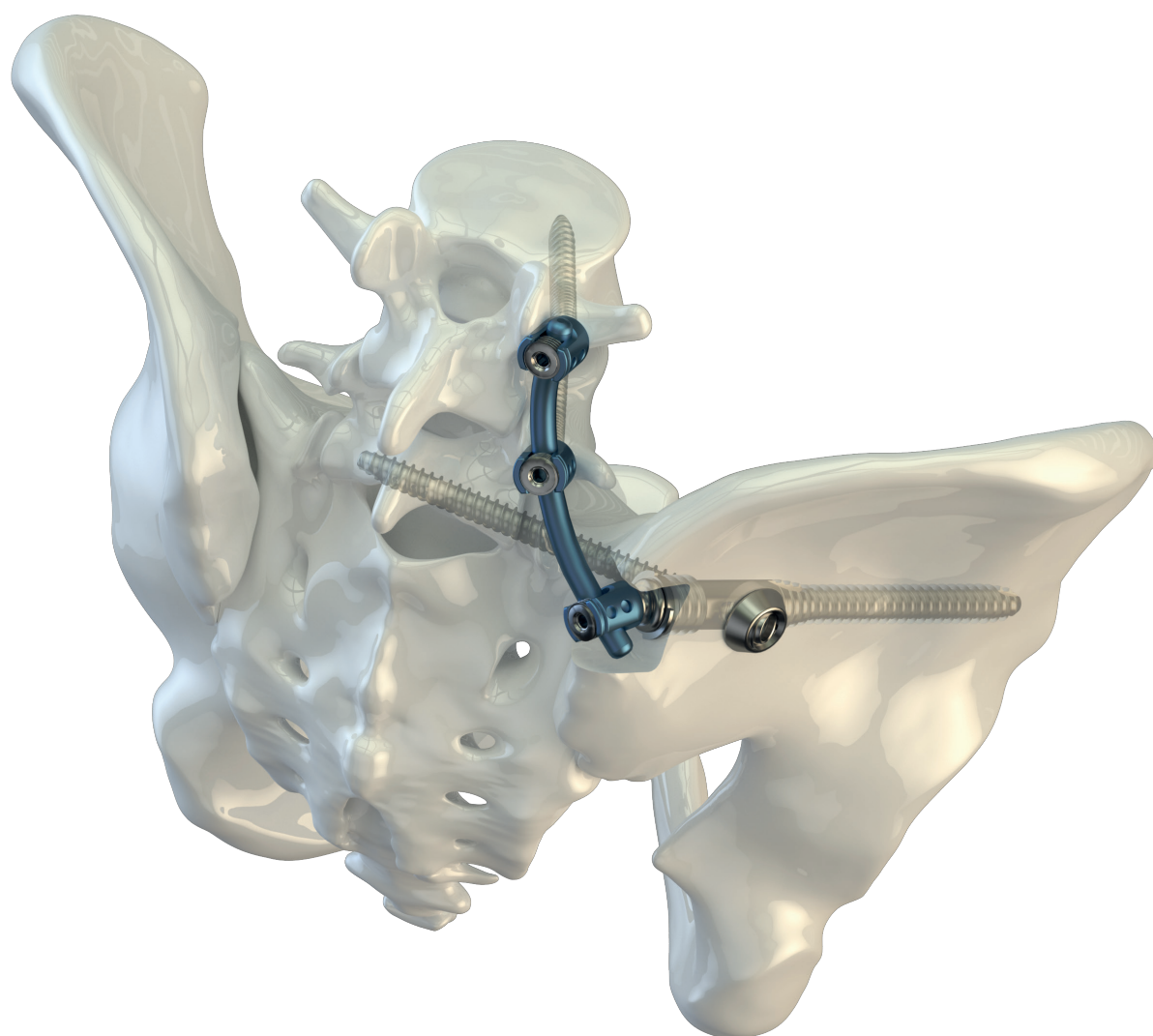


VERTICALE[®] TRIANGULAR FIXATION SYSTEM

INSTRUMENTATION GUIDE



MADE IN GERMANY

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NOTE: This guide describes the instrumentation of the VERTICALE® Triangular Fixation System. - 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.

INTRODUCTION

VERTICALE® TRIANGULAR FIXATION SYSTEM

The VERTICALE Triangular Fixation System is intended to be used for surgical procedures with the objective of correction, immobilization and stabilization of the the posterior pelvic ring, the lumbo-sacral and sacro-iliac region.

Benefits and features:

- Enhanced primary fixation through screw-in-screw technique.
- Dual core iliac screw with large 14mm proximal iliac screw shaft for enhanced fixation in iliac crest.
- Revision option to avoid bone defects or disruptions and soft tissue irritations.
- Preassembled SI screws with plate or washer for ease of use.
- Quattro-lead thread at proximal SI screw shaft for enhanced fixation in iliac cortex.
- Wide screw selection to fit anatomical requirements:
 - Full threaded SI screw 70-140mm with plate or washer
 - SI lag-screw 70-140mm with plate
 - Iliac screw from 70-110mm length

Indications

The VERTICALE Triangular Fixation System is intended to be used for surgical procedures with the objective of correction, immobilization and stabilization of the the posterior pelvic ring, the lumbo-sacral and sacro-iliac region. To achieve the objective, it can be combined with the VERTICALE pedicle screw system.

This includes:

- Pelvic ring instabilities
- Iliosacral instabilities
- Lumbo-sacral instabilities

Contraindications

- Anticipated or documented allergy or intolerance to the materials (e.g. titanium)
- 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 structure
- Missing bone structures that render good anchoring of the implant impossible

Product specific Intended use:

VERTICALE SI Screw (ilio-sacral screw):

The SI screw is inserted from lateral through the iliac bone and the ala into the sacrum. Through the use of the partially threaded SI screw (lag screw) option, an additional compression of the fracture can be achieved.

The SI screw is made available in two options:

VERTICALE SI Screw with washer:

The washer distributes the load and avoids subsidence of the SI screw into the lateral iliac cortex.

VERTICALE SI Screw w. plate:

The plate enables fixation as a stable angle locking screw (VERTICALE SI Plate fixation screw) and avoids subsidence of the SI screw into the lateral iliac cortex.

VERTICALE Iliac Screw:

Iliac screws are inserted into the os ilium (iliac crest). They are used to introduce and distribute spinal loads into the pelvic ring.

In order to achieve correction, immobilisation and stabilisation of the pelvic ring, the thoraco-lumbar and ilio-sacral spine, their use can be stand alone or in combination with the VERTICALE pedicle screw system.

Due to the proximal fenestration of the screw shaft, a VERTICALE SI (ilio-sacral) Screw can be placed from lateral through the fenestration.

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® TRIANGULAR FIXATION PREPARATION

Position and planning

The prone position is used for access to the lumbar spine, sacrum and posterior pelvic regions.

Prior to starting the procedure anterior-posterior (AP), lateral, inlet and outlet image intensifier control should be obtained to ensure adequate visualization.

