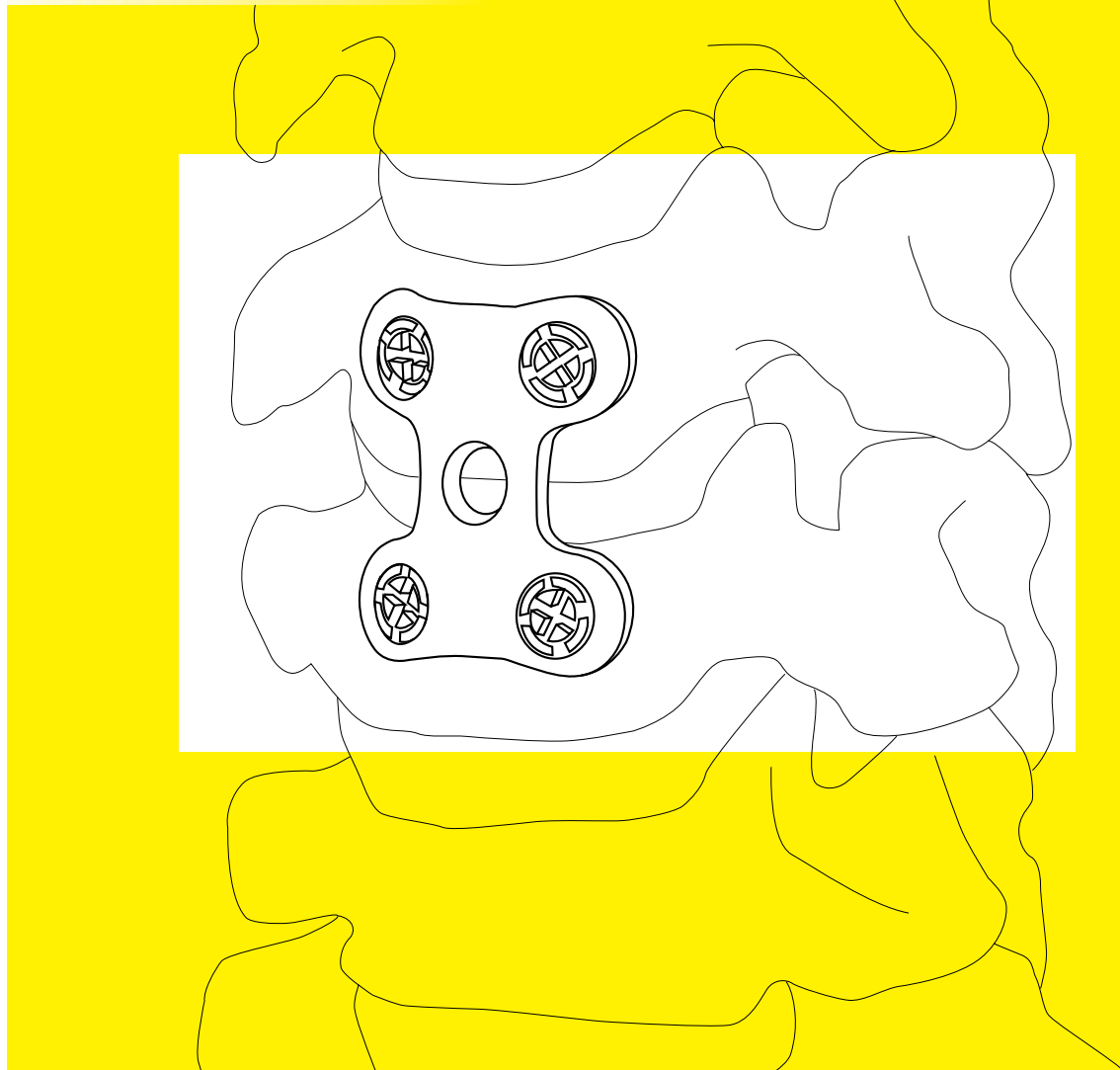


CSLP Cervical Spine Locking Plate

Surgical Technique

with Improved Instruments



SYNTHES®

Original Instruments and Implants of the
Association for the Study of Internal Fixation –
AO/ASIF

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Image intensifier control

Warning

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

Indications

The CSLP is used in anterior plating of the cervical spine (C2–T2) for the internal fixation in the treatment of instabilities associated with:

- fractures/dislocations
- degenerative diseases
- tumours
- partial or total spondylectomy

