

# TSLP Thoracolumbar Spine Locking Plate. Anterior thoracolumbar spine locking plate.

Surgical technique





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\*Shown on a bone model without pathology

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 Image intensifier control

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## Warning

This description is not sufficient for immediate application of the instrumentation. Instruction by a surgeon experienced in handling these instruments is highly recommended.

## TSLP Thoracolumbar Spine Locking Plate. Anterior thoracolumbar spine locking plate.

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### Comprehensive implant system

- Monosegmental and bisegmental plate lengths
- Self-locking 5.5 mm screws
- Titanium alloy (Ti-6Al-7Nb)



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### Optimally adapted to the anatomy

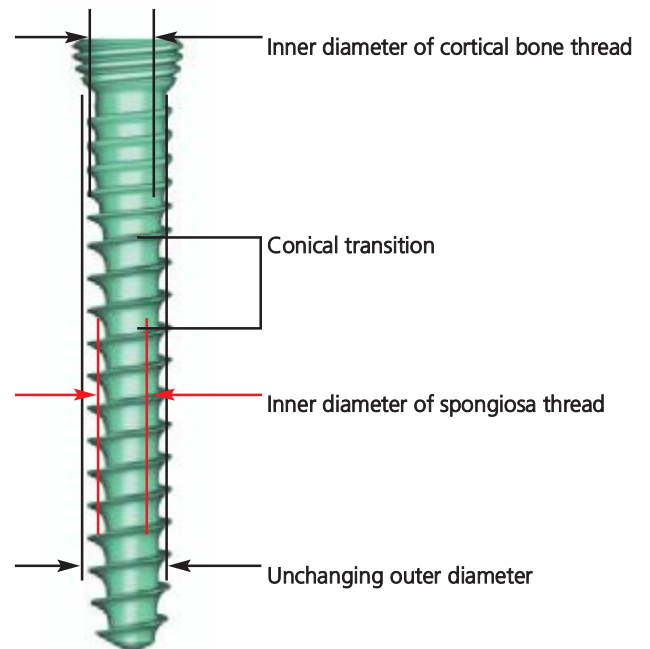
- Low profile of 4.5 mm
- Anatomically-shaped plates for kyphotic and lordotic placement



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**Dual Core Design**

- Proximal cortical bone thread combined with the distal spongiosa thread provides bone-tailored anchoring
- Constant outer diameter provides fixation against tearing out
- Self-tapping
- Blunt screw tip for greater safety



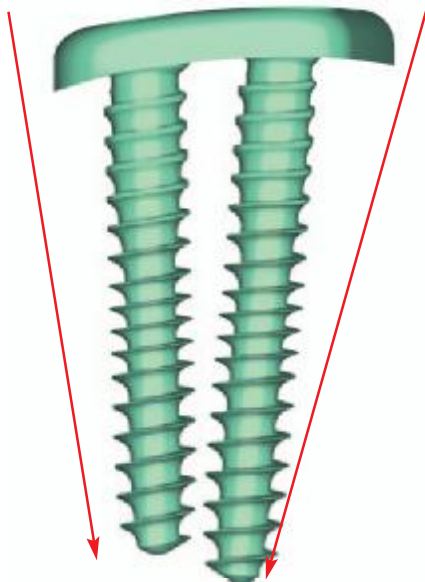
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**Strong resistance to extractive forces**

Optimum bone anchoring from:

- Dual-core thread
- Converging screw positions
- Constant outer screw diameter

- Conical screw holes that enable angulation of  $\pm 5^\circ$  upon insertion



# AO principles

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For optimum intercorporal fusion, the TSLP system transfers the **AO principles for internal fixation** to spinal surgery:

- Stable internal fixation
- Surgical technique with minimum trauma  
(sparing soft tissue and vascularisation)
- Restores the anatomy
  - Intervertebral disc height
  - Natural lordosis
  - Integrity of the vertebral endplates
- Early, active mobilization

# Indications and contraindications

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## Indications

The TSLP plates can be used through an anterolateral or lateral approach in the area of T3 to L5 for:

Instability of the spinal column from

- Fractures
- Tumors, and
- Degenerative intervertebral disc diseases

that are suitable for ventral treatment, and where sufficient ventral support is ensured.

