

# ABOVE-KNEE IMMEDIATE POSTSURGICAL FITTING BELT <sup>a</sup>

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## INTRODUCTION

A belt, comprised of four separate sections, has been developed for above-knee postsurgical fitting. The four sections are made independently which makes construction easier, and the materials used are usually on hand or easily obtainable. The belt is narrower and weighs less than the conventional belt. It is adjustable for both left and right amputations and has a 12-in. adjustment to accommodate varying waist measurements.

Parachute cord traveling through polyethylene tubing and secured to eyelets on the belt is substituted for the customary cable with cable housing, and buckle attachments. This increases patient comfort without compromising the function or suspension of the rigid dressing.

The four sections which make up the belt are as follows: 1. an apron of  $\frac{1}{8}$ -in.-thick felt, reinforced at the waist level and provided with belt loops; 2. a section of webbing which forms the back part of the shoulder strap; 3. a front section of the shoulder strap; 4. a separate belt that is guided through the loops of the apron and shoulder strap.

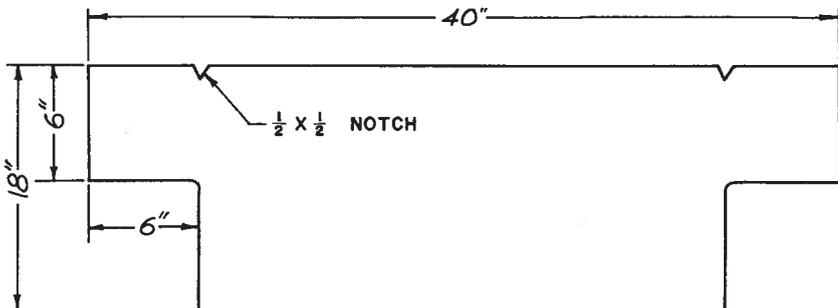


FIGURE 1

<sup>a</sup> Based on work performed under VA Contract V1005M-1079. Robert G. Thompson, M.D., Responsible Investigator; Edward C. Grahn, B.S.M.E., Director, Prosthetic Research and Evaluation.

