

Cannulated Screws  
Ø 7.0 mm, Ø 7.3mm



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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.

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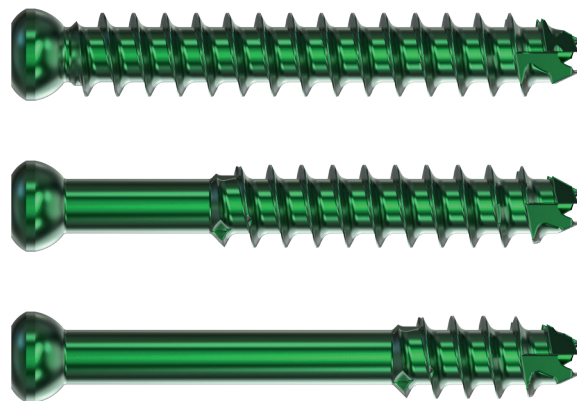
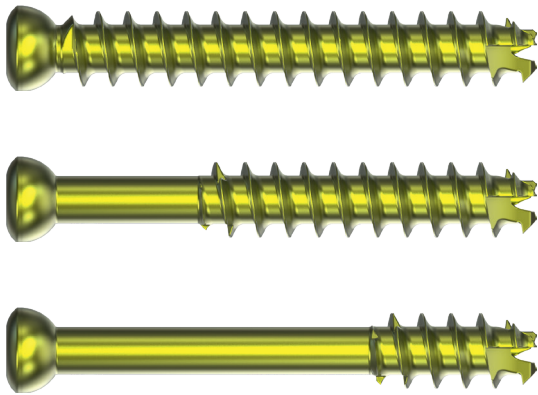
# Cannulated Screws 7.0 and 7.3

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## ► Introduction

### Product Specification

- The Marquardt **Cannulated Screw System** offers a wide range of cannulated screws from Ø 7.0 and Ø 7.3mm. Cannulated screws are intended for fracture fixation in large bones. They can also be used in combination with other Marquardt plate systems.



### Indication

- For use in metaphyseal or epiphyseal area of large bones. (Cannulated Screws Ø 7.0 and Ø 7.3mm)
- Prevent the head of a screw splitting the cortex and sinking into the bone. (Washer)

## ► Surgical Technique, percutaneous Ø 7.0 and Ø 7.3mm

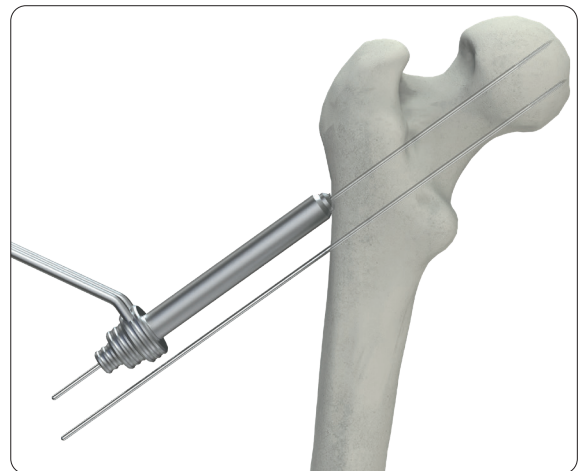
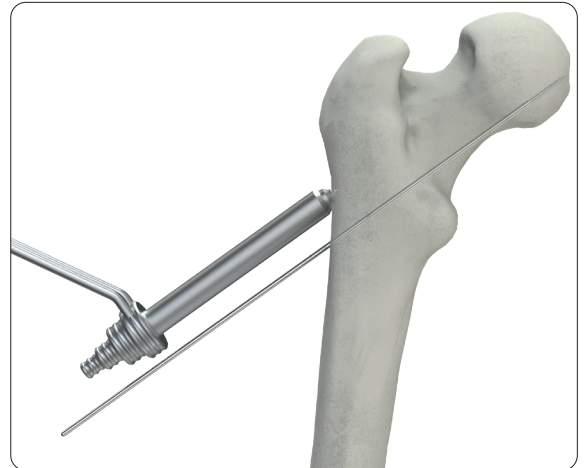
The following operation instructions describe the use of the cannulated screw Ø 7.0 mm. The surgical technique for the cannulated screw Ø 7.3 mm is identical, but performed with different instruments (indicated in brackets).

