

MANUFACTURING GUIDELINES

Trans-Femoral Prosthesis

with monocentric knee joint



Promoting
Independent
Lifestyle

Foreword

The polypropylene (PP) technology

This technology was created by the International Committee of the Red Cross (ICRC) in 1979. Its use is appropriate to specific contexts i.e., countries affected by war and low-income or developing countries.

The technology has been tailored to meet the needs of the physically disabled in the countries concerned.

The features of this technology are:

- Freedom from the transport and storage restrictions of other materials and no shelf-life constraints;
- Durable, comfortable, easy for service users to use and maintain;
- Its hard cosmetic shell helps the device maintain a good appearance throughout its life;
- Easy for P&O technicians to learn, use and repair;
- Standardized but compatible with the environment in different regions of the world;
- Low-cost but modern and consistent with internationally accepted standards (ISO certification and CE marked);
- Does not require expensive machines, tools, and a large setup;
- Easily available.

The choice of technology is of great importance for promoting sustainable affordable quality physical rehabilitation services.

The Rehab'Impulse Brand – owned by ICRC made by Alfaset!

The ICRC registered the Rehab'Impulse trademark in 2019 with the aim of developing a brand identity for its technology. The Rehab'Impulse brand remains under the ownership of ICRC, while the components are manufactured in Switzerland by the Alfaset Foundation, a social enterprise employing persons with disabilities.

Objectives of the manuals

The "Manufacturing Guidelines" are designed to provide the information necessary for production of high-quality assistive devices.

The main aims of these informative manuals are as follows:

- To promote good practice.
- To provide support for training in the use of this technology.
- To promote and enhance Rehab'Impulse technology.

This is another step forward in the effort to ensure that service users have access to high-quality services.

Introduction

The aim of this document is to describe the method for manufacturing a **Trans-Femoral (TF) prosthesis with a monocentric knee joint** using polypropylene technology and Rehab'Impulse components/products.

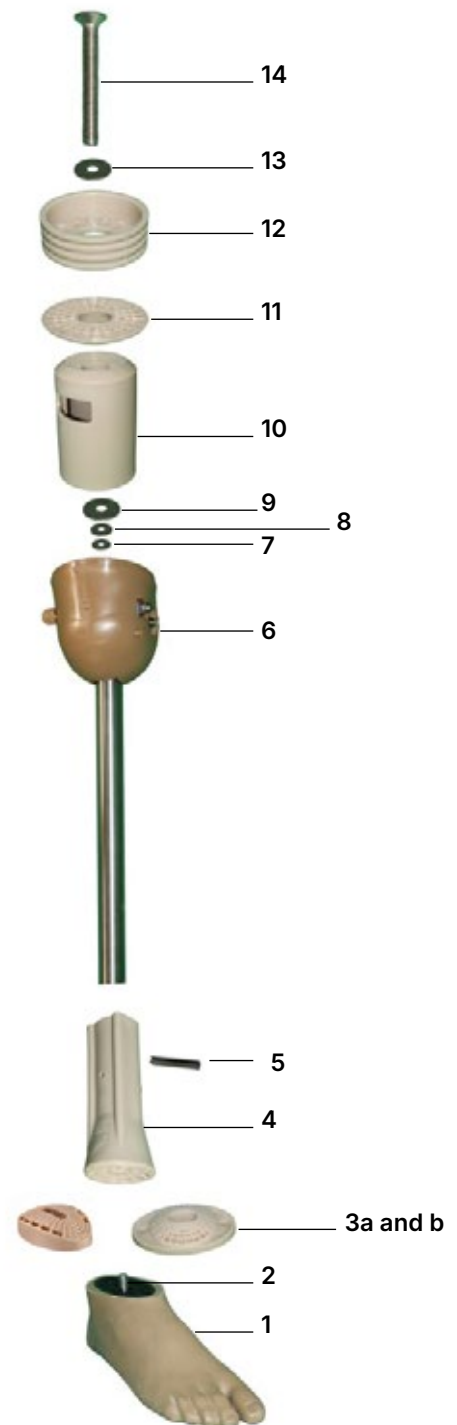
The casting, rectification and alignment methods used correspond to international prosthetic and orthotic (P&O) standards of practice and are therefore not described in detail within these manufacturing guidelines.

1. Raw materials and components

The Trans-Femoral alignment kits and foot components are available in adult and child sizes.

Description:

1. Solid Ankle Cushion Heel (SACH) foot 2.0, child or adult size, or Dynamic K3 foot for adult size only
2. Socket head cap screw, stainless steel, M8 × 80 mm (child) or M10 × 80 mm (adult) + Ribbed lock washer M8 or M10
- 3a. Convex ankle washer, child
- 3b. Convex ankle washer, adult
4. Concave cylinder M8 (child), or M10 (adult)
5. Coiled spring expansion pin, stainless steel, 5 × 40 (child) or 5 × 45 (adult)
6. Monocentric knee joint (child or adult size)
7. Hexagonal nut, stainless steel, M10
8. Flat washer, stainless steel, 10.5/25/1.5
9. Flat washer, stainless steel, 15/44/3 (child) or 15/55/3 (adult)
10. Conical cup, transfemoral (child or adult size)
11. Convex disc (child or adult size)
12. Cup, transfemoral (child TFC or adult TFA size)
13. Flat washer, stainless steel, 15/44/3 (child) or 15/55/3 (adult)
14. Screw, countersunk head, FT, stainless steel, M10 × 50



2. Measurements and socket manufacture

Assessment, measurements and casting

- The service user is assessed, a prescription is made and measurements are taken in accordance with P&O best practice.



Fig 1



Fig 2

- A negative cast is taken in accordance with usual P&O practice (Fig 1, 2 and 3).



Fig 3

- The mould is filled to produce the positive model, which is rectified according to the measurements taken (Fig 4 and 5).

Consider drilling a 5 mm hole ('A' Fig 4) from the deepest part of the ischial seat to the proximal surface of the cast to aid close moulding of the PP sheet during thermoforming.

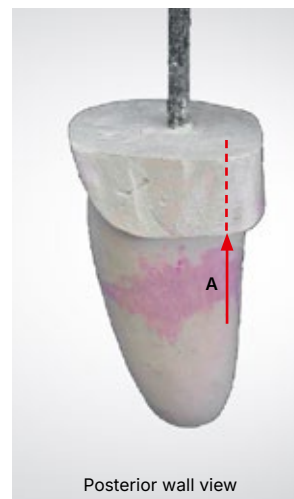


Fig 4



Fig 5

2.1 Trans-Femoral cup alignment and socket manufacture

- Chamfer the internal edge of the Trans-Femoral cup (Fig 6).

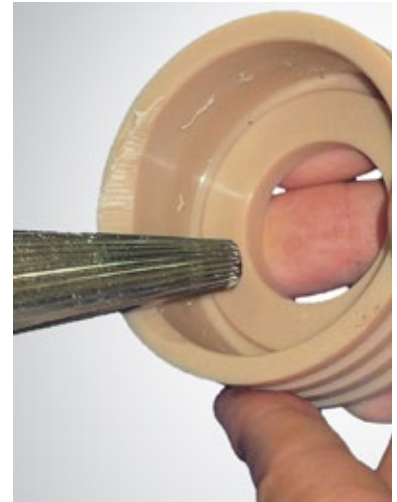


Fig 6

Alignment of the Trans-Femoral cup

- Cover the positive plaster model with a nylon lady's stocking.
- Fix a nail at the bottom of the model, where the cup will be attached.
- Place the TF model on the alignment jig; align according to the instructions on the use of the jig (separate manual). Make the alignment in accordance with the measurement card. Fix the cup to the socket with plaster of Paris – POP (Fig 7).



Fig 7

- Add a piece of EVA foam in the hole of the cup (Fig 8).

This will prevent the PP from being drawn in during suction.

It will also facilitate opening.



Fig 8

- Cut a sheet of 5 mm PP according to the measurements: add 10 cm to the circumferences A and B, and 10–15 cm to the length C (Fig 9).

Heat the PP in an oven between 8 to 20 minutes at 180° depending on the type of oven used (see the guideline on “Polypropylene thermoforming for Prosthetics-Orthotics” for a detailed explanation).