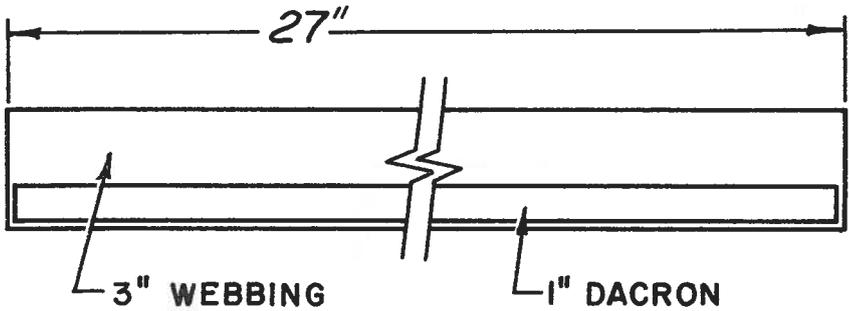


FIGURE 2

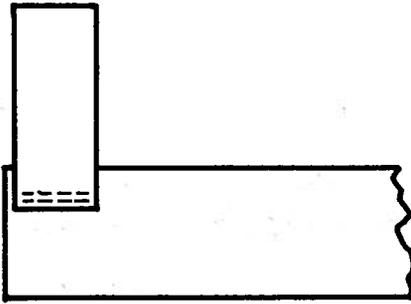
### CONSTRUCTION

Using  $\frac{1}{8}$ -in.-thick white padding felt, cut out a section to the dimensions shown in Figure 1. Cut a 27-in. length of 3 in. nonelastic webbing. (If 3 in. webbing is not available, two sections of 2 in. webbing may be overlapped and sewn to the correct dimension.) Sew 1 in. Dacron webbing along one edge of the 3 in. webbing to reinforce this section (Fig. 2). Later, eyelets will be placed along this edge. Turn the section of webbing over so that the Dacron strip is facing downward and toward you. Belt loops made from 2 in. webbing are to be sewn onto the 3 in. webbing. The loops should allow a belt  $1\frac{1}{2}$  in. wide to pass through with relative ease. One belt loop should be sewn at either end and two loops sewn butting one another in the center, leaving spaces of  $9\frac{1}{2}$  in. on either side. These belt loops are made secure by sewing the top part with the material away from you and stitching  $\frac{1}{2}$  in. down from the top edge (Fig. 3a). Then reflect the 2 in. webbing back toward you and cross and box stitch the lower part, leaving approximately  $\frac{1}{4}$  in. of material on top of the loop (Fig. 3b).

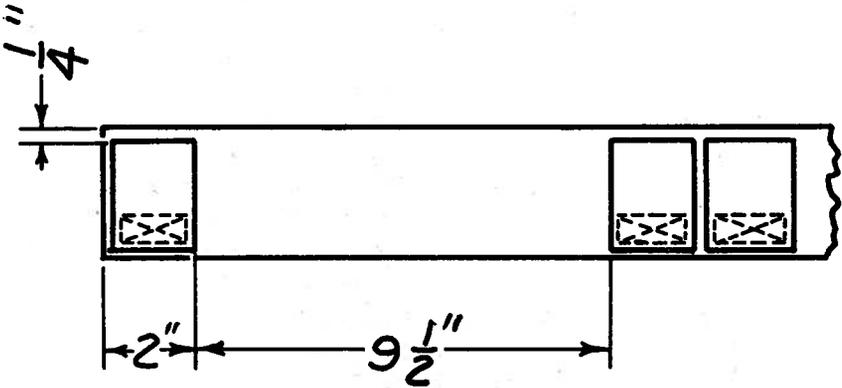
This section is now ready to be sewn onto the felt. This is done using a technique similar to that used in lining the standard below-knee thigh lacer. Place the felt centrally *on top* of the webbing section, the edges of both pieces parallel. Sew both pieces together about  $\frac{1}{8}$  in. down from the top. When this is done the felt can be turned back under the webbing section to create a comfortable rolled edge.

To finish this section, sew the webbing and felt together in the spaces between the belt loops. Keep the stitching above the area that is backed by the strip of Dacron. Finally, seven eyelets should be placed  $1\frac{2}{3}$  in. apart along the section that is reinforced with Dacron (Fig. 4).

Shoulder straps can be made from either  $1\frac{1}{2}$  or 1 in. width, nonelastic webbing. The *back section* consists of a length of webbing 48 in. long. The last  $3\frac{1}{2}$  in. of one end are turned back and sewn as diagramed in Figure 5. This forms a  $1\frac{1}{2}$ -in. loop for the belt with an



(A)



(B)

FIGURE 3

extension of double sewn material in which an eyelet is placed.

The front section of the shoulder strap is made from a 15-in. piece of webbing of the same width as the rear strap. The end is prepared with belt loops, repeating the steps used for the back section. The proximal end receives a safety buckle of the appropriate width. long with a safety buckle sewn at one end.

The separate belt is made from 1½ in. webbing. It should be 42 in.

Assembly of the postsurgical belt becomes apparent when all four sections are completed. First, lay the apron down. Thread the belt from the right through the first loop of the apron, then through the loop of the front section of the shoulder strap. Next thread the belt

