



SERGING OF AIRCRAFT CARPET EDGES

- Issue 2
- This standard supersedes PPS 38.04, Issue 1.
 - Extensive changes and/or deletions have been made at this issue and, therefore, detail changes have not been noted.

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1 SCOPE

- 1.1 This Production Process Standard (PPS) specifies the procedure and requirements for serging aircraft carpets and fabrics.
- 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.

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.

4 MATERIALS AND EQUIPMENT

4.1 Materials

- 4.1.1 Nylon serging thread - DSC 222-5-1 - blue
- DSC 222-5-2 - beige
- DSC 222-5-3 - red
- DSC 222-5-4 - grey
- DSC 222-5-5 - seal



- 4.1.2 Nylon thread - DSC 222-2-1 - bright gold
- DSC 222-2-2 - blue
- DSC 222-2-3 - white
- DSC 222-2-4 - orange
- DSC 222-2-5 - dark blue
- DSC 222-2-6 - grey
- DSC 222-2-7 - seal
- DSC 222-2-S - special orders

- 4.1.2.1 For DSC 222-2-S nylon thread, the manufacturer's colour code number shall be called up along with the DSC part number.

4.2 Equipment

- 4.2.1 Sanwa Serging Machine.

5 PROCEDURE

5.1 General

- 5.1.1 Serging is a border sewn on to carpet edges in order to prevent fraying.
- 5.1.2 Refer to [Figure 1](#) for a general description of a carpet with serged edges.
- 5.1.3 Thread colours for specific carpet colours shall be as specified on the engineering drawing. If serging thread is not supplied for customers special order carpet, use the most suitable colour thread.

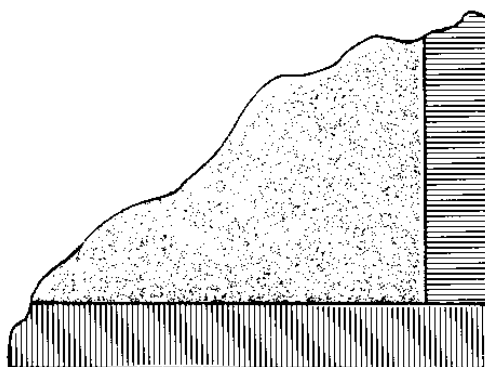


FIGURE 1 - GENERAL DESCRIPTION OF SERGED CARPET EDGE

5.2 Preparation of Serging Machine

5.2.1 Oiling

- 5.2.1.1 Before commencing serging operations, the operator must run the machine slowly for a minute to allow the oil wicks to carry the oil to the bearings.
- 5.2.1.2 The operator must check that the oil wicks are saturated by the flow from the oil reservoir and that they contact the oil holes in the straps.

5.2.2 Needle

- 5.2.2.1 The needle shall centre in the front end of the throat plate needle slot.
- 5.2.2.2 At its highest position, the needle shall be 1 1/2 inch above the top of the needle plate (see [Figure 2-A](#)).
- 5.2.2.3 Tighten the stitch such that the stitch purl is located firmly on the underside of the carpet as shown in [Figure 2-B](#).
 - 5.2.2.3.1 Where the stitch is either loose or too tight, adjust the amount of needle thread pulled into the stitch by changing the needle thread tension.
 - 5.2.2.3.1.1 Raising the needle frame eyelet will increase the needle thread tension while lowering it reduces the needle thread tension.
 - 5.2.2.3.1.2 The greater the needle thread tension, the lower the amount of needle thread pulled into the stitch.