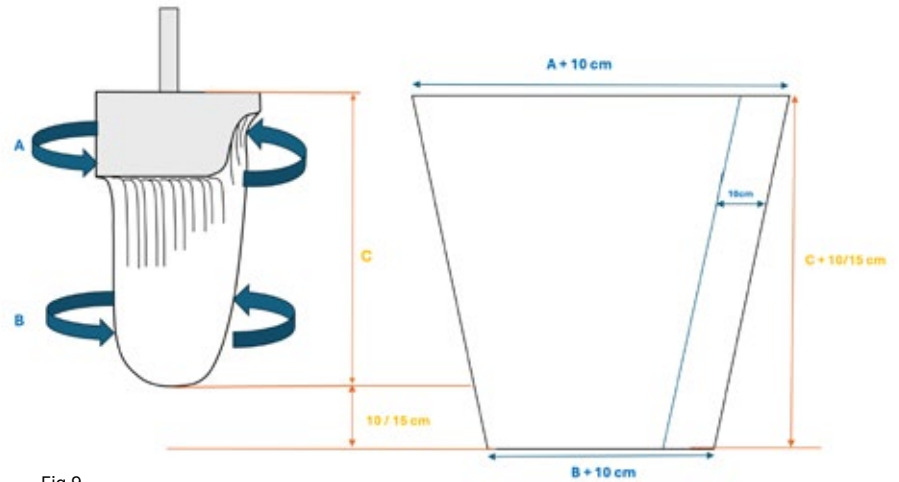


Fig 9

- Drape the PP on the model (Fig 10) and open the vacuum valve.



Fig 10

- Cut off the excess PP.

Leave the vacuum on until the PP cools down (Fig 11).



Fig 11

- Wait at least 6 hours before opening.

Draw the trim line on the proximal part of the socket.

Use the oscillating saw to cut the PP (Fig 12).

Remove the plaster.



Fig 12

- Grind the distal part of the cup down to the EVA foam pad.

Use a screwdriver to remove the EVA foam (Fig 13).



Fig 13

- Grind the distal part until it is flat (Fig 14 and 15).

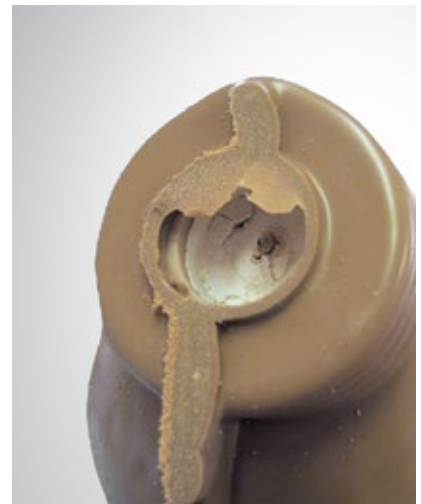


Fig 14

- Do not remove all the PP (Fig 15).

For maximum strength, keep a minimum PP thickness of 2 to 3 mm under the cup.



Fig 15

- Check that the surface is flat (Fig 16).

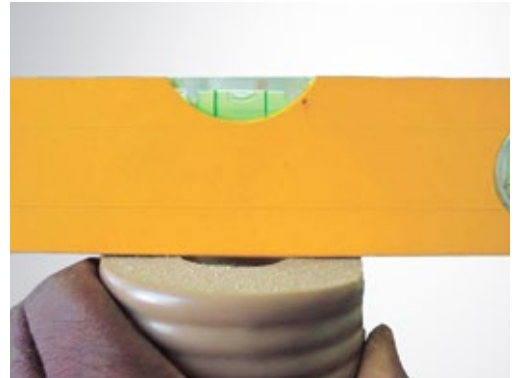


Fig 16

- Grind the socket along the trim lines with the router (Fig 17).



Fig 17

- Use a sharp piece of glass to smooth the edge of the socket (Fig 18).



Fig 18

- Using a conical drill, make the hole for the tubular stockinette cotton or for the suction valve (Fig 19).



Fig 19

2.2 Total-contact prosthesis

There are **two techniques** of manufacturing a total-contact Trans-Femoral socket:

1. By the same procedure as for a conventional TF (Fig 20, 21 and 22);
2. By welding the conical cup directly under the PP socket (Fig 33, 34 and 35).

Technique 1

- Position the suction valve medio-anteriorly and distally to the plaster model (Fig 20 and 21).

Use the suction valve ring to shape the plaster. Reduce the diameter of the plaster to allow for the thickness of PP used (4 or 5 mm). Smooth it and remove the sharp edge (see 2.1, page 7).



Fig 20

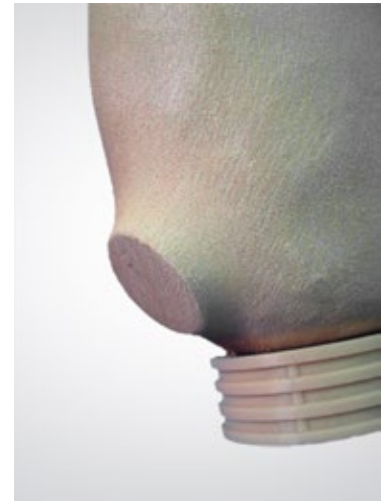


Fig 21

- Cover the plaster model with a nylon lady's stocking.

Fix the cup with plaster in the usual way (Fig 22).

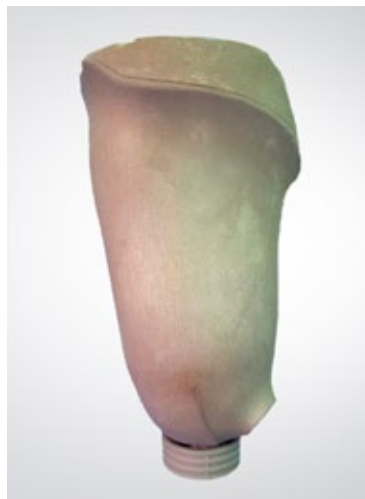


Fig 22

During the first fitting, glue pieces of EVA foam inside the cup in order to avoid air leakage.

Glue a 12 mm and a 6 mm piece of EVA foam inside the cup. Finally, use a 3 mm piece to cover the cup and the sides of the cup (Fig 23).

■ Material needed for filling the cup.

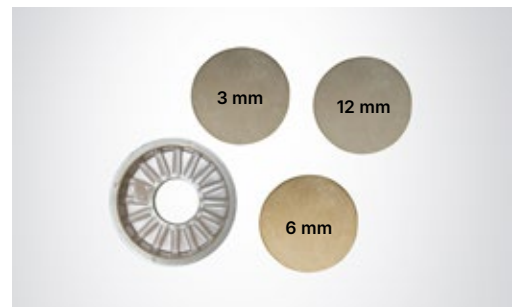


Fig 23

■ Glue the 12 mm and 6 mm EVA foam discs inside the cup (Fig 24).



Fig 24

■ Lastly, glue the 3 mm EVA foam all around the cup (Fig 25 and 26).



Fig 25

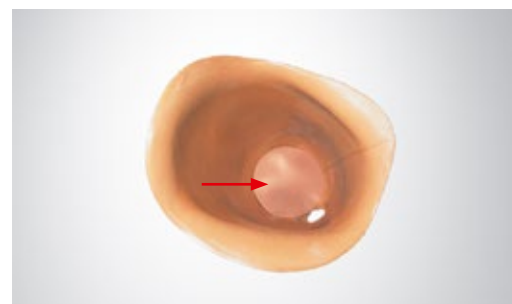


Fig 26

- Bore a hole according to the diameter of the suction valve (Fig 27).



Fig 27

- Smooth the edge with a sharp piece of glass (Fig 28).



Fig 28

- Test the suction valve by filling the socket with water (Fig 29).



Fig 29

Technique 2

- Cover the plaster model with a nylon lady's stocking, and put the suction valve directly on the nylon in the usual position (Fig 30).



Fig 30

- Drape the PP on the model (Fig 31), and open the vacuum valve (See the guideline on "Polypropylene thermoforming for Prosthetics-Orthotics" for a detailed explanation).



Fig 31

- After a minimum of 6 hours, when the PP has cooled down, remove the plaster from the socket, and adjust the valve hole to allow fitting of the valve seat (Fig 32).



Fig 32

- Adjust the length of the conical cup according to the service user's measurements (ischium - knee).