### Guide Wire Insertion

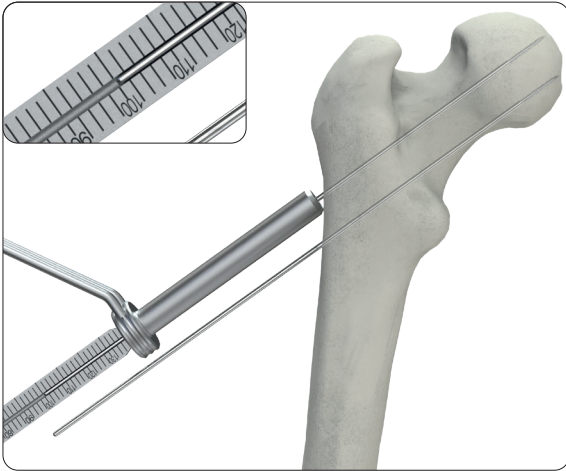
#### Instruments

REF 11.90220.230 (REF 11.90228.300)	Kirschner Wire Ø 2.0 mm, L 230 mm Kirschner Wire Ø 2.8 mm, L 300 mm)
REF 08.20120.070 (REF 08.20120.070)	Protection Sleeve 11.0/8.0 Protection Sleeve 11.0/8.0)
REF 08.20060.080 (REF 08.20060.173)	Drill Sleeve 8.0/4.5 Drill Sleeve 8.0/5.0)
REF 08.20060.045 (REF 08.20060.073)	Centering Sleeve 4.5 for K-Wire 2.0mm Centering Sleeve 5.0 for K-Wire 2.8mm)
REF 08.20120.020 (REF 08.20120.073)	Trocar Ø 2.0mm Trocar Ø 2.8mm)

- After reduction, a K-wire is inserted along the anterior surface of the femoral neck to determine anteversion.
- The position is checked using an image intensifier.
- Through a stab incision, the sleeve assembly (protection sleeve, drill sleeve, centering sleeve and trocar) is advanced to the lateral cortex and held parallel to the anteversion wire (frontal plane)..
- The trocar is then removed and the K-wire is advanced through the centering sleeve into the bone until the required depth is reached.
- The correct position of the K-wire is checked in both planes.



# Cannulated Screws 7.0 and 7.3



## Screw Length Determination

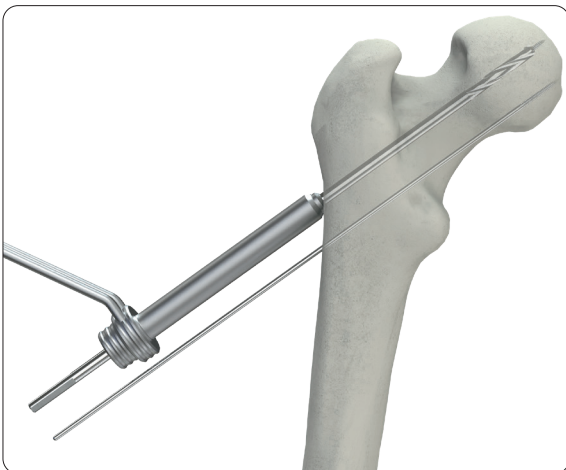
### Instruments

REF 08.20100.070	Length Determination Instrument for K-Wire Ø 2.0mm
(REF 08.20100.073	Length Determination Instrument for K-Wire Ø 2.8mm)

- Remove the centering sleeve and the drill sleeve from the protection sleeve.
- Advance the length determination instrument over the K-wire through the protection sleeve up to the bone.
- The required screw length can be read directly from the scale of the length determination instrument (end of the guide wire).

### Note:

Screwing through the opposite cortical cortex must be prevented.

