

PEDUS

Fore- and Midfoot



Surgical technique PEDUS-MTP1 Plate

PEDUS-MTP1 Plate

Product Specifications:

- 3 different plate lengths
- · Separate versions for the left / right foot
- 2 different adjustments of the dorsal extension (0° and 8°)



Indications:

• PEDUS-MTP1 Arthrodesis Plates are indicated for fixation of fractures, osteotomies and joint fusions at the fore- and midfoot, especially at the first metatarsophalangeal joint with Hallux Rigidus.



1. Access and Resection

- Dorsal longitudinal cut over the metatarsophalangeal joint of the hallux, approx. 4–5 cm.
- The tendon of the extensor hallucis longus muscle is retracted laterally.
- Separation of the joint capsule and presentation of the metatarsal head and the basis of the proximal phalanx.
- The joint capsule is preserved where possible and sutured during wound closure as a sliding layer between plate and extensor tendon.

2. Preparation of the Metatarsophalangeal Joint: MT1

Instruments

REF 12.20032.075Reamer for arthrodesis, concave, smallREF 12.20032.085Reamer for arthrodesis, concave, mediumREF 12.20033.075Reamer for arthrodesis, concave, largeREF 11.90016.150Kirschner wire, Ø 1.6 mm, L 150 mm

- Osteophyte removal
- The K-wire is inserted under plantar flexion of the phalanx into the metatarsal head and comes to rest centrally in the metatarsal I.
- A concave reamer is used to ream the joint surface of the metatarsal I until subchondral bone becomes visible.

Note:

- If you are unsure about which size of reamer to use, start with a large reamer and then reduce the size if required.
- Only minor resection may be required for certain revision surgery. Reaming progress should be constantly monitored to prevent excessive shortening of the metatarsal I.







3. Preparation of the Metatarsophalangeal Joint of the Hallux: Phalanx

Instruments

REF 12.20030.075	Rea
REF 12.20030.085	Rea
REF 12.20031.075	Rea
REF 11.90016.150	Kirs

Reamer for arthrodesis, convex, small Reamer for arthrodesis, convex, medium Reamer for arthrodesis, convex, large Kirschner wire, Ø 1.6 mm, L 150 mm

- The plantar flexion is preserved, and the K-wire is inserted in the proximal phalanx.
- The K-wire comes to rest centrally in the proximal phalanx.
- The joint surface of the phalanx is removed with a convex reamer.
- In order to obtain congruent surfaces, the same size of reamer should be used for this process as in point 2.

Note:

- The K-wire should not extend distally into the interphalangeal joint.
- During the reaming process, care must be taken to ensure that the metatarsal head is not damaged with the convex reamer.

4. Implant Selection and Positioning

Instruments

REF 11.90012.070

Kirschner wire, Ø 1.2 mm, L 70 mm

- The PEDUS-MTP1 plate is applied dorsally, as a result of which the position of the toe is predetermined.
- The plates are preformed with a valgus angle of 5° and are available in angles of 0° and 8° depending on the required dorsal extension.
- The laser marking is provided for guide purposes and should be positioned level with the resected metatarsophalangeal joint of the hallux.
- The plate is temporarily fixed on the bone with K-wires. Atthis stage the position of the plate can be checked very well with the image intensifier.
- It is possible to additionally stabilize the arthrodesis temporarily with a K-wire

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In the event of bone defects or revision surgery it may be expedient to insert bone transplants. Plates with a correspondingly longer proximal design are available for this indication.



5. Fixation of the Plate

Instruments

REF 10.20010.020 Drill b REF 12.20060.017 Doub

Drill bit Ø 2.0 mm Double Drill Guide 2.0 / 1.7

- The proximal oval hole is filled with a non-locking Ø 2.7 mm screw.
- The screw hole is pre-drilled using the drill bit via the guide wire, through the double drill guide.



Instruments

REF 03.20100.040

Length Determination Instrument, for screws up to 40 mm

• Afterwards the length determination instrument, is used to determine the required screw length.







Instruments

REF 03.20040.030

Screwdriver. hex 2.5 mm

- Once the required screw length has been determined, the corresponding screw will be inserted with the screwdriver.
- Final tightening of the non-locking screw should not be performed until the proximal phalanx has been screwed in and after the tension screw has been inserted.

6. Drilling the Locking Screws at the Proximal Phalanx

Instruments

REF 10.20010.020 REF 10.20060.047 Drill bit Ø 2.0 mm Drill Guide 2.0

- For the Ø 3.0 mm locking screws the scaled drill guide is screwed into the screw hole that is to be used.
- With the aid of the drill bit the required screw length can be read off directly via the scaling of the drill guide.



7. Length Determination via Depth Gauge

Instruments

REF 03.20100.040

Length Determination Instrument, for screws up to 40 mm

- Alternatively, it is also possible to use a length determination instrument to determine the required screw length.
- The length determination instrument is placed directly on the plate here, and after hooking onto the opposite cortical bone the value can be read off.

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Instruments

REF 10.20060.047 REF 10.20100.050 Drill Guide 2.0 Length Determination Instrument, for screws up to 50 mm

- Optionally it is also possible to perform the measurement with the length determination instrument via the drill guide.
- To do this, the length determination instrument, which is marked with a dot, is placed on the screwed-in drill guide.



8. Insertion of Screws into the Proximal Phalanx

Instruments

REF 03.20040.030 Screwdriver, hex 2.5 mm

- After determination of the required screw lengths, the screws are inserted with the screwdriver.
- Non-locking screws should be inserted before the locking screws are inserted.
- The bores for the locking screws should not be made until the non-locking screws have been fully tightened. Otherwise the position of the plate can change slightly in relation to the bone, as a result of which the drilled axes will no longer line up exactly.









