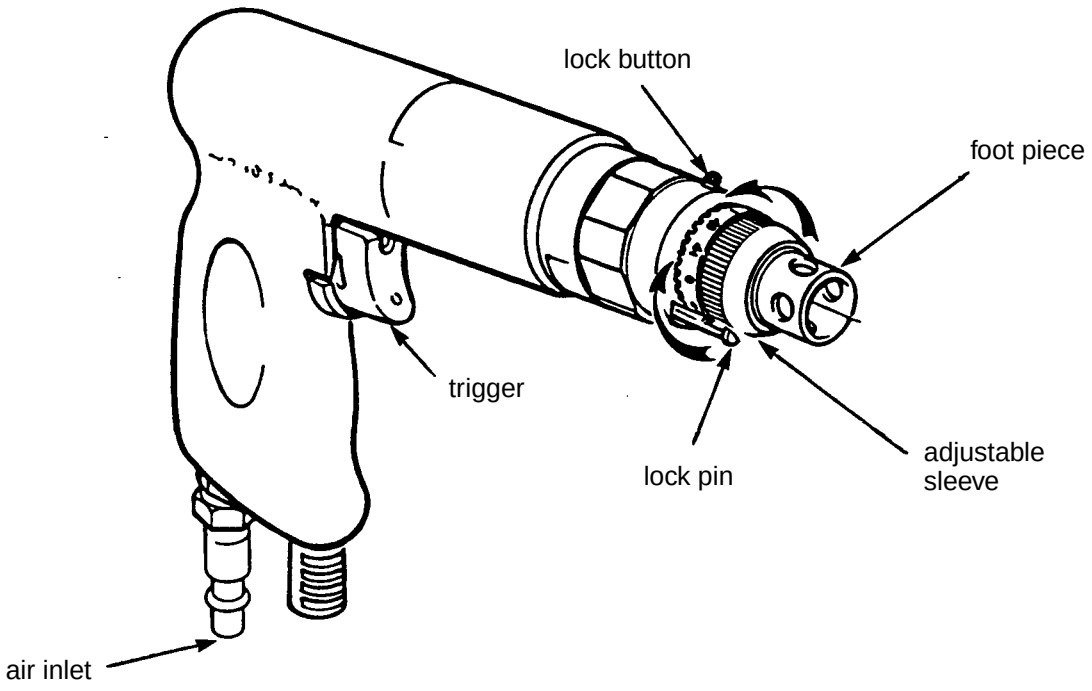


**Figure 1 - Rivet Shaver (typ.)**

## 5 Procedure

### 5.1 General

5.1.1 Rivet shavers are air operated portable tools used to remove excess head protrusion of properly installed flush head rivets. Installed rivets must meet the applicable "as installed" protrusion requirements specified in the rivet installation PPS **before** shaving.

5.1.2 Rivet shavers require a specific cutter and foot piece combination for set-up, depending upon the diameter of the rivet head to be shaved.

5.1.3 **Do not** shave reduced flush head rivets (e.g., NAS1097, NAS1200, BACR15CE, CSP371, CSP372 AND CSP391) under any circumstance.

5.1.4 It is acceptable to use alternative tooling to that specified in section 4.2, provided it is set-up and operated according to the manufacturers instructions and the requirements specified herein are met.

**Table 1 - Rivet Shavers**

| MODEL | D.H TOOL IDENTIFICATION NUMBER | RPM |
|---|---|---|
| US TOOLS US7385RS | 12193 | 15000 - 18000 |
| US TOOLS US7364RS | 10859 | |
| ZEPHYR ZT 405 | 9970 | |
| | 9911 | |

**Table 2 - Cutters and Foot Pieces**

| CUTTER DIAMETER | ATI INDUSTRIES CUTTER | ATI INDUSTRIES FOOT PIECE |
|---|---|---|
| 5/16" | AT 429B-1 | AT 429A-1 |
| 3/8" | AT 429B-2 | AT 429A-2 |
| 7/16" | AT 429B-3 | AT 429A-3 |
| 1/2" | AT 429B-4 | AT 429A-4 |

### 5.2 Set-Up of Rivet Shaver

5.2.1 Assemble the cutter and foot piece to the rivet shaver as follows:

Step 1. Select a rivet shaver from Table 1 and the applicable cutter and foot piece from Table 2, according to the size of the rivet head to be shaved. As a general rule, the diameter of the cutter should be approximately 1/16" greater than the diameter of the rivet head to be shaved.

Step 2. Lock the rotating spindle of the rivet shaver by pressing the lock button and thread the cutter onto the spindle shaft (see Figure 2).

Step 3. Firmly tighten the cutter by inserting a 1/8" diameter pin through the hole of the cutter and turning it counterclockwise, while holding the spindle in the locked position.

Step 4. Insert the spring and the washer, assemble the adjustable sleeve and foot piece and thread it onto the body of the rivet shaver while holding the lock pin down (see Figure 2).

