KEVIN ORTHOPEDIC

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The Process: From Negative Cast to Ankle Foot Orthotic

Kevin Orthopedic Work Flow of Custom Fabrication of Ankle Foot Orthotics from Negative Cast

When our laboratory receives a patient's cast, our technician scans the order for future use and enters key data into our proprietary software. This includes the patient's demographic information including the patient's name, height, weight, and diagnosis. Also added are specific points of information included in our laboratory form (detailed written order). This includes but is not limited to such information as the type of shell (Solid, hinged, etc.) and a myriad of modifications (see attached form).

The negative cast is then reinforced if necessary with extra layers of materials (plaster or fiberglass) so that the negative casts have the sufficient characteristics required for use in the production of a positive cast (mold). The distal end of the cast is sealed with plaster (if not already done and the seam where cut also sealed. Any areas requiring reinforcement or any dells causing fingerprints will also be reinforced and smoothed out. The casts are submerged into a solution which assists in allowing the negative cast to be separated from the positive mold. The negative is allowed to dry for a sufficient time.

As the negative is drying a serial number is attached to it and the Detailed Written Order to allow for easy identification. The plaster ingredients for the positive are prepped and combined. They are then placed into a mixing bucket with water. Some coloring agents so that the positive and negative can easily be compared by the technician and allow for appropriate adjustments as mandated by the Rx. All is mixed to the correct consistency. The plaster is then poured into the negative. The plaster casts are allowed to dry and harden.

Before the plaster of the positive mold is completely dry the same serial number as on the order form and negative is placed on the positive mold. Once the positive has thoroughly dried, the positive is removed.

Rough edges are smoothed out. A level is used to balance the positive model as per the order. If not balanced this is corrected with a nail.

Once balanced to the requested angle on the order form additional plaster is added. Additional plaster is added to the positive to account for various requested corrections such Arch fill, fat pad expansion, malleoli, and navicular protection. All the added plaster is smoothed. Markings are added to the positive as required by the order to accommodate cut-outs additional paddings, etc. The frame (shell) materials are then heated and vacuum pressed against the positive. The height of the leg component and shell foot plate (e.g. metatarsal, sulcus, full foot) are determined by the order. The frame (shell) materials are then inspected to make sure the shell has confirmed to the congruency of the positive model. Cutouts on the frame (shell) are made if needed. Additional materials (e.g. for rear and forefoot postings) are then cut and prepped. The additional materials are then pressed onto the frame (shell). Excess materials are cut and smoothed. Frame fillers (shell) such as soft tissue interfaces are then rough cut to fit the device. The frame (shell) is roughened for acceptance of frame fillers.* The frame fillers are glued and vacuum pressed to the frame.

Other additional modifications such as malleolar or navicular padding are glued and pressed into place. Additional top cover and modifications are rough cut, glued and pressed into place. All excess materials are sanded smooth. Drill holes are made for the required straps. Rivets and straps are placed at strategic intervals as determined by the order and our standard specifications. A final inspection takes place to ensure that the correct model and modifications have been produced based on the order and an invoice with the correct serial number is used. The device is shipped to our customer with an invoice and orthosis record with the date shipped and Patient's name.

*Custom Fabricated Leather Covered Devices do not have their leather covers glued and/or sewn onto the frame (shell) until after all modifications are made on the shell.

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Kevin B. Rosenbloom, founder and president of Kevin Orthopedic, is a renowned certified pedorthist and sports biomechanist practicing in Santa Monica, CA. With his continuing research on the historical development of foot and ankle pathologies, comparative evolution of lower extremities and the modern environmental impacts on ambulation, he provides advanced biomechanical solutions for his patients and clients.