SmartPuck™
AirPuck™
ZeroPuck™

Prosthetist Technical Guide

Puck Fabrication Guide

for Internal Elevated Vacuum Systems

No Full Carbon Lamination

See instructions for details Pg. 38 & 50

More information is available online at - www.coyote.us/vacuum-technology

Digital and Video Instructions are available online at - www.coyote.us/instructions-vacuumsystems

Coyote® O&P Inc. | 1-208-429-0026
www.coyote.us

Coyote.Rev.B.07172025

SmartPuck™

Prosthetist Technical Guide

SP-200(V3)

WARNING:
SLEEVE SUSPENSION ONLY

THE SMARTPUCK™ CAN ONLY BE USED WITH SLEEVE SUSPENSION USE OF INTERNAL SOCKET SEALING SYSTEMS (SEAL-IN LINERS, AURA SEALS, ETC.) WILL DAMAGE THE SMARTPUCK™ AND VOID THE WARRANTY

Use the ZeroPuck OD™, ZeroPuck SP™ AirPuck™ for the following Liner Sealing systems:

SEAL-IN TM LINERS, AURA/ ECHO TM SOCKS SYMMETRY LINERS™ SECURE RING™

USING AND SETTING UP THE SMARTPUCK™ APP REQUIRES:

WIFI CONNECTION IN FACILITY OFFICE

SETTING UP THE PATIENTS APPLE ID / ITUNES ACCOUNT, OR GMAIL ACCOUNT

SMARTPUCK™ REQUIRES DEVICES WITH BLUETOOTH 4.0 (5TH GENERATION IPOD TOUCH, iPHONE 5 AND NEWER, ANDROID OS 4.4 AND NEWER

PATIENT WILL NEED A VALID EMAIL ADDRESS TO SIGN UP FOR AN APPLE ID OR GMAIL ACCOUNT

Table of Contents

Symbol Definitions

Symbol	Description
	Consult the Operating Instructions
	Type B Applied Part
	Direct Current
	Alternating Current
	Caution, Consult Instructions
	Radio Transmission

Warnings And Safety Notices

READ THESE INSTRUCTIONS FOR USE CAREFULLY AND PAY SPECIAL ATTENTION TO ALL SAFETY CONSIDERATIONS AND WARNINGS.

THIS MANUAL PROVIDES STEP-BY-STEP INSTRUCTIONS FOR SETUP AND OPERATIONS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY.

The SmartPuck™ and its accompanying accessories do not contain any serviceable parts and should under no circumstances be opened.

If the SmartPuck™ or any of its accompanying accessories show any signs of damage, they must not be used.

Do not immerse the SmartPuck™ or any of its accompanying accessories in water or any other liquid.

Avoid all explosive/combustible materials while using the SmartPuck™ System.

Battery Level of the SmartPuck™ should be checked periodically to guarantee proper pressure levels.

Introduction

The SmartPuck™ is a modular socket computer system that utilizes an electronic vacuum pump to create negative pressure inside the prosthetic socket. The SmartPuck™ improves the linkage between the residual limb and the prosthesis. The SmartPuck™ is equipped with an easy to use iDevice and application interface, allowing the user to quickly and easily set and adjust vacuum pressure settings of their prosthesis.

SmartPuck™ System advantages include:

- Reduction in daily volume differences
- Improved proprioception
- Improved adhesion / suspension
- Reduction in the forces that are applied to the residual limb

What's Included:

1) SmartPuck™ Vacuum system
2) Charger
3) Magnetic Wand
4) Puck Lubricant
5) Install screws
6) Removal Screws
7) Filter Disks (1/2) Micron)
8) Instructions

Unit Overview

The SmartPuckTM System consists of the following key components:

- SmartPuck™
- Socket (in which the SmartPuck™ is installed)
- Prosthetic Liner
- AirWick
- Sealing Sleeve
- Distal Pad or Flexible inner liner

NOTE: THE SMARTPUCK™ SYSTEM CAN ONLY BE USED WITH SLEEVE SUSPENSION. USE OF INTERNAL MECHANICAL SEALS SUCH AS SEALIN™ LINERS AND SIMILAR SYSTEMS WILL DAMAGE THE SMARTPUCK™ AND VOID THE WARRANTY.

The SmartPuck™ creates an elevated vacuum in the space between the socket and the liner when the SmartPuck™ is activated. The user can configure and activate the SmartPuck™ through the use of an easy to use Smart Device APP or manually using the included Magnet. User configured settings in the Smart Device APP are wirelessly transmitted to the SmartPuck™ through a Bluetooth LE connection without the inconvenience of cables and connectors.

ATTENTION: The socket MUST be fabricated following the SmartPuck™ socket fabrication technique. The use of other techniques may cause health risks for the patient.

ATTENTION: Attempting to modify or use the SmartPuck™ System in any other configuration other than its intended use may cause health risks for the patient.

Accessories

SmartPuck Charger

The SmartPuck™ System comes equipped with a smart charger. The charger uses an air tight coupling to charge the SmartPuck's™ internal LiPO battery. Once the prosthesis has been removed from the patient's residual limb, the charger should be inserted into the SmartPuck through a pre-fabricated hole in the socket.
The charger's LED indicator will show a solid Amber color while the SmartPuck™ is charging. Once fully charged, the LED will illuminate Solid green.

ATTENTION: Using any other charger other than the one supplied with the SmartPuck™ System can result in damage to the product.

SmartPuck™ Smart Device Application

An application is available for the SmartPuck™ System and can be downloaded from the APP Store™ or Google Play™. The SmartPuck™ application provides an intuitive interface giving the user control over the various SmartPuck™ settings and controls as well as sensor readings. The application allows the user to preset settings which the SmartPuck™ will retain even in the absence of the Smart Device. Details of the Smart Device application are provided in the System Operation section of this manual.

Magnetic Wand

If the user does not intend on using the SmartPuck™ Smart Device Application or an iDevice is not available, the SmartPuck's™ internal pump can still be activated using the Magnetic Wand. The Wand allows the user to turn the SmartPuck's™ pump on and off by simply waving the wand along the side of the Socket. Bringing the magnetic wand to the side of the socket while the pump is enabled will disable the pump. Performing the same task while the pump is disabled will activate the pump. Details of the Magnetic Wand are provided in the System Operation section of this manual.

Quick start Kit

The quick start kit includes a Charger, Puck lubricant and vacuum sealant for installing the SmartPuck™ 20mm Screw set to attach external components, 40mm screw set to remove the puck, Filter Disks to be used as a secondary filter for the SmartPuck™.

Installation

ATTENTION: The user must be trained by the prosthetist or practit ioner who will be performing the product fitting.

ATTENTION: Installation of the SmartPuck™ into the socket must be done by a certified prosthetic technician or practitioner who is fitting the user.

For clinical or technical assistance, please contact **Coyote O&P Inc.**

Information : Coyote® O&P 419 N. Curtis Rd. Boise ID 83706
1-208-429-0026 | ww.coyote.us

BEFORE STARTING:

Ensure the bottom external surface of the socket is parallel to the interior surface on the distal end of the socket. Proper socket fabrication ensures that there are no shear forces on the installation screws.

INSTALLATION

1) Lubricate the soft seal on the SmartPuck™ with Dow Corning 111 Vacuum sealant. Also be sure to lubricate the proximal aspect of the socket void (The area the valve will seat).

2) ONLY USE THE INCLUDED PUCK LUBE (DOW CORNING 111) - NEVER USE ANY OTHER LUBRICANT!

3) Orientate the SmartPuck™ such that the hall switch (magnetic ON/OFF) is located either anterior/medial LT leg OR posterior/medial RT Leg. Charge port will be medial. Orientation is discretionary.

4) Gently insert the SmartPuck™ into the void at the bottom of the socket. Make sure the soft seal does not roll up as the Puck is pushed into place. Align the four hole pattern and side hole as the Puck is pushed into place. There should be resistance as the Puck is pushed into place. This is the compression of the soft seal as it slides into the void. Ensure there is good even compression on the seal. The seal should appear to be a 1/2" solid wet looking band (when using clear socket material).

5) Use a 4mm wrench to rotate the puck such that the four hole pattern is aligned with the four hole pattern in the bottom of the socket.

6) Secure SmartPuck™ into the bottom of the socket by connecting external hardware to the four hole pattern of the SmartPuck™. Use install screws and tighten opposite screws to pull the Puck down into the void evenly.

7) Apply Blue Loctite™ 242 to screws and Torque to10Nm.

8) CAREFULLY wipe out excess lube around the Puck lid.

9) DO NOT GET LUBE ON THE WHITE AND BLUE INTAKE FILTERS... THIS WILL CLOG THE SYSTEM!

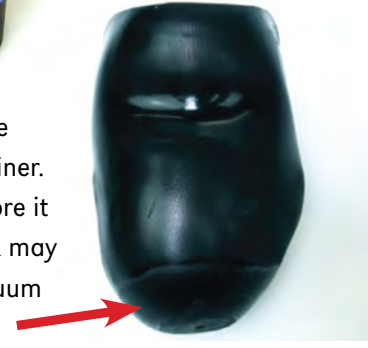
NOTE: Make sure the attachment component has a center hole. **For best results:** Use circular attachment components to reduce stress and better distribute forces to the bottom of the socket.

10) CRITICAL: Ensure the air exhaust hole is open to the ambient air. This is where the SmartPuck™ reads the differential air pressure. There should be a center hole drilled in the bottom of the socket. Use connection components that have a center hole. We use American Prosthetics TI-400BIL pyramid or Bull Dog.

11) Place the filter disk over the SmartPuck™ lid. This 1/2 micron disk will protect the primary intake of the the SmartPuck™. The Filter disk should be placed felt side down (facing puck lid).

12) Place distal pad or flexible inner liner on top of the puck and filter disk. Socket not shown for clarity.

NOTE: When drilling the air through hole in the flexible liner drill the hole off center up the side of the flexible liner. This will act as a third filter system to catch debris before it can reach the filter located on the Puck lid. (An air wick may be necessary between the two sockets to facilitate vacuum flow).

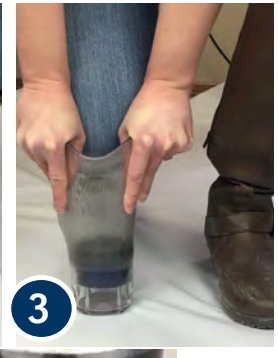


REMOVAL OF THE SMARTPUCK™

1) Remove all external hardware including connection pyramid.

2) Thread in 4-40mm removal screws (included) into the bottom of the SmartPuck™ through the four hole pattern in the bottom of the socket

3) Place the socket on the floor and apply your full weight to the top of the socket. This will slowly push the SmartPuck™ out of the void (this can take up to 20 seconds) Gently remove the SmartPuck,™ never bang or pry the puck out of place. ANY DAMAGE ON THE BOTTOM OF THE PUCK VOIDS WARRANTY.



Donning Instructions

1) Charge the SmartPuck™ and Smart Device every night to make sure you have a full charge through out the day.

2) Place the filter disk on top of the SmartPuck™. This 1/2 micron disk will help prevent the pump inside the SmartPuck™ from getting clogged and reduce the number of times the primary filter has to be replaced.

