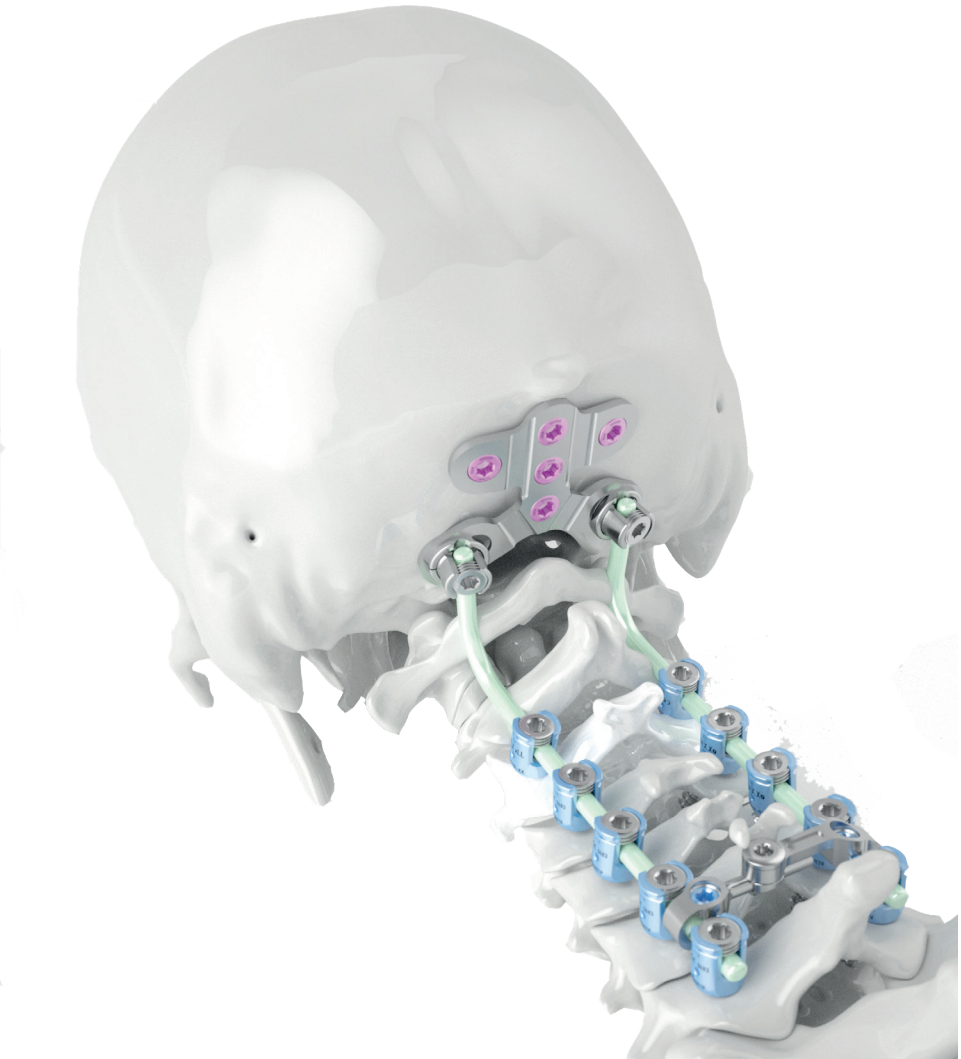
silony® MEDICAL

VERTICALE® CERVICAL SCREW ROD SYSTEM INCLUDING OCCIPITO-CERVICAL FUSION

INSTRUMENTATION GUIDE



MADE IN GERMANY

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NOTE: This guide describes the use of the VERTICALE Cervical posterior spinal fixation instrument set. This guide does not replace briefing by a physician experienced in the instrumentation used in spinal surgery. We would be happy to assist you in finding a hospital that provides an opportunity to observe surgical procedures.

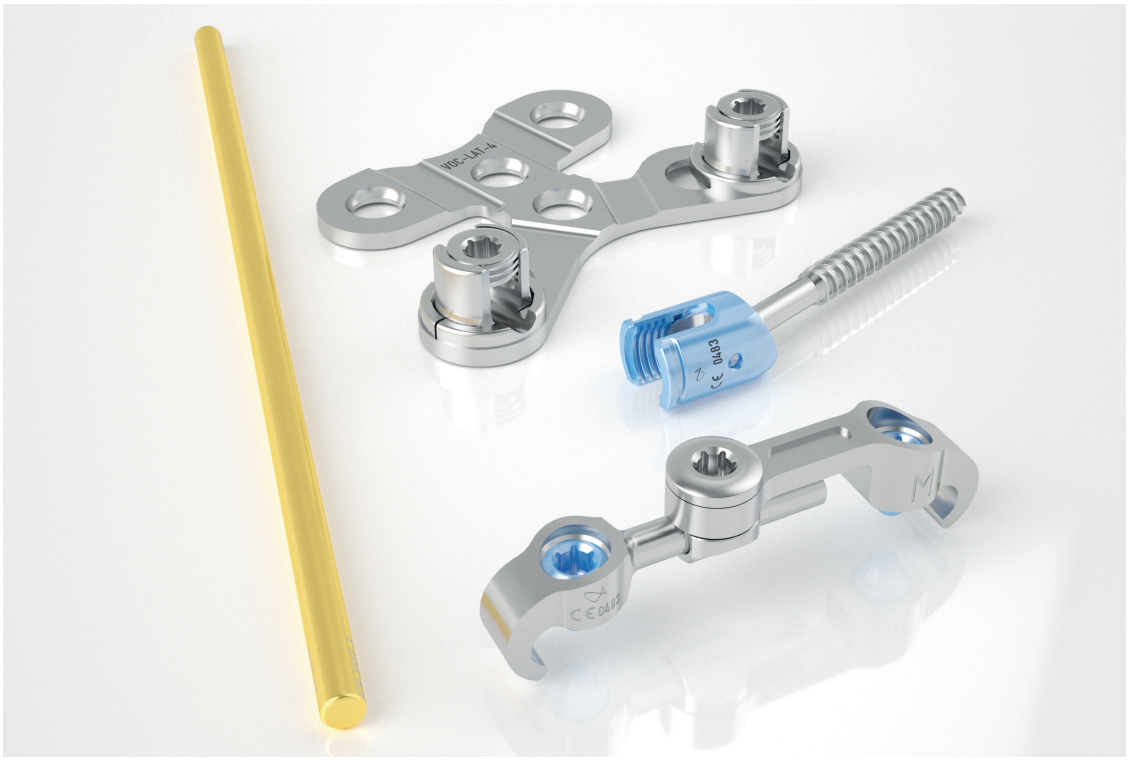
PREFACE

VERTICALE® – CERVICAL SCREW ROD SYSTEM INCLUDING OCCIPITO-CERVICAL FUSION

The Silony VERTICALE Cervical system is a double rod fixation posterior system consisting of polyaxial screws, rods, occiput plates, connectors and accessories. It is intended to provide immobilization and stabilization of spinal segments of the craniocervical junction (occiput-C2), subaxial cervical spine (C3-C7) and upper thoracic spine (T1-T3). The VERTICALE Cervical system may only be used in the field of human medicine and consists of polyaxial screws, far angle (FA) screws, rods, occiput plates, connectors and the related instrumentation. Implants of the VERTICALE Cervical system are supplied sterile and are intended for single use.

Different screw placements will be possible:

- C1: Lateral mass screw
- C2: Isthmus screw, pedicle screw, laminar screw, transarticular
- C1-2: Length of current screw can be used for this connection
- C3-7: Lateral mass screw, pedicle screw, laminar screw
- T1-T3: Pedicle screw, laminar screw



Indication

The VERTICALE Cervical system is indicated for use in the occipito-cervico-(upper-) thoracic regions for the following indications:

- Degenerative disc diseases (DDD)
- Instabilities
- Trauma
- Deformities

Contraindications

Under certain circumstances, implantation is prohibited or associated with substantial risks, even though it may be indicated. These include in particular:

- Anticipated or documented allergy or intolerance to the materials (e.g. titanium or cobalt chromium)
- Any case in which the chosen implants would be too large or too small to achieve a successful result
- Any patient for whom the use of the implant would conflict with anatomical structures
- Missing bony structures, which would render solid anchoring of the implant impossible (e.g., in the case of fractures, tumors, or osteoporosis)

NOTE: Anterior interbody support in the form of an intervertebral implant device, such as a ROCCIA cage, is recommended for treating instabilities of the anterior spine and is used at the discretion of the operating surgeon and in accordance with the respective indication.

NOTE: Please also note the Instructions for Use provided with each product. They may include additional advice that leads to exclusion of the implant procedure.

VERTICALE® CERVICAL INSTRUMENTATION GUIDE

In the following section, we begin by discribing a monosegmental posterior VERTICALE Cervical instrumentation with pedicle screws that forms the basis for all subsequent steps with additional instruments and implant devices. Multisegmental instrumentations or the implantation of other screws (e.g. lateral mass screws) are also performed according these instructions.

Position and approach

The patient is positioned in the standard prone position for the posterior approach. The skin incision is performed medially above the spinous processes corresponding to the spinal segments to be treated. The soft tissue is then dissected until the anatomical structures of the spinal column can be clearly seen.

Opening the pedicle

VI-0010
VERTICALE CERVICAL
Awl with stop

VI-0020
VERTICALE CERVICAL
Probe, straight

The desired screw insertion point into the pedicle is defined by means of anatomical landmarks and under X-ray control or other suitable inspection methods. The cortex is subsequently opened with the VERTICALE Cervical Awl with stop (Fig 1). For safety reasons, the awl has a depth stop after 6 mm.
To further open up the pedicle down to the cancellous bone of the vertebral body, the corresponding VERTICALE Cervical Probe is used.

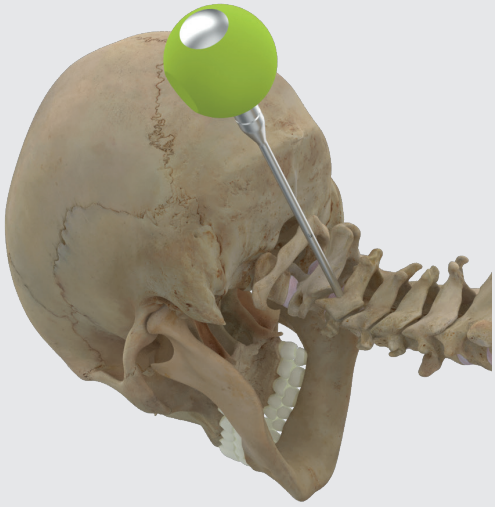


Fig. 1 Opening the pedicle with the awl or probe

Probing the pedicle

VI-0025
VERTICALE CERVICAL
Pedicle Feeler

The one-sided VERTICALE Cervical Pedicle Feeler can be used to check the prepared screw channel for possible perforations (Fig 2).

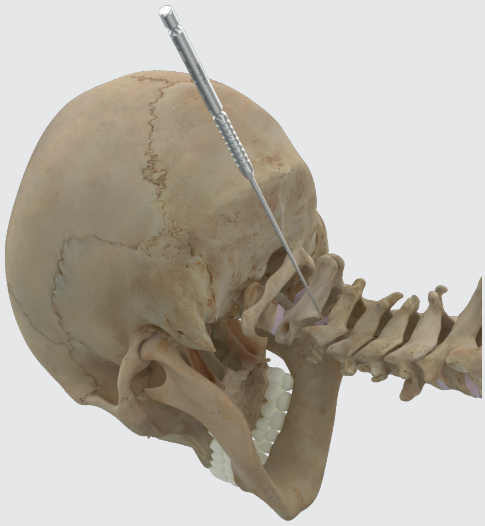


Fig. 2 Probing the pedicle with the pedicle feeler

Drilling

VI-0230
VERTICALE CERVICAL
Drill Guide Standard

VI-0256
VERTICALE CERVICAL
Drill Guide XL

VI-0235
VERTICALE CERVICAL
Drill 2.4 mm standard*

Two different drill guides are available. A standard version for screw dimensions between 10 mm to 30 mm and a XL version for screw lengths of 14 mm to 56 mm. Choose the corresponding drill guide for the desired screw dimension (Determine the appropriate screw dimension by preoperative planning).

Insert the depth sleeve into the corresponding drill guide and set the depth sleeve to the required screw length. The adjustment of the length is made by pressing the button on the proximal part of the drill guide. The corresponding screw length is indicated by the laser marking on the drill guide (Fig. 3).

