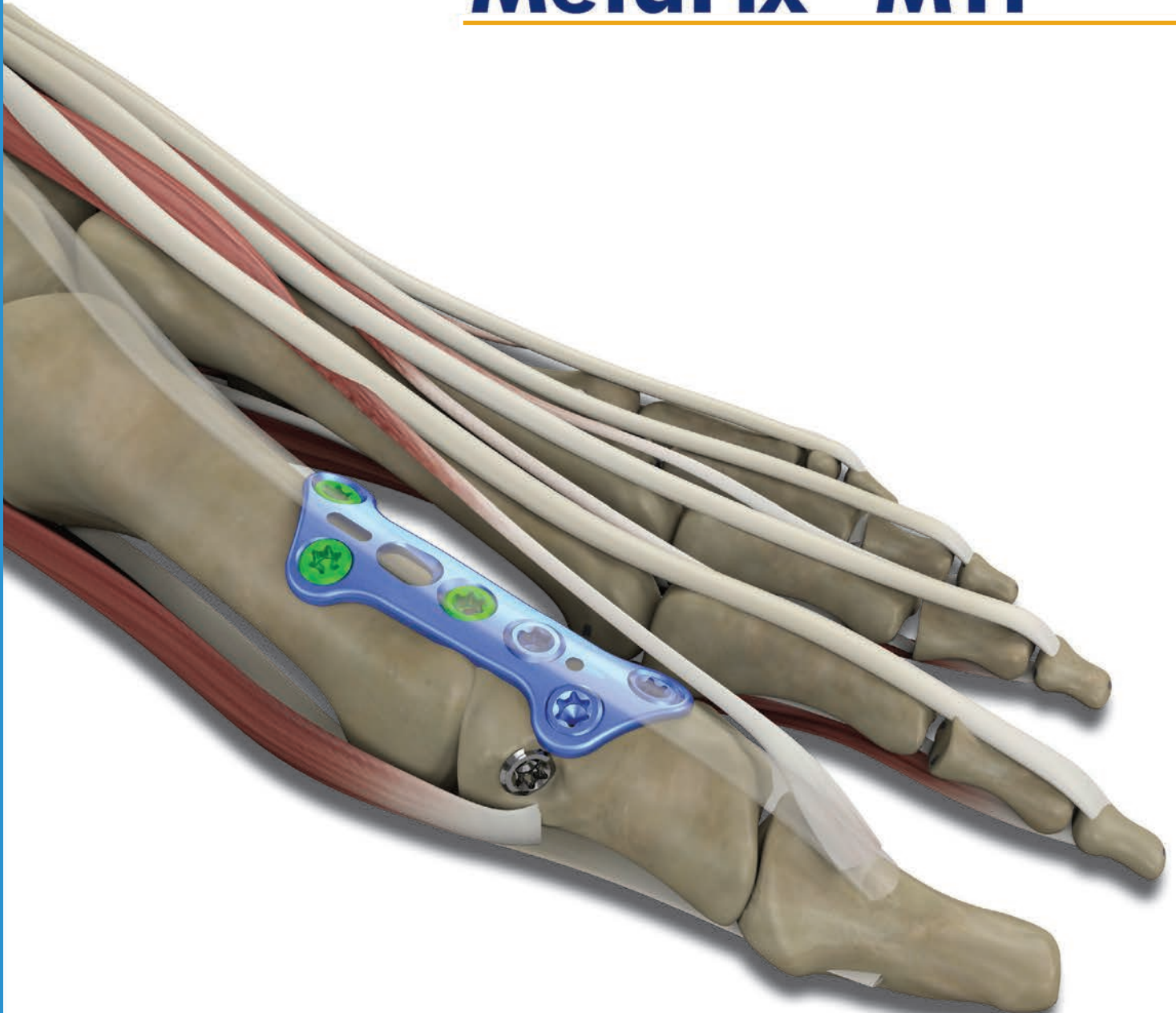


# MetaFix™ MTP

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**Surgical Technique and  
Ordering Information**



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## Description

The MetaFix™ MTP plate system is a plate-screw system for the arthrodesis of the first metatarsal-phalangeal joint (MTP). The combination of an anatomic plate with locking and non-locking screws results in a rigid and stable fixation.

### ▶ Indications

- Arthrodesis of the first metatarsophalangeal (MTP) joint
- Hallux rigidus
- Arthrosis
- Revision after failed Keller procedure
- Revision after failed arthroplasty

### ▶ Contraindications

- Infection or painful, swelling and/or inflammation of the implantation area
- Bone absorption or over production
- Allergic reactions to implant materials, particularly metal (eg chromium, nickel, etc.)
- Difficult to treat histological reactions possibly involving macrophages and/or fibroblasts
- Embolism



## Surgical Technique

The surgical technique presented here is used to demonstrate the fundamental procedure. Merete GmbH, as the manufacturer of these devices, does not practice medicine and does not recommend these or any other surgical techniques for use on a particular patient. The surgeon who performs any implant procedure is responsible for determining and utilizing the appropriate techniques for implanting a prosthesis in each individual patient. Merete GmbH is not responsible for the selection of the appropriate surgical technique to be utilized for an individual patient.

### ► Incision

Perform a dorsal longitudinal incision to obtain adequate exposure of the MTP joint while releasing the joint capsule and collateral ligaments to expose the MTP joint. Use a rongeur for both metatarsal head and phalangeal to begin preparation for fusion.

