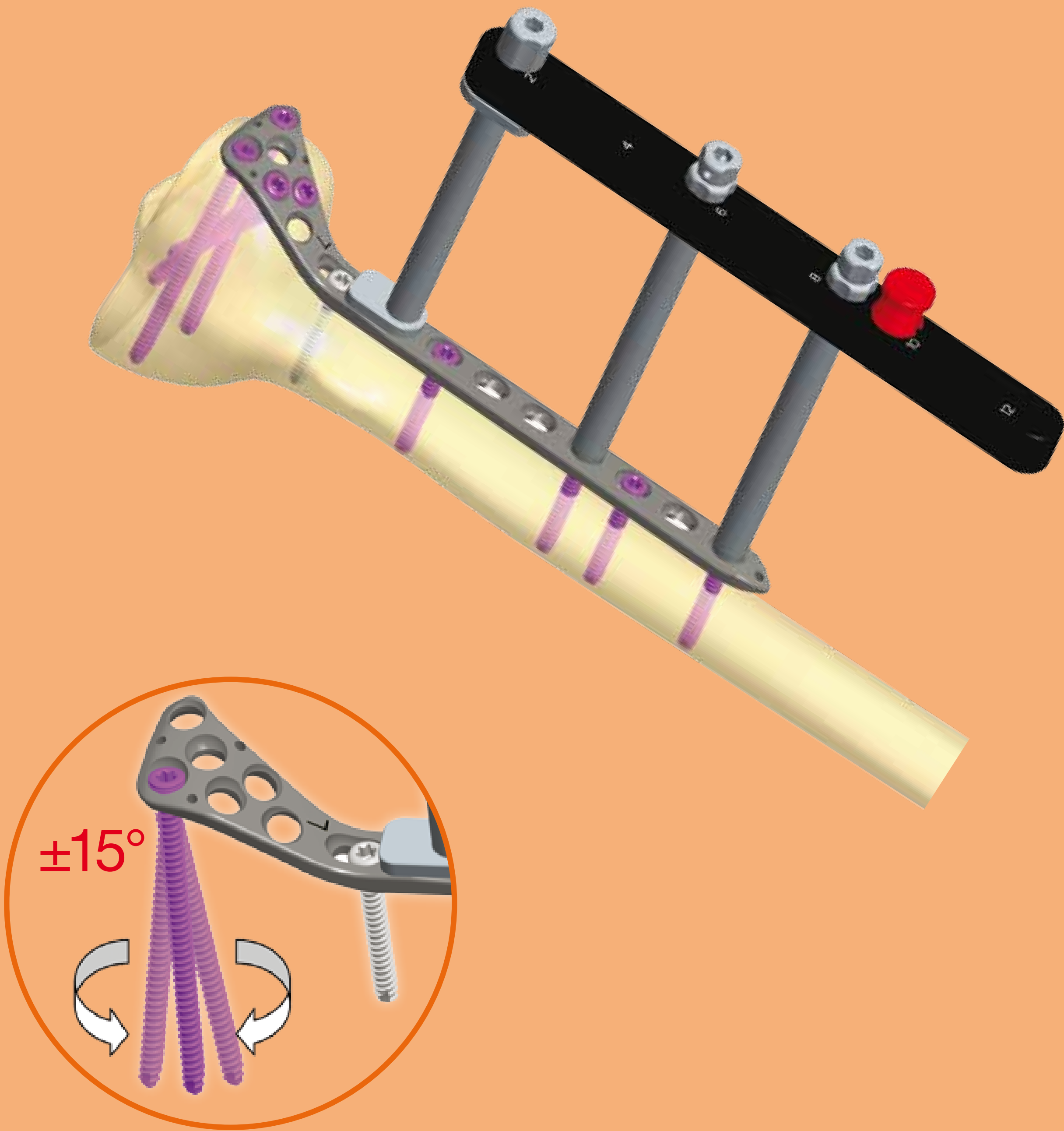
Vortex

Vortex Proximal Tibia



Sanatmetal®

References

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The following surgical description contains general outlines for Vortex Proximal Tibia plating. However, the operating surgeon shall adapt the content to the patient, fracture type and all other relevant factors that may have influence on the outcome of the surgery.

Therefore, Sanatmetal Ltd. strongly recommends participation on workshops and trainings prior to the initial operation.

Content

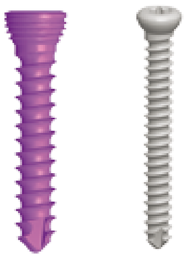
1 | Introduction

Vortex plates, serving to heal peri- and intraarticular fractures, have a new family member, VPT (Vortex Proximal Tibia) which goes to proximal part of the tibia bone offering the same usual high end features that we got used to from Vortex plates.
The comfort and security of polyaxial locking is further enhanced by a minimally invasive radiolucent targeting arm for the tail. To reach stabile-enough locking the system uses Ø 5,1 mm polyaxial and cortical screws. They represent the outstanding features of Vortex screws together with excellent mechanical properties.

