

SWIM FIN KIT: CONTENTS

<u>Qty.</u>	<u>Item</u>
5 pages	Instructions, diagrams, and copy of a photograph.
1	Layout worksheet
2	9" pieces, pre-drilled polyflex hinge
5 feet	Surgical tubing
3	5"x 9"x .125" polyethylene plates.
36	Rivets
1	T.R.S. Rivet Tool
1	5"x 9"x .375" white foam padding

SWIM FIN KIT: FABRICATION INSTRUCTIONS

2-5-04

General procedure. These instructions will guide you through the entire layout and construction of the swim fin. Note using this design without using the TRS kit is prohibited. The procedure allows you to design the swim fin completely on paper **first** and then transfer your design to the enclosed components for fabrication. Don't hesitate to call us at 1-800-279-1865 if you have fabrication questions.

Please refer to the corresponding illustrations, for each of the following Steps, at the back of these instructions!

- Step 1. Trace stump profile along center-line of fabrication layout sheet. Axis of radius and olecranon should align as close as possible with center-line. Arm should be placed ventral side down on paper ("palm down") for tracing and pencil should be kept vertical (perpendicular) to paper for an accurate profile. For short BE, flex forearm slightly (30 degrees) and then trace.
- Step 2. Draw two "hinge" center-lines on or immediately parallel to the arm profile. These center-lines will designate where the hinges are positioned on either side of the arm.
- Step 3. Sketch outline of the "support plate", .187-.250" (max.) in from center-line of each hinge. For a short BE, 4-5" in length or less, construct support plate past elbow and extend proximally 3-4" along humeral center-line, then round off plate (see illustration of Short BE design). For longer forearms end the support plate approximately 2" distal of the olecranon. At stump distal end round off plate .187-.250" in from (inside of) profile line.
- Step 4. Reinforcing tabs. For short BE sketch in one tab on each side of plate. For longer BE sketch in two or more tabs on each side of plate. These tabs prevent fins from hyper extending during the power stroke. Tabs should extend at least 1" from the support plate so as to overlap the hinge and fin. Tab width should be .750" or wider and "radius" into support plate. (See illustrations)

Step 5. Sketch fins on either side of arm. Fin edges should be drawn .125-.187" from hinge center-line. For fin shapes and sizes see examples. It's better to construct the fins oversized at first, so you can cut them down rather than have them too small and have to reconstruct them. Do not extend fins more than two inches past distal end of stump.

Step 6. Using a hinge as a template lay it down along the hinge center-line and mark rivet holes on either side of support plate and on each fin. Note: Use at least 3 rivets for each side of each hinge. Add more if additional strength is needed. Rivet holes on fins and support plate should be approximately 7/16" from center-line of hinge. Note the hinge is **directional**. Deeper groove goes on underside of fin. Also, hinge should not extend distally beyond arm although fins may. Align hole placement so that a hole exists close to each end of the support plate for strength.

Trace support plate, fins and accompanying hole patterns onto the 5"x9" plastic sheets(provided). Identify fins and hinges as to medial or lateral and their proximal ends.

Hint! If you make two photo copies of the finished drawing you can cut out the components and paste (spray mount) them onto the plastic sheets directly for easier cutting, drilling, etc.

Step 7. Cut out support plate, fins and hinge and drill appropriate rivet holes using a 1/8" drill bit. Lightly radius/buff edges of the support plate and fins. Round off sharp edges of each hinge.