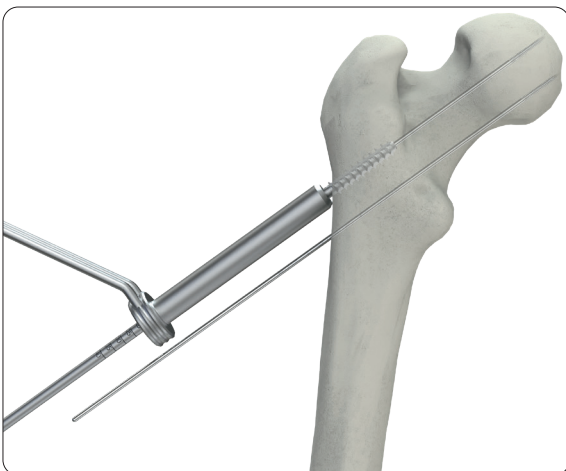


## Drilling

### Instruments

REF 08.20010.145	Drill Bit Ø 4.5/2.1mm
(REF 08.20010.150	Drill Bit Ø 5.0/2.9mm)

- Insert the drill sleeve into the protection sleeve.
- The cannulated drill bit is used to predrill through the drill sleeve via the K-wire.



### Instruments

REF 08.20020.070	Tap Ø 7.0/2.2mm
(REF 08.20020.073	Tap Ø 7.3/2.9mm)

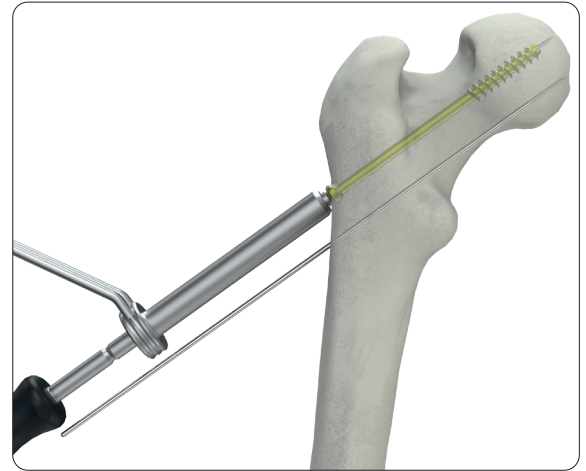
- If necessary, the tap can be used to prepare the thread for the screw.

## Screw Insertion

### Instruments

REF 08.20040.070      Screwdriver, hex 3.5, cannulated  
(REF 08.20040.173      Screwdriver, hex 4.0, cannulated)

- The cannulated screwdriver is then used to insert the cannulated screw over the guide wire through the protection sleeve.

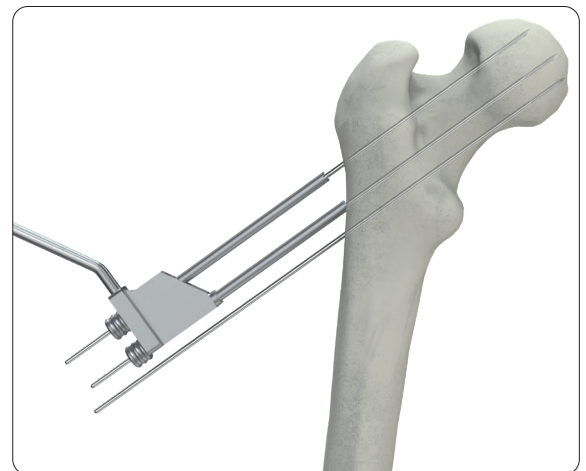


## Insertion of Percutaneous Parallel K-wires

### Instrumente

REF 08.20060.145      Parallel Drill Guide 4.5  
(REF 08.20060.273      Parallel Drill Guide 5.0)  
REF 08.20060.045      Centering Sleeve 4.5 for K-Wire 2.0mm  
(REF 08.20060.073      Centering Sleeve 5.0 for K-Wire 2.8mm)

- Remove the sleeve assembly completely.
- Insert the centering sleeve into the parallel drill guide and move it over the previously inserted K-wire.
- Then insert the second centering sleeve into the desired position of the parallel drill guide and set the additional K-wire.

