

# Frame Fabrication Method - Lab Process

Information Provided By Kevin Orthopedic Institute

## Direct Mill Frame

Subtractive manufacturing

*Option not on the order form and is available as a special request*

### FOOT IMPRESSION METHODS ACCEPTED

Plaster Slipper Cast, Foam Impression, STS Slipper Sock, 3D Scanner

### FRAME MATERIAL OPTIONS

Polypropylene, EVA

### ADVANTAGES

- Consistent
- Reproducible

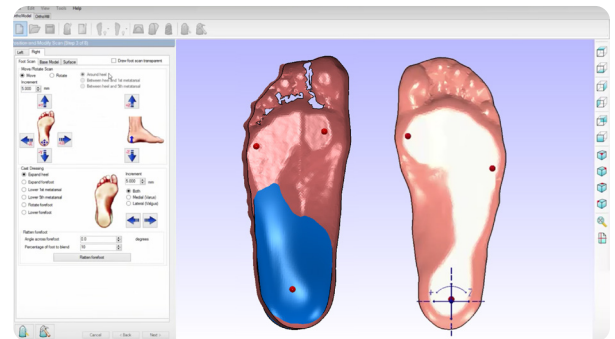
### DISADVANTAGES

- Some contour loss
- CAD technician design time limitations

Kevin Orthopedic offers the option for clients to use direct milling through subtractive manufacturing for a patient's devices. After a patient's foot model is digitally scanned, technicians take measurements from the patient's model to design a frame before it is submitted to the Computer Numerical Control process, which then removes material from a block of polypropylene or EVA to produce the physical frame of the device. The benefits of using the CNC fabrication method are that it quickly produces frames for multiple pairs of devices simultaneously and makes reordering easy, as the lab stores the digital frame specifications indefinitely. The compromises of using this fabrication method are limitations in frame material options and frame congruency. Orthotic lab CAD technicians are limited in the time they have to design orthotic frames that are perfectly congruent with the patient foot impressions. CAD software shortcuts are used to reduce the time needed to design the digital frame, resulting in an increased variation between the shape and contour of the orthotic frame and the patient's impression model.



18% FRAME TO  
MODEL VARIATION  
TOLERANCE



CAD orthotic frame process for direct mill or 3D printing



Polypropylene Frame Milling Process



CNC (Computer Numerical Control) Terminal



Mill Bit Cutting Polypropylene Frame