### ► Preparation of metatarsal I

Plantar flex the phalangeal bone to gain adequate exposure of the metatarsal head. Insert a Merete K-wire DIA. 1.4 mm 70 mm (Ref. CK14215) centered to the metatarsal head driven parallel to the shaft (Figure 1).

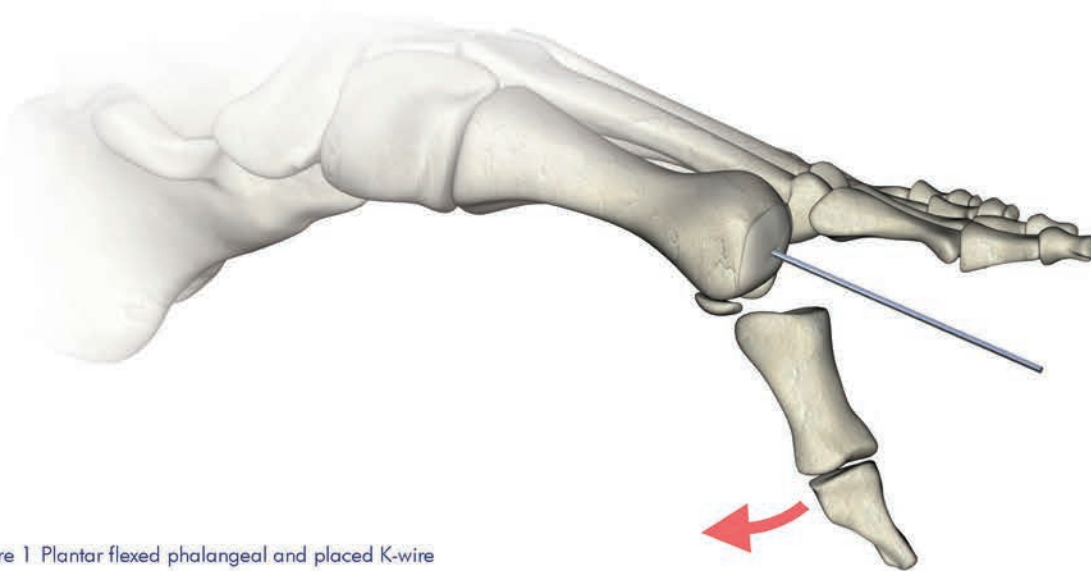


Figure 1 Plantar flexed phalangeal and placed K-wire

#### **Note:**

To expose the articular surface and to protect the surrounding soft tissue use curved elevators or retractors.

## ▶ Reaming of the metatarsal head

Select appropriate size Merete<sup>®</sup> cannulated Cone Reamer and place over K-wire to begin reaming of the metatarsal head until bleeding subchondral bone becomes visible on the joint surface (Figure 2). Take note of the last reamer size. After reaming, take K-wire and perforate the metatarsal head several times to finish metatarsal preparation for fusion.



Figure 2 Reaming of the metatarsal head

### **Note:**

Take care not to run the cutting edges of the reamer against the sesamoids. Check the process often to avoid excessive shortening of the metatarsal head.

## ▶ Phalangeal preparation

Plantarflex and elevate the phalangeal bone to gain adequate exposure of the base of the phalangeal bone. Insert a DIA. 1.4 mm K-wire length 70 mm (Ref. CK14215) down the center shaft of the phalangeal.

Select the same size Cup Reamer that was used on the metatarsal and place over the K-wire to gently ream the phalangeal bone (Figure 3). After reaming, take K-wire and perforate the phalangeal bone to complete phalangeal preparation.

