

TWIN - Compression Screw \varnothing 4.5mm
 \varnothing 7.0mm

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Note:

The surgical technique outlined below reflect the surgical procedure usually chosen by the clinical advisor. However, each surgeon must decide which surgical method and which approach is the most successful for his patient.

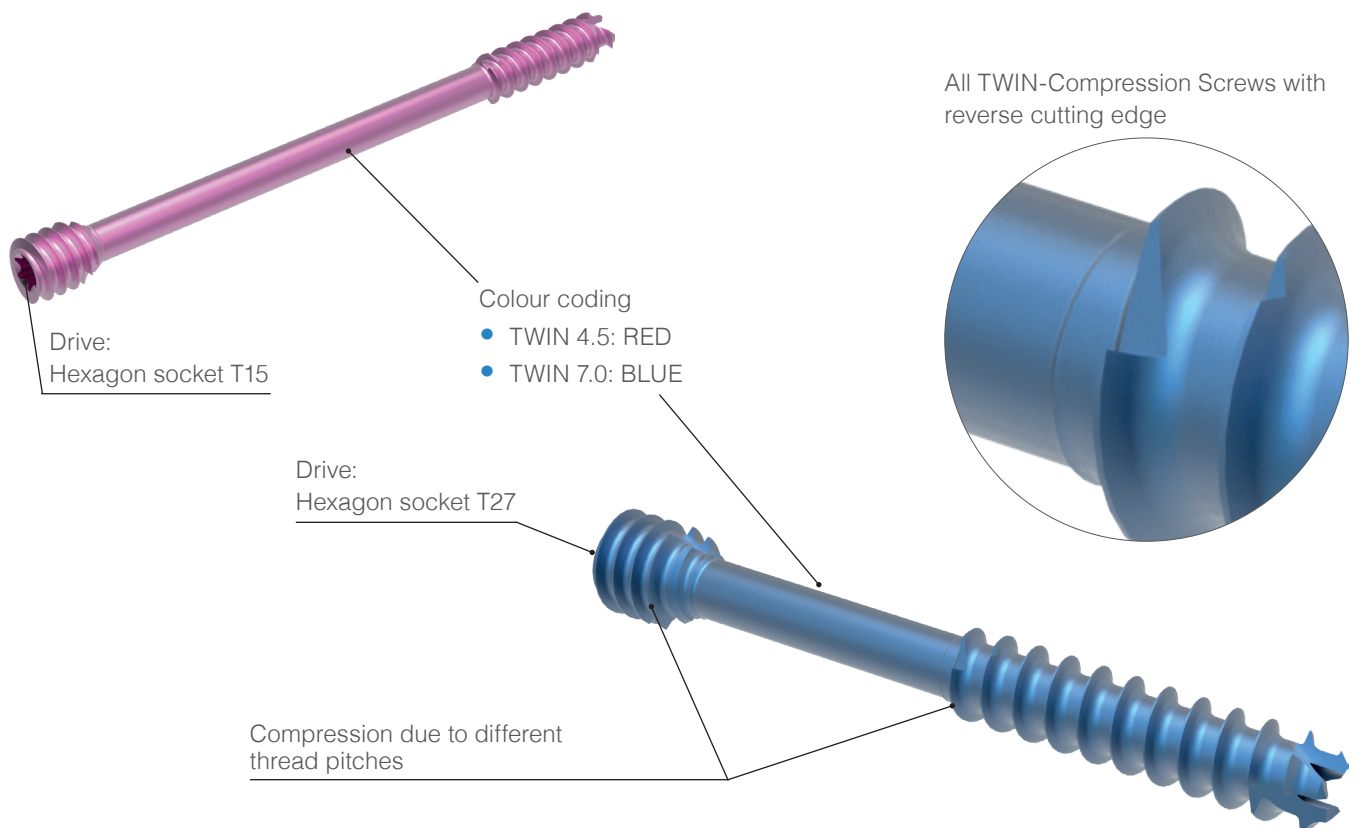
TWIN-Compression Screw

► Introduction

Product Specification

The **TWIN**-Compression Screw has one thread each on the screw head and the screw tip.

