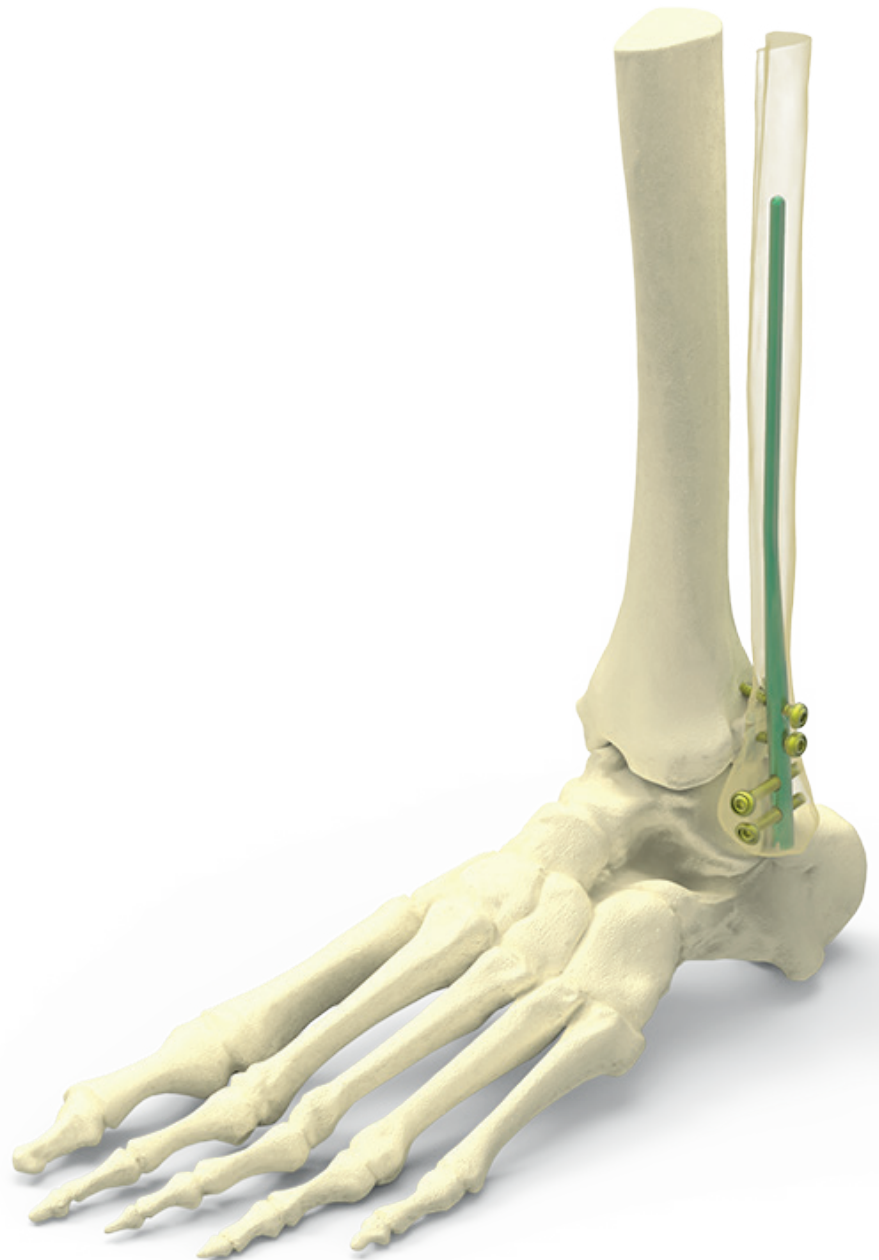


# VITUS-Fi

## Fibula Nail System



## **Clinical Advisor**

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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.