1.1 | The implant

- Polyaxial angle stabilized system in step - free ±15 deg angulation of insertion

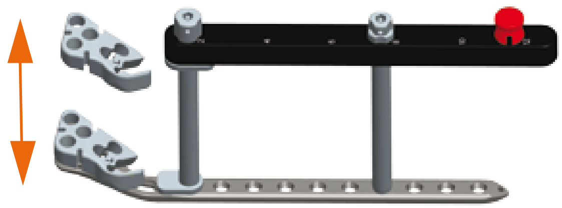
- Optimal, pre-determined screw directions in the holes
- Maximum 3 times of correction possibility when misidentifying the correct screw direction
- Thinned head, the implant does not interfere with the soft tissues
- Rounded edges to protect nearby soft tissues
- Oval hole for plate positioning
- Ability to perform minimally invasive surgery
- Self tapping but blunt ended screws to avoid tissue irritation



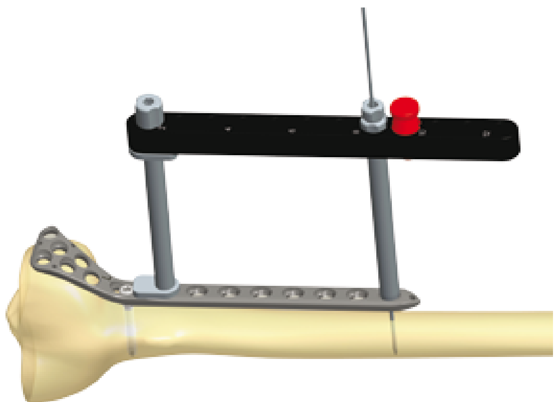
- Anodized Titanium raw material
- Torx recess screws

1.2 | The instruments

- Capable of drilling in preset and ±15 deg directions step – free
- Easy to assemble targeting head for choosing either polyaxial or monoaxial fixation in the pre-determined directions.



- Radio translucent targeting arm for the tail holes



- Instruments and implants in one tray
- Optimized instruments
- Color coded torque limiting screwdriver

1.3 | Indications

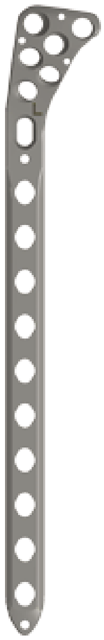
Peri- and intra-articular fractures of the proximal tibia.

2.1 | Vortex Proximal Tibia plate

Holes on tail*	Side	Length
2H	**right/left**	**98,5 mm**
4H	**right/left**	**130,5 mm**
6H	**right/left**	**162,5 mm**
8H	**right/left**	**194,5 mm**
10H	**right/left**	**226,5 mm**
12H	**right/left**	**258,5 mm**

Cross section (width x thickness)

Head: 34,4 x 4 mm
Tail: 14 x 5 mm



Raw material

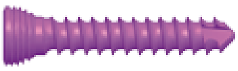
anodized Titanium

Color

grey

* Number of holes is without the oval hole!

2.2 | Vortex screw Ø5,1 mm



Length (mm)

24 - 80

Raw material

anodized Titanium

Color

purple

2.3 | Cortical screw - TX Ø5,1 mm

Length (mm)

24 - 40

Raw material

anodized Titanium

Color

grey

2.4 | Cancellous screw Ø6,5 mm

Length (mm)

25 - 80

Raw material

Titanium

Color

grey

3 | Surgical description

3.1 | Patient positioning

In supine position on translucent surgical table.

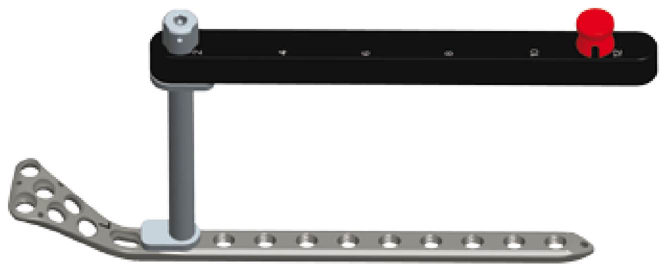
3.2 | Plate selection

During preoperative planning select the most appropriate plate for the fracture and the anatomy of the patient. Consider that a little longer plate is more acceptable than a too short one.

3.3 | Assembly of plate and targeting arm

The system enables poly- and monoaxial locking on the head of the plate. See point 3.11.1 for the monoaxial head targeting.

Place the targeting arm on the plate while paying attention to the small peg entering into its hole on the plate. Mount the carbon arm and fix the system to the plate as per the image.



Check accuracy with soft tissue protector, drill sleeve and the Ø 4 mm drillbit.

In case we do not use the longest plate put the indicator plug into the arm to represent the position of the last hole.

