BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 3.03

PRODUCTION PROCESS STANDARD

Nylon Cord Splicing

Issue 4
- This standard supersedes PPS 3.03, Issue 3.
- 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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1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for splicing nylon cord.

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.

3.2 PPS 31.17 - Solvent Usage.

4 Materials and Equipment

4.1 Materials

4.1.1 Nylon cord and terminals (thimbles) as specified on the engineering drawing.

4.1.2 Chem Seal CS7707, Clear 2 Part Nylon Coating.

4.1.3 Braided cord to Air Ministry Spec. 5F 35.

4.2 Equipment

4.2.1 Cable assembling bench complete with vise and winch.

5 PROCEDURE

5.1 Preparation of Cord and Terminal

5.1.1 Cut the cord to length, allowing about eight to ten inches extra at each end for splicing purposes. It is recommended that masking tape be used to wrap the end of the cord on the supply roll, to prevent fraying.

5.1.2 Bend the points of the thimble upward at an angle of approximately 45° as shown in Figure 1 before installation of the cord.

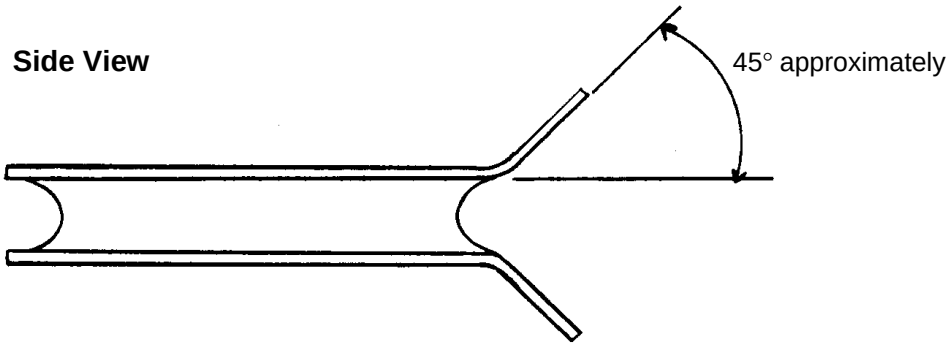

Figure 1 - Preparation of Thimble

5.2 Preparation of Coating Material

5.2.1 Prepare Chem Seal CS7707 coating as follows:

Step 1. Stir the base and catalyst component of the coating thoroughly in their own containers.

Step 2. Mix the base and catalyst with a 100:6 mixing ratio (by weight) in a clean wax free cup. Mix only sufficient material for the job at hand. Stir the base/catalyst mixture thoroughly to obtain a homogeneous mix.

Step 3. Allow the mixture to stand for a reaction time of approximately 15 minutes.

Step 4. Re-stir immediately before using.

Step 5. Discard unused catalyzed mixture at the end of each shift.

5.3 Splicing

Step 1. Tie two strands of linen thread to the nylon cord about four inches back from the end to be spliced.

Step 2. Unravel the end of the cord to be spliced back to the thread.

Step 3. Apply masking tape to each of the unravelled ends to make points which will be convenient to thread through the cord in the splicing operation (see Figure 2).

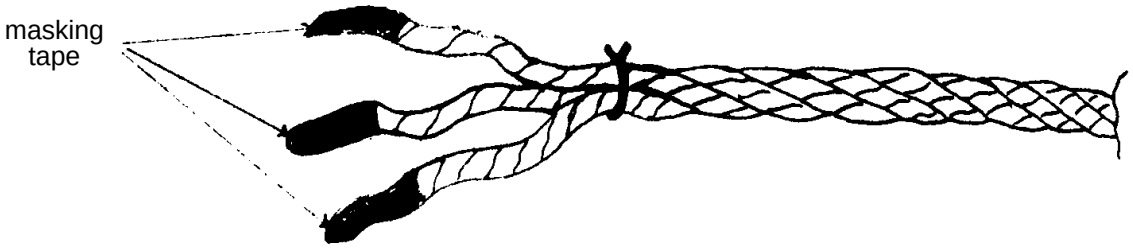

Figure 2 - Preparation of Cord for Splicing

Step 4. Install the cord to the thimble and clamp the thimble in a vise.

Step 5. With the free end of the cord lying along the bottom, for the purposes of this PPS consider the free strands adjacent to the left hand thimble point (looking in the direction of arrow C in Figure 3) as the No. 1 strand and number the other two strands counter-clockwise as shown in Figure 3. Also, consider the standing strand adjacent to No. 1 free strand as the 'a' strand and the remaining two strands lettered clockwise.

