

PolyCar-C™

REINFORCING APPLICATIONS

RECIPROCATING GAIT ORTHOSIS

ANKLE - FOOT ORTHOSIS

PDC, PDA & DORSIFLEXION ASSIST
ANKLE JOINT ASSEMBLIES

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Reinforcing

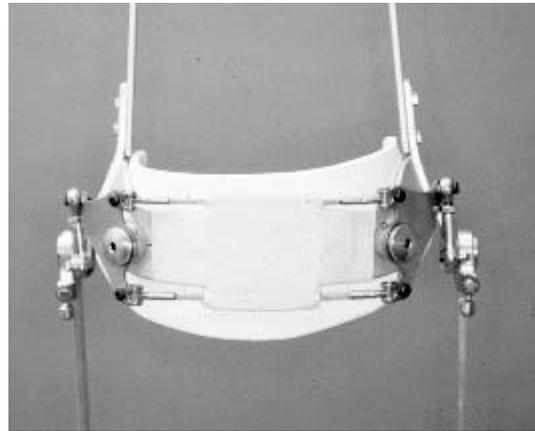
HORIZONTAL RECIPROCATING GAIT ORTHOSIS

Prepared Materials:

1. Pelvic model with Pe-Lite™ and nylon tricot covering.
2. Pattern for PolyCar-C™
3. First piece of copolymer (inner layer).
4. Fish net.
5. Pattern and PolyCar-C™ unidirectional piece cut out with backup 1/8" copolymer piece (1/4" oversize).
6. Second piece of copolymer (outer layer).

Equipment Required:

Vacuum source - Drape forming adapter -
Large scissors- Insulated gloves

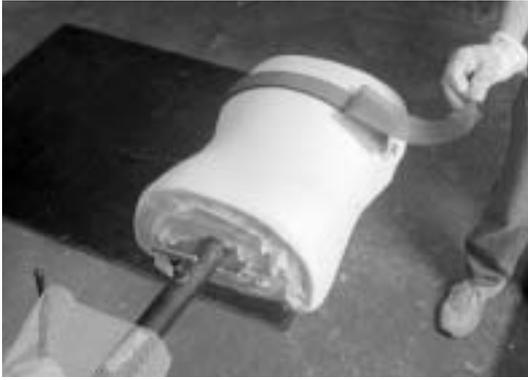


A. Cover model with stockinette. Attach hip joint bars allowing adequate space for composite and a layer of copolymer. Layout oval pattern for PolyCar-C™ band to extend to just behind hip joint bars. Cut PolyCar-C™ exactly as indicated by the pattern layout. Using the same pattern, cut a piece of copolymer 1/4" larger than the perimeter of the PolyCar-C™.

Note:

In forming the pelvic girdle, speed and coordinated action of those involved is essential for a proper bond between the three layers.

B. Position all the plastic along with the PolyCar-C™ and attached 1/8" Copolymer in the oven at the same time. The PolyCar-C™ must be on a separate piece of Teflon. Heat oven to 400°F.



C. Position heated PolyCar-C™ and backup 1/8" copolymer piece on the model and peel away the Teflon backing.



D. Cover with the first piece of copolymer.



E. To evacuate all air between the first and second layer of copolymer, place a covering of fish net on top of the first piece of copolymer.



F. Quickly and tightly attach the hip joint hardware to the hip joint spacer.



G. Immediately vacuum form the last piece of copolymer over the entire model.



H. Cool with air (optional).

Reciprocating Gait Orthosis

ROCKER BAR WITH POLYCAR-C™

Prepared Materials:

1. Pelvic model with Pe-Lite™ and nylon tricot covering.
2. Pattern for PolyCar-C™.
3. Unidirectional piece of PolyCar-C™ cut to pattern with 1/8" copolymer piece cut 1/4" larger all around than PolyCar-C™.
4. First piece of copolymer (inner layer.)
5. Fish Net.
7. Second piece of copolymer.

