Fabrication Guide

Video Instructions

XtremityTT D.I.Y. Socket System
for use without a Distal End Pad

Fig. 1

Fig. 2

1. Prepare Limb Model:

- The XtremityTT Socket Preform is formed over a positive limb model.
- Remove excessive buildups around the proximal brim (including any posterior shelf buildup) to prevent overstretching of the preform. Maintain a round shape and avoid flattening the posterior wall. (Figs. 1-3)
- Move your finished limb model to the vacuum stand. Add spacers between the model and vacuum stand to ensure the Preform will not contact the stand once pulled. (Fig. 4)
- Apply a vacuum nylon.

Fig. 3

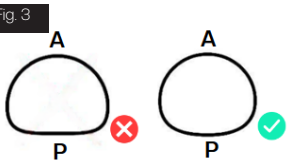


Fig. 4

Fig. 5

2. Heat

- Place the Preform into the Xtremity Benchtop Heating Unit (BHU) and ensure proper alignment on the pedestal. Place the lid over the socket base. If using size 26 or 26 plus, insert the rubber O-ring. (Fig. 5)
- To begin heating, press the POWER button to turn the unit on.
- Press START to accept the temperature of 350 degrees.
- Press START again to accept the time of 5 minutes and begin heating.
- The timer will start counting down once the heating unit reaches the set temperature.

3. Shape

- Ensure all supplies are laid out next to vacuum stand.
- Once the timer alarms, remove the Preform from the heating unit by the socket base.
- Apply powder to the inside of the Preform and gently pre-stretch the proximal end.
- Identify the anterior logo on the outside of the socket to align with the anterior portion of the limb model. Using this logo and the medial and lateral Distal Base cutouts, ensure correct socket rotational alignment.
- Place all 4 fingers of each hand inside the anterior and posterior aspect of the Preform and pull downward until it will not slide any further. (Fig. 6)

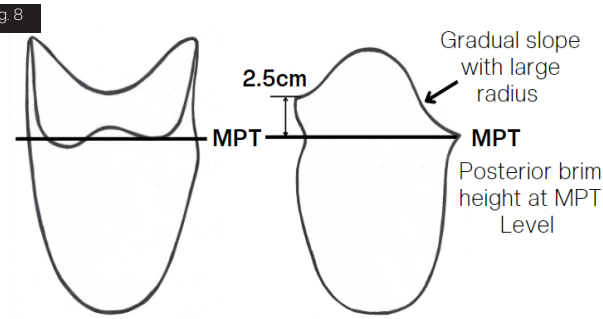
Fig. 6

- Insert Base Plate into the Distal Base and push downward while massaging the Distal Base transition to ensure no bulging occurs. (Fig. 7) There should be no wrinkles in the socket surface.
- Ensure distal contact is achieved between the limb model and the Preform by looking or feeling through the threaded hole in the Distal Base. Place a piece of tape over the hole in the Distal Base to create seal and apply vacuum. (Fig. 9)
- Once cool, remove from vacuum and draw trimlines. The anterior trimline must be at least 2.5cm proximal to MPT. Finished posterior brim shape must be at MPT level. Ensure posterior brim corners provide smooth, generous curves for hamstring reliefs that seamlessly connect to the gradually sloping medial and lateral walls. (Fig. 8)
- Trim, break out model, and smooth the proximal brim. Ensure the outer surface of the brim is smooth, with no nicks or discontinuities.

Fig. 9

Fig. 7

Fig. 8



4. Assemble:

Pin Lock system: (Fig. 10)

- Insert the Pin Lock Bridge into the Distal Base.

Suction system: (Fig. 11)

- Apply a small amount of silicone adhesive to the threads of the DEP Air Valve Base.
- From the inside of the socket, screw the Air Valve Base into the hole in the distal socket using the 8mm hex wrench provided. The Air Valve Filter can be compressed with the 8mm wrench or removed for valve installation and reinserted.
- Press the Suction Release Bridge into the base.

Vacuum system: (Fig. 12)

- Drill a 5/32" hole through the Base Vacuum Port. Use a 10-32 tap to thread the Base Vacuum Port from the distal end and insert the Vacuum Port Filter.
- Screw in the Air Hose Barb and connect the vacuum hose.
- Screw the Air Valve Base into the hole in the distal socket using the 8mm hex wrench.
- Insert the Suction Release Bridge and connect the vacuum hose.