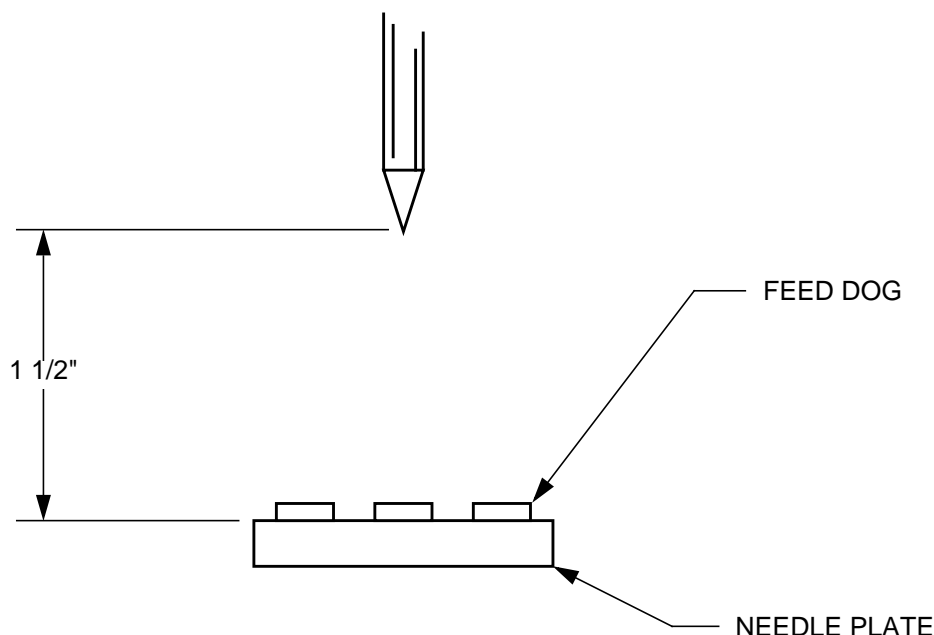


FIGURE 2A - NEEDLE POSITION

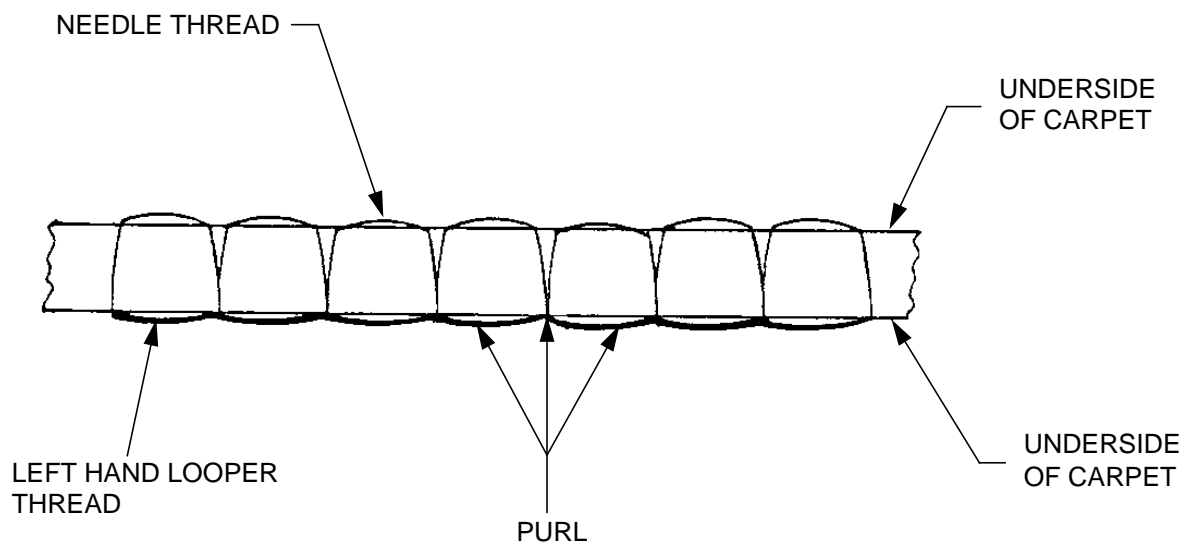


FIGURE 2B - PURL LOCATION

5.2.3 Left Hand Looper

- 5.2.3.1 In order to adjust the left hand looper, the presser feet, cloth plates, and feed dog must first be removed.
- 5.2.3.2 The left hand looper gauge shall be set to 1/4 inch. The looper gauge is set when the looper is at its farthest point of travel to the left (see [Figure 3](#)).
 - 5.2.3.2.1 This adjustment is accomplished by raising or lowering the ball joint in the left hand looper slot. Raising the ball joint decreases the looper gauge and lowering it increases the looper gauge.
- 5.2.3.3 The left hand looper shall also be set up so that it is adjacent to the back of the needle without deflecting it.
 - 5.2.3.3.1 This adjustment to the left hand looper is made by loosening the two screws in the lower rocker.
- 5.2.3.4 To provide tight stitching on the underside of the carpet, the left hand looper thread shall tighten as the left hand looper moves to the end of its travel to the right.
- 5.2.3.5 Increase or decrease the tension of the left hand looper thread by rotating the left hand looper thread control take-up.
 - 5.2.3.5.1 Rotating the take-up clockwise will increase the left hand looper thread tension, while rotating the take-up counter-clockwise will decrease the left hand looper thread tension.