Step 8. Rivet hinges to support plate. Remember **hinge is directional is located on the underside of the support plate.** (See diagrams)

Step 9. Rivet fins to hinges using the T.R.S. Rivet Tool provided in the kit. Brace head of rivet against a hard metal surface. Center the Rivet Tool in the rivet hole then strike the tool with a hammer to rivet the two plastic pieces together. Make sure there is no gap between the hinge and the plate during this process. It should only take a couple of hammer blows to roll the edge of the rivet. **Note: fins are installed on the underside of the hinges. (See diagram).**

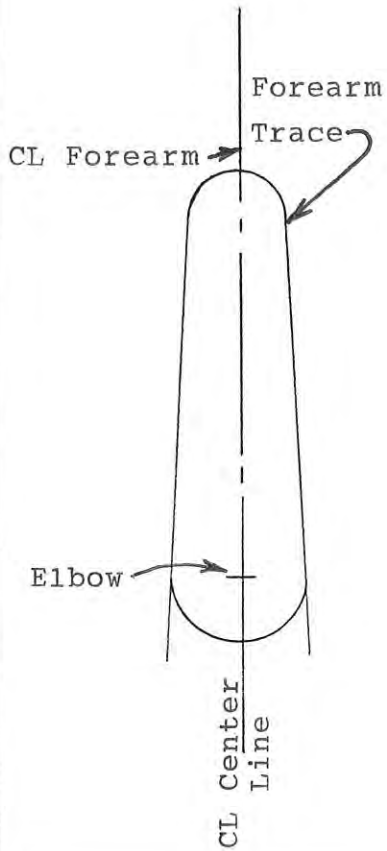
Step 10. Position stump on support plate and choose appropriate locations for surgical tube restraints. Do not place restraints too close to the

distal end of the stump or they will simply slide off. Stay proximal to the end of the stump at least 1.5". Consider crossing over the tubing to create an "x" shaped tube restraint at this end. Mark accordingly and drill ¼" holes near the edges of the support plate to accept the tubing. Install tubing by knotting one end and sliding it through the plate from the bottom side. Loop over arm and down through hole on the opposite side. Tension appropriately for comfort and knot off on the underside of the support plate.

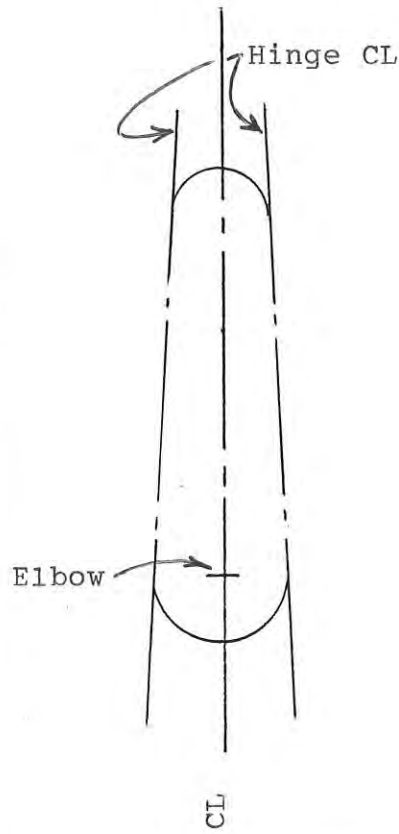
Note: You may wish to install foam pad onto plate prior to size adjusting the tubing. Trace pad to fit and cover support plate *only* (don't extend onto tabs or hinges). Glue pad in place with rubber cement or other adhesive suitable for polyethylene. Self adhesive straps, such as Velcro may be riveted to the support plate as an alternative to the surgical tubing.

Step 11. Allow patient to try on the swim fin and adjust tubing/straps accordingly for comfort and security.