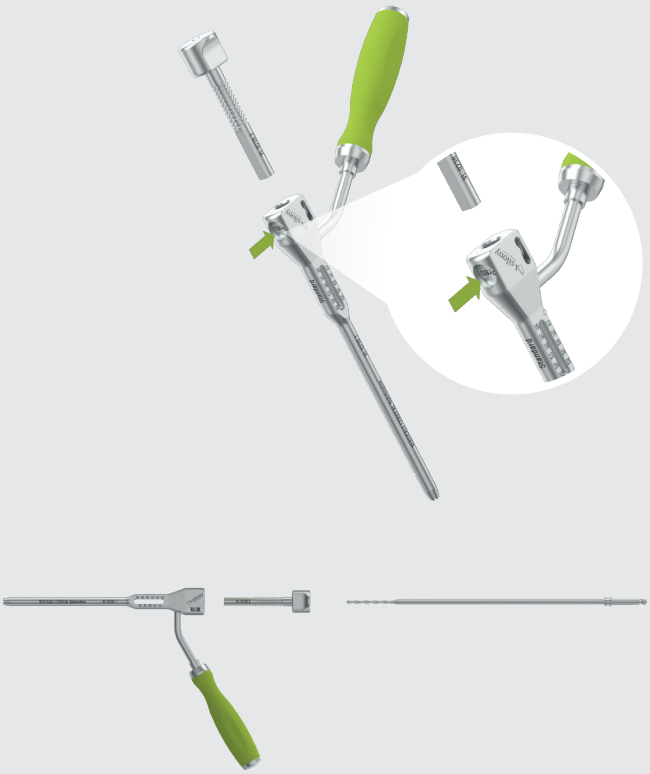


Fig. 3 Assemble the Drill Guide and insert corresponding drill

Separate drills for both standard and XL drill guides are available*. The drills have diameters of 2.4 mm and 2.9 mm for 3.5 mm and 4.0 mm screws, respectively. The drills are color coded according to the anodization color of the screws, i.e. yellow for the 3.5 mm screws and blue for the 4.0 mm screws. Choose an appropriate drill for corresponding screw diameter ensuring the color coding of the drill matches the anodization colour of the screw.
The drills can be used with one of the VERTICALE Cervical quick-coupling handles or with a power tool.
Drill the hole into the pedicle or lateral mass to the appropriate depth and use intraoperative X-ray control if necessary (Fig.4).

* Further drill options are shown in the chapter “Instruments”.

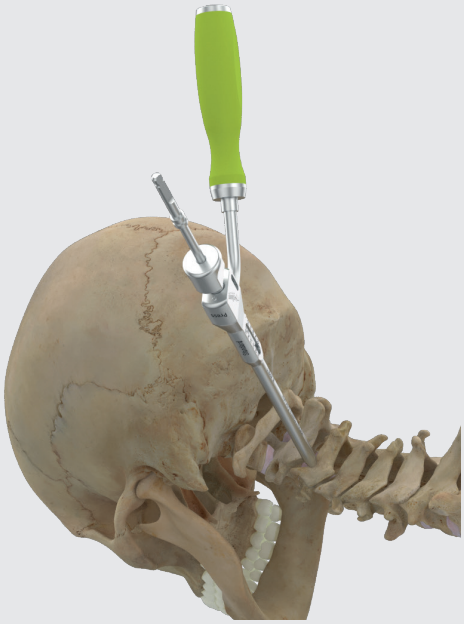


Fig. 4 Drilling a hole into the pedicle

NOTE: Confirm the correct adjustment of the depth sleeve and the desired drill length prior to drilling! Please correct the position of the depth sleeve if necessary.

NOTE: Ensure the sharpness of the drill prior to drilling! In case of blunt drill, use a new one.

Determining the screw dimensions

VI-0030
VERTICALE CERVICAL
Depth Gauge

VI-0020
VERTICALE CERVICAL
Probe, straight

Using the markings on the VERTICALE Cervical Probe, the dimension of the pedicle screw can be estimated. The markings are between 10 and 30 mm in increments of 10 mm. Use the VERTICALE Cervical Depth Gauge with markings between 8 and 56 mm with increments of 2 mm to confirm the required screw length (Fig 5).

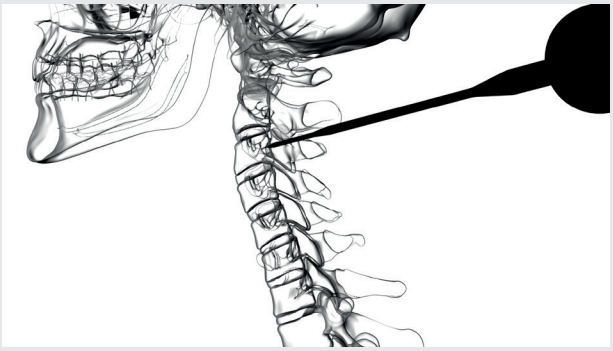


Fig. 5 Determining the length of the screws

NOTE: Do not bend the depth gauge or push by force into the bone as damage of the instrument may occur, which may lead to false length indications. Please check, whether the tip of the depth gauge is intact. Use the depth gauge only if the tip is intact and the laser marking is clearly visible.

Tapping

VI-0230
VERTICALE CERVICAL
Drill Guide Standard

VI-0256
VERTICALE CERVICAL
Drill Guide XL

VI-0301
VERTICALE CERVICAL
T-Handle*

VI-0135
VERTICALE CERVICAL
Tap 3.5 mm XL **

All VERTICALE Cervical screws have a self-tapping thread. However, for very hard bone structures (e.g. sclerotic bone) it may be necessary to pre-tap the thread into the bone. Taps for the screws with a diameter of 3.5 and 4.0 mm are available for this. All taps are color coded according to the anodization color of the screws, i.e. yellow for the 3.5 mm screws and blue for the 4.0 mm screws.
Separate taps for both standard and XL drill guides are available. Choose appropriate tap diameter and length ensuring the color coding of the tap matches the anodization color of the screw. The depth of the tapping is controlled by the depth sleeve of the drill guides (Fig. 6).
The taps can be used with one of the VERTICALE Cervical quick-coupling handles. After selecting the appropriate modular and cannulated handle (T-handle, long handle, with or without ratchet mechanism), it is connected to the corresponding VERTICALE Cervical Tap by locking into place (Fig. 7).
The screw channel is prepared clockwise. The thread on the VERTICALE Cervical taps has a length of 16 mm. After cutting, the tap is disengaged by turning it counter clockwise.
Cannulated taps are available for guided insertion using a Guide-Wire (Ø 1.3 mm). See appendix VERTICALE Cervical instruments.

* Further handle options are shown in the chapter “Instruments”.

** Further taps are shown in the chapter “Instruments”.

NOTE: If using another guide wire than listed in the appendix, ensure that the length of the guide wire exceeds the length of implant, instrument and additional handle.

NOTE: Do not use power tool for tapping!

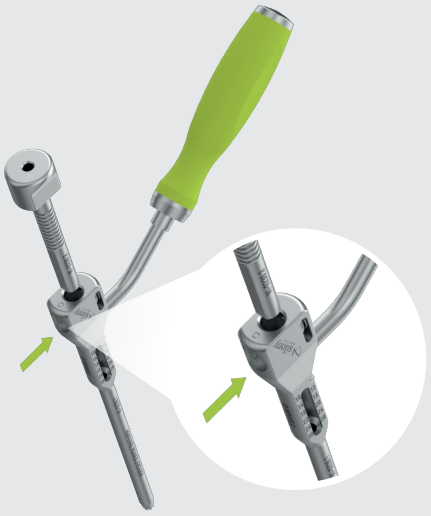


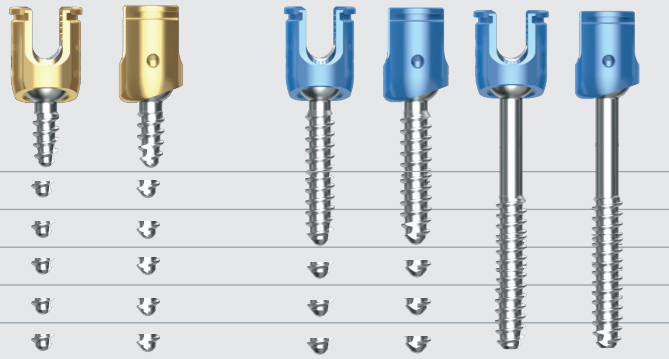
Fig. 6 Inserting the depth sleeve and set the depth sleeve to the required length

Fig. 7 Tapping of screw holes

Selection of pedicle screws

To enable faster and easier identification, all VERTICALE Cervical screws are color coded by diameter. The lengths vary by 2 mm increments for the 3.5 mm and 4.0 mm screws. The 4.5 mm screw serves as a revision option and vary by 5 mm increments. Two different types of screw heads are available. The poly-head with an angulation of 40° in all directions and a FA-head (far angle) with an increased angulation of 57° in either cranial or caudal direction. 4.0 mm and 4.5 mm screws are also available with cannulation. Moreover, a smooth shank option is available with 10 mm non-threaded screw shaft for the 4.0 mm screws.*

* Further screw options are shown in the chapter "Implants".



	Ø 3.5 mm (10 - 30 mm á 2 mm)		Ø 4.0 mm (14 - 56 mm á 2 mm)		Ø 4.0 mm (20 - 36 mm á 2 mm)		Ø 4.5 mm (20 - 55 mm á 5 mm)		
10 mm	●	●	●	●	●	●			
12 mm	●	●	●	●	●	●			
14 mm	●	●	●	●	●	●			
16 mm	●	●	●	●	●	●			
18 mm	●	●	●	●	●	●			
20 mm	●	●	●	●	●	●	●	●	20 mm
22 mm	●	●	●	●	●	●			
24 mm	●	●	●	●	●	●			
26 mm	●	●	●	●	●	●	●	●	25 mm
28 mm	●	●	●	●	●	●			
30 mm	●	●	●	●	●	●	●	●	30 mm
32 mm			●	●	●	●			
34 mm			●	●	●	●			
36 mm			●	●	●	●	●	●	35 mm
38 mm			●	●					
40 mm			●	●			●	●	40 mm
42 mm			●	●					
44 mm			●	●					
46 mm			●	●			●	●	45 mm
48 mm			●	●					
50 mm			●	●			●	●	50 mm
52 mm			●	●					
54 mm			●	●					
56 mm			●	●			●	●	55 mm

NOTE: Using the A-P X-ray image, choose pedicle screws according to the pedicle diameter with the largest possible diameter. The length of the screw should be such that it reaches at least 2/3 of the diameter of the vertebral body, and in the best case the anterior edge of the vertebral body.

Preparing the pedicle screw driver

VI-0130
VERTICALE CERVICAL
Pedicle SD (screw driver)

VI-0201
VERTICALE CERVICAL
Straight Handle*

The VERTICALE Cervical Pedicle Screwdriver is used to screw in the VERTICALE Cervical screws. It has to be assembled prior to use.

Mount the inner shaft of the screw driver to the basic core by pushing the quick-release button at the proximal part of the basic core. To ensure better protection of the tissue, the Screwdriver is equipped with a removable protection sleeve. It is attached, as shown, until it clicks into position (Fig. 8a). The screw driver is mounted onto the desired handle using the quick coupling on the handle. Different modular handles are available for use with the screwdrivers (with or without ratchet mechanism). Laser marking on the quick-coupling supports the right orientation of the modular handle for mounting. Moreover, a self-retaining mechanism prevents the inner shaft from rotating during mounting of the handle while holding the screw driver at the knob of the basic core (Fig. 8b).

* Further handle options are shown in the chapter “Instruments”.

Fig. 8a Assembly of pedicle screw driver

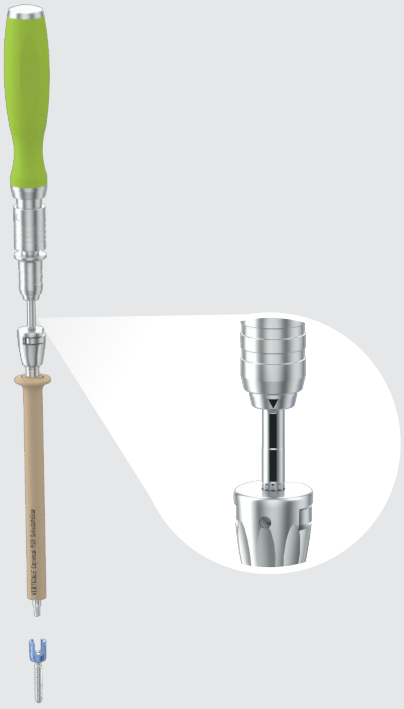


Fig. 8b Attaching handle according to the laser marking

Picking up the screws

VI-0130
VERTICALE CERVICAL
Pedicle SD (screw driver)

VI-0201
VERTICALE CERVICAL
Straight Handle*

All VERTICALE Cervical screws are single used and are delivered in sterile packaging.

Care must be taken to ensure an orthograde alignment between the tulip and screw shaft. The inner shaft of the VERTICALE Cervical Pedicle Screwdriver is first inserted deeply into the inner Torx of the screw shaft. After that, the threaded basic core is pushed towards the tulip and the internal thread of the tulip is connected to the external thread of the instrument by rotating to knob of the screw driver clockwise and applying mild downward force with the instrument shaft (Fig 9).
Ensure that the T-shaped tip is sufficiently inserted into the tulip for secure locking of the screw to the pedicle screw driver.

