MARK FUGIT ORTHOTIC LAB

Orthotic Production Steps – Page 1

Receiving / Log In
Check cast I D & match to order form. Scan for complete patient information & vital statistics. Confirm Doctor / Account information.

Negative Cast Inspection
Examine negative cast or foam impression for deformation and defects. Check for markings locating accommodations.

Worksheet Completion
Transfer doctor's prescription orders into work order format. Choose – orthotic type, shell material, balancing/post material and extrinsic angle, accommoda-tions and top covers.

Cast Bisection
Apply heel bisection to the posterior of slipper casts to determine the angle of forefoot deviation compared to subtalar joint neutral position.

Negative Cast Preparation
Apply patch material to slipper casts as needed. Apply separating media to cast interior to assist negative cast removable. Position negative cast with forefoot wedge to capture forefoot varus or valgus.

Cast Pour
Fill negative cast with liquid dyed-casting plaster. Insert reinforce-ment material to positive cast.

Positive Cast Measuring
Calculate and note the amount of forefoot varus or valgus. Scribe this information on the dorsal aspect of the positive cast.

Positive Cast Identification
Scribe patient name or initials and other pertinent numbering or data on the dorsal aspect of the positive cast.

Negative Cast Removal
Upon hardening of the positive cast the plaster slipper or fomar impression material is removed. The dorsal aspect of the positive cast is ground to remove the meniscus excess.

Positive Cast Diagramming
Locate and mark the bisection of the 1st and 5th metatarsal phalangeal joints and the calcaneal cuboid joint.

Positive Cast Set-up
Drill proximal to the 1st and 5th MPJ bisection relative to the individual foot size and insert balance pegs. Cut the pegs to balance the fore-foot, removing varus or valgus deviation.

Correction Preparation
File positive cast for symmetry and to an acceptable condition to receive plaster cast dressing. Medial Heel Skive technique is done if necessary at this stage.

Cast Correction
Apply lateral expansion. Apply the forefoot platform and file to the height of the balance pegs. Apply the medial filler, determining the longitudinal arch height and contour.

Cast Finishing
Sand the corrected positive cast to a smooth even finish with wet/dry sandpaper.

Positive Cast Labeling
Mark the proximal aspect of the platform at the 1st and 5th mets. Indicate all of the necessary information on the finished positive cast.

Material Cutting
Choose the appropriate shell material according to the work-sheet. Heat and cut to the proper dimension for vacuum forming.

Material Preparation
Apply texture by grinding the dorsal aspect of the shell material as needed. Bevel smooth any sharp edges to prevent damage to the vacuum press bladder.

Shell Forming
Heat and vacuum form the shell material to a close fitting contour over the positive cast.

Rough Grinding
Remove any excess shell material to prepare the shell for finish grinding.

Identification Engraving
Apply proper patient identification and other pertinent information by engraving the shell.

Finish Grinding
Finish the orthotic shell to the proper heel cup depth, length and width. Smooth and bevel all perimeter edges to a fine finish.

Balance & Post Preparation
Grind the plantar heel to establish any extrinsic angle for the heel post. Abrade the heel region if needed to accept the post material and to determine the length of the heel post.

Shell Marking
Mark the finished shell as needed to indicate the positioning of accommodations and designate extrinsic values.

Shell Dimension Capture
The finished shell is traced on the positive cast to preserve the size of the perimeter of the orthotic.

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Balancing / Posting Application

Choose the proper balancing or posting materials and glue onto the finished shell. Contact adhesive is used on each layer on both surfaces allowing dry time before laminating. Apply layers and press onto the shell eliminating any air space for complete adhesion. Pre-grind the perimeter of the materials to ready the orthotic for finishing.

Finish Balancing / Posting

Grind off all excess materials to establish the final balancing or post stance of the orthotic. Grind the perimeter of the device to the proper angles and establish symmetry.

Shell Buffing

Buff the perimeter of the orthotic shell to remove all grind lines establishing a smooth finish.

Heel Caps

Apply as needed any post caps to the plantar surface of the heel: grind excess and buff smooth.

The next three steps of production usually only pertain to rigid acrylic or carbon-graphite shells.

Acrylic Post Application

Establish distal post line and apply acrylic post material. Fixate the device at the required extrinsic angle and work the acrylic material until firm. Before total cure of the acrylic, cut the distal line and any excess material around the heel cup.

Acrylic Post Finishing

Grind the perimeter of the post for proper heel radius and then smooth the plantar surface. If needed grind for post motion.

Polishing

Using a pumice slurry and a cotton buff wheel, polish any exposed surfaces of the device to remove grind lines. This step applies to all Polydur shells and all acrylic posts as well as the perimeter of carbon graphite shells. Secondary abrading of the dorsal shell edge may be necessary for those devices that are to receive a top cover.

Application of Accommodations

During the various gluing stages of production all additional types of accommodations are added. Each attribute is adhered using contact cement and is positioned in the proper location.

Accommodation Grinding

All heel pads, metatarsal pads, dancer's pads, reverse dancer's pads, neuroma pads, arch pads, cuboid pads, balance pads and soft tops are ground smooth to the proper contour for its given application.

Top Cover Application

According to the work order each device's finish top cover material is chosen and cut to the gluing size. Using contact cement the top cover is adhered to the orthotic shell over any accommodations.

Finish Trimming

Each top cover is trimmed to its appropriate dimension. Covers are trimmed either to the length of the shell, to the sulcus or full length. As needed, covers may include a medial flap along the longitudinal arch border or any other special extra abnormal border shape.

Extension Beveling

After the top cover is trimmed, edges of the extension are beveled to a fine finish. Any desired apertures are ground into the plantar surface of the extension.

Orthotic Finishing

Final touch up and removal of debris is done to complete the device. As needed, the shell and top cover are wiped clean or shinned with a cleaning agent.

Quality Inspection

A final comparison of the entire device and its attributes is confirmed with the work order. The identification of the patient and the Doctor are confirmed with the work order and the completed orthotic is placed into a bag with the same patient / doctor information.

These various stages of production may be altered or modified depending upon the particular capabilities and processes in place at any given laboratory. These steps encompass the entire production procedure for a facility that utilizes the traditional methods of complete hand-crafting of orthotics. Some facilities may ad, eliminate, or even consolidate certain steps of production if any type of auto-mated system is utilized. In any orthotic production laboratory each technician is trained to master any given stage of fabrication. Individuals must possess great hand-eye coordination, dexterity, patience, attention to detail and the skill that comes with experience in order to be a part of creating quality orthotics.