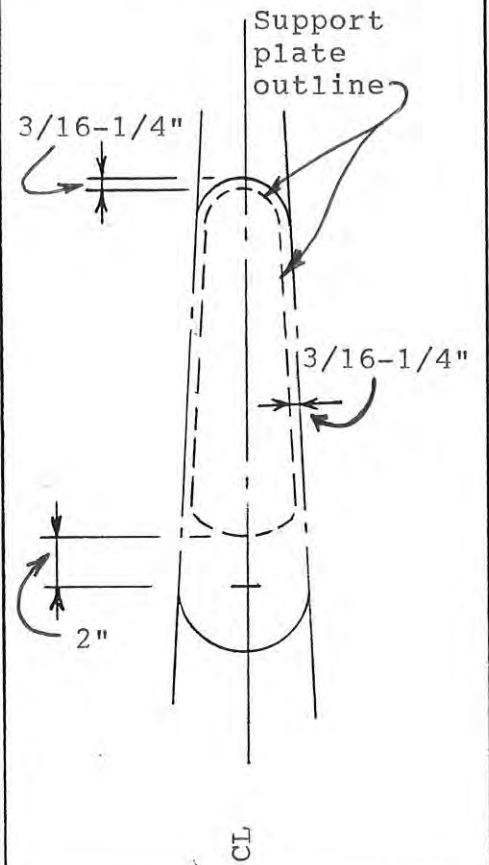
STEP 1



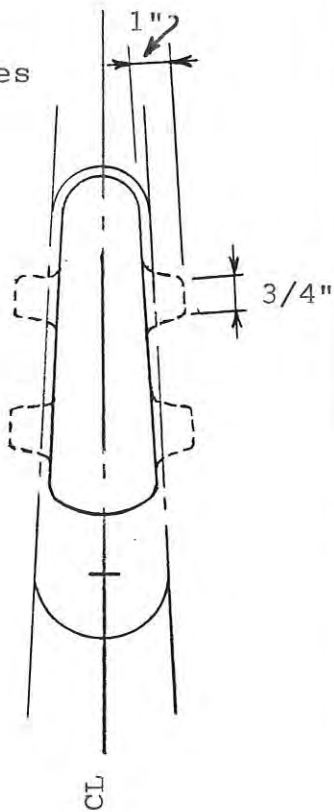
STEP 2



STEP 3

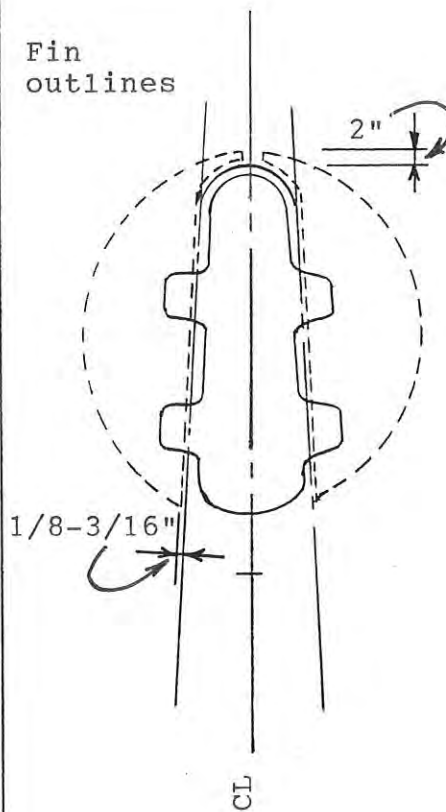


Tab outlines



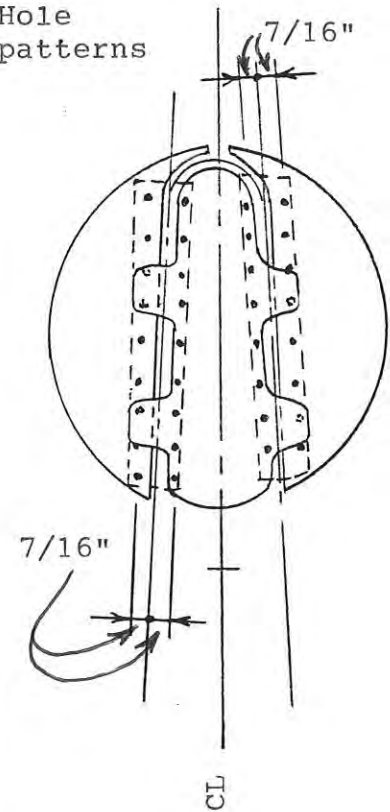
STEP 4

Fin outlines