Currell: AK Immediate Postsurgical Belt

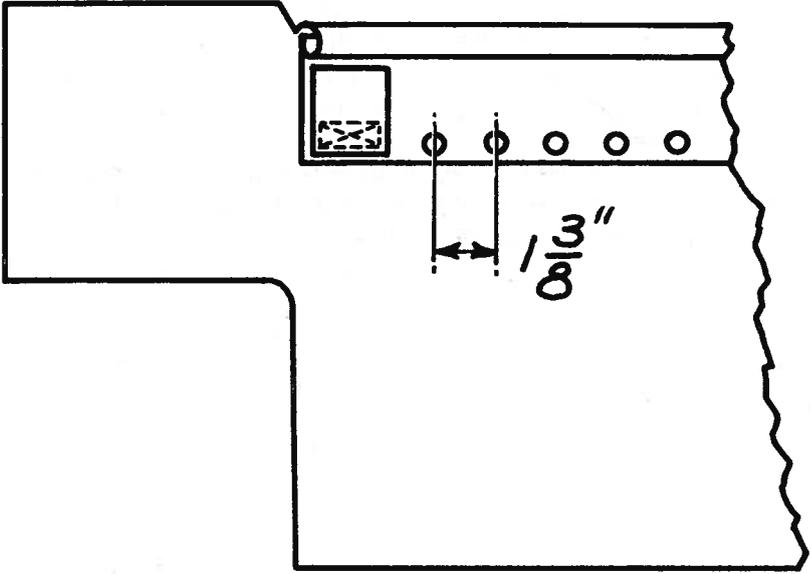


FIGURE 4

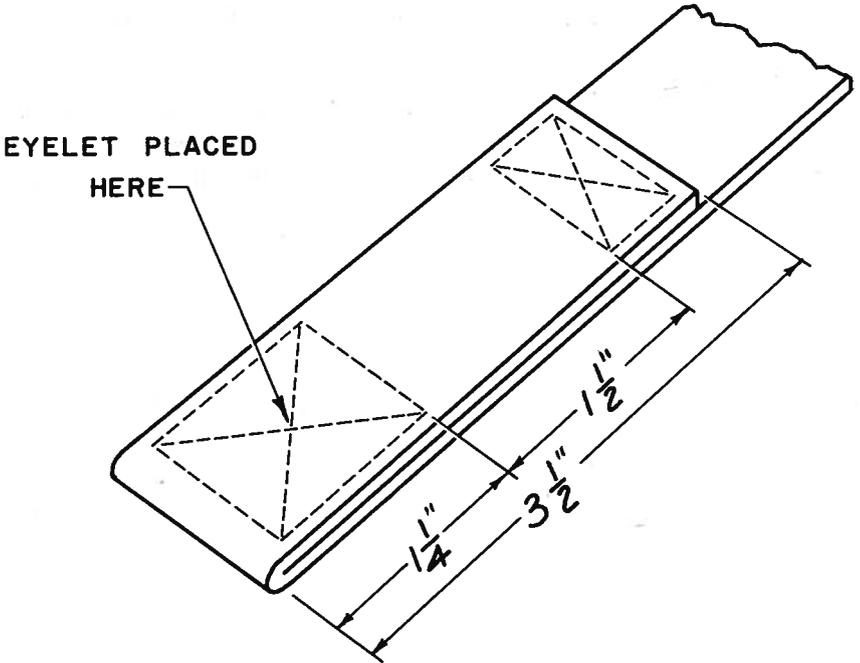


FIGURE 5

through the center loops, then through the loop on the back portion of the shoulder strap, and lastly through the left hand loop on the apron. This assembles the belt for use on a right amputation. For a left amputation the sequence is the same except the parts are assembled from left to right.

The belt is worn with the webbing section above the iliac crest and with the two butted loops superior to the trochanter. The intervals between the loops, where the eyelets are placed, give a selection of attachment places for the parachute cord through a distance of 9½ in. both anteriorly and posteriorly. The anterior and posterior ends of the lateral cord are tied to appropriate eyelets on the belt. The ends of the medial parachute cord are tied to both eyelets in the belt and the eyelet in the end of the shoulder strap.

### **CONCLUSION**

Some of the problems of adequately suspending a rigid dressing are still present, especially on high level above-knee amputations and in cases where the patient is obese. There are, however, many benefits derived from this new belt:

1. There is less abrasion to the patient by substituting parachute cord for steel cable.
2. There is greater selection in placing the cords in a parasagittal plane.
3. The belt is made more comfortable by the elimination of buckles.
4. The reduction in its size makes the belt more comfortable and cooler.
5. This belt can accommodate a large range of waist sizes for both left and right amputees.