BOMBARDIER
AEROSPACE
Toronto (de Havilland)

PPS 38.03

PRODUCTION PROCESS STANDARD

COMBINATION GLASS CLOTH INSULATION

Issue 3
- This standard supersedes PPS 38.03, Issue 2.
- PPS ACN 38.03/1 has been superseded in this or previous issues.
- Vertical lines in the left hand margin indicate changes over the previous issue.

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This PPS is effective as of the distribution date specified on the accompanying distribution notice.

Direct any PPS related questions to the PPS Group (416) 375-4365.

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1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the installation and repair of thermal insulation on bleed-air ducts, using glass fibre cloth over ceramic fibre insulation.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction and the procedure specified 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 Aerospace Process Specification (BAPS) or Bombardier Aerospace Montreal (Canadair) Materials and Processes Specification (MPS) **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 or MPS is specified.

2 HAZARDOUS MATERIALS

2.1 Before receipt at Bombardier Aerospace Toronto, all materials must be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Aerospace Toronto 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 Aerospace Toronto Environment, Health and Safety Department.

3 REFERENCES

3.1 PPS 13.26 - General Subcontractor Provisions.

3.2 PPS 25.14 - General Electric SR6574/SRC18.

3.3 PPS 31.17 - Solvent Usage.

3.4 QDI-15-01 - Storage Life of Adhesives, Sealants, Paints and Composite Products - *Bombardier Aerospace Toronto internal operating procedure*.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Insulation, ceramic fibre, 1/2" thick, 4 lb/cubic foot density (Kaowool).

4.1.2 Glass fibre cord, Paisley Products EC9-3-U.

4.1.3 Silicone coated glass fabric, No. 128.

4.1.4 Glass cloth adhesive tape, 1" width, DSC 91-2-3A.

4.1.5 Sealant, Dow Corning Silastic RTV 732 white.

4.1.6 Glass fibre thread, Dodge Oak Materials R75-12.

4.1.7 Adhesive, General Electric SR6574/SRC18 silicone.

4.2 Equipment

4.2.1 Suitable sealant spatula.

5 PROCEDURE

5.1 Application of Insulation

5.1.1 Apply insulation as follows:

Step 1. Cut ceramic fibre insulation to the required size.

Step 2. Wrap insulation around the area of the duct to be insulated and hold in place using glass fibre cord as shown in Figure 1.

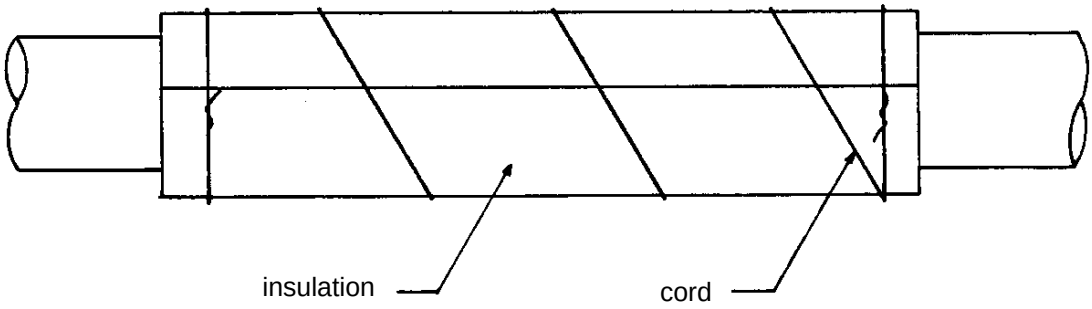

FIGURE 1 - USE OF GLASS FIBRE CORD TO HOLD INSULATION IN PLACE

5.2 Application of Glass Cloth Cover

5.2.1 Apply the glass cloth cover as follows:

Step 1. Cut the silicone coated glass fibre cloth to the length of the insulation along the duct plus 2 1/2".

Step 2. Using templates, cut the glass cloth to the circumference of the insulated duct plus 3/4" for the seam. Wrap the cloth around the insulation (coated side out) and position so that the cloth extends evenly beyond the insulation at both ends. If more than one section of glass cloth is used for the cover, machine sew the individual pieces together using a flat fold seam and glass fibre thread. Fold machine stitched seams on the inside of the cover.

Step 3. After placing the cover in position, double fold the lengthwise seam and hand stitch in place using glass fibre thread as shown in Figure 2 with stitches approximately 1/4" apart. Masking tape or pins may be used to hold the cover temporarily in place for sewing, but must be removed before sealing.