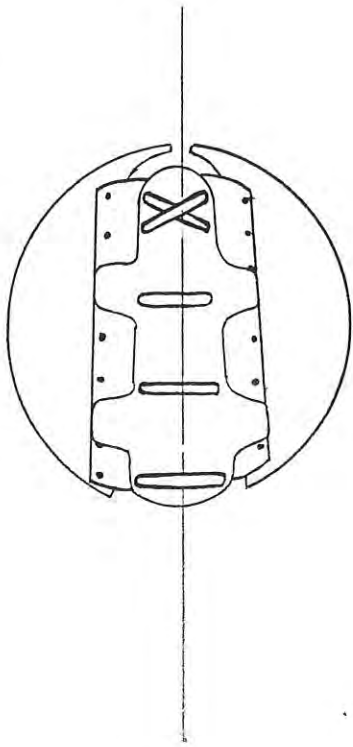
STEP 5

Hole patterns

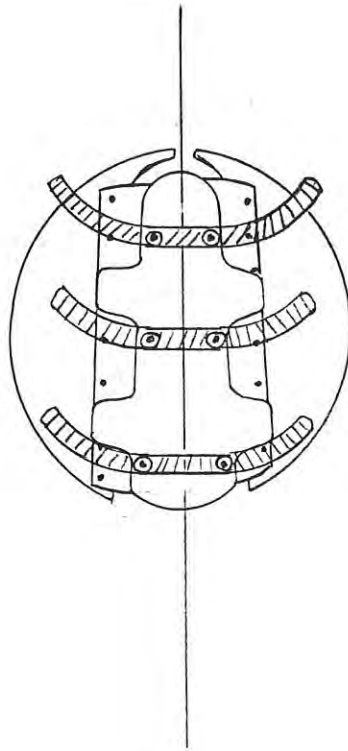


STEP 6

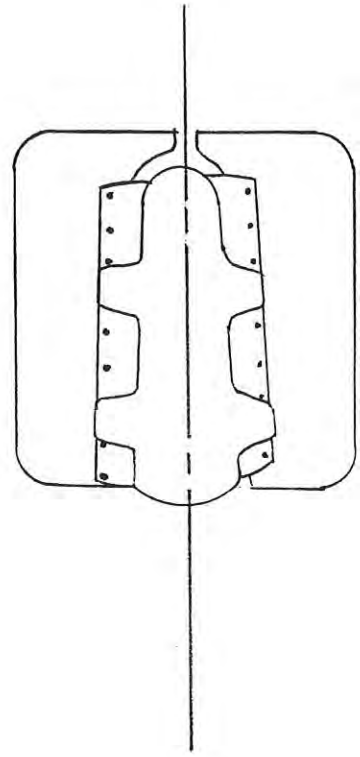
STEP 10
Tubing



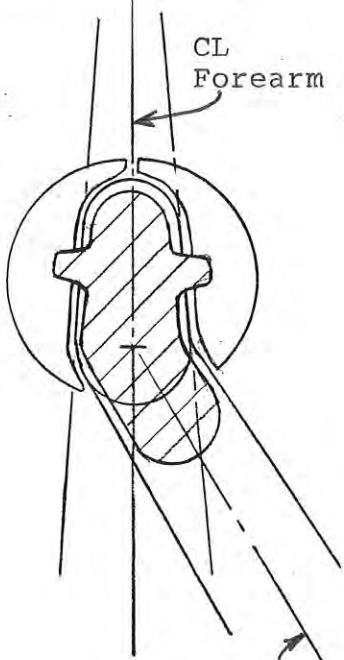
STEP 10
Straps



Alternate Fin Design