3) Before donning the prosthesis make sure the distal end pad or flexible inner liner has been placed on top of the SmartPuck™. This ensures that you have total contact on your residual limb which is very important for comfort and limb health. (Socket not shown for clarity.)

4) Don a urethane or silicone Liner. If the liner has a fabric exterior it will be necessary to reflect the top portion of the liner down your leg 3-4 inches to create a sealing surface. The sleeve can NOT seal to bare skin.

Note: Thermo-elastomer gel liners are not to be used with the SmartPuck™ System. The oil in these liners will clog your SmartPuck™ Vacuum Pump.

5) Apply an air wick or sheath over the liner so vacuum will flow over your entire residual limb. Leave the top portion of the liner uncovered, this will be the area to which your sealing sleeve is applied.

Note: Vacuum will flow over the area where the fabric or sheath is.

6) Insert residual limb into the socket system. The socket fit should fit comfortably and provide total contact every where (especially at the bottom of the socket).

7) Apply the sealing sleeve. Make sure your sleeve is free of holes and has equal contact on both the socket and the upper portion of the liner. These are the only two areas leaks can occur. We recommend 3”-4” of direct sleeve to socket contact and 3”-4” of direct sleeve to liner contact. The air wick should not be on or in between either of these sealing areas.

8) Placing a elastic velcro™ band around the end of the sealing sleeve (on the socket) will minimize any leaks on the bottom portion of the sleeve/ socket seal.

9) You are now ready to begin using your new SmartPuck™ System.

Removing the Prosthesis

1) TURN OFF THE SMARTPUCK™ BEFORE REMOVING THE PROSTHESIS!

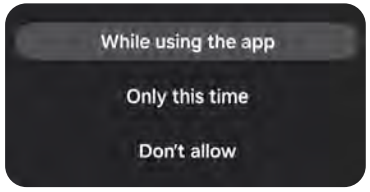
Installing the SmartPuck™ App

Scan the appropriate QR code for your device. Alternatively search “SmartPuck V2” in either the iOS app store, or the Google play store. Install the app.

Apple Android

For android app:

The first time you launch the app, please make sure to allow it the proper permissions for the app to function. Choose “While using the app” for the first prompt, and “Allow” for the second prompt. If either permission is not granted, the app will not function properly.



We do not collect any location data or personal information. These permissions are only required for Bluetooth functionality.

Connecting Bluetooth

1) Ensure the device is fully charged. It will automatically be in Bluetooth pairing mode when charged, it does not need to be turned on.

2) Ensure Bluetooth is turned on for your Android or iOS smartphone.

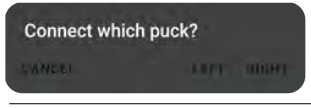
3) Open the SmartPuck™ app on your smartphone.

4) Navigate to the Bluetooth pairing tab on the app.

5) Press “SCAN” to start scanning for devices.

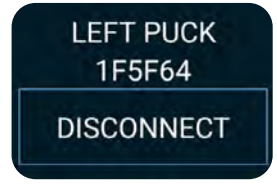
6) Press the 6-digit ID for your device.

7) A prompt will appear asking which puck you would like to connect, choose “LEFT” or “RIGHT” to pair the device.



8) A “CONNECTING...” prompt will appear.

9) Once completed, the 6 digit ID for your device will be displayed under either “LEFT PUCK” or “RIGHT PUCK” along with a “DISCONNECT” button.



10) The device has been successfully completed, and you may return to the home tab to control your device.

Pairing Device

1) Indicates connection status for the device. One column shows the status of the device connected as “LEFT”, the other column shows the connection status of the device connected as “RIGHT”. If there is no device connected, “DISCONNECTED” will be displayed. If a device is connected, the 6 digit ID matching the device will be displayed, along with a “DISCONNECT” button.

2) The disconnect button can be used to unpair the device with your smartphone.

3) The “SCAN” button is used to search for nearby devices to connect to. If you do not see your device, scan can be pressed again to refresh the list.

4) List of available devices to connect to. The devices can be tapped to connect to your smartphone. Each device will have a unique 6 digit ID, which is engraved on the top of the device.

5) If you are having trouble connecting to a device, the “RESET” button can be pressed to reset the Bluetooth connection on your smartphone.

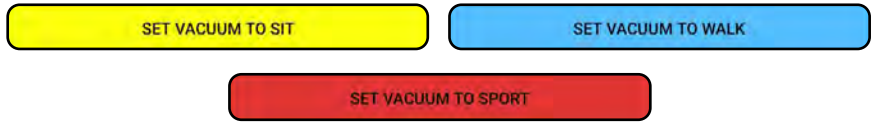
Setting Vacuum Presets

Under the Presets tab in the SmartPuck™ App, tap either left or right depending on how your device(s) are connected. You can then tap on “Sit”, “Walk”, or “Sport” setting. After tapping on the setting you can type in your desired pressure, and press enter.

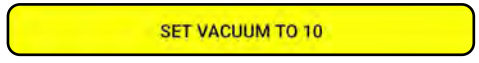
Getting Started with WIFI Connection

1) Tap left or right to change which device you are controlling (Two devices can be used at once, for example with bilateral patients).

2) Tap either “SIT”, “WALK” or “SPORT” to use preset vacuum pressures. “SET VACUUM TO” must be pressed to apply the settings.



3) Press and slide the slider bar to adjust the vacuum pressure manually. “SET VACUUM TO” must be pressed to apply the settings.



4) Push button to apply either preset or manual vacuum pressure settings.

5) Indicates current vacuum setting.

6) Indicates current vacuum pressure read by the device.

7) Indicates whether a device is connected to the app. Green for CONNECTED, gray for DISCONNECTED.

8) Indicates the devices current power state. Green for ON, gray for OFF.

9) Indicates current battery level of the connected device.

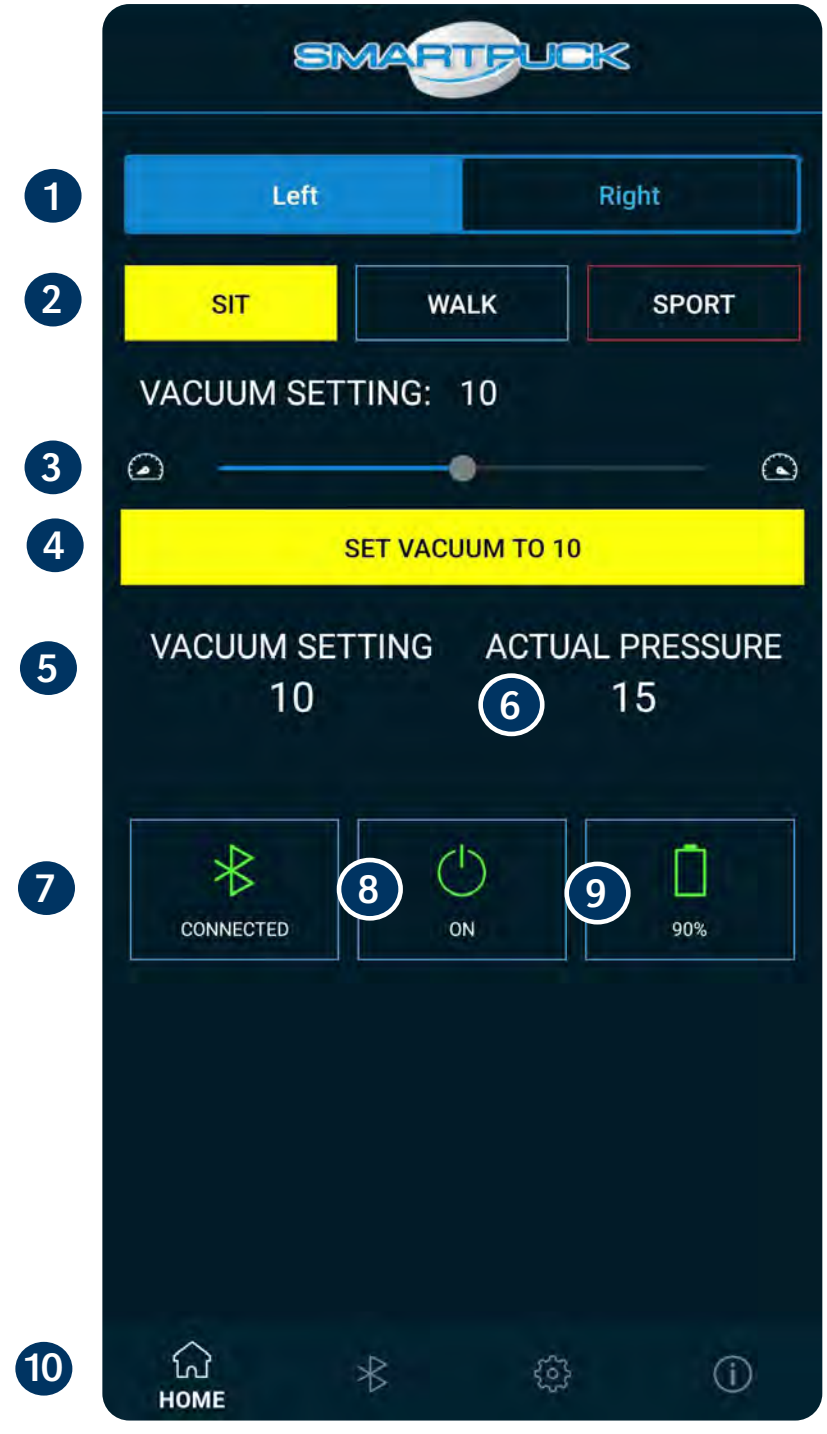
10) Navigation bar:

For controlling devices

For connecting devices

For editing vacuum presets

Information page with tutorials



Charging

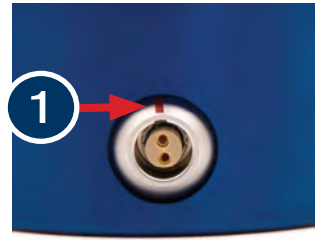
The SmartPuck™ is equipped with an internal LiPO battery which will provide power to the SmartPuck™ as long as it is charged. Before attempting to use the SmartPuck™ first make sure the battery is fully charged.
In order to ensure proper SmartPuck™ operation, it should be charged every night by using the included charger.

NOTE: NEVER CHARGE THE SMARTPUCK WHEN THE PROSTHESIS IS ON THE PATIENT.

1) To charge the SmartPuck™ locate the red charger alignment dots on both the Puck charge port and on the charge plug.

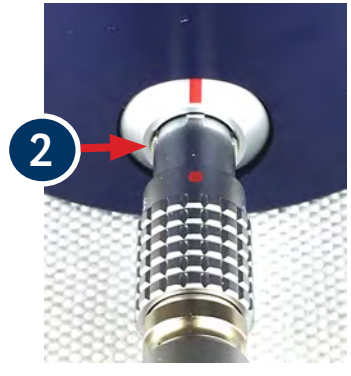
NOTE: THE CHARGE PLUG KEYS IN TO THE PUCK ONLY ONE WAY. THE RED DOTS MUST BE ALIGNED!

2) FULLY insert the charger into the Puck Housing into the charge base. The charger will lock and lock into place.



3) Once the SmartPuck™ has reached a full charge, the LED indicator on the SmartPuck™ PowerStick™ will illuminate a solid green non flashing pattern.