## ► Introduction

### Product specification

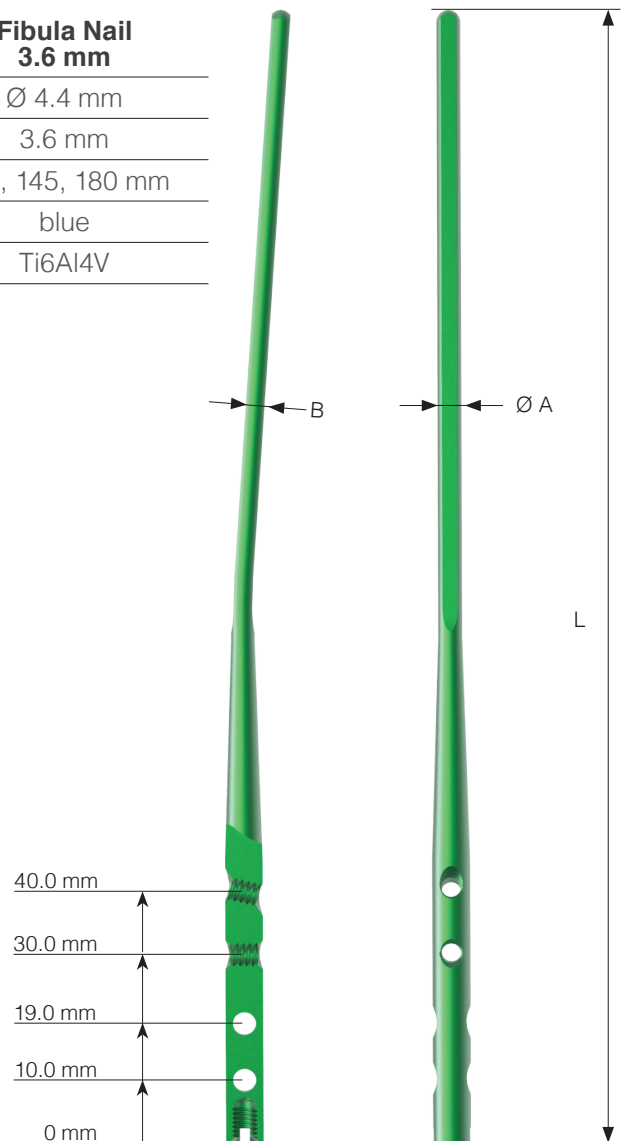
The Marquardt **VITUS-Fi** Fibula Nail System serves for stable fixation and soft tissue sparing treatment of distal fibula fractures.

	Fibula Nail 3.0 mm	Fibula Nail 3.6 mm
<b>Diameter (A)</b>	Ø 3.8 mm	Ø 4.4 mm
<b>Width (B)</b>	3.0 mm	3.6 mm
<b>Length (L)</b>	110, 145, 180 mm	110, 145, 180 mm
<b>Colour</b>	green	blue
<b>Material</b>	Ti6Al4V	Ti6Al4V



### Modular washer

The modular washer offers a safe, interlocking transfer of force to the cortical bone. This ensures pressure distributed fixation of the fragments.



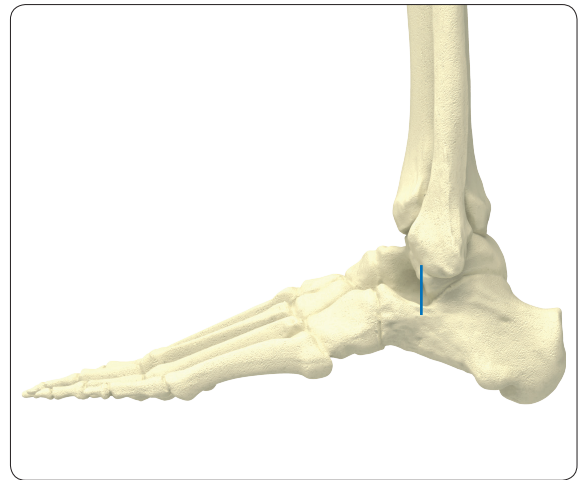
### Indication

- Distal fibula shaft fractures in the case of a lower leg fracture.
- Low to moderate dislocated distal fibula fractures in the case of an ankle fracture.