Surgical Technique

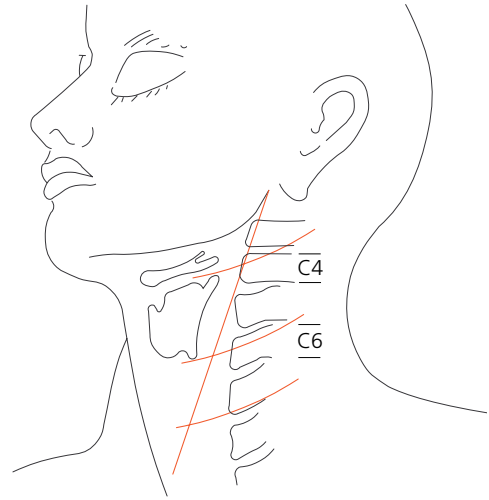
1



Patient Positioning and Approach

The approach described by Southwick and Robinson is chosen for plating the mid and lower cervical spine through T2. The patient is in supine position, with his/her head turned slightly away from the operator. If the plating is to extend over several segments, it is advisable to make a long incision along the anterior border of the *M. sternocleidomastoideus*. The approach to the spine is medial to this muscle and the neurovascular bundle, and lateral to the thyroid, trachea, and oesophagus. The *A. thyroidea inferior* must be ligated as a rule.

When preparing the vertebral body, it is important to only remove or incise the anterior longitudinal ligament where the intervertebral disc is to be bridged by the fusion. Under no circumstances is the anterior longitudinal ligament to be traumatised in the neighbouring segments not involved in the fusion.

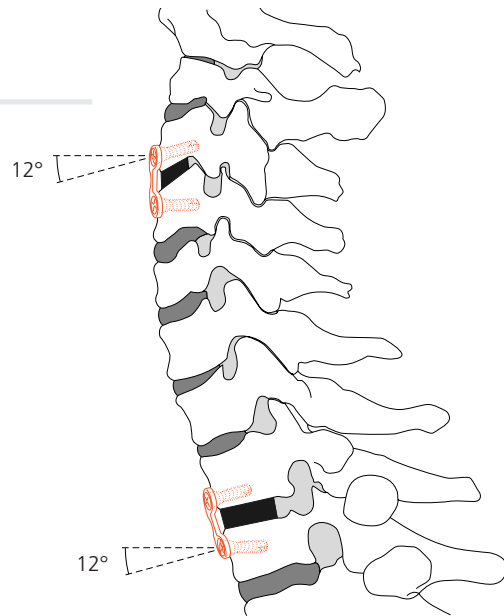


2

Select Plate

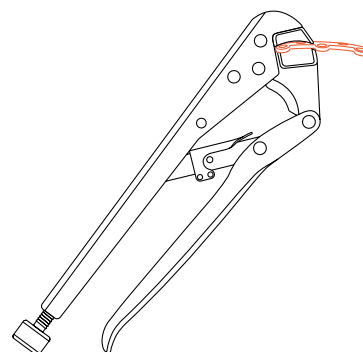
When choosing the suitable plate size, it must be considered that the intervertebral discs in the neck region are slightly inclined from antero-caudal to postero-cranial. Ensure that the screws will remain totally in the vertebral body and will not penetrate the intervertebral discs. Make sure there will be enough space between the intact adjacent intervertebral discs and the screws.

Once the correct plate size has been chosen, the alignment of the plate is determined. The 12° angled screw holes are, as a rule, positioned cranially to allow access to the cranial vertebrae. When directed caudally, the angled holes make instrumentation of T2 possible (possible insertion of screw in T2).



If the plate requires contouring, ensure that the holes remain unaltered. Distorted holes cannot be used for expansionhead screws. The Bending Pliers (no. 324.065) are recommended to give the Cervical Spine Locking Plate its correct lordotic curvature.

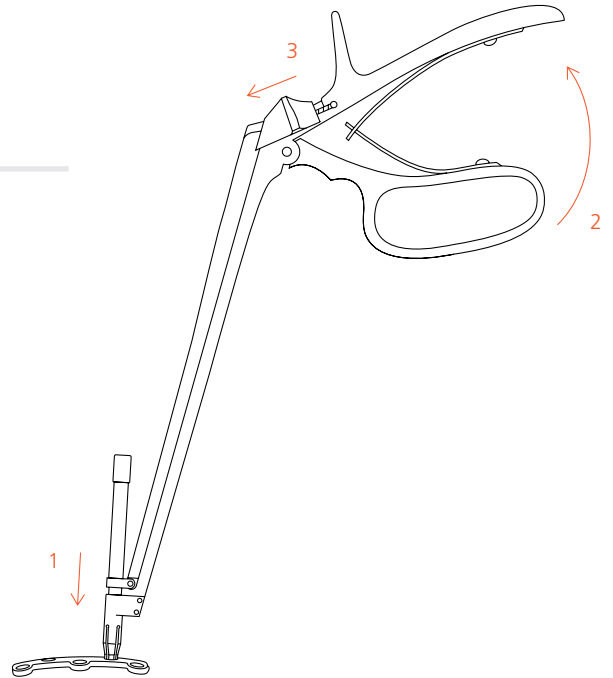
Note: The plate must not be bent backward and forward as this has a weakening effect.



