

MANUFACTURING GUIDELINES

Trans-Femoral Prosthesis

with polycentric knee joint



Promoting
Independent
Lifestyle

rehabimpulse.org

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 polycentric knee joint** using polypropylene technology and Rehab'Impulse components/products.

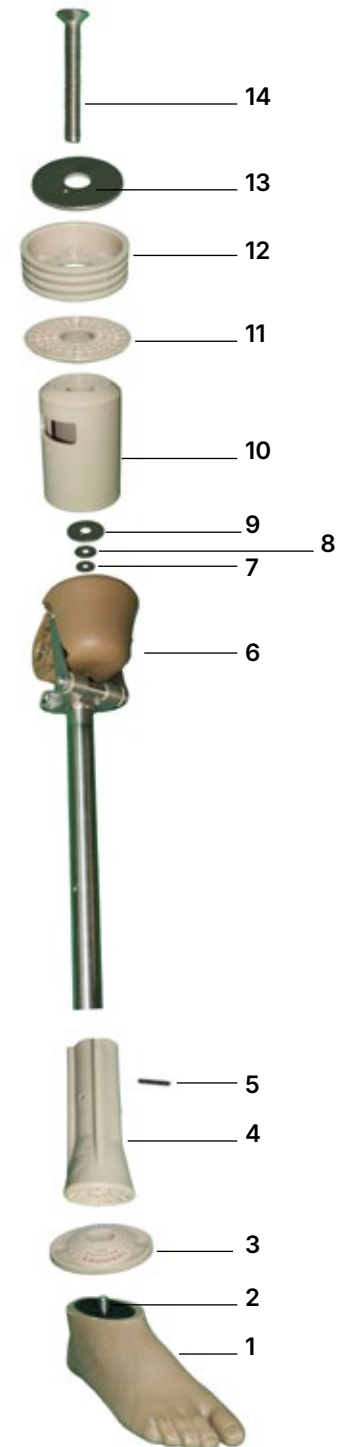
The casting, rectification and alignment methods used correspond to international prosthetic and orthotic (P&O) standards of practice and are therefore not described in detail within these manufacturing guidelines.

1. Raw materials and components

Trans-Femoral alignment kits and foot components used for the prosthesis with polycentric knee joint are only compatible in adult size.

Description:

1. Solid Ankle Cushion Heel (SACH) foot 2.0, or Dynamic K3 foot
2. Socket head cap screw, stainless steel, M10 × 80 mm + Ribbed lock washer M10
3. Convex ankle washer
4. Concave cylinder, M10
5. Coiled spring expansion pin, stainless steel, 5 × 45
6. Polycentric knee joint (only for adult weighing no more than 80 Kg)
7. Hexagonal nut, stainless steel, M10
8. Flat washer, stainless steel, 10.5/25/1.5
9. Flat washer, stainless steel, 15/55/3
10. Conical cup, transfemoral
11. Convex disc
12. Cup, transfemoral
13. Flat washer, stainless steel, 15/55/3
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.

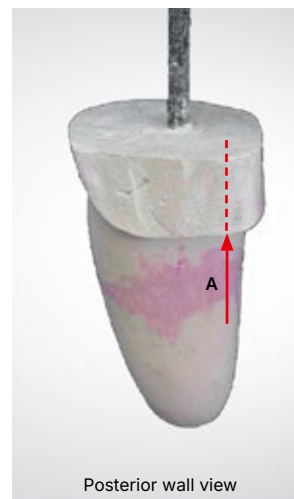


Fig 4



Fig 5

2.1 Trans-Femoral cup alignment and socket manufacture

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

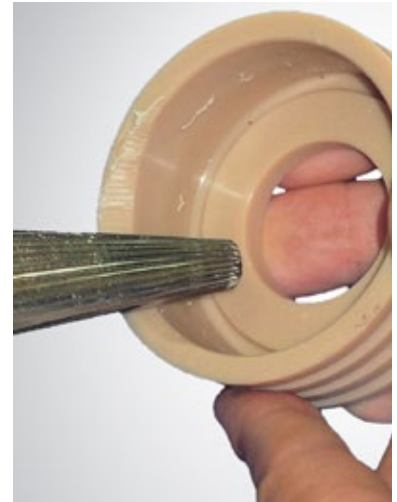


Fig 6

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).

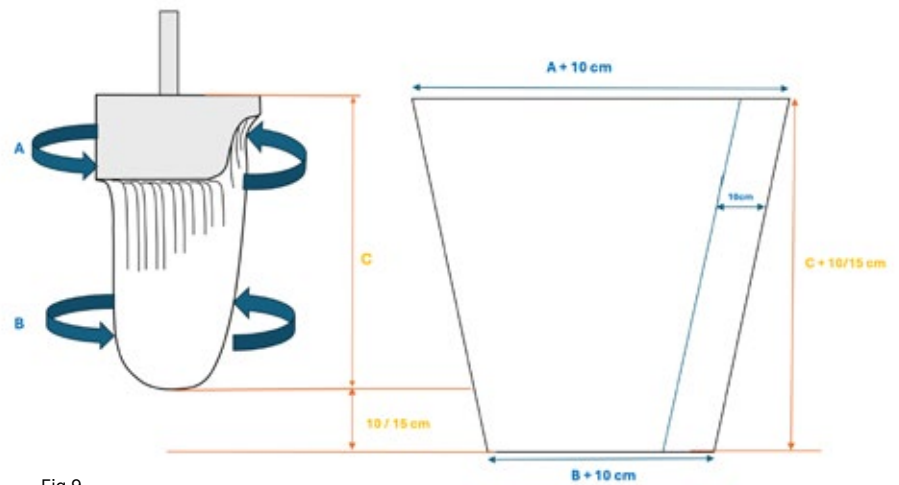


Fig 9

- 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).