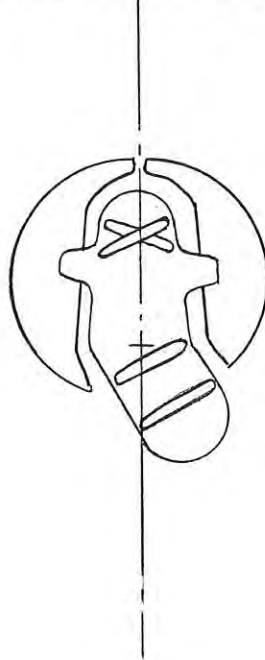


Short BE Design

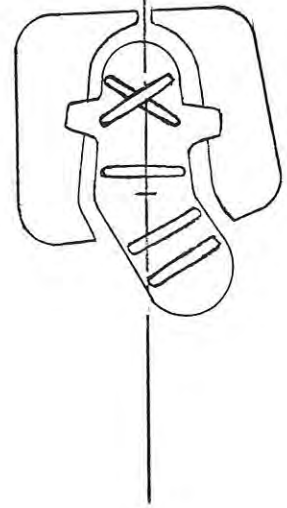


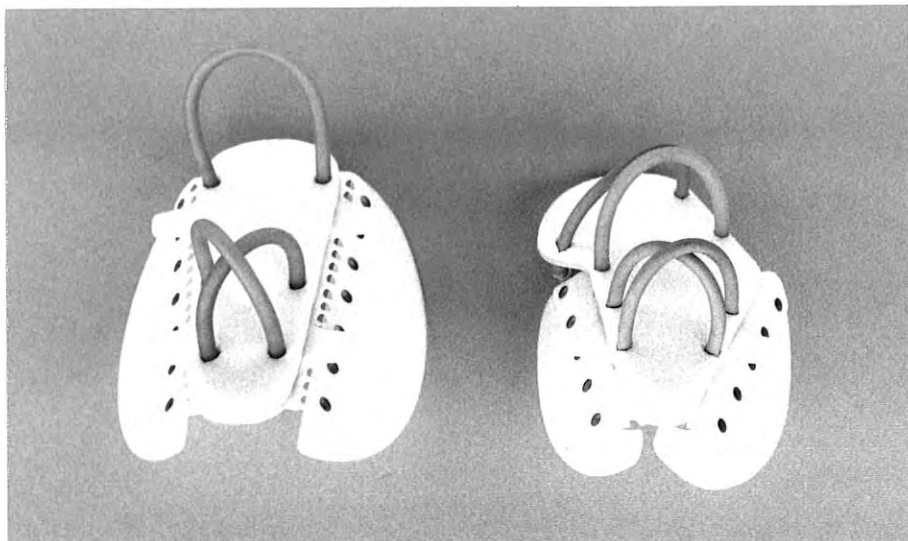
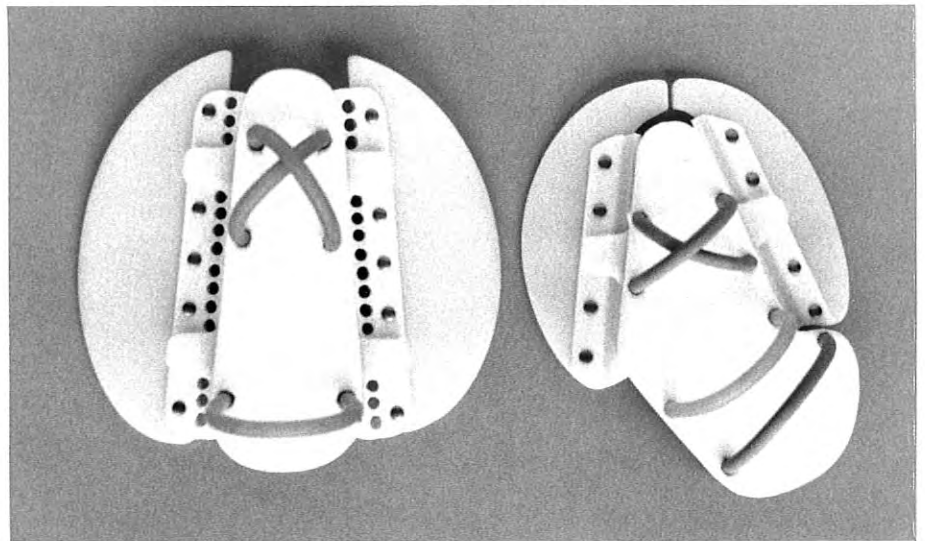
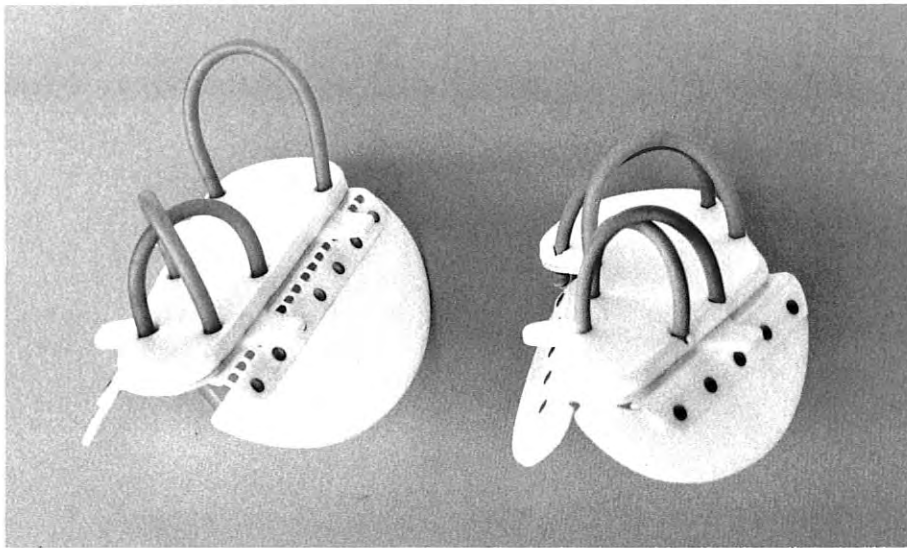
Center line humerus