3

Insert Drill Guide

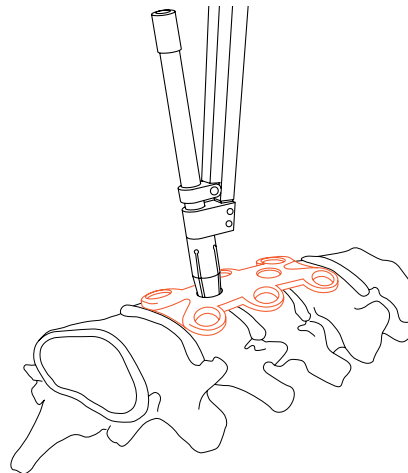
Insert the Drill Guide 3.0 (no. 387.201) into a middle plate hole (1). Choose the correct alignment to hold the plate, press the handle to attach the plate to the drill guide (2) and slide the catch forward to lock the drill guide in its position (3).



4

Position the Plate

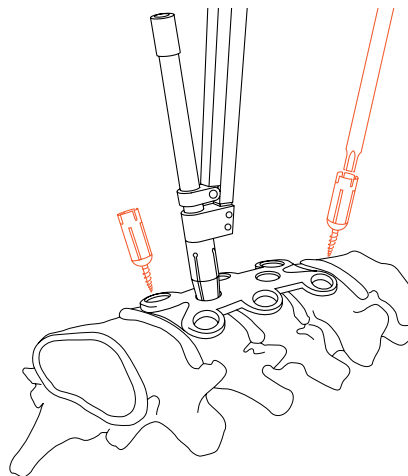
The plate thus attached to the drill guide is inserted into the operating area and aligned. Ensure that the screws will remain totally in the vertebral body and will not penetrate the intervertebral discs. Make sure there will be enough space between the intact adjacent intervertebral discs and the screws.



5

Insert Fixation Pins

Using the self-holding Screwdriver Shaft 4.0/4.35 (no. 387.281) and Handle (311.430), a Fixation Pin (no. 387.595) is taken from the rack and inserted into one of the cranial plate holes. The proximal end of the handle may be tapped on to facilitate the penetration of the pin into the cortex. Screw the pin into the vertebral body. Insert a second fixation pin into the diagonally opposite plate hole and remove screwdriver and drill guide (additional temporary fixation pins may be inserted if desired). An image intensifier may be used for a lateral view of the position of the fixation pins to indicate the potential positions of the screws.



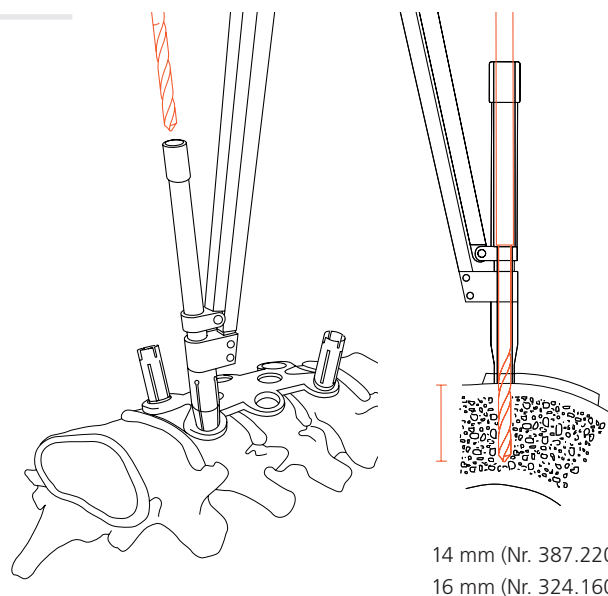
6



Drill Holes for Expansionhead Screws

For Expansionhead Screws of 14 mm of length Drill Bit \varnothing 3.0 mm with Stop (387.220) and Drill Guide 3.0 are used to drill the holes no deeper than 14 mm. For this purpose insert Drill Guide 3.0 in the empty caudal hole. The drill guide must sit correctly in the plate hole so the screw head can later be fully sunk into the plate. For 16 mm colour-coded screws use the violet colour-marked Drill Bit with Stop (no. 324.160) to drill the holes no deeper than 16 mm.

Note: During drilling the drill guide must sit accurately in the plate hole and the handle has to be pressed to achieve a firm hold between the plate and the drill guide.



