Silicone ArmLiner

Fabrication of a Transradial Prosthesis with Ottobock Silicone ArmLiner

Technical Information 3.3.1
1 Introduction

The residual limb socket is of the utmost importance for the quality and comfort of an upper limb prosthesis. The use of a Silicone ArmLiner clearly improves wearer comfort, ensures good residual limb adhesion and reduces frictional forces. With an adequate residual limb length, an elbow-encompassing socket is not required. This enables unrestricted pronation and supination.

Silicone offers particular advantages:
- Temperature resistant from -60 °C to +200 °C
- Resistant to water, perspiration and weather
- Neutral odour and taste
- High gas permeability
- Good adhesion

As close to 100% contact as possible between the skin and Silicone ArmLiner is a fundamental requirement for a successful fitting; otherwise perspiration can condense into liquid. Reddening of the skin and allergic reactions caused by amino acids in perspiration are possible as a result.

A precise plaster casting technique is therefore of particular importance to ensure that the benefits of the Silicone ArmLiner can be used to full advantage.

In this Technical Information, the fabrication of a transradial prosthesis with a 14Y1 Ottobock Silicone ArmLiner with pin and lock is illustrated as an example.

2 Components

2.1 Silicone ArmLiner

14Y1 Silicone ArmLiner for use with 14A1 Lock Set. In the distal area, a threaded plate is integrated to screw in the 14A107 Pin.

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2.2 Lock and Accessories

14A1 Lock Set consisting of:
(1) 14A110 Lock
(2) 14A107 Pin
(3) 14A108 Lamination Ring, including casting protector

14A111 Dummy Set consisting of:
(4) 14A113 Pin Dummy with thread
(5) 14A114 Pin Dummy without thread
(6) 14A112 Shaped Dummy for lamination ring

2.3 Taking Measurements

To select the size of the Silicone ArmLiner, the residual limb circumference has to be measured from the end of the residual limb. To determine the size of the Silicone ArmLiner required, deduct approx. 1 – 2 cm.
Tighten the 14A113 Pin Dummy with thread on the chosen 14Y1 Silicone ArmLiner.

Turn the Silicone ArmLiner inside out or roll it up.

Apply 640Z5 Plaster Insulating Cream to the residual limb. Evenly unroll the Silicone ArmLiner onto the residual limb, avoiding the displacement of soft tissue.

**Important!**
The formation of wrinkles and air pockets between the skin and Silicone ArmLiner must be avoided! Under no circumstances should the Silicone ArmLiner be pulled up like a sock!
Check the fit of the Silicone ArmLiner. The pin dummy with thread must be aligned in the axial direction of the residual limb.

Apply 640Z5 Plaster Insulating Cream to the outside of the Silicone ArmLiner.

Pull on a moistened 623T3 Perlon Stockinette. Keep the perlon stockinette tight with the help of a suspender.

Bend the elbow at approx. 70°-90° and wrap, circularly and diagonally in turn, with 699G1 Elastic Plaster Bandage using even tension. Ensure that the elbow joint is free to bend. Also cover the base of the pin dummy with thread in plaster.

Keep the elbow bent while the plaster sets. Note the specified position of the pin dummy with thread.
Pull off the plaster negative after it has set. Clean the Silicone ArmLiner and residual limb with lukewarm water.

**Note:**
*Do not use solvents such as thinner, acetone, benzine etc.*

Insert the 14A114 Pin Dummy without thread distally into the negative to a depth of approx. 2 cm. This creates an axial recess in the plaster positive for the position of the casting dummy.

Extend the proximal edge with a 699G3 Cellona® Plaster Bandage. Then trim the edge and fill the negative with wet plaster.
Alignment of the lamination ring and shaped dummy for the lamination ring.

Slide the shaped dummy for the lamination ring onto the pin dummy in the plaster positive. With wet plaster, create a thin and exact support for the lamination ring between the plaster positive and the pin dummy.

Then smooth the transitions with a rasp. Remove the shaped dummy for the lamination ring and the pin dummy without thread from the plaster positive.
Pull on a soaked 99B81 PVA Bag, free of wrinkles, and tie off distally.
Turn on the vacuum machine.

Apply plaster insulating cream to the thread of the casting protector and screw it into the lamination ring.
Position the lamination ring with casting protector on the plaster positive. Mark the desired position of the release pin.

Reinforce the lamination resin inner socket with dacron felt and perlon stockinette. The reinforcement depends on the residual limb dimensions, type of prosthesis, expected load etc.

Cut off perlon stockinette of double the length, pull on half and tie off in the groove of the lamination ring.
Integrate circular, distal and proximal carbon reinforcement with lateral and medial connecting strips.

⚠️ **Attention:**
With myoelectrically controlled prostheses, there must be no connection of carbon fibre fabric between the electrodes and lamination ring!

Fold over the perlon stockinette.

Position 507S15 Toothed Lamination Disks to attach the outer socket. Apply two additional layers of perlon stockinette.

Pull on the soaked PVA bag. Depending on the size of the plaster positive, mix up the corresponding amount of 617H19 Orthocryl® Lamination Resin with colour paste and hardener. For a distal finish without wrinkles, tighten the PVA bag and tie it off at the lamination ring.

After curing, cut open the PVA bag in the area of the casting protector. Loosen the casting protector with a two-hole screwdriver to check whether the lamination resin has penetrated.
Reinsert the casting protector. Apply talcum to a 99B71 PVC Bag and pull it on.

Position the 743A18 Alignment Tool with a foam insert of the corresponding hand size.
Tie off the PVC bag.

Measure the forearm length of the prosthesis and reposition the foam insert on the alignment tool until the upper edge reaches 1 cm beyond the nominal measurement. Turn on the vacuum machine.

Glue a strip of foam, approx. 2 cm wide, all around the casting slightly below the lamination disks.
Conically wind a trimmed Trolen film around the casting and secure it. Then fill with 617H12 Pedilen® Rigid Foam 200 – mixed 1:1 with 617P21 Pedilen Hardener and stirred well – for the shape of the outer socket.

After demoulding, remove the casting dummy and install the lock.

Roll the Silicone ArmLiner onto the residual limb, free of wrinkles.
5 Trial Fitting the Prosthesis

Engage the pin in the lock.

After shaping the Pedilen®, the outer socket is cast in the usual manner and the bore hole for the release pin is drilled. In case of excess length, shorten the release pin.

Verify the locking and unlocking functions. The pin has to engage audibly in the lock.

Wearing the Silicone ArmLiner requires intensive daily skincare to avoid skin irritation. Please inform the patient regarding the required skincare and provide the 646D89 Patient Information for the Ottobock Silicone ArmLiner.