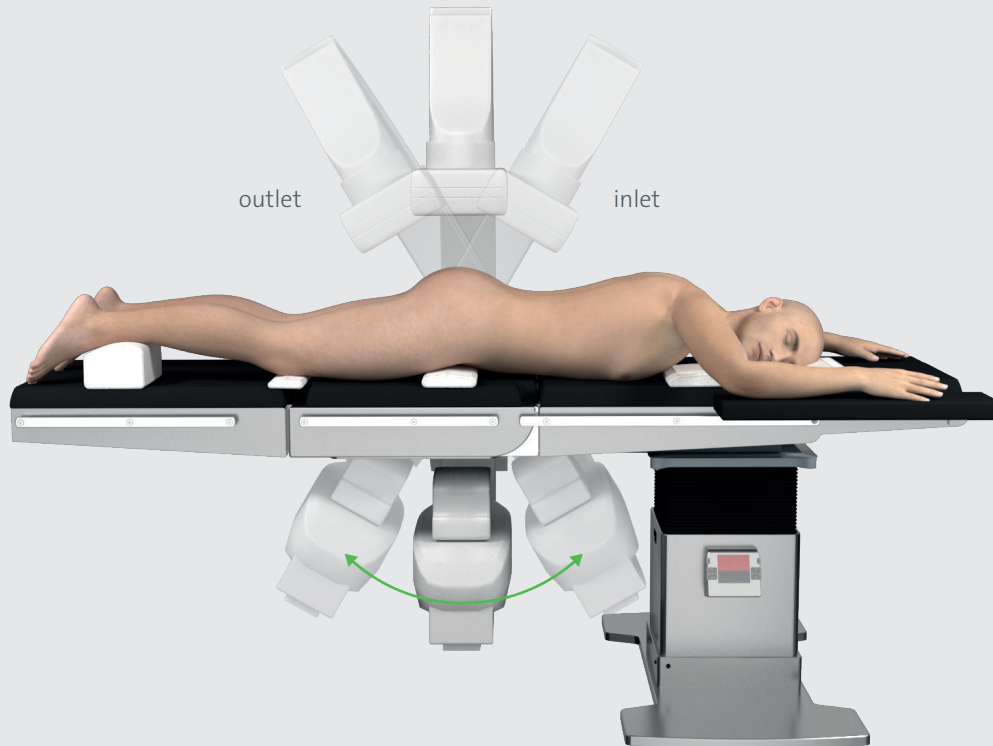


Fig. 1 Intra-operative imaging control

Intraoperative C-arm imaging

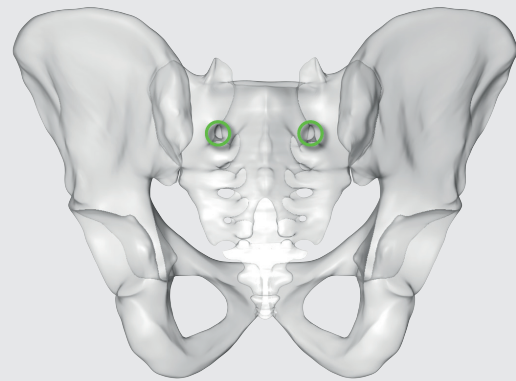
During setup for surgery, it is important to confirm the adequacy of fluoroscopic imaging. This is essential to avoid errors in SI-screw placement.

The following should be clearly identifiable:

- sacral foramina (outlet view)
- spinal canal (inlet view)
- S1 body (inlet view)

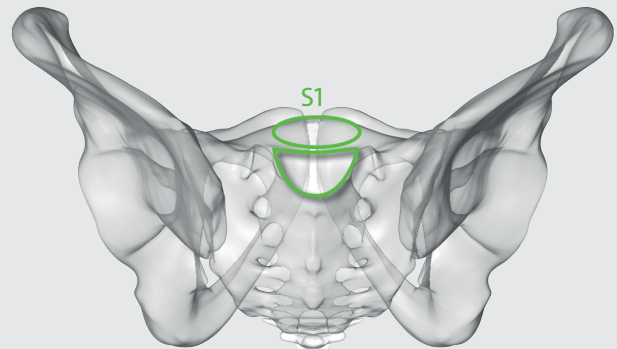
If these structures cannot be clearly seen, a safe trajectory for the SI screw cannot be determined.

It is recommended that before beginning an SI screw fixation procedure, appropriate preoperative planning for screw length, trajectory and location needs to be verified.



inlet

Fig. 2 Intra-operative imaging - inlet view



outlet

Fig. 3 Intra-operative imaging - outlet view

Landmarks for stab incision

On a lateral projection, identify the S1 body and iliac cortical densities (ICDs), here overlapping correctly.

The entry point should be posterior in S1 and inferior to the ICD, which parallels the sacral alar slope. The direction of the entry point is usually slightly caudal and posterior. The ICD thus marks the antero-superior boundary of the safe zone for an iliosacral screw. Having a safe entry point avoids injuring the L5 nerve root if it penetrates this cortex.

A 3-4 cm incision is made at the identified site

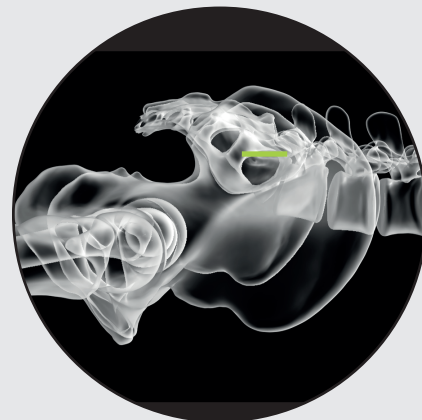


Fig. 4 Intra-operative imaging - lateral view

Placement of guide wire

VI-6000
VERTICALE Holding Clamp



VI-6051
VERTICALE Guide wire trocar,
3.2 x 400 mm



VI-6052
VERTICALE Guide wire threaded
3.2 x 400 mm



VI-6059
VERTICALE Guide wire
protection sleeve



Use a less invasive approach for Iliac-screw placement with a 2-3 cm skin incision at the posterior superior iliac spina. Insert the 3.2mm guide wire at the entry position to the ilium under image intensifier control.

NOTE: If you use a hammer to advance the guide wire the guide wire protection sleeve must be used. Do not hammer on the guide wire tip to avoid damaging the wire.

The Holding Clamp can be used to guide the wire in a controlled way. This clamp may also be used to remove the guide wire in combination with a slotted hammer.

Control the final positioning of the guide wire using image intensifier in the lateral view and outlet view.

Correct placement of the guide wire is essential:

- Entry point: spina posterior superior
- Orientation: divergent, 3 – 4 cm above the outline of the foramen obturatum (lateral view)

Point aimed at supra acetabular region/ spine sup. anterior.

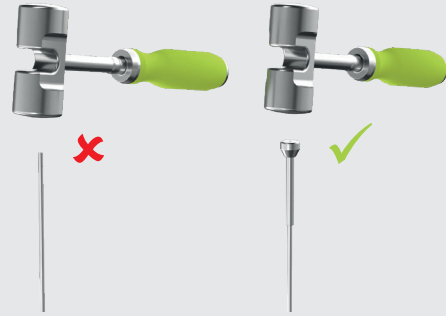


Fig. 4 Do not use a hammer with the guidewire without protection sleeve

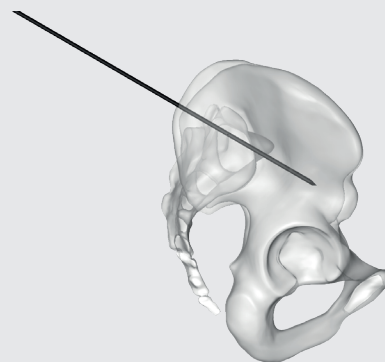
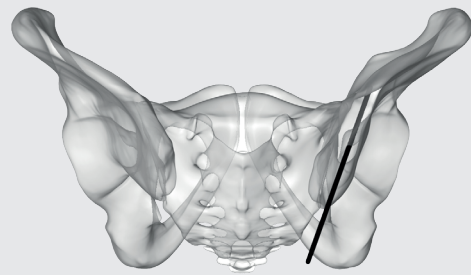


Fig. 5 Imaging intensifier control in outlet and lateral view.

Placement of iliac screw

VI-6840
VERTICALE Iliac Screw Indicator S



VI-6841
VERTICALE Iliac Screw Indicator M



VI-6842
VERTICALE Iliac Screw Indicator L



Prepare the entry point and identify the correct screw size and length using the VERTICALE Iliac Screw Indicator.

NOTE: The Tip of the Verticale Iliac Screw Indicator corresponds to start of the fenestration for the iliac screw.

The reamer indicates and prepares the position of the poly-axial screw head, which is attached later.

Whilst using the Verticale Iliac Screw Indicator until the tip reaches the contour of the posterior edge of the S1 vertebrae under lateral imaging intensifier control. Start with the S-size indicator. The screw size M or L may be required.

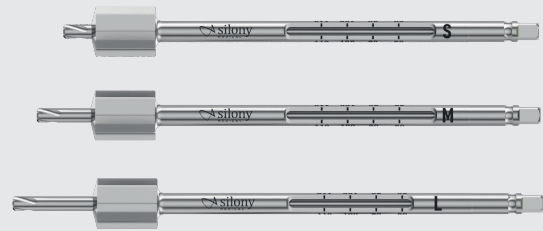


Fig. 6 Verticale Iliac Screw Indicator with size S, M, L

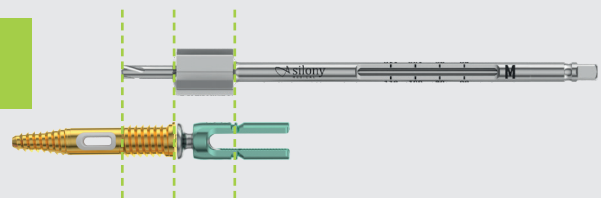


Fig. 7 Match between Iliac Screw Indicator and Iliac Screw

Placement of iliac screw

VI-6840
VERTICALE Iliac Screw
Indicator S



VI-6841
VERTICALE Iliac Screw
Indicator M



VI-6842
VERTICALE Iliac Screw
Indicator L



GI-2111
Ratchet T-Handle, short



The guide wire must be enhanced to the desired iliac screw final position. The laser marking of the Guide wire shows the corresponding screw length.