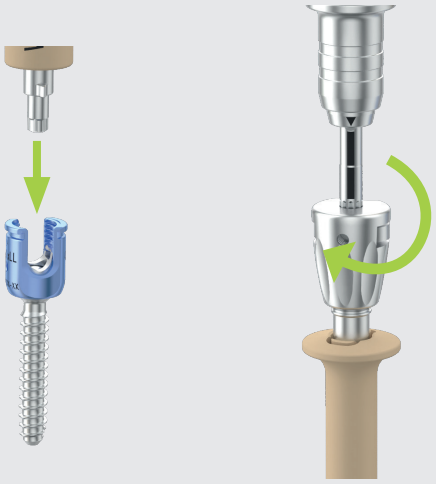


Fig. 9 Attaching pedicle screw driver to pedicle screw

Pedicle screw insertion

VI-0130
VERTICALE CERVICAL
Pedicle SD (screw driver)

VI-0201
VERTICALE CERVICAL
Straight Handle*

The VERTICALE Cervical pedicle screws are screwed into the prepared screw channel of the bone until the screw shaft is fully inserted into the pedicle (Fig 10). Screwing too far into the pedicle can restrict the mobility of the tulip and make it difficult to insert the rod later. To disengage the instrument from the pedicle screw, maintain firm grip of screwdriver handle while rotating the rotation knob of sleeve counter-clockwise and pull instrument away from tulip. This process is repeated until all pedicle screws have been inserted. Verifying the correct positioning of the pedicle screws by means of an image intensifier in frontal and sagittal projection is strongly recommended.

* Further handle options are shown in the chapter “Instruments”

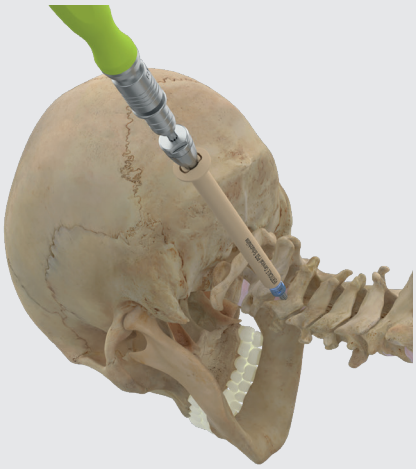


Fig. 10 Inserting the pedicle screw into the bone

NOTE: It is important that the polyaxiality of the tulip is not blocked. If necessary, the screw must be turned back a little.

Countersinking the pedicle screw

VI-0446
VERTICALE CERVICAL
Pedicle Screw Driver Ballhead

The VERTICALE Cervical Pedicle Screw Driver Ballhead is available for countersinking the pedicle screws (Fig 11).

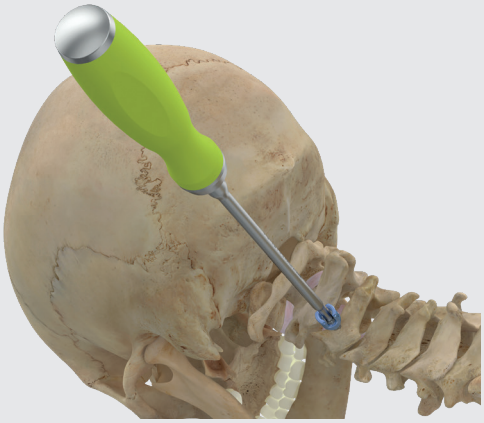


Fig. 11 Countersinking the pedicle screws

Aligning the screw heads (tulip)

VI-0350
VERTICALE CERVICAL
Rod and Tulip Adjuster

The VERTICALE Cervical screw tulips are adjusted with the VERTICALE Cervical Rod and Tulip Adjuster. The adjuster is placed into the tulip and can then be used to align the tulip (by rotating and tilting) depending on how the rod will subsequently be inserted (Fig. 12).

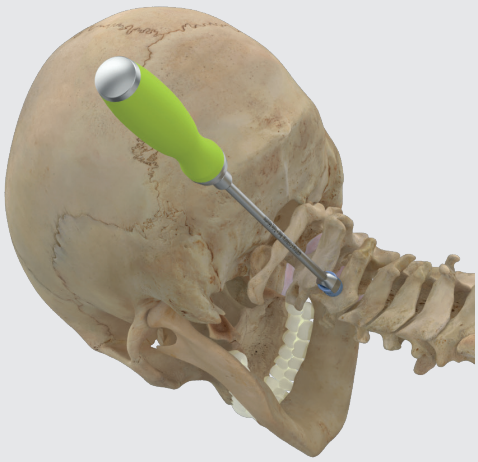


Fig. 12 Aligning the pedicle screw heads with the rod and tulip adjuster

Selecting and sizing the rods

VI-0535
VERTICALE CERVICAL
Phantom Rod

VI-0610
VERTICALE CERVICAL
Rod Bender

VI-0260
VERTICALE CERVICAL
Rod Cutter*

Various rod lengths with a diameter of 3.5 and 4.0 mm are available. Details can be found in the chapter "Implants". The VERTICALE Cervical Phantom Rod can be used to determine the required rod length and curvature. In order to estimate the required rod length, laser markings on the Phantom rod are implemented in increments of 10 mm. Rods that are too long can be shortened with the VERTICALE Cervical Rod Cutter. Rotate the knurled wheel until the two arrows are aligned. Insert the rod into the corresponding hole (i.e. 3.5 mm or 4.0 mm). Repeatedly, squeeze the handles and initiate the ratcheting mechanism until the rod is cut. Before the next rod can be cut, rotate the knurled wheel until the two arrows are aligned again (Fig. 13a).
For individual anatomic adjustment of the rod, you can use the VERTICALE Cervical Rod Bender. Place the rod within the rod bender and squeeze the handles until the desired curvature is reached. Three different bending radii are possible (small, medium, large). In order to change the bending radius, pull the center knob and turn (~120°) to select the required bending radius. Make sure the center knob is arrested correctly and fixed in its position before contouring the rod (Fig 13b).

* Further rod cutter are shown in the chapter “Instruments”.

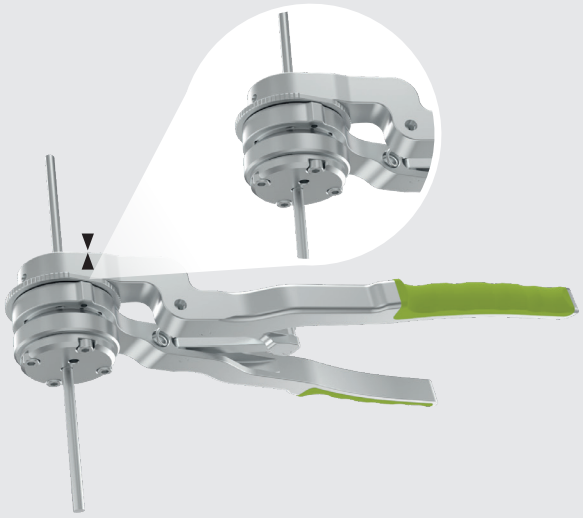


Fig. 13a Cutting the rod with the rod cutter

Fig. 13b Bending the rod with the rod bender

NOTE: The “cutting line” indicates the area where the rod will be cut. This line is located approximately 8 mm from the upper face of the instrument where the rod will be inserted.

NOTE: Any reverse bending of the rod decreases the integrity of the material and must be avoided. For this reason, bending of the rod should be performed gradually until the desired curvature is attained.

Inserting the rods

VI-0330
VERTICALE CERVICAL
Rod Holder

VI-0350
VERTICALE CERVICAL
Rod and Tulip Adjuster

The rods are inserted using the VERTICALE Cervical Rod Holder (Fig. 14).
If the rod is not placed deep enough into the pedicle tulip, it can be additionally maneuvered into the correct position with the VERTICALE Rod and Tulip Adjuster.

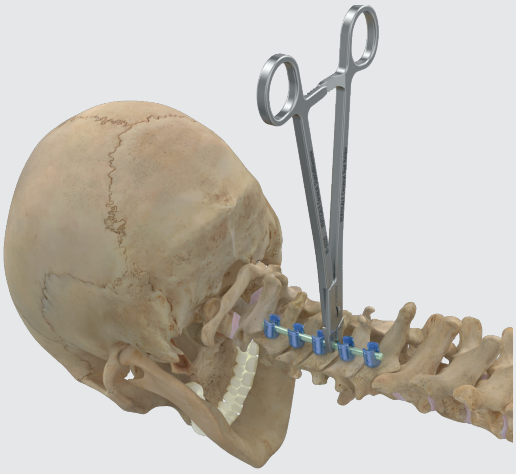


Fig. 14 Inserting the rods

NOTE: The end of the rod shall visibly protrude from the last screw head to ensure sufficient contact between tulip, set screw and rod.

Temporarily tightening the set screw

VI-0421
VERTICALE CERVICAL
Setscrew Starter double

The VERTICALE Cervical set screw is inserted with the double-sided VERTICALE Cervical Set Screw Starter. To do this, the torx of the VERTICALE Cervical Set Screw Starter is equipped with a self-retaining geometry that hold the set screw in place during handling. Insert the set screw into the tulip of the pedicle screw. The rod is temporarily fixed by gently turning the set screw clockwise (Fig 15).

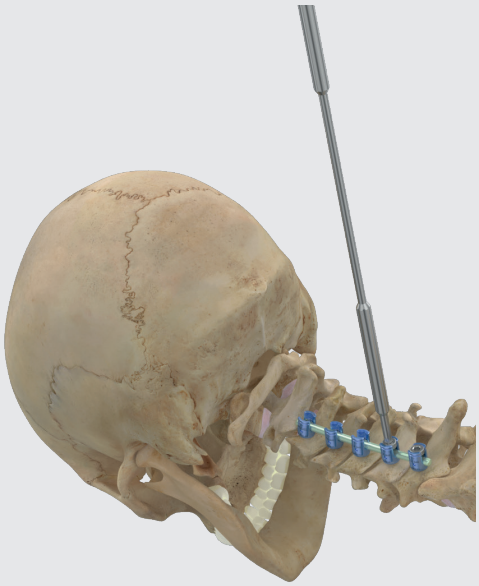


Fig. 15 Inserting and temporarily tightening the set screw

NOTE: Set screws should always be inserted with a smooth clockwise rotation. To prevent tilting, a brief prior counter clockwise rotation can facilitate insertion of the set screw into the first thread.

Final tightening using the counter torque

VI-0440
VERTICALE CERVICAL
Torque Limiter 3 Nm

VI-0450
VERTICALE CERVICAL
Counter Torque

The VERTICALE Cervical Counter Torque is used to stabilize the rotation when tightening the VERTICALE Cervical set screw. In order to insert the set screw with guidance, the counter torque is placed directly onto the screw head. The VERTICALE Cervical Counter Torque can be comfortably mounted parallel or at right angles to the rod. The VERTICALE Cervical Torque Limiter (Torx 20) can then be guided by the counter torque and the set screw is tightened in its final position with a torque of 3 Nm (an audible click indicates that the torque has been reached). The same procedure must be repeated with all other set screws (Fig. 16). We recommend ensuring that the set screw is correctly seated by repeatedly tightening with the torque limiter. This is confirmed by two clicking sounds.

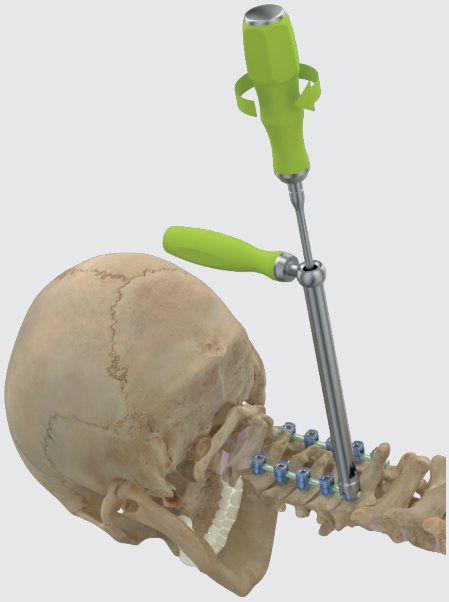


Fig. 16 Final tightening using the counter torque

Verification

Please check the correct position of the rods and screws as well as the result of compression and distraction manoeuvres by final X-ray.
The result of the instrumentation is verified using images in two planes from an image intensifier.

VERTICALE® CERVICAL INSTRUMENT-BASED REDUCTION AND CORRECTION OPTIONS

It is often necessary to perform intra-operative reductions and corrections of the implant devices with the help of VERTICALE Cervical Instruments in one or more segments.