CHARGE LIGHT STATUS:
SOLID AMBER = CHARGING
SOLID GREEN = COMPLETE CHARGE (5-6 hours)



DISCONNECTING THE CHARGER

1) Pull back the knurled collar on the silver adaptor on the end of the charge cord.

2) If the unit has a lanyard loop on the silver charger plug, simply pull the lanyard back (away from the puck) to disengage the charger.

NOTE: DO NOT PULL ON THE CORD TO REMOVE THE CHARGER. NEVER TWIST OR USE TOOLS TO REMOVE CHARGER. THIS WILL VOID THE WARRANTY.

NOTE: If the charger does not indicate a light or is blinking the charger may be damaged. Discontinue use and contact medical provider.

HALL SWITCH OPERATION
(Magnetic ON/ OFF Switch)

LOCATION
1) The Hall switch position is marked with a sticker on the side of the SmartPuck™. The Dot should be positioned anterior /medial corner of the socket (for easy access and line of sight).
The actual switch is located in the middle of the puck (measure up 3/4" from the bottom of the Puck).

OPERATION
1) Slide the magnet over the side of the Puck in the location described above in one single fluid motion. This motion will turn the pump ON.
2) Repeat the same procedure to turn the Puck OFF

The Puck will vibrate 1X = SmartPuck™ is ON.
The Puck will Vibrate 2X = SmartPuck™ is OFF.

VACUUM LEVEL
The SmartPuck™ will default to the last vacuum setting that was entered into the Puck. The SmartPuck™ will remember and maintain the last vacuum setting that was entered into the system.
See your Mobile APP under the ABOUT TAB for a detailed video on how to use this function.

MESSAGES

The SmartPuck™ will communicate with the user through messages sent to the Smart Device.

- Battery low indicator
- Connection lost indicator

Maintenance / Cleaning Instructions

- Replace the secondary filter disk on a regular basis (1x per month) or as needed.
- If pump function decreases the pump should be sent back to Coyote® O&P Inc. for evaluation and repair. Pump repairs and debris removal are NOT a warranty item.
- The filter on the SmartPuck™ can be replaced as needed. IT IS CRITICAL THAT NO DEBRIS GETS INTO THE INTAKE
- There is no sterilization required for any components of the SmartPuck™ System.

ATTENTION: A SmartPuck™ made before July 1st 2025 must never be submerged in water, or any other liquid, for any length of time unless it has been serviced by Coyote since that date and has an IP28 logo on its face.

The SmartPuck™ is now water-resistant. Tested to IP28 (3 meters of water for up to 4 hours). A SmartPuck™ sold after July 1st, 2025 will be IP28 water-resistant. Look for the IP28 designation engraved on the top of the SmartPuck™. A SmartPuck™ without the IP28 designation are not water-resistant. SmartPuck™ sold before July 1st, or without the IP28 designation, can be sent in for refurbishment, updating them to the new IP28 standard.

The SmartPuck™ has only been tested in fresh water. If your puck has IP28 etched into its face, and water and/or debris get through your liner sleeve and into your socket while in water, please do the following.

1. Remove your socket from your leg.
2. Remove the distal pad, rinse it off with clean water, and dry it with a clean towel.
3. Remove the filter pad.
4. Make sure the SmartPuck™ is turned off, not pumping air through it. Rinse out the inside of your socket with a shower or hose, pour the water out.
5. If water got into the socket while the pump was running, pour distilled water into the socket and turn on the pump, pump the water through the SmartPuck™ to help clean it out.
6. After rinsing out the socket and SmartPuck™, dry out the inside with the clean towel.
7. Run the SmartPuck™ pump with the empty socket to get out any excess moisture for about 20 seconds or until it stops sputtering water in the lines.
8. Once the socket has fully dried, place a new filter pad in the bottom of the socket with the shiny side up and then place the distal pad over it.

SmartPuck Waterproof Use and Care Instructions

For Coyote SmartPucks Sold After July 1, 2025
Water Rating: IP28

IMPORTANT SAFETY NOTICE: CHARGER IS NOT WATERPROOF

- Never use or charge your SmartPuck near water.
- The SmartPuck Charger is not waterproof.
- Do not submerge the Charger or expose it to moisture.
- Water exposure can lead to serious injury, electric shock, or death, and will void the Charger's warranty.

SmartPuck Water Resistance Information

Your SmartPuck is waterproof according to the IP28 standard when used in fresh water only:

- Water depth limit: Up to 10 feet (3 meters)
- Time limit: Up to 12 continuous hours
- The SmartPuck is not designed for use in salt water, murky water, swimming pools, hot tubs, or other corrosive liquids.
- If exposed to rain, splashes, or humidity, dry the SmartPuck thoroughly.
- The ZeroPuck is currently NOT IP rated for any water exposure.

After Water or Outdoor Activity

1. Check the Charge Port for water or debris.
   - Wipe with a clean, dry cloth, or
   - Use compressed air to remove any particles.
2. Always ensure a white filter disc is in place.
   - If the SmartPuck gets wet, replace the filter disc—especially if visibly soiled.
   - Regular replacement: every 30 days or more frequently depending on activity or expo sure.

Avoid These Activities

The SmartPuck is not recommended for use during:

- Skydiving, martial arts (karate, judo), or similar high-impact sports
- Any activity that may damage a natural limb
- Activities involving salt water, chemicals, or extreme environments
- These activities are considered "extremely high and abusive" and will void the one-year warranty.

Managing Sweat and Moisture

Excessive sweat can lead to internal corrosion of your SmartPuck over time.
To reduce this risk:

- Dry your residual limb regularly throughout the day
- Use sweat management techniques recommended by your clinician
- SmartPuck refurbishing service by Coyote is recommended yearly for cases of extreme perspi ration

Do Not Open or Disassemble the SmartPuck

- The SmartPuck contains no user-serviceable parts.
- Opening or tampering with the SmartPuck will void the warranty.

Need Help?

If you have a concern with your SmartPuck—especially after it has been exposed to water or de bris—stop use and contact Coyote for further support and instructions.

ENVIRONMENTAL

Ingress Protection Rating - IP28
Operating Temperature - -40C to 85C

Tips and Tricks

1) To minimize the chance for air leaks between the sealing sleeve and the socket—place a elastic Velcro™ strap over the distal aspect of the sleeve to improve the air seal between the sleeve and socket.

2) Reflect fabric covered liners down at least 3" to create a viable sealing area.

3) Never try to seal the sleeve to bare skin

4) Replace the secondary filter disk on a regular basis or as needed.

5) ONLY use Puck lubricant when installing a Puck. Dow Corning 111. Any other lubricant will dry up and lock the Puck into place permanently.

Characteristics

Pressure Range	20 in HG maximum (dependent on altitude)
Accuracy	+/- 1 in HG
Precision	1 in HG

Electrical Specifications - SmartPuck™ & ZeroPuck™

Operating Voltage	3.7VDC Typ.
Operating Current	20mA minimum | 300mA maximum

Battery

Battery Technology	Rechargeable Lithium Polymer Battery
Battery Capacity	1000mAh
Battery Model	
Time Between Charges	24 hours max

PowerStick™

Input Voltage	100VACminimum | 240VACmaximum
Input Frequency	47Hz minimum | 63Hz maximum
Input Current	0.6A maximum

Liner Configurations / Recommendations

Any liner configuration can be used with the SmartPuck™. This includes:

• Any silicone or urethane liner with an available sealing surface of 3”or more. (Used with a sealing sleeve configuration)

• The Otto Bock™ Anatomic 3D PUR liner is a great polyurethane choice. Liner reflectionmethod (for use with fabric covered liners): We primarily use Ossur™ Dermo / Activa liners with a sleeve suspension. The liner is left long and the top half of the liner is reflected down such that the silicone faces outward. The suspension sleeve is then rolled onto the reflected liner portion (at least 3”of sealing surface) to solidify the air seal.

We **DO NOT** recommend thermo elastomer gel liners or any gel liner for vacuum systems.

DO NOT USE ANY TYPE OF INTERNAL MECHANICAL SEAL LINER SUCH AS SEAL-IN™ OR AURA SLEEVES™

Sleeve Recommendations

The general rule for sleeve selection is to choose sleeves that are tight and sticky.

Remember we are trying to keep air molecules out of the socket this needs to be an intimate fit!

We recommend the following sleeves:

• Ossur™ Iceross Sleeve

• ThermoPly™ Sleeves

• OttoBock™ ProFlex Sleeve (must remove powder)

INITIAL PUMP WIND UP

1) Once the SmartPuck™ is switched to the ON position:

2) The pump will run constant for a about 20-30 seconds and then shift to short bursts as it finds pockets of air trapped in various places in the system.

3) Massage the upper and lower sleeve to the liner to help solidify the exterior seal while the pump runs.

4) After the initial air evacuation the pump should go silent. The actual pressure reading should display a constant number (The selected and actual should read the same). The pump may go into short bursts as the user walks with the system evacuating the last air pockets.

5) Vacuum level should remain constant after a very short period of time. If the pump runs constantly or keeps cycling:

(1) There is a hole in the sleeve

(2) The sleeve is not adhered to the socket properly

(3) The sleeve is not adhered to the liner properly.

Typically the pump will run one to two times every hour for a 1-2 second burst. This indicates that there is a good proximal seal.

The ONLY place the socket can leak is at the proximal seal. The distal aspect of the socket is completely sealed. The sleeve will NOT seal to skin.

FINDING MAX VACUUM LEVEL

1) Find the Max Vacuum level at your altitude. Start the pump at 13 in/hg.

2) Use the slide bar to select a vacuum level of 13. Hit the SET VACUUM button to confirm the level setting. Leave the Pump in the ON position.

3) Gradually bump up the vacuum setting 1 in/hg at a time. Allow the pump to run and stop once it has reached the appropriate level.

4) When the max vacuum level has been exceeded the pump will continue to run.

5) Back the pump setting down 1-2 in/hg this will be the max vacuum setting. We recommend saving this number as the SPORT mode setting.

Typically max vacuum is:

SEA LEVEL 20-24 in/HG

ALTITUDE 17-20 in/HG

SHUT DOWN PROCEDURE

To turn off the SmartPuck™ touch the ON / OFF toggle switch in the upper right hand corner. OR Use the magnet to turn off the system.

NOTE: It is NOT necessary to disconnect the BLUETOOTH when turning off the App. We recommend leaving the BLUETOOTH linked all of the time.

ALWAYS TURN THE SMARTPUCK™ OFF BEFORE THE PROSTHESIS IS REMOVED.

AUTOMATIC PUMP SHUT OFF

The SmartPuck™ has an automatic pump shut off. If the pump runs constantly for 2 minutes , the system recognizes the leak and turns the system off .

OPERATING PROTOCOL

There are two ways to use the SmartPuck™ system.

ACTIVE: Set the vacuum level and leave the SmartPuck™ App in the ON position. This method will maintain the specified vacuum level all day long. The system will drop 1-2 in/hg and then restart the pump to reach the selected vacuum level. The primary factor with this method is the residual limb will be under constant STEADY vacuum (no fluctuation in pressure). With this method most patients choose a Medium level of vacuum, typically 8-12 in/HG.