3.4 | Incision

Longitudinal anterolateral incision that shall be continued in arched form at the joint height, parapatellary.

3.5 | Modellation of the plate

For optimal fitting we can modellate the plate if needed. Use table bending device for that purpose.

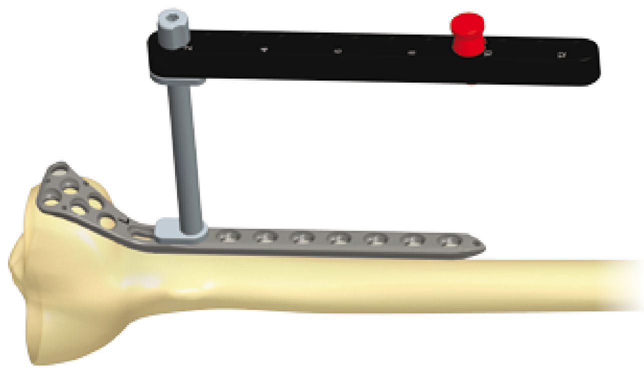
Attention!

After bending the plate the targeting devices on the head and the tail cannot be used!

3.6 | Insertion of the plate

The plate can be introduced minimally invasively. Guide the plate mounted on the targeting arm on the bone surface towards the distal. Optimal position shall be checked with image intensifier.

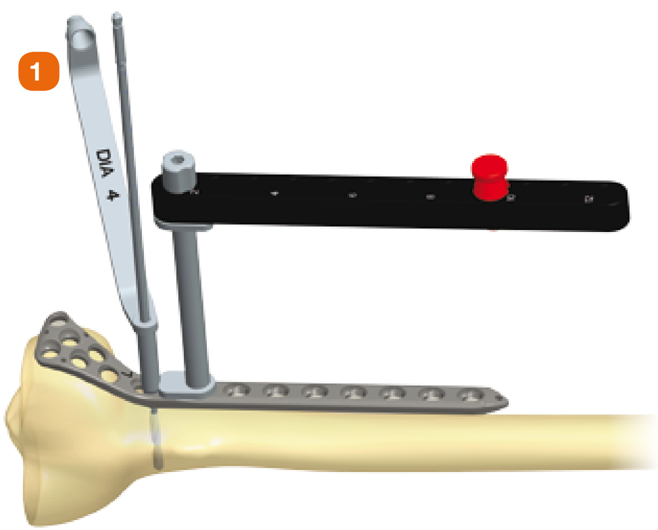
The plate can be fixed with Kirschner wires at this step but the fine tuning of the position with the oval holes is only possible after the wires are removed.



3.7 | Positioning with the oval hole

Lock the plate in the oval hole with a grey cortical screw.

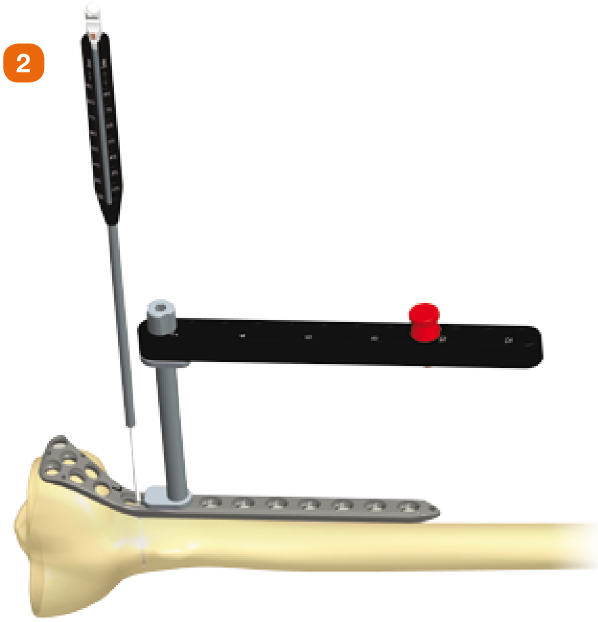
Pre drilling takes place through the straight side of the Ø4 mm double drill sleeve. After setting the optimal angle perform drilling with the Ø4 mm drillbit. (1)



Measure the necessary screw length.

Remove the Ø4 mm double drill sleeve. Hook the gauge to the other side of the hole while moving the reader on the bone surface. Read length at the red mark. (2)

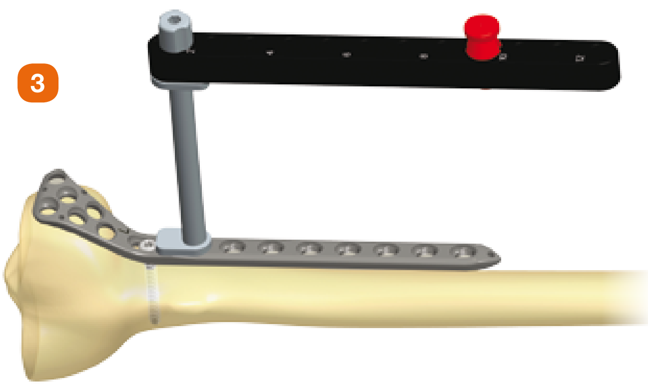
2



Correct holding of the length gauge.