Then weld the conical cup directly under the PP socket (Fig 33): See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation. It must be positioned in accordance with the alignment. The window of the conical cup should be located anteriorly (see page 21).

No need to add an EVA foam piece inside at the bottom of the socket like for the technique 1. The distal part of the PP socket and the conical cup are directly welded together.



Fig 33

- Use the welding iron to make a groove between the socket and the conical cup (Fig 34).

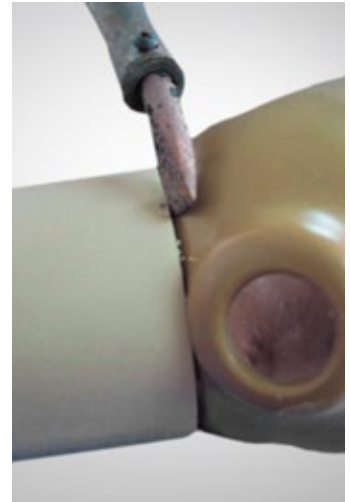


Fig 34

- Use the hot-air welding gun to weld the cup to the socket (Fig 35).

This has to be done very carefully to avoid breakage during the first fitting.

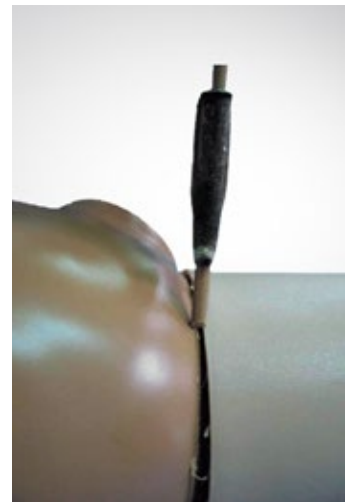


Fig 35

- Refit the suction valve and recheck the suction by filling the socket with water (Fig 36).



Fig 36

3. Assembly and bench alignment

The assembly and bench alignment process – steps to follow

- Ankle-foot alignment
- Socket alignment
- Adjustment of length
- Welding of cylinders
- Alignment of assembled prosthesis

Ankle-foot alignment

The foot, the convex ankle washer and the concave cylinder are attached together:

Fig 37 (adult size) and Fig 38 (child size).

For maximum strength of the assembly, the Rehab'Impulse logo at the bottom of the concave cylinder must face anteriorly.



Fig 37



Fig 38

Note: Regardless of which Rehab'Impulse foot is used (SACH foot 2.0 or Dynamic K3 foot), the assembly and bench alignment processes remain the same.

The ankle alignment system allows dorsi and plantar flexion so that the prosthesis can be adjusted to the heel height of the shoe.

The alignment can be adjusted for a heel height of between 0 mm and 20 mm, however, a heel height of 10 mm is recommended for Rehab'Impulse feet.

The heel height is adjusted according to the service user's shoe; the concave cylinder **must be perpendicular to the ground** (Fig 39).

- The foot is positioned in about 5° external rotation (Fig 40).



Fig 39

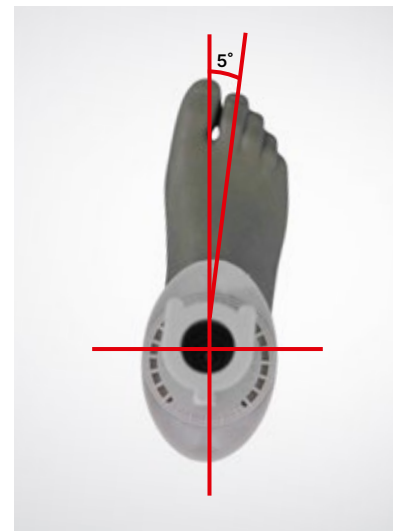


Fig 40

- Check the alignment once again with the service user's shoe on the foot (Fig 41).



Fig 41

Knee-ankle-foot alignment

- Same measurement
- The measurement taken on the service user must be from 1.5 to 2 cm above the medial tibial plateau (MTP) to the ground (Fig 43). The mechanical knee joint centre should be placed 1.5 to 2 cm above the MTP.
- Transfer this measurement from the foot up to the mechanical knee joint axis. For monocentric knee joint, it is the centre of the knee axis (Fig 42).



Fig 42

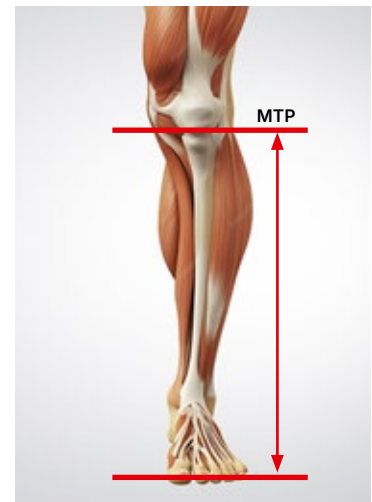


Fig 43

- Draw a line with a marker on the knee pipe according to the measurement taken.

Make another mark 9 cm from the first. This corresponds to the bottom of the concave cylinder minus 1 cm (Fig 44).

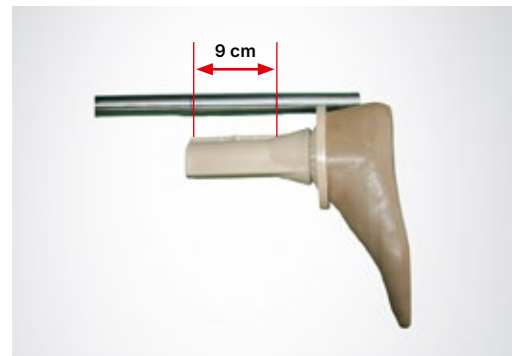


Fig 44

- Use the pipe cutter to make the cut (Fig 45). Smooth the edges.



Fig 45

- Pay special attention to the rotation of the knee joint with the foot (Fig 46).



Fig 46

- Use the manual alignment vice to insert the distal part of the pipe into the concave cylinder (Fig 47).
- If the manual alignment vice is not available, heat the distal part of the pipe with the hot-air welding gun. Use a rubber mallet to insert the knee joint into the concave cylinder as far as the mark (Fig 48).



Fig 47



Fig 48

Socket assembly and bench alignment

Length adjustment for medium stump length

For a conventional TF socket:

The socket is connected to the conical cup with a convex disc in between (Fig 49 and 50).

Check the length against that of the service user and adjust the length of the conical cup accordingly (Fig 51). The conical cup is then mirror welded directly on top of the knee joint.

The convex disc allows abduction, adduction, flexion, extension and shifting in all directions.

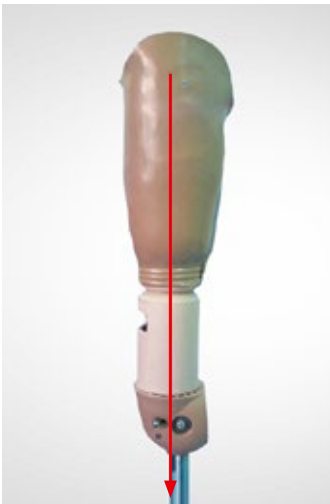


Fig 49

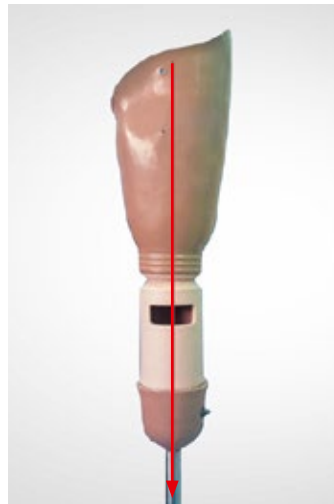


Fig 50



Fig 51

For a total contact TF socket:

The socket is directly connected/welded to the conical cup (after length adjustment) with the convex disc placed between the knee and the cup. The conical cup is assembled to the convex disc, which is itself fixed on the knee joint. The convex disc allows the same movements orientations (abduction, adduction, flexion, extension and shifting in all directions).

- Check the alignment and adjust the conical cup according to the measurements taken. The plumb line should fall 10–15 mm anterior to the knee axis in the sagittal plane and through the centre of the knee in posterior plane (Fig 52, 53 and 54).



