

TECHNICAL NOTE

THE ZOROC TECHNIQUE FOR EARLY OR CHECK FITTING AND ALIGNMENT OF LOWER-LIMB PROSTHESES

Zoroc is a nonelastic, resin-filled, plaster bandage made by Johnson and Johnson and is available from all Johnson and Johnson dealers. Zoroc is not expensive, and is handled in the same manner as ordinary plaster-of-Paris bandages, so there is no new handling technique to be learned. Zoroc is available in three widths: 3, 4, and 6 in. A Zoroc socket can be used in the fitting and alignment of a prosthesis so that a laminated plastic socket is not required. This is a method which, in some instances, will permit the prosthetist to cast, measure, modify and set up on an adjustable leg, and to fit and align an amputee in a single day.

The characteristics of Zoroc make it very useful in prosthetics. Zoroc can be handled like plaster bandage, and can be dried rapidly in an oven without impairing its strength. In fact, it can be used in place of a laminated plastic socket for fitting. It can be split along the anteroposterior plane for below-knee sockets and along the mediolateral plane for above-knee sockets for enlarging or reducing the size of a socket. Furthermore, it can be ground down to increase volume or built up with leather, plaster bandage, R.T.V., and other plastics to decrease the volume. Because of its strength and light weight, a Zoroc socket can be used as a check socket for final fittings and aligning. This, in turn, assures a properly fitted laminated socket and eliminates the need for extra thickness to allow later reliefs by grinding and the undesired extra weight this will cause.

The normal course in provision of a prosthesis to an amputee requires at least three appointments:

- 1) Casting and measuring (followed by making the socket and setting up the prosthesis).
- 2) Fitting and aligning (followed by alignment duplication and finishing).
- 3) Delivering the final prosthesis.

The Zoroc Technique can eliminate one appointment by combining Steps 1 and 2.

The materials are:

- 1) Plaster bandage (Orthoflex and/or regular)
- 2) Zoroc plaster bandage
- 3) Parting agent (Tincture Green Soap)
- 4) Ambroid lacquer and brush
- 5) Bucket of water
- 6) Casting equipment

The procedure is:

- 1) Take a cast of the stump.
- 2) Coat the inside of the cast with parting agent and fill with plaster. Modify the positive cast in the normal way. It is not necessary to prepare the cast as meticulously as would be the case for a lamination. Relief can be made with plaster bandage, hard felt, or leather stapled or tacked into place. The smoothing can be carried out after the fitting.
- 3) Coat the modified positive cast with parting agent and wrap with Zoroc plaster bandage that has been *thoroughly* saturated with water. Begin the wrap at the superior one-third of the cast using approximately two layers of material and continue with one layer over the remainder of the cast. If a suction valve is needed, it should be applied at this time.

4) Apply added layers of Zoroc bandage to areas which need to be strengthened, such as joint areas and where the socket might need to be relieved. Zoroc when cured has approximately the same relative strength as that of a laminated polyester and nylon lay-up. Therefore, the thickness of the wrap should be approximately the same as you would have in the laminated socket.

5) Apply layers of Zoroc bandage over the entire cast until the socket is the desired thickness.

6) After the socket has set up, a single cut can be made the entire length of the socket with a cast saw. On below-knee sockets, cut on the posterior side, and on above-knee sockets cut on the medial side.

7) Index the socket with respect to the cast and separate them, being careful not to distort the socket during the process.

8) Bring the cut edges together and hold them in place with a splint of Zoroc bandage, as well as a proximal and distal wrap.

9) Place the Zoroc socket in an oven and allow to cure for 30 min. at 275° F. or 45 min. at 250° F.

10) Remove from oven and allow to cool.

11) Trim and sand the socket edges. Apply a coat of ambroid to the interior surface. In the case of a suction socket, apply a second coat of ambroid to insure a seal as well as to provide a smoother surface. Allow each coat to dry 10 min.

The socket is now ready for attachment to the adjustable leg. The Zoroc socket can be attached to an adjustable leg as easily as a laminated socket can be attached. Suspension devices can be at-

tached with rivets, screws, or "gunk." Once dynamic alignment has been achieved, the adjustable leg should be checked to insure that all adjustments are tight and that it is indexed if it must be broken down into its components.

The limb is now ready to be shipped to the central fabricator for duplication into a laminated socket with the required components and the achieved alignment, or to be finished in one's own facility. If central fabrication is used, be sure to include a completed measurement chart for information regarding components, such as knee-shin setup, foot, swing-phase unit, joints, etc.

If there are any questions, please write or call:

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