## Contraindications

TSLP plates are contraindicated for:

- Scoliosis
- Severe osteoporosis, especially osteoporotic fractures
- Spondylolisthesis

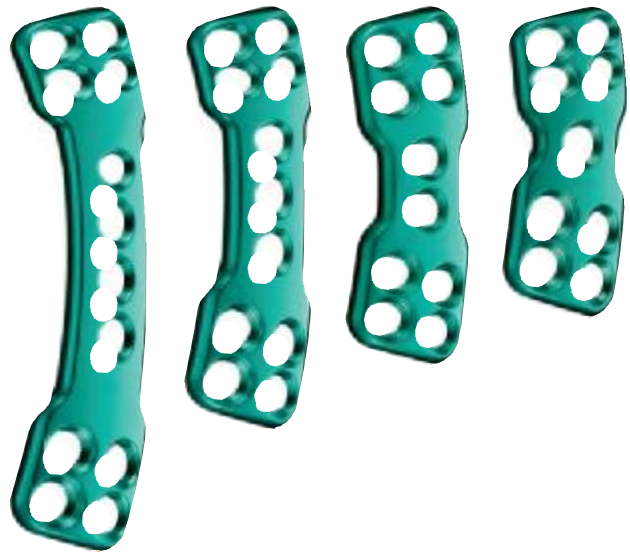
# Implants

## TSLP plates

- Comprehensive line of plates for mono- and bisegmental instrumentations
- Low profile of 4.5 mm with a width of 26 mm
- Range of plate lengths (in 3-mm gradations)
- Anatomical plate curvature
- Screws lock with angular stability
- Alternative screw hole selection
- Central holes for bone graft visualisation
- Titanium alloy (Ti-6Al-7Nb)

## TSLP Plates 5.5, titanium alloy (TAN), green

Art. No.	Length
489.440	40 mm
489.443	43 mm
489.446	46 mm
489.450	49 mm
489.453	52 mm
489.456	55 mm
489.458	58 mm
489.461	61 mm
489.463	64 mm
489.466	67 mm
489.470	70 mm
489.474	73 mm
489.475	76 mm
489.480	79 mm
489.483	82 mm
489.487	85 mm
489.489	88 mm
489.490	91 mm
489.493	94 mm
489.497	97 mm
489.500	100 mm
489.506	103 mm
489.510	106 mm
489.512	109 mm





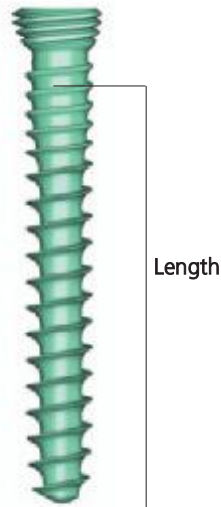
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**TSLP screws**


- Dual-core design
- Self-tapping
- Screw-head thread provides a form-fit with the plate
- Proximal cortical thread and distal spongiosa thread for appropriate anchoring in the bone
- A constant outer diameter increases resistance to tearing out
- Blunt screw tip for greater safety

**Cancellous Bone Locking Screws  $\varnothing$  5.5 mm, self-tapping, Titanium Alloy (TAN), green**

Art. No.	Length
489.140	20 mm
489.142	22 mm
489.145	24 mm
489.147	26 mm
489.150	28 mm
489.154	30 mm
489.156	33 mm
489.160	36 mm
489.162	39 mm
489.165	42 mm
489.168	45 mm
489.170	48 mm
489.171	51 mm
489.174	54 mm

