

Pangea Spine System. Top loading pedicle screw and hook system for posterior stabilization and correction of spinal deformities.

Surgical Technique



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In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation¹. They are:

- Anatomic reduction
- Stable fixation
- Preservation of blood supply
- Early, active mobilization

The fundamental aims of fracture treatment in the limbs and fusion of the spine are the same. But a specific goal of spine treatment is to restore as much function as possible to the injured neural elements².

AO Principles as applied to the spine³

Anatomical reduction

Restoration of normal spine alignment improves the biomechanics of the spine and reduces pain by reestablishing and maintaining the natural curvature and the protective function of the spine.

Stable internal fixation

In the spine, the goal of internal fixation is to maintain not only the integrity of a mobile segment, but also to maintain the balance and the physiologic three-dimensional form of the spine. A stable spinal segment allows bony fusion at the junction of the lamina and pedicle.

Preservation of blood supply

The proper atraumatic technique enables minimal retraction or disturbance of the nerve roots and dura, and maintains the stability of the facet joints. The ideal surgical technique and implant design minimize damage to anatomical structures, i.e. facet capsules and soft tissue attachments remain intact, and create a physiological environment that facilitates healing.

¹Müller ME, Allgöwer M, Schneider R, Willenegger H (1995) Manual of Internal Fixation. 3rd, exp. a. completely rev. ed. 1991. Corr. 3rd printing. Berlin, Heidelberg, New York: Springer

²Ibid.

³Aebi M, Arlet V, Webb JK (2007) AOSPINE Manual (2 vols), Stuttgart, New York: Thieme

Early, active mobilization

The ability to restore normal spinal anatomy may permit the immediate reduction of pain, resulting in a more active, functional patient. The reduction in pain and improved function can result when a stable spine is achieved.

Indications and Contraindications

The Pangea Spine System is a posterior pedicle screw and hook fixation system (T1–S2) designed to provide precise and segmental stabilization of the spine in skeletally mature patients.

Indications

- Degenerative disc disease
- Spondylolisthesis
- Trauma (i.e., fracture or dislocation)
- Tumor
- Stenosis
- Pseudoarthrosis
- Failed previous fusion
- Deformities (i. e. scoliosos, khyphosis and/or lordosis)



Note: For deformity corrections, polyaxial screws can only be used in conjunction with monoaxial screws.

Contraindications

- Fractures and tumors with loss of anterior support

Pedicle Preparation

1

Open pedicle and determine screw length

Instruments

388.656 Pedicle Awl \varnothing 4.0 mm with Silicone Handle, length 255 mm, for Pedicle Screws \varnothing 5.0 to 7.0 mm

388.655 Pedicle Probe \varnothing 3.7 mm with Silicone Handle, length 240 mm, for Pedicle Screws \varnothing 5.0 to 7.0 mm

Optional instruments

03.622.005 Pedicle Probe, thoracic

388.536 Pedicle Probe for Screws \varnothing 4.2 mm, length 240 mm

388.545 Feeler for Screw Channel, straight, \varnothing 2.3 mm, length 275 mm

388.546 Feeler for Screw Channel, curved, \varnothing 2.3 mm, length 275 mm

388.551 Pedicle Awl \varnothing 3.0 mm, length 230 mm, for Screws \varnothing 4.0 mm and 4.2 mm



Locate pedicles as outlined in the AOSPINE Manual¹. Use an awl to perforate the outer cortex of the pedicles. Use a probe to open the pedicle canal. The markings on the probes provide a visual indication of the pedicle canal depth.

Screws are self-tapping for easier insertion and as such, it is not necessary to tap pedicles. In clinical cases that require tapping, taps for pedicle screws and a ratchet T-handle are separately available.

¹Aebi M, Arlet V, Webb JK (2007) AOSPINE Manual (2 vols), Stuttgart, New York: Thieme

2

Prepare site for screw head for polyaxial screws

Instrument

388.532	Reamer for preassembled Pedicle Screws
---------	--

Insert the tip of the reamer into the prepared hole. Use rotating movements to remove all interfering bone, and ensure there is enough space to allow free mobility of the screw head.

Repeat for each pedicle site to be instrumented with polyaxial screws.

Polyaxial Screw Insertion

Instruments

03.620.005	Ratchet T-Handle with Low Toggle with Hexagonal Coupling 6.0 mm
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03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm
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Optional instruments