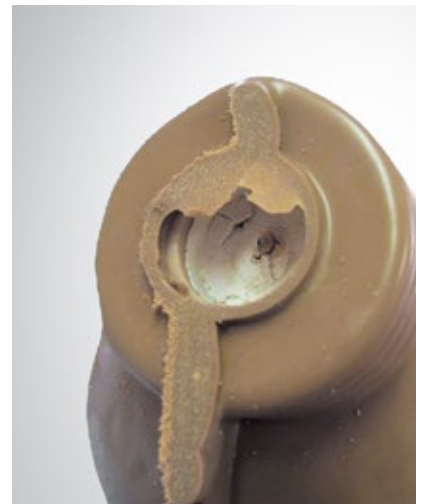


Fig 14

- 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).

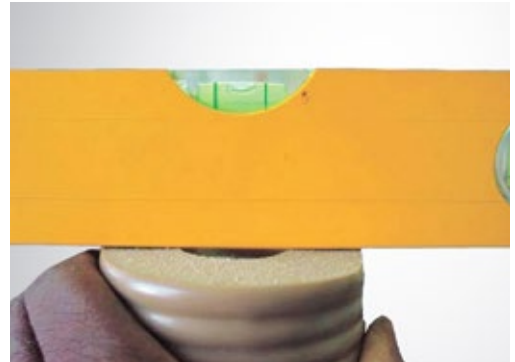


Fig 16

- 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

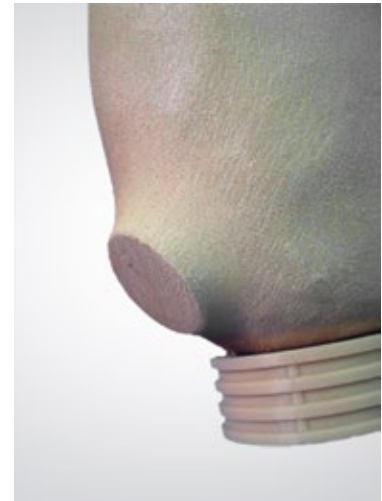


Fig 21

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

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

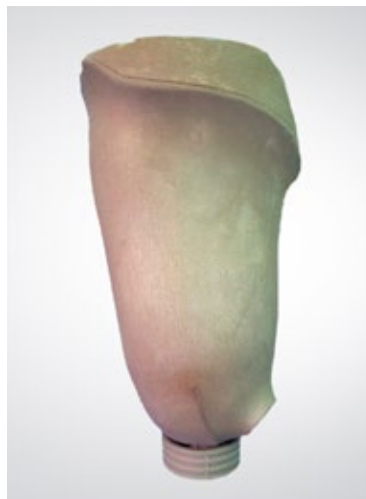


Fig 22

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.

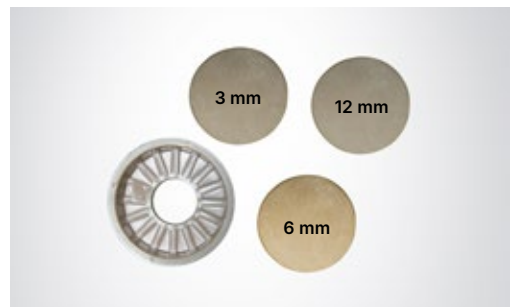


Fig 23

- 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

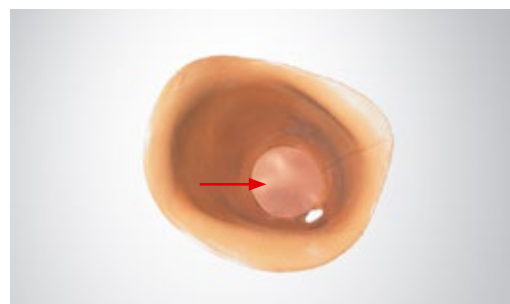


Fig 26

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

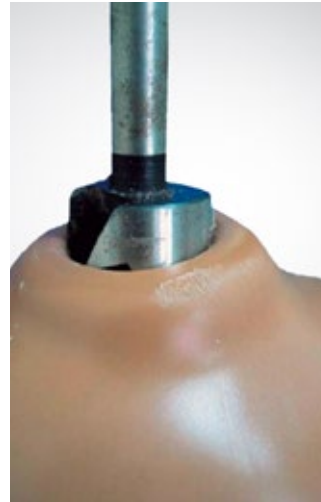


Fig 27

- 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).
 - 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).
 - 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).
 - 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 30



Fig 31



Fig 32



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.

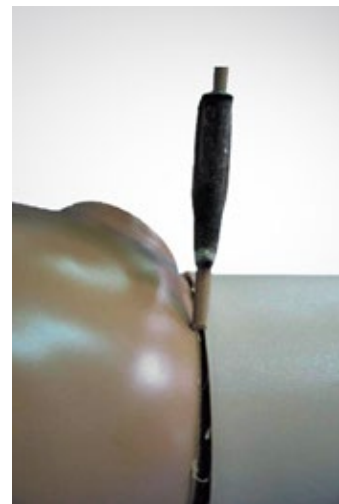


Fig 35

- 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).

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



Fig 37

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 38).

- The foot is positioned in about 5° external rotation (Fig 39).



Fig 38

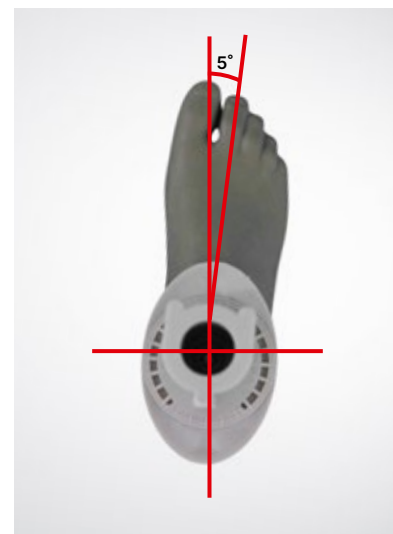


Fig 39

- Check the alignment once again with the service user's shoe on the foot (Fig 40).