The thread at the screw head has a larger diameter and a smaller pitch than at the screw tip. As a result, when the screw head enters the bone, the distal fragment is pulled closer and compression is achieved. The result is stable internal fixation of the fragment by means of compression.



Indication TWIN 4.5:

Fixation of fractures of small and medium bones and bone fragments. Fixation of osteotomies and arthrodesis of the mid- and hindfoot.

In particular for:

- talonavicular arthrodesis
- subtalar arthrodesis
- calcaneocuboid arthrodesis
- triple Arthrodesis
- calcaneal osteotomy

Indication TWIN 7.0:

Fixation of fractures of small, medium and large bones and bone fragments. Fixation of osteotomies and arthrodesis of the foot and ankle.

In particular for:

- ankle arthrodesis
- Subtalar arthrodesis
- Calcaneal osteotomy

► Surgical Technique

The following surgical instructions describe the use of the TWIN-Compression Screw \varnothing 4.5 mm. The surgical technique for the TWIN-Compression Screw \varnothing 7.0 mm is identical, but performed with different instruments (indicated in brackets).

Guide Wire Insertion

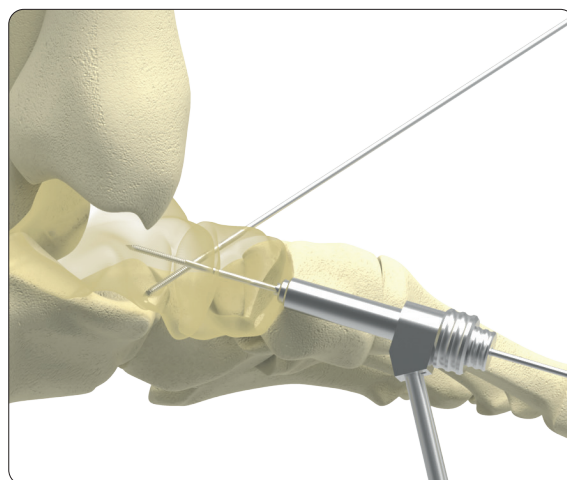
Instruments

REF 11.90217.150 (REF 11.90225.240S)	K-Wire \varnothing 1.7 mm K-Wire \varnothing 2.5 mm)
REF 08.20060.032 (REF 12.20060.050)	Centering Sleeve 3.2 mm Centering Sleeve 5.0 mm)
REF 12.20060.060 (REF 12.20060.085)	Drill Sleeve 6.0/3.5 Drill Sleeve 8.7/5.0)
REF 12.20120.055 (REF 12.20120.085)	Protection Sleeve 8.0/6.0 Protection Sleeve 10.6/8.8)

- After joint resection, the screw position is determined with the help of the K-wire \varnothing 1.7 mm.
- The K-wire is inserted into the bone via the centering sleeve located in the protection sleeve and the drill sleeve.
- The correct position of the guide wire is then checked by means of a C-arm.

Note:

- A second K-wire can be inserted into the bone for additional rotational stability.



Screw Length Determination

Instruments

REF 12.20100.080 (REF 12.20100.120)	Length Determination Instrument for REF 08.20060.032 Length Determination Instrument for REF 12.20060.050
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- The length determination of the screw to be used is made via the K-wire located in the bone.
- The screw to be used is usually chosen 2 mm shorter than the specific length measurement result.
- This allows the proximal portion of the screw to be fully countersunk into the cortex and avoids any soft tissue irritation.