Fig 52



Fig 53

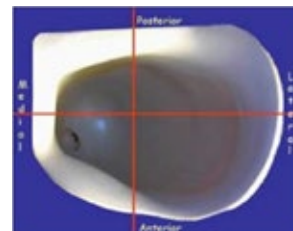


Fig 54

Conical cup opening anteriorly
on the monocentric knee joint
CORRECT



Fig 55

Conical cup opening posteriorly
on the monocentric knee joint
INCORRECT



Fig 56

- The force patterns on heel strike are as shown in these illustrations (Fig 57 and 58). Breakages are likely to occur if the conical cup isn't correctly orientated.

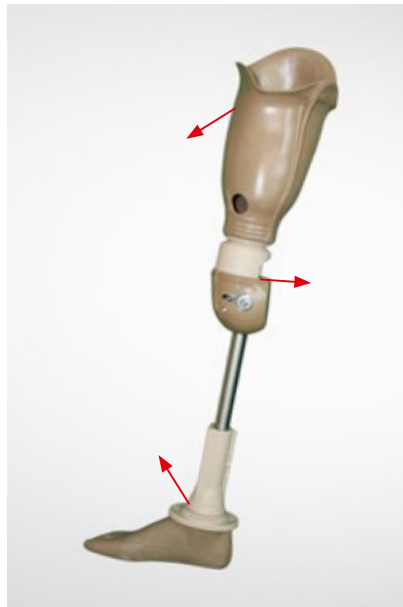


Fig 57

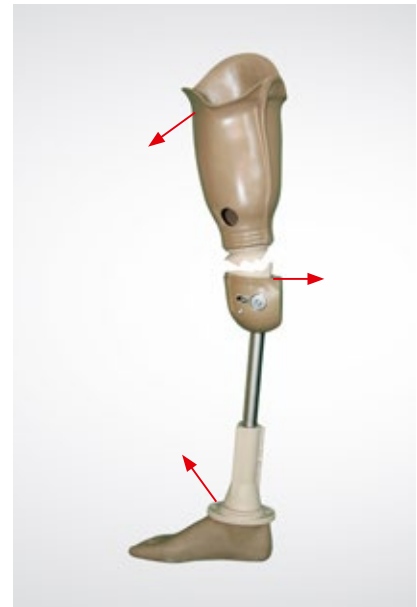


Fig 58

- Make sure the conical cup remains horizontal in both planes before welding it (Fig 59 and Fig 60).

Check also knee alignment (Fig 59 and Fig 60) and foot rotation.



Fig 59



Fig 60

Assembling of the above knee joint section

For a conventional TF socket:

- The temperature of the mirror should be between 180° and 200°C (Fig 61). See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation.



Fig 61

- Hold the conical cup and the upper part of the knee joint on the mirror welder for no more than 5 minutes until a roll of melted PP is formed (Fig 62).

Weld them together squarely, applying light even pressure.



Fig 62

For a total-contact TF socket:

- As already explained in detail on pages 14 and 15, assemble the total-contact socket to the conical cup (Fig 63), then adjust the socket adduction and flexion according to the service user requirements.
- When the socket's adduction and flexion adjustments are completed on the service user from the convex disc and the conical cup, temporarily fix them together with the welding iron (Fig 64).



Fig 63



Fig 64

Length adjustment for a short stump (Fig 65 and 66)

1. The socket is connected to the conical cup with a convex disc in between.
2. The second conical cup is connected to the knee joint with another convex disc in between.
3. Once the height has been adjusted, the conical cups can be welded together using the welding mirror.

Static and/or dynamic alignment can be done either above the knee joint or below the socket.



Fig 65



Fig 66

Length adjustment for a long stump with knee joint (Fig 67):

Pay attention to minimum dimensions (see below)

- A** 22 mm minimum for conical cup and convex disc
- B** 40 mm minimum distance between connection surface and axis of the knee joint

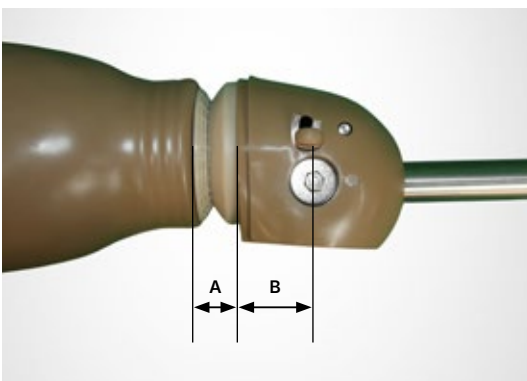
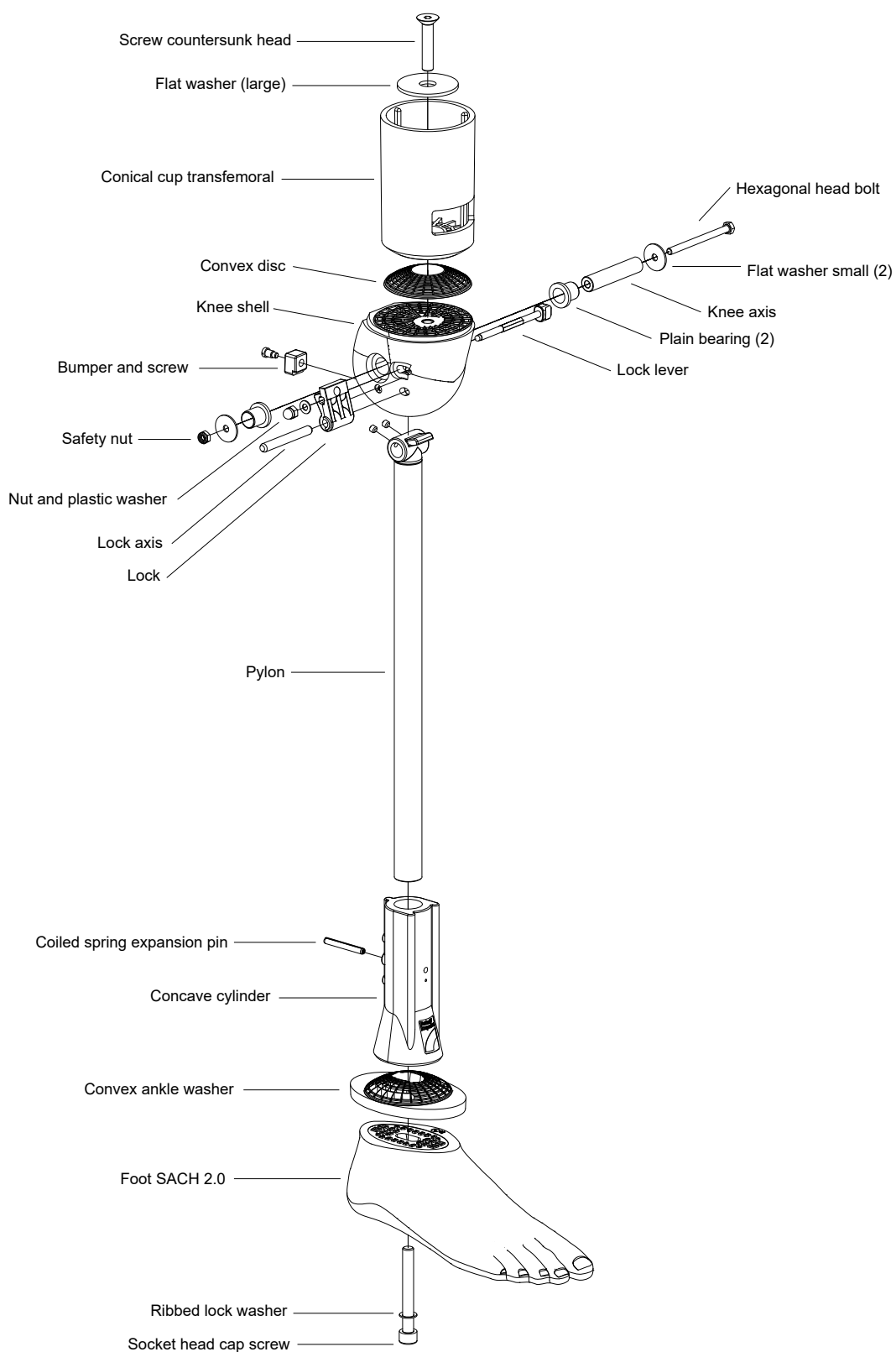
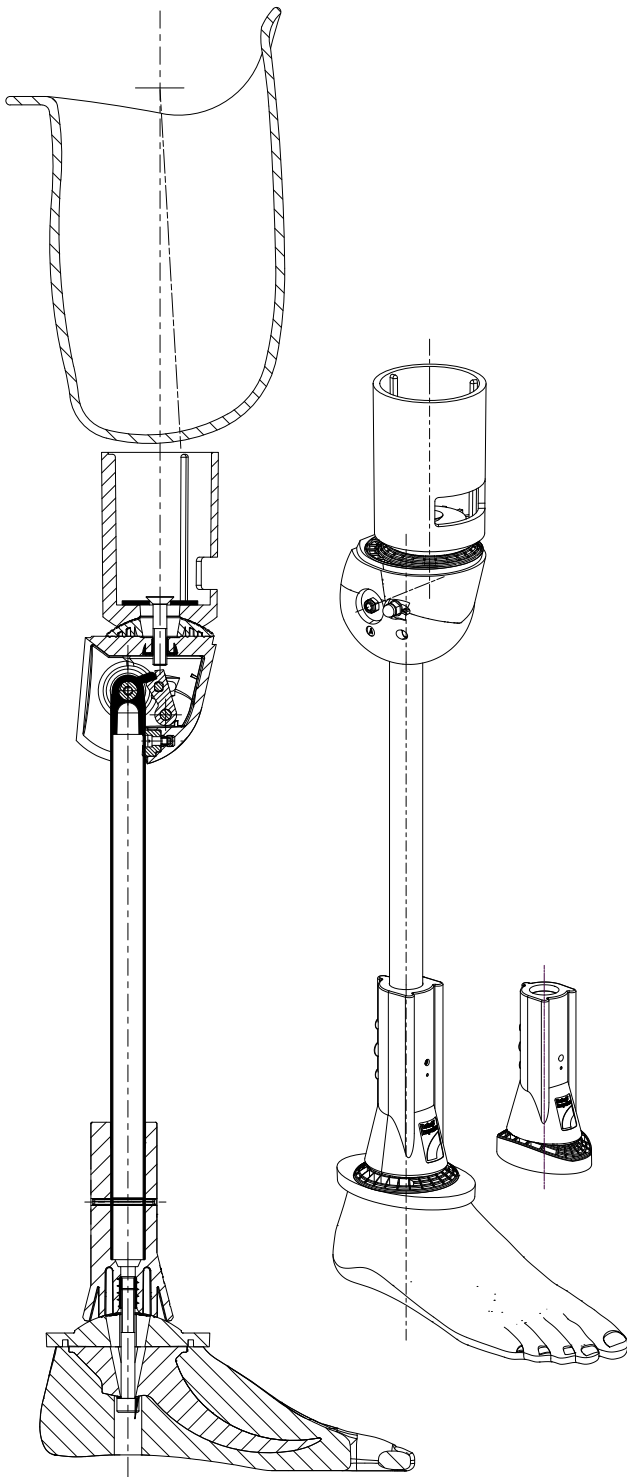