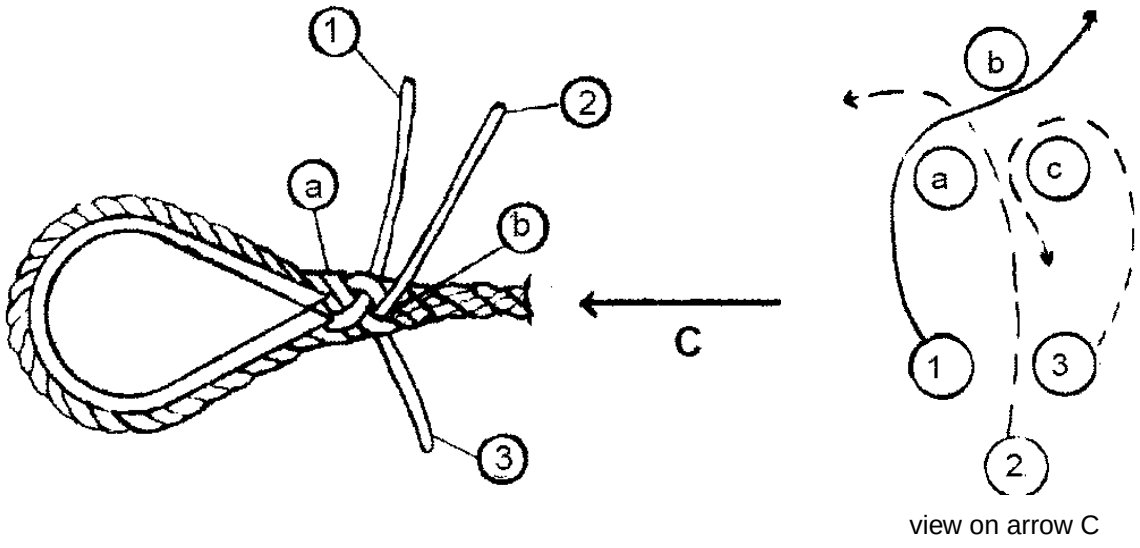

Figure 3 - First Tuck

Step 6. Loosen the lay of the upper cord by twisting it with the fingers against the lay.

Step 7. Move the ‘a' strand aside and thread the No. 2 strand under it.

Step 8. In a similar manner, thread the No. 1 under the 'b' strand and the No. 3 strand under the 'c’ strand.

Step 9. Pull each strand tight in turn, toward the throat of the thimble to complete the first tuck.

Step 10. The second tuck is done by threading the No. 1 strand over the 'c' strand and under the ‘a' strand, the No. 2 strand over the 'b' strand and under the 'c' strand, and the No. 3 strand over the 'a' strand and under the 'b' strand (see Figure 4).

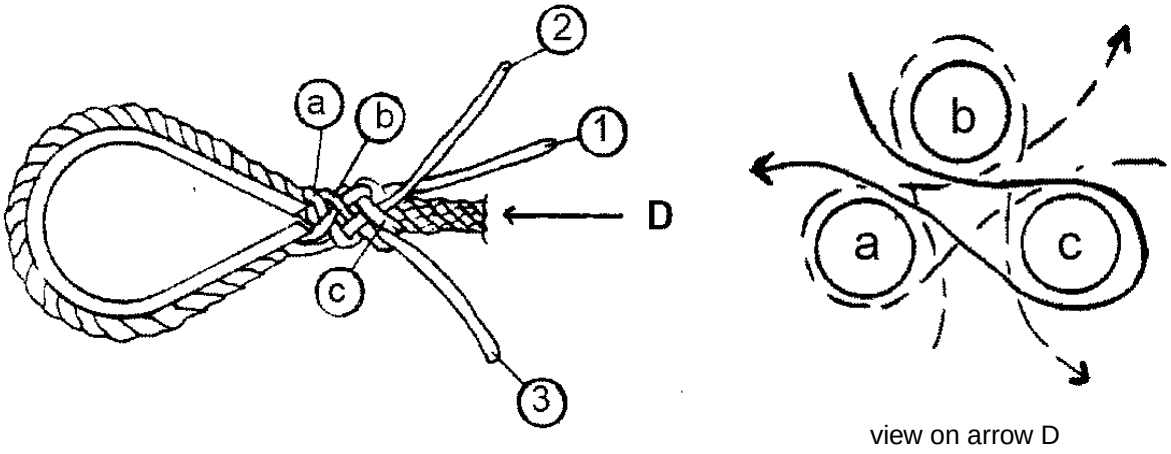

Figure 4 - Second Tuck

Step 11. Pull each strand tight in turn, toward the throat of the thimble,

Step 12. Complete two more tucks, in a manner similar to that described above, to give four tucks in all.

Step 13. Using a suitable adaptor, install the assembly in the winching device on the cable assembling bench and subject it to moderate tension.

Step 14. Bend the points of the thimble back to their original position.

Step 15. Trim the strand ends to different lengths and wrap with masking tape to secure the ends against the cord in such a manner as to produce a fairly smoothly tapered section (see Figure 5).