Note:

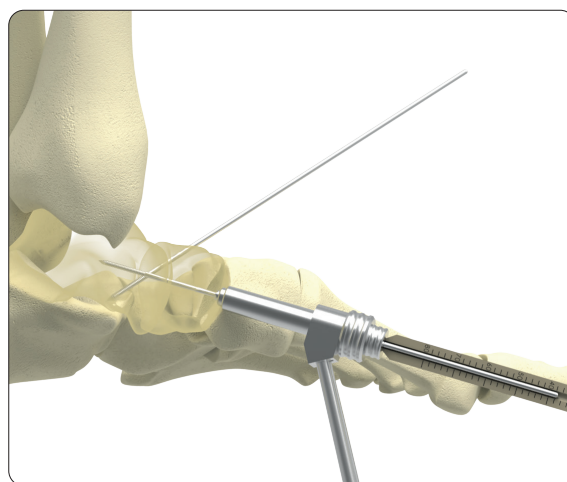
- The length determination instrument is placed directly on the guide sleeve. The K-wire end defines the screw to be used minus 2 mm.

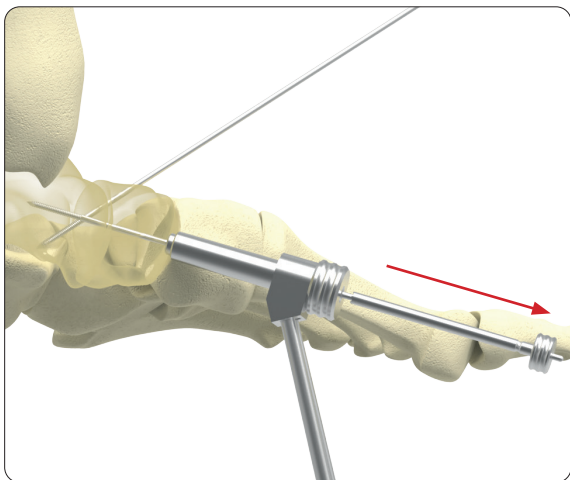
Note:

Instruments

REF 12.20100.085 (REF 12.20100.125)	Length Determination Instrument for K-Wire \varnothing 1.7 mm Length Determination Instrument for K-Wire \varnothing 2.5 mm)
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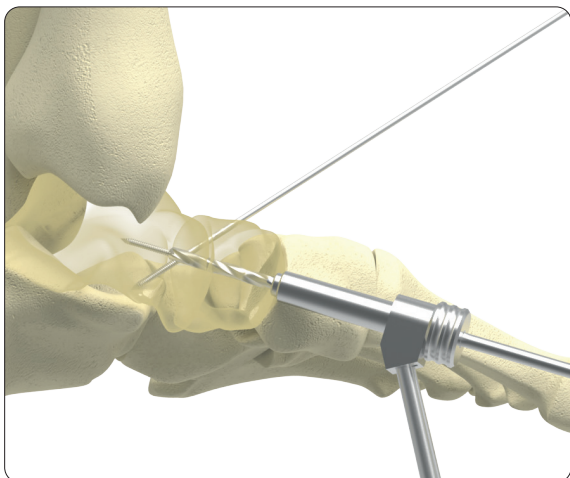
- Optionally, the screw length can be determined directly via the K-wire without guide sleeve, drill sleeve and tissue protection sleeve.





Centernig Sleeve Removal

- After determining the required screw length, the centering sleeve is removed.

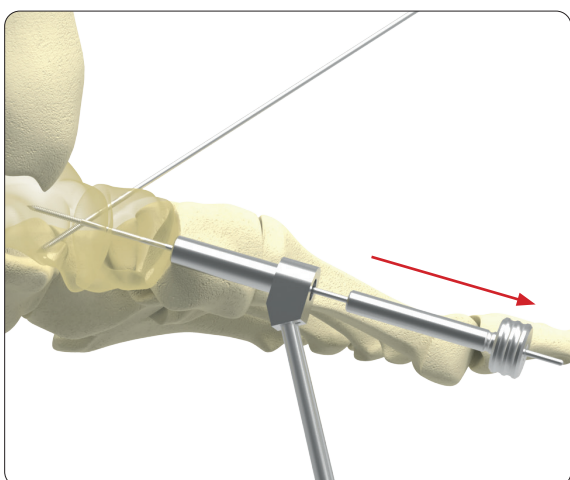


Drilling

Instruments

REF 12.20010.135(S) Drill Bit Ø 3.5 mm
(REF 12.20010.150(S) Drill Bit Ø 5.0 mm)