Using the VERTICALE Iliac Screw Indicator the size and length of the iliac screw is identified. Colour coding corresponds to the related screw size S (magenta), M (yellow) or L (green) 1.

The length of the desired screw can be indicated by the marking of the guide wire.

Remove the screw indicator.

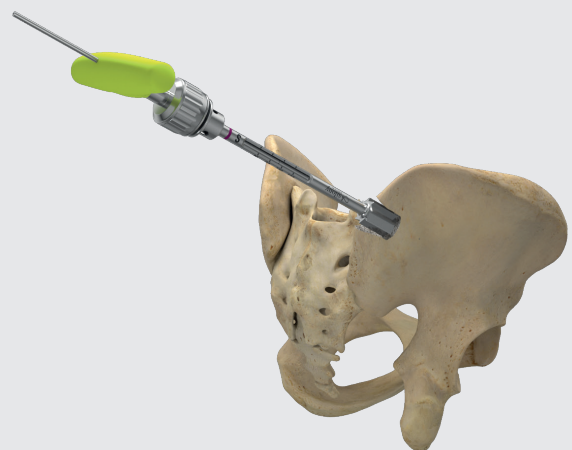


Fig. 8 Prepare bone for placement of iliac screw.

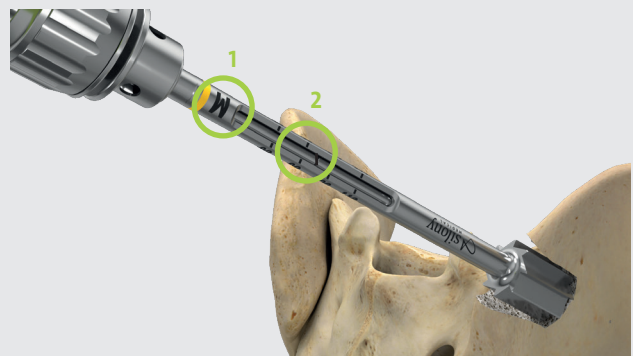


Fig. 9 Indicate size and length of iliac screw.

NOTE: Maintain control of the guide wire position. It is recommended to secure the guide wire to avoid dislocation or erroneous movement during any manoeuvres.

Placement of iliac screw

VI-6200.1
VERTICALE T-handle iliac screw driver



VI-6200.2
VERTICALE Inner fixation pin



VI-6210
VERTICALE Iliac screw anti torque sleeve



Attach the VERTICALE Iliac Screw Anti-Torque Sleeve on the selected Iliac Screw and rotate it counter-clockwise by a quarter turn. Hold it in place for the screw driver attachment.

Insert the VERTICALE Iliac Screw Driver T-handle into the anti-torque sleeve in the indicated 1 position. The marking of the shaft of the screw driver should align to the marking of the Anti-Torque Sleeve.

Insert the Fixation Inner Pin into the VERTICALE Iliac Screw Driver T-handle and Lock securely.

Guide the screw over the guide wire and begin to insert the screw.

The Guide Wire can be removed when the outer diameter of the screw has entered the iliac crest.

The VERTICLE Holding clamp can be used to remove the guide wire.

Insert the screw to its desired position. Rotate the screw until the access to the S1 vertebrae is visible through the fenestration of the Iliac screw. The right position of the Iliac Screw with PE Inlay is given also by the slot of the VERTICALE T-Handle.



Fig. 10 Assembly of screw driver onto the iliac screw shaft.



Fig. 11 Marking of the sleeve indicates position of final poly head.

NOTE: Control the position of Guide Wire during screw insertion. The Guide Wire Extension and the Holding clamp can be used.

NOTE: The poly-axial screw head position and height is indicated by the marking below "Lock" on the VERTICALE Iliac Screw Anti Torque Sleeve.

Placement of guide wire for the SI screw

VI-6250.1
VERTICALE Aiming Arm



VI-6250.2
VERTICALE Aiming arm screw



VI-6250.3
VERTICALE Aiming Sleeve for
3.2 mm wire



VI-6250.4
VERTICALE Aiming Slide



VI-6250.5
VERTICALE Aiming Slide Screw



VI-6050
VERTICALE Guide wire blunt,
3.2 x 400 mm



VI-6051
VERTICALE Guide wire trocar,
3.2 x 400 mm



VI-6052
VERTICALE Guide wire threaded
3.2 x 400 mm



Attach the VERTICALE Aiming Slide (2) onto the VERTICALE Aiming arm (2) and insert the VERTICALE Aiming Slide Screw (3).

The Aiming Slide Screw (3) is screwed in until the tip touches the elongated hole so that the Aiming Slide has the option of being adjusted and does not falls off.

Attach the prepared VERTICALE Aiming Arm (1) onto the VERTICALE Iliac Screw Driver T-handle (4) and tighten securely using the VERTICALE Aiming Arm Screw (5). The desired position is indicated by the size of the Iliac screw (S, M or L) or according to the colour coding of the screw (6)

Attach the VERTICALE Aiming Sleeve for 3.2mm wire (7) into the VERTICALE Aiming Slide.
Guide the 3.2mm wire through the VERTICALE Aiming sleeve.

The aiming slide screw (3) must be tightened if the correct projection is achieved before the guide wire is enhanced into the bone.



Fig. 12 Assembly of aiming device



Fig. 13 Placement of aiming sleeve onto the aiming arm

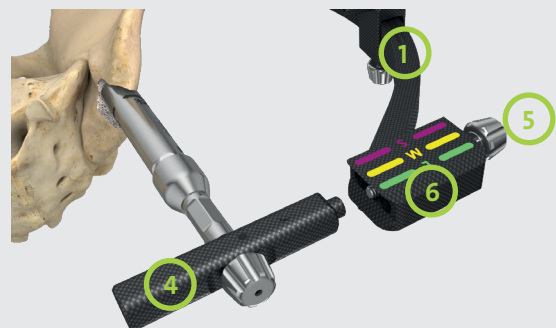


Fig. 14 Attachment of aiming arm onto the screw driver

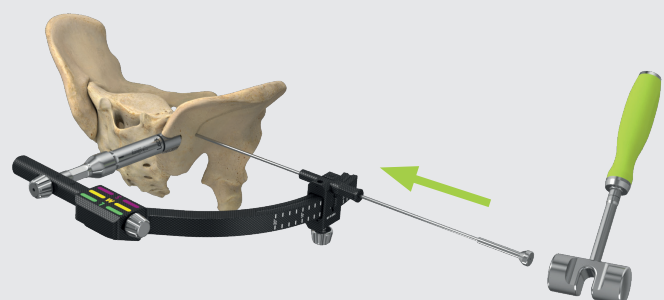


Fig. 15 Placement of guide wire for the SI screw

Placement of guide wire for the SI screw

Whilst in a lateral view, identify the S1 vertebral body and iliac cortical densities (ICDs), are overlapping correctly.

The entry point should be anterior in S1 and inferior to the iliac cortical density (ICD), which parallels the sacral alar slope, usually slightly caudal and posterior. The ICD thus marks the antero-superior boundary of the safe zone for an iliosacral screw which may injure the L5 nerve root if it penetrates this cortex.

A 2-3 cm incision is made at the identified site.

The guide wire is tapped 2-3 mm into the planned screw entry point. Control position using imaging intensifier.