Fig. 10

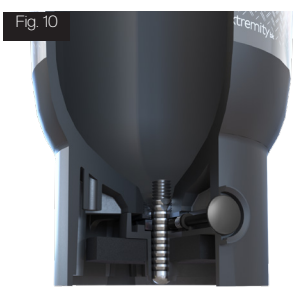


Fig. 11

Fig. 12

Base Plate Assembly for all suspension systems:

- Add the Bridge Foam Spacer
- Attach a 4-hole distal adapter to the Base Plate Assembly using the M6 flat head screws, threading them through the Base Plate Assembly into the Bolt Ring. (Fig. 13)
- If using vacuum suspension, pass the vacuum hose through the hole in the Base Plate. (Fig. 14)
- Determine your initial offset direction when installing the Base Plate Assembly onto the Distal Base. Using one M4 socket head screw, line up the Base Plate Assembly with the threaded insert in the Distal Base.
- Press the Base Plate Assembly into place and thread in the remaining three screws.
- Adjust the Base Plate to the desired alignment, then tighten all screws.
- Loctite and Torque all screws:
  * M6 Flathead Screws: 13.2 Nm
  * M4 Socket Head Screws: 3.8 Nm

Fig. 13

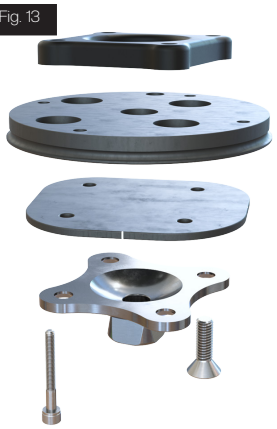


Fig. 14

5. Adjust

- Check the fit of the socket to identify areas that need adjustment.
- Use a heat gun to heat the area, keeping it at least 2 inches from the socket to ensure even heating. (Fig. 15)
- Wearing insulated gloves, adjust the socket as needed.
- Adjustments can be made at any time throughout the lifetime of the prosthesis.

Fig. 15

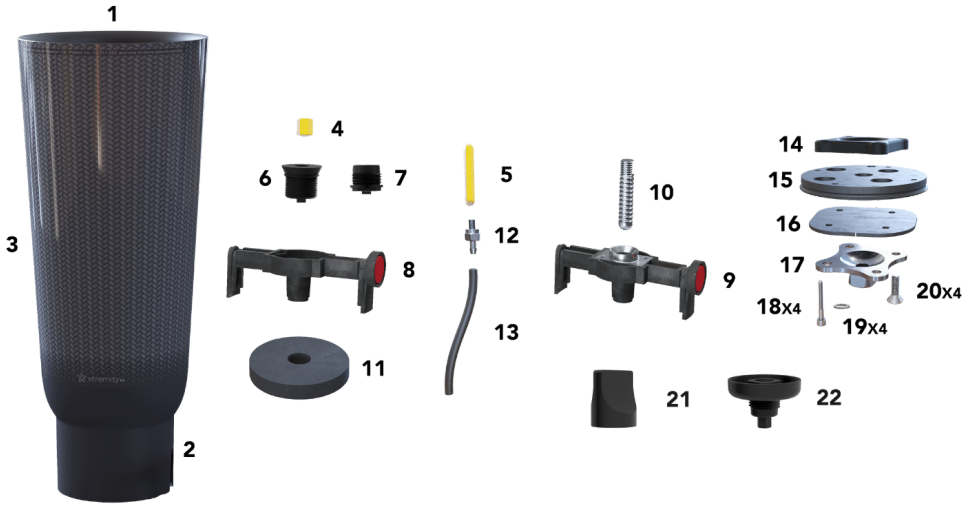
Precautions

- Do NOT use an open flame anywhere on the socket.
- Do NOT grind into the interior of the socket.
- Do NOT rapidly cool the socket with air or water.
- Do NOT drill holes or cut windows through the socket walls.

xtremity
by WillowWood

Quick Start Guide

XtremityTT D.I.Y. Socket System can be fabricated with or without a Distal End Pad. This guide will walk you through fabrication steps for both options.



Parts Key

1. XtremityTT Preform
2. Distal Base
3. Socket Applique
4. Air Valve Filter
5. Vacuum Port Filter
6. Suction Air Valve Base
7. DEP Compatible Suction Air Valve Base
8. Suction Bridge Assembly
9. Pin Lock Bridge Assembly
10. 1.5" Plunger Pin
11. Bridge Foam Spacer
12. Air Hose Barb
13. Vacuum Hose – Not included
14. Bolt Ring
15. Base Plate
16. Base Plate Cover
17. 4-Hole Pyramid Adapter – Not included
18. M4 Socket Head Screws
19. Lock Washers
20. M6 Flat Head Screws
21. DEP Valve Key
22. DEP Injection Valve

Fabrication Guide

Video Instructions

XtremityTT D.I.Y. Socket System
for use with a Distal End Pad

Fig. 1

Fig. 2

1. Prepare Limb Model:

- The XtremityTT Socket Preform is formed over a positive limb model.
- Remove excessive buildups around the proximal brim (including any posterior shelf buildup) to prevent overstretching of the preform. Maintain a round shape and avoid flattening the posterior wall. (Figs. 1-3)
- Move your finished limb model to the vacuum stand. Add spacers between the model and vacuum stand to ensure the Preform will not contact the stand once pulled. (Fig. 4)
- Apply a vacuum nylon.