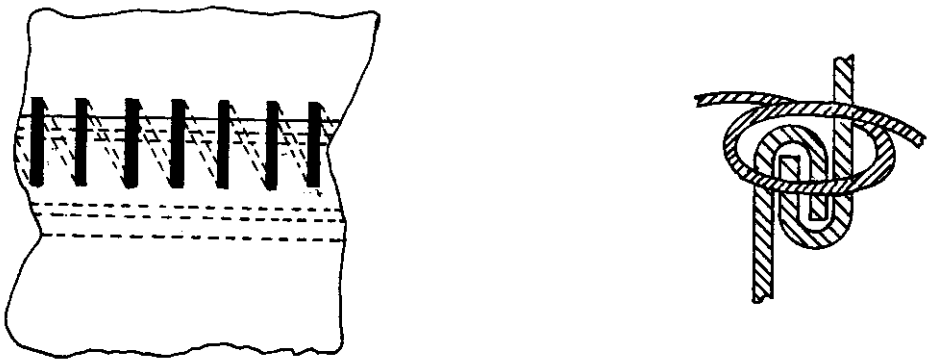

FIGURE 2 - HAND STITCHING OF LENGTHWISE SEAM

Step 4. Tape the ends of the cover tightly against the duct using at least 2 wraps of 1" wide glass cloth adhesive tape overlapping approximately 1/2" onto the duct.

Step 5. Secure the end of the tape with two single stitches using glass fibre thread as shown in Figure 3.

Step 6. Seal the tape and seams of the cover according to section 5.3.

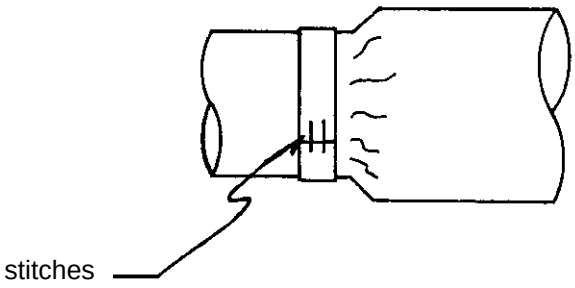

FIGURE 3 - SECURING OF TAPE ENDS

5.3 Post Assembly Sealing of Tape and Seams

5.3.1 Seal the tape and seams after assembly as follows:

Step 1. Immediately before applying the sealant, thoroughly solvent clean the tape and seams of the cover according to PPS 31.17. Clean the area to which sealant is to be applied and the surrounding area (at least 50% greater than the area to which the sealant is to be applied).

Step 2. Using a suitable spatula, apply a thin, uniform coat of RTV 732 sealant to the tape and all seams of the cover approximately as shown in Figure 4.

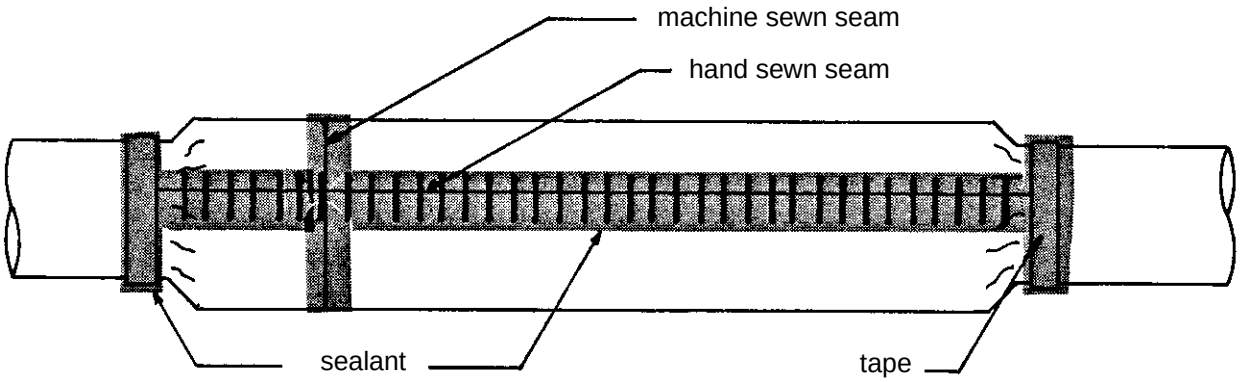

FIGURE 4 - APPLICATION OF SEALANT

Step 3. Allow the sealant to cure for 24 hours before further working the part or installing it in an aircraft.

5.4 Repair of Covers

5.4.1 Refer covers with tears or abrasions up to 4" in length to Bombardier Aerospace Toronto MRB or Bombardier Aerospace Toronto delegated MRB for authority to repair according to paragraph 5.4.1.1 or paragraph 5.4.1.2, as applicable. Replace covers with tears exceeding 4" in length.

5.4.1.1 Repair abrasions or tears 1/2" to 4" in length as follows:

Step 1. Thoroughly solvent clean an area at least 50% larger than the area of the patch to be applied in Step 6 according to PPS 31.17.

Step 2. Sew the tear with glass fibre thread using 4 - 6 stitches per inch.

Step 3. Cut a patch of silicone coated glass fabric cloth to overlap approximately 1/2" on all sides of the damaged area.