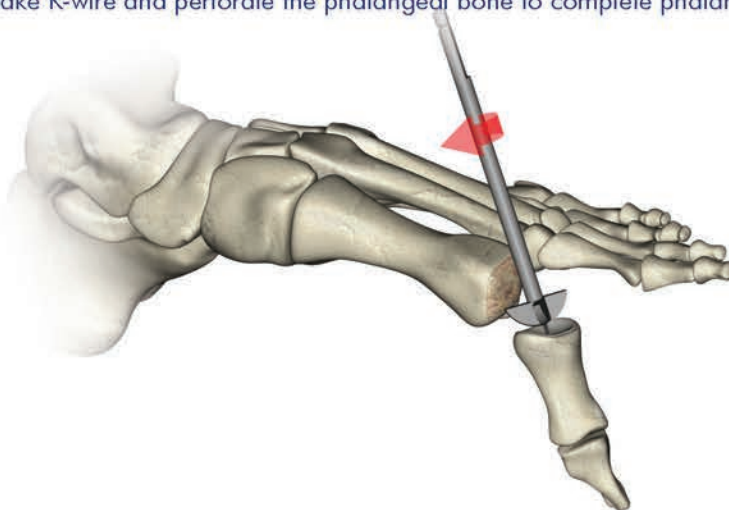


Figure 3 Reaming of the phalangeal

**Note:** Take care not to remove too much bone or damage the metatarsal head.

► MTP-Fusion plate placement

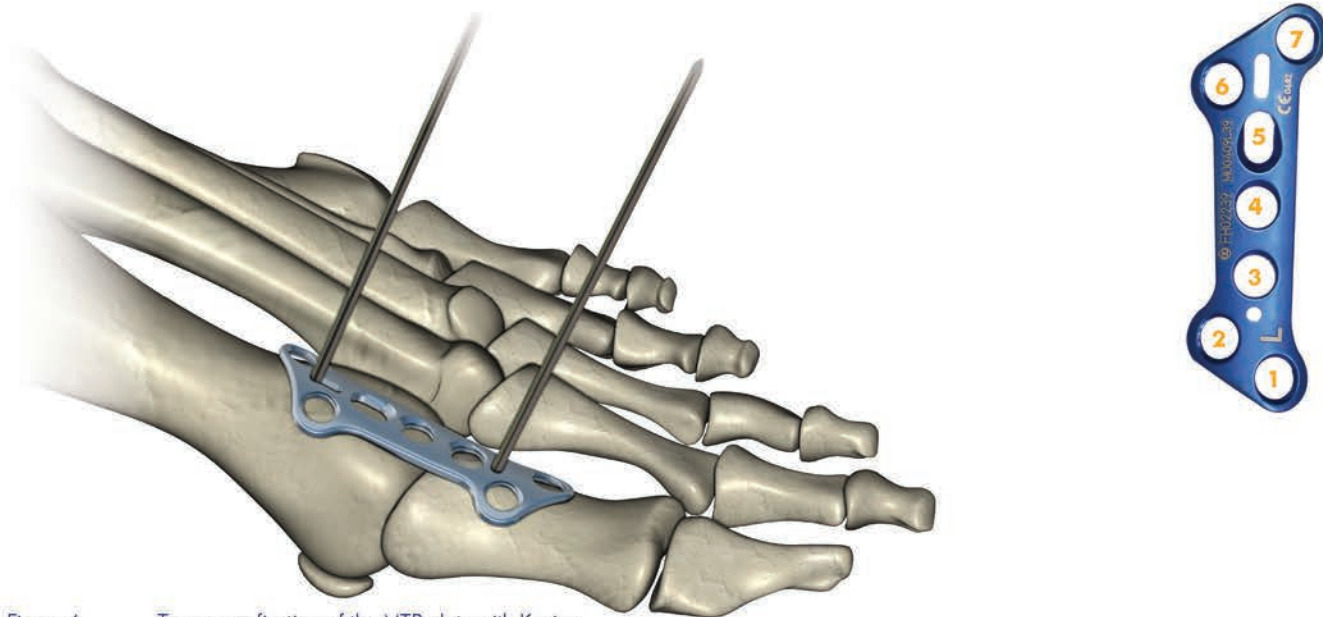


Figure 4 Temporary fixation of the MTP plate with K-wires

The MetaFix™ MTP plate is placed dorsal on the bone, if necessary, adjusted by bending and temporarily fixed with K-wires (DIA. 1.4 mm 70 mm length). The K-wire is placed proximal to the proximal end of the K-wire slot (Figure 4). The compression slot hole (5) of the plate should be in the range of the first metatarsal. Subsequently, the plate and the toe bones are adjusted. This can be fixed temporarily with another K-wire distal to the plate.

**Attention:**

The distal K-wire has to be removed prior to placing the third hole (3), otherwise the K-wire collides with the drill or the screw.

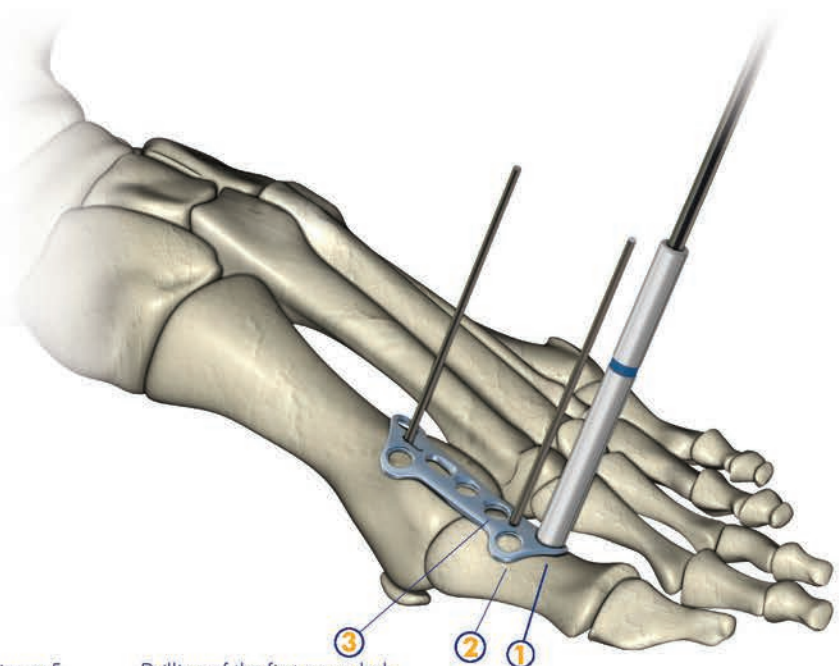


Figure 5 Drilling of the first screw hole

The attachment of the MTP plate begins distally at the phalangeal. It is important to ensure that the screwing begins on the lateral (1) or medial (2) holes. Thread a DIA. 2.0 mm drill guide (Ref. FH10045) into the distal screw hole. Predrill through bone with DIA. 2.0 mm drill bit (Ref. FH10003) (Figure 5). The distal K-wire has to be removed prior to placing the third hole (3), otherwise the K-wire collides with the drill or the screw.