Fig. 3

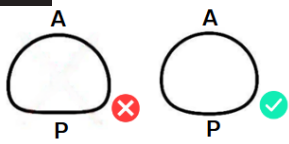


Fig. 4

Fig. 5

2. Heat

- Spray the Distal End Pad (DEP) Injection Valve with mold release and thread it into the Distal Base of the Preform using the DEP Injection Valve Key.
- Place the Preform into the Xtremity Benchtop Heating Unit and ensure proper alignment on the pedestal. Place the lid over the socket base. If using size 26 or 26 plus, insert the rubber O-ring. (Fig. 5)
- Press the POWER button to turn the unit on.
- Press START to accept the temperature of 350 degrees.
- Press START again to accept the time of 5 minutes and begin heating.
- The timer will start counting down once the heating unit reaches the set temperature.

3. Shape

- Ensure all supplies are laid out next to vacuum stand.
- Gently pre-stretch the proximal end. DO NOT apply powder when using a Distal End Pad.
- Identify the anterior logo on the outside of the socket to align with the anterior portion of the limb model. Using this logo and the medial and lateral Distal Base cutouts, ensure correct socket rotational alignment.
- Place all 4 fingers of each hand inside the anterior and posterior aspect of the Preform and pull downward until it will not slide any further. (Fig. 6)

Fig. 6

- Place the Base Plate into the Distal Base and push downward while massaging the Distal Base transition to ensure no bulging occurs. (Fig. 7) There should be no wrinkles in the socket surface.
- Place a piece of tape over the hole in the Distal End Pad Injection Valve and then place the Valve Key over the tape to snugly seal and apply vacuum. (Figs. 8 & 9)

Fig. 9

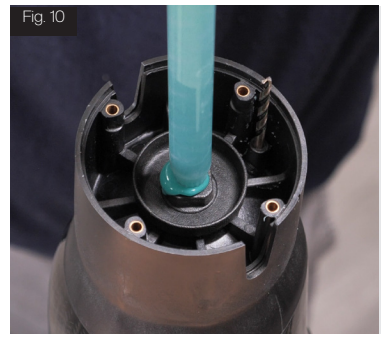
Fig. 7

Fig. 8

4. Distal End Pad Fabrication:

- If using vacuum suspension, using a 5/32" drill bit, drill a hole through the Base Vacuum Port. Use caution to not drill into the limb model.
- Remove the drill bit and place the smooth end into the hole just drilled until it contacts limb model. This will create a vacuum channel through the DEP. (Fig. 10)
- With a silicone dispenser gun loaded and a mixer tip installed, place the mixer tip into the hole in the DEP Injection Valve.
- Inject silicone into the socket until it overflows. Let the silicone set for approximately 15 minutes. (Fig. 10)
- Remove the DEP Injection Valve (and drill bit if using vacuum).
- Place a 5/16" hole punch into the center of the Distal Base center hole. Punch a hole through the silicone until it reaches the limb model. (Fig. 11)

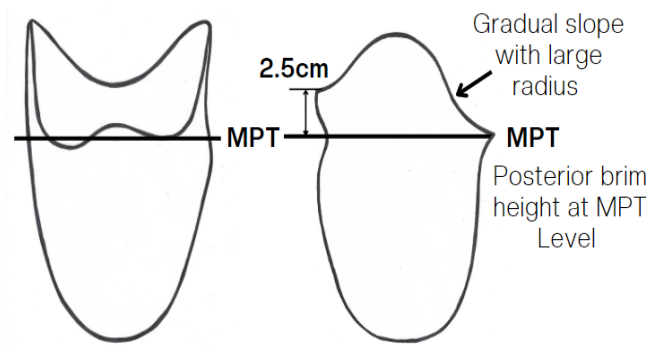
Fig. 10



- Once cool, remove from vacuum and draw trimlines. The anterior trimline must be at least 2.5cm proximal to MPT. Finished posterior brim height must be at MPT level. Ensure posterior brim corners provide smooth, generous curves for hamstring reliefs that seamlessly connect to the gradually sloping medial and lateral walls. (Fig. 12)
- Trim, break out model, and smooth the proximal brim. Ensure the outer surface of the brim is smooth, with no nicks or discontinuities.