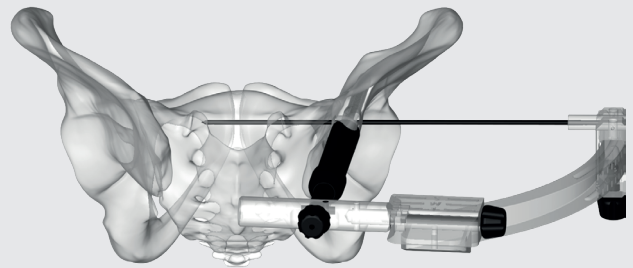
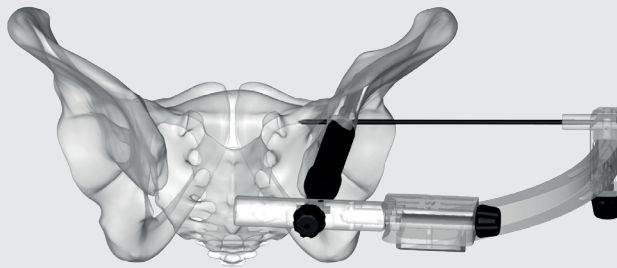
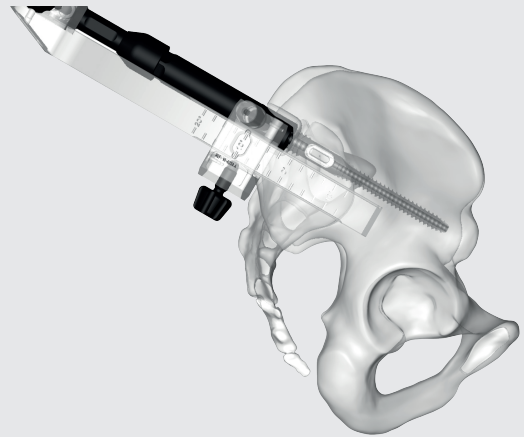


Fig. 16 Control of guide wire placement using imaging intensifier control.

NOTE: the guide wire must follow the planned projection through the insert of the iliac screw and the ala.

Placement of guide wire for the SI screw

NOTE: If you use a hammer to advance the guide wire the guide wire protection sleeve must be used. Do not hammer on the guide wire tip to avoid damaging the wire.

If correct entry point is identified the guide wire is advanced 1 cm into the sacral ala according to chosen screw channel.

The position and trajectory of the guidewire is checked in inlet view and outlet view.

Confirmation that the desired guide wire position has been achieved is once the guidewire tip is lateral to the neural foramen on the outlet view.

The desired trajectory is within, but close to the anterior alar cortex on the inlet view, and cranial to the ventral foramen of the first sacral nerve root.

If the trajectory of the guidewire would compromise either the sacral foramen or the spinal canal, the guidewire is removed and then reinserted from a similar entry point but in a corrected trajectory.

When a safe trajectory for the guidewire is confirmed, it is advanced further in to the S1 vertebral body.

When the guide wire reaches the centre of S1, the position is again verified in lateral, inlet, and outlet view.

The wire must be far enough from cortices and neural foramina to accommodate the 7.2mm SI screw.

Advance the guide wire into the desired position for the SI screw placement and length.

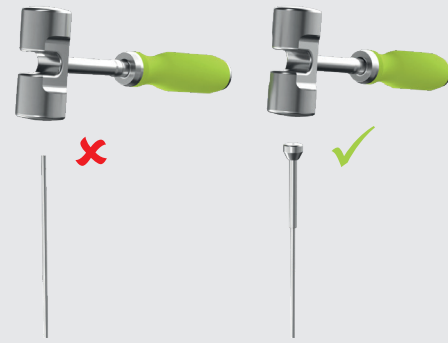


Fig. 17 Use the hammer with the guide wire with the protection sleeve only.

VERTICALE®
TRIANGULAR FIXATION
PLACEMENT OF
SI SCREW WITH WASHER

Placement of the SI screw

VI-4024
VERTICALE MIS Dilator 4
(20mm)



VI-6023
VERTICALE Dilator 17mm



VI-6860
VERTICALE SI screw indicator



Remove the VERTICAL Aiming Sleeve for 3.2mm wire and detach the VERTICAL Aiming arm completely from the VERTICAL Iliac Screw Driver T-handle.

The underlying tissues are dissected down to bone, using the VERTICAL 17mm Dilatation Awl Sleeve.

Slide the VERTICAL Working Tube 20 mm over the 17 mm Dilatation tube and push it down onto the iliac cortex. The dilatation tube 17 mm is removed. The Working Tube provides sufficient room for a protective screw bed preparation using the awl with stop and for the insertion of the SI screw with washer.

The screw length is measured using the VERTICAL SI Screw Indicator, which is guided over the guide wire and pushed onto the iliac cortex. The end of the guide wire indicates to the appropriate length of the SI screw.

In healthy bone the screw bed may be prepared for proper screw insertion using the VERTICAL Probe with ball tip to open the iliac cortex.

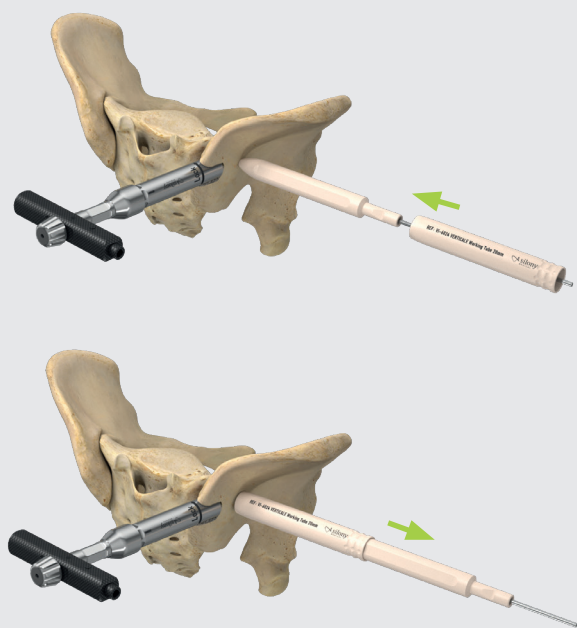
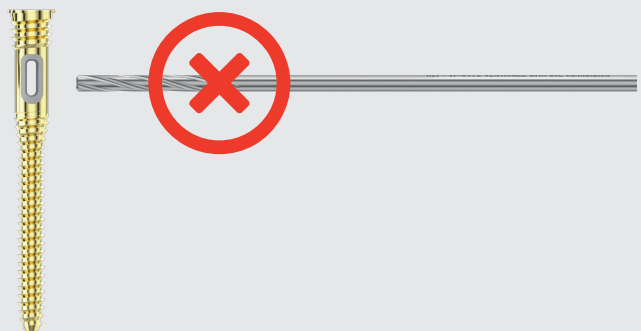


Fig. 18 Prepare access for the placement of the SI screw.



Fig. 19 Indicate length of the SI Screw.



NOTE: A drill must not be used.

Placement of an SI screw with washer

GI-2111
Ratchet T-Handle, short



VI-6700.1
VERTICALE Screw Driver shaft



The selected VERTICALE SI Screw is placed over the guide wire.

Attach the Ratched T-Handle on the VERTICALE Screw Driver Shaft. Guide the Screw driver over the wire and push the torx into the screw head. Avoid tilting of the screw driver during insertion. Control screw insertion and guide wire position using imaging intensive control.

In normal bone the force for screw insertion will increase as the washer reaches the iliac cortex.

Tactile feed-back may not be observed in soft bones. It is therefore recommended to control the positioning of the washer onto the iliac cortex in an oblique inlet view.

When the SI Screw is in its desired position remove the screw driver.

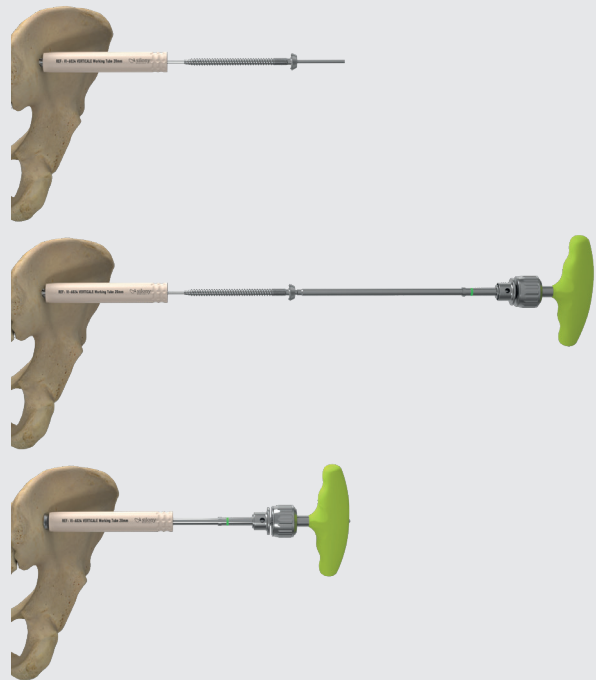


Fig. 13 Insertion of SI screw

VI-6000
VERTICALE Holding Clamp



When the SI-screw reaches the desired position the guide wire is removed.