SLEEPER: Set the vacuum level to the desired amount of vacuum. After the selected vacuum level has been reached TURN OFF the SmartPuck™ App (on/off toggle center bottom box of screen). The vacuum level will bleed down naturally over the coarse of the day, however, the system is very efficient and the vacuum level should hold for long periods of time. The user simply turns on the vacuum pump when more vacuum is needed. This protocol extends battery life and can be more discreet for the user.

Warranty Terms

Coyote® O&P warrants all of its products and services, to the original purchaser, to be free from defects in materials and workmanship. This warranty applies, subject to normal wear and tear, when the products are used as intended, without modifications, and following all of Coyote® O&P instructions and requirements.
The duration of our Limited Warranties is 12 months effective from the date of receipt. Coyote® O&P sole obligation under this Limited Warranty shall be to repair, replace, or refund the cost of the item to the original purchaser, at Coyote's sole discretion.
This limited warranty does not cover : Clogged or obstructed electric pumps /plumbing, damage due to accidents, pump failure due to inadequate filtration/pump maintenance, neglect, misuse, operation beyond capacity, use of internal mechanical seals, parts damaged by improper installation/removal, any alteration or repair by other that, in Coyote® O&P judgment, materially or adversely affects the product. Damage to the Puck from trying to pound or pry the Puck out of the socket (scratches, dents, evidence of tool use completely void the warranty of the device.
Use of this product is not a guarantee against injury. This Limited Warranty excludes liability for any personal injury, property damage, or special, incidental, or consequential damages arising out of, related, or incident to use the product, even if Coyote® O&P has been advised of the possibility of such potential loss or damage, unless state law otherwise precludes this exclusion.

Return Policy

Please inspect all orders immediately upon receipt. In the event items were ordered or shipped in error, you must notify Coyote® O&P, for a return authorization number. Coyote® O&P must be contacted within five (5) business days of the receipt of the items.
No returns will be accepted without prior authorization. Due to the computerized nature of the SmartPuck™ product and agreements with Apple™ Inc the SmartPuck™ can not be returned if the packaging has been opened. Please call 208-429-0026 to obtain a Return Authorization number.
When returning a product for credit or replacement, please provide either the original or a copy of the invoice or packing slip.
Credit or replacement of goods is subject to inspection and evaluation. Coyote® O&P will not issue a credit or replace any products returned to Coyote® O&P that are not in new or salable condition. The determination about whether returned products are new or salable will be made at Coyote® O&P sole discretion. Altered products are not returnable.

AirPuck™

Prosthetist Technical Guide

AP-100

Coyote® O&P | 1-208-429-0026
www.coyote.us

Coyote.Rev.B.01092025

Table of Contents for AirPuck™

Before Starting:

Ensure the bottom external surface of the socket is parallel to the interior surface on the distal end of the socket. This can be accomplished by fabricating the socket with the proper tooling. This is critical to prevent shear forces on bolts and attachment components.

Installation

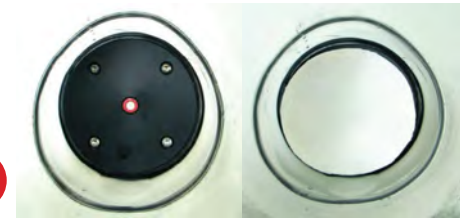
1) Lubricate the soft seal on the AirPuck™ with Dow Corning 111 Vacuum sealant. Also be sure to lubricate the proximal aspect of the socket void (The area the seal will seat).

2) Gently insert the AirPuck™ into the void at the bottom of the socket. Make sure the soft seal does not roll up as the puck is inserted. Align the four hole pattern and side hole as the puck is pushed into place. There should be resistance as the puck is pushed into place. This is the compression of the soft seal as it slides into the void. Ensure there is good even compression on the seal. The seal should appear to be a 1/2"solid wet looking band (when using clear socket material).

3) Secure AirPuck™ to the bottom of the socket by connecting external hardware into the four hole pattern of the AirPuck™. Make sure the attachment screws do not thread into the puck body more than 13mm(1/2"). The thread holes do not penetrate the puck interior. Tighten opposite screws to pull the puck down into the void evenly.

NOTE: For best results: Use circular attachment components to reduce stress and better distribute forces to the bottom of the socket. Make sure the component has a center hole.

4) Place the filter disk over the AirPuck™ lid. This 1/2 micron disk will reduce the instance of having to replace the primary filter in the AirPuck™. The filter disk should be placed felt side down (facing puck lid).



5) Install distal pad or flexible inner liner on top of the puck and filter disk. Pictures shown without socket for clarity.

NOTE: When drilling the air flow through hole in the flexible liner, drill the hole off center up the side of the flexible liner. This will act as a third filter system to catch debris before it can reach the filter located on the puck lid. NEVER drill a hole in the flexible inner socket directly on the bottom in alignment with the puck filter. (An air wick may be necessary between the two sockets).

6) Lubricate the VacLoc valve on the face O-Ring as well as the piston O-Ring. Use Dow Corning 111 vacuum sealant or Vaseline. Make sure not to apply any lubricant to the valve export hole in-between the two O-Rings as this can affect air flow.

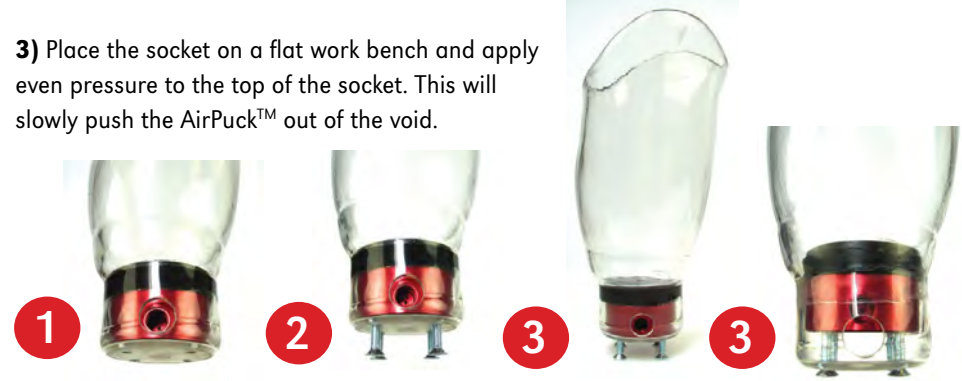
7) Insert the valve into the puck body. Ensure the valve does not bind on the socket wall.

Removal of AirPuck™

1) Remove all external hardware including the connection pyramid.

2) Thread in four 30mm screws into the bottom of the AirPuck™ through the four hole pattern in the bottom of the socket

3) Place the socket on a flat work bench and apply even pressure to the top of the socket. This will slowly push the AirPuck™ out of the void.



Valve Operation

The VacLoc is a bleed valve design NOT an auto expulsion valve (the wrong valve for vacuum). The VacLoc valve is a two position valve. It is either open or closed. In the closed position, NO air can leak into the system nor can air be evacuated.

1) Open the VacLoc valve by turning the valve 180° or more in the counterclockwise direction.

2) Attach the vacuum source to the barb fitting located inside the valve housing.

3) Evacuate the air inside the socket with a vacuum pump.

NOTE: The Actron pump needle should hold steady after the initial body of air has been evacuated. Pump to the maximum pressure initially. If the needle drops, there is a leak in either the proximal sealing sleeve, internal mechanical seal or the pump itself (see pump integrity test).

The AirPuck™ will not leak air.

4) Close the valve by turning it clockwise 180°. Keep the vacuum source attached and the vacuum applied until the VacLoc is completely closed. Finger tight tension is enough to keep the valve seated.

NOTE: Do not disconnect the vacuum source until the valve is closed.

5) Evacuate air out of socket as needed or just before higher activity. Vacuum typically lasts 8-10 hours from a single air evacuation (with a good proximal seal).

Removing the socket with an Internal Mechanical Seal

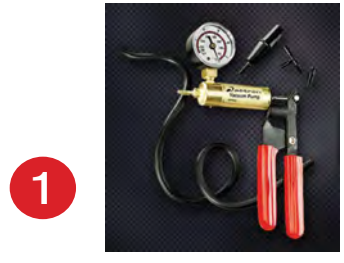
6) If the socket design has an internal mechanical seal such as a Seal-In™ liner or Aura Sleeve™, to remove the prosthesis simply open the VacLoc valve. This will allow air to enter the bottom of the socket and facilitate removal of the prosthesis.

Suction Valve Function

When **NO** vacuum is applied to the AirPuck™ the system functions as a suction valve.

Vacuum Sources

1) Actron CP7835 Brake Bleed Pump
These are durable pumps and have a gauge on the manifold. The gauge feature is beneficial for checking vacuum levels. Use Tygon tubing to connect to the Puck (1/8"ID 1/4"OD).



2) Food Saver Vacuum
An effective rechargeable electric vacuum pump.

Tips and Tricks

1) To minimize the chance for air leaks between the sealing sleeve and the socket, place a tension band over the distal aspect of the sleeve to improve the air seal.

2) To improve the air seal and adhesion between the liner and proximal sealing sleeve, use a water based lubricant between the two.

3) Always apply Blue Loctite™ 242 to screws and Torque to10Nm.

Vacuum Levels Check

With the AirPuck™ system, it is easy to check the vacuum level inside the socket at anytime.

1) Connect the Actron CP7835 vacuum pump to the barb located inside the valve housing of the socket that is already under vacuum.

2) Pump the the handle twice to remove all of the air out of the line (Tygon tubing). The VacLoc valve should still be in the closed position The gauge should read 18-20 in/hg.

3) Open the AirPuck™ VacLoc valve while the vacuum pump is still connected. The needle on the gauge on the pump will read the actual pressure inside the socket cavity.

4) Close valve while vacuum pump is still attached.

5) Disconnect vacuum source.

6) Check vacuum level frequently to monitor how much vacuum the system holds. Typically with a good proximal seal the AirPuck™ will maintain 12-15 in/hg of vacuum all day with one evacuation.

IF THE VACUUM GAUGE DOES NOT READ CONSTANT
(the needle is dropping when pulling vacuum).

Pump Integrity Check

1) Disconnect the Tygon hose from the pump.

2) Plug the end of the pump with your finger and cycle the pump. The gauge should read around 20 in/hg and remain there. If the needle drops, the pump has an internal leak and should be discarded.

Liner Configurations / Recommendations

Any liner configuration can be used with the AirPuck™. This includes:

- Any Silicone or Urethane liner with an available sealing surface of 3”or more. (Used with a sealing sleeve configuration)

- The Otto Bock™ Anatomic 3D PUR liner is a great Polyurethane choice.

- Liner Reflection Method (for use with fabric covered liners):

We Primarily use Ossur™ Dermo / Activa liners with a sleeve suspension. The liner is left long and the top half of the liner is reflected down such that the silicone faces outward. The suspension sleeve is then rolled onto the reflected liner portion (at least 3”of sealing surface) to solidify the air seal.

We **DO NOT** recommend Thermo Elastomer Gel liners or any gel liner for our vacuum systems.

The following Internal mechanical seal (the air seal is formed by sealing to the inside of the socket wall) systems work great as well:

- Ossur™ Seal In liners (X5 and Seal-In V)
- Evolution Aura Seals™
- ESP Secure Ring™
- Otto Bock ProSeal™

Sleeve Recommendations

The General Rule for sleeve selection is to choose sleeves that are tight and sticky. Remember we are trying to keep air molecules out of the socket and it needs to be an intimate fit!