Step 4. Prepare a sufficient quantity of SR 6574/SRC 18 silicone adhesive according to PPS 25.14, to bond the patch to the cover.

Step 5. Using a suitable spatula, apply a thick (0.020" - 0.040") uniform coat of adhesive to the bonding surface (uncoated side) of the patch.

Step 6. Immediately following the application of the adhesive, apply the patch so that it is centered over the damaged area, and press down firmly with the fingers to displace air and ensure full contact with the cover. Ensure that no more than 5 minutes elapses between the application of the adhesive and application of the patch to the cover.

Step 7. Seal the edges of the patch to the cover with a 1/2" wide strip of RTV 732 sealant overlapping approximately equally onto the cover and patch as shown in Figure 5-A.

Step 8. Allow the sealant to cure for 24 hours before further working the part or installing it in an aircraft.

5.4.1.2 Repair abrasion or tears less than 1/2" in length as follows:

Step 1. Solvent clean the area of the tear or abrasion and surrounding area (at least 50% greater than the area to which the sealant is to be applied in Step 2) according to PPS 31.17.

Step 2. Using a suitable spatula, apply a uniform coat of RTV 732 sealant to the cover to overlap at least 1/2" on all sides of the damaged area as shown in Figure 5-B.

Step 3. Allow the sealant to cure for 24 hours before further working the part or installing it in an aircraft.

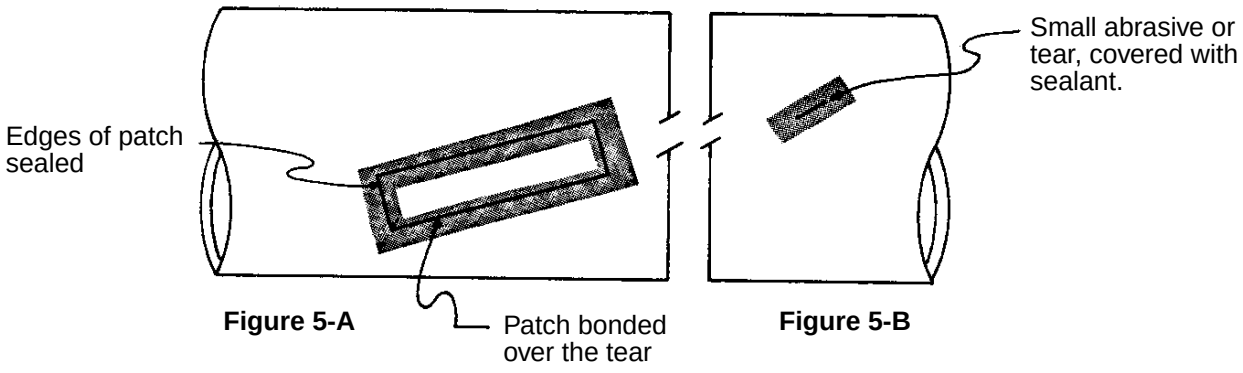

FIGURE 5 - SEALING OF REPAIRED COVERS

5.5 Clean-Up

5.5.1 Remove uncured sealants from tools and other equipment by solvent cleaning according to PPS 31.17.

6 REQUIREMENTS

6.1 Ensure glass fabric tape ends have been secured with two single stitches.

6.2 Ensure all seams and glass fabric tape are sealed against the ingress of moisture, oils, fuels, etc.

7 SAFETY PRECAUTIONS

7.1 Refer to PPS 31.17 for the safety precautions for solvent cleaning.

7.2 Keep adhesives away from fire and other sources of ignition.

7.3 Ensure sufficient ventilation is supplied when using adhesive in confined areas.

7.4 Avoid skin contact with adhesive. Do not use protective hand cream as it may cause contamination of cleaned or adhesive coated surfaces.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for the installation and repair of thermal insulation on bleed-air ducts, using glass fibre cloth over ceramic fibre insulation must have a basic understanding of the procedure and requirements as specified herein and must have exhibited their familiarity to their supervisor.

9 STORAGE

9.1 Store RTV 732 sealant and SR 6574/SRC 18 adhesive at a temperature of 16°C - 26°C (60°F - 80°F).

9.2 Refer to QDI-15-01 for the storage life of sealant and adhesives.

9.3 Ensure containers of sealant and adhesive are clearly marked with the storage life expiry date.

9.4 When not in use, keep containers of sealant, adhesive, and solvents tightly closed.

10 ADDITIONAL INFORMATION

10.1 Paint adhesion problems occur on surfaces contaminated with silicone sealants and adhesives. Therefore, take the following precautions to avoid contaminating other areas with sealants or adhesives.

- Discard cleaning cloths contaminated with silicone sealants or adhesives after each single cleaning. Do not clean such cloths or reuse.
- Carefully clean gloves or tools contaminated with silicone sealants or adhesives by solvent cleaning according to PPS 31.17 immediately after completion of bonding or sealing to prevent contamination of other areas of the aircraft components.