Remove the drill guide and use the sliding depth gauge (Ref. AI00301) to obtain proper screw measurement. The appropriate screw length can be read off the scale at the end of the outer mantle of the sliding depth gauge (Figure 6).

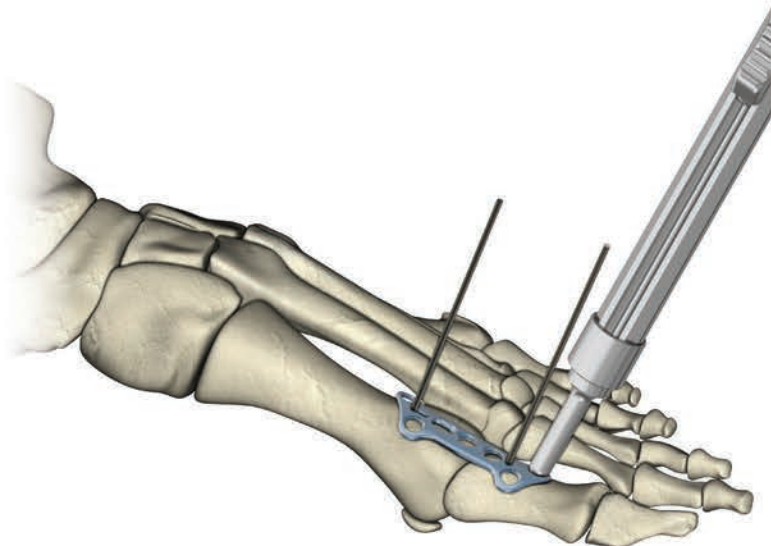


Figure 6 Measurement of the screw length

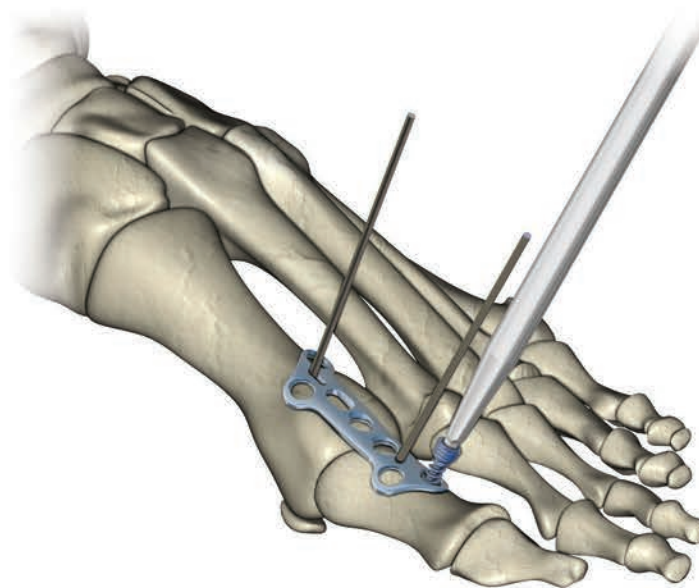


Figure 7 Tightening of a distal screw

**Note:**

*Placement of Locking Screws*

- *The screw and the screwdriver should be exactly aligned with the axis of the screw hole. The screw should easily thread and lock into the plate.*
- *Do not use much force when tightening the screws. If resistance is met, slightly back out screw, realign screw and screw driver and turn the screw in again. The screw head should end up flush to the plate.*
- *For screw length measurements indicated with odd numbers, round up to ensure bi-cortical placement of the locking screw.*

► **Compression of the fusion**

To achieve a compression of the fusion use the cannulated headless compression screws (*Placement of the interfragmentary compression screw across MTP joint (see page 10)*) or place a compression screw through the compression slot screw (*Placement of compression slot screw (see page 11)*).




<b>Merete® Cannulated HCS</b>	<b>Merete® Cannulated PCS</b>	<b>Merete® CS</b>
DIA. 3.0 mm	DIA. 3.0 mm	DIA. 3.0 mm
		
External compression screw	Compression screw for compression slot hole	Compression screw for compression slot hole
cannulated for DIA.1.0 mm K-wire	cannulated for DIA.1.0 mm K-wire	not cannulated

Table 1 Screws for compression

► Placement of the interfragmentary compression screw across MTP joint

DIA. 3.0 mm cannulated headless compression screws are available in the tray for interfragmentary compression across the joint or for a 2 screw fixation if soft tissue does not allow the use of the plate. Use a DIA. 1.0 mm K-wire, length 150 mm (Ref. CK10215) and place K-wire across the MTP joint from either proximal to distal, or distal to proximal (surgeons preference). Under C-arm exposure, ensure K-wire is placed appropriately and distal tip is just exiting the distal cortex. Measure the screw length using the white cannulated depth gauge (Ref. AC14150) over the K-wire. If an odd number is measured, we recommend to round up for bi-cortical fixation. Drive screw into position, flush to bone to achieve adequate compression (Figure 8). Check under C-arm for appropriate position.