## ► Surgical Technique

### Access

- Obtain access via an incision of approx. 1 to 2 cm length from the fibula tip distally.
- Then reposition the fracture, as required, using reduction forceps by means of stab incisions.

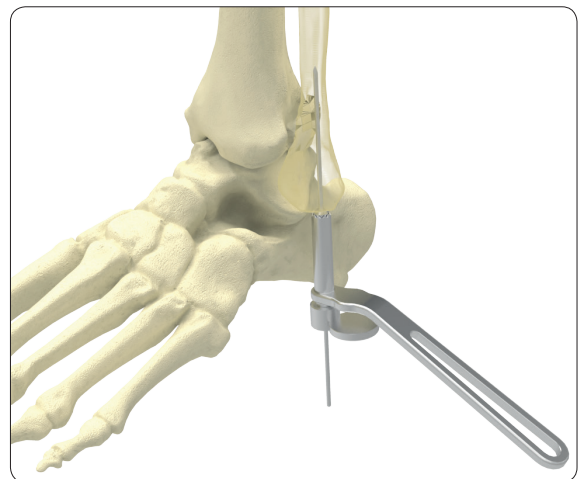


### Nail Entry Point

#### Instruments

REF 11.90018.150      *Kirschner Wire Ø 1.8 mm, L 150 mm*  
REF 09.20310.245      *VITUS-Fi Protection Sleeve 8.0/7.0*  
REF 09.20310.246      *VITUS-Fi Reduction Sleeve 6.0/2.0*

- Firstly place the protection sleeve on the fibula tip incl. the reduction sleeve.
- Drill K-wire through the reduction sleeve into the fibula and position the proximal fragment in the medullary canal.
- Radiologically control the K-wire in the a.p. and lateral X-ray view.
- Then remove reduction sleeve.

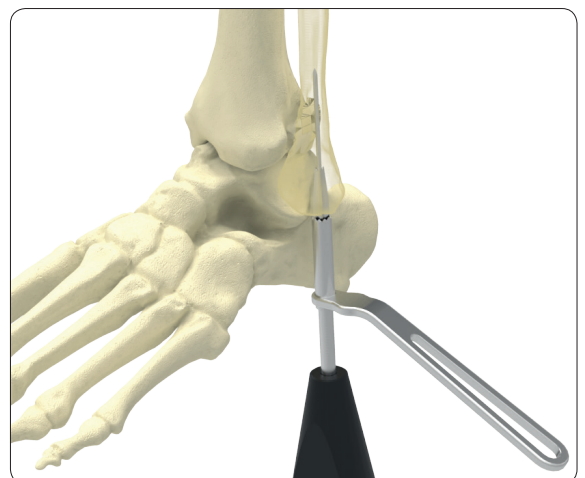


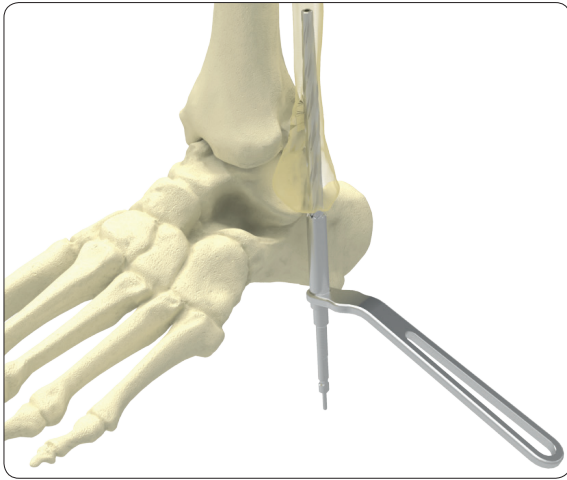
### Opening the Medullary Canal

#### Instruments

REF 09.20310.401      *Awl, cannulated Ø 2.0 mm*

- Open the medullary canal with the cannulated awl via the K-wire (facultative).