- The cannulated drill bit is then advanced over the K-wire to the bone and the screw hole for the TWIN screw is drilled.



Drill Sleeve Removal

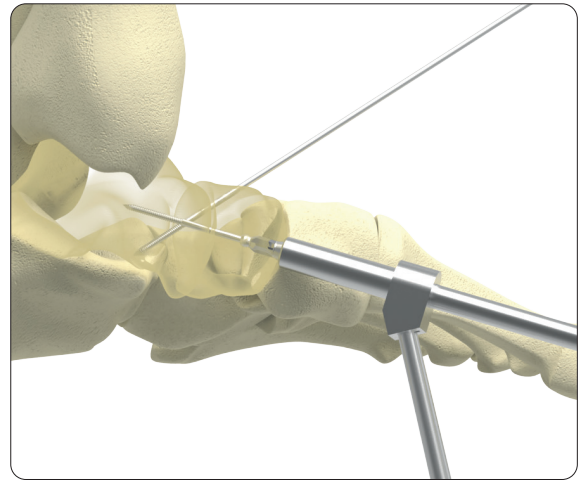
- After drilling the screw hole, the drill bit and the drill sleeve are removed.

Milling

Instruments

REF 12.20030.142 Countersink Ø 4.2 mm
(REF 12.20030.164 Countersink Ø 6.5 mm)

- The countersink is guided through the protection sleeve via the K-wire.
- The countersink is used to prepare the proximal portion of the TWIN screw in the bone.

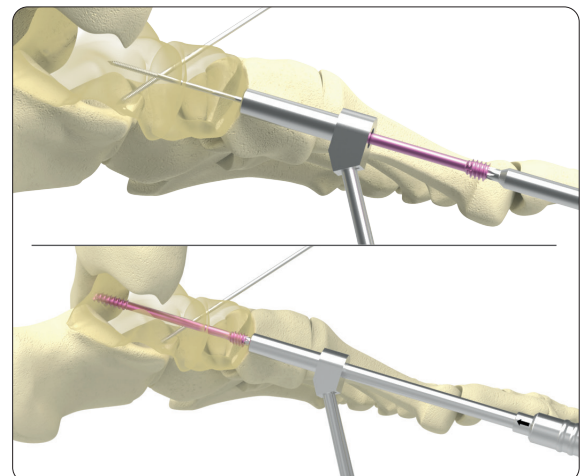


Screw Insertion

Instruments

REF 12.20040.115 Screwdriver Shaft, T15
(REF 12.20040.128 Screwdriver Shaft, T27)
REF 12.20050.020 Handle with AO Coupling
(REF 01.20010.270 T-Handle with Quick Coupling)

- The TWIN screw Ø 4.5 mm is now screwed into the bone over the K-wire using the screwdriver shaft and handle.



TWIN-Compression Screw

▶ Product Information

Implants



TWIN-Compression Screw Ø 4.5 / 5.5 mm

- Thread diameter: 4.5 / 5.5 mm
- Core diameter: 3.35 mm
- Pitch: 1.75 / 1.25 mm
- Hexagon socket: T15
- Cannulation: 1.87 mm
- Material: Ti6Al4V