We recommend the following sleeves:
- Ossur™ Iceross Sleeve
- Euro International™ Contex Gel Sleeve

Warranty Terms

Coyote® O&P Inc. warrants all of its products and services, to the original purchaser, to be free from defects in materials and workmanship. This warranty applies, subject to normal wear and tear, when the products are used as intended, without modifications, and following all of Coyote® O&P Inc. instructions and requirements.

The duration of our Limited Warranties is 12 months effective from the date of receipt. Coyote's sole obligation under this Limited Warranty shall be to repair, replace, or refund the cost of the item to the original purchaser, at Coyote® O&P Inc.'s sole discretion.

This limited warranty does not cover damage due to accidents, neglect, misuse, or operation beyond capacity, parts damaged by improper installation, any alteration or repair by other that, in Coyote® O&P Inc.'s judgment, materially or adversely affects the product.

Use of this product is not a guarantee against injury. This Limited Warranty excludes liability for any personal injury, property damage, or special, incidental, or consequential damages arising out of, related, or incident to use the product, even if Coyote® O&P Inc. has been advised of the possibility of such potential loss or damage, unless state law otherwise precludes this exclusion.

Return Policy

Please inspect all orders immediately upon receipt. In the event items were ordered or shipped in error, you must notify Coyote® O&P Inc. for a return authorization number. Coyote® O&P Inc. must be contacted within five (5) business days of the receipt of the items.
No returns will be accepted without prior authorization. Please call 208-429-0026 to obtain a Return Authorization number. When returning a product
for credit or replacement, please provide either the original or a copy of the
invoice or packing slip.
Credit or replacement of goods is subject to inspection and evaluation. Coyote® O&P Inc. will not issue a credit or replace any products returned to Coyote® O&P Inc. that are not in new or salable condition. The determination
about whether returned products are new or salable will be made at Coyote® O&P Inc. sole discretion. Altered products are not returnable.

Coyote® O&P Inc.
419 N. Curtis Rd. | Boise, ID 83706
208-429-0026 | www.coyote.us

Puck Fabrication Guide

for Internal Elevated Vacuum Systems

Detailed Fabrication Videos at www.coyote.us

No Full Carbon Lamination
See instructions for details Pg. 38 & 50

Coyote® O&P | 1-208-429-0026
www.coyote.us

Coyote. Rev.B.01092025

Table of Contents for AirPuck™

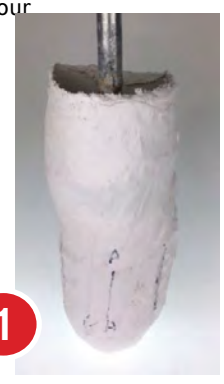
Standard Puck Mods & Model Prep

CRITICAL STEPS FOR SUCCESS:

1) Nothing should contact the molding dummy in the Red Zone (nylons, build ups, foam etc. This is the surface in which the puck will seal against).
2) The plastic pull must be perfect around the dummy side wall. It is important to get excellent vacuum during the socket forming process.
3) The interior of the void must be glass smooth. Nylon imprints in your plastic can cause a vacuum leak.
4) The socket must be fabricated such that the dummy can be removed (and the Puck installed).

Model Preparation

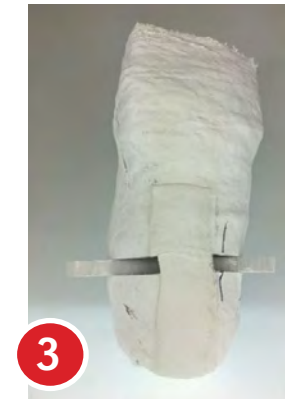
1) Fill the negative model with the pipe in the correct alignment to capture the socket flexion and AB/Adduction and rotation.



NOTE (2): To maximize the amount of vacuum to the dummy (prior to filling the mold) place surgical tubing or long party straw along your pipe such that it exits out both ends of the negative impression.

TIP(3): If an extra thick distal pad is desired cut the negative cast on the band saw and splint the negative impression back together with a 3/8" block in between the sections to lengthen the socket chamber.

4) Rectify positive model with preferred standard vacuum reductions and modification technique.
OR (Strongly Recommended)
Use the DP pressure casting method / modification for a great fitting socket with minimal reductions to your positive model. See the full video at: www.coyote.us



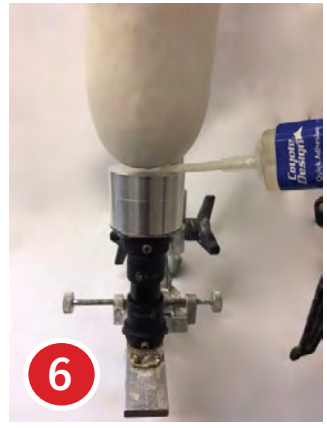
Total Contact Options (Choose one)

Option 1 (Recommended): Bond the molding dummy directly to the plaster model for a single wall socket. A total contact pad is injected at time of patient fitting. The distal pad creates a soft distal surface improving patient comfort. (See page 13)

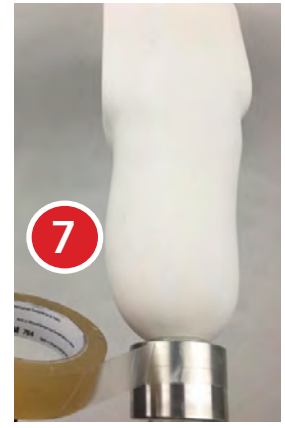
Option 2) Bond the molding dummy to the flexible inner liner.
The flexible inner liner provides total contact and allows for significant offset alignment. Follow the steps below except the Dummy will be bonded to Flexible Inner.

Attaching the Combo Molding Dummy - (Part #AP100MD)

5) Place the molding dummy (Part #AP100MD) and model in the vertical jig. Determine optimal AP and ML placement. Any reasonable amount of off-set can be accommodated for by the distal pad or flexible inner liner.



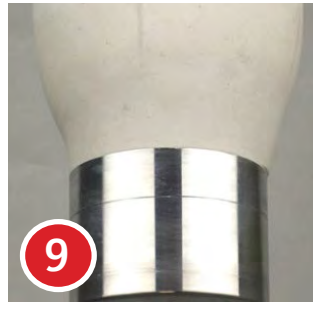
6) Bond the molding dummy in place in the proper alignment (Use Coyote QUIK GLUE 4150).



7) Apply Tape to the dummy to keep the sealing surface clean and protect the dummy during the plastering process.

8) Fill the transition between the dummy and model with plaster or similar medium.

Remove tape after plaster application and smoothing.
Note: Ensure transition buildup is smooth and cosmetic. The transition must allow for removal.



9) Ensure there is nothing contacting the molding dummy on the RED ZONE. Especially from the scribed line on the dummy to the proximal end (side opposite the four hole pattern). Any material in this area could affect the seal (nylon, seams, etc.).

10) Model is now ready for fabrication. Proceed to Thermo-FAB or LaminationFAB Sections.
OUTER SOCKET MUST BE PLASTIC OR PETG TO BE AIR TIGHT.

For Detailed Fabrication Videos visit www.coyote.us

Check Sockets & Thermo Plastic Fabrication

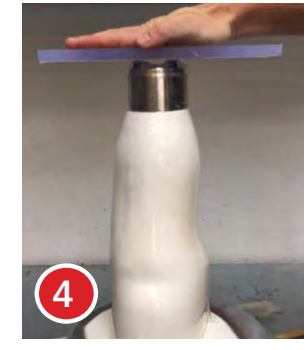
1) Install socket cap screws into the Thermo Dummy. For a thicker distal end back out the cap screws evenly.

2) Reflect and tie a vacuum nylon (Pace Line Feather Stretch) at the base of the molding Dummy and reflect over model. The nylon should NOT be placed on the dummy. Nylons can create an imprint in the plastic and cause a vacuum leak.

NOTE: Keep the **RED ZONE** free of nylons, plaster and tape. This is the sealing area the plastic must form directly to the dummy to create a SMOOTH sealing surface.

3) Blister Form OR-FIT Trans Stiff Thermoplastic socket by twisting the plastic in the frame as it is pulled down over the dummy and model.
Wrap the plastic directly against the molding dummy. No nylons, tape or plaster should be on the side wall of the molding dummy.

NOTE: Check socket material MUST be OR-Fit Trans Stiff (Curbell Plastics) or Thermolyn Stiff (OttoBock).
DO NOT USE PETG, Vivak, Durplex (THESE MATERIALS CAN CRACK CAUSING A SAFETY HAZARD TO THE PATIENT.)



4) Use a flat disk to compress the distal end of the pulled plastic. Work the Plastic around the cap screws to ensure there is no gapping around the screws.

5) Examine the plastic pull to ensure it is in perfect contact with the molding dummy body (especially in the sealing area). This is the sealing surface for the Puck and must be glass smooth.

NOTE: Repull the socket if this criteria has not been met.

6) Grind the plastic down to the socket cap screws.
Keep distal surface parallel to the dummy surface.
The Exterior distal surface should be parallel to the interior distal surface to eliminate stress to the attachment screws.

7) Break out Plaster model and remove the molding dummy.

NOTE: Use Long Screws to push Dummy out if necessary.

8) Drill a 3/8"Center Hole in the bottom of the socket. Ensure there are no burrs or plastic that protrude inward that will prevent the Puck from fully seating.
The Center hole is where air is exported out of the socket and where the Puck can read the differential air pressure (to regulate vacuum levels).

9) Drill Out Charge Plug/ Valve Opening (AirPuck™, SmartPuck™, MagPuck™, VaporPuck™).

Mark and drill the side hole with a 3/4" plastic bit. Split the difference between adjacent cap screws and draw a bisection line up the side of the socket in the molding dummy void. Measure up 3/8" from the base of the molding dummy (distal end). Place the hole medial. The Hole MUST be below the seal and above the socket floor.

Repeat this process on the opposite side for the VaporPuck™ valve installation.

10) The socket is now ready for patient fitting. Install the distal injection tool to inject a custom
distal pad.

OR

Install the appropriate puck if the distal pad has been fabricated previously.

Laminated Socket Fabrication

ATTENTION: DO NOT USE CARBON FIBER with the SmartPuck™ USE Coyote Composite, Synthex, NSP.

Use Combo Molding Dummy (Part #AP100MD)

Note: PETG works great if you're using a regular resin. If you use ER Resin or another vacuum tight resin they work well without PETG. If you are using a vacuum tight resin use a very fine knit material on the interior of the socket so it is saturated and creates a perfectly smooth sealing surface rather than the lumps and bumps of a braid.

1) Reflect and tie a vacuum nylon (Pace Line Feather Stretch) at the base of the molding Dummy. The nylon should NOT be placed on the dummy. Nylons can create an imprint in the plastic and cause a vacuum leak.

NOTE: Keep the RED ZONE free of nylons, plaster and tape. This is the sealing area the plastic must form directly to the dummy to create a SMOOTH sealing surface.

2) Begin by pulling a 3/16"PETG inner socket (hot PVA) in a 16"x16" frame. Twist the plastic as the socket is pulled to help wrap the plastic around the dummy.