Fig 40

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 42). The mechanical knee joint centre should be placed 1.5 to 2 cm above the MTP.



Fig 41

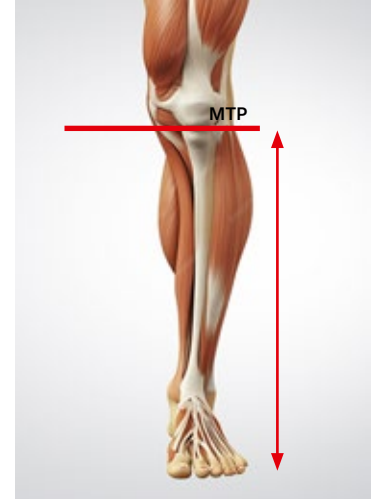


Fig 42

- Transfer this measurement from the foot up to the mechanical knee joint axis. For polycentric knee joint, it is the centre of the proximal anterior linkage joint (Fig 41, 43 and 44).

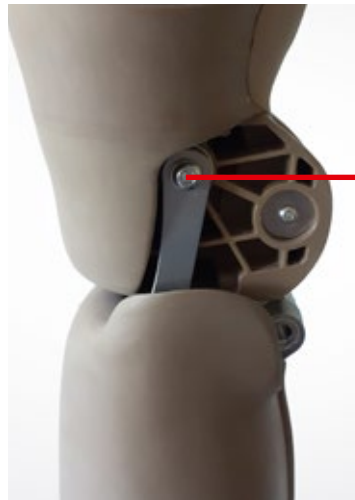


Fig 43

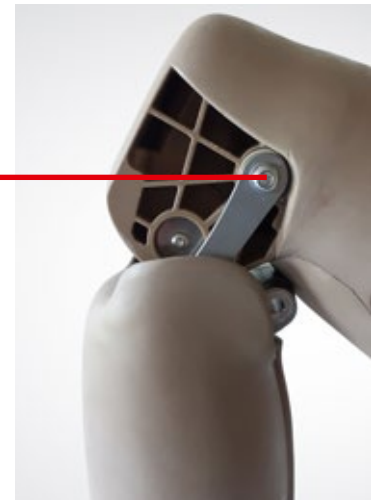


Fig 44

- 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 45).

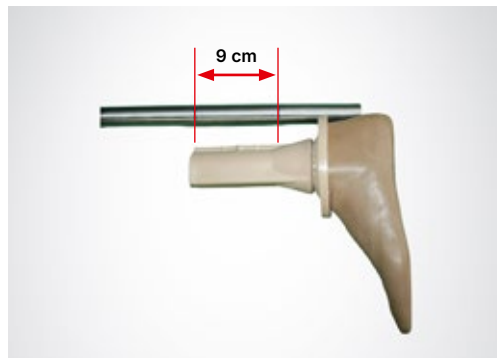


Fig 45

- Use the pipe cutter to make the cut (Fig 46). Smooth the edges.
- Pay special attention to the rotation of the knee joint with the foot (Fig 47).



Fig 46



Fig 47

- Use the manual alignment vice (Fig 48 and Fig 49) to insert the distal part of the pipe into the concave cylinder.



Fig 48

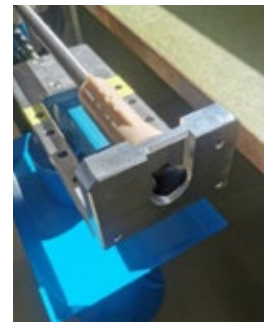


Fig 49

- 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 50).



Fig 50

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 51, 52). Check the length against that of the service user and adjust the length of the conical cup accordingly (Fig 53). 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.

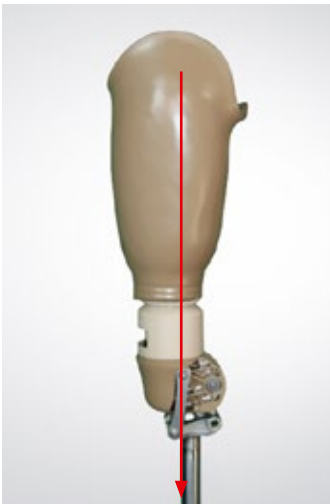


Fig 51



Fig 52



Fig 53

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 (Fig 54, 55, 56 and 57). The plumb line should fall in line with the anterior-proximal axis of the knee. In the sagittal plane and through the centre of the knee in the posterior plane.



Fig 54



Fig 55



Fig 56

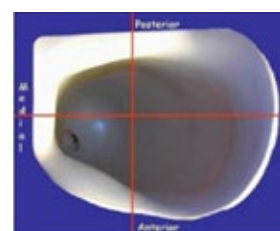


Fig 57

Conical cup opening anteriorly on the polycentric knee joint (Fig 58)

CORRECT



Fig 58

Conical cup opening posteriorly on the polycentric knee joint (Fig 59)

INCORRECT



Fig 59

- The force patterns on heel strike are as shown in these illustrations (Fig 60 to 61). Breakages are likely to occur if the conical cup isn't correctly orientated.