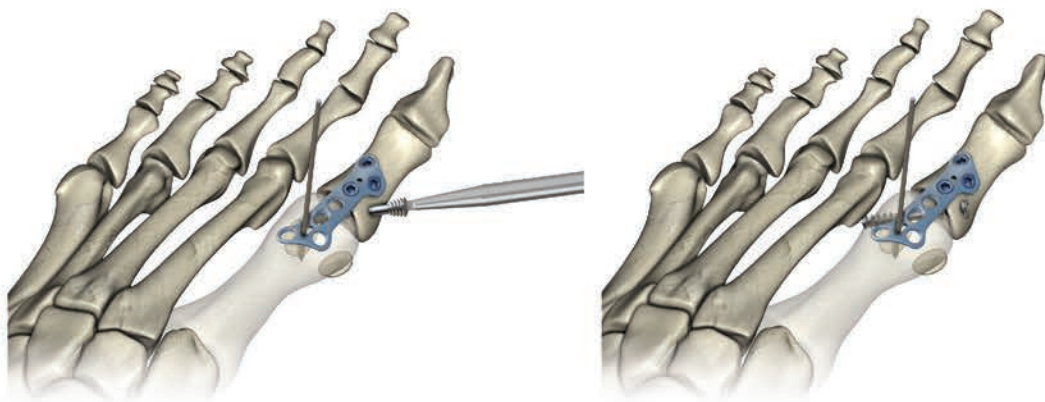


Figure 8 Tightening of the interfragmentary compression screw

**Note:**

For fixation use cannulated DIA. 3.0 mm HCS screw

- For a DIA. 3.0 mm headless compression screw use the DIA. 1.0 mm K-wire, length 150 mm (Ref. CK10215). For K-wire placement and drilling the hole use the drill guide (Ref. AC10020) to protect the soft tissue.

► Placement of Merete® Cannulated PCS or Merete® CS screw

To achieve a compression of the fusion use the DIA. 3.0 mm cannulated non-locking screw or DIA. 3.0 mm non-cannulated locking screw through the slotted compression hole.

Use a DIA. 1.0 mm K-wire length 150 mm (Ref. CK10215) and the DIA. 1.0 mm K-wire soft tissue protector (Ref. AC10020) to insert K-wire centered and proximal in the compression slot hole. Surgeon may use C-arm to check if K-wire position is located appropriately into the distal/plantar cortex.

Check the depth with the white depth gauge or use a DIA. 2.0 mm cannulated drill bit over the K-wire to completely drill through the cortex (Figure 9). Check depth with sliding depth gauge.