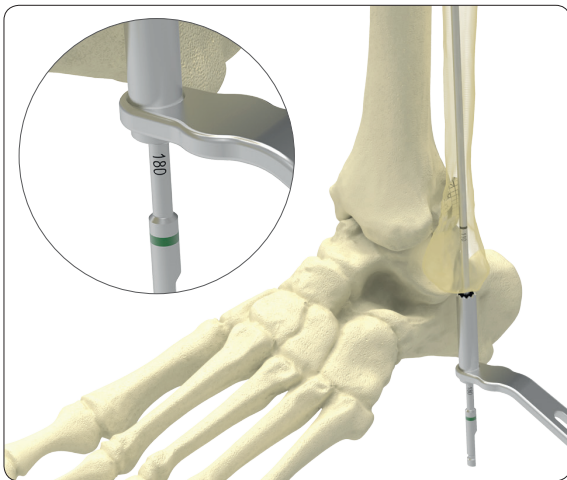


## Drilling

### Instruments

REF 09.20310.220 VITUS-Fi Medullary Reamer Ø 6.1 mm

- Ream the medullary canal in the distal fragment with the Ø 6.1 mm medullary reamer with stop via the K-wire using the protection sleeve.
- Drill the medullary reamer up to the stop on the protection sleeve.
- Then remove the medullary reamer and K-wire.



## Expanding the Medullary Canal of the Proximal Fragment

### Instruments

REF 09.20310.230 VITUS-Fi Medullary Reamer Ø 3.1 mm

REF 09.20310.240 VITUS-Fi Medullary Reamer Ø 3.7 mm

- Insert the Ø 3.1 mm or Ø 3.7 mm medullary reamer through the protection sleeve into the distal fragment and push it into the proximal fragment.
- Ream the medullary canal of the proximal fragment.
- Use the Ø 3.1 mm medullary reamer (green marking) for the 3.0 mm fibula nail. Use the Ø 3.7 mm medullary reamer (blue marking) for the 3.6 mm fibula nail.
- The drilling depth corresponds to the intended nail length. Observe the scaling for this purpose.

### Note:

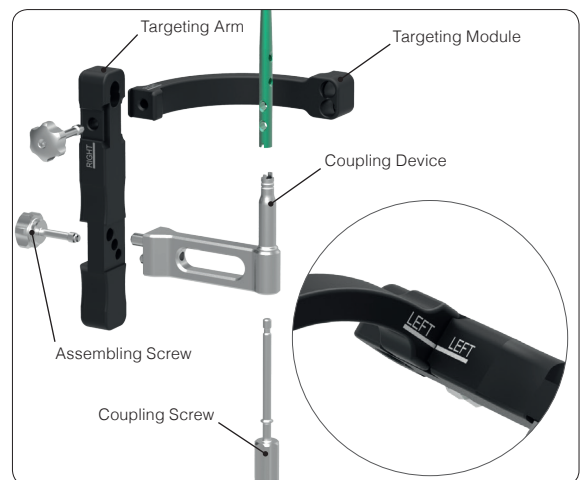
If necessary, the repositioned fracture should be held with the reduction forceps while expanding the medullary canal.

## Assembly of the Targeting Device

### Instruments

REF 09.20310.010	VITUS-Fi Coupling Device
REF 09.20310.015	VITUS-Fi Targeting Arm
REF 09.20310.020	VITUS-Fi Targeting Module
REF 09.20310.030	VITUS-Fi Coupling Screw
REF 09.20310.035	VITUS-Fi Assembling Screw
REF 14.30060.165	Pin Wrench, hex 3.5 mm

- Firstly the targeting arm with the coupling device is assembled using the assembling screw.
- Then also fix the left/right targeting module on the targeting arm with the assembling screw. The laser marking on the targeting module and the targeting arm has to coincide.
- The coupling screws have to be tightened with the pin wrench.
- Finally connect the appropriate fibula nail with the coupling screw on the coupling device. The slots on the nail prevent incorrect assembling.