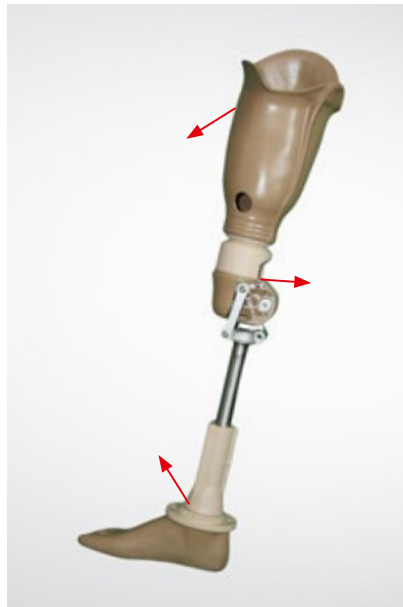


Fig 60

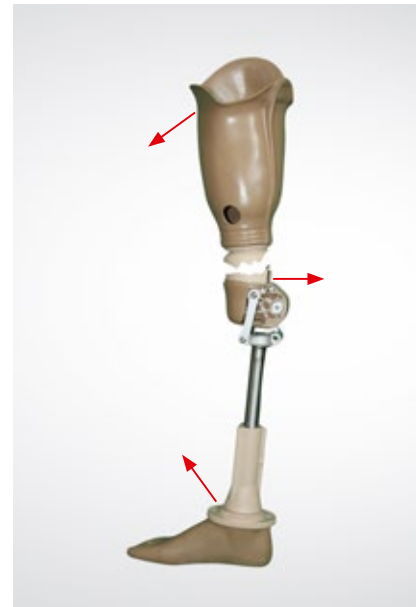


Fig 61

- Make sure the conical cup remains horizontal in both planes before welding it (Fig 62 and Fig 63).

Check also knee alignment (Fig 62 and Fig 63) and foot rotation.



Fig 62



Fig 63

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 64). See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation.



Fig 64

- 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 65).

Weld them together squarely, applying light even pressure.



Fig 65

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 66), then adjust the socket adduction and flexion according to the service user's requirements.



Fig 66

- 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 67).



Fig 67

Length adjustment for a short stump (Fig 68 and 69)

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 68



Fig 69

Length adjustment for a long stump with knee joint (Fig 70):

Pay attention to minimum dimensions (see below)

- A 22 mm minimum for conical cup and convex disc
- B 20 mm minimum distance between connection surface and knee joint anterior-proximal axis