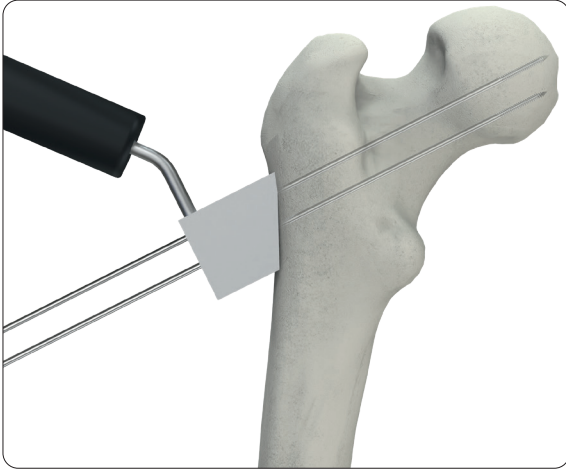


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# Cannulated Screws 7.0 and 7.3

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## ► Surgical Technique, open Ø 7.0 and Ø 7.3mm



### Insertion of the Guide Wire

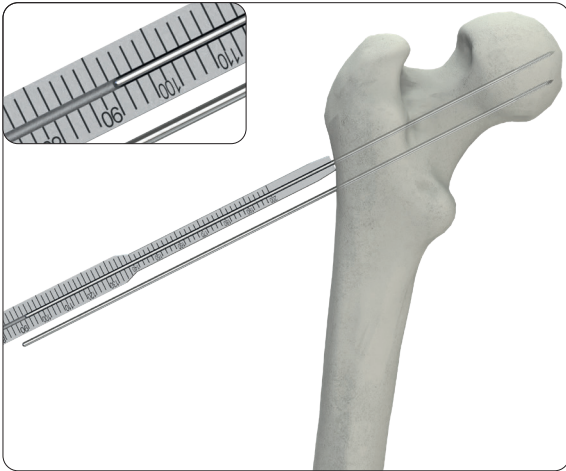
#### Instruments

REF 08.20060.170      Parallel Guide for K-Wire Ø 2.0mm  
(REF 08.20060.373      Parallel Guide for K-Wire Ø 2.8mm)

- The parallel guide is advanced to the bone via one of the central holes over the previously inserted guide wire.
- After the parallel guide has been placed, further parallel K-wires can be placed.

#### Note:

Triangular placement is recommended as this allows the use of washers with all screws.



### Screw Length Determination

#### Instruments

REF 08.20100.070      Length Determination Instrument  
for K-Wire Ø 2.0mm  
(REF 08.20100.073      Length Determination Instrument  
for K-Wire Ø 2.8mm)

- Advance the length determination instrument over the K-wire up to the bone.
- The required screw length can be read directly from the scale of the length determination instrument (end of the guide wire).

#### Note:

Screwing through the opposite cortical cortex must be prevented.

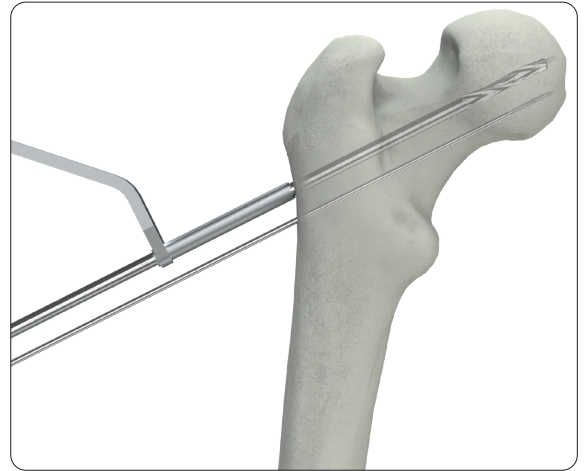


## Drilling

### Instruments

REF 08.20010.145      Drill Bit Ø 4.5/2.1mm  
(REF 08.20010.150      Drill Bit Ø 5.0/2.9mm)  
REF 04.20060.045      Double Drill Guide 4.5/3.2