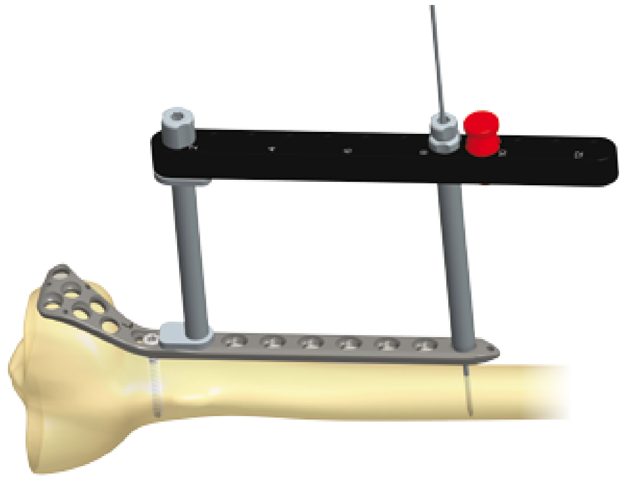
The plate is fixed to the bone with a Ø5,1 mm cortical screw in the oval hole. The screw is not fully tightened until the fine tuning of the position is done. Afterwards it is to be locked firmly. (3)

3



3.8 | Closing the frame

Perform incision at the most distal hole of the plate used. Push the Ø8 mm soft tissue protector into the hole and turn the drill sleeve into the hole of the plate. This way the plate and the carbon arm are aligned. The plate can be fixed - either at the most distal hole or through the small hole on the tip of the plate - with Kirschner wires to the bone.



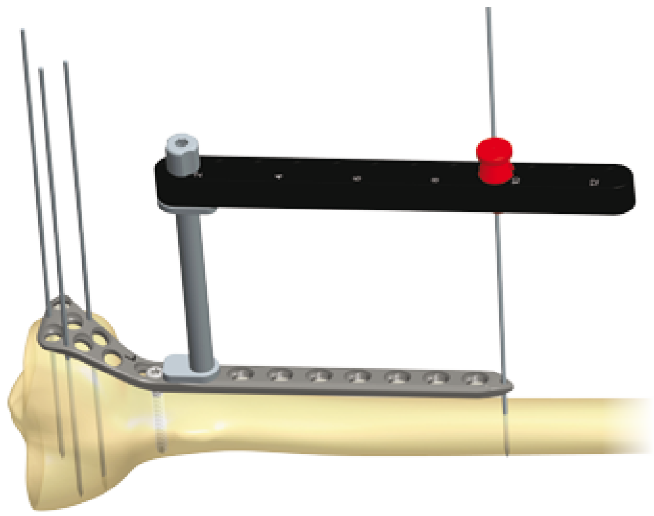
Attention!

This step is absolutely necessary for the perfect targeting.

In case sleeves cannot be turned by the hand, use the T25 screwdriver!

3.9 | Temporary fixation of the plate

Fix the plate to the bone with Kirschner wires through the corresponding holes on the head or at the tip of the plate. In the latter the wires can be led from the sides of the carbon arm.



3.10 | Fixation of the head

There are 6 locking options on the head. In each hole mono- and polyaxial locking is also possible.

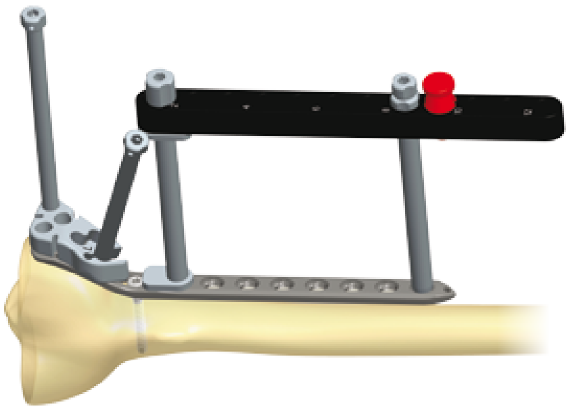
3.11 | Monoaxial locking

In this case the screws can be inserted in the anatomically optimal direction. The screw-plate connection will be angle stabilized ensuring loosening-free locking.