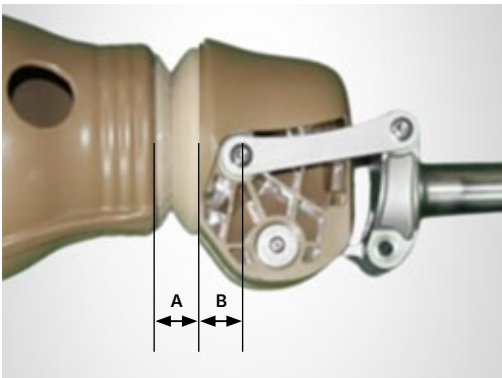
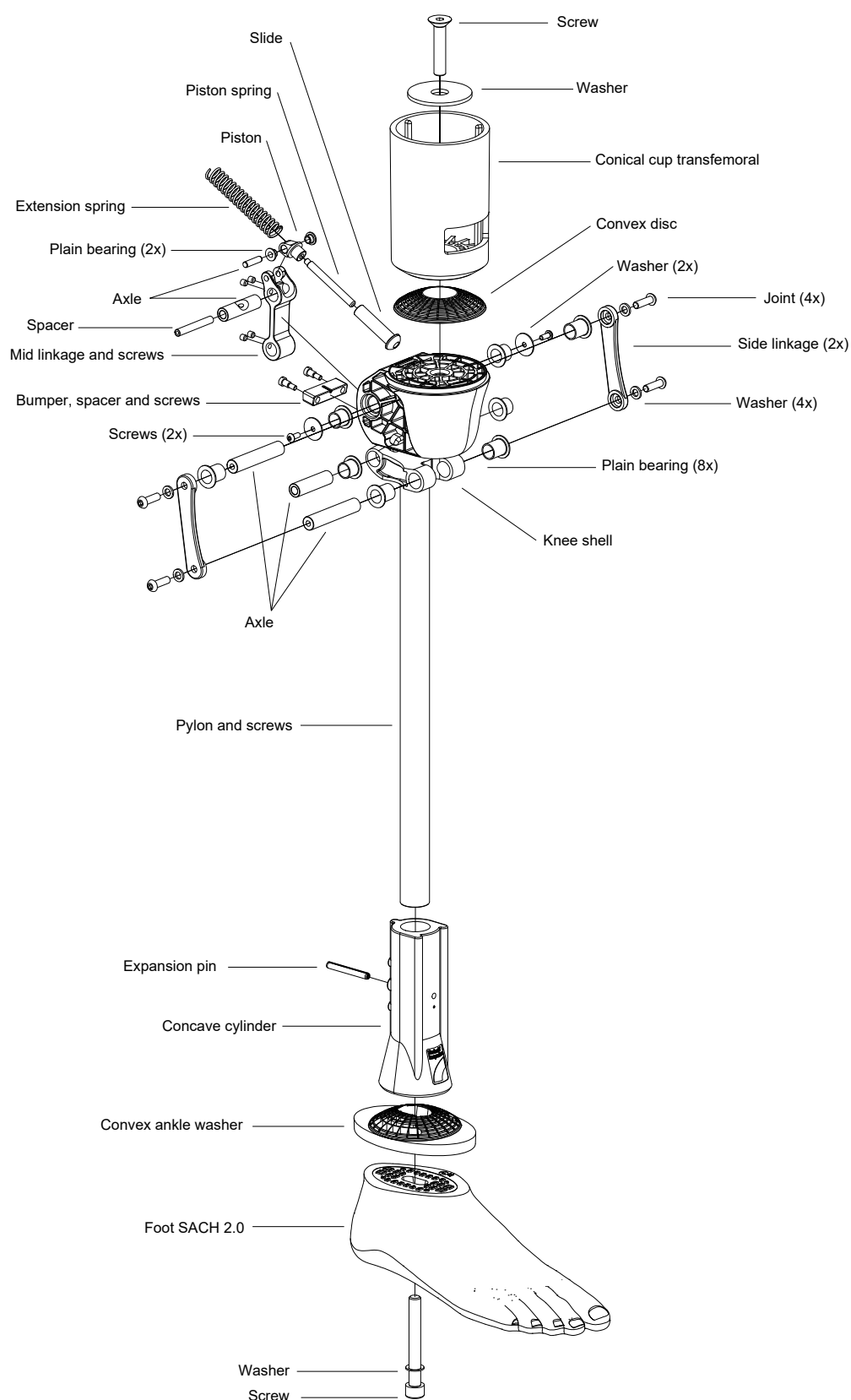
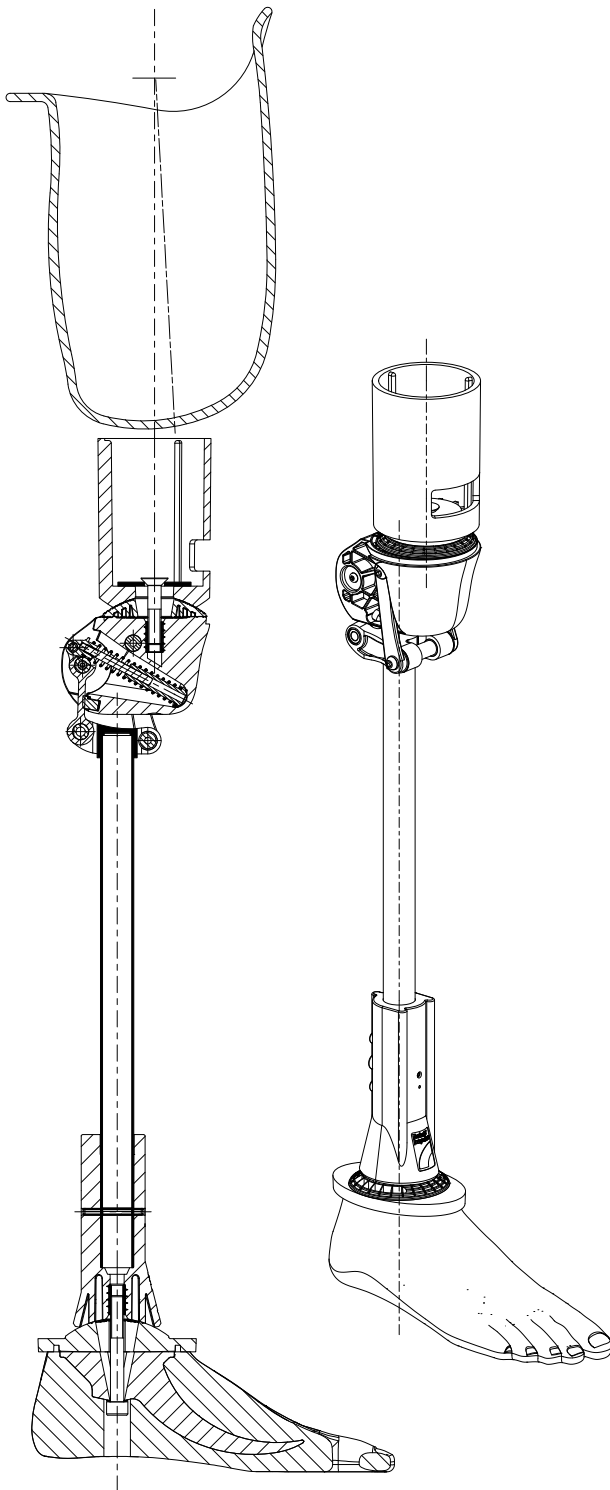


Fig 70

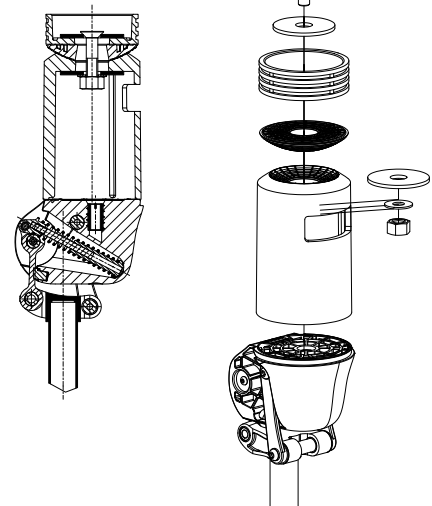
Trans-Femoral componentry description



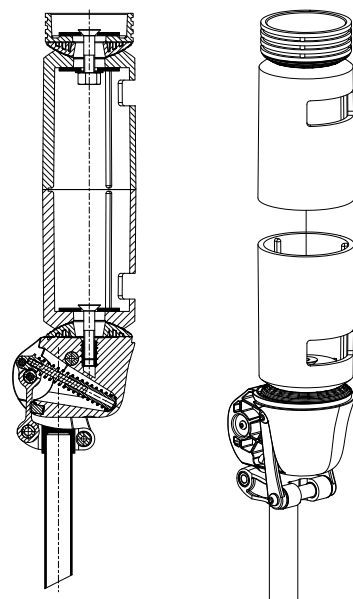
Trans-Femoral prosthesis setup



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 (Fig 72 and Fig 73).