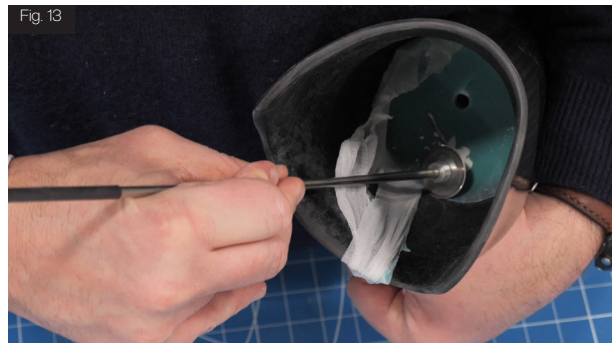
Fig. 11

Fig. 12



- Using the Rotary Cutting Stylus, trim the excess nylon along the edge of the DEP to create a smooth transition from the silicone to the inside of the socket. (Fig. 13)
- The DEP is permanently adhered to the inside of the socket.

Fig. 13

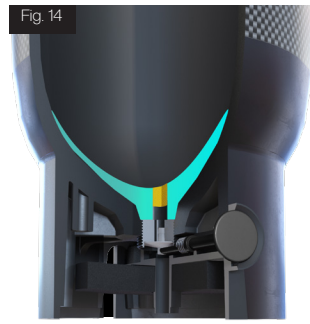


5. Assemble:

Suction system: (Fig. 14)

- Apply a small amount of silicone adhesive to the threads of the DEP Air Valve Base.
- Insert the Air Valve Filter into the hole in the Distal End Pad. From the outside of the socket, insert the DEP Air Valve Base into the threaded hole using the DEP Valve Key.
- Press the Suction Release Bridge into the base.

Fig. 14

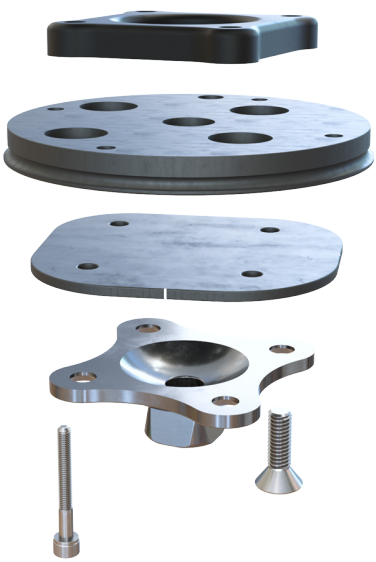


Vacuum system: (Fig. 15)

- Use a 10-32 tap to thread the Base Vacuum Port from the distal end.
- Screw in the air hose barb and attach the vacuum hose.
- Apply a small amount of silicone adhesive to the threads of the DEP Air Valve Base.
- Insert the Air Valve Filter and Vacuum Port Filter into the respective holes in the DEP. From the outside of the socket, insert the DEP Air Valve Base into the threaded hole using the DEP Valve Key.
- Press the Suction Release Bridge into the base.

Fig. 15

Fig. 16



Base Plate Assembly for all suspension systems:

- Attach a 4-hole distal adapter to the Base Plate Assembly using the M6 flat head screws, threading them through the Base Plate Assembly into the Bolt Ring. (Fig. 16)
- If using vacuum suspension, pass the vacuum hose through the hole in the Base Plate.
- Determine your initial offset direction when installing Base Plate Assembly onto the Distal Base. Using one M4 socket head screw, line up the Base Plate Assembly with the threaded insert in the Distal Base.
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Fig. 17

6. Adjust

- Check the fit of the socket to identify areas that need adjustment.
- Use a heat gun to heat the area, keeping it at least 2 inches from the socket to ensure even heating. (Fig. 17)
- Wearing insulated gloves, adjust the socket as needed.
- Adjustments can be made at any time throughout the lifetime of the prosthesis.

Important Tips for Successful Fabrication

1. **Proper Preform sizing, limb model preparations, and achieving distal contact are critical for optimal fabrication and performance.**

2. **Repulls:** If the first attempt resulted in an unsuccessful pull over the limb model, remove the Preform from the model while still warm and let cool for at least 5 minutes. Remove the lid from the BHU and let cool for at least 5 minutes before heating Preform again. The Preform can be heated in the BHU and repulled up to 3 times as long as it has not been trimmed. Once trimmed, only spot heating is recommended.

3. **Alignment:**
   - Slight angular alignment adjustments can be achieved by tilting the Distal Base (no more than 5° in any direction) while the preform is still hot on the limb model, prior to pulling vacuum. Ensure no bulging occurs.
   - High impact users with significant angular or offset alignment needs may not be good candidates for the XtremityTT socket.

4. **Limb Model Shapes and Measurements:** Take additional circumferential measurements at the most proximal trimline and at levels with limb abnormalities to reference with the corresponding lengths on the sizing chart. (Fig. 18) If all measurements do not fall within the same size Preform, this limb may not be a good candidate for the XtremityTT Socket, unless additional modifications can be made to the limb model.

Fig. 18