Fig 67

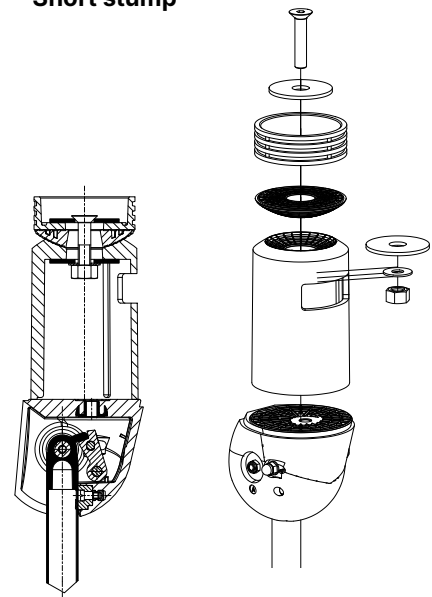
Trans-Femoral componentry description



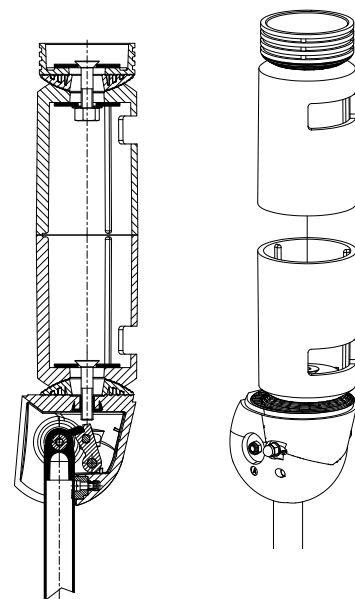
Trans-Femoral prosthesis setup



Short stump



Very short stump



Final prosthesis alignment

(Technique 1 with the TF cup incorporated in the distal part of the socket)

- Modular PP technology allows sliding and tilting during alignment (from Fig 68 to Fig 70).

Neutral position

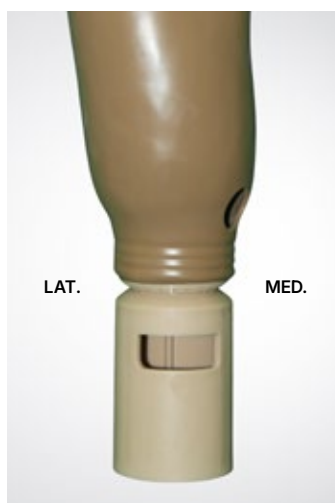


Fig 68

Flexion

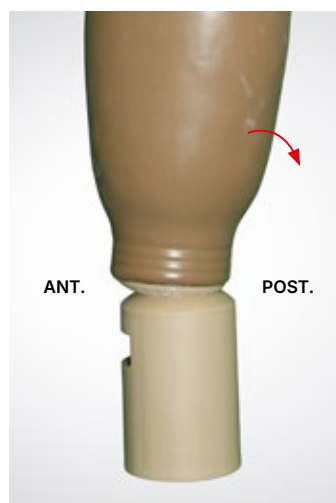


Fig 69

Extension

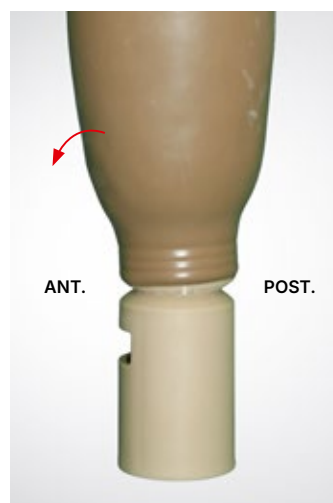


Fig 70

- Posterior or anterior shifting is possible (Fig 71 and 72). Shifting is also possible medially or laterally.
- Adduction and abduction alignments are also possible (Fig 73 showing adduction).

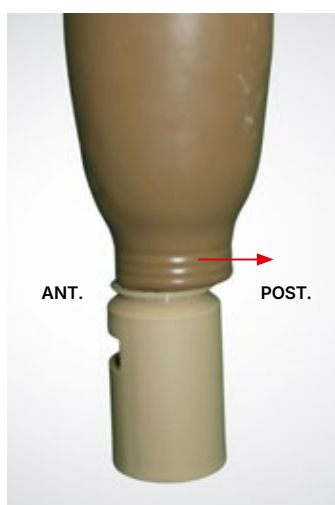


Fig 71

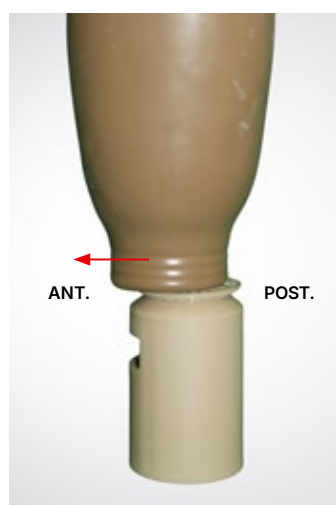


Fig 72

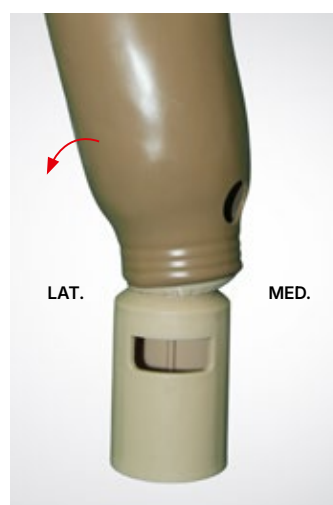


Fig 73

Final prosthesis alignment

(Technique 2 with the distal part of the socket directly welded on the conical cup)

- Modular PP technology allows sliding and tilting during alignment (from Fig 74 to Fig 76).