Short BE Tubing Layout

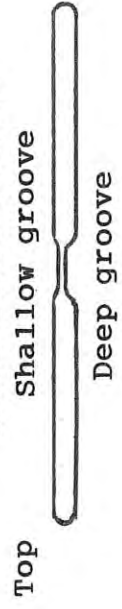


Short BE Alternate
Fin Design
Alternate
Tubing
Layout

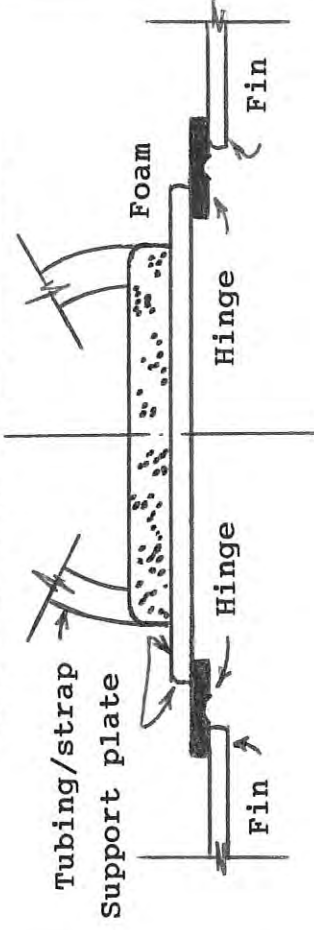




HINGE CROSS-SECTION



SWIM FIN CROSS-SECTIONAL DIAGRAM



Distal end

Centerline arm

Proximal end (Elbow)



T.R.S. INC.
2450 CENTRAL AVENUE, UNIT D
BOULDER, CO 80301-2844 (303) 444-4720
P.O. BOX 19349, BOULDER, CO 80308-2349
FAX (303) 444-5372
1-800-279-1865