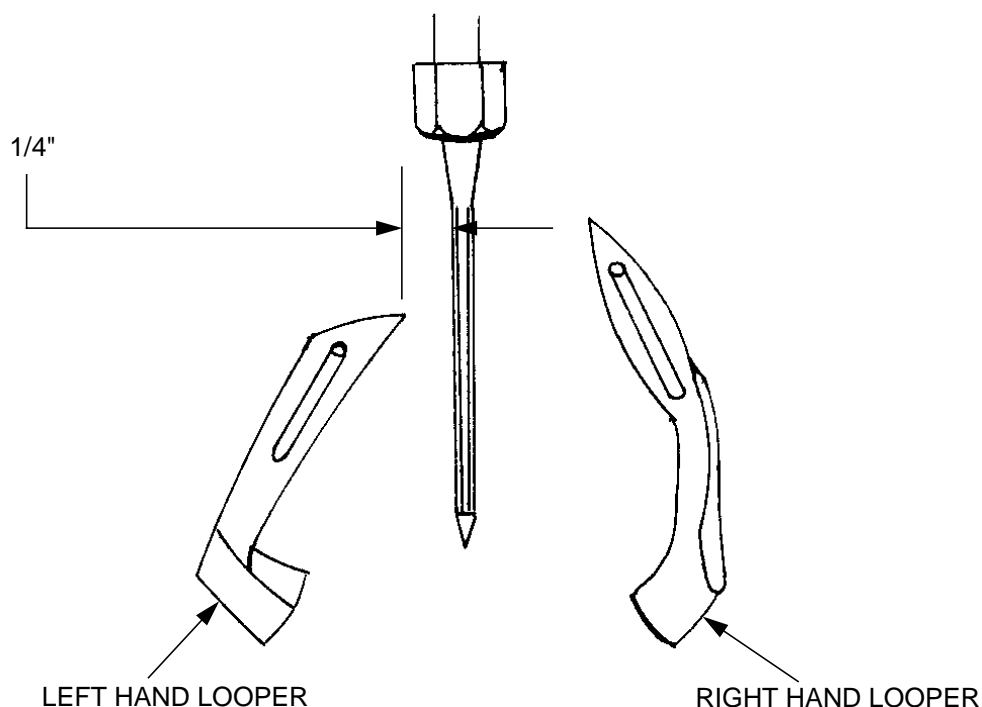


FIGURE 3 - LEFT HAND LOOPER POSITION

5.2.4 Right Hand Looper

- 5.2.4.1 In order to adjust the right hand looper, the presser feet, cloth plates, and feed dog must first be removed.
- 5.2.4.2 The right hand looper gauge shall be set such that the point of the right hand looper passes 0.640 inch to the left of the centre of the needle when the looper is at its extreme left position (see [Figure 4](#)).
 - 5.2.4.2.1 The looper gauge of the right hand looper is controlled by moving the looper drive lever on the cross shaft. To increase the looper gauge the lever is rotated clockwise and to decrease the gauge the lever is rotated counter-clockwise.
 - 5.2.4.2.2 Care shall be taken when tightening the screws on the looper drive lever that there is no end play in the cross shaft. This is done by pushing forward on the cross shaft while setting the looper drive lever tight up against the casting.
- 5.2.4.3 The right hand looper shall pull the thread into the stitch to form a close fitting border on the carpet edge.
 - 5.2.4.3.1 Adjust the amount of right hand looper thread pulled into the stitch by rotating the right hand looper take-up.



- 5.2.4.3.1.1 Rotating the right hand looper take-up clockwise pulls more thread into the stitch, while rotating it counter-clockwise pulls less thread into the stitch.
- 5.2.4.3.1.2 Care shall be taken that the left hand looper gauge is not changed when the nut is loosened to adjust the right hand looper.
- 5.2.4.4 The right hand looper shall also be set such that as it moves to the right it passes between the needle and left hand looper.
- 5.2.4.4.1 The distance between the needle and the right hand looper shall be approximately equal to the distance between the left hand looper and the right hand looper.
- 5.2.4.4.2 The adjustment is made by moving the looper shaft or sliding block. Moving the block upward brings the looper closer to the needle while moving it downward brings the looper closer to the left hand looper.