Plastic must be pulled so there is perfect contact around the molding dummy body. This is the sealing surface. It is critical the plastic conforms tightly to the sidewall of the dummy and is glass smooth on the interior. PETG is required for an airtight socket.

3) Scratch up the outer surface of the PETG liner to facilitate a good resin bond. DO NOT PUNCTURE PETG LINER- This will cause a vacuum leak.

4) Burn out (w/ hot awl) the five holes located on the bottom of the dummy.

NOTE: Holes should only be as wide as given thread. to help prevent resin from getting under PETG. PETG should be under cap screws ensuring the bottom socket thickness is at least 1/4". (Cap screws should not sit directly on the dummy).

5) Fill all holes and voids with Dow Corning electrical insulating compound #4 or machine wax (generously). This will prevent resin from getting under PETG and in the dummy.

6) Install socket cap screws into the Dummy. Fill cap screw heads with machine wax.

For a thicker distal end: Back out the cap screws evenly to increase desired thickness.

7) Locate the proper location for the Charge Plug /AirPuck™Valve Fab Dot (Circular) . This will create a grind through hole for the charger /AirPuck™ Valve.

NOTE: Alternatively... Holes for the charger / valves can be drilled out after fabrication if desired. Keep the holes bellow the Puck seal.

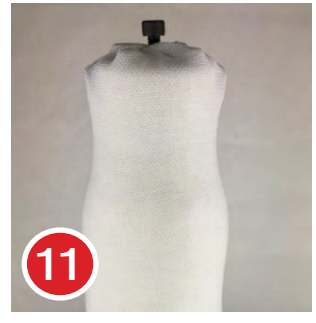
8) Draw a line bisecting the four hole euro pattern in the bottom of the socket. Extend lines up sides of dummy by 1".

9) Apply the fabrication dots to the PETG. Affix each Fabrication Dot by centering the dot on the line up the side of the Puck. The Fab Dot should be placed as distal as possible BUT above the distal socket thickness of the PETG. Typically measure up 1/4'from the bottom of the socket.

10) Thread in the center Post. Lubricate the post with machine wax. (Model shown with both Fab Dots for VaporPuck setup. Other systems like the Smart-Puck ONLY require the circular Fab Dot).

11) Layup Model. Tie material to center post. Try to use one tie to avoid extra bulk.

NOTE: DO NOT use carbon fiber if using the SmartPuck™. Carbon can block the Bluetooth signal. Carbon fiber reinforcement strips are allowed. Laminate the socket with a non-carbon fiber alternative such as Coyote Composite, Synthex, NSP.
To avoid a PETG layer we recommend Prosthetics Research Specialtists ER Resin or Paceline Eco-Extreme Resin.



12) Cut holes in layup to expose the four cap screws.

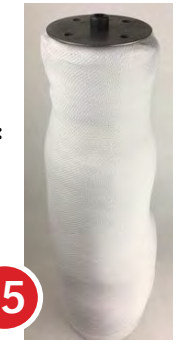
13) Carefully remove the center post

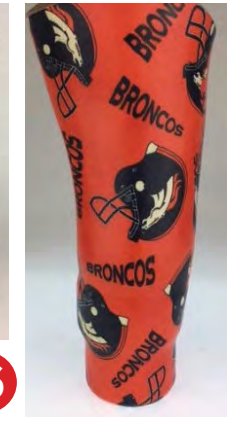
14) Place the center post through the lamination plate. Lubricate threads and reinstall the center post and lamination plate into the dummy.

Ensure there is adequate material for distal socket thickness.

15) The socket is ready for lamination.

FOR FASTER FABRICATION: The socket can be fabricated by simply grinding to the cap screws and the center hole drilled out after the socket is completed.





16) Laminate Socket.

17) Remove lamination plate.

18) Grind down to the cap screws on the distal end of the socket (if the lamination plate was not used).

NOTE: The exterior bottom surface of the socket must be parallel to the interior bottom surface of the socket. This will eliminate shear forces to the attachment screws.

19) Break out plaster model & remove molding dummy.

20) Grind the side of the lamination to expose the Fab Dots.

21) Remove the Fab Dots.

22) Use a Dremel to remove the remaining PETG underneath where the Fab Dot was installed.

NOTE: Widen the hole as needed. Ensure the hole does not extend upward into the sealing area.

23) The socket is now ready for patient fitting.
Install the distal injection tool to inject a custom distal pad.

OR

Install the appropriate puck if the distal pad has been fabricated previously.

ATTENTION:
Lay-up instructions are helpful hints on how to work with the SmartPuck and AirPuck. Actual lay-ups are the responsibility of the technician and/or practitioner.
Apply Blue Loctite™ 242 to screws and Torque to10Nm.

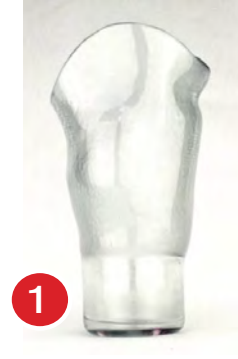
Methods for Total Contact In the Distal End of Socket

Using the Distal Injection Tool Part# AP100DI

Option 1
Injecting a Custom Distal Pad
Strongly recommended for SmartPuck™

1) Fabricate socket to completion such that it is ready to be fit on the patient.

NOTE (2): There must be 5 holes drilled in the bottom of the socket. 4 hole Euro pattern & one 3/8" center hole. This is the hole in which silicone is injected into the socket. The bottom of the socket should be flat and level.



2) Five Hole Pattern is required to inject silicone and for proper Puck function.

3) Apply a rubber band to the body of the tool & apply light lubricant to rubber band to insert tool into socket.

4) Insert the taller portion of the injection tool into the socket. 9 Hole pattern facing up.

5) Secure the injection port to the bottom of the socket by securing it to the internal module with the two 6mm screws included.

NOTE: Only two of the four holes are threaded. This is to allow for easy cleaning of the unit.

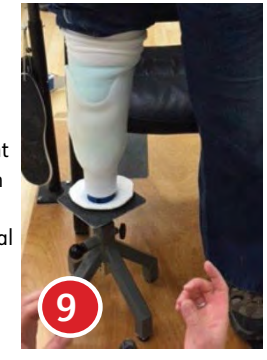
NOTE: The injection port should face anterior. The center hole in the injection port should align with the center hole in the socket. Tighten securely.

6) Test fit the socket to ensure the correct sock ply is used such that the patients limb is not too deep in the socket and is in the correct orientation. The distal end of the socket is now ready to be injected.

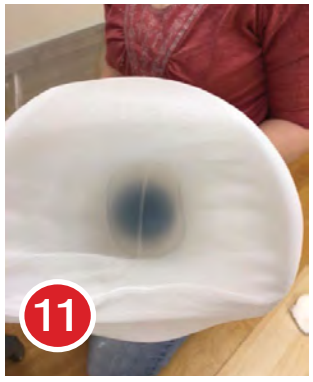
7) Place a Saran Wrap™ barrier over the patient's limb, liner and socks.

8) Apply a vacuum nylon over the covered residual limb. Orientate the seam anterior/posterior.
An orientation mark can also be placed on the nylon (this mark & nylon will become embedded in the silicone pad).

9) In the parallel bars have the patient bear weight (50/50) in the socket with the socket supported by a limb stand with a Pe-lite pad or other soft material as an anti-slip agent.



10) Inject Renew Silicone 5 or similar (1 minute set silicone) until the void in the socket is completely filled. Have the patient stand on the socket squarely so the silicone does not drain out of the air escape holes in the bottom of the socket. Allow silicone to cure (4-5 minutes).



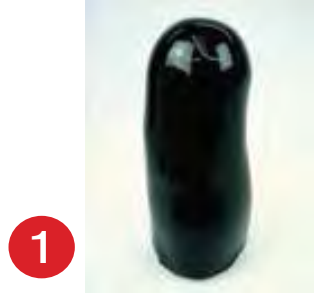
11) Remove socket after silicone has setup. Mark the anterior alignment of the pad.

12) Disassemble the distal end injection

13) Remove and trim the distal end pad.

14) Punch a 1/2"CENTER HOLE in the pad to allow vacuum to pass through the silicone.

Option 2 - Flexible Inner Liner



1) Pull inner socket out of desired material.

2) Follow steps 5-10 in the Model Prep Section of this manual (Attaching the molding dummy).

The Molding Dummy setup is identical over a flexible inner liner.

TIP: Consider using a PVA to help separate the socket materials. Ensure the PVA bag & vacuum wicks are not on the molding dummy.

For alternative methods, contact Coyote O&P Inc.

See www.coyote.us for instructional videos on injecting a distal pad.

Transferring Alignment

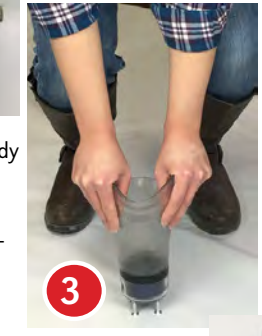
IMPORTANT: To transfer alignment or to convert a check socket to a laminated socket THE PUCK MUST BE REMOVED from the socket and replaced with the Combo Molding Dummy.

1) Place the Socket with alignable components the in vertical jig. Mark and remove the external hardware connecting the socket (this will be reinstalled once the Puck is replaced with the molding dummy).

2) Remove the Puck from the socket by installing long screws into the Puck through the socket.

3) Place the socket on the floor and apply full body weight on the socket. The Puck will unseat slowly. This process can take 30 seconds.

DO NOT TRY TO BANG OR BEAT THE PUCK OUT OF SOCKET. This will damage Puck and void warranty.



4) Tape off the center hole in the Dummy.

5) Lubricate the dummy. Use 30mm screws to pull the dummy all the way back down into the socket.

6) Reinstall the connecting hardware to the socket place Socket back in vertical jig.

7) Fill the check socket in the vertical jig.

It is not necessary to fill the socket with the Distal end pad in place. Leave the interior of the socket flat to avoid having to redo the plaster transition between the dummy and the model. The same distal pad that was made in check socket can be used in definitive.

NOTE: If the alignment is OFF by a significant margin it maybe advisable to fill the socket with the distal pad in place(on top of the molding dummy). If the alignment position of the Puck is moved significantly it will be necessary to reinject the distal pad.

8) Once the plaster has set remove the model from the jig. Cut off old test socket and place the model back in the vertical jig.

9) Remove the molding Dummy and attach it to the original connector & components in the vertical jig.

10) Place the Dummy back in the vertical jig. Neutral out Molding Dummy & components.

11) Bond Molding Dummy to the plaster model in the vertical jig. (Space Dummy away from model to create a thicker distal end pad).

12) Tape Dummy and fill the transition between the dummy and the model.
(SEE MODEL SETUP GUIDE, Page 34)

Coyote O&P Inc.
419 N. Curtis Rd. Boise, ID 83706
208-429-0026 | www.coyote.us

ZeroPuck™

Prosthetist Technical Guide

ZP-200

No Full Carbon Lamination
See instructions for details Pg. 38 & 50

Coyote® O&P | 1-208-429-0026
www.coyote.us

Coyote.Rev.B.01092025

Table of Contents ZeroPuck™

Introduction

The ZeroPuckTM is a modular socket computer system that utilizes an electronic vacuum pump to create negative pressure inside the prosthetic socket. The ZeroPuck™ improves the linkage between the residual limb and the prosthesis. The ZeroPuck™ is equipped with an easy to use iDevice and application interface, allowing the user to quickly and easily set and adjust vacuum pressure settings of their prosthesis.