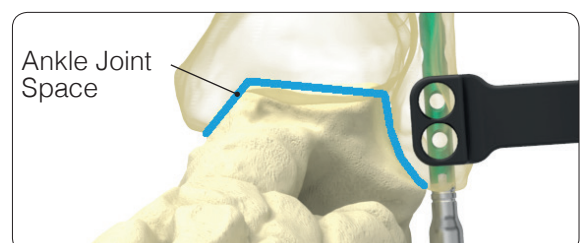
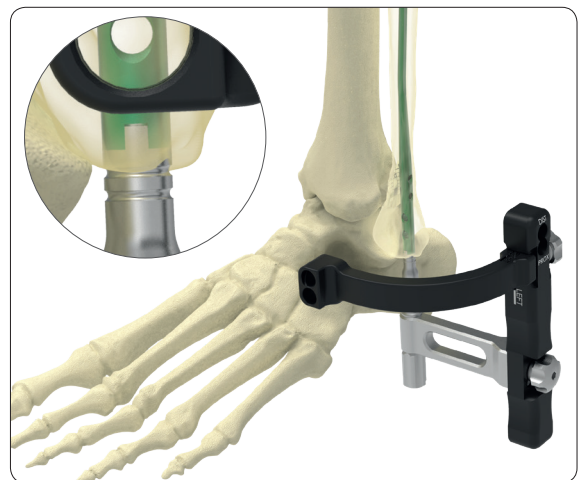


## Insertion of the Nail

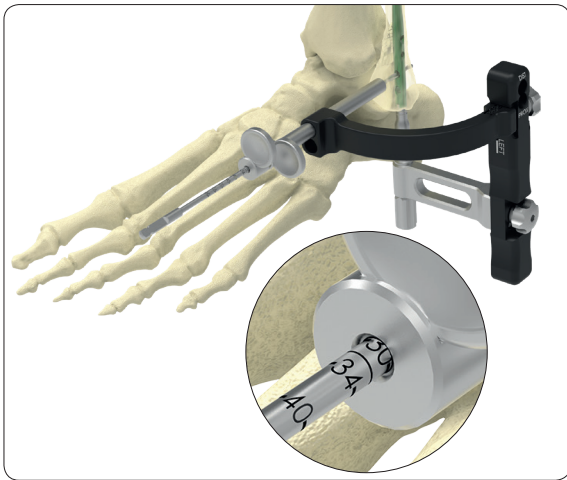
- The fibular nail assembled on the targeting device is inserted into the medullary canal.
- The correct rotation setting of the nail is essential for positioning the two proximal locking screws. For this, a slight external rotation is to be set.
- Set the ankle joint space correctly using the X-ray a.p. view (mortise view with 15° internal rotation of the leg).
- Then place the nail to the correct depth (coupling point between nail and coupling device at the level of the fibula tip).

### Note:

- With the ankle joint space (shown in blue) set correctly, both holes of the target module must project above the two distal locking holes of the nail in the a.p. view.
- An inward rotation of the targeting device must be prevented as the screws could run past the dorsal tibial edge. A slight outward rotation is acceptable.