Compression and distraction

VI-0620
VERTICALE CERVICAL
Distraction Pliers

VI-0630
VERTICALE CERVICAL
Compression Pliers

To compress or distract the pedicle screws, the VERTICALE Cervical Distraction or Compression Pliers are attached to the rod. The desired maneuver is performed by pressing together the respective pliers (Fig. 17 + 18). Both compression and distraction pliers feature a parallel mechanism for improved handling. The set screws are then final tightened with the VERTICALE Cervical Torque
Limiter 3 Nm and the VERTICALE Cervical Counter Torque to secure the result of the compression or distraction maneuver.

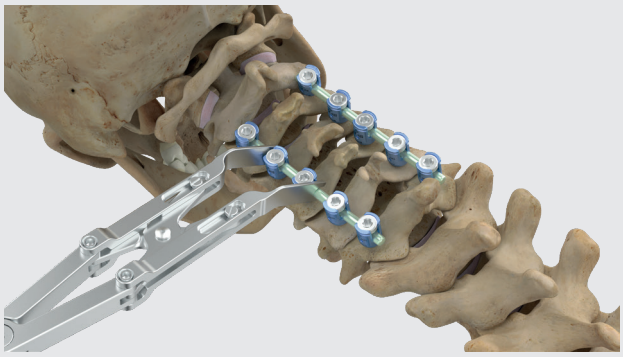


Fig. 17 Compression with the compression pliers

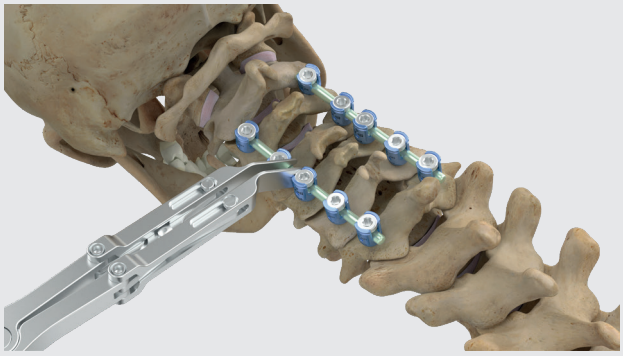


Fig. 18 Distraction with the distraction pliers

NOTE: The set screws, at least one in the segment being corrected, must not be closed tightly during the maneuver.

Reduction with the reduction instrument

VI-0360
VERTICALE CERVICAL
Reduction Instrument

The VERTICALE Cervical Reduction Instrument is used to reduce the rod into the tulip of the pedicle screws. It is positively locked onto the designated hook groove (notch) at the verge of the tulip and the wings of the reduction instrument. The rod is then persuaded into the tulip by pressing together the pliers of the reduction instrument. At the same time, the position of the vertebral body is corrected to posterior (Fig. 19).

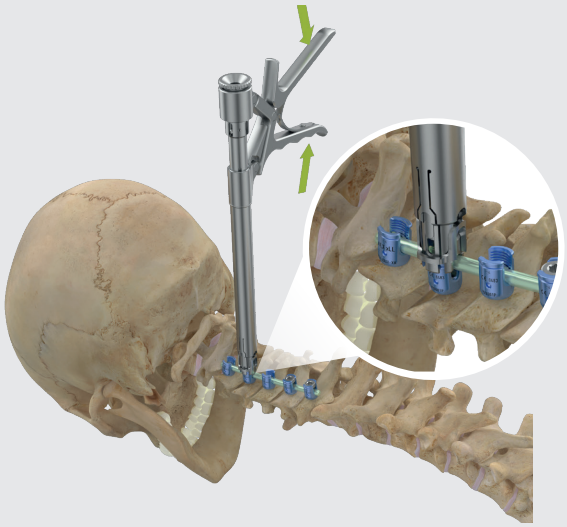


Fig. 19 Reduction with the reduction instrument

NOTE: Consider both wings of the reduction instrument being in contact with the outer notch of the screw head (illustration) before pushing the rod into the tulip.

Fixing the rod in place with the reduction instrument

VI-0360
VERTICALE CERVICAL
Reduction Instrument

VI-0421
VERTICALE CERVICAL
Setscrew Starter double

Fixation of the rod is achieved using the VERTICALE Cervical Set Screw. It is inserted with the VERTICALE Set Screw Starter. To do this, the set screw is attached to the self-retaining Torx on the VERTICALE Set Screw Starter (Fig. 20). The rod is temporarily fixed by turning the set screw.

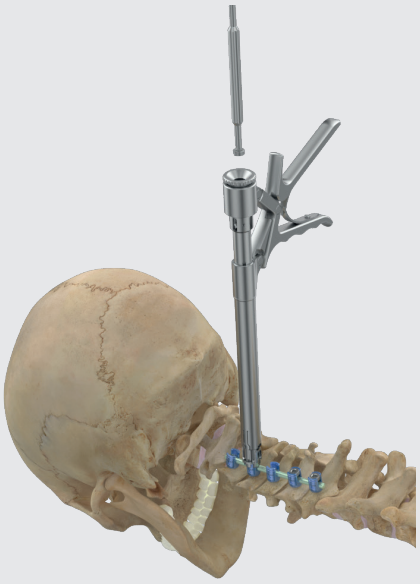


Fig. 20 Fixation with the reduction instrument and set screw starter

NOTE: Neither the set screw starter nor the reduction tool are designed for final screw tightening and may get damaged if applied torque is too high. For final tightening use the torque limiter and counter torque.

INSTRUMENTATION WITH THE VERTICALE® CERVICAL CROSS CONNECTOR

VERTICALE Cervical Cross Connectors (CC) are recommended to improve rotational stability, especially for instrumentations spanning multiple segments.

Size determination

VI-0830
VERTICALE CERVICAL
Cross Connector Sizer

Three different sizes of the VERTICAL Cervical Cross Connector implants are available with color-coding via the pre-mounted set screws.

In order to determine the required size, use the VERTICALE Cervical Cross Connector Sizer by attaching the instrument on both rods (Fig. 21). Both rods have to lie completely in the two recesses of the instrument. Otherwise, another size range needs to be checked with the instrument.

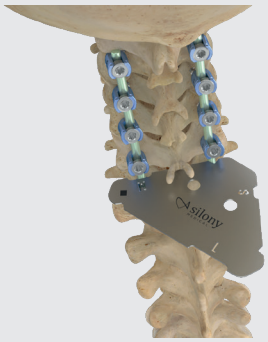


Fig. 21 Size determination of cross connector

Preparing the cross connectors

VI-0330
VERTICALE CERVICAL
Rod Holder

VI-0810
VERTICALE CERVICAL
CC Torque Limiter 2Nm

Ensure the pre-mounted set screws are loosened by using the VERTICALE Cervical CC Torque Limiter 2 Nm (Torx 15) prior to insertion onto the rods. Pay attention not to detach the set screws completely from the cross connector (Fig. 22).

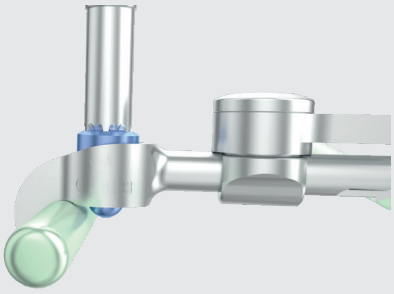


Fig. 22 Preparing and inserting the cross connector

Inserting and temporarily fixing the cross connector

VI-0330
VERTICALE CERVICAL
Rod Holder

VI-0810
VERTICALE CERVICAL
CC Torque Limiter 2Nm

VI-0820
VERTICALE CERVICAL
CC Counter Torque

The cross connector can be engaged with the VERTICALE Cervical Rod Holder and inserted between the rods. Ensure that the cross connector is positioned correctly on the rod before tightening the set screws (Fig. 23). The cross connector can be adjusted in three dimensions, i.e. adjustment of the length, rotation around the transverse axis and rotation around the sagittal axis.
After placing the cross connector on the rods, first the lateral set screws and then the medial set screw are temporarily fixed with the VERTICALE Cervical CC Torque Limiter 2 Nm by tightening the screws hand-tight.

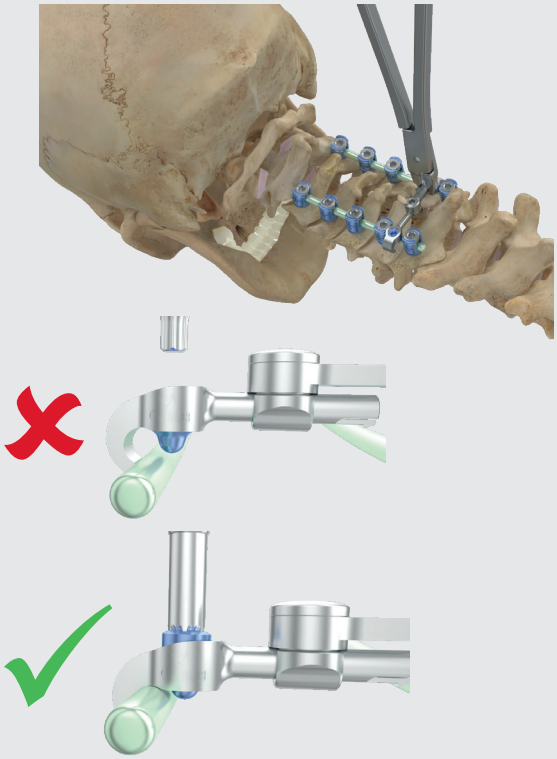


Fig. 23 Inserting and temporarily fixing the cross connector

Final tightening using the cross connector counter torque

VI-0810
VERTICALE CERVICAL
CC Torque Limiter 2Nm

VI-0820
VERTICALE CERVICAL
CC Counter Torque

The VERTICALE Cervical CC Counter Torque is used to stabilize the rotation when tightening the cross connector set screw. The VERTICALE Cervical CC Torque Limiter (Torx 15) can then be guided by the counter torque and the cross connector set screws are tightened in their final position with a torque of 2 Nm (an audible click indicates that the torque has been reached). The same procedure must be repeated with all other cross connector set screws. Begin fixation with both lateral set screws prior to tightening the medial screw (Fig. 24).

NOTE: In case of two possible size indications please select the larger cross connector in order to prevent high strain and accidently disassembly.

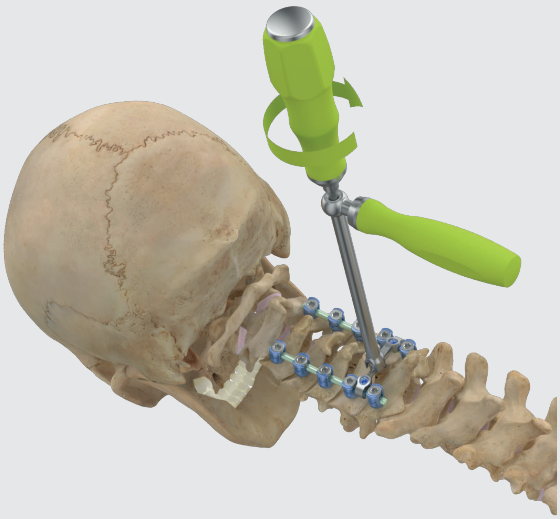


Fig. 24 Final tightening with the counter torque

VERTICALE® CERVICAL OCCIPUT INSTRUMENTATION

Determine plate position and shape

VI-0700
VERTICALE CERVICAL Occiput
Plate Holder

VI-0710
VERTICALE CERVICAL OC Plate
Bender right

VI-0711
VERTICALE CERVICAL OC Plate
Bender left

The VERTICALE Cervical Occiput Plate Holder is used to determine the appropriate plate positioning and screw placement. Three different designs of occiput plates are available. Chose the appropriate plate design for the patient's anatomy.
If required, use the plate bender to bend the plate to the desired shape. For bending the lateral wings of the plate insert them into the proximal part of the plate bender (Fig. 25). A self-retaining mechanism prevents the plate from falling down during bending. The area of the anchors can be bent by placing the distal flat end of the plate bender around the anchors. Gently bend the plate to the desired shape. The bending should be performed only in the bending zones to avoid damaging the area of the screw holes.

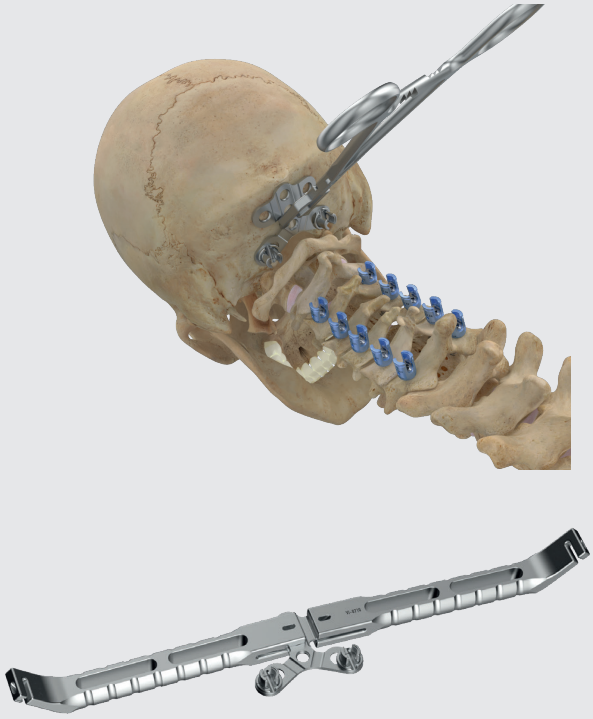


Fig. 25 Bending of the desired plate shape

NOTE: The appropriate plate size and plate position should be determined by preoperative imaging techniques.