Remove the guide wire and the working tube.

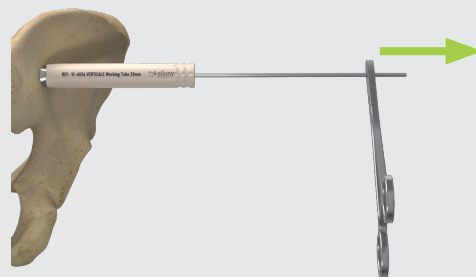


Fig. 14 Removal of guide wire.

Placement of the SI screw with washer

Remove the screw driver and the 20mm working tube.
Upon completion of the SI screw procedure, use imaging to control the correct placement of the SI screw. This requires AP, inlet, outlet, and lateral images of the posterior pelvis.

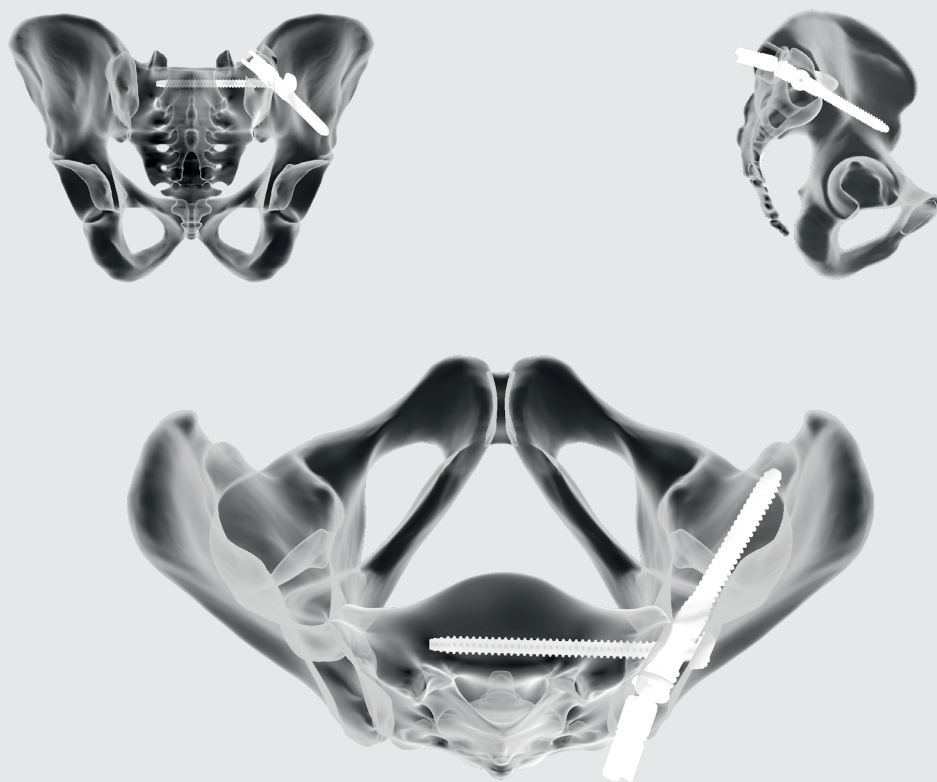


Fig. 24 Verification of final implantation using imaging intensifyer control in inlet, outlet and lateral view.

VERTICALE®
TRIANGULAR FIXATION
PLACEMENT OF
SI SCREW WITH PLATE

Placement of an SI screw with plate

VI-6070
VERTICALE Probe with ball tip



VI-6860
VERTICALE SI Screw Indicator



Fig. 25 Identification of screw length.

After placement of the guide wire in the desired position the tissues are dissected down to bone, by spreading with an appropriate blunt clamp, or with scissors to ensure a 3-4 cm access to the iliac cortex for a protective screw bed preparation using the awl with stop or the drill.

The screw length is measured with the VERTICALE SI Screw Indicator, which is guided over the guide wire and pushed onto the iliac cortex. The end of the guide wire indicates the appropriate length of the SI-screw.

In normal bone the screw bed may be prepared for proper screw insertion using the VERTICALE Probe with ball tip to open the iliac cortex to enhance SI-screw insertion.

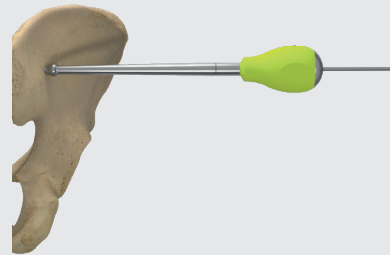
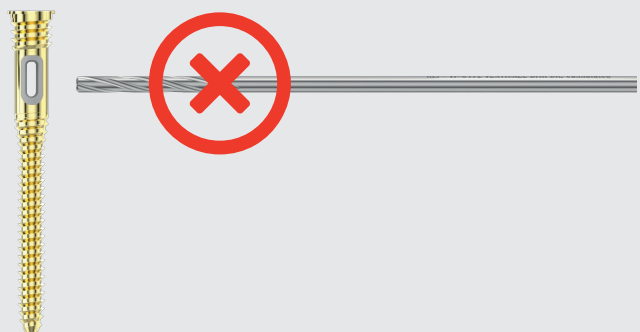


Fig. 26 Preparation of bone using probe.



NOTE: A drill must not be used.

Placement of an SI screw with plate

VI-6700.1
VERTICALE SI Screw Driver shaft



GI-2111
Ratchet T-Handle, short



VI-6751.1 VERTICALE Plate
inserter inner sleeve



VI-6751.2 VERTICALE Plate
inserter outer sleeve



Slide the VERTICALE SI Plate inserter outer sleeve from lateral onto the plate (1). Insert the VERTICALE SI Plate inserter inner sleeve (2) and lock it to the outer sleeve by a quarter turn (3).

The VERTICALE SI Screw is placed over the guide wire.

Attach the Ratched T-Handle on the VERTICALE Screw Driver Shaft. Guide the Screw driver over the wire and push the torx into the screw head. Avoid tilting of the screw driver during insertion.

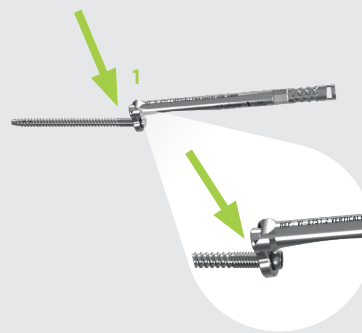


Fig. 17 Assembly of the Plateholder onto the SI plate - Step 1.

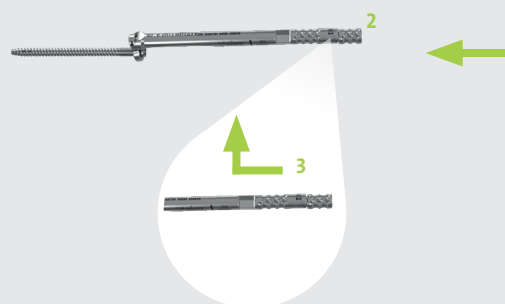


Fig. 18 Assembly of the Plateholder onto the SI plate - Step 2.

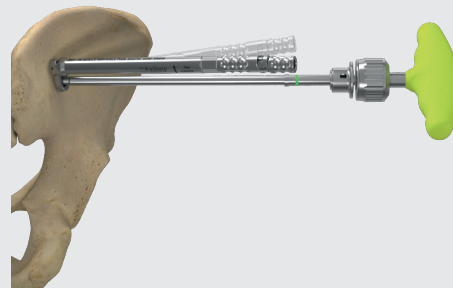


Fig. 19 Placement of SI Screw with assembled plate holder over the guide wire.

Placement of an SI screw with plate

Control the screw insertion and guide wire position using imaging intensive control.

In a normal bone the force for screw insertion will increase when the plate reaches the iliac cortex.