Neutral position

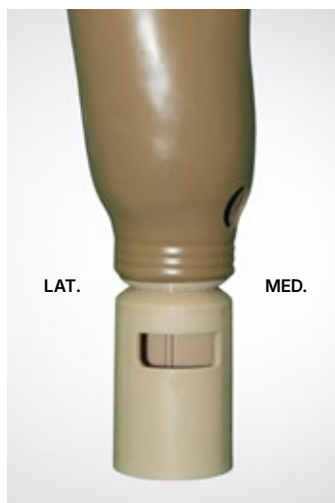


Fig 71

Flexion

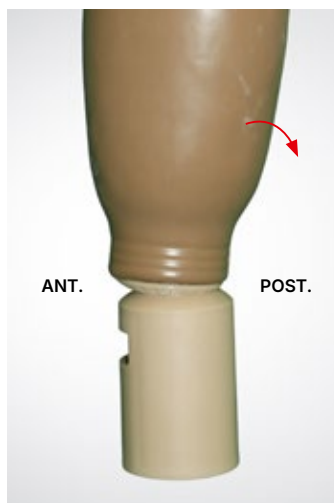


Fig 72

Extension

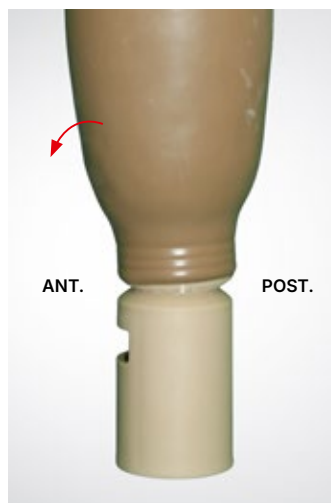


Fig 73

- Posterior or anterior shifting is possible (Fig 74 and 75). Shifting is also possible medially or laterally.

- Adduction and abduction alignments are also possible (Fig 76 showing adduction).

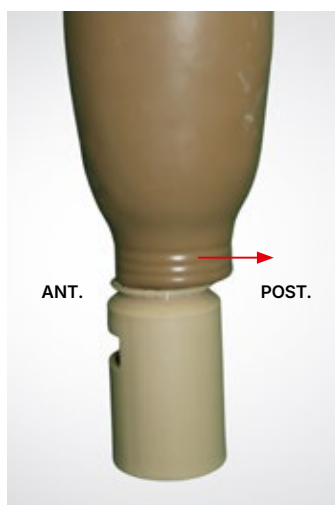


Fig 74

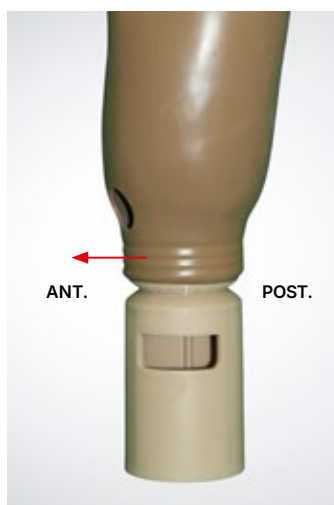


Fig 75

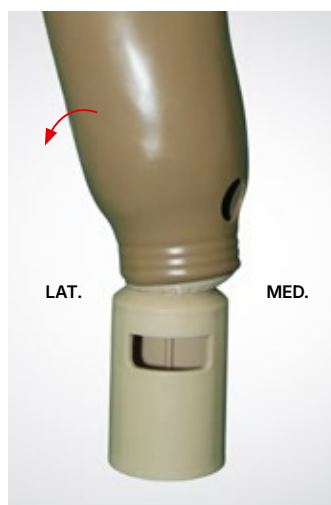


Fig 76

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 (Fig 78 and 79) during alignment.

Neutral position



Fig 77

Flexion



Fig 78

Extension



Fig 79

- Posterior or anterior shifting is possible (Fig 80 and 81). Shifting can also occur medially or laterally.
- Adduction and abduction alignments are also possible (Fig 82 showing adduction).



Fig 80



Fig 81



Fig 82

Belt manufacture for conventional socket (Fig 84)

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 83).

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.

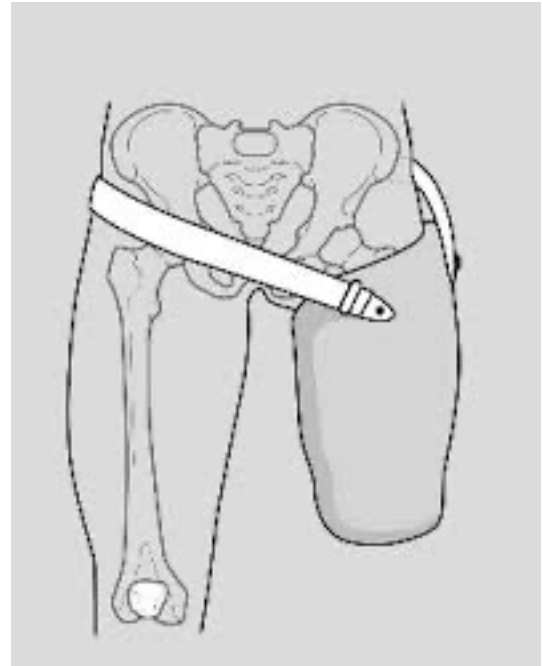


Fig 83



Fig 84

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 85), all components have to be definitively welded together (Fig 86 and Fig 87): See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation.



Fig 85



Fig 86



Fig 87

- Drill a 5 mm hole in the concave cylinder and the pipe (Fig 88).



Fig 88

- Fix the expansion pin (Fig 89).



Fig 89

- Draw a line following the shape of the foot (Fig 90).



Fig 90

- Disassemble the foot (Fig 91).



Fig 91

- Check your mark and grind it carefully (Fig 92 and 93).

Check once more against the foot.



Fig 92



Fig 93

- 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 94).