3.11.1 | Assembly of the head block

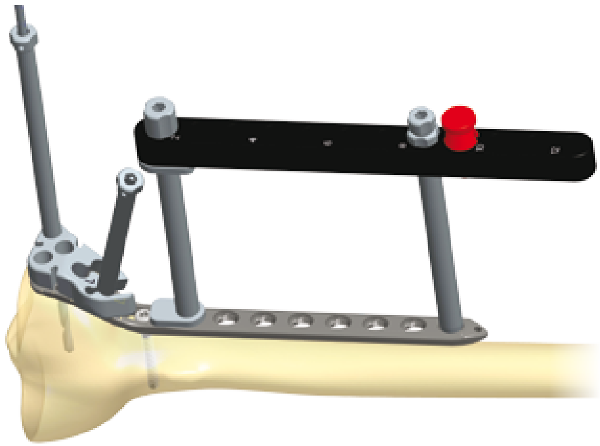
Fix the removable head as per the image.

Drive a Ø4 mm sleeve into the most distal hole of the head of the plate and click the removable head on this from the direction of the patella. Drive another sleeve though the removable head into the plate thus ensuring rotation stability of the removable head.



3.11.2 | Monoaxial drilling - head

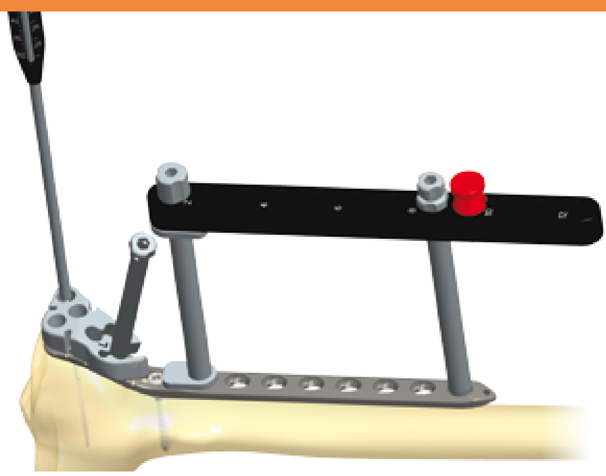
Drill through the sleeve for the Ø5,1 mm screw while using image intensifier control. The spiral dill to be used is Ø4 mm in diameter.



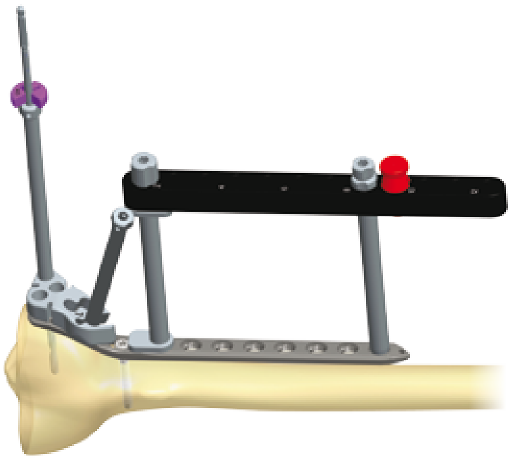
3.11.3 | Length gauging – head

Length gauging can take place in two ways.

As per the first, previously already detailed, use a hooked gauge. Hook it into the other wall of the hole, push the moving part on the bone surface and read length.



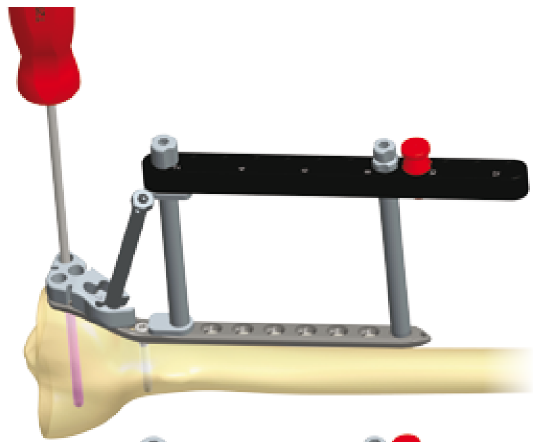
The other method uses the purple drill stop over the Ø4 mm drillbit just above the spiral part. Perform drilling through the sleeve. The necessary length can be read on the scale of the drillbit at the drill stop's side facing the sleeve.

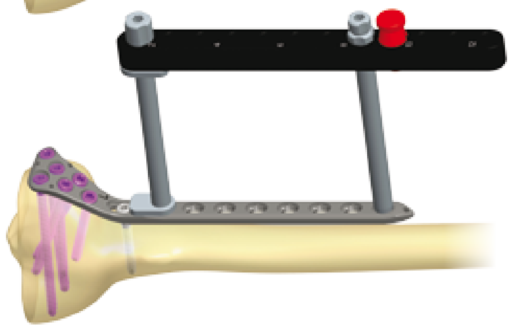


3.11.4 | Screw insertion – head

Drive the selected Ø5,1 mm screw with the T25/3,5 Nm torque screwdriver. Using torque screwdriver reduces chances of cold welding during the healing period.

Repeat the above steps in case of all necessary screws. This way they are inserted in the anatomically optimal direction.