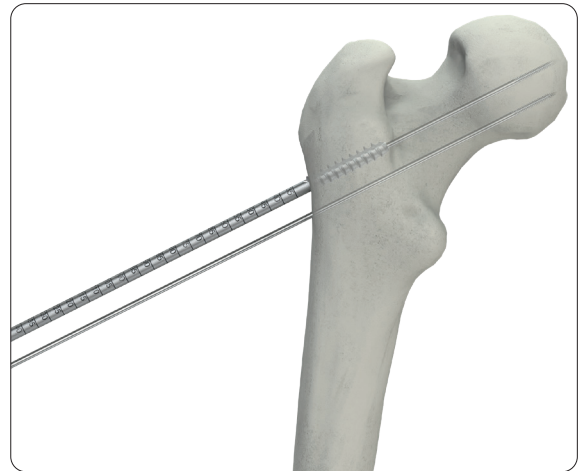
- The cannulated drill bit is used to predrill over the K-wire.



### Instruments

REF 08.20020.070      Tap Ø 7.0/2.2mm  
(REF 08.20020.073      Tap Ø 7.3/2.9mm)

- If necessary, the tap can be used to prepare the thread for the screw.

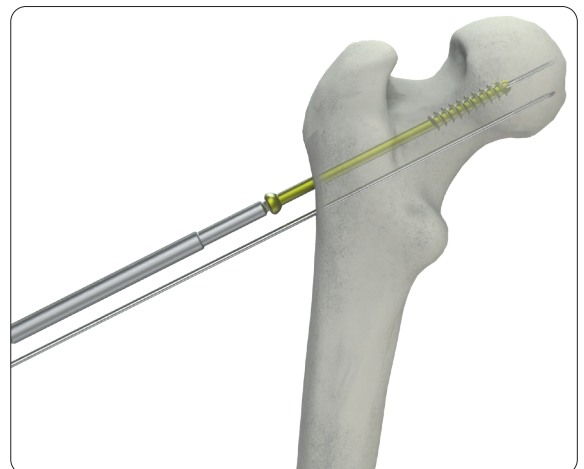


## Screw Insertion

### Instruments

REF 08.20040.070      Screwdriver, hex 3.5, cannulated  
(REF 08.20040.173      Screwdriver, hex 4.0, cannulated)

- The cannulated screwdriver is then used to insert the cannulated screw over the guide wire.



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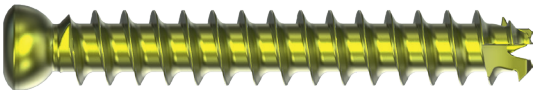
## Cannulated Screws 7.0 and 7.3

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► Product Information

Implants

Article Number Stainless Steel	Article Number * Titanium	Screw Length
08.02800.025	08.03800.025	25mm
08.02800.030	08.03800.030	30mm
08.02800.035	08.03800.035	35mm
08.02800.040	08.03800.040	40mm
08.02800.045	08.03800.045	45mm
08.02800.050	08.03800.050	50mm
08.02800.055	08.03800.055	55mm
08.02800.060	08.03800.060	60mm
08.02800.065	08.03800.065	65mm
08.02800.070	08.03800.070	70mm
08.02800.075	08.03800.075	75mm
08.02800.080	08.03800.080	80mm
08.02800.085	08.03800.085	85mm
08.02800.090	08.03800.090	90mm
08.02800.095	08.03800.095	95mm
08.02800.100	08.03800.100	100mm
08.02800.105	08.03800.105	105mm
08.02800.110	08.03800.110	110mm
08.02800.115	08.03800.115	115mm
08.02800.120	08.03800.120	120mm
08.02800.125	08.03800.125	125mm
08.02800.130	08.03800.130	130mm



**Cannulated Screw Ø 7.0mm,  
fully threaded, self-drilling**

- Thread diameter: 7.0mm
- Head diameter: 8.0mm
- Hexagon Socket: 3.5mm
- Cannulation: 2.20mm

\* All implants are also available in sterile. Therefor, add suffix "S" to article number.