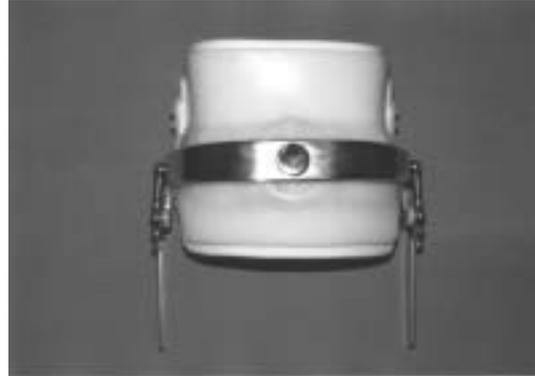
With pelvic model prepared as usual for RGO; Layout pivot hole in sacral area by measuring 2" above hip joint center and drilling 90o to surface a 3/8" hole. Cover model with stockinette. Mold Pe-Lite™ and secure anterior to midline. Cover Pe-Lite™ with nylon tricot. Cut a 3/8" hole in Pe-Lite™ for the pivot hole. Attach hip joint bars allowing adequate space for PolyCar-C™ composite and a layer of copolymer. Layout a pattern for PolyCar-C™ band to extend to just behind hip joint bars (3" width for medium and 4" width for large size.) Cut PolyCar-C™ exactly as indicated by the pattern layout. Using the same pattern, cut another piece of copolymer 1/4" larger than the perimeter of the PolyCar-C™ layout. Both pieces should be made with a matching 3/8" center hole.



A. With RGO hip joint hardware in place, lay out pattern for unidirectional PolyCar-C™ reinforcement.

Equipment Required:

Vacuum source - Drape forming adapter - large scissors - insulated gloves - holding fixture for PolyCar-C™



Note:

In forming the pelvic girdle, speed and coordinated action of those involved is essential for a proper bond between the three layers.



B. Position the copolymer and anchor plate along with the PolyCar-C™ in the oven at the same time. The PolyCar-C™ must be on a separate piece of Teflon. Heat oven to 400°F.



C. Place heated PolyCar-C™ on cast where outlined & peel away Teflon backing.



D. Attach anchor plate with forming plug. Then cover with first piece of copolymer.



E. To evacuate all air between the first and second layer of copolymer, place a covering of fish net on top of the first piece of copolymer.



F. Quickly and tightly attach the hip joint hardware to the hip joint spacer.



G. Cover with final piece of copolymer and vacuum form.



H. Cool with air (optional).

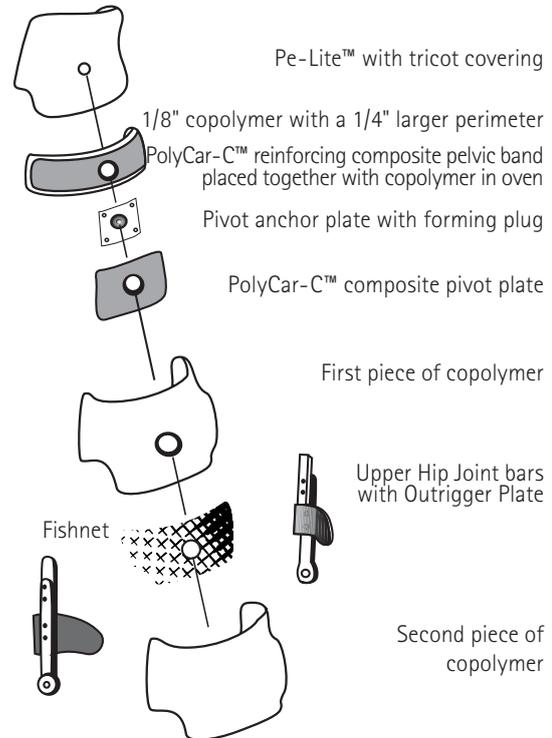
Reciprocating Gait Orthosis

ROCKER BAR WITH POLYCAR-C™

Before starting to form the Rocker Bar band, layout reference lines about 1 1/2" on both sides of the 1/2" diameter center pivot hole. It is important to maintain this 3" area perfectly flat for smooth operation of the thrust bearing pivot. Depending on the configuration of the posterior pelvic area, form the band to provide a space from the plastic of at least 1/4" to 3/8". This endpoint should be just posterior to the hip joint uprights. Final confirmation that proper clearance has been provided can only be determined in the next step, which will permit assembly of the complete thrust bearing pivot and band. Keep in mind the turnbuckle attachment hole should be directly above the attachment hole in the coupling plate (for the large size hip joint this is 7/8" (22 mm) posterior of the posterior edges of the hip joint uprights, 23/32" (18 mm) for the medium size to the center line of hip joint uprights.) These attachment holes, at the level 2 - 2 1/8" above the coupling plate hole, are drilled and tapped after the band has been fully formed.