3.11.5 | Drilling – tail

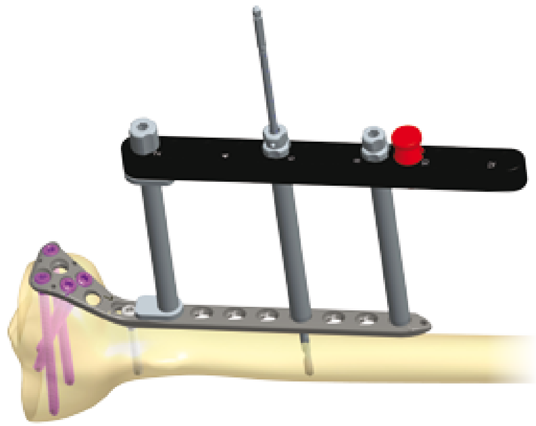
VPT system uses radio translucent arm for minimally invasive targeting of the tail.

Attention!

The targeting arm can be used only with intact, non-modellated plate. Otherwise drilling accuracy greatly reduces and plate and/or targeting arm damages might occur.

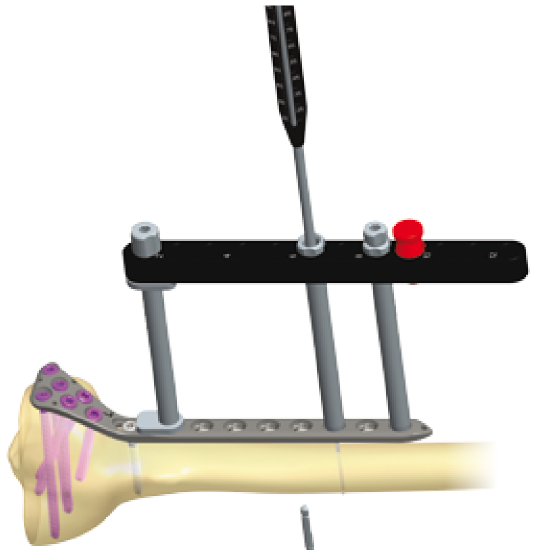
On the tail the traditional monoaxial locking is suggested.

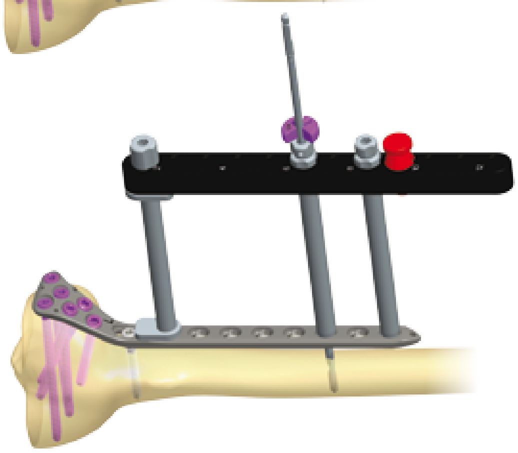
Push and drive the soft tissue protector and the drill sleeve into the hole's thread you wish to use. Perform drilling with the Ø4 mm drillbit. Remove the Ø4 mm drill sleeve.



3.11.6 | Length gauging – tail

To determine screw length either use length gauge or the drill stop.





3.11.7 | Screw insertion – tail

Turn in the selected screw with the T25/3,5 Nm screwdriver.

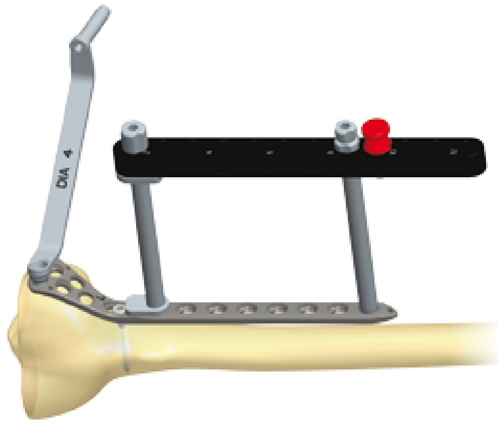
3.12 | Polyaxial locking

In case of polyaxial locking we have the freedom of ±15 degrees from the anatomically optimal direction. Use the system without the removable head to have the possibility of the six polyaxial locking on the head.

3.12.1 | Polyaxial drilling – head

Place the conical end of the Ø4 mm double drill sleeve into the hole. It fits exactly into the hole and its symmetry axis is in the anatomically optimal direction (the same direction in which monoaxial locking takes place). Thus it is ensured that the ±15 degree direction is always from the anatomically optimal direction.

Perform drilling in the desired direction with the Ø4 mm drillbit.