This tactile feed-back may not be observed in soft bones.

Therefore it is recommended to control the positioning of the plate onto the iliac cortex in an oblique inlet view until the plate is firmly attached on the iliac cortex.

The SI screw should not be inserted completely until the plate is guided into the desired position. If needed unscrew the SI screw until the plate can be moved. A marking on the Plate Inserter outer sleeve indicates the orientation of the plate.

Position the plate into the desired position and enhance the SI screw until the plate is positioned firmly onto the iliac cortex.

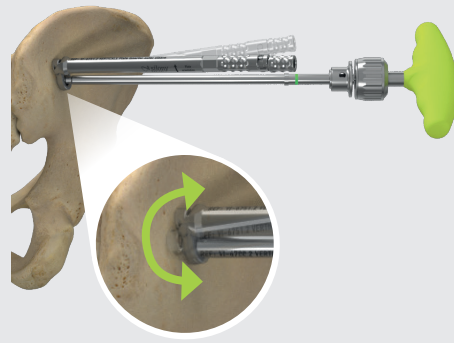


Fig. 20 Orientation of Plate

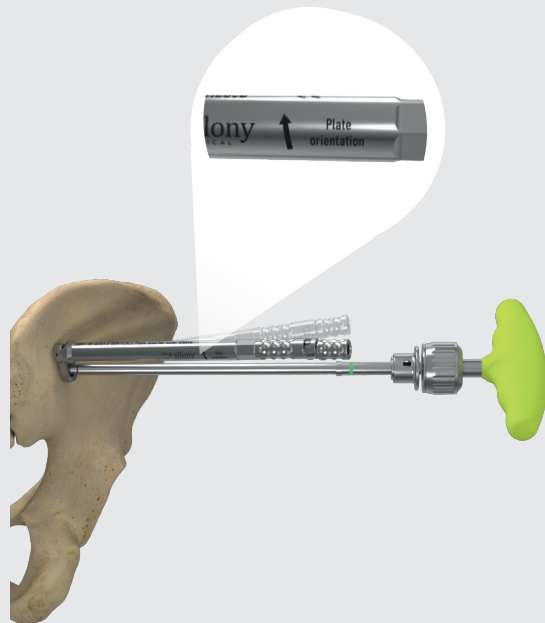


Fig. 21 Define final position of the plate.

Placement of an SI screw with plate

VI-6870.1
VERTICALE Plate Indicator



VI-6870.2
VERTICALE Plate Fixation Screw Indicator



VI-6720
VERTICALE SI Wrench



VI-6710
VERTICALE Screwdriver Hex 3.5



GI-6141
VERTICALE Ratchet T-Handle,
4Nm



The correct position of the plate onto the cortex can be verified using the VERTICALE SI Plate Indicator. Also the length of the plate fixation screw can be identified. If the line of the plate indicator is visible it indicates that the plate is fully seated onto the iliac cortex.

Remove the screw driver and the guide wire.

Using the Plate Fixation Screw Indicator the length and position of the plate fixation screw can be verified. The length is indicated on the plate indicator.

Remove the plate indicator and the plate fixation screw indicator.

Attach the selected plate fixation screw to the VERTICALE Screw Driver Hex 3.5. Attach the T-handle with 4Nm torque and guide the Plate fixation screw through the SI Plate inserter. Use the VERTICALE SI Wrench as counter-torque. The screw must be inserted into the bone and the plate using the torque limiting T-Handle 4Nm until there is a tactile release which indicates that the required torque has been applied.

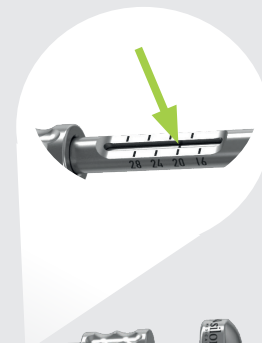


Fig. 22 Indicate required length of the plate fixation screw.



Fig. 23 Insertion of plate fixation screw.

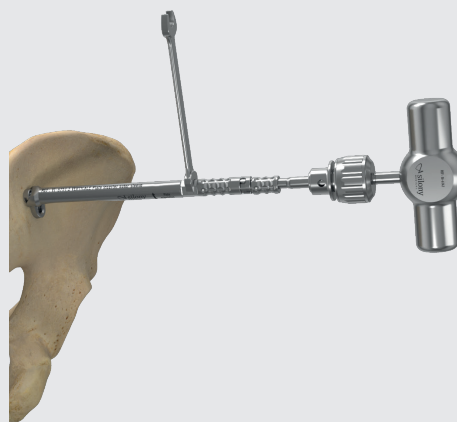


Fig. 24 final tightening of plate fixation screw

Placement of an SI screw with plate

Now unlock the Plate inserter inner sleeve from the outer sleeve by a quarter turn and remove it. The plate inserter outer sleeve must be slipped off the plate. The marking on the sleeve indicates the direction of movement.

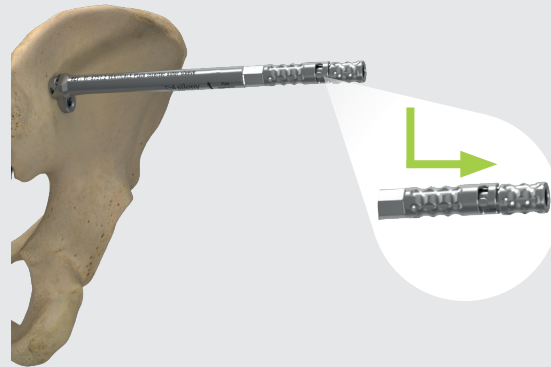


Fig. 25 Removal of SI plate holder - Step 1

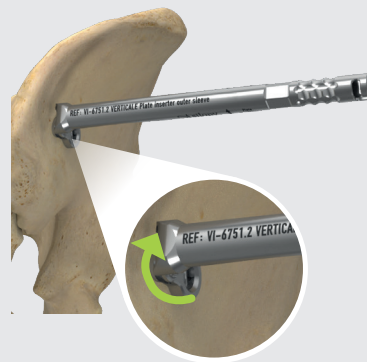


Fig. 26 Removal of SI plate holder - Step 2

Upon completion of the SI-screw with plate procedure, use appropriate imaging to confirm the correct placement of the SI screw. This should include AP, inlet, outlet, and true lateral images of the posterior pelvis.

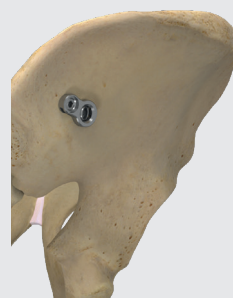


Fig. 27. Final Position of SI screw with plate

**VERTICALE®
TRIANGULAR FIXATION
LUMBO PELVIC FIXATION
AND REVISION OPTION**

Complete lumbo pelvic fixation

VI-6450 Counter torque handle



Remove the VERTICALE Iliac Screw Driver T-handle and whilst retaining the Iliac Screw Anti Torque Sleeve. This provides sufficient room for a protective attachment of the Iliac poly-head and ensures no soft tissue interferes during the polyaxial head application.

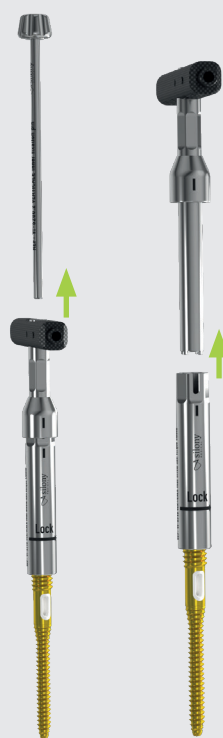


Fig. 49 Removal of the screw driver with T-handle

Mount the VERTICALE Iliac Polyaxial Head to the VERTICALE Screw Driver (VI-1130). Attach the torque limiting T-Handle 4Nm.

Screw the polyaxial head into the inner thread of the Iliac Screw and tighten until an audible click while holding the sleeve with the Anti Torque handle.

Remove all instruments.

All further steps of the attachment of the lumbar spine fixation please follow the steps described in the VERTICALE Spine Fixation technique guide.