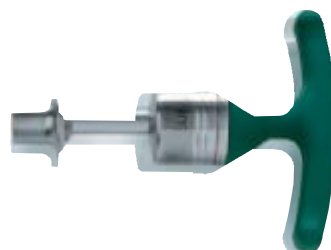


# Instruments

389.801	Threaded Drill Guide Inserter, cannulated	
389.802	Threaded Drill Guide	
389.872	Driver for Fixation Pin for temporary use	
389.873	Fixation Pin, for temporary use	
389.803	Awl $\varnothing$ 3.3 mm, length 325 mm	
319.090	Depth Gauge for Long Screws $\varnothing$ 3.5 mm, measuring range up to 110 mm	
388.652	Ratchet Wrench with T-Handle, with Hexagonal Quick-Coupling	
389.829	Screwdriver Shaft, Hexagonal 3.5, with Hexagonal Coupling	
389.814	Holding Sleeve, length 193 mm	

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321.133 Torque-limiting T-Handle, 7 Nm



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389.811 Construct Holder, angled (optional)



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389.812 Tap for Cancellous Bone Screws  $\varnothing$  5.5 mm, length 248 mm (optional)



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311.425 Handle with Quick Coupling



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389.808 Drill Bit  $\varnothing$  3.3 mm, length 248 mm, for Quick Coupling (optional)



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324.092 Measuring Tool (optional)



# Surgical technique

## Standard procedure

### 1

#### Prepare the vertebrae

Expose the operating site, decompress neural structures, and insert bone graft or a vertebral body replacement such as *synex*<sup>™</sup>. Remove osteophytes from the vertebral surface to give the TSLP plate a flat resting surface. If necessary, incorporate additional autologous bone or an allograft.

### 2

#### Select plate size

##### Required instruments

Threaded Drill Guide	389.802
Construct Holder, angled	389.811

##### Optional instruments

Drill Guide Inserter, cannulated	389.801
Measuring Tool	324.092

Approximate the plate size using an X-ray, and select a TSLP plate that bridges the destroyed vertebrae including the intervertebral disc and bone graft or vertebral body replacement.

The screw holes for fixation should lie under the outside end-plates (see arrows).

**Note:** The indicated plate lengths refer to the entire length.



### 3

#### Prepare TSLP plate for implantation

##### Required instruments

Threaded Drill Guide	389.802
Drill Guide Inserter, cannulated	389.801
Construct Holder, angled	389.811

Insert a Drill Guide into the required caudal and cranial plate holes.

Insert another Drill Guide in a suitable central plate hole, mount the Construct Holder, and move the TSLP plate into position.



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## 4

### Position and temporarily fix the TSLP plate

#### Required instruments

Fixation Pin, for temporary use	389.873
Driver for Fixation Pin	389.872
Awl $\varnothing$ 3.3 mm, length 325 mm	389.803
Threaded Drill Guide Inserter, cannulated	389.801

Position the plate so that all the screws can be securely anchored in the vertebrae, and the plate curvature optimally follows the shape of the vertebrae.

Mount the Threaded Drill Guide Inserter onto the cranial, posterior Drill Guide, and perforate the cortical bone with the Awl  $\varnothing$  3.3 mm through the Cannulated Drill Guide Inserter. (1)



By leaving the Awl in place, the plate is temporarily fixed to the vertebrae and cannot be displaced.

**Note:** If the Awl is directly inserted through the Drill Guide, the maximum drill depth will be 20 mm. (2)



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Place a Fixation Pin on the driver, and temporarily affix the plate to the vertebrae through the caudal posterior Drill Guide.



Also insert a Fixation Pin in the remaining cranial and caudal Drill Guides.



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## Alternative to step 4 – without an awl

The primary fixation can be achieved using just 4 temporary Fixation Pins.



Remove the Construct Holder for better visualisation of the operative site.



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## 5

### Prepare the first screw hole

Remove the cannulated Threaded Drill Guide inserter together with the Awl in a single step.

**Alternative:** If temporary fixation is provided by four Fixation Pins, first remove the Fixation Pin from the Drill Guide selected for locating the screw, and then the Drill Guide with the Drill Guide Inserter.



**Option:** (hard bone)

#### Optional Instruments

Drill Bit $\varnothing$ 3.3 mm, length 248 mm	389.808
Handle with Quick Coupling	311.425

In the case of hard bone, remove the Inserter and Awl, but leave the Drill Guide. Mount the Handle with the Quick Coupling on the Drill Bit  $\varnothing$  3.3 mm, and drill the screw hole.