NOTE: Do not bend the plate more than 15°. Do not perform reverse bending of the plate in order not to decrease the fatigue life of the material.

Drilling with occiput drills

VI-0700
VERTICALE CERVICAL Occiput Plate Holder

VI-0720
VERTICALE CERVICAL OC Drill Guide

VI-0731
VERTICALE CERVICAL OC Drill, flexible*

Insert the depth sleeve into the drill guide and set the depth sleeve to the required screw length. The adjustment of the length is made by pressing the button on the proximal part of the drill guide (Fig. 26). The corresponding screw length is indicated by the laser marking on the drill guide (Determine the appropriate screw dimension by preoperative planning). Drills are available as straight and flexible version (with universal joint for difficult anatomy)*. All drills have a diameter of 3.4 mm. The drills can be used with one of the VERTICALE Cervical quick-coupling handles or with a power tool. If a power drill is used in combination with the flexible drill, avoid angulation of more than 45° of the universal joint during drilling as damage of the drill may occur.
Place the tip of the drill guide in one of the holes for the occiput plate. Drill the initial occipital pilot hole in one of the midline holes to the appropriate depth and use intraoperative X-ray control if necessary (Fig. 27).

* Further drill options are shown in the chapter “Instruments”.

NOTE: Confirm the correct adjustment of the depth sleeve and the desired drill length prior to drilling! Please correct the position of the depth sleeve if necessary.

NOTE: Ensure the sharpness of the drill prior to drilling! In case of blunt drill, use a new one.

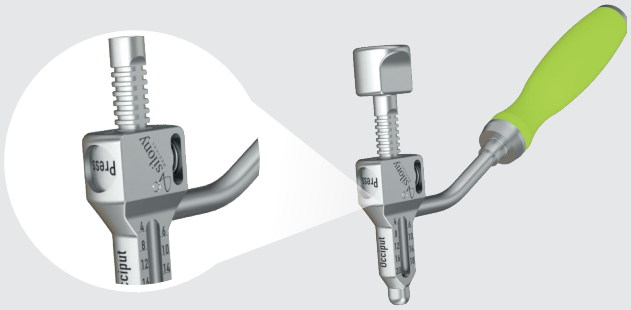
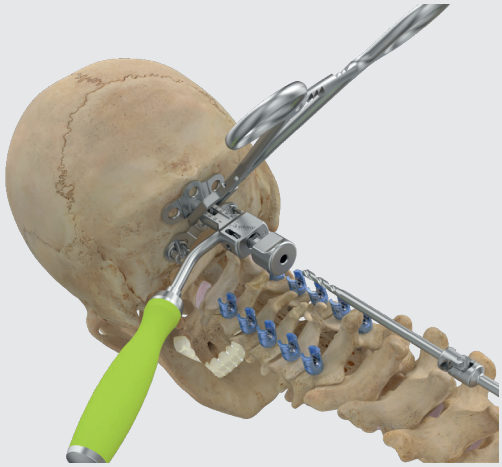


Fig. 26 Assemble the Drill Guide



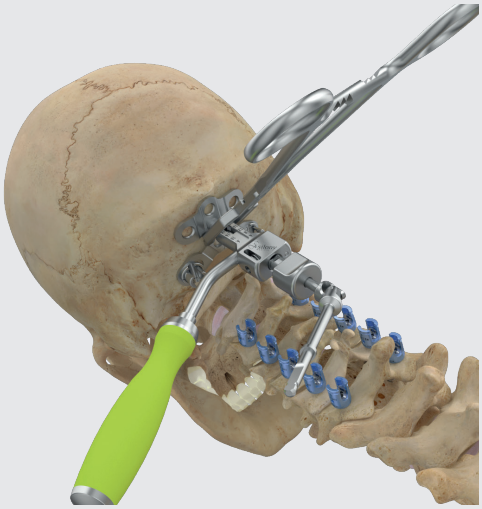


Fig. 27 Drilling the occiput screw holes

Probing the occiput screw holes

VI-0025
VERTICALE CERVICAL Pedicle Feeler

The one-sided VERTICALE Cervical Pedicle Feeler can be used to check the prepared screw channel for possible perforations (Fig. 28).

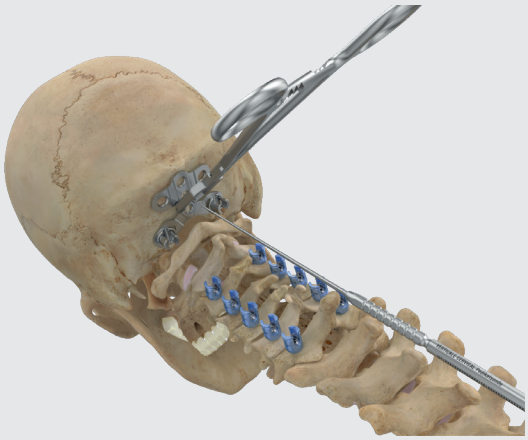


Fig. 28 Probing the occipital screw holes

Determining the occiput screw dimension

VI-0030
VERTICALE CERVICAL Depth Gauge

Use the VERTICALE Cervical Depth Gauge with markings between 8 and 56mm with increments of 2 mm to confirm the required screw dimension.

NOTE: Do not bend the depth gauge or push by force into the bone as damage of the instrument may occur, which may lead to false length indications. Please check, whether the tip of the depth gage is intact. Use the depth gauge only if the tip is intact and the laser marking is clearly visible.

Tapping with the occiput tap

VI-0700
VERTICALE CERVICAL Occiput
Plate Holder

VI-0720
VERTICALE CERVICAL Occiput
Drill Guide

VI-0741
VERTICALE CERVICAL Occiput
Taps, flexible*

VI-0301
VERTICALE CERVICAL T-Handle**

For very hard bone structures (e.g. sclerotic bone) it may be necessary to pre-tap the thread into the bone. Taps are available for screws with a diameter of 4.5 mm.
The depth of the tapping is controlled by the depth sleeve of the drill guides (compare to chapter ”Drilling with occiput drills”).
The taps can be used with one of the VERTICALE Cervical quick-coupling handles. After selecting the appropriate handle, it is connected to the corresponding VERTICALE Cervical tap by locking into place (Fig. 29).
The screw channel is prepared clockwise. The thread on the VERTICALE Cervical Tap has a length of 16 mm. After cutting, the tap is disengaged by turning it counter clockwise.

* Further taps are shown in the chapter “Instruments”.
** Further handle options are shown in the chapter “Instruments”.

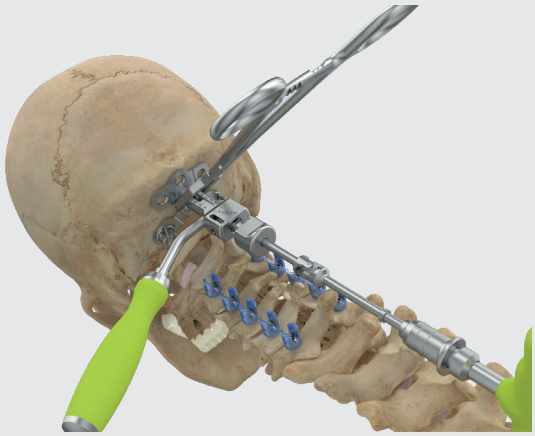


Fig. 29 Tapping the occiput screw holes

NOTE: Do not use power tool for tapping!

Selection of occiput screws

To enable faster and easier identification, all VERTICALE Cervical screws are color coded by diameter, i.e. violet and silver for the 4.5 and 5.2 mm screws, respectively. The lengths vary between 4 and 20 mm by 2 mm increments. The 5.2 mm screw serves as a revision option.

Inserting the occiput screws

VI-0700
VERTICALE CERVICAL Occiput Plate Holder

VI-0751
VERTICALE CERVICAL OC Screwdriver, flexible*

VI-0761
VERTICALE CERVICAL OC Counter Torque

The VERTICALE Cervical occiput bone screw is inserted with the VERTICALE Cervical Occiput Screwdriver. To do this, the torx of the screw driver is equipped with a self-retaining geometry that holds the occiput screw in place during handling. Insert the occiput bone screw into the prepared bone channel. The occiput bone screw is temporarily fixed by gently turning the screw driver clockwise. For difficult anatomy, a flexible screw driver with universal joint is also available. In order to support the guidance of the flexible screw driver, the occiput counter torque can be used as a guide (Fig. 30).
Insert all other occiput bone screws in the same manner. Then, final tightening is performed with one of the occiput screw drivers.

* Further occiput screwdriver options are shown in the chapter "Instruments".

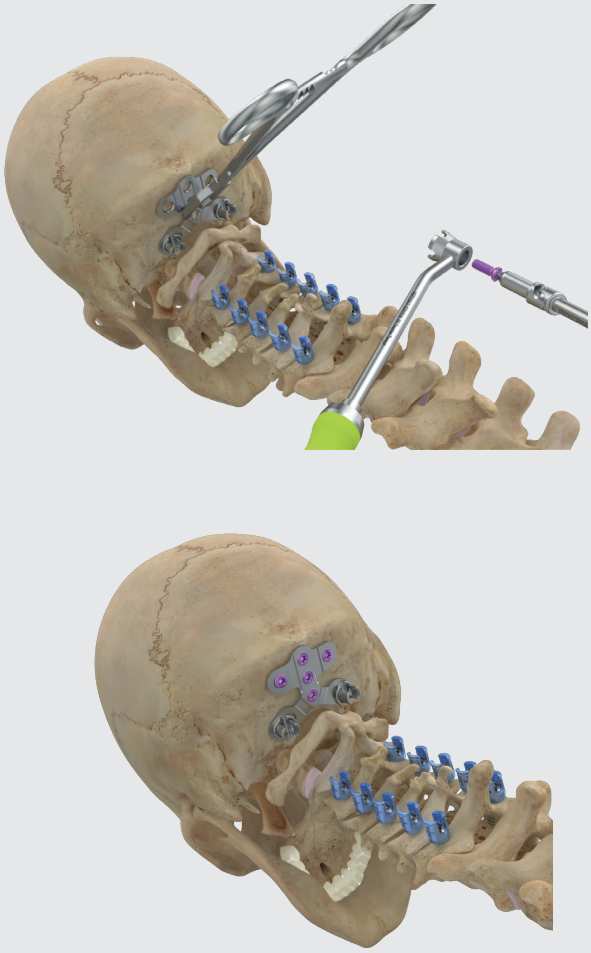


Fig. 30 Inserting the occiput screws

Selecting and sizing the rods for occiput

VI-0535
VERTICALE CERVICAL Phantom Rod

VI-0610
VERTICALE CERVICAL Rod bender

VI-0611
VERTICALE CERVICAL Rod Bending Tube

VI-0260
VERTICALE CERVICAL Rod Cutter*

Despite the standard rods, prebent rods are available especially for the occiput region with an angulation of 55° and two different diameters, i.e. 3.5 and 4.0 mm. Length of the prebent rod is 200 mm for the cervical part and 90 mm for the occipital part (Details can be found in the chapter “Implants”). For further individual anatomic adjustment of the rod, the VERTICALE Cervical Rod Bender or the VERTICALE Cervical Rod Bending Tubes can be used. Rods that are too long can be shortened with the VERTICALE Cervical Rod Cutter.
The VERTICALE Cervical Phantom Rod can be used to determine the required rod length and curvature. In order to estimate the required rod length, laser markings on the phantom rod are implemented in increments of 10 mm.

* Further rod cutter are shown in the chapter “Instruments”.

NOTE: Any reverse bending of the rod decreases the integrity of the material and must be avoided. For this reason, bending of the rod should be performed gradually until the desired curvature is attained.

NOTE: When using the VERTICALE Cervical bending tubes, do not make sharp bends or reverse bending of the rods in order to avoid potential fatigue of the implant.

Inserting the rods

VI-0330
VERTICALE CERVICAL Rod Holder

The VERTICALE Cervical Rod Holder is used to place the bended rod into the anchors of the occiput plate as well as the tulips of the pedicle screws (Fig. 31).