# Cannulated Screws 7.0 and 7.3



## Cannulated Screw Ø 7.0mm, short threaded 16mm, self-drilling

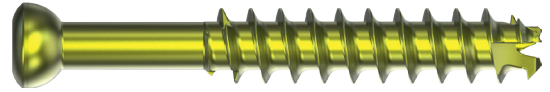
- Thread diameter: 7.0mm
- Shaft diameter: 4.5mm
- Head diameter: 8.0mm
- Hexagon socket: 3.5mm
- Cannulation: 2.20mm

Article Number Stainless Steel	Article Number * Titanium	Screw Length
08.02816.025	08.03816.025	25mm
08.02816.030	08.03816.030	30mm
08.02816.035	08.03816.035	35mm
08.02816.040	08.03816.040	40mm
08.02816.045	08.03816.045	45mm
08.02816.050	08.03816.050	50mm
08.02816.055	08.03816.055	55mm
08.02816.060	08.03816.060	60mm
08.02816.065	08.03816.065	65mm
08.02816.070	08.03816.070	70mm
08.02816.075	08.03816.075	75mm
08.02816.080	08.03816.080	80mm
08.02816.085	08.03816.085	85mm
08.02816.090	08.03816.090	90mm
08.02816.095	08.03816.095	95mm
08.02816.100	08.03816.100	100mm
08.02816.105	08.03816.105	105mm
08.02816.110	08.03816.110	110mm
08.02816.115	08.03816.115	115mm
08.02816.120	08.03816.120	120mm
08.02816.125	08.03816.125	125mm
08.02816.130	08.03816.130	130mm

\* All implants are also available in sterile. Therefor, add suffix "S" to article number.

## Cannulated Screws 7.0 and 7.3

Article Number Stainless Steel	Article Number * Titanium	Screw Length
08.02832.045	08.03832.045	45mm
08.02832.050	08.03832.050	50mm
08.02832.055	08.03832.055	55mm
08.02832.060	08.03832.060	60mm
08.02832.065	08.03832.065	65mm
08.02832.070	08.03832.070	70mm
08.02832.075	08.03832.075	75mm
08.02832.080	08.03832.080	80mm
08.02832.085	08.03832.085	85mm
08.02832.090	08.03832.090	90mm
08.02832.095	08.03832.095	95mm
08.02832.100	08.03832.100	100mm
08.02832.105	08.03832.105	105mm
08.02832.110	08.03832.110	110mm
08.02832.115	08.03832.115	115mm
08.02832.120	08.03832.120	120mm
08.02832.125	08.03832.125	125mm
08.02832.130	08.03832.130	130mm



### Cannulated Screw Ø 7.0mm, short threaded 32mm, self-drilling

- Thread diameter: 7.0mm
- Shaft diameter: 4.5mm
- Head diameter: 8.0mm
- Hexagon Socket: 3.5mm
- Cannulation: 2.20mm

\* All implants are also available in sterile. Therefor, add suffix "S" to article number.

# Cannulated Screws 7.0 and 7.3



**Cannulated Screw Ø 7.3mm,  
fully threaded, self-drilling**

- Thread diameter: 7.3mm
- Head diameter: 8.0mm
- Hexagon socket: 4.0mm
- Cannulation: 2.90mm