## A/P Fixation

### Instruments

REF 09.20310.055

VITUS-Fi Protection Sleeve 8.0/7.0

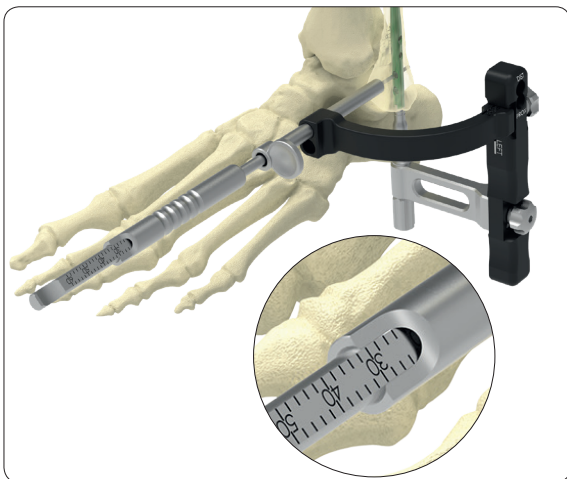
REF 09.20310.060

VITUS-Fi Drill Guide 7.0/2.8 mm

REF 09.20310.090

Drill Bit Ø 2.8 mm, calibrated

- Firstly mark the skin incision with the trocar positioned over the respective guides of the targeting module and perform a stab incision here.
- Insert the protection sleeve and drill guide through the respective hole in the targeting device and place on the bone.
- Then use the drill bit to drill up to the 2nd cortical bone.
- The screw length required can be measured on the scale of the drill.



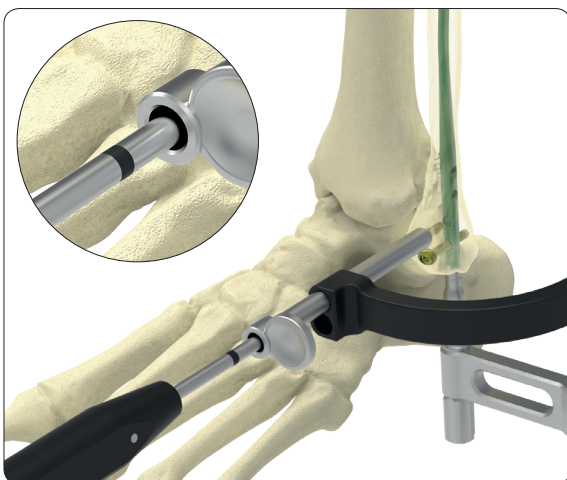
## A/P Fixation - Measuring the Screw Length

### Instruments

REF 009.20310.125

VITUS-Fi Depth Gauge, range 60 mm

- Alternatively, the depth gauge is introduced via the protection sleeve and the slider is pushed to the second cortical bone.
- The screw length required can then be read off from the scale of the depth gauge.



## A/P Fixation - Insertion of the Screws

### Instruments

REF 09.20310.120

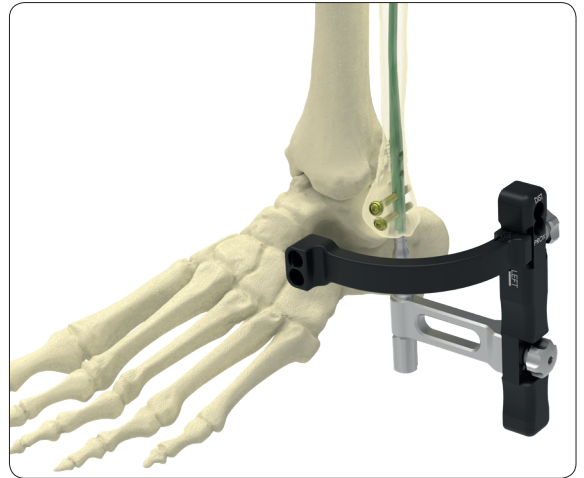
VITUS-Fi Screwdriver, hex 2.5 mm

- Both a.p. screws are tightened by hand with the screwdriver.
- In order to avoid alteration of the peroneal tendons, the screws should stand max. 1 to 2 mm above the dorsal cortical bone.
- The modular washer fixed to the screw prevents the screw head from sinking in.
- With the protection sleeve seated correctly on the bone, the marking on the screwdriver shaft shows whether the screw head runs onto the ventral cortical bone with the washer.



## Fracture Repositioning

- With the a.p. locking screw in place, the fracture can still be repositioned, particularly to set the correct fibula length.