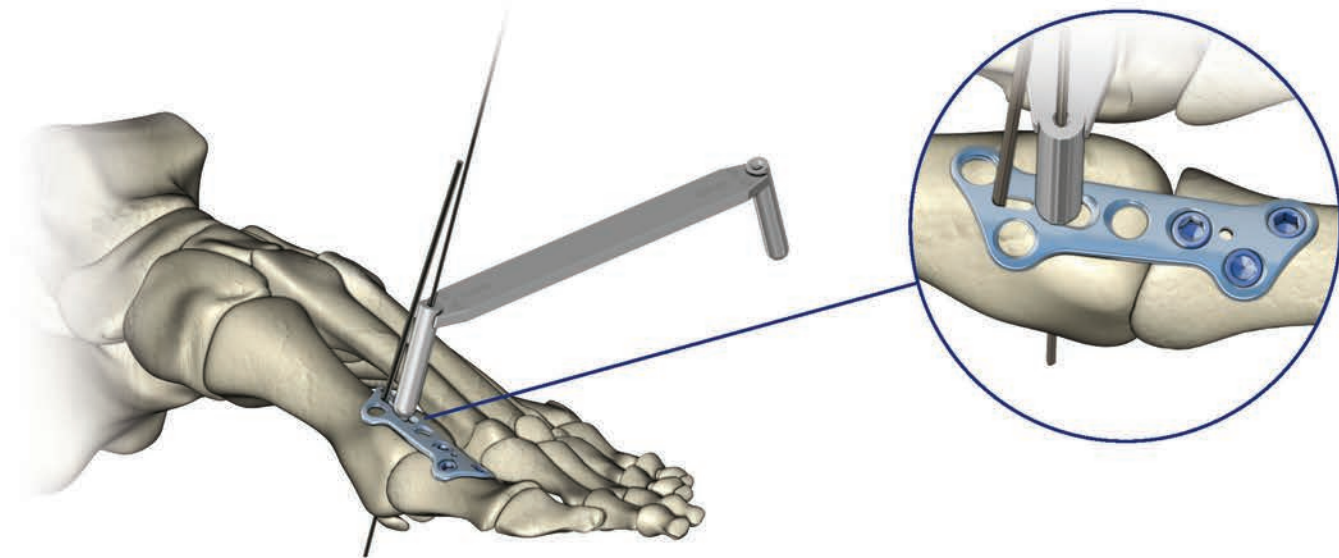


Figure 9 Placing the K-wire for the Merete® Cannulated PCS screw

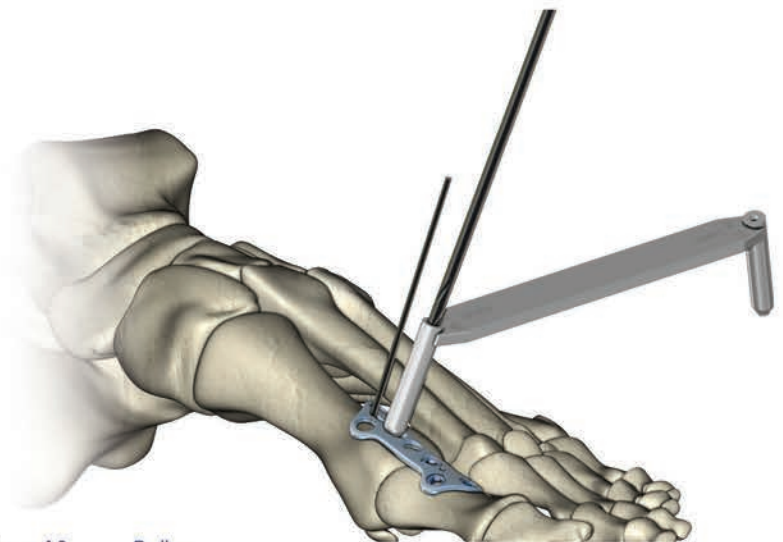


Figure 10 Drilling

▶ Screw placement

- Merete® Cannulated PCS screw

Insert DIA. 3.0 mm GOLD non-locking cannulated screw over the K-wire. Remove the proximal and distal K-wire. Tighten the DIA. 3.0 mm screw flush to plate surface to achieve compression of the fusion. During tightening of the screw compression increases the compression in the MTP joint (Figure 11 and 12).

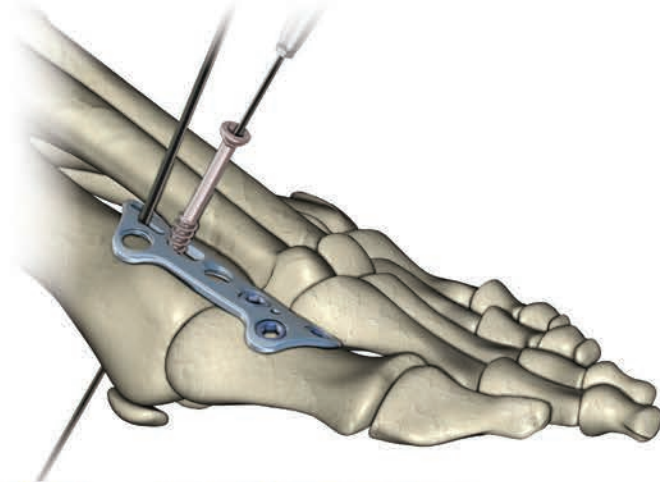


Figure 11 Inserting of the compression screw

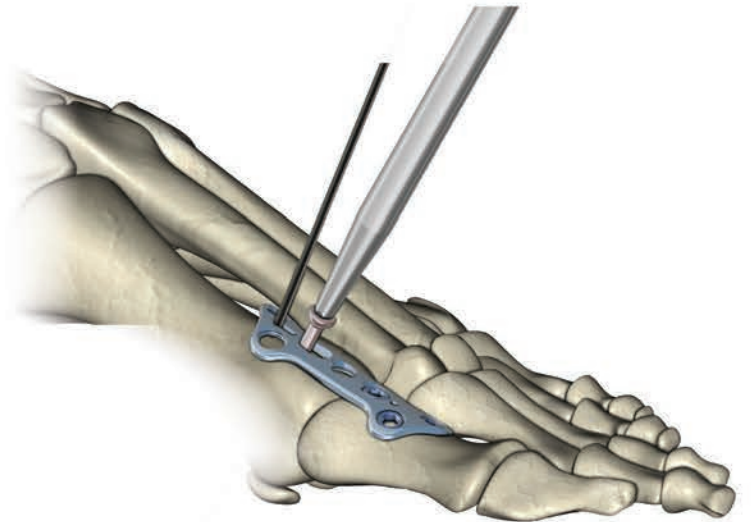


Figure 12 Remove the K-wire of PCS screw before the PCS screw is fully tightened

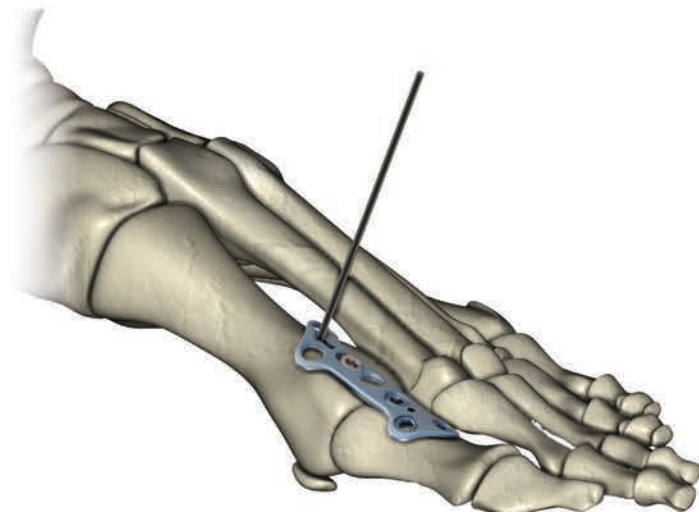


Figure 13 Completely screwed in PCS screw (compressed joint)

- Merete® CS screw

Placing and insertion of the Merete® CS screw is similar to the insertion of the Merete® Cannulated PCS screw. Since the Merete® CS screw is not cannulated, the guide wire in the slot must be removed before screwing.

► Placement of proximal fixation screws

For a higher stability of the MTP plate at the first metatarsal it is recommended to use MetaFix™ LS DIA. 3.5 mm screws. Drilling and screw insertion is done similarly to the distal screws (see pages 7 and 8). The first screw should be introduced into the hole (4). To avoid a collision between the K-wire and drills or screws (6) and (7) remove the K-wire before placing.