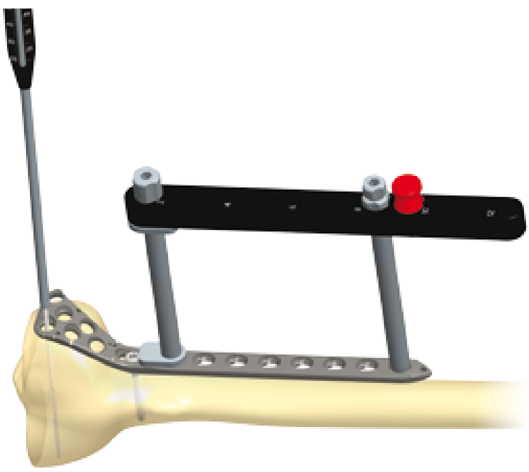


3.12.2 | Length gauging – head

Use the length gauge without the sleeve.

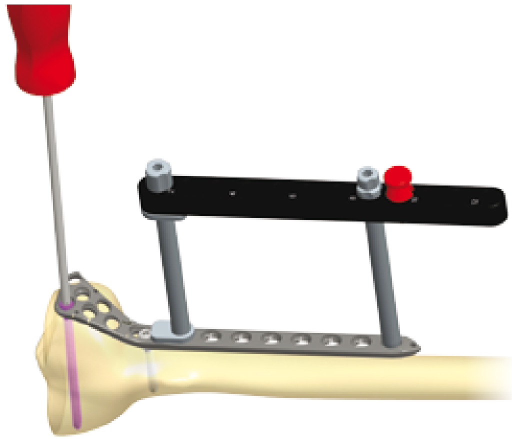
Attention!

The drillstop method cannot be used when drilling through the conical end of the double drill sleeve.



3.12.3 | Screw insertion – head

Drive in the selected screw with the T25/3,5 Nm torque limiting screwdriver.



3.12.4 | Drilling – tail

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Attention!

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On the tail the traditional monoaxial locking is suggested.

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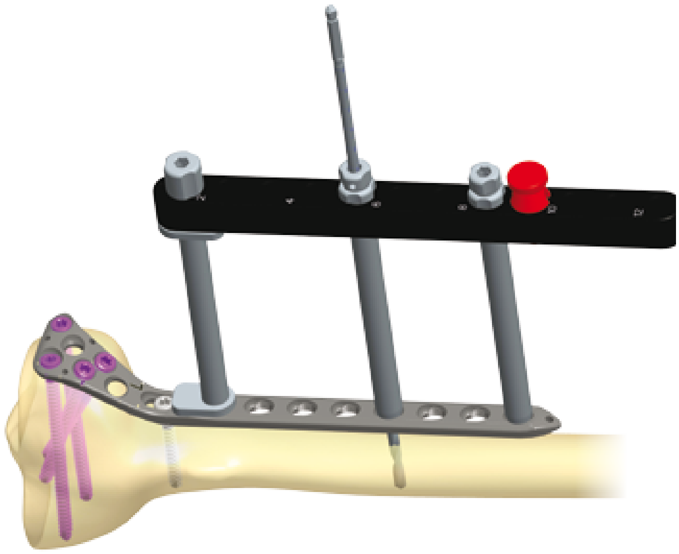
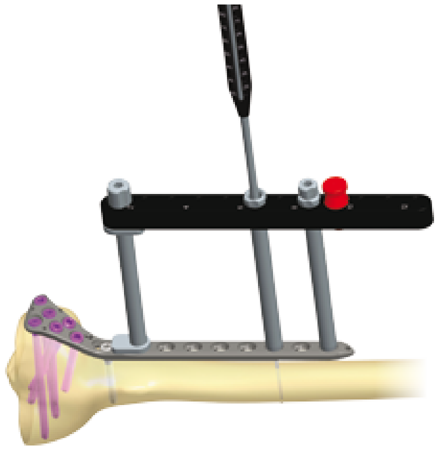
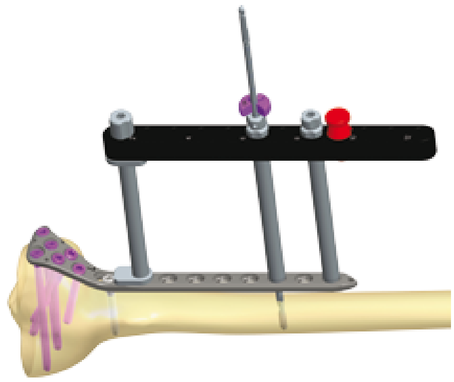


3.12.5 | Length gauging – tail

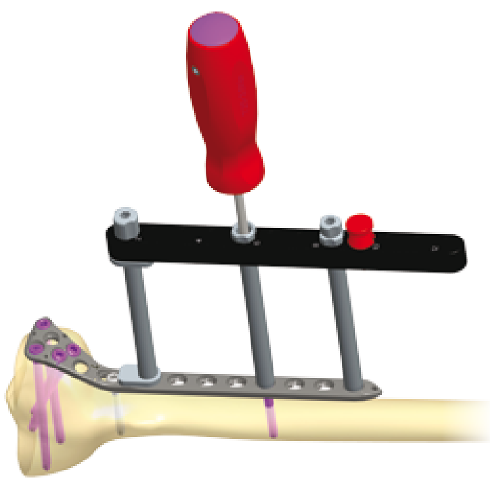
To determine screw length either use length gauge or the drill stop.