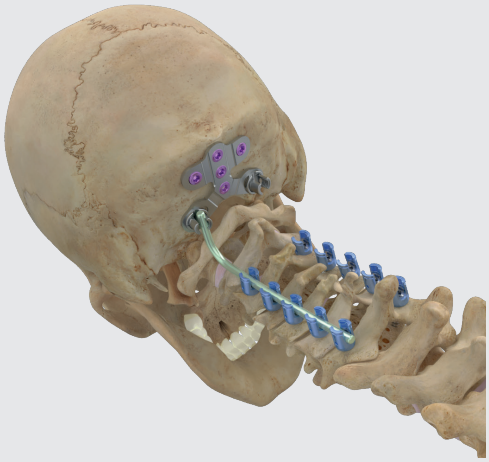


Fig. 31 Inserting the rods

Temporarily tightening the set screw

VI-0750
VERTICALE CERVICAL OC Screwdriver

The VERTICALE Cervical Set Screw is inserted with the VERTICALE Cervical screw driver. Insert the set screw into the anchor of the occiput plate. The rod is temporarily fixed by gently turning the set screw clockwise (Fig. 32).

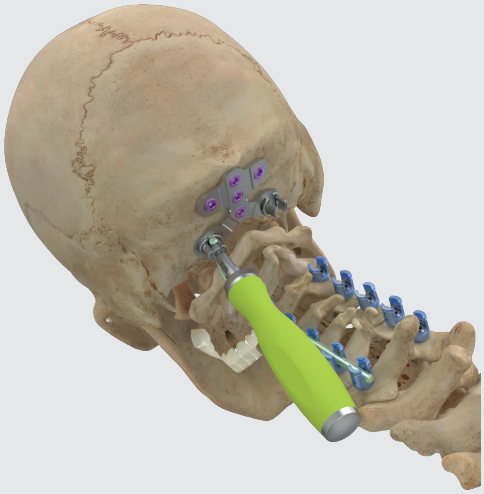


Fig. 32 Tightening the set screws

NOTE: Set screws should always be inserted with a smooth clockwise rotation. To prevent tilting, a brief prior counter clockwise rotation can facilitate insertion of the set screw into the first thread.

Final tightening using the occiput counter torque

VI-0760
VERTICALE CERVICAL OC Torque Limiter 3Nm

VI-0761
VERTICALE CERVICAL OC Counter Torque

The VERTICALE Cervical Occiput Counter Torque is used to stabilize the rotation when tightening the VERTICALE Cervical set screw. In order to insert the set screw with guidance, the counter torque is placed directly onto the anchor of the occiput plate. The VERTICALE Cervical Occiput Counter Torque can be comfortably mounted parallel or at right angles to the rod. The VERTICALE Cervical Occiput Torque Limiter (Torx 20) can then be guided by the counter torque and the set screw is tightened in its final position with a torque of 3 Nm (an audible click indicates that the torque has been reached). The same procedure must be repeated with the other set screw within the anchor of the occiput plate (Fig. 33). We recommend ensuring that the set screw is correctly seated by repeatedly tightening with the torque limiter. This is confirmed by two clicking sounds.

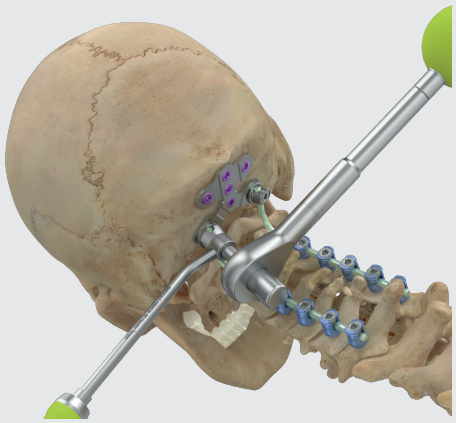


Fig. 33 Final tightening the set screws

Verification

Please check the correct position of the plate, rods and screws by final X-ray.

The result of the instrumentation is verified using images in two planes from an image intensifier.

CONNECTION OF VERTICALE® CERVICAL TO VERTICALE (THORACIC SPINE)

In order to combine the VERTICALE Cervical system with the VERTICALE System in the thoracic spine, transition rods with two different dual-diameters are available.

Selecting and sizing the transition rods

VI-0535
VERTICALE CERVICAL Phantom Rod

VI-0610
VERTICALE CERVICAL Rod Bender

VI-0260
VERTICALE CERVICAL Rod Cutter*

VI-1261
VERTICALE Rod Cutter, 5.5 mm**

VI-1270
VERTICALE French Bender**

The VERTICALE Cervical system offers two dual diameter (transition) rods that can be connected to a thoracolumbar rod-screw-system with 5.5mm rods, i.e. 3.5 and 5.5 mm or 4.0 and 5.5 mm. Details can be found in chapter "Implants". Individual anatomic adjustment of the 3.5 and 4.0 mm diameter part of the transition rod can be performed according to the chapter: “Selecting and sizing the rods”.

* Further rod cutter are shown in the chapter “Instruments”.
** Instrument contained in VERTICALE Open trays

NOTE: For the rod bending and rod cutting steps for the 5.5 mm rods the VERTICALE Open Tray is required and the final tightening of the 5.5 mm rods has to be performed according to the VERTICALE Open instrumentation guide.

NOTE: Any reverse bending of the rod decreases the integrity of the material and must be avoided. For this reason, bending of the rod should be performed gradually until the desired curvature is attained.

Implant removal procedure

To remove an implant, please execute the following steps as described. Pay special attention during the working steps on the loosened implants and screws.

Step 1: Removal of the Cross Connector
Use the VERTICALE Cervical CC Torque Limiter 2Nm VI-0810 to loosen the set screw on both sides of the cross connector and the central position by turning the handle counterclockwise. The VERTICALE Cervical CC Counter Torque VI-0820 should be used to stabilize the rotation when loosening the set screws. Once the screws are loosened, use the VERTICALE Cervical Rod Holder VI-0330 to remove the cross connector from the rods.

Step 2: Removal of the Set Screws
Insert the VERTICALE Cervical Torque Limiter 3Nm VI-0440 and turn the set screw counterclockwise until it loosens. The VERTICALE Cervical Counter Torque VI-0450 should be used to stabilize the rotation when loosening the set screw. All VERTICALE Cervical torque limiter are equipped with a self-retaining mechanism at the tip of the torque limiter. Therefore, the set screws are attached to the instrument and can be securely removed from the pedicle screws. Repeat this step until all set screws have been removed.

Step 3: Removal of the Rods
Once all of the set screws have been removed take the rod with the VERTICALE Cervical Rod Holder VI-0330 and lift it up to remove the rod from the screw heads.

Step 4: Removal of the Pedicle Screws
The VERTICALE Cervical Pedicle SD X15 VI-0130 or the VERTICALE Cervical PSD Inner Shaft VI-0130.3 is used to remove the VERTICALE Cervical pedicle screws. For attachment of the pedicle screw, the VERTICALE Cervical pedicle screw driver is fully inserted into the inner Torx of the screw shaft and rotated inwards via the sleeve of the pedicle screw driver. Rotate the screw driver counterclockwise until the screw is fully out of the bone.
You can also use the VERTICALE Cervical Pedicle SD Ballhead VI-0446 to remove the pedicle screws.

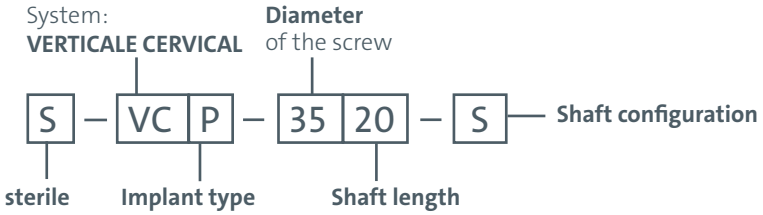
Step 5: Removal of the Occiput Plate
Use the VERTICALE Cervical OC Screwdriver VI-0750 or the VERTICALE Cervical OC Screwdriver, flex VI-0751 to remove the set screws from the plate tulips. Remove the rod as described in step 4.
Use the VERTICALE Cervical OC Screwdriver VI-0750 or the VERTICALE Cervical OC Screwdriver, flex VI-0751 also for removing the occiput screws. Before removing the last occiput screw take the VERTICALE Cervical Occiput Plate Holder VI-0700 to hold the plate to prevent from traveling.

VERTICALE® CERVICAL PRODUCT-INFORMATION

VERTICALE® CERVICAL Implants

Article number explanation for screws, as examples

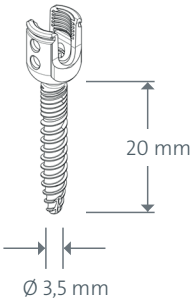
VERTICALE CERVICAL Poly Screw Ø 35 x 20 mm, solid



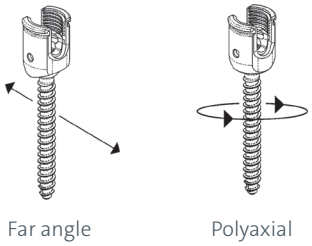
Diameter
Differentiation by color coding

- Ø 3,5 mm
- Ø 4,0 mm
- Ø 4,5 mm

Shaft dimensions



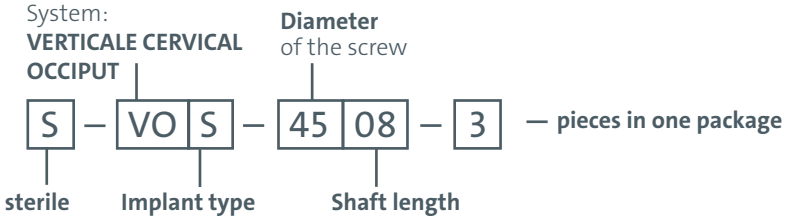
Implant type – Axial Mobility



Shaft configuration – Shape

- Solid
- Cannulated

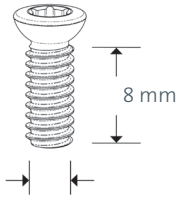
VERTICALE CERVICAL 3 Occi Screw 4,5 x 8 mm



Diameter
Differentiation by color coding

- Ø 4,5 mm
- Ø 5,2 mm

Shaft dimensions



VERTICALE® Cervical Occiput Implants

System:
VERTICALE CERVICAL

Implant type:
Occiput screw

Material:
Ti6Al4V ELI

All articles are sterile packed.
- 2:2 pieces in one package
- 3:3 pieces in one package

Article number	Description	Illustration
S-VOS-4504-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 4 mm	
S-VOS-4506-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 6 mm	
S-VOS-4508-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 8 mm	
S-VOS-4510-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 10 mm	
S-VOS-4512-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 12 mm	
S-VOS-4514-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 14 mm	
S-VOS-4516-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 16 mm	
S-VOS-4518-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 18 mm	
S-VOS-4520-3	VERTICALE CERVICAL Occi 3 Screw 4.5 x 20 mm	
S-VOS-5204-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 4 mm	
S-VOS-5206-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 6 mm	
S-VOS-5208-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 8 mm	
S-VOS-5210-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 10 mm	
S-VOS-5212-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 12 mm	
S-VOS-5214-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 14 mm	
S-VOS-5216-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 16 mm	
S-VOS-5218-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 18 mm	
S-VOS-5220-3	VERTICALE CERVICAL Occi 3 Screw 5.2 x 20 mm	
S-VOS-4504-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 4 mm	
S-VOS-4506-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 6 mm	
S-VOS-4508-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 8 mm	
S-VOS-4510-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 10 mm	
S-VOS-4512-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 12 mm	
S-VOS-4514-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 14 mm	
S-VOS-4516-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 16 mm	
S-VOS-4518-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 18 mm	
S-VOS-4520-2	VERTICALE CERVICAL Occi 2 Screw 4.5 x 20 mm	

VERTICALE® Cervical Occiput Implants

Article number	Description	Illustration
S-VOS-5204-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 4 mm	
S-VOS-5206-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 6 mm	
S-VOS-5208-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 8 mm	
S-VOS-5210-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 10 mm	
S-VOS-5212-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 12 mm	
S-VOS-5214-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 14 mm	
S-VOS-5216-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 16 mm	
S-VOS-5218-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 18 mm	
S-VOS-5220-2	VERTICALE CERVICAL Occi 2 Screw 5.2 x 20 mm	

System:
VERTICALE CERVICAL

Implant type:
Occiput screw

Material:
Ti6Al4V ELI

All articles are sterile packed.
- 2:2 pieces in one package
- 3:3 pieces in one package

Article number	Description	Illustration
S-VOC-LAT-5	VERTICALE CERVICAL Occipital Pl. Lat. 5	
S-VOC-LAT-4	VERTICALE CERVICAL Occipital Pl. Lat. 4	
S-VOC-MID-3	VERTICALE CERVICAL Occipital Pl. Midl 3	

System:
VERTICALE CERVICAL

Implant type:
Occiput plate

Material:
Ti6Al4V ELI

All articles are sterile packed.