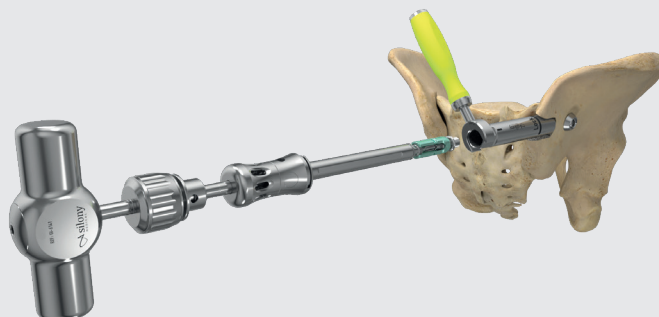
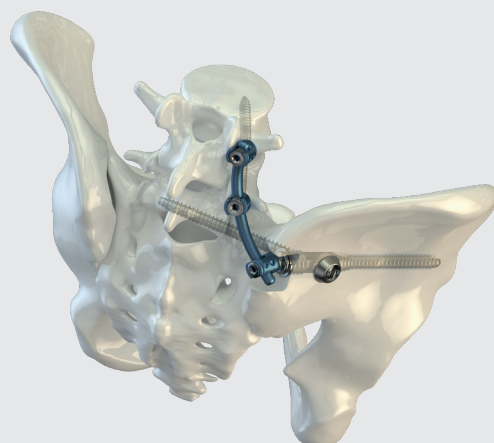


Fig. 50 Attachment of poly-head onto the iliac screw shaft

Upon completion of the triangular fixation, use image intensifier to control the correct placement of the SI screw. This requires AP, inlet, outlet, and true lateral images of the posterior pelvis.



NOTE: Ensure that the sleeve is not rotated, which may disconnect the sleeve from the screw.

Revision option

VI-6220
VERTICALE Iliac screw revision
sleeve



VI-6450 Counter torque handle



VI-6700.1
VERTICALE SI Screw Driver shaft



GI-6141
Ratchet T-Handle, 4Nm



The following chapter describes a option to maintain the VERTICALE Iliac screw while the spinal construct is removed. In this case, the poly-head must be replaced by a blunt cap to avoid soft tissue irritation.

Following revision of the locking cap and rod, a guide wire (1.5mm) can be placed into the shaft of the iliac screw. Prepare the soft tissue and bone around the iliac screw that the VERTICALE Iliac screw revision sleeve can be placed on the iliac screw shaft.

Place the VERTICALE Pedicle Screw Driver T25 over the guide wire and attach it to the poly head. Unscrew the poly head off the iliac screw while blocking rotation using the VERTICALE Counter Torque Handle.

Replace the VERTICALE Iliac Screw Revision Sleeve by the VERTICALE Iliac Screw anti torque sleeve. Attach the VERTICALE Counter Torque Handle.

Attach the Cap for Iliac screw on the VERTICALE SI Screw Driver.

Attach the torque-limiting T-Handle 4Nm.

Guide the cap over the guide wire and screw the cap into the inner thread of the Iliac Screw and tighten to the audible click.

We recommend securing the correct cap seat by repeatedly tightening with the torque limiter. Confirmation with two clicks. Remove all instruments.

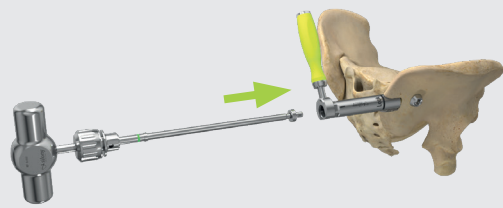
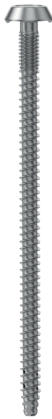


Fig. 51 Attachment of the Cap onto the iliac screw

VERTICALE® TRIANGULAR FIXATION SYSTEM PRODUCT INFORMATION

VERTICALE Triangular Fixation Implants by article number	PI 02 – 04
VERTICALE Triangular Fixation Instruments by article number	PI 05 – 06
VERTICALE Triangular Fixation Index	PI 07

VERTICALE® Triangular Fixation Implants

Article number	Description	Illustration
S-VOW-7070-CL1	VERTICALE SI screw with washer 7,2 x 70	
S-VOW-7075-CL1	VERTICALE SI screw with washer 7,2 x 75	
S-VOW-7080-CL1	VERTICALE SI screw with washer 7,2 x 80	
S-VOW-7085-CL1	VERTICALE SI screw with washer 7,2 x 85	
S-VOW-7090-CL1	VERTICALE SI screw with washer 7,2 x 90	
S-VOW-7095-CL1	VERTICALE SI screw with washer 7,2 x 95	
S-VOW-7100-CL1	VERTICALE SI screw with washer 7,2 x 100	
S-VOW-7105-CL1	VERTICALE SI screw with washer 7,2 x 105	
S-VOW-7110-CL1	VERTICALE SI screw with washer 7,2 x 110	
S-VOW-7115-CL1	VERTICALE SI screw with washer 7,2 x 115	
S-VOW-7120-CL1	VERTICALE SI screw with washer 7,2 x 120	
S-VOW-7125-CL1	VERTICALE SI screw with washer 7,2 x 125	
S-VOW-7130-CL1	VERTICALE SI screw with washer 7,2 x 130	
S-VOW-7135-CL1	VERTICALE SI screw with washer 7,2 x 135	
S-VOW-7140-CL1	VERTICALE SI screw with washer 7,2 x 140	

System:
VERTICALE

Implant type:
SI Screw with Washer

Screw shaft diameter:
7.2 mm

Configuration:
Polyaxial, cannulated
and fenestrated shaft,
full threaded

Material:
Ti6Al4V ELI

Article number	Description	Illustration
S-VOP-7070-CL1	VERTICALE SI screw w. plate 7,2 x 70	
S-VOP-7075-CL1	VERTICALE SI screw w. plate 7,2 x 75	
S-VOP-7080-CL1	VERTICALE SI screw w. plate 7,2 x 80	
S-VOP-7085-CL1	VERTICALE SI screw w. plate 7,2 x 85	
S-VOP-7090-CL1	VERTICALE SI screw w. plate 7,2 x 90	
S-VOP-7095-CL1	VERTICALE SI screw w. plate 7,2 x 95	
S-VOP-7100-CL1	VERTICALE SI screw w. plate 7,2 x 100	
S-VOP-7105-CL1	VERTICALE SI screw w. plate 7,2 x 105	
S-VOP-7110-CL1	VERTICALE SI screw w. plate 7,2 x 110	
S-VOP-7115-CL1	VERTICALE SI screw w. plate 7,2 x 115	
S-VOP-7120-CL1	VERTICALE SI screw w. plate 7,2 x 120	
S-VOP-7125-CL1	VERTICALE SI screw w. plate 7,2 x 125	
S-VOP-7130-CL1	VERTICALE SI screw w. plate 7,2 x 130	
S-VOP-7135-CL1	VERTICALE SI screw w. plate 7,2 x 135	
S-VOP-7140-CL1	VERTICALE SI screw w. plate 7,2 x 140	

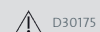
System:
VERTICALE

Implant type:
SI Screw with Plate

Screw shaft diameter:
7.2 mm

Configuration:
Polyaxial, cannulated
and fenestrated shaft,
full threaded

Material:
Ti6Al4V ELI



VERTICALE® Triangular Fixation Implants

System:
VERTICALE

Implant type:
SI Lag Screw with Plate

Screw shaft diameter:
7.2 mm

Configuration:
Polyaxial, cannulated and fenestrated shaft, partially threaded

Length of thread:
20 mm for screws in length 70-90 mm
32 mm for screws in length 95-140 mm

Material:
Ti6Al4V ELI


Article number	Description	Illustration
S-VOP-7070-CS1	VERTICALE SI lag screw w. plate 7,2 x 70	
S-VOP-7075-CS1	VERTICALE SI lag screw w. plate 7,2 x 75	
S-VOP-7080-CS1	VERTICALE SI lag screw w. plate 7,2 x 80	
S-VOP-7085-CS1	VERTICALE SI lag screw w. plate 7,2 x 85	
S-VOP-7090-CS1	VERTICALE SI lag screw w. plate 7,2 x 90	
S-VOP-7095-CS1	VERTICALE SI lag screw w. plate 7,2 x 95	
S-VOP-7100-CS1	VERTICALE SI lag screw w. plate 7,2 x 100	
S-VOP-7105-CS1	VERTICALE SI lag screw w. plate 7,2 x 105	
S-VOP-7110-CS1	VERTICALE SI lag screw w. plate 7,2 x 110	
S-VOP-7115-CS1	VERTICALE SI lag screw w. plate 7,2 x 115	
S-VOP-7120-CS1	VERTICALE SI lag screw w. plate 7,2 x 120	
S-VOP-7125-CS1	VERTICALE SI lag screw w. plate 7,2 x 125	
S-VOP-7130-CS1	VERTICALE SI lag screw w. plate 7,2 x 130	
S-VOP-7135-CS1	VERTICALE SI lag screw w. plate 7,2 x 135	
S-VOP-7140-CS1	VERTICALE SI lag screw w. plate 7,2 x 140	