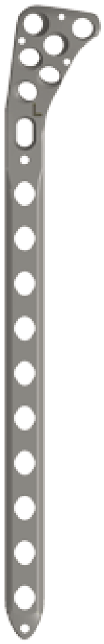
3.12.6 | Screw insertion – tail

Turn in the selected screw with the T25/3,5 Nm screwdriver.



4 | Implant list

4.1 | Vortex proximal tibia plate



Anodized Titanium

Cat no	Size	Length (mm)
280122702	2H/left	98,5
280122704	4H/left	130,5
280122706	6H/left	162,5
280122708	8H/left	194,5
280122710	10H/left	226,5
280122712	12H/left	258,5
280122802	2H/right	98,5
280122804	4H/right	130,5
280122806	6H/right	162,5
280122808	8H/right	194,5
280122810	10H/right	226,5
280122812	12H/right	258,5

4.2 | Vortex screw Ø5,1 mm

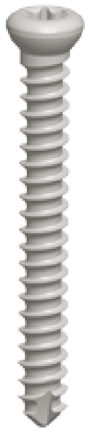
Anodized Titanium

Cat. no	Size (mm)
260851024	24
260851026	26
260851028	28
260851030	30
260851032	32
260851034	34
260851036	36
260851038	38
260851040	40
260851042	42
260851044	44
260851046	46
260851048	48
260851050	50
260851055	55
260851060	60
260851065	65
260851070	70
260851075	75
260851080	80

4.3 | Cortical screw - TX Ø5,1 mm

Anodized Titanium

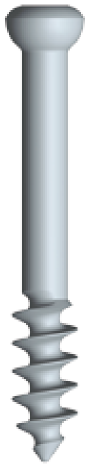
Cat. no	Size (mm)
267551024	24
267551026	26
267551028	28
267551030	30
267551032	32
267551034	34
267551036	36
267551038	38
267551040	40



4.4 | Cancellous screw Ø6,5 mm

Anodized Titanium

Cat. no	Size (mm)
914465025	25
914465030	30
914465035	35
914465040	40
914465045	45
914465050	50
914465055	55
914465060	60
914465065	65
914465070	70
914465075	75
914465080	80



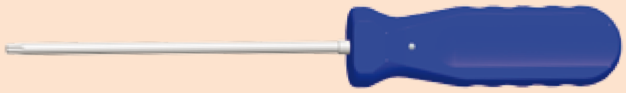
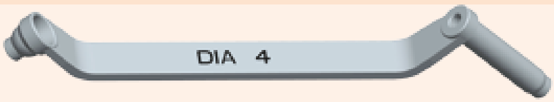
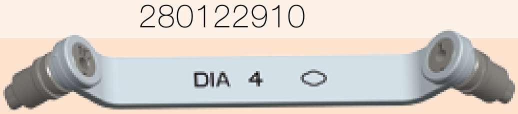
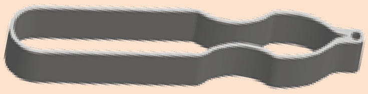
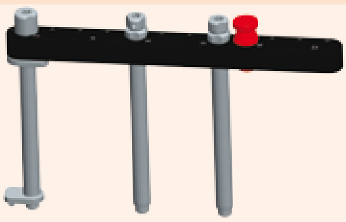
5 | Instrument list

5.1 | Filled up tray

Surgical instruments

Description	Size	Qantity	Cat. no
Screwdriver	T25	1	210720025
Torque screwdriver	T25/3,5Nm	1	210510046
Spiral drill	4x260 mm	1	280122915
Double drill sleeve - PAS	4 mm	1	280122910
Double drill sleeve - V	Large	1	275214902
Kirschner wire	2x230 mm	5	937520230
Screw forceps		1	939999002
Drill stop	4 mm	2	210510240
Length gauge	20-90 mm	1	280122912
Targeting arm - VPT		1	280122909
Torque screwdriver for motors	T25/3,5 Nm	1	210510048
Tray - VPT		1	233800023
Filled up tray (VPT)		**1**	**233800022**

5.2 | Instruments

Screwdriver (T25)	 210720025
Torque screwdriver (T25/3,5 Nm)	 210510046
Spiral drill (4x260 mm)	280122915
Double drill sleeve - PAS (4 mm)	 280122910
Double drill sleeve - V (Large)	 275214902
Kirschner wire (2x230 mm)	937520230
Screw forceps	 939999002
Drill stop (4 mm)	 210510240
Length gauge (20-90 mm)	 280122912
Targeting arm - VPT	 280122909
Torque screwdriver for motors (T25)	 210510048

Product Family

TRAUMATOLOGY

ORTHOPAEDICS

DENTAL

SPINE

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