5.2.5 Stitch Length

- 5.2.5.1 The number of stitches per inch shall be set to 15 - 18 stitches per inch.
- 5.2.5.2 The number of stitches per inch is changed by adjusting the stitch length. The shorter the stitch length the greater the number of stitches per inch. This adjustment is made as follows:
 - Step 1. Loosen the stitch regulator nut on the side of the feed rocker (see [Figure 5](#)).
 - Step 2. Raise the feed driving arm to shorten the stitch, lower it to lengthen the stitch.

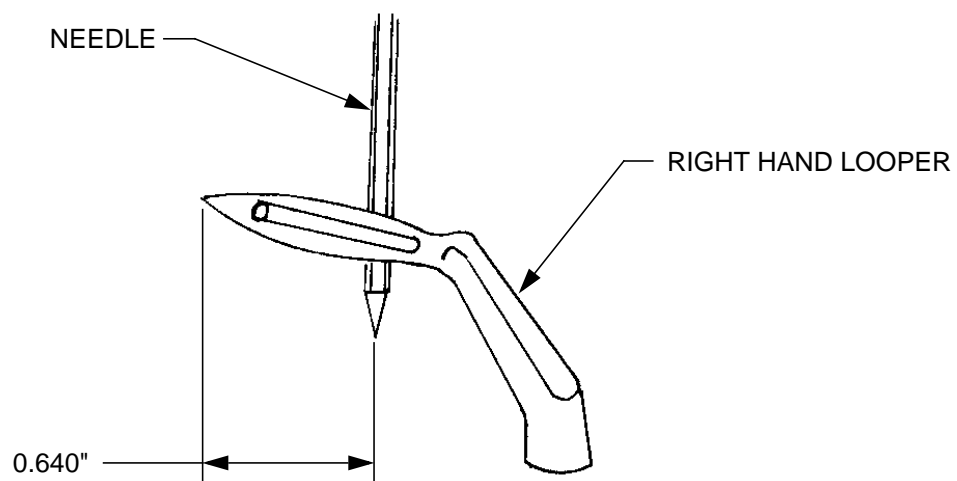


FIGURE 4 - RIGHT HAND LOOPER POSITION

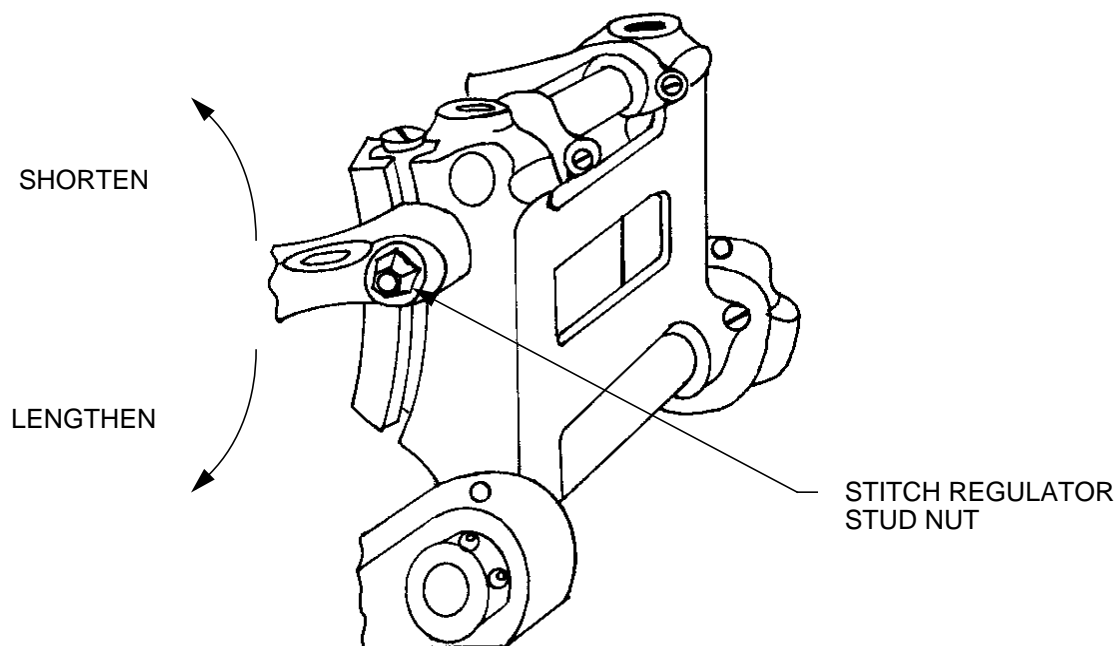


FIGURE 5 - STITCH LENGTH ADJUSTMENT

5.2.6 Edge Guide

5.2.6.1 The edge guide shall be set 5/16 inch from the needle (see [Figure 6](#)).

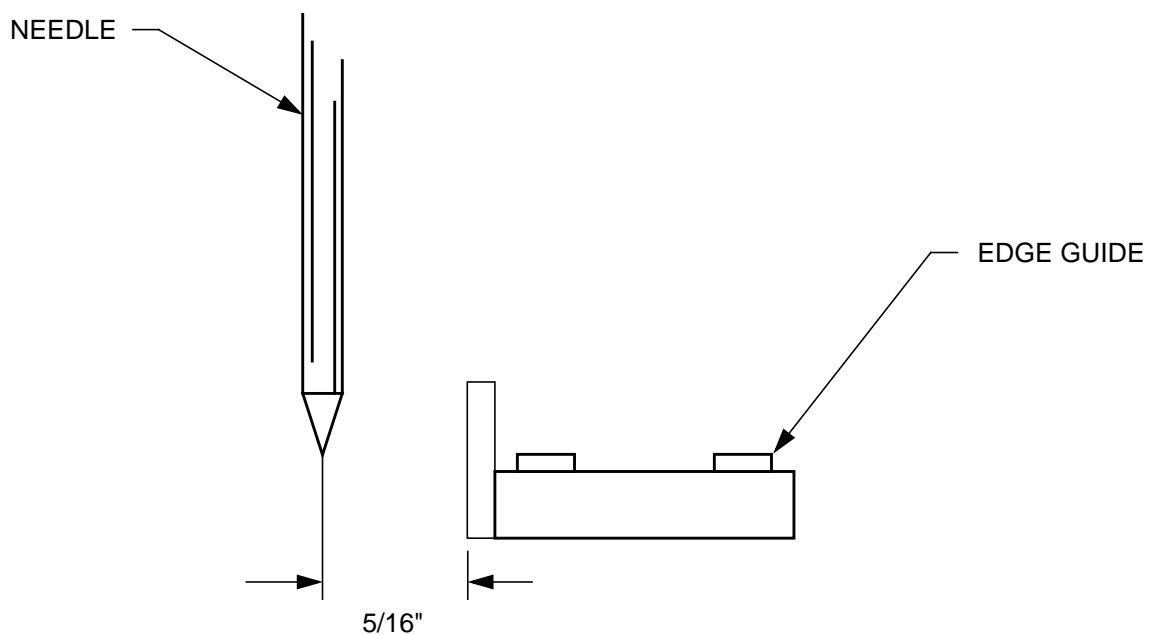


FIGURE 6 - SETTING SERGING WIDTH



5.2.7 Threading

5.2.7.1 Thread the Sanwa serging machine as shown in [Figure 6](#).

5.3 Serging

5.3.1 The operator shall direct the material along the edge guide as it is fed into the machine, ensuring that the material does not wrinkle or overlap.

5.3.2 The speed of serging shall be controlled by the operator by means of the foot pedal.

6 REQUIREMENTS

6.1 The serged border shall have 15 - 18 stitches per inch.

6.2 The width of the serging on the carpet or fabric edges shall be approximately 5/16 inches.

6.3 The carpet serging shall be tightly fitted around the edge of the carpet.

6.4 The stitching on the face and underside of the carpet shall be tight and even.

6.5 The colour of the threads for the specific colour of carpet shall be as specified on the engineering drawing. If serging thread has not been supplied for customers special order carpet, use the most suitable thread.