Article Number	Length	Thread Length
12.03355.020S	20 mm	9 mm
12.03355.022S	22 mm	9 mm
12.03355.024S	24 mm	10 mm
12.03355.026S	26 mm	16 mm
12.03355.028S	28 mm	16 mm
12.03355.030(S)	30 mm	16 mm
12.03355.032(S)	32 mm	16 mm
12.03355.034(S)	34 mm	16 mm
12.03355.036(S)	36 mm	16 mm
12.03355.038(S)	38 mm	16 mm
12.03355.040(S)	40 mm	16 mm
12.03355.045(S)	45 mm	16 mm
12.03355.050(S)	50 mm	16 mm
12.03355.055(S)	55 mm	20 mm
12.03355.060(S)	60 mm	20 mm
12.03355.065(S)	65 mm	20 mm
12.03355.070S	70 mm	24 mm
12.03355.075S	75 mm	24 mm
12.03355.080S	80 mm	24 mm

Article Number	Length	Thread Length
12.03716.040S	40 mm	16 mm
12.03716.045S	45 mm	16 mm
12.03716.050S	50 mm	16 mm
12.03716.055S	55 mm	16 mm
12.03716.060S	60 mm	16 mm
12.03716.065S	65 mm	16 mm
12.03716.070S	70 mm	16 mm
12.03716.075S	75 mm	16 mm
12.03716.080S	80 mm	16 mm
12.03716.085S	85 mm	16 mm
12.03716.090S	90 mm	16 mm
12.03716.095S	95 mm	16 mm
12.03716.100S	100 mm	16 mm
12.03716.105S	105 mm	16 mm
12.03716.110S	110 mm	16 mm
12.03716.115S	115 mm	16 mm
12.03716.120S	120 mm	16 mm

TWIN-Compression Screw Ø 7.0 / 8.5 mm, 16 mm thread

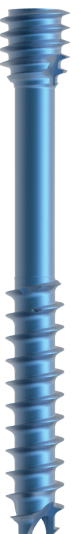
- Thread diameter: 7.0 / 8.5 mm
- Core diameter: 4.85 mm
- Pitch: 2.75 / 1.8 mm
- Hexagon socket: T27
- Cannulation: 2.8 mm
- Material: Ti6Al4V



Article Number	Length	Thread Length
12.03732.050S	50 mm	32 mm
12.03732.055S	55 mm	32 mm
12.03732.060S	60 mm	32 mm
12.03732.065S	65 mm	32 mm
12.03732.070S	70 mm	32 mm
12.03732.075S	75 mm	32 mm
12.03732.080S	80 mm	32 mm
12.03732.085S	85 mm	32 mm
12.03732.090S	90 mm	32 mm
12.03732.095S	95 mm	32 mm
12.03732.100S	100 mm	32 mm
12.03732.105S	105 mm	32 mm
12.03732.110S	110 mm	32 mm
12.03732.115S	115 mm	32 mm
12.03732.120S	120 mm	32 mm

TWIN-Compression Screw Ø 7.0 / 8.5 mm, 32 mm thread

- Thread diameter: 7.0 / 8.5 mm
- Core diameter: 4.85 mm
- Pitch: 2.75 / 1.8 mm
- Hexagon socket: T27
- Cannulation: 2.8 mm
- Material: Ti6Al4V