Neutral position



Fig 74

Flexion

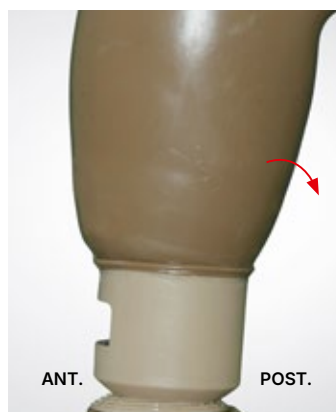


Fig 75

Extension



Fig 76

- Posterior or anterior shifting is possible (Fig 77 and 78). Shifting can also occur medially or laterally.

- Adduction and abduction alignments are also possible (Fig 79 showing adduction).



Fig 77



Fig 78



Fig 79

Belt manufacture for conventional socket (Fig 81)

During the first fitting with the service user, the measurement for the belt is taken from the greater trochanter, around the back and between the opposite iliac crest and greater trochanter as far as Scarpa's triangle (Fig 80).

The belt can be either a leather or a cotton strap, fixed with a 16 mm buckle.

Add 15 cm to the measurement taken on the service user to allow for adjustment during fitting.

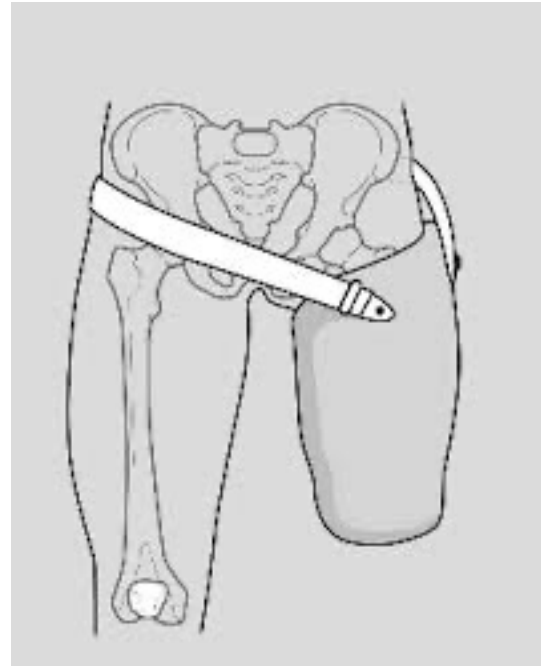


Fig 80



Fig 81

4. Cosmetic finishing

The EVA foam method of cosmetic finishing is no longer recommended, the strength only meets ISO quality standards when the prosthesis is finished with PP.

4.1. Part I – Preparation steps

- When static and dynamic alignment procedures are completed and the socket is in the correct position (Fig 82), all components have to be definitively welded together (Fig 83, 84, 85 and 86): See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation.



Fig 82

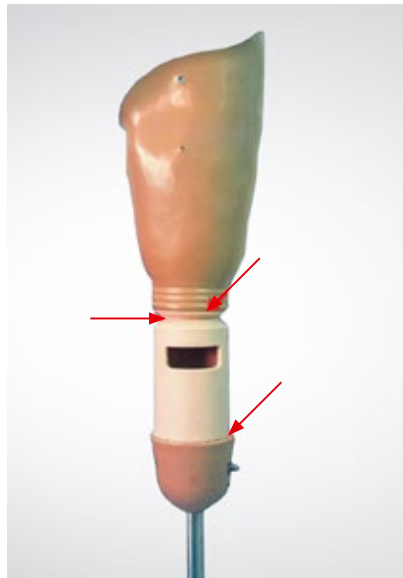


Fig 83



Fig 84



Fig 85



Fig 86

- Drill a 5 mm hole in the concave cylinder and the pipe (Fig 87).



Fig 87

- Fix the expansion pin (Fig 88).



Fig 88

- Draw a line following the shape of the foot (Fig 89).



Fig 89

- Disassemble the foot (Fig 90).



Fig 90

- Check your mark and grind it carefully (Fig 91 and 92).

Check once more against the foot.



Fig 91



Fig 92

- Stick adhesive tape on the foot and make an alignment reference mark with a permanent marker on the top of the convex ankle washer and on the tape (Fig 93).



Fig 93

- Remove the foot and draw a line all around the convex ankle washer 3 or 4 mm from the edge (Fig 94), depending on which thickness of PP is used for the cosmetic calf (3 mm for a child or 4 mm for an adult).



Fig 94

- Grind the edge carefully (Fig 95).



Fig 95

- Check again with the foot, and grind it again to obtain a smooth finish if necessary (Fig 96).



Fig 96

- For heavy and active service users, a strip of 3 mm PP can be draped around the conical cup and alignment system for extra strength (Fig 97 and 98). Use an elastic bandage to tighten it well.

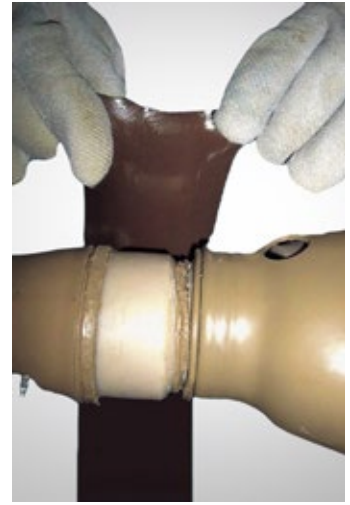


Fig 97



Fig 98

- When the PP has cooled down, grind the edges and weld (Fig 99): See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation.

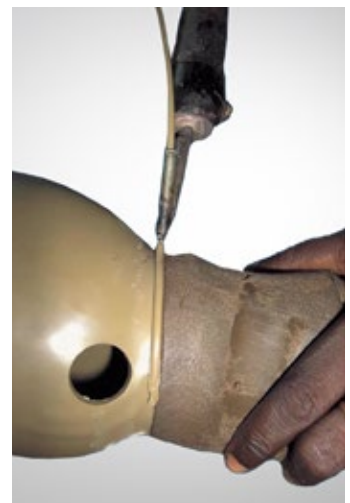


Fig 99

4.2 Part II – PP cosmetic manufacture

- Protect the knee joint with adhesive tape (Fig 100).

Grind the outside of the socket with sandpaper to roughen it.

Fill the socket with POP in order to fix a pipe. To facilitate the removal of the plaster and the pipe at the end of this operation, fill the bottom 1/3 of the socket with sand, before continuing to fill the remaining 2/3 with POP.

- Apply plaster to the above-knee section and shape the plaster according to the service user's measurements (Fig 101).

- Smooth the plaster and allow it to dry, preferably overnight.

Cover the plaster with a nylon lady's stocking (Fig 102).

- Drape 4 mm PP around the above knee section in the same way as for the socket (Fig 103): See the guideline on "Polypropylene thermoforming for Prosthetics-Orthotics" for a detailed explanation.



Fig 100



Fig 101



Fig 102



Fig 103

- Once the PP has cooled down after 6 hours duration minimum, use an oscillating saw to open the seam and remove the proximal cosmetic shell.

Remove the plaster and clean up the socket.

Trim the shell proximally and distally in line with the socket and the knee joint.

Replace the shell on the socket (Fig 104).

Weld the seam (Fig 105): See the guideline on "Polypropylene welding techniques for Prosthetics-orthotics" for a detailed explanation.

Weld the proximal shell edge to the socket (Fig 106).

Weld the distal shell edge to the knee joint.



Fig 104



Fig 105



Fig 106

- When the welding is completed, remove the excess PP (Fig 107).

- Grind the weld between the shell and the knee joint.
- The seam must be ground almost flush with the cosmetic shell.
- Grind the proximal edge of the socket.

These three areas must then be polished.