7 SAFETY PRECAUTIONS

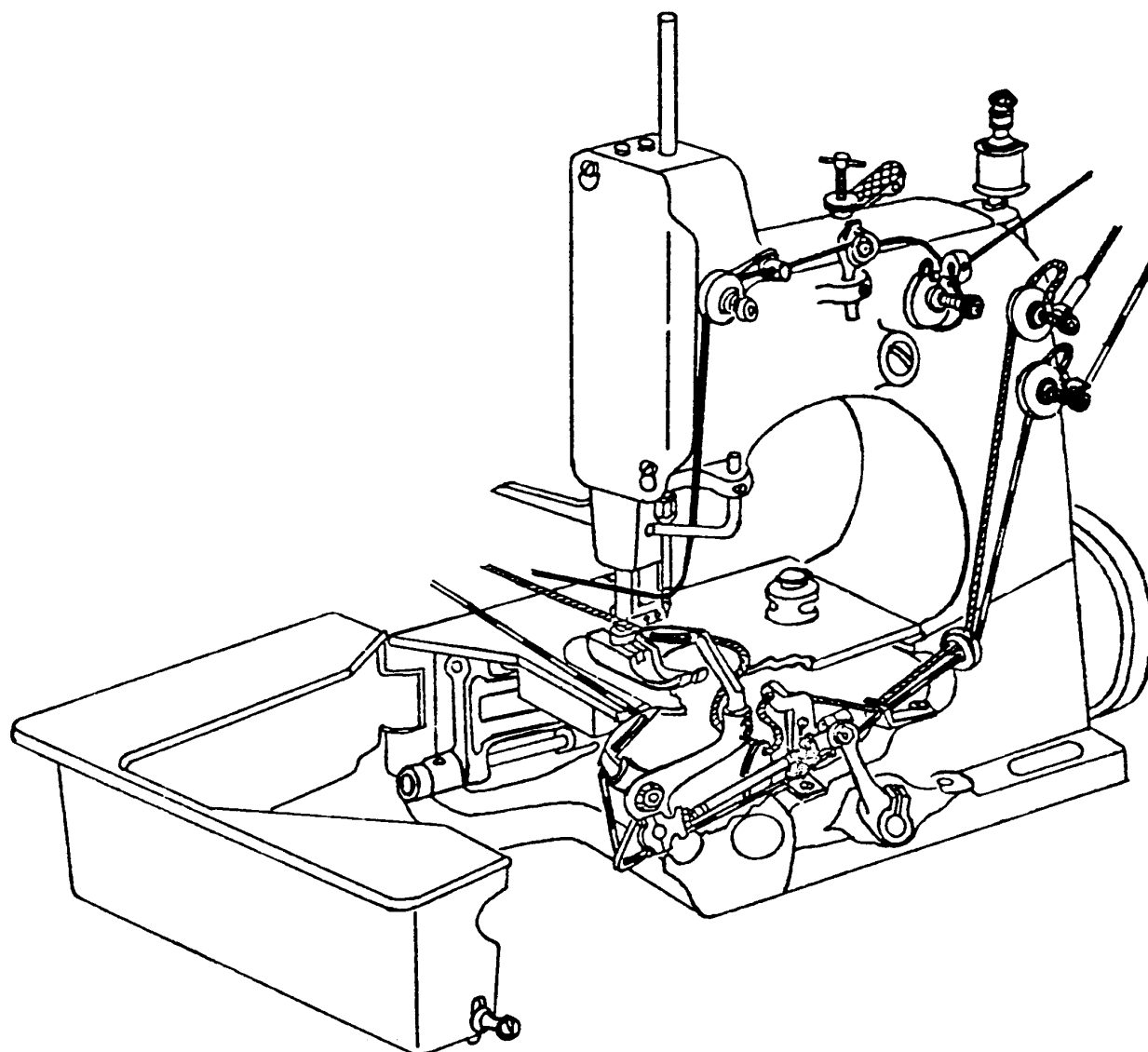
7.1 *Take care when placing fingers near the moving parts of the machine.*

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for serging aircraft carpets and fabrics must have a basic understanding of the procedure and requirements as specified herein and must have exhibited their familiarity to their supervisor.

9 MAINTENANCE OF EQUIPMENT

9.1 The operator must ensure that there is oil remaining in the oil reservoir.





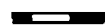
-  Nylon thread, DSC 222-1
-  Nylon serging thread, DSC 222-5
-  Nylon thread, DSC 222-1

FIGURE 7 - THREADING DIAGRAM