Article Number Stainless Steel	Article Number * Titanium	Screw Length
08.02900.025	08.03900.025	25mm
08.02900.030	08.03900.030	30mm
08.02900.035	08.03900.035	35mm
08.02900.040	08.03900.040	40mm
08.02900.045	08.03900.045	45mm
08.02900.050	08.03900.050	50mm
08.02900.055	08.03900.055	55mm
08.02900.060	08.03900.060	60mm
08.02900.065	08.03900.065	65mm
08.02900.070	08.03900.070	70mm
08.02900.075	08.03900.075	75mm
08.02900.080	08.03900.080	80mm
08.02900.085	08.03900.085	85mm
08.02900.090	08.03900.090	90mm
08.02900.095	08.03900.095	95mm
08.02900.100	08.03900.100	100mm
08.02900.105	08.03900.105	105mm
08.02900.110	08.03900.110	110mm
08.02900.115	08.03900.115	115mm
08.02900.120	08.03900.120	120mm
08.02900.125	08.03900.125	125mm
08.02900.130	08.03900.130	130mm

\* All implants are also available in sterile. Therefor, add suffix "S" to article number.

## Cannulated Screws 7.0 and 7.3

Article Number Stainless Steel	Article Number * Titanium	Screw Length
08.02916.030	08.03916.030	30mm
08.02916.035	08.03916.035	35mm
08.02916.040	08.03916.040	40mm
08.02916.045	08.03916.045	45mm
08.02916.050	08.03916.050	50mm
08.02916.055	08.03916.055	55mm
08.02916.060	08.03916.060	60mm
08.02916.065	08.03916.065	65mm
08.02916.070	08.03916.070	70mm
08.02916.075	08.03916.075	75mm
08.02916.080	08.03916.080	80mm
08.02916.085	08.03916.085	85mm
08.02916.090	08.03916.090	90mm
08.02916.095	08.03916.095	95mm
08.02916.100	08.03916.100	100mm
08.02916.105	08.03916.105	105mm
08.02916.110	08.03916.110	110mm
08.02916.115	08.03916.115	115mm
08.02916.120	08.03916.120	120mm
08.02916.125	08.03916.125	125mm
08.02916.130	08.03916.130	130mm
08.02916.135	08.03916.135	135mm
08.02916.140	08.03916.140	140mm
08.02916.145	08.03916.145	145mm
08.02916.150	08.03916.150	150mm



### Cannulated Screw Ø 7.3mm, short threaded 16mm, self-drilling

- Thread diameter: 7.3mm
- Shaft diameter: 4.8mm
- Head diameter: 8.0mm
- Hexagon socket: 4.0mm
- Cannulation: 2.90mm

\* All implants are also available in sterile. Therefor, add suffix "S" to article number.

# Cannulated Screws 7.0 and 7.3



## Cannulated Screw Ø 7.3mm, short threaded 32mm, self-drilling

- Thread diameter: 7.3mm
- Shaft diameter: 4.8mm
- Head diameter: 8.0mm
- Hexagon socket: 4.0mm
- Cannulation: 2.90mm

Article Number Stainless Steel	Article Number * Titanium	Screw Length
08.02932.045	08.03932.045	45mm
08.02932.050	08.03932.050	50mm
08.02932.055	08.03932.055	55mm
08.02932.060	08.03932.060	60mm
08.02932.065	08.03932.065	65mm
08.02932.070	08.03932.070	70mm
08.02932.075	08.03932.075	75mm
08.02932.080	08.03932.080	80mm
08.02932.085	08.03932.085	85mm
08.02932.090	08.03932.090	90mm
08.02932.095	08.03932.095	95mm
08.02932.100	08.03932.100	100mm
08.02932.105	08.03932.105	105mm
08.02932.110	08.03932.110	110mm
08.02932.115	08.03932.115	115mm
08.02932.120	08.03932.120	120mm
08.02932.125	08.03932.125	125mm
08.02932.130	08.03932.130	130mm
08.02932.135	08.03932.135	135mm
08.02932.140	08.03932.140	140mm
08.02932.145	08.03932.145	145mm
08.02932.150	08.03932.150	150mm



## Washer Ø 13.0mm, for Screws Ø 4.5 to 7.3mm

Article Number Stainless Steel	Article Number Titanium	Thickness
04.90000.130	04.91000.130	1.50mm

\* All implants are also available in sterile. Therefor, add suffix "S" to article number.