Fig 107

- Connect the below knee joint section to a dummy knee shell section, then insert a mandrel into the upper part of the dummy knee (Fig 108).



Fig 108

- Protect the pylon pipe and the knee joint with tape (Fig 109).



Fig 109

- Apply plaster to the shank, shape, smooth, and allow the plaster to dry, preferably overnight (Fig 110).



Fig 110

- Pull on a lady's nylon stocking and drape a PP sheet of 3 mm (child) or 4 mm (adult) over the plaster (Fig 111).

When the PP has cooled down (after 6 hours duration minimum), open the shell and remove the plaster.



Fig 111

- Insert the prosthesis into the cosmetic shell.

Determine and grind the proximal trim line for maximum flexion of the knee joint (Fig 112).



Fig 112

- Weld the seam and the ankle connection (Fig 113): See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation.

After welding, carefully grind the ankle surface to ensure it is flat.

- Grind and smoothen the welding on the seam (Fig 114).



Fig 113



Fig 114

- Insert a 12 mm EVA foam washer cut to the same shape as the shank about 10 cm below the knee joint to keep the cosmetic shank in place. This will also prevent noise (Fig 115 and 116).



Fig 115



Fig 116

- Fix the knee joint back onto the shank, without forgetting to put Loctite glue on the set screws and thread of the bolt (Fig 117).

Fix the belt (for a conventional socket).



Fig 117

- Glue a piece of 3 mm EVA foam (previously skived all around) over the seam of the socket for an improved cosmetic finish and comfort (Fig 118).



Fig 118

- The last step is to re-attach the foot to the prosthesis using the appropriate foot screw and Loctite glue (Fig 119).



Fig 119

- The **Trans-Femoral Prosthesis with monocentric knee joint** is now complete (Fig 120).



Fig 120

- An elastic strap can sometimes be attached between the distal part of the socket, and the proximal part of the below knee cosmetic shell, in order to assist with knee extension, especially for short stumps (Fig 121).



Fig 121

Reference list of materials

1. Prosthetic Components

1.1 Components for Trans-Femoral Prosthesis, Adult

Trans-Femoral alignment kit

Rehab/Impulse Code	Size	Side	Colour	User weight	Contents of kit*
74-00134	Adult	Right/left	Beige	≤ 80 kg	1× Cup, Trans-Femoral adult
					1× Convex disc
					1× Conical cup, Trans-Femoral, adult
					1× Concave cylinder, M10, adult
					1× Convex ankle washer, adult
					1× Screw, countersunk head, FT, stainless steel, M10 × 50
					2× Flat washer, stainless steel, 15/55/3
					1× Flat washer, stainless steel, 10.5/25/1.5
					1× Hexagonal nut, stainless steel, M10
					1× Coiled spring expansion pin, stainless steel, 5 × 45



Pyramid adapter, for knee joint, adult (1 pyramid + 1 Threaded stud M8/M10 + 1 hexagonal nut, M8)

Rehab/Impulse Code	Size	Side	Material	User weight
74-0337	Adult	Right/left	Stainless steel	≤ 80 kg



Please note:

- Knee joint and foot are not included in the kit. To be ordered separately.
- Pyramid adapter is not included in the Trans-Femoral alignment kit. To be ordered separately.

* articles only available as a complete kit

1.2 Knee joint, Adult

Rehab/Impulse Code	Type	Size	Side	Colour	User weight
74-00243	Monocentric	Adult	Right/left	Beige	≤ 80 kg
74-00244	Monocentric	Adult	Right/left	Olive	≤ 80 kg
74-00245	Monocentric	Adult	Right/left	Terra	≤ 80 kg



1.2.1 Bumper Kit Adult, for monocentric knee joint

Rehab/Impulse Code	Size	Material Bumper	Material Screw	User weight	Contents of kit*
74-00780	Adult	TPE	Stainless steel	≤ 80 kg	10 pcs Rubber bumper
					10 pcs Screw M5, stainless steel



*articles only available as a complete kit

1.3 Components for Trans-Femoral Prosthesis, Child

Trans-Femoral alignment kit

Rehab'Impulse Code	Size	Side	Colour	User weight	Contents of kit*
74-00223	Child	Right/left	Beige only	≤ 60 kg	1× Cup, Trans-Femoral child
					1× Convex disc
					1× Conical cup, Trans-Femoral, child
					1× Concave cylinder, M8, child
					1× Convex ankle washer, child
					1× Screw, countersunk head, FT, stainless steel, M10 × 50
					2× Flat washer, stainless steel, 15/44/3
					1× Flat washer, stainless steel, 10.5/25/1.5
					1× Hexagonal nut, stainless steel, M10
					1× Coiled spring expansion pin, stainless steel, 5 × 40

Please note: Knee joint and foot not included in the kit. To be ordered separately.



1.4 Trans-Femoral alignment Kit, Child Connector for Adult Foot

Rehab'Impulse Code	Size	Side	Colour	User weight	Contents of kit
74-00227	Child	Right/left	Grey only	≤ 60 kg	1 pc Concave cylinder child, connector for adult foot
					1 pc Coiled spring expansion pin, stainless steel, 5 × 40



*articles only available as a complete kit

1.5 Knee joint, Child

Rehab'Impulse Code	Type	Size	Side	Colour	User weight
74-00240	Monocentric	Child	Right/left	Beige	≤ 60 kg
74-00241	Monocentric	Child	Right/left	Olive	≤ 60 kg
74-00242	Monocentric	Child	Right/left	Terra	≤ 60 kg



1.5.1 Bumper Kit Child, for monocentric knee joint

Rehab'Impulse Code	Size	Material Bumper	Material Screw	User weight	Contents of kit*
74-00781	Child	TPE	Stainless steel	≤ 60 kg	10 pcs Rubber bumper
					10 pcs Screw M4, stainless steel



*articles only available as a complete kit

1.6 Feet

1.6.1 Foot SACH 2.0, Adult

Rehab'Impulse Code	Size	Side	Colour	Heel height	User weight	Contents of kit*
from 74-00139 to 74-00153	22 to 28	Right/left	Olive Terra	10 mm	≤ 80 kg ≤ 100 kg	1 pc Foot SACH 2.0, Adult
						1 pc Socket head cap screw, stainless steel, M10×80 mm
						1 pc Ribbed lock washer M10



Olive



Terra



1.6.2 Dynamic K3 Foot, Adult

Rehab'Impulse Code	Size	Side	Colour	Heel height	User weight	Contents of kit*
from 74-02157 to 74-02293	22 to 28	Right/left	Olive Terra	10 mm	≤ 80 kg	1 pc Dynamic K3 Foot, Adult
						1 pc Socket head cap screw, stainless steel, M10×80 mm
						1 pc Ribbed lock washer M10



Olive



Terra



* articles only available as a complete kit

1.6.3 Foot SACH 2.0, Child

Rehab/Impulse Code	Size	Side	Colour	Heel height	User weight	Contents of kit*
from 74-00157 to 74- 00219	14 to 21	Right/left	Olive Terra	5 mm	≤ 45 kg ≤ 60 kg	1 pc Foot SACH 2.0, Child
						1 pc Socket head cap screw, stainless steel, M8×80 mm
						1 pc Ribbed lock washer M8



Olive



Terra



* articles only available as a complete kit

1.7 Maintenance Kit, for knee joints

Rehab'Impulse Code	Weight	Setup of kit
74-01341	4.15 kg	25 pcs Spring support
		25 pcs Bumper
		50 pcs Screw for bumper
		100 pcs Screw M6 (lateral linkage)
		100 pcs Washer M6
		100 pcs Screw M5 (central linkage)
		25 pcs Pin D5 (central linkage)
		50 pcs Bushing for spring piston
		100 pcs Bushing front linkage
		100 pcs Bushing rear linkage
		25 pcs Extension spring low
		25 pcs Extension spring hard
		100 pcs Screw M4 (friction adjustment)
		100 pcs Washer M4, large
		50 pcs Spacer for bumper
		1 btl Glue for friction adjustment screw