The profile of the lateral ends of the band generally follows the accompanying sketch. This is for cosmetic reasons since the need for rigidity is minimal in this area.

In preparing the girdle for the Rocker Bar the alignment fixture is removed. A hot knife is well suited for removing the plastic over the fixture.



Following removal of the girdle from the model and the typical trimming of surplus girdle material, the cavity created by the alignment tool must be reduced to a depth of .120 (the combined thickness of the thrust bearing and washers.) Surplus copolymer is best removed by sanding on a wide sanding drum. The next step is cutting a 1 1/8" diameter hole in the back side of the girdle. A hole saw with a .450 or 11.40 mm pilot accomplishes this with little difficulty, but care must be exercised in controlling the depth to just touching the metal face of the pivot plate. It is then necessary to assemble the thrust bearing pivot and band in order to check that adequate clearance has been provided in the rocker arm band.

Reinforcing

THE AFO & KAFO

Prepared Materials

1. Plaster model
2. Pre-cut Polypropylene pieces
3. POLYCAR-C™ ankle inserts
4. Nylon hose
5. Teflon sheet to transport heated inserts from oven

Equipment Required:

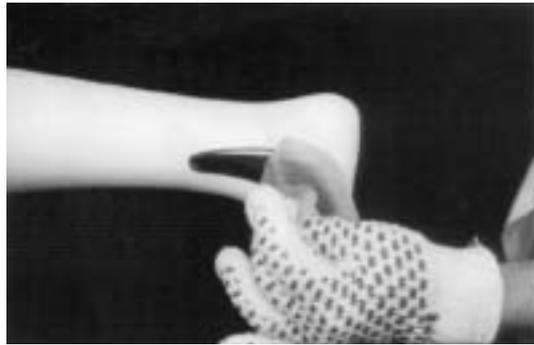
Vacuum source- drape forming adapter #227495 angled or #227497 straight - large scissors - poly adhesive #199448 - insulated gloves.



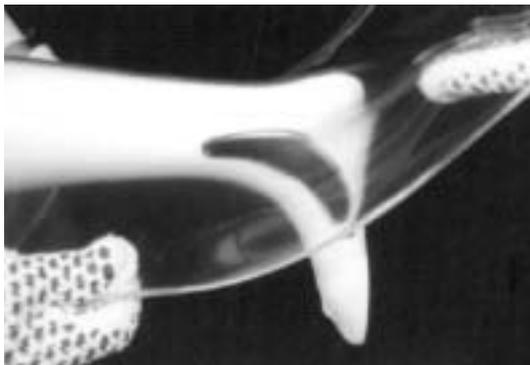
A. Outline the selected ankle insert reinforcements on the centerline of the model and apply adhesive to the area.



B. Place plastic in oven first. Allow plastic to heat until it clears. Immediately place inserts (placed on oversized Teflon cutouts) in the oven. Heat 2-3 minutes or until inserts are pliable.



C. Holding by the Teflon cutouts, place the inserts on the model as marked. Peel Teflon away from the inserts



D. Quickly vacuum form the AFO. It is important that this step take place with minimum delay to assure bonding between the Plastic and the PolyCar-C™.



E. Cool with air (optional). Trim accordingly. The finished AFO should have a smooth interior and exterior surface.

Reinforcing

PDC, PDA, & DORSIFLEXION ASSIST ANKLE JOINT ASSEMBLY

Prepared Materials:

1. Plaster model
2. 2 Pre-cut PolyCar-C™ pieces
3. Nylon Hose
4. PDC Ankle Joint Assembly
Small Kit #020816 or Large Kit #020840
- PDA Ankle Joint Assembly
Small Kit #020892 or Large Kit #020894
- or Dorsiflexion Assist Ankle Joint Assembly
Small Kit #020838 or Large Kit #020836
5. Copolymer

Equipment and Accessories:

- Vacuum source – drape adapter #227495
 angled or #227497 straight – large scissors –
 Poly Adhesive #199448 – Insulated gloves

This procedure includes a simple and efficient means of aligning the ankle joints during fabrication using a disposable alignment kit (#020820 Fig.1) that is included with the joint assemblies.