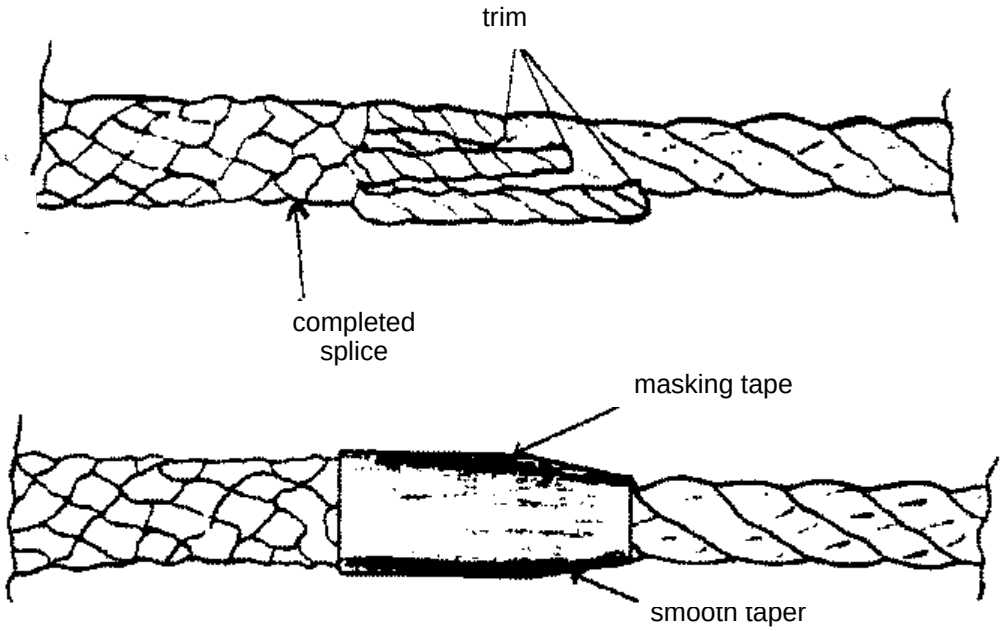

Figure 5 - Terminating the Splice

Step 16. Wrap the splice for its full length with braided cord, inserting the end back through the last four wrappings as shown in Figure 6.

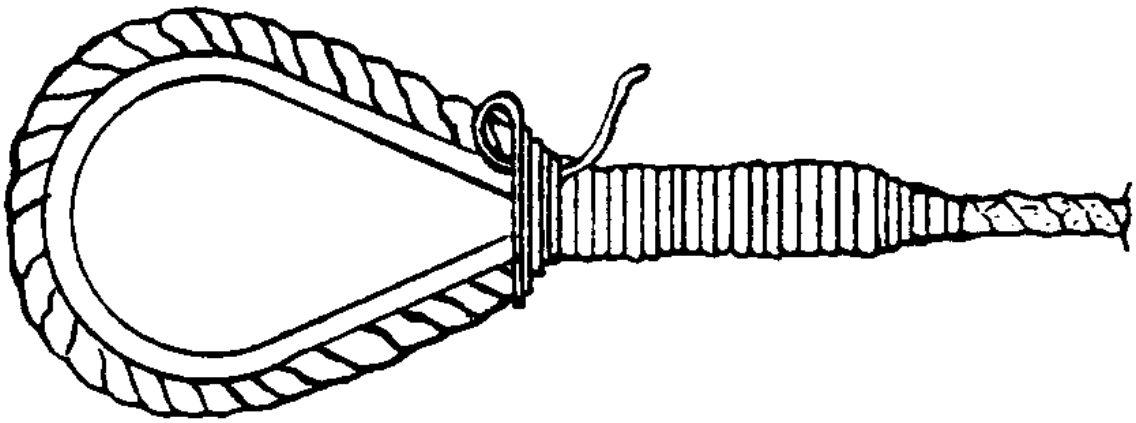

Figure 6 - Finishing the Splice

Step 17. Remove the assembly from the winching device and pound the splice with a plastic mallet to relieve stresses and to produce as symmetrical a splice as possible.

Step 18. Apply two thin brush coats of Chem Seal CS7707 to the finished area. Allow the first coat to air dry for approximately 30 minutes at room temperature before applying the second coat. Chem Seal CS7707 will be dry to the touch after 30 minutes at 75 ± 5°F, but a minimum of 3 days (72 hours) at 75 ± 5°F is required for full cure.

5.4 Clean-Up

5.4.1 Clean brushes according to PPS 31.17 immediately after use.

5.5 Proof Loading

5.6 Subject each spliced cord to the proof load specified on the engineering drawing.

5.7 Identification of Splices

5.8 Identify each spliced cord assembly with a paper tag including the part number secured by cellulose adhesive tape.

6 Requirements

6.1 The thimble must be of the specified size and tightly enclosed within the loop.

6.2 The splice must be approximately symmetrical.

6.3 There must be no evidence of loose strands.

7 Safety Precautions

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

8 Personnel Requirements

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