TWIN-Compression Screw

Instruments

TWIN-Compression Screw Ø 4.5 mm

11.90217.150 Kirschner Wire Ø 1.7mm, threaded tip, L 150mm



12.20010.135(S) Drill Bit Ø 3.5/1.85mm, cannulated, AO Coupling, L 150/120mm



12.20030.142 Countersink Ø 4.2mm with stop, cannulated, AO Coupling



12.20040.115 Screwdriver Shaft, T15, cannulated, AO Coupling, L 142/112mm



08.20120.016 Trocar Ø 1.6mm



08.20060.032 Centering Sleeve 3.2 for K-wire Ø 1.6mm



12.20060.060 Drill Sleeve 6.0/3.5



12.20100.080 Length Determination Instrument for REF 08.20060.032



12.20100.085 Length Determination Instrument for K-wire Ø 1.7mm x 150mm



12.20050.020 Handle with AO Coupling



12.20120.055 Protection Sleeve 8.0/6.0



12.20120.018 Universal Distractor for K-wire Ø 1.8mm/2.5mm



02.20120.015 Screw Forceps, self-holding



TWIN-Compression Screw Ø 7.0 mm

11.90225.240S Kirschner Wire Ø 2.5mm, threaded tip, L 240mm



12.20010.150(S) Drill Bit Ø 5.0/2.8mm, cannulated, Jacobs Chuck, L 230mm



12.20030.164 Countersink Ø 6.5mm with stop, cannulated, AO Coupling



12.20040.128 Screwdriver Shaft, T27, cannulated, Quick Coupling, L 190/160mm



12.20120.030 Trocar Ø 2.8mm



12.20060.050 Centering Sleeve 5.0 for K-wire Ø 2.5mm



12.20060.085 Drill Sleeve 8.7/5.0



12.20100.120 Length Determination Instrument for REF 12.20060.050



12.20100.125 Length Determination Instrument for K-wire Ø 2.5mm x 240mm



01.20010.270 T-Handle with Quick Coupling, cannulated



12.20120.085 Protection Sleeve 10.6/8.8



12.20120.018 Universal Distractor for K-wire Ø 1.8mm/2.5mm





MRI Safety Information

Non-clinical testing has demonstrated that the screw range from Marquardt Medizintechnik is MR Conditional in accordance with the ASTM F2503 standard definitions. A patient with this device can be safely scanned in an MR system meeting the following conditions:

- Cylindrical-bore
- Horizontal magnetic field (B_0)
- Spatial field gradient lower than or equal to
 - **1.5 T:** 23.45 T/m (2345 G/cm)
 - **3.0 T:** 11.75 T/m (1175 G/cm)
- Radiofrequency (RF) field exposure:
 - RF excitation: Circularly Polarized (CP)
 - RF transmit coil: whole-body transmit coil
 - RF receive coil type: whole-body receive coil
 - Maximum permitted whole-body averaged specific absorption rate (SAR):
Normal Operating Mode, 2 W/kg.
 - Scan duration and wait time:
 - 1.5 T:** 2 W/kg whole-body average SAR for **10min and 55s** of continuous RF (a sequence or back-to-back series/scan without breaks) followed by a wait time of **10min and 55s** if this limit is reached.
 - 3.0 T:** 2 W/kg whole-body average SAR for **7min and 54s** of continuous RF (a sequence or back-to-back series/scan without breaks) followed by a wait time of **7min and 54s** if this limit is reached.
- The screws are expected to produce a maximum temperature rise of 6.2 °C at 1.5 T and 6.5 °C at 3 T both after the scanning periods presented above.
- The presence of this implant may produce an image artifact. Some manipulation of scan parameters may be needed to compensate for the artifact. In non-clinical testing, the image artifact caused by the device extends approximately 83 mm from the device edge when imaged with a spin echo pulse sequence and 65 mm with a gradient echo, both at 1.5 T.
- Patients with uncompromised thermoregulation and under uncontrolled conditions or patients with compromised thermoregulation (all persons with impaired systemic or reduced local thermoregulation) and under controlled conditions (a medical doctor or a dedicated trained person can respond instantly to heat induced physiological stress).

Note:

Undergoing an MRI scan, there is a potential risk for patients with a metallic implant. The electromagnetic field created by an MRI scanner can interact with the metallic implant, resulting in displacement of the implant, heating of the tissue near the implant, or other undesirable effects.



Dieter Marquardt Medizintechnik GmbH

Robert-Bosch-Straße 1 • 78549 Spaichingen, Germany
Telefon +49 7424 9581-0 • Telefax +49 7424 501441
info@marquardt-medizintechnik.de • www.marquardt-medizintechnik.de

CE 0297