The effective drill depth is 23 mm.



## 6

### Determine the screw length

#### Required instruments

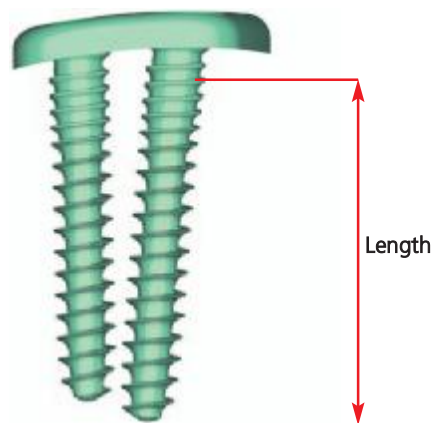
Depth Gauge for Long Screws  $\varnothing$  3.5 mm, measuring range 110 mm 319.090

- 1 Determine the required screw length using CT or an X-ray, or use the Depth Gauge.

Select a length to fully exploit the vertebral width without perforating the opposite side of the cortical bone.



**Note:** The indicated lengths of the locking screws refer to the distance from the first thread on the shaft to the tip.



## 7

### Insert the first screw

#### Required instruments

Ratchet Wrench with T-Handle, with Hexagonal Quick-Coupling	388.652
Screwdriver Shaft, Hexagonal 3.5, with Hexagonal Coupling	389.829
Holding Sleeve	389.814

Place the Ratchet Wrench with T-handle on the Hexagonal Screwdriver Shaft, and introduce it into the Holding Sleeve.

Select a 5.5 mm screw of the appropriate length, and screw it into the prepared plate hole.



Insert the screw up to 3/4 its length. Then pull the Holding Sleeve upward, and continue to screw in the screw until the screw head is seated in the plate.

**Note:** The Torque Limiter is only used to finally lock the screw after the remaining 5.5 mm locking screws have been inserted.



## 8

### Insert remaining screws

#### Required instruments

Driver for Fixation Pin	389.872
Drill Guide Inserter	389.801

First remove the Fixation Pin with the Driver, and then the Drill Guides with the Inserter.





Begin to insert the other screws cross-wise as described in steps 6 and 7.



## 9

### Lock the screws

#### Required instruments

Torque-limiting T-Handle, 7 Nm	321.133
Screwdriver Shaft, Hexagonal 3.5, with Hexagonal Coupling	389.829

Place the Torque-limiting T-Handle on the Hexagonal Screwdriver Shaft, and finally lock all screws.



A clear clicking from the T-Handle signals that the necessary torque has been reached.



# Surgical technique for affixing a bone graft

## 1

### Drill bone graft

#### Required instruments

Threaded Drill Guides	398.802
Drill Guide Inserter	389.801
Drill Bit $\varnothing$ 3.3 mm, length 248 mm, for Quick Coupling	389.808
Handle with Quick Coupling	311.425
Tap for Cancellous Bone Screws $\varnothing$ 5.5 mm, length 248 mm	389.812

Mount the Drill Guide in a middle screw hole. Mount the Drill Bit engaged in the Quick Coupling, and drill the bone graft. The Drill Bit has an effective drilling depth of 23 mm.



Remove the Drill Bit and Drill Guide.



## 2

### Tap the thread

#### Required instruments

Tap for Cancellous Bone Screws $\varnothing$ 5.5 mm, length 248 mm	389.812
Ratchet Wrench with T-Handle, with Hexagonal Quick-Coupling $\varnothing$ 6.0 mm	388.652

In the case of hard bone, mount the Tap on the Ratchet Wrench with T-handle, and pretap the thread.



### 3

#### Insert bone graft screw

##### Required instruments

Torque-limiting T-Handle, 7 Nm	321.133
Screwdriver Shaft, Hexagonal 3.5, with Hexagonal Coupling	389.829
Holding Sleeve	389.814

Place the Ratchet Wrench with T-Handle on the Hexagonal Screwdriver Shaft, and introduce it into the Holding Sleeve. Select a screw of the appropriate length, and screw it through the plate hole into the bone graft.







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