## Lateral Fixation - Drilling

### Instruments

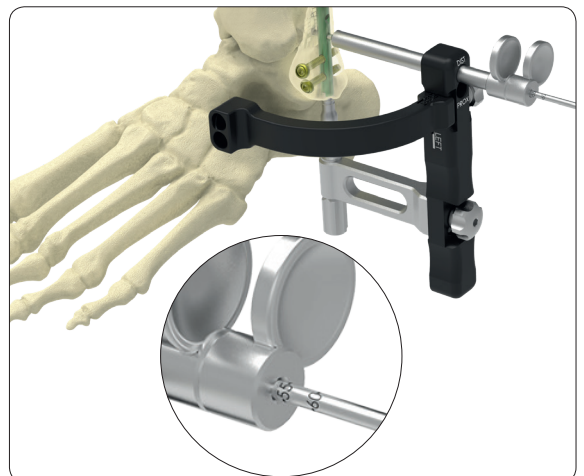
- REF 09.20310.055 VITUS-Fi Protection Sleeve 8.0/7.0  
REF 09.20310.060 VITUS-Fi Drill Guide 7.0/2.8 mm  
REF 09.20310.090 Drill Bit Ø 2.8 mm, calibrated

- Lateral screw fixation takes place analogous to a.p. screw placement.
- Use the drill bit to also drill through the lateral cortical bone of the tibia.

### Note:

The upper hole in the target device (labeled “DIST”) serves for distal-lateral screw placement.

The lower hole in the target device (labeled “PROX”) is intended for proximal-lateral screw placement.

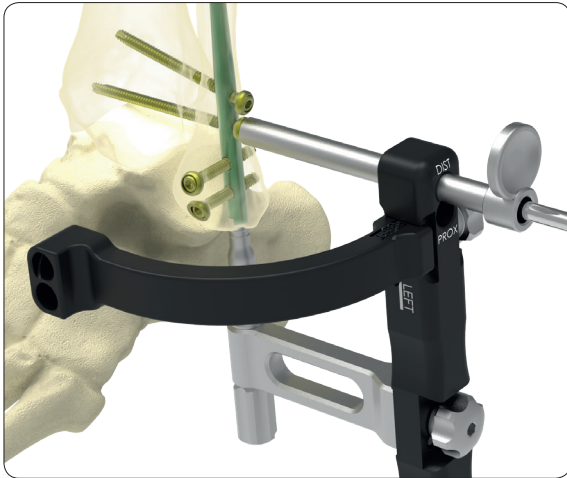


## Lateral Fixation - Measuring the Screw Length

### Instruments

- REF 09.20310.125 VITUS-Fi Depth Gauge, range 60 mm

- The screw length can be read off from the scale of the drill bit if the protection sleeve is correctly seated on the bone.
- Alternatively, the screw length can be determined with a depth gauge.



## Lateral Fixation - Insertion of the Screws

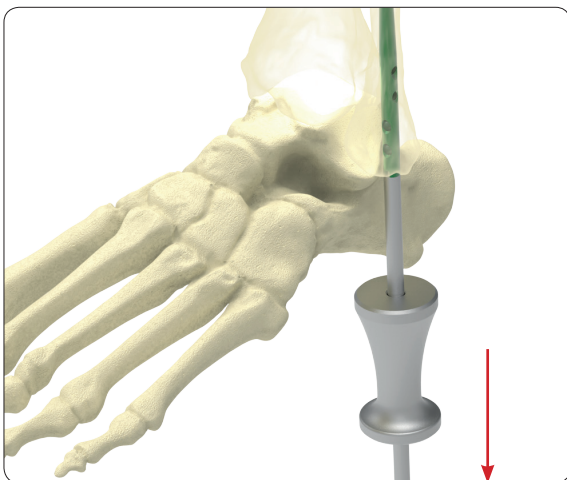
### Instruments

REF 09.20310.120 VITUS-Fi Screwdriver, hex 2.5 mm

- Both lateral screws are tightened by hand with the screwdriver.
- With the protection sleeve seated correctly on the bone, the marking on the screwdriver shaft shows the correct depth position of the screw (washer lies on the lateral cortical bone).
- The target device is released from the nail and removed by loosening the coupling screw.