9. Insertion of ML Screws

Instruments

REF 03.20100.040	Length Determination Instrument,
	for screws up to 40 mm
REF 10.20010.020	Drill bit Ø 2.0 mm
REF 10.20050.025	ML Drill Guide 2.0

- The ML drill guide is used for Ø 2.7 mm ML screws. The funnel-shaped sleeve is screwed into the hole and then enables continuous multiaxial drilling in a 20° cone.
- The measurement of the screw length is performed as described in point 7, and the screw is inserted as described in point 8.

Note:

• The range of 20° must not be exceeded, as otherwise correct blocking between screw and plate will not be ensured.

10. Insertion of the Lag Screw

Instruments

REF 08.20100.035	Length Determination Instrument,
	for K-wires
REF 12.20010.027	Drill Bit Ø 2.7 mm, cannulated

- The compression of the arthrodesis is performed via a lag screw, which is inserted via a K-wire obliquely from medial to lateral through the metatarsophalangeal joint of the hallux.
- The screw is normally inserted from proximal to distal.
- The required screw length is determined using the length determination instrument over the inserted K-wire.
- The end of the K-wire indicates the length of the required screw.
- Subsequently, bicortical advancement is made via the K-wire with the cannulated drill bit.
- Check the length and position of the screw under radiological control in both planes.



Note:

 Alternatively it is also possible to use compression screws with similar dimensions following similar mechanical principles.



11. Fixation of the Proximal Screw Holes

- After insertion of the lag screw and compression of the metatarsophalangeal joint of the hallux, further compression is performed by tightening the non-locking screw in the oval hole. Afterwards the proximal locking screw holes of the plate are filled.
- Here, the procedure for inserting the screws corresponds to the procedure described in points 6, 7, 8 and 9.
- Once all of the screw holes have been filled, a final radiological check is performed.



12. Postoperative Protocol

- The postoperative protocol is performed using a surgical shoe with a stiff sole or a special post-operative shoe with forefoot support until bony consolidation has taken place.
- Normally the arthrodesis has been fused with bone growth after six weeks. However, as a result of individual patient factors, such as bone quality or medication that inhibits the formation of new bone, significant deviations from this value are possible.
- The transition to normal shoes can be facilitated with a stiff insert (rigidus spring plate) or with the aid of a shoe modification with a midfoot roll.



Surgical technique PEDUS-L Plantar Lapidus Plate

PEDUS-L Plantar Lapidus Plate

Product specifications:

- The plantar contact of the plate generates a tension band mechanism, which causes a compression of the arthrodesis under load.
- In addition, the plate is completely covered by the abductor hallucis muscle, which reduces postoperative tissue repair problems and makes the removal of metal unnecessary in most cases.



Indications:

• PEDUS-L Plantar Lapidus Plates are indicated for fixation of fractures, osteotomies and joint fusions at the midfoot, especially at the first tarsometatarsal joint. The Plates may be used for correction of deformities, especially hallux valgus.



1. Access and Resection

- The incision is made medioplantar over the first tarsometatarsal (TMT1) joint along the metatarsal up to the MTP1 joint.
- The joint surfaces are removed and the joint is repositioned.
- Alternatively, a medioplantar incision is made above the TMT1 joint and a second incision is made from the medial side above the MTP1 joint. Afterwards the medial Os cuneiform I and the basis of the metatarsal are exposed.

2. Insertion of the Lag Screw

- The TMT1 joint is fixed in the required position with a K-wire, Ø 1.2 mm, using the double drill guide.
- A cannulated lag screw Ø 4.0 mm is inserted from plantar medial to dorsal lateral into the second Os cuneiform.
- The insertion of the cannulated screw Ø 4.0 mm is done as described in step 10 in the MTP surgical technique.



3. Positioning and Fixation of the Plate

- The plate is positioned and can be temporarily fixed with a K-wire.
- The plate can be fixed with locking or multiaxial locking screws.
- The steps for drilling, measuring the screw length and fixation are the same as steps 6, 7, 8 and 9 in the MTP surgical technique (see above).





Surgical technique PEDUS-L

PEDUS-L

Product specifications:

- 5 different step heights: 0, 2, 3, 4 and 5 mm
- The plate design allows the insertion of a cortical screw, which can be used to exert compression on the arthrodesis surfaces.



Indications:

• PEDUS-L Lapidus Plates are indicated for fixation of fractures, osteotomies and joint fusions at the midfoot, especially at the first tarsometatarsal joint. The Plates may be used for correction of deformities, especially hallux valgus.



1. Access and Resection

- A dorsomedial incision is made over the first tarsometatarsal (TMT1) joint from the medial cuneiform to the mid of the MTP1. The incision is placed medial to the extensor hallucis longus.
- The TMT1 joint is identified, the cartilage is removed and the joint surfaces are prepared for fusion. The resected wedge determines the direction of correction.

2. Insertion of the Lag Screw

- The TMT1 joint is fixed in the required position with a K-wire Ø 1.2 mm, using the double drill guide.
- A cannulated lag screw is inserted from dorsal to plantar into the first Os cuneiform.
- The insertion of the cannulated screw Ø 4.0 mm is done as described in step 10 in the MTP surgical technique (see above).



3. Positioning and Fixation of the Plate

- The plate is positioned and can be temporarily fixed with a K-wire.
- The plate can be fixed with locking or multiaxial locking screws.
- The steps for drilling, measuring the screw length and fixation are the same as steps 6, 7, 8 and 9 in the MTP surgical technique (see above).