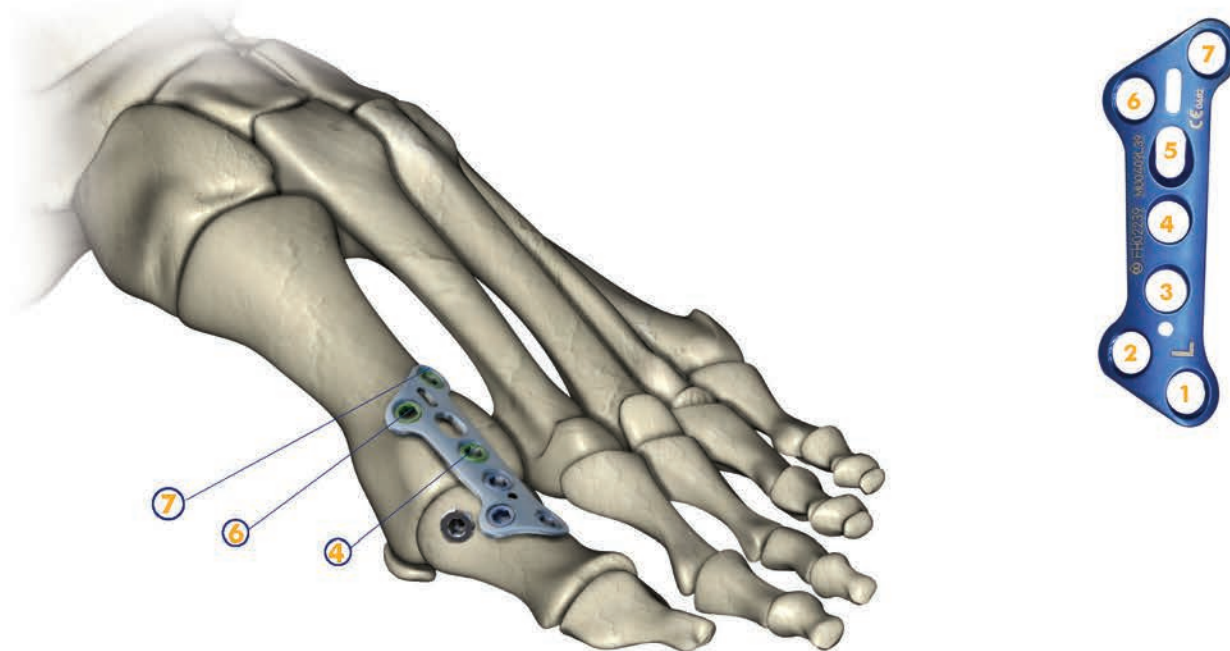


Figure 14 MTP Plate in combination with interfragmentary compression screw

**Attention:**

The proximal K-wire has to be removed prior to placing the proximal screws (6) and (7), otherwise the K-wire collides with the drill or the screw.