The 1/2" disposable rod with 3/16" clearance hole should be cut to length to provide the desired ankle clearance and placed in the negative cast prior to pouring the plaster (Fig. 2).

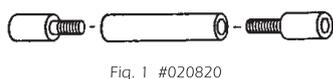


Fig. 1 #020820



Fig. 2

During modification of the positive model the two socket head alignment screws are substituted for the ankle joint screws for positioning the joints on the alignment rod (Fig. 3). The components are contoured to the cast and any space beneath them is filled with plaster or Rapidcure (#199547) to provide intimate contact with the composite during vacuum forming.

The model is covered with nylon hose and the areas under the ankle components are coated with Poly Adhesive. Openings should be made in the hose to provide access to the holes in the alignment rod.

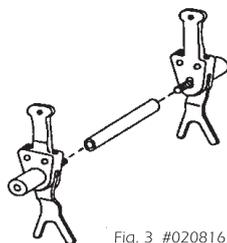


Fig. 3 #020816

Following preparation of the model, a pattern (2 x 4 1/2) is made that is 1/4" oversize around the joint and stirrup with a 3/4" dia. hole for the alignment rod (Fig. 4). Two pieces of PolyCar-C™ .060 are cut out. Pre-cut PolyCar-C™ pieces are available separately (#020802), but are included in all the kits.

The plastic (polypropylene or co-polymer) and metal components are placed in the oven followed 2-3 minutes later by the PolyCar-C™ plates. When PolyCar-C™ is ready for molding and bonding it is soft and glazed.

After the PolyCar-C™ and metal components have been heated sufficiently, it is suggested that the PolyCar-C™ be positioned on the ankle assembly (Fig. 5) and left in the oven for 1-2 additional minutes. This will greatly facilitate transferring both units to the cast with minimal loss of heat. Since good adhesion depends on adequate temperature at the moment of vacuum forming, speed is essential.

Pattern for PolyCar-C^o
Fig. 4

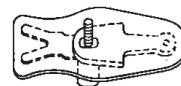


Fig. 5

Place the heated PolyCar-C™ on the cast where outlined; it will adhere to the area coated with the Poly Adhesive.

Vacuum the plastic as rapidly as possible to assure good bonding and encapsulation.

Once the plastic has cooled, remove the plastic over the alignment screw heads to expose them. The alignment screws can then be removed. Finishing can begin by laying out the trim lines as illustrated on (Fig. 6.) We strongly suggest leaving the ankle joint trim line just above the joint nut and screw, and using a hot knife for trimming over metal areas. Similarly, a minimal amount of the stirrup uprights should be exposed on the shoe insert portion. A hot rod should be used to open up the various screw holes.

The AFO can be finished, as usual, from this point.

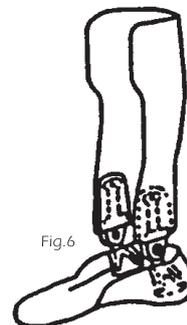


Fig. 6



A. Outline PolyCar-C™ on the Model.



B. Coat the outlined area with Poly Adhesive.



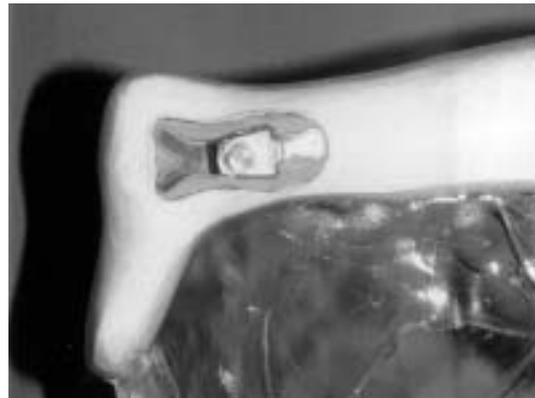
C. Place the plastic (polypropylene or copolymer) and metal components in 400° oven until the plastic clears. Then place PolyCar-C™ into the oven for 2-3 minutes, or until pliable.



D. After heating to approximately 400° F, place the PolyCar-C™ on the ankle joint assembly and replace in oven for 1-2 minutes.



E. Immediately place the heated ankle joint (the PolyCar-C™ assembly) on the cast where it is outlined.



F. Vacuum-form the plastic (polypropylene or copolymer) rapidly to assure good bonding and encapsulation. Cool with air. The AFO is finished as usual from this point.