ZeroPuckTMSystem advantages include:

- Reduction in daily volume differences
- Improved proprioception
- Improved adhesion / suspension
- Reduction in the forces that are applied to the residual limb

What's Included:

1) ZeroPuck™ Vacuum system
2) Charger
3) Magnetic Wand
4) Puck Lube
5) Instructions
6) Extra O-Ring Kit
7) Dummy & Dummy Insert

Unit Overview

The ZeroPuck™ Systemconsists of the following key components:

· ZeroPuck™
· Socket (in which the ZeroPuck™ is installed)
· Prosthetic Liner
· AirWick
· Sealing Sleeve or Annular Seal
· Distal Pad or Flexible inner liner

NOTE: THE ZEROPUCK™ SYSTEM CAN BE USED WITH SLEEVE SUSPENSION OR INTERNAL MECHANICAL SEALS SUCH AS SEAL-IN™ LINERS AND SIMILAR SYSTEMS.

The ZeroPuck™ creates an elevated vacuum in the space between the socket and the liner when the ZeroPuck™ is activated.

ZEROPUCK SP™ (Smart)

The user can configure and activate the ZeroPuck SP™ through the use of an easy to use Smart Device APP or manually using the included Magnet. User configured settings in the Smart Device APP are wirelessly transmitted to the ZeroPuck™ through a Bluetooth LE connection without the inconvenience of cables and connectors.

CAUTION: The socket MUST be fabricated following the ZeroPuck™ socket fabrication technique. The use of other techniques may cause health risks for the patient.

CAUTION: Attempting to modify or use the ZeroPuck™ System in any other configuration other than its intended use may cause health risks for the patient.

Accessories (Refer to the SmartPuck™ instructions as needed)

- **ZeroPuck™ Charger** - Refer to SmartPuck™ charger instructions
- **ZeroPuck™ App** - An application is available for the ZeroPuck™ System and can be downloaded from the APP Store™ or Google PlayT™. The SmartPuck™ application provides an intuitive interface giving the user control over the various ZeroPuck™ settings and controls as well as sensor readings. Refer to the SmartPuck™ instructions for app download and instructions.
- **MagneticWand** - The Wand allows the user to turn the ZeroPuck's™ pump on and off by simply waving the wand along the bottom of the unit.

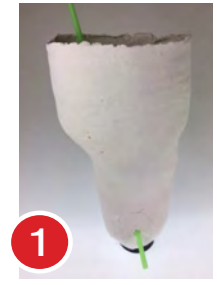
Installation

WARNING: The user must be trained by the prosthetist or practitioner who will be performing the product fitting.
WARNING: Installation of the ZeroPuck™ into the socket must be done by a certified prosthetic technician or practitioner who is fitting the user.
For clinical or technical assistance please contact Coyote O&P Inc.

Coyote® O&P Inc. 419 N. Curtis Rd. Boise, ID 83706
(208) 429-0026 | www.coyote.us

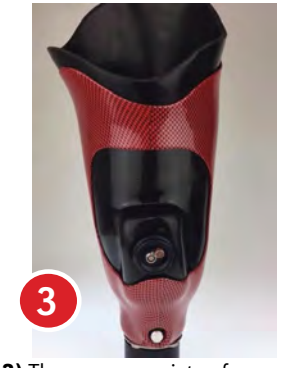
ZeroPuck™ Socket Fabrication

ZeroPuck™ Basics



1) There MUST be a vacuum hole or passage way through the model (under the dummy) to get good vacuum around the seal /o-ring area.

2) Recommended placement for the ZeroPuck™ is Distal /Medial or Lateral for Transfemoral sockets and Posterior for Transtibial sockets. However, placement location is the prosthetists discretion.



3) There are a variety of ways to design a prosthetic socket with the ZeroPuck™. This manual will detail how to fabricate a single wall socket designed to be worn with an internal sealing liner (liner or sock with a sealing mechanism). Please visit www.coyote.us for fabrication videos on how to fabricate two stage TF sockets and other designs.

4) A flat spot to seat the Zero-Puck on the model can be created (1) during the casting process by pushing the molding dummy into the negative impression during the casting process OR (2) after the negative impression has been filled.

5) Typically we DO NOT recommend forming the ZeroPuck into the check socket. The check socket can be fit with a threaded elbow into the socket material and utilize a in line one way valve and brake bleed pump to evaluate the liner, seal and socket fit.

6) If desired the ZeroPuck can be integrated into the check socket. Follow the instructions as detailed. USE OR-FIT Trans Stiff™ (Curbell Plastic™) or Thermolyn Stiff™ (Otto Bock™) plastic for the check socket material. These materials will conform around the molding dummy and sealing surface during the forming process. PETG, Durplex, Vivak will not conform and the Puck will not seal the socket.

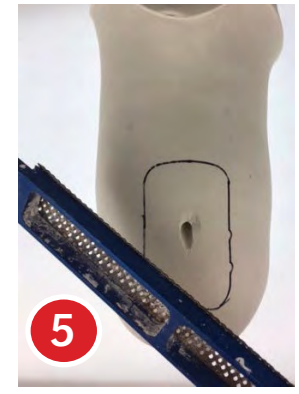
ZeroPuck™ Fabrication... Getting Started

1) Prior to filling the negative impression, place a vacuum tube or party straw through the cast such that it exits out where the Puck will be placed on the model. IT IS CRITICAL TO HAVE A VACUUM SOURCE UNDER THE ZERO MOLDING DUMMY.
TIP: 17" Mammoth Bendy Straws from www.barproducts.com work well for a disposable in cast vacuum tube.

2) Position the Dummy in the distal / medial or lateral region of the socket. ZeroPuck placement on the model is at the prosthetists discretion. Orient the Dummy such that the valve post & sealing nut are proximal (longer end of the Puck body points downward).
CRITICAL : The molding dummy must be located below the area where the liner seal will reside.

3) Trace the outline of the dummy onto the model.

4) Ensure the vacuum passage way in the cast is located underneath where the dummy will be placed.
CRITICAL: There must be a vacuum source/ passage way under the dummy to ensure the plastic conforms to the dummy and seal area.

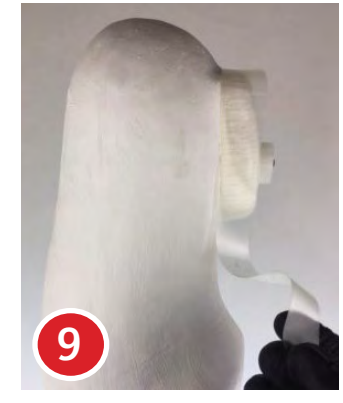


5) Flatten the model surface enough to get the dummy to sit relatively flat. (Small gaps on the corners will be filled in later).

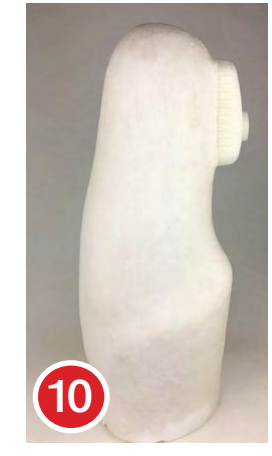
6) Apply Tape to the side wall of the dummy. This will keep the dummy clean during the plastering process.

7) Screw or spot glue (don't seal off vacuum source) the Dummy and forming post into the model in the desired location. Orientation should be vertical with the longer side of the dummy positioned on the distal aspect of the model.

8) Use plaster to transition the edges of the dummy & blend it seamlessly with the model. Be careful not to recess the puck.
CRITICAL: Keep the ENTIRE edge of the dummy free of any plaster. This will allow the plastic to form directly to the edge of the dummy. Excess plaster will cause a gap.



9) Remove the tape from the dummy. This will produce a clean edge for the plastic to form to.



10) Model is ready for fabrication.

ATTENTION:
Lay-up instructions are helpful hints on how to work with the SmartPuck, AirPuck and ZeroPuck. Actual lay-ups are the responsibility of the technician and/or practitioner.

11) Blister form Flexible inner socket. CRITICAL : The plastic must vacuum form perfectly around the dummy and ESPECIALLY around the base of the post. This is where the sealing o-ring sits. Re-Pull socket if this criterial is not met.

12) Apply PVA bag over flexible inner liner.

VISIT www.coyote.us Fabrication Videos On Our Adjustable DoubleWall Vacuum Socket

13) Laminate the socket with the preferred method and materials. When using a ZeroPuck use an alternate to Carbon Fiber such as Coyote Composite, Synthex, NSP.
Typically a window is cut in the frame of the laminated socket for the ZeroPuck. This allows the Bluetooth to function correctly if a carbon socket us used.

14) Grind down to the top of the dummy post area of the dummy. GRIND TO THE TOP SURFACE OF THE DUMMY POST ONLY. DO NOT GRIND FURTHER THAN THE TOP SURFACE OF THE POST. KEEP THE PLASTIC LEVEL WITH THE SURFACE OF THE MOLDING DUMMY POST. THIS IS CRITICAL FOR GETTING A VACUUM TIGHT SOCKET!

15) Remove Screw and Dummy Post. Check the continuity between the pulled plastic and the interior of the molding dummy body. The transition should be seamless.
NOTE: Any gap between the dummy and plastic pull could cause a vacuum leak.

16) Break out plaster mold. and grind out a window for the Puck and inner socket in the laminated socket. This will improve Bluetooth™ connectivity.

17) The socket is now ready for Puck installation and patient fitting.

Coyote O&P Inc.
419 N. Curtis Rd. Boise, ID 83706
208-429-0026 | www.coyote.us

ZEROPUCK™ INSTALLATION:

1) Remove the base O-Ring from the ZeroPuck™.

2) Apply a **VERY** light layer of Puck Lube to both sides of the O-RING. Re-apply the o-ring to the base of the post. **DO NOT OVER LUBRICATE**- Excess lube can get sucked in to the intake of the Puck and clog the pump.

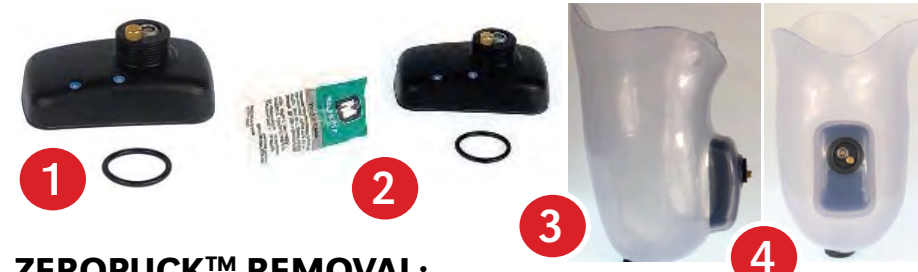
3) Insert the ZeroPuck™ into the void on the interior of the socket. Gently slide the threaded post through the hole in the socket wall and seat the Puck completely.

4) Thread the Lock nut onto the exposed threads on the ZeroPuck™ post. **HAND TIGHTEN ONLY!**

CAUTION: NEVER USE TOOLS TO TIGHTEN THE LOCKNUT. THIS WILL CRACK THE HOUSING AND IS NOT A WARRANTY ITEM.