2. Raw materials

Rehab/Impulse Code	Item Description	Used for
74-00825	EVA Foam, 3 mm × 0.95 m × 0.95 m, 0.90 m ² , beige colour	Cup filling / socket finishing
74-00828	EVA Foam, 3 mm × 0.95 m × 0.95 m, 0.90 m ² , olive colour	Cup filling / socket finishing
74-00831	EVA Foam, 3 mm × 0.95 m × 0.95 m, 0.90 m ² , terra colour	Cup filling / socket finishing
74-00826	EVA Foam, 6 mm × 0.95 m × 0.95 m, 0.90 m ² , beige colour	Cup filling
74-00829	EVA Foam, 6 mm × 0.95 m × 0.95 m, 0.90 m ² , olive colour	Cup filling
74-00832	EVA Foam, 6 mm × 0.95 m × 0.95 m, 0.90 m ² , terra colour	Cup filling
74-00827	EVA Foam, 12 mm × 1.10 m × 1.10 m, 1.21 m ² , beige colour	Cup filling / cosmetic shank
74-00830	EVA Foam, 12 mm × 1.10 m × 1.10 m, 1.21 m ² , olive colour	Cup filling / cosmetic shank
74-00833	EVA Foam, 12 mm × 1.10 m × 1.10 m, 1.21 m ² , terra colour	Cup filling / cosmetic shank
74-01085	Homopolymer, 5 mm × 1 m × 2 m, 9.2 kg, beige colour	Socket
74-01088	Homopolymer, 5 mm × 1 m × 2 m, 9.2 kg, olive colour	Socket
74-01090	Homopolymer, 5 mm × 1 m × 2 m, 9.2 kg, terra colour	Socket
74-01084	Homopolymer, 4 mm × 1 m × 2 m, 7.5 kg, beige colour	Cosmetic calf
74-01087	Homopolymer, 4 mm × 1 m × 2 m, 7.5 kg, olive colour	Cosmetic calf
74-01089	Homopolymer, 4 mm × 1 m × 2 m, 7.5 kg, terra colour	Cosmetic calf
74-01083	Homopolymer, 3 mm × 1 m × 2 m, 5.5 kg, beige colour	Cosmetic calf / conical cup & alignment system draping
74-01086	Homopolymer, 3 mm × 1 m × 2 m, 5.5 kg, olive colour	Cosmetic calf / conical cup & alignment system draping
74-01082	Homopolymer, 3 mm × 1 m × 2 m, 5.6 kg, terra colour	Cosmetic calf / conical cup & alignment system draping
74-01079	Polypropylene welding rod, 4 mm, beige colour, roll	Welding of components, socket and cosmetic
74-01080	Polypropylene welding rod, 4 mm, olive colour, roll	Welding of components, socket and cosmetic
74-01081	Polypropylene welding rod, 4 mm, terra colour, roll	Welding of components, socket and cosmetic

3. Consumables

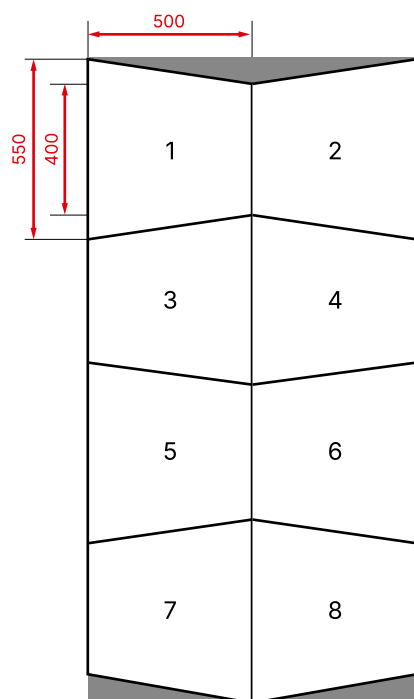
Rehab/Impulse Code	Item Description	Used for
74-00793	Bandage, Plaster of Paris, 15 cm × 3 m	Cast taking
74-00794	Bandage, Plaster of Paris, 20 cm × 3 m	Cast taking
74-01950	Examination glove, latex, non-steril, M (7-8), Pack of 100 pcs	Cast taking
74-01949	Examination glove, latex, non-steril, XL (10-11), Pack of 90 pcs	Cast taking
74-00846	Pencil, blue, indelebile, for marking on moist surface	Cast taking
74-00699	Tubular stockinette, cotton, 100 mm, roll of 25 m	Cast taking
74-00700	Tubular stockinette, cotton, 120 mm, roll of 25 m	Cast taking
74-00701	Tubular stockinette, cotton, 150 mm, roll of 25 m	Cast taking
74-00702	Tubular stockinette, cotton, 200 mm, roll of 25 m	Cast taking
74-00703	Tubular stockinette, cotton, 250 mm, roll of 25 m	Cast taking
74-00788	Lady stocking, nylon, for cast taking and thermoforming, pair	Cast taking / thermoforming
74-01754	Plaster of Paris, Powder	Positive mould / PP cosmetic
74-01430	Talc powder, conform to pharmacopoeia	Thermoforming
74-01431	Glue, neoprene contact, Drum of 4 kg	Cup filling / finishing
74-01109	Glue, Loctite n.243, blue thread lock, btl. 50 ml	Gluing screws
74-01108	Glue, Loctite n.290, thread lock, btl.50 ml	Gluing screws
74-01432	Solvent thinner, drum of 5 L for glue neoprene contact	PP Cleaning
74-00913	Rivet, tubular, brass nickel plated, 13 × 12 mm	Belt fixation
74-01814	Stump sock, Trans-Femoral, flat width 13 cm, length 40 cm, Pack of 10	Stump sock
74-01815	Stump sock, Trans-Femoral, flat width 13 cm, length 50 cm, Pack of 10	Stump sock
74-01816	Stump sock, Trans-Femoral, flat width 13 cm, length 60 cm, Pack of 10	Stump sock
74-01052	Silicone valve and removable valve seat – Set	Contact socket
74-01240	Aluminum seat valve, for AK prosthesis + thermoforming dummy	Contact socket

4. Accessories

Rehab/Impulse Code	Item Description	Used for
74-00805	Spare blade, for "Stanley Surform" round file 250 mm	Positive model rectification
74-00790	Spare blade, for "Stanley Surform" half round, 250 mm	Positive model rectification
74- 00901	Spare blade, for "Stanley Surform" std flat file, 250 mm	Positive model rectification

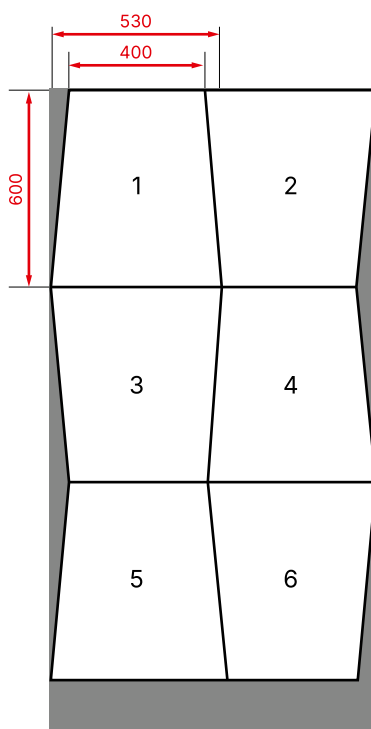
Precutting methods of standard polypropylene sheet 2000 x 1000 mm

Polypropylene sheet
5 mm



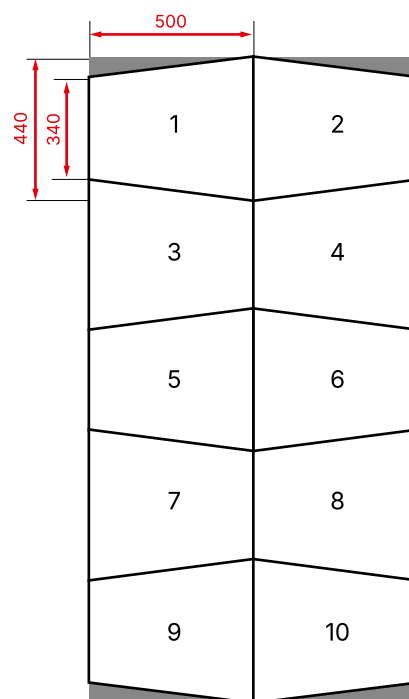
Socket
Trans-Femoral

Polypropylene sheet
4 mm



Cosmetic shank
Trans-Femoral

Polypropylene sheet
4 mm



Cosmetic calf
Trans-Femoral

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