Fig 94

- Remove the foot and draw a line all around the convex ankle washer 3 or 4 mm from the edge (Fig 95), depending on which thickness of PP is used for the cosmetic calf (3 mm for a child or 4 mm for an adult).



Fig 95

- Grind the edge carefully (Fig 96).



Fig 96

- Check again with the foot, and grind it again to obtain a smooth finish if necessary (Fig 97).



Fig 97

4.2 Part II – PP Cosmetic manufacture

- Carefully disassemble the below-knee joint section (from Fig 98 to Fig 104).



Fig 98



Fig 99



Fig 100



Fig 101



Fig 102



Fig 103



Fig 104

- Connect the below-knee joint section to a dummy upper knee (Fig 105).



Fig 105

- Keep all bolts and nuts of the polycentric knee joint in a safe place (Fig 106).



Fig 106

- Insert a mandrel into the upper part of the dummy knee (Fig 107).



Fig 107

- Protect the pylon pipe and the knee joint with tape, then cover the open spaces of the knee unit with plaster (Fig 108). This will facilitate the snug fit of the lower section cosmetic shell.



Fig 108



Fig 109

- Build up and shape the calf with plaster (Fig 110 and Fig 111).
- Ensure the plaster at the ankle remains 4 mm away from the edge of the foot (Fig 112).
- Allow the plaster to dry, preferably overnight.



Fig 110



Fig 111



Fig 112

- Remove the foot (Fig 113) and prepare the lower shank for the PP draping:
 - Plug the hole in the middle of the convex ankle washer where the cap head screw of the prosthetic foot fits, with a small piece of EVA foam (Fig 114).
 - Then put on a double layer of nylon lady's stockings (Fig 115).



Fig 113



Fig 114



Fig 115

- Prepare a piece of 4 mm polypropylene for calf section draping (Fig 116 and 117).



Fig 116



Fig 117

- Heat the PP in an oven between 6 to 18 minutes at 180° depending on the type of oven used (Fig 118) and drape the polypropylene on the calf section (Fig 119): See the guideline on "Polypropylene thermoforming for Prosthetics-Orthotics" for a detailed explanation.



Fig 118



Fig 119

- Once the polypropylene has cooled down for a minimum of 6 hours, determine the trim lines of the calf section, open the seam and remove the below knee part (Fig 120 and Fig 121).



Fig 120



Fig 121

- Grind all trim lines (Fig 122), reconnect the knee joint (Fig 123), and replace the foot (Fig 124).



Fig 122



Fig 123



Fig 124

- Check that all movements of the shank are clear of obstacles (Fig 125 and 126).



Fig 125

- Weld the seam and the ankle connection (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.



Fig 126

Polypropylene cosmetic of the socket part

- Grind the outside of the socket with sandpaper to roughen it.
- Wrap the upper part of the socket with plaster bandages (Fig 127, 128 and 129) and fill the above knee section with plaster (Fig 130). In order 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 plaster.



Fig 127



Fig 128



Fig 129



Fig 130

- Once the plaster has hardened after around 2 hours, remove the dried plaster bandages from the socket (Fig 131 and Fig 132), and fill the inside of the posterior opening of the knee joint with a wad of plaster bandage (Fig 133).



Fig 131



Fig 132



Fig 133

- Build up the above knee section and smooth (Fig 134 and Fig 135).
- Fill the side's openings of the knee joint with plaster (Fig 135), and allow it to dry, preferably overnight.



Fig 134



Fig 135

- Add a lady's nylon stocking on the above knee section (Fig 136), and add some talcum powder (Fig 137).



Fig 136



Fig 137

- Cut a sheet of 4 mm polypropylene according to the measurements (add 5 cm to the circumference and 10–15 cm to the length).
- Heat the PP in an oven between 6 to 18 minutes at 180° depending on the type of oven used (Fig 138) and drape it when the polypropylene is ready (Fig 139): See the guideline on "Polypropylene thermoforming for Prosthetics-Orthotics" for a detailed explanation.
- Leave the vacuum on until the PP cools down. Wait at least 6 hours before opening.



Fig 138



Fig 139

- Grind the seam (Fig 140) and draw the trim line on the proximal part (Fig 141).



Fig 140



Fig 141

- Use the oscillating saw to open the seam (Fig 142).

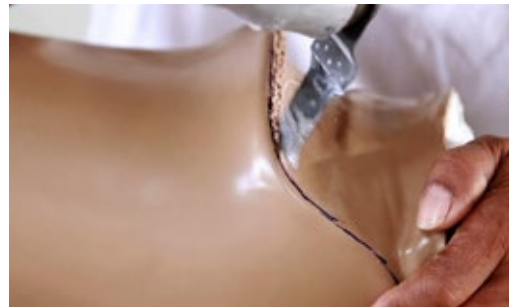


Fig 142

- Remove the above knee cosmetic shell (Fig 143, 144 and 145).



Fig 143



Fig 144



Fig 145

- Remove the plaster (from Fig 146 to Fig 149) and clean up the socket.



Fig 146



Fig 147



Fig 148



Fig 149

- Prepare the above knee cosmesis by cutting / griding to the trimlines (Fig 150 and Fig 151).



Fig 150



Fig 151

- Clamp the seam (Fig 152) and weld it according to the different types of welding techniques (from Fig 153 to Fig 155): See the guideline on "Polypropylene welding techniques for Prosthetics-Orthotics" for a detailed explanation.



Fig 152



Fig 153

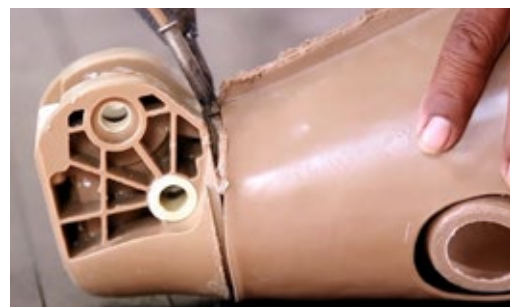


Fig 154



Fig 155

- Grind and smooth all welded areas (Fig 156).