System:
VERTICALE

Implant type:
Plate Fixation Screw

Configuration:
Solid, locking, self-tapping

Material:
Ti6Al4V ELI

Article number	Description	Illustration
S-VOP-0016-X1	VERTICALE SI Plate fixation screw 16 mm	
S-VOP-0018-X1	VERTICALE SI Plate fixation screw 18 mm	
S-VOP-0020-X1	VERTICALE SI Plate fixation screw 20 mm	
S-VOP-0022-X1	VERTICALE SI Plate fixation screw 22 mm	
S-VOP-0024-X1	VERTICALE SI Plate fixation screw 24 mm	
S-VOP-0026-X1	VERTICALE SI Plate fixation screw 26 mm	
S-VOP-0028-X1	VERTICALE SI Plate fixation screw 28 mm	
S-VOP-0030-X1	VERTICALE SI Plate fixation screw 30 mm	

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VERTICAL[®] Triangular Fixation Implants

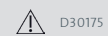
Article number	Description	Illustration
S-VOX-9070-S1	VERTICAL Iliac Screws S, 9,2 x 70 mm	
S-VOX-9080-S1	VERTICAL Iliac Screws S, 9,2 x 80 mm	
S-VOX-9090-S1	VERTICAL Iliac Screws S, 9,2 x 90 mm	
S-VOX-9100-S1	VERTICAL Iliac Screws S, 9,2 x 100 mm	
S-VOX-9110-S1	VERTICAL Iliac Screws S, 9,2 x 110 mm	
S-VOX-9070-M1	VERTICAL Iliac Screws M, 9,2 x 70 mm	
S-VOX-9080-M1	VERTICAL Iliac Screws M, 9,2 x 80 mm	
S-VOX-9090-M1	VERTICAL Iliac Screws M, 9,2 x 90 mm	
S-VOX-9100-M1	VERTICAL Iliac Screws M, 9,2 x 100 mm	
S-VOX-9110-M1	VERTICAL Iliac Screws M, 9,2 x 110 mm	
S-VOX-9080-L1	VERTICAL Iliac Screws L, 9,2 x 80 mm	
S-VOX-9090-L1	VERTICAL Iliac Screws L, 9,2 x 90 mm	
S-VOX-9100-L1	VERTICAL Iliac Screws L, 9,2 x 100 mm	
S-VOX-9110-L1	VERTICAL Iliac Screws L, 9,2 x 110 mm	



System:
VERTICAL

Implant type:
Iliac screw

Configuration:
Polyaxial, cannulated
and fenestrated shaft,
full threaded

Material:
Ti6Al4V ELI



S-VOX-0001	VERTICAL Cap for Iliac Screw	
S-VOX-0002	VERTICAL Polyaxial Head Iliac Screw	

VERTICALE® Triangular Fixation Instruments

Article number	Description	Illustration	Page
GI-2111	Ratchet T-Handle, short		10, 17
GI-6141	Ratchet T-Handle, 4Nm		23, 29
RI-1355	ROCCIA Slotted Mallet, solid		
VI-4024	VERTICALE MIS Dilator 4 (20 mm)		15
VI-6000	VERTICALE Holding Clamp		17, 22
VI-6023	VERTICALE Dilator 17 mm		15
VI-6050	VERTICALE Guide wire blunt, 3.2x400 mm		12
VI-6051	VERTICALE Guide wire trocar, 3.2x400 mm		8, 12
VI-6052	VERTICALE Guide wire threaded 3.2x400 mm		8, 12
VI-6059	VERTICALE Guide wire protection sleeve		8
VI-6070	VERTICALE Probe with ball tip		19
VI-6200.1	VERTICALE T-handle iliac screw driver		11
VI-6200.2	VERTICALE Inner fixation pin		11
VI-6210	VERTICALE Iliac screw anti torque sleeve		11
VI-6220	VERTICALE Iliac screw revision sleeve		29
VI-6250.1	VERTICALE Aiming Arm		12

VERTICAL[®] Triangular Fixation Instruments

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VI-6250.2	VERTICAL Aiming arm screw		12
VI-6250.3	VERTICAL Aiming Sleeve for 3.2mm wire		12
VI-6250.4	VERTICAL Aiming Slide		12
VI-6250.5	VERTICAL Aiming Slide Screw		12
VI-6450	VERTICAL Counter torque handle		28, 29
VI-6700.1	VERTICAL SI Screw Driver shaft		16, 20, 29
VI-6710	VERTICAL Screwdriver Hex 3.5		23
VI-6720	VERTICAL SI Wrench		18, 23, 24
VI-6751.1	VERTICAL Plate inserter inner sleeve		20
VI-6751.2	VERTICAL Plate inserter outer sleeve		20
VI-6840	VERTICAL Iliac Screw Indicator S		9, 10
VI-6841	VERTICAL Iliac Screw Indicator M		9, 10
VI-6842	VERTICAL Iliac Screw Indicator L		9, 10
VI-6860	VERTICAL SI screw indicator		15, 19
VI-6870.1	VERTICAL Plate Indicator		23
VI-6870.2	VERTICAL Plate Fixation Screw Indicator		23

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	VERTICALE Aiming Sleeve for 3.2 mm wire	VI-6250.3	12, PI 06
	VERTICALE Aiming Slide	VI-6250.4	12, PI 06
	VERTICALE Aiming Slide Screw	VI-6250.5	12, PI 07
C	VERTICALE Counter torque handle	VI-6450	28, 29, PI 06
D	VERTICALE Dilator 17 mm	VI-6023	15, PI 05
	VERTICALE MIS Dilator 4 (20 mm)	VI-4024	15, PI 05
G	VERTICALE SI Gauge for instruments	VI-6800	PI 06
	VERTICALE Guide wire blunt, 3.2 x 400 mm	VI-6050	12, PI 05
	VERTICALE Guide wire trocar, 3.2 x 400 mm	VI-6051	8, 12, PI 05
	VERTICALE Guide wire threaded 3.2 x 400 mm	VI-6052	8, 12, PI 05
	VERTICALE Guide wire protection sleeve	VI-6059	8, PI 05
H	VERTICALE Holding Clamp	VI-6000	17, 22, PI 05
I	VERTICALE Iliac Screw Indicator S	VI-6840	9, 10, PI 06
	VERTICALE Iliac Screw Indicator M	VI-6841	9, 10, PI 06
	VERTICALE Iliac Screw Indicator L	VI-6842	9, 10, PI 06
	VERTICALE Iliac screw anti torque sleeve	VI-6210	11, PI 05
	VERTICALE Iliac screw revision sleeve	VI-6220	29, PI 05
	VERTICALE Inner fixation pin	VI-6200.2	11, PI 05
P	VERTICALE Plate Indicator	VI-6870.1	23, PI 07
	VERTICALE Plate Fixation Screw Indicator	VI-6870.2	23, PI 07
	VERTICALE Plate inserter inner sleeve	VI-6751.1	20, PI 06
	VERTICALE Plate inserter outer sleeve	VI-6751.2	20, PI 06
	VERTICALE Probe with ball tip	VI-6070	19, PI 05
S	VERTICALE SI Screw Driver shaft	VI-6700.1	16, 20, 29, PI 06
	VERTICALE Screwdriver Hex 3.5	VI-6710	23, PI 06
	VERTICALE SI screw indicator	VI-6860	15, 19, PI 07
	ROCCIA Slotted Mallet, solid	RI-1355	PI 05
T	Ratchet T-Handle, short	GI-2111	10, 17, PI 05
	Ratchet T-Handle, 4Nm	GI-6141	23, 29, PI 05
	VERTICALE T-handle iliac screw driver	VI-6200.1	11, PI 05
W	VERTICALE SI Wrench	VI-6720	18, 23, 24, PI 06



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