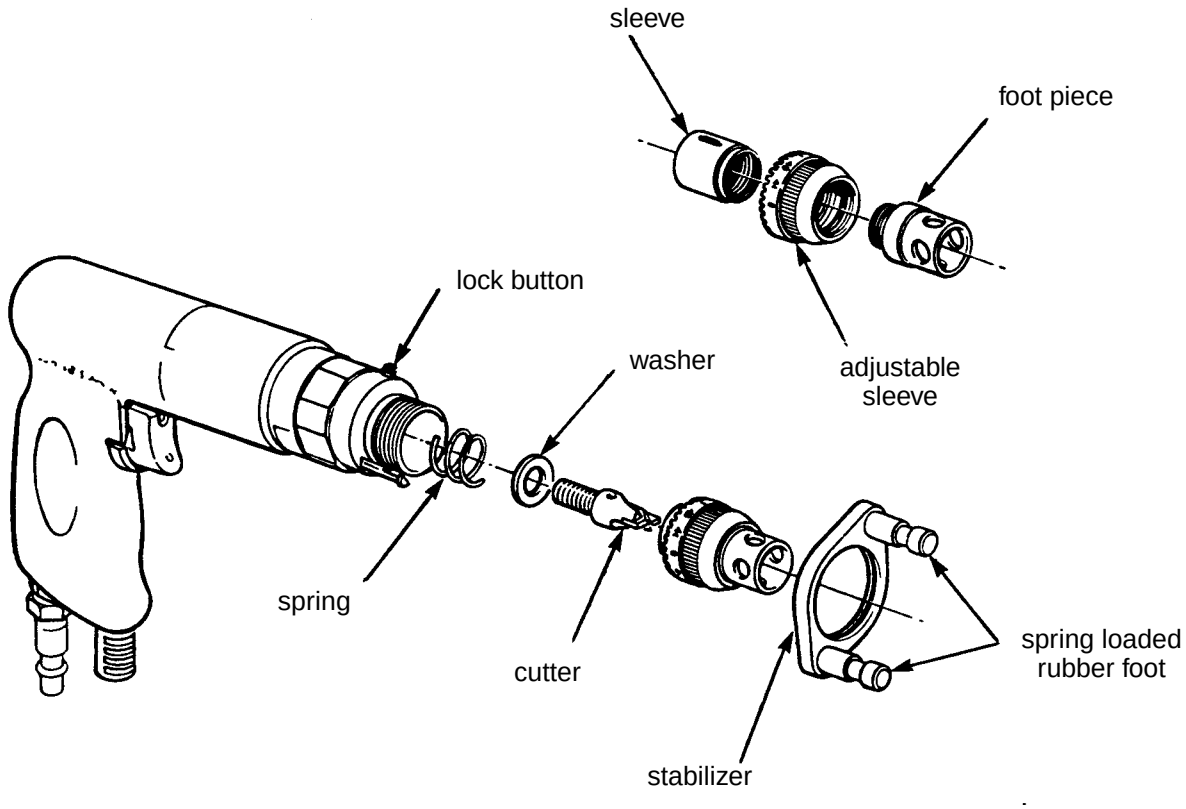


**Figure 2 - Installation of Cutter and Foot Piece Assembly**

5.2.2 Before shaving installed rivets, adjust the cutter depth of rivet shavers as follows.

Step 1. Place the rivet shaver square to the surface of a flat piece of scrap metal, hold it firmly against the work piece and press the trigger to commence the shaving operation.

Step 2. To increase or decrease the depth of cut, adjust the rivet shaver by pressing the lock pin down and rotating the adjustable sleeve, clockwise to decrease or counterclockwise to increase, as required. Rotation of one division on the adjustable sleeve will adjust the depth of cut by 0.001". After increasing or decreasing the depth of cut, release the lock pin and check that it is locked in position in one of the slots of the adjustable sleeve.

Step 3. Repeat the above procedure until the tip of the cutter just touches the surface of the test piece.

Step 4. Retract the cutter to allow a clearance of 0.001" from the work surface by turning the adjustable sleeve clockwise one division.

### 5.3 Operation of Rivet Shaver

5.3.1 Operate rivet shavers as follows:

Step 1. Position the rivet shaver on the rivet head which requires shaving. If required, assemble the spring loaded rubber feet mounted stabilizer onto the stem of the rivet shaver. The stabilizer holds the rivet shaver square to the work surface and prevents skidding when in operation.

Step 2. Hold the rivet shaver firmly, square to the work piece and press the trigger to activate. The foot piece and cutter will retract uniformly as the shaving action is in progress. The foot piece will resume its original position when shaving is completed, keeping the cutter under constant guard.

## 6 Requirements

6.1 Refer to the rivet installation PPS for the height requirements of the flush head above the work surface.

6.2 Ensure that the surface surrounding the rivet head is not marked or damaged.

## 7 Safety Precautions

7.1 Disconnect air lines from rivet shavers when changing the cutters.

## 8 Personnel Requirements

8.1 Personnel responsible for shaving of rivets must have a good working knowledge of the applicable procedure and requirements as specified herein and must have exhibited their familiarity to their supervisor.

## 9 Maintenance of Equipment

9.1 It is recommended that a few drops of light machine oil be inserted daily into the air inlet of rivet shavers.

9.2 Replace damaged or badly worn parts, as necessary.

9.3 Any rework or alteration of rivet shavers is prohibited unless it is appropriately authorized.