HAND TIGHTEN ONLY!

CAUTION: Be careful not get puck lube on the blue intake filters. This will clog the system

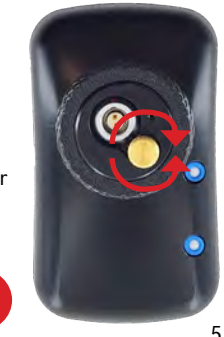


ZEROPUCK™ REMOVAL:

1) Remove the Lock Nut on the outside of the socket.
2) Gently push the post back through the socket. Apply even pressure.
3) Clean the excess lubrication off the Puck with a clean rag with warm water. Do not get any lubricant or water on the blue intake filters.

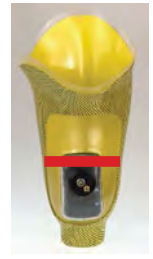
VALVE OPERATION

1) Ensure the black rubber washer is seated under the thumb screw post.
2) Turn the gold valve counter clockwise to open. This will allow air to enter the socket.
3) Turn the gold valve clockwise to close the valve. Compress the rubber washer lightly.



VERIFY SEAL PLACEMENT:

Correct (air tight)



Incorrect (vacuum leak)

NOTE: With sealing liners and seal mechanisms: The internal seal of the liner or annular seal must be1"above the Zero Puck™ housing.

DONNING INSTRUCTIONS FOR INTERNAL SEALING SYSTEMS

1) Charge the ZeroPuck™ and Smart Device every night to make sure you have a full charge through out the day.

2) Don a urethane or silicone Liner. The Liner should be a naked liner or Sealing liner that has sealing mechanism bonded to the liner. The seal of the liner but be at least 1" proximal to the Zero-Puck™ Housing.

3) Apply annular seal over the liner (AuraSeal™, Echo Seal™, etc.) Naked liner is required with these seals.

NOTE: Movable Seals such as Seal In X™ on fabric covered liners do not provide an adequate airtight seal for the ZeroPuck. We have experienced significant problems with vacuum leaking between the seal and the liner.

DO NOT USE THESE LINER/SEALS WITH ZEROPUCK™

4) Apply hand sanitizer gel or spray alcohol to the seal and inner socket to allow for donning of the socket.

5) Open the gold ZeroPuck™ Valve 1/2 turn counter clockwise.

6) Insert Limb into the prosthetic socket.

7) Close the gold valve.

8) You are now ready to begin using the ZeroPuck™ system.

DONNING INSTRUCTIONS FOR DOUBLE WALL SOCKETS

1) Charge the ZeroPuck™

2) Don a urethane or silicone Liner. The Liner should be a naked liner or a fabric covered liner with the proximal 3-4 inches of the liner with exposed silicone or urethane. The proximal aspect of the liner acts as the sealing surface when using a sealing sleeve.

3) Apply an air wick or sheath to the liner below the seal. Vacuum will flow over the area where the fabric or sheath is.

4) Don the inner socket. Ensure the inner socket is rotated in the proper orientation to ensure the toe in / toe out of the outer socket and frame are in the correct alignment.

5) Roll up sealing sleeve. The sleeve should directly contact the proximal 3"-4" of exposed liner to create a vacuum tight seal.

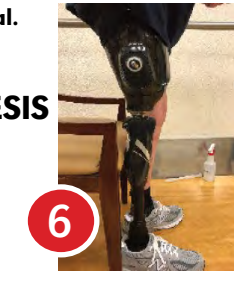
6) Insert Limb/ inner socket into the outer frame of the prosthetic socket. Engage locking mechanism.

7) You are now ready to begin using the ZeroPuck™ system.

CRITICAL: The annular seal or Sealing liner seal MUST BE AT LEAST 1" PROXIMAL to the entire ZeroPuck™ Housing. Seals that intersect the housing will not be able to create a vacuum tight seal.

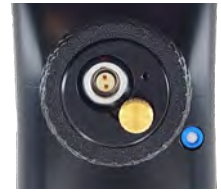
REMOVING THE PROSTHESIS

1) TURN OFF THE ZEROPUCK SP™ BEFORE REMOVING PROSTHESIS!



Charging

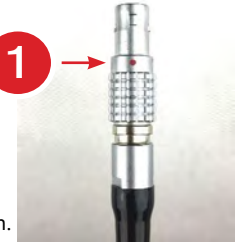
The ZeroPuck™ is equipped with an internal LiPO battery which will provide power to the ZeroPuck™ as long as it is charged. Before attempting to use the ZeroPuck™ first make sure the battery is fully charged. In order to ensure proper ZeroPuck™ operation, it should be charged every night by using the included charger.



NOTE: NEVER CHARGE THE ZEROPUCK WHEN WEARING THE PROSTHESIS.

1) To charge the ZeroPuck™ locate the red charger alignment dots on both the Puck charge port and on the charge plug.

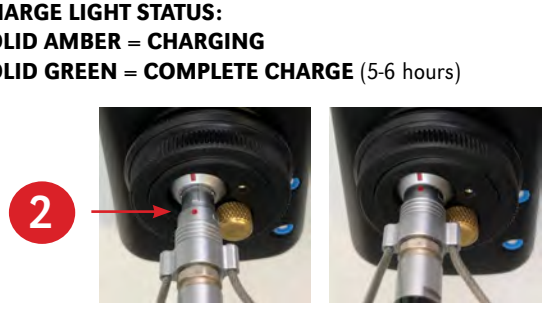
NOTE: THE CHARGE PLUG KEYS IN TO THE PUCK ONLY ONE WAY. THE RED DOTS MUST BE ALIGNED!



2) FULLY insert the charger into the Puck Housing into the charge base. The charger will lock and lock into place. The RED DOTS on the charger and Puck will almost touch (2mm apart).

3) Once the ZeroPuck™ has reached a full charge, the LED indicator on the ZeroPuck™ charger will illuminate a solid green non flashing pattern.

CHARGE LIGHT STATUS:
SOLID AMBER = CHARGING
SOLID GREEN = COMPLETE CHARGE (5-6 hours)



DISCONNECTING THE CHARGER

1) Pull back the knurled collar on the silver adaptor on the end of the charge cord.

2) If the unit has a lanyard loop on the silver charger plug, simply pull the lanyard back (away from the puck) to disengage the charger.

NOTE: DO NOT PULL ON THE CORD TO REMOVE THE CHARGER. NEVER TWIST OR USE TOOLS TO REMOVE CHARGER. THIS WILL VOID THE WARRANTY.

NOTE: If the charger does not indicate a light or is blinking, the charger may be damaged. Discontinue use and contact medical provider.

Battery Life

ZEROPUCK SP™ (Smart): 2-3 Days (Bluetooth)

Hall Switch Operation

(Magnetic ON/ OFF Switch)

Location

1) The Hall switch position is marked on the bottom of the ZeroPuck™ with a sticker. The switch is located towards the bottom of the Puck.

Operation

1) Slide the magnet over the bottom of the Puck in the location described above in one single fluid motion. This motion will turn the pump ON.

2) Repeat the same procedure to turn the Puck OFF.

The Puck will vibrate 1X = SmartPuck™ is ON.
The Puck will Vibrate 2X = SmartPuck™ is OFF.

Vacuum Level

The ZeroPuck™ will default to the last vacuum setting that was entered into the Puck. The ZeroPuck™ will remember and maintain the last vacuum setting that was entered into the system.

See your Mobile APP under the ABOUT TAB for a detailed Video on how to use this function.

Messages

The ZeroPuck™ will communicate with the user through messages sent to the Smart Device.

- Battery low indicator
- Connection lost indicator

Maintenance / Cleaning Instructions

- If pump function decreases the pump should be sent back to Coyote® O&P Inc. for evaluation and repair. Pump repairs and debris removal are NOT a warranty item.
- There is no sterilization required for any components of the ZeroPuck™ System.

CAUTION: The ZeroPuck™ Must NEVER be submerged in water or any other liquid for any length of time.

Liner Configurations / Recommendations

Almost Any naked liner or naked top liner can be used with the ZeroPuck™.

- Any silicone or urethane liner with an available sealing surface of 3”or more. (Used with a sealing sleeve configurations)
- The Otto Bock™ 6Y520, Evolution, ESP, OWW Duo

We **DO NOT** recommend thermo elastomer gel liners or any gel liner for vacuum systems. SEAL IN XTM LINERS ARE NOT RECOMMENDED DUE TO VACUUM LEAK PROBLEMS BETWEEN THE SEAL AND LINER USE ANY TYPE OF INTERNAL MECHANICAL SEAL LINER SUCH AS SEALIN™, OR AURA SLEEVES™,

Sleeve Recommendations

The general rule for sleeve selection is to choose sleeves that are well fitting and sticky. Sleeves can be used with sub-ischial and double wall sockets.
We recommend the following sleeves: Thermoply, Otto Bock Pro Flex™, Alps

Warranty Terms

Coyote® O&P Inc. warrants all of its products and services, to the original purchaser, to be free from defects in materials and workmanship. This warranty applies, subject to normal wear and tear, when the products are used as intended, without modifications, and following all of Coyote® O&P Inc. instructions and requirements.

The duration of our Limited Warranties is 12 months effective from the date of receipt. Coyote® O&P Inc.'s sole obligation under this Limited Warranty shall be to repair, replace, or refund the cost of the item to the original purchaser, at Coyote® O&P Inc.'s sole discretion.

This limited warranty does not cover : Clogged or obstructed electric pumps/plumbing, damage due to accidents, pump failure due to inadequate filtration/pump maintenance, neglect, misuse, operation beyond capacity, use of internal mechanical seals, parts damaged by improper installation/removal, any alteration or repair by other that, in Coyote® O&P Inc. judgment, materially or adversely affects the product. Damage to the Puck from trying to pound or pry the Puck out of the socket (scratches, dents, evidence of tool use completely void the warranty of the device.

Use of this product is not a guarantee against injury. This Limited Warranty excludes liability for any personal injury, property damage, or special, incidental, or consequential damages arising out of, related, or incident to use the product, even if Coyote® O&P Inc. has been advised of the possibility of such potential loss or damage, unless state law otherwise precludes this exclusion.

Return Policy

Please inspect all orders immediately upon receipt. In the event items were ordered or shipped in error, you must notify Coyote® O&P Inc. for a return authorization number. Coyote® O&P Inc. must be contacted within five (5) business days of the receipt of the items.

No returns will be accepted without prior authorization. Due to the computerized nature of the SmartPuck™ product and agreements with Apple Inc™ the SmartPuck™ can not be returned if the packaging has been opened. Please call 208-429-0026 to obtain a Return Authorization number. When returning a product for credit or replacement, please provide either the original or a copy of the invoice or packing slip.

Credit or replacement of goods is subject to inspection and evaluation. Coyote® O&P Inc. will not issue a credit or replace any products returned to Coyote® O&P Inc. that are not in new or salable condition. The determination about whether returned products are new or salable will be made at Coyote® O&P Inc. sole discretion. Altered products are not returnable.

Coyote® O&P Inc.,
419 N. Curtis Rd. | Boise, ID 83706
1(208) 429-0026 | www.coyote.us

More information is available online at - www.coyote.us/vacuum-technology

Digital and Video instructions are available online at - www.coyote.us/instructions-vacuumsystems