7

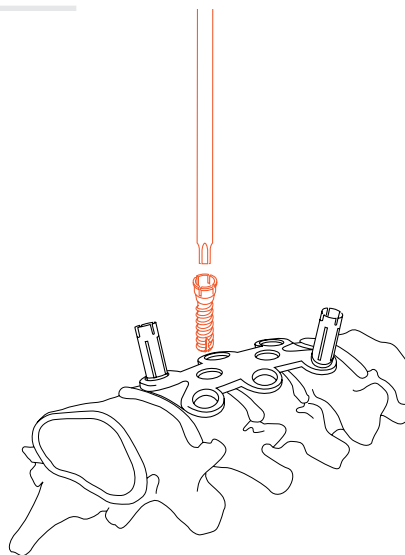
Insert the First Expansionhead Screw

A self-tapping Expansionhead Screw appropriate in length and diameter is taken from the screw rack by means of the self-holding Screwdriver Shaft 4.0/4.35 (no. 387.281) and inserted at the given angle. The screw must not be fully tightened at first as this could cause the opposite side of the plate to tilt.

Screw Types

\varnothing 4.0 mm	14 mm gold	(no. 487.044)	normal screw
\varnothing 4.0 mm	16 mm violet	(no. 487.046)	for special cases
\varnothing 4.35 mm	14 mm gold	(no. 487.054)	emergency screw for no. 487.044
\varnothing 4.35 mm	16 mm violet	(no. 487.056)	emergency screw for no. 487.046

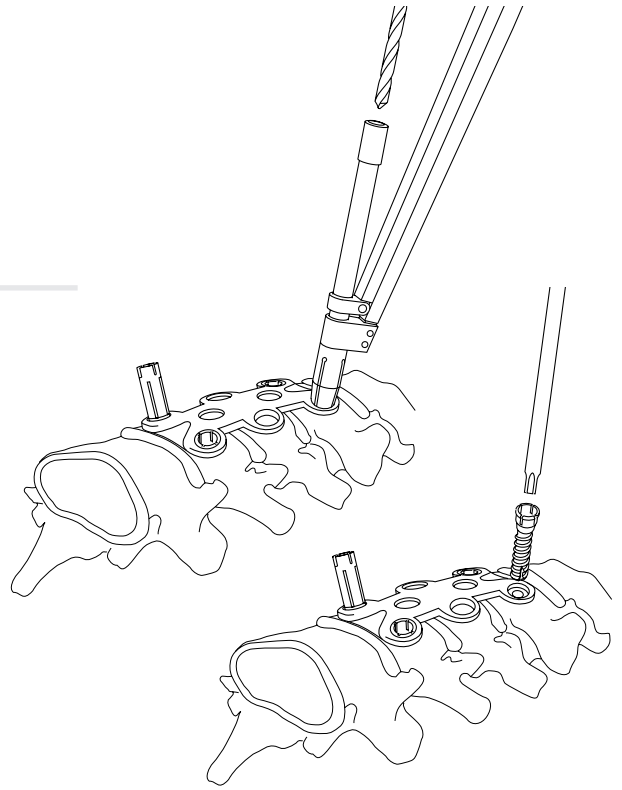
Note: For long spans or poor bone quality: The surgeon is urged to consider the nature of such cases. The treatment may require the use of longer screws (16 mm), and/or posterior fixation for this kind of inherently unstable cases. The 4.35 mm screw may be used as an emergency screw in cases where the 4.0 mm screw has stripped the bone and a larger screw thread is required.



8

Insert Remaining Screws

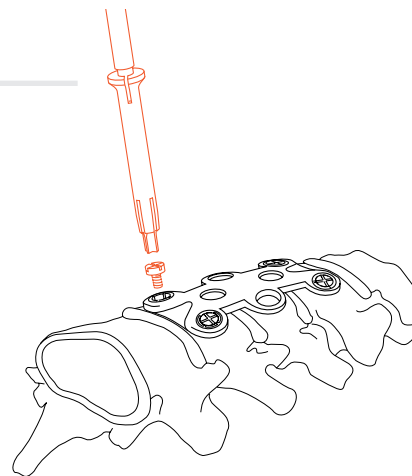
The remaining screws are then inserted likewise, starting with the screw diagonally opposite the first one. The screw holes are prepared as in step 6. Once the second screw is inserted the fixation pins are removed. Finally, all screws must be tightened so that the screw heads render a flush plate surface.



9

Insert Locking Screws

The Locking Screws \varnothing 1.8 mm (no. 497.780) are then inserted. Using Screwdriver Shaft 1.8 (no. 387.310) and Holding Sleeve (no. 387.320) one locking screw after the other is taken from the screw rack, carefully inserted into the screw heads and firmly tightened.



10



Check Plate Surface

Before closing the incision check with your finger tip that all screws are fully sunk into the plate. A flush surface prevents the soft tissue from being damaged (oesophagus!).



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