### Note:

It is recommended to always use lateral screw placement irrespective of the mechanical instability of the syndesmosis.



## Removal of the Nail

### Instruments - Optional

REF 09.20310.145 Extractor for Nails

REF 14.30060.146 Slide Hammer for Extractor

REF 03.20040.025 Screwdriver, hex 2.5 mm

- All locking screws except a lateral locking screw are removed with the screwdriver.
- Slide the slide hammer onto the extractor and then screw the extractor to the nail.
- Remove the last lateral locking screw with the screwdriver.
- Remove the nail under light strokes with the slide hammer.

## ► Product Information

### Implants

#### VITUS-Fi Fibula Nail Ø 3.0 mm

Article Number	Length
09.63030.110S	110 mm
09.63030.145S	145 mm
09.63030.180S	180 mm



#### VITUS-Fi Fibula Nail Ø 3.6 mm

Article Number	Length
09.63036.110S	110 mm
09.63036.145S	145 mm
09.63036.180S	180 mm



Article Number	Length
09.31635.010S	10 mm
09.31635.012S	12 mm
09.31635.014S	14 mm
09.31635.016S	16 mm
09.31635.018S	18 mm
09.31635.020S	20 mm
09.31635.022S	22 mm
09.31635.024S	24 mm
09.31635.026S	26 mm
09.31635.028S	28 mm
09.31635.030S	30 mm
09.31635.032S	32 mm
09.31635.034S	34 mm
09.31635.040S	40 mm
09.31635.045S	45 mm
09.31635.050S	50 mm
09.31635.055S	55 mm
09.31635.060S	60 mm

#### VITUS-Fi Locking Screw Ø 3.5 mm

- Thread diameter: 3.5 mm
- Core diameter: 2.7 mm
- Hexagone socket: 2.5 mm
- Material: Ti6Al4V



## Instruments

11.90018.150 Kirschner Wire Ø 1.8 mm, trocar tip, L 150 mm, stainless steel



09.20310.090 Drill Bit Ø 2.8 mm, calibrated, AO Coupling, L 210/180 mm



09.20310.220 VITUS-Fi Medullary Reamer Ø 6.1 mm, cannulated, AO Coupling



09.20310.230 VITUS-Fi Medullary Reamer Ø 3.1 mm, calibrated, AO Coupling



09.20310.240 VITUS-Fi Medullary Reamer Ø 3.7 mm, calibrated, AO Coupling



09.20310.055 VITUS-Fi Protection Sleeve 8.0/7.0



09.20310.060 VITUS-Fi Drill Guide 7.0/2.8 mm



09.20310.065 VITUS-Fi Trocar Ø 2.6 mm



09.20310.245 VITUS-Fi Protection Sleeve 8.0/6.2



09.20310.246 VITUS-Fi Reduction Sleeve 6.0/2.0



09.20310.125 VITUS-Fi Depth Gauge for Screws, range up to 60 mm



14.30060.165 Pin Wrench, hex 3.5 mm



09.20310.120 VITUS-Fi Screwdriver, hex 2.5 mm



09.20310.401 Awl, cannulated Ø 2.0 mm

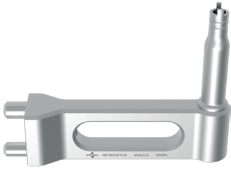


12.20050.020 Handle with AO Coupling, cannulated



## Instruments - VITUS-Fi Targeting Device

09.20310.010 VITUS-Fi Coupling Device for Targeting Device



09.20310.015 VITUS-Fi Targeting Arm for REF 09.20310.010



09.20310.020 VITUS-Fi Targeting Module for REF 09.20310.015



09.20310.030 VITUS-Fi Coupling Screw for Nail



09.20310.035 VITUS-Fi Assembling Screw for Targeting Device



## Instruments - Optional

09.20310.145 Extractor for Nails



14.30060.146 Slide Hammer for Extractor



03.20040.025 Screwdriver, hex 2.5 mm











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