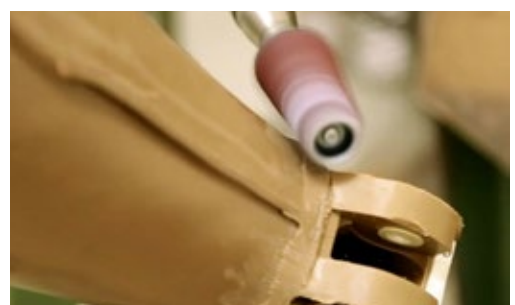


Fig 156

- Remove the dummy knee joint from below-knee section (from Fig 157 to Fig 159).



Fig 157



Fig 158



Fig 159

- Assemble the above and below knee sections, without forgetting to put Loctite glue on the set screws and thread of the bolts (from Fig 160 to Fig 165).



Fig 160



Fig 161



Fig 162



Fig 163



Fig 164



Fig 165

- Permanently fix the valve (Fig 166, 167 and 168).



Fig 166



Fig 167



Fig 168

- Re-attach the foot to the prosthesis using the appropriate foot screw and Loctite glue (Fig 169).



Fig 169

- Check that the knee can bend over 145° without the calf cosmesis touching the socket (Fig 170 and Fig 171).



Fig 170



Fig 171

- Glue a piece of 3 mm EVA foam (previously skived all around) over the seam of the socket for a better cosmetic finish and comfort (Fig 172).



Fig 172

- The **trans-femoral prosthesis with polycentric knee joint** is now complete (Fig 173).



Fig 173

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
74-00246	Polycentric	Adult	Right/left	Beige	≤ 80 kg
74-00247	Polycentric	Adult	Right/left	Olive	≤ 80 kg
74-00248	Polycentric	Adult	Right/left	Terra	≤ 80 kg



*articles only available as a complete kit

1.3 Feet

1.3.1 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 – 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



1.3.2 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 – 100 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

1.4 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

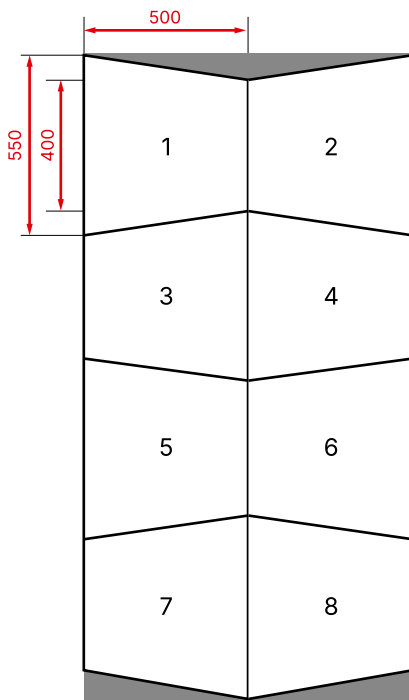
Rehab/Impulse Code	Item Description	Used for
74-00793	Bandage, Plaster of Paris, 15 cm × 3 m	Cast taking
74-00794	Bandage, Plaster of Paris, 20 cm × 3 m	Cast taking
74-01950	Examination glove, latex, non-steril, M (7-8), Pack of 100 pcs	Cast taking
74-01949	Examination glove, latex, non-steril, XL (10-11), 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

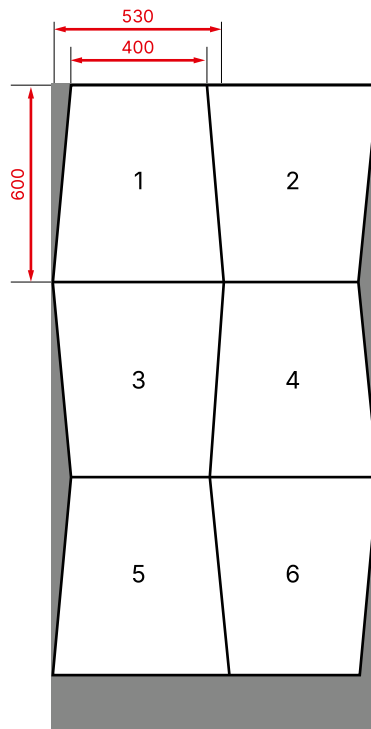
Precutting methods of standard polypropylene sheet 2000 x 1000 mm

Polypropylene sheet
5 mm



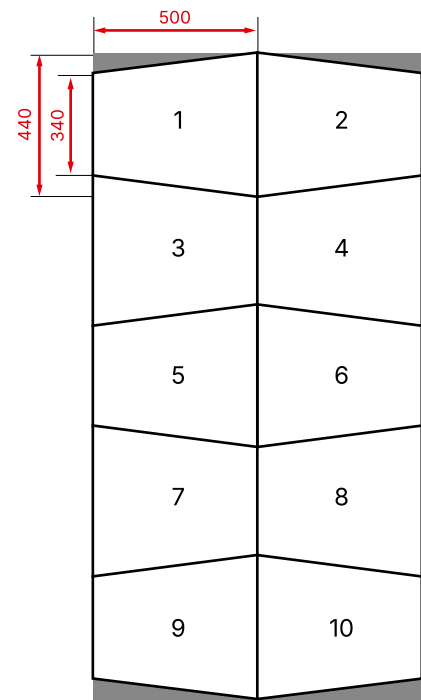
Socket
Trans-Femoral

Polypropylene sheet
4 mm



Cosmetic shank
Trans-Femoral

Polypropylene sheet
4 mm



Cosmetic calf
Trans-Femoral

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