Figure 15 MTP plate with compression slot screw

## Ordering Information

### ► Implants

## MetaFix™ MTP plate

non-sterile

### Left

Size	Ref. left	
39 mm	FH02239	
52 mm	FH02252	

### Right

Size	Ref. right	
39 mm	FH01239	
52 mm	FH01252	

**Screws**  
non-sterile



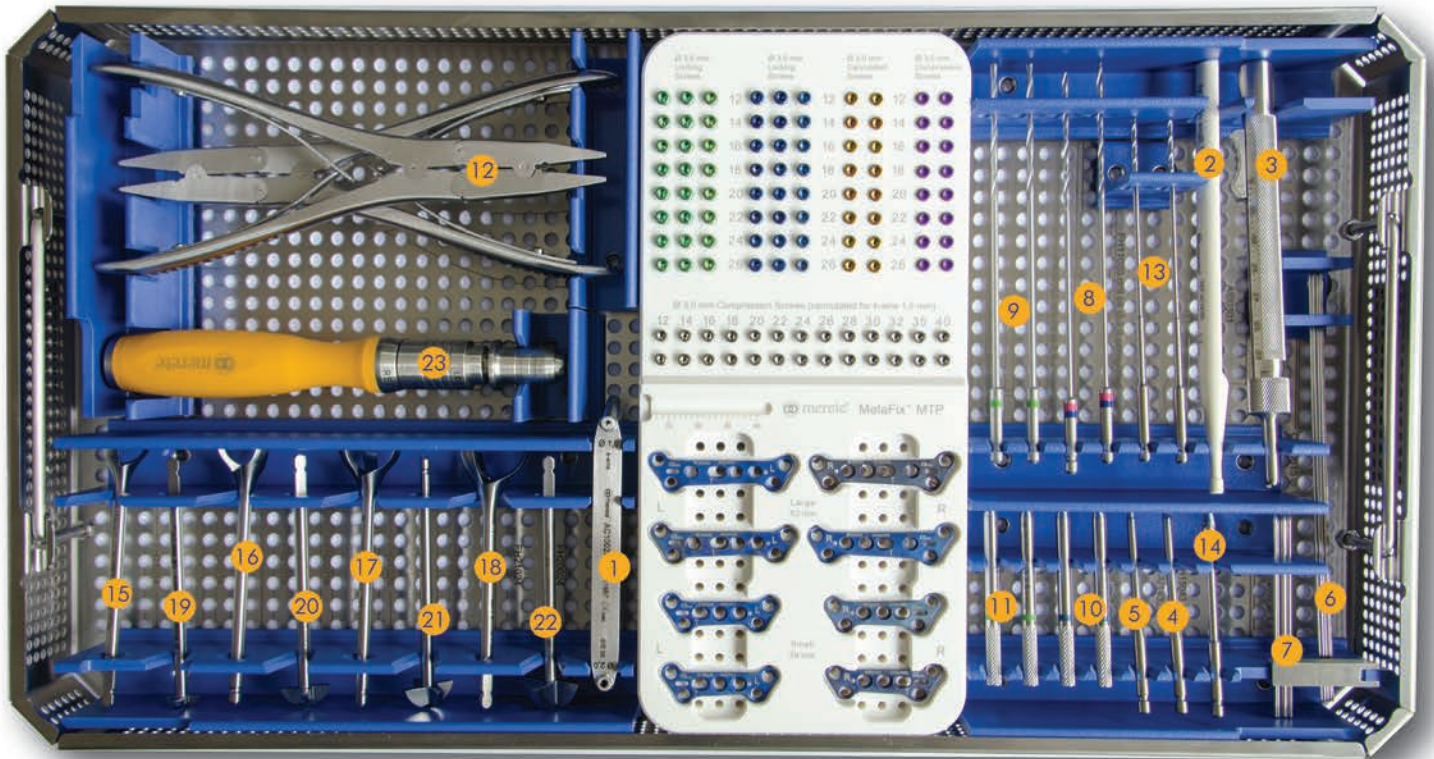
Length	MetaFix™ LS DIA. 3.0 mm	MetaFix™ LS DIA. 3.5 mm	Merete® Cannulated PCS DIA. 3.0 mm	Merete® CS DIA. 3.0 mm
12 mm	FH30012	FH35012	FH30112	CR30312
14 mm	FH30014	FH35014	FH30114	CR30314
16 mm	FH30016	FH35016	FH30116	CR30316
18 mm	FH30018	FH35018	FH30118	CR30318
20 mm	FH30020	FH35020	FH30120	CR30320
22 mm	FH30022	FH35022	FH30122	CR30322
24 mm	FH30024	FH35024	FH30124	CR30324
26 mm	FH30026	FH35026	FH30126	CR30326



Length	Merete® Cannulated HCS DIA. 3.0 mm
20 mm	CB03020
22 mm	CB03022
24 mm	CB03024
26 mm	CB03026
28 mm	CB03028
30 mm	CB03030
32 mm	CB03032
34 mm	-
35 mm	CB03035
36 mm	-
38 mm	-
40 mm	CB03040

▶ Instruments

Description	Ref.
MetaFix™ MTP Tray with implants and instruments	FH92000



Description	Ref.
1 Double drill sleeve DIA. 1.0 mm/DIA. 2.0 mm	AC10020
2 Length Gauge 0-90 mm	AC14150
3 Depth Gauge 0 - 60 mm	AI00301
4 Screwdriver hex 2.5 mm, L: 70 mm, cannulated for DIA. 1.4 mm K-Wire, AO-Connector small	AI14326
5 Screwdriver Torx T10, L: 70 mm, cannulated for DIA. 1.4 mm K-Wire, AO-Connector small	AI14327
6 K-wires DIA. 1.0 mm; L: 150 mm	CK10215*
7 K-wires DIA. 1.4 mm, L: 70 mm	CK14207*
8 Drill Bit DIA. 2.0 mm, L: 140 mm, AO-Connector	FH10003
9 Drill Bit DIA. 2.5 mm, L: 140 mm, AO-Connector	FH10004
10 Drill Guide for DIA. 2.0 mm drill for locking screws	FH10045
11 Drill Guide for DIA. 2.5 mm drill for locking screws	FH10046
12 Bending Wrench	FH10905
13 Drill Bit DIA. 2.0 mm with AO-Connector cannulated for K-Wire DIA. 1.0 mm	FH11020
14 Countersink with AO-Connector for screws DIA. 3.0 mm / DIA. 4.3 mm	FH15043
15 Cup-Shaped Reamer with AO-Connector, DIA. 14 mm, cannulated for K-Wire DIA. 1.6 mm	FH20014
16 Cup-Shaped Reamer with AO-Connector, DIA. 18 mm, cannulated for K-Wire DIA. 1.6 mm	FH20018
17 Cup-Shaped Reamer with AO-Connector, DIA. 20 mm, cannulated for K-Wire DIA. 1.6 mm	FH20020
18 Cup-Shaped Reamer with AO-Connector, DIA. 24 mm, cannulated for K-Wire DIA. 1.6 mm	FH20024
19 Ball-Shaped Reamer with AO-Connector, DIA. 14 mm, cannulated for K-Wire DIA. 1.6 mm	FH21014
20 Ball-Shaped Reamer with AO-Connector, DIA. 18 mm, cannulated for K-Wire DIA. 1.6 mm	FH21018
21 Ball-Shaped Reamer with AO-Connector, DIA. 20 mm, cannulated for K-Wire DIA. 1.6 mm	FH21020
22 Ball-Shaped Reamer with AO-Connector, DIA. 24 mm, cannulated for K-Wire DIA. 1.6 mm	FH21024
23 Handle with ratchet and AO-Connector small	FH90003

\*Packing unit 10 Pcs.





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