# Cannulated Screws 7.0 and 7.3

## Instruments

### Cannulated Screws Ø 7.0

11.90220.230 Kirschner Wire Ø 2.0mm, threaded tip, L 230mm

02.20010.020 Drill Bit Ø 2.0mm, AO Coupling, L 100/70mm



08.20010.145 Drill Bit Ø 4.5/2.1mm, cannulated, scaled, Jacobs Chuck, L 230/200mm



08.20020.070 Tap Ø 7.0/2.2mm, cannulated, scaled, T-Handle, L 212/30mm



08.20030.070 Countersink, cannulated, for Cannulated Screws Ø 7.0mm, T-Handle, L 180mm



04.20060.045 Double Drill Guide 4.5/3.2



08.20120.070 Protection Sleeve 11.0/8.0



08.20060.080 Drill Sleeve 8.0/4.5



08.20060.045 Centering Sleeve 4.5 for Kirschner Wire Ø 2.0mm



08.20120.020 Trocar Ø 2.0mm



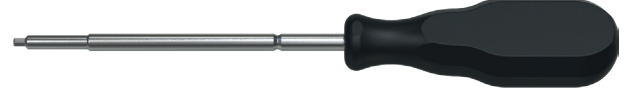
08.20100.070 Length Determination Instrument for Kirschner Wire Ø 2.0mm x 230mm



04.20040.035 Screwdriver, hex 3.5mm, L 247/137mm



08.20040.070 Screwdriver, hex 3.5mm, cannulated, L 244/214mm



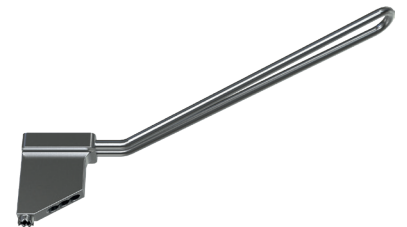
08.20040.170 Screwdriver Shaft, hex 3.5mm, cannulated, Quick-Coupling, L 244/214mm



08.20040.270 Screwdriver Shaft, hex 3.5mm, Quick-Coupling, L 225/195mm



02.20120.015 Screw Forceps, self-holding



08.20060.145 Parallel Drill Guide 4.5



08.20060.170 Parallel Guide for Kirschner Wires Ø 2.0mm



08.20120.170 Cleaning Wire Ø 2.0mm, L 250mm



# Cannulated Screws 7.0 and 7.3

## Cannulated Screws Ø 7.3mm

11.90228.300 Kirschner Wire Ø 2.8mm, threaded tip, L 300mm



03.20010.425 Drill Bit Ø 2.5mm, AO Coupling, L 160/130mm



08.20010.150 Drill Bit Ø 5.0/2.9mm, cannulated, scaled, Jacobs Chuck, L 295/265mm



08.20020.073 Tap Ø 7.3/2.9mm, cannulated, scaled, T-Handle, L 232/50mm



08.20030.073 Countersink, cannulated, for Cannulated Screws Ø 7.3mm, T-Handle



08.20120.070 Protection Sleeve 11.0/8.0



08.20060.173 Drill Sleeve 8.0/5.0



08.20060.073 Centering Sleeve 5.0 for Kirschner Wires Ø 2.8mm



08.20120.073 Trocar Ø 2.8mm



08.20100.073 Length Determination Instrument for Kirschner Wires Ø 2.8mm x 300mm



08.20040.073 Screwdriver, hex 4.0mm, L 244/134mm



08.20040.173 Screwdriver, hex 4.0mm, cannulated, L 295/185mm



08.20040.373 Screwdriver Shaft, hex 4.0mm, cannulated, Quick Coupling, L 295/265mm



08.20040.273 Screwdriver Shaft, hex 4.0mm, Quick Coupling, L 295/265mm



08.20060.273 Parallel Drill Guide 5.0



08.20060.373 Parallel Guide for Kirschner Wires Ø 2.8mm



02.20120.015 Screw Forceps, self-holding



08.20120.173 Cleaning Wire Ø 2.8mm, L 270mm





## 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.



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