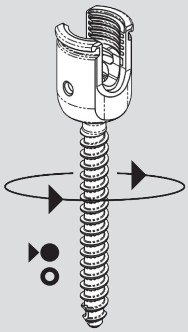
VERTICALE® Cervical Implants

System:
VERTICALE CERVICAL

Implant type:
Polyaxial screw

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



⚠ D60035

Article number	Description	Illustration
S-VCP-3510-S	VERTICALE CERVICAL Poly Scr 3.5 x 10 mm sol	
S-VCP-3512-S	VERTICALE CERVICAL Poly Scr 3.5 x 12 mm sol	
S-VCP-3514-S	VERTICALE CERVICAL Poly Scr 3.5 x 14 mm sol	
S-VCP-3516-S	VERTICALE CERVICAL Poly Scr 3.5 x 16 mm sol	
S-VCP-3518-S	VERTICALE CERVICAL Poly Scr 3.5 x 18 mm sol	
S-VCP-3520-S	VERTICALE CERVICAL Poly Scr 3.5 x 20 mm sol	
S-VCP-3522-S	VERTICALE CERVICAL Poly Scr 3.5 x 22 mm sol	
S-VCP-3524-S	VERTICALE CERVICAL Poly Scr 3.5 x 24 mm sol	
S-VCP-3526-S	VERTICALE CERVICAL Poly Scr 3.5 x 26 mm sol	
S-VCP-3528-S	VERTICALE CERVICAL Poly Scr 3.5 x 28 mm sol	
S-VCP-3530-S	VERTICALE CERVICAL Poly Scr 3.5 x 30 mm sol	
S-VCP-4014-S	VERTICALE CERVICAL Poly Scr 4.0 x 14 mm sol	
S-VCP-4016-S	VERTICALE CERVICAL Poly Scr 4.0 x 16 mm sol	
S-VCP-4018-S	VERTICALE CERVICAL Poly Scr 4.0 x 18 mm sol	
S-VCP-4020-S	VERTICALE CERVICAL Poly Scr 4.0 x 20 mm sol	
S-VCP-4022-S	VERTICALE CERVICAL Poly Scr 4.0 x 22 mm sol	
S-VCP-4024-S	VERTICALE CERVICAL Poly Scr 4.0 x 24 mm sol	
S-VCP-4026-S	VERTICALE CERVICAL Poly Scr 4.0 x 26 mm sol	
S-VCP-4028-S	VERTICALE CERVICAL Poly Scr 4.0 x 28 mm sol	
S-VCP-4030-S	VERTICALE CERVICAL Poly Scr 4.0 x 30 mm sol	
S-VCP-4032-S	VERTICALE CERVICAL Poly Scr 4.0 x 32 mm sol	
S-VCP-4034-S	VERTICALE CERVICAL Poly Scr 4.0 x 34 mm sol	
S-VCP-4036-S	VERTICALE CERVICAL Poly Scr 4.0 x 36 mm sol	
S-VCP-4038-S	VERTICALE CERVICAL Poly Scr 4.0 x 38 mm sol	
S-VCP-4040-S	VERTICALE CERVICAL Poly Scr 4.0 x 40 mm sol	
S-VCP-4042-S	VERTICALE CERVICAL Poly Scr 4.0 x 42 mm sol	
S-VCP-4044-S	VERTICALE CERVICAL Poly Scr 4.0 x 44 mm sol	
S-VCP-4046-S	VERTICALE CERVICAL Poly Scr 4.0 x 46 mm sol	
S-VCP-4048-S	VERTICALE CERVICAL Poly Scr 4.0 x 48 mm sol	
S-VCP-4050-S	VERTICALE CERVICAL Poly Scr 4.0 x 50 mm sol	
S-VCP-4052-S	VERTICALE CERVICAL Poly Scr 4.0 x 52 mm sol	
S-VCP-4054-S	VERTICALE CERVICAL Poly Scr 4.0 x 54 mm sol	
S-VCP-4056-S	VERTICALE CERVICAL Poly Scr 4.0 x 56 mm sol	

VERTICALE® Cervical Implants

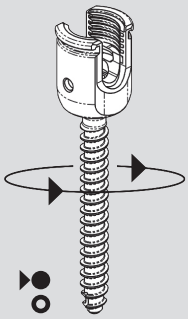
Article number	Description	Illustration
S-VCP-4520-S	VERTICALE CERVICAL Poly Scr 4.5 x 20 mm sol	
S-VCP-4525-S	VERTICALE CERVICAL Poly Scr 4.5 x 25 mm sol	
S-VCP-4530-S	VERTICALE CERVICAL Poly Scr 4.5 x 30 mm sol	
S-VCP-4535-S	VERTICALE CERVICAL Poly Scr 4.5 x 35 mm sol	
S-VCP-4540-S	VERTICALE CERVICAL Poly Scr 4.5 x 40 mm sol	
S-VCP-4545-S	VERTICALE CERVICAL Poly Scr 4.5 x 45 mm sol	
S-VCP-4550-S	VERTICALE CERVICAL Poly Scr 4.5 x 50 mm sol	
S-VCP-4555-S	VERTICALE CERVICAL Poly Scr 4.5 x 55 mm sol	

System:
VERTICALE CERVICAL

Implant type:
Polyaxial screw

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



⚠ D60035

VERTICALE® Cervical Implants

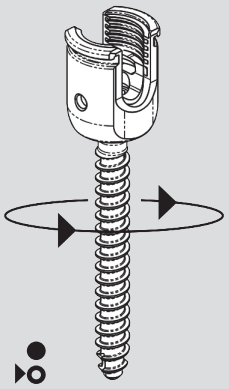
System:
VERTICALE CERVICAL

Implant type:
Polyaxial screw

Typing:
cannulated

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



Article number	Description	Illustration
S-VCP-4014-K	VERTICALE CERVICAL Poly Scr 4.0 x 14 mm can	
S-VCP-4016-K	VERTICALE CERVICAL Poly Scr 4.0 x 16 mm can	
S-VCP-4018-K	VERTICALE CERVICAL Poly Scr 4.0 x 18 mm can	
S-VCP-4020-K	VERTICALE CERVICAL Poly Scr 4.0 x 20 mm can	
S-VCP-4022-K	VERTICALE CERVICAL Poly Scr 4.0 x 22 mm can	
S-VCP-4024-K	VERTICALE CERVICAL Poly Scr 4.0 x 24 mm can	
S-VCP-4026-K	VERTICALE CERVICAL Poly Scr 4.0 x 26 mm can	
S-VCP-4028-K	VERTICALE CERVICAL Poly Scr 4.0 x 28 mm can	
S-VCP-4030-K	VERTICALE CERVICAL Poly Scr 4.0 x 30 mm can	
S-VCP-4032-K	VERTICALE CERVICAL Poly Scr 4.0 x 32 mm can	
S-VCP-4034-K	VERTICALE CERVICAL Poly Scr 4.0 x 34 mm can	
S-VCP-4036-K	VERTICALE CERVICAL Poly Scr 4.0 x 36 mm can	
S-VCP-4038-K	VERTICALE CERVICAL Poly Scr 4.0 x 38 mm can	
S-VCP-4040-K	VERTICALE CERVICAL Poly Scr 4.0 x 40 mm can	
S-VCP-4042-K	VERTICALE CERVICAL Poly Scr 4.0 x 42 mm can	
S-VCP-4044-K	VERTICALE CERVICAL Poly Scr 4.0 x 44 mm can	
S-VCP-4046-K	VERTICALE CERVICAL Poly Scr 4.0 x 46 mm can	
S-VCP-4048-K	VERTICALE CERVICAL Poly Scr 4.0 x 48 mm can	
S-VCP-4050-K	VERTICALE CERVICAL Poly Scr 4.0 x 50 mm can	
S-VCP-4052-K	VERTICALE CERVICAL Poly Scr 4.0 x 52 mm can	
S-VCP-4054-K	VERTICALE CERVICAL Poly Scr 4.0 x 54 mm can	
S-VCP-4056-K	VERTICALE CERVICAL Poly Scr 4.0 x 56 mm can	
S-VCP-4520-K	VERTICALE CERVICAL Poly Scr 4.5 x 20 mm can	
S-VCP-4525-K	VERTICALE CERVICAL Poly Scr 4.5 x 25 mm can	
S-VCP-4530-K	VERTICALE CERVICAL Poly Scr 4.5 x 30 mm can	
S-VCP-4535-K	VERTICALE CERVICAL Poly Scr 4.5 x 35 mm can	
S-VCP-4540-K	VERTICALE CERVICAL Poly Scr 4.5 x 40 mm can	
S-VCP-4545-K	VERTICALE CERVICAL Poly Scr 4.5 x 45 mm can	
S-VCP-4550-K	VERTICALE CERVICAL Poly Scr 4.5 x 50 mm can	
S-VCP-4555-K	VERTICALE CERVICAL Poly Scr 4.5 x 55 mm can	

VERTICALE® Cervical Implants

Article number	Description	Illustration
S-VCP-4020-SG	VERTICALE CERVICAL Poly smooth 4 x 20 mm s	
S-VCP-4022-SG	VERTICALE CERVICAL Poly smooth 4 x 22 mm s	
S-VCP-4024-SG	VERTICALE CERVICAL Poly smooth 4 x 24 mm s	
S-VCP-4026-SG	VERTICALE CERVICAL Poly smooth 4 x 26 mm s	
S-VCP-4028-SG	VERTICALE CERVICAL Poly smooth 4 x 28 mm s	
S-VCP-4030-SG	VERTICALE CERVICAL Poly smooth 4 x 30 mm s	
S-VCP-4032-SG	VERTICALE CERVICAL Poly smooth 4 x 32 mm s	
S-VCP-4034-SG	VERTICALE CERVICAL Poly smooth 4 x 34 mm s	
S-VCP-4036-SG	VERTICALE CERVICAL Poly smooth 4 x 36 mm s	
S-VCP-4020-KG	VERTICALE CERVICAL Poly smooth 4 x 20 mm c	
S-VCP-4022-KG	VERTICALE CERVICAL Poly smooth 4 x 22 mm c	
S-VCP-4024-KG	VERTICALE CERVICAL Poly smooth 4 x 24 mm c	
S-VCP-4026-KG	VERTICALE CERVICAL Poly smooth 4 x 26 mm c	
S-VCP-4028-KG	VERTICALE CERVICAL Poly smooth 4 x 28 mm c	
S-VCP-4030-KG	VERTICALE CERVICAL Poly smooth 4 x 30 mm c	
S-VCP-4032-KG	VERTICALE CERVICAL Poly smooth 4 x 32 mm c	
S-VCP-4034-KG	VERTICALE CERVICAL Poly smooth 4 x 34 mm c	
S-VCP-4036-KG	VERTICALE CERVICAL Poly smooth 4 x 36 mm c	

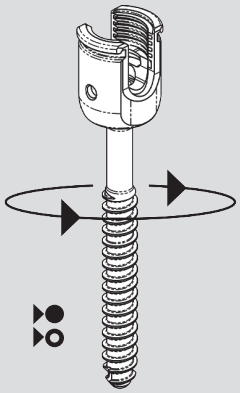
System:
VERTICALE CERVICAL

Implant type:
Polyaxial screw

Typing:
smooth, cannulated

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



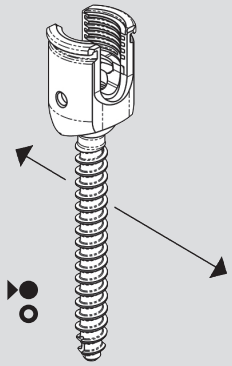
VERTICALE® Cervical Implants

System:
VERTICALE CERVICAL

Implant type:
Far angle screw

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



Article number	Description	Illustration
S-VCF-3510-S	VERTICALE CERVICAL FA Scr 3.5 x 10 mm solid	
S-VCF-3512-S	VERTICALE CERVICAL FA Scr 3.5 x 12 mm solid	
S-VCF-3514-S	VERTICALE CERVICAL FA Scr 3.5 x 14 mm solid	
S-VCF-3516-S	VERTICALE CERVICAL FA Scr 3.5 x 16 mm solid	
S-VCF-3518-S	VERTICALE CERVICAL FA Scr 3.5 x 18 mm solid	
S-VCF-3520-S	VERTICALE CERVICAL FA Scr 3.5 x 20 mm solid	
S-VCF-3522-S	VERTICALE CERVICAL FA Scr 3.5 x 22 mm solid	
S-VCF-3524-S	VERTICALE CERVICAL FA Scr 3.5 x 24 mm solid	
S-VCF-3526-S	VERTICALE CERVICAL FA Scr 3.5 x 26 mm solid	
S-VCF-3528-S	VERTICALE CERVICAL FA Scr 3.5 x 28 mm solid	
S-VCF-3530-S	VERTICALE CERVICAL FA Scr 3.5 x 30 mm solid	
S-VCF-4014-S	VERTICALE CERVICAL FA Scr 4.0 x 14 mm solid	
S-VCF-4016-S	VERTICALE CERVICAL FA Scr 4.0 x 16 mm solid	
S-VCF-4018-S	VERTICALE CERVICAL FA Scr 4.0 x 18 mm solid	
S-VCF-4020-S	VERTICALE CERVICAL FA Scr 4.0 x 20 mm solid	
S-VCF-4022-S	VERTICALE CERVICAL FA Scr 4.0 x 22 mm solid	
S-VCF-4024-S	VERTICALE CERVICAL FA Scr 4.0 x 24 mm solid	
S-VCF-4026-S	VERTICALE CERVICAL FA Scr 4.0 x 26 mm solid	
S-VCF-4028-S	VERTICALE CERVICAL FA Scr 4.0 x 28 mm solid	
S-VCF-4030-S	VERTICALE CERVICAL FA Scr 4.0 x 30 mm solid	
S-VCF-4032-S	VERTICALE CERVICAL FA Scr 4.0 x 32 mm solid	
S-VCF-4034-S	VERTICALE CERVICAL FA Scr 4.0 x 34 mm solid	
S-VCF-4036-S	VERTICALE CERVICAL FA Scr 4.0 x 36 mm solid	
S-VCF-4038-S	VERTICALE CERVICAL FA Scr 4.0 x 38 mm solid	
S-VCF-4040-S	VERTICALE CERVICAL FA Scr 4.0 x 40 mm solid	
S-VCF-4042-S	VERTICALE CERVICAL FA Scr 4.0 x 42 mm solid	
S-VCF-4044-S	VERTICALE CERVICAL FA Scr 4.0 x 44 mm solid	
S-VCF-4046-S	VERTICALE CERVICAL FA Scr 4.0 x 46 mm solid	
S-VCF-4048-S	VERTICALE CERVICAL FA Scr 4.0 x 48 mm solid	
S-VCF-4050-S	VERTICALE CERVICAL FA Scr 4.0 x 50 mm solid	
S-VCF-4052-S	VERTICALE CERVICAL FA Scr 4.0 x 52 mm solid	
S-VCF-4054-S	VERTICALE CERVICAL FA Scr 4.0 x 54 mm solid	
S-VCF-4056-S	VERTICALE CERVICAL FA Scr 4.0 x 56 mm solid	

VERTICALE® Cervical Implants

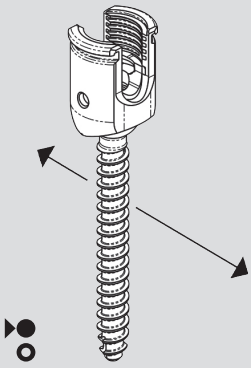
Artikelnummer	Beschreibung	Abbildung
S-VCF-4520-S	VERTICALE CERVICAL FA Scr 4.5 x 20 mm solid	
S-VCF-4525-S	VERTICALE CERVICAL FA Scr 4.5 x 25 mm solid	
S-VCF-4530-S	VERTICALE CERVICAL FA Scr 4.5 x 30 mm solid	
S-VCF-4535-S	VERTICALE CERVICAL FA Scr 4.5 x 35 mm solid	
S-VCF-4540-S	VERTICALE CERVICAL FA Scr 4.5 x 40 mm solid	
S-VCF-4545-S	VERTICALE CERVICAL FA Scr 4.5 x 45 mm solid	
S-VCF-4550-S	VERTICALE CERVICAL FA Scr 4.5 x 50 mm solid	
S-VCF-4555-S	VERTICALE CERVICAL FA Scr 4.5 x 55 mm solid	

System:
VERTICALE CERVICAL

Implant type:
Far angle screw

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



VERTICALE® Cervical Implants

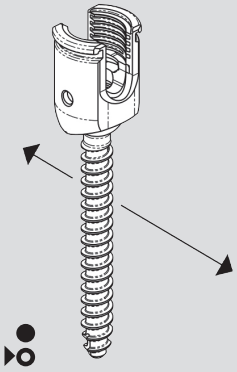
System:
VERTICALE CERVICAL

Implant type:
Far angle screw

Typing:
cannulated

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



Artikelnu mmer	Beschreibung	Abbildung
S-VCF-4014-K	VERTICALE CERVICAL FA Scr 4.0 x 14 mm can	
S-VCF-4016-K	VERTICALE CERVICAL FA Scr 4.0 x 16 mm can	
S-VCF-4018-K	VERTICALE CERVICAL FA Scr 4.0 x 18 mm can	
S-VCF-4020-K	VERTICALE CERVICAL FA Scr 4.0 x 20 mm can	
S-VCF-4022-K	VERTICALE CERVICAL FA Scr 4.0 x 22 mm can	
S-VCF-4024-K	VERTICALE CERVICAL FA Scr 4.0 x 24 mm can	
S-VCF-4026-K	VERTICALE CERVICAL FA Scr 4.0 x 26 mm can	
S-VCF-4028-K	VERTICALE CERVICAL FA Scr 4.0 x 28 mm can	
S-VCF-4030-K	VERTICALE CERVICAL FA Scr 4.0 x 30 mm can	
S-VCF-4032-K	VERTICALE CERVICAL FA Scr 4.0 x 32 mm can	
S-VCF-4034-K	VERTICALE CERVICAL FA Scr 4.0 x 34 mm can	
S-VCF-4036-K	VERTICALE CERVICAL FA Scr 4.0 x 36 mm can	
S-VCF-4038-K	VERTICALE CERVICAL FA Scr 4.0 x 38 mm can	
S-VCF-4040-K	VERTICALE CERVICAL FA Scr 4.0 x 40 mm can	
S-VCF-4042-K	VERTICALE CERVICAL FA Scr 4.0 x 42 mm can	
S-VCF-4044-K	VERTICALE CERVICAL FA Scr 4.0 x 44 mm can	
S-VCF-4046-K	VERTICALE CERVICAL FA Scr 4.0 x 46 mm can	
S-VCF-4048-K	VERTICALE CERVICAL FA Scr 4.0 x 48 mm can	
S-VCF-4050-K	VERTICALE CERVICAL FA Scr 4.0 x 50 mm can	
S-VCF-4052-K	VERTICALE CERVICAL FA Scr 4.0 x 52 mm can	
S-VCF-4054-K	VERTICALE CERVICAL FA Scr 4.0 x 54 mm can	
S-VCF-4056-K	VERTICALE CERVICAL FA Scr 4.0 x 56 mm can	
S-VCF-4520-K	VERTICALE CERVICAL FA Scr 4.5 x 20 mm can	
S-VCF-4525-K	VERTICALE CERVICAL FA Scr 4.5 x 25 mm can	
S-VCF-4530-K	VERTICALE CERVICAL FA Scr 4.5 x 30 mm can	
S-VCF-4535-K	VERTICALE CERVICAL FA Scr 4.5 x 35 mm can	
S-VCF-4540-K	VERTICALE CERVICAL FA Scr 4.5 x 40 mm can	
S-VCF-4545-K	VERTICALE CERVICAL FA Scr 4.5 x 45 mm can	
S-VCF-4550-K	VERTICALE CERVICAL FA Scr 4.5 x 50 mm can	
S-VCF-4555-K	VERTICALE CERVICAL FA Scr 4.5 x 55 mm can	

VERTICALE® Cervical Implants

Artikelnummer	Beschreibung	Abbildung
S-VCF-4020-SG	VERTICALE CERVICAL FA smooth 4 x 20 mm sol	
S-VCF-4022-SG	VERTICALE CERVICAL FA smooth 4 x 22 mm sol	
S-VCF-4024-SG	VERTICALE CERVICAL FA smooth 4 x 24 mm sol	
S-VCF-4026-SG	VERTICALE CERVICAL FA smooth 4 x 26 mm sol	
S-VCF-4028-SG	VERTICALE CERVICAL FA smooth 4 x 28 mm sol	
S-VCF-4030-SG	VERTICALE CERVICAL FA smooth 4 x 30 mm sol	
S-VCF-4032-SG	VERTICALE CERVICAL FA smooth 4 x 32 mm sol	
S-VCF-4034-SG	VERTICALE CERVICAL FA smooth 4 x 34 mm sol	
S-VCF-4036-SG	VERTICALE CERVICAL FA smooth 4 x 36 mm sol	
S-VCF-4020-KG	VERTICALE CERVICAL FA smooth 4 x 20 mm can	
S-VCF-4022-KG	VERTICALE CERVICAL FA smooth 4 x 22 mm can	
S-VCF-4024-KG	VERTICALE CERVICAL FA smooth 4 x 24 mm can	
S-VCF-4026-KG	VERTICALE CERVICAL FA smooth 4 x 26 mm can	
S-VCF-4028-KG	VERTICALE CERVICAL FA smooth 4 x 28 mm can	
S-VCF-4030-KG	VERTICALE CERVICAL FA smooth 4 x 30 mm can	
S-VCF-4032-KG	VERTICALE CERVICAL FA smooth 4 x 32 mm can	
S-VCF-4034-KG	VERTICALE CERVICAL FA smooth 4 x 34 mm can	
S-VCF-4036-KG	VERTICALE CERVICAL FA smooth 4 x 36 mm can	

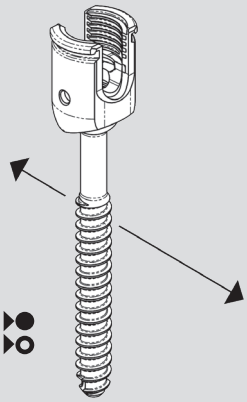
System:
VERTICALE CERVICAL

Implant type:
Far angle screw

Typing:
smooth, cannulated

Material:
Ti6Al4V ELI

All articles are sterile packed and include set screw.



VERTICALE® Cervical Implants

System:
VERTICALE CERVICAL

Implant type:
Set Screw / connector

Material:
Ti6Al4V ELI

All articles are sterile packed.

* Package includes 2 items

Article number	Description	Illustration
S-VMS-1020	VERTICALE CERVICAL Set Screw X20*	
S-VCC-2833	VERTICALE CERVICAL Cross Connect 28-33 mm	
S-VCC-3241	VERTICALE CERVICAL Cross Connect 32-41 mm	
S-VCC-4057	VERTICALE CERVICAL Cross Connect 40-57 mm	

System:
VERTICALE CERVICAL

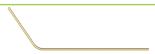
Implant type:
Rod

Typisierung:
Prebent, straight, transition

Material:
Ti6Al4V ELI

All articles are sterile packed.

All packages include 2 items.

Article number	Description	Illustration
S-VOR-3520-P55	VERTICALE CERVICAL Rod Pre 3.5/200 mm 55°	
S-VOR-4020-P55	VERTICALE CERVICAL Rod Pre 4.0/200 mm 55°	
S-VCR-3506-S	VERTICALE CERVICAL Rod 3.5/60 mm	
S-VCR-3512-S	VERTICALE CERVICAL Rod 3.5/120 mm	
S-VCR-3524-S	VERTICALE CERVICAL Rod 3.5/240 mm	
S-VCR-4006-S	VERTICALE CERVICAL Rod 4.0/60 mm	
S-VCR-4012-S	VERTICALE CERVICAL Rod 4.0/120 mm	
S-VCR-4024-S	VERTICALE CERVICAL Rod 4.0/240 mm	
S-VCR-5535-T	VERTICALE CERVICAL Rod Trans. 5.5/3.5 mm	
S-VCR-5540-T	VERTICALE CERVICAL Rod Trans. 5.5/4.0 mm	

VERTICALE® Cervical Instruments

Article number	Description	Illustration	Seite
VI-0010	VERTICALE CERVICAL Awl with stop		7
VI-0020	VERTICALE CERVICAL Probe, straight		7, 9
VI-0025	VERTICALE CERVICAL Pedicle Feeler		7, 24
VI-0030	VERTICALE CERVICAL Depth Gauge		9, 24
VI-0035	VERTICALE CERVICAL Tap 3.5mm standard		10, 25
VI-0040	VERTICALE CERVICAL Tap 4.0mm standard		10, 25
VI-0041	VERTICALE CERVICAL Tap 4.0mm std, can		10, 25
VI-0130	VERTICALE CERVICAL Pedicle SD		12, 13
VI-0135	VERTICALE CERVICAL Tap 3.5 mm XL		10, 25
VI-0140	VERTICALE CERVICAL Tap 4.0 mm XL		10, 25
VI-0141	VERTICALE CERVICAL Tap 4.0 mm XL, can		10, 25
VI-0235	VERTICALE CERVICAL Drill 2.4 mm standard		8
VI-0240	VERTICALE CERVICAL Drill 2.9 mm standard		8
VI-0335	VERTICALE CERVICAL Drill 2.4 mm XL		8
VI-0340	VERTICALE CERVICAL Drill 2.9 mm XL		8

VERTICALE® Cervical Instruments

Article number	Description	Illustration	Seite
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