03.620.001	Screwdriver Stardrive, T25, with T-Handle
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03.620.006	Screwdriver Stardrive, T25, with straight Handle
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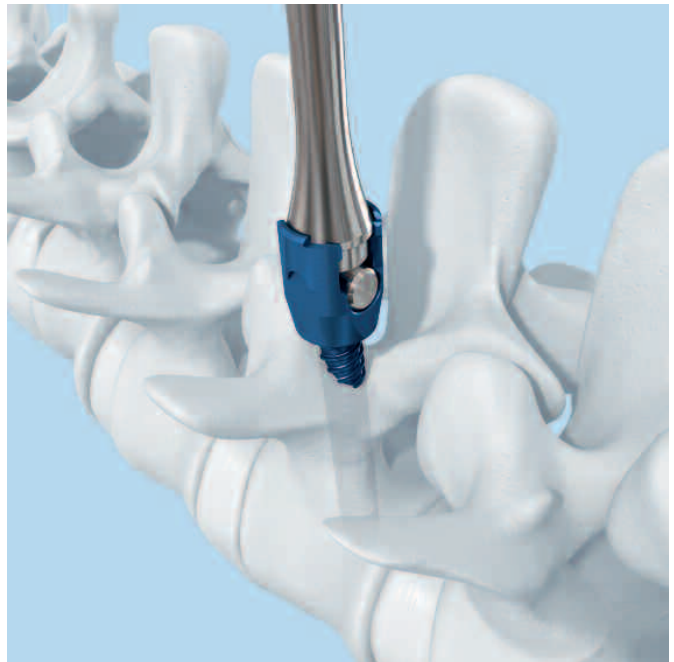
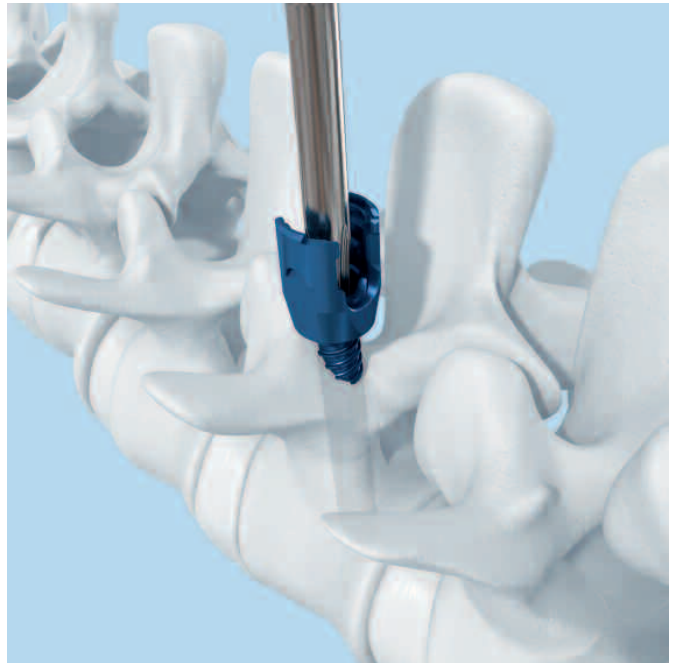
03.620.015	Alignment Tool
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Use the ratchet T-handle and the self-retaining screwdriver shaft to pick up a screw from the screw rack.

Place the screwdriver tip firmly into the star recess and pick up the appropriate screw. Insert the screw into the prepared pedicle.

Repeat for each screw site.

Note: Following insertion, the orientation of the screw head can be adjusted by using the alignment tool.



Option: Inserting polyaxial screw with stabilizing sleeve

Instruments

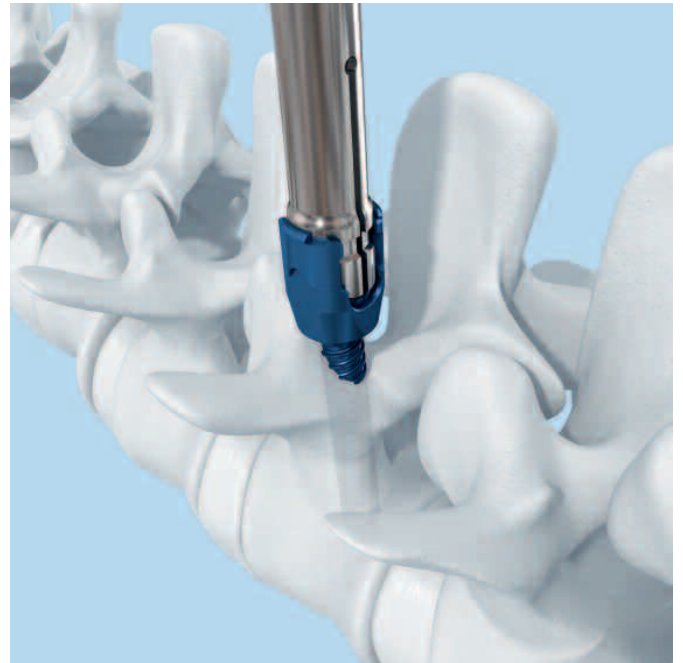
03.620.005	Ratchet T-Handle with Low Toggle with Hexagonal Coupling 6.0 mm
03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm
03.620.004	Stabilization Sleeve for preassembled Pedicle Screw Pangea

Optional instrument

03.620.001	Screwdriver Stardrive, T25, with T-handle
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If there is soft tissue blocking the path to the pedicle, use the stabilization sleeve to stabilize the head and to prevent it from rotating during insertion.

Load the stabilization sleeve on the Stardrive screwdriver shaft. Place the screwdriver tip firmly into the star recess of the screw in the screw rack and slide the stabilizing sleeve down into the screw head. Hold the sleeve during screw insertion to prevent the head from rotating as the screw advances.



Option: Inserting polyaxial screw with retaining sleeve

Instruments

03.620.005 Ratchet T-Handle with Low Toggle with Hexagonal Coupling 6.0 mm

03.620.003 Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm

03.620.023 Retaining Sleeve for Pangea Polyaxial screws

Optional instruments

03.620.001 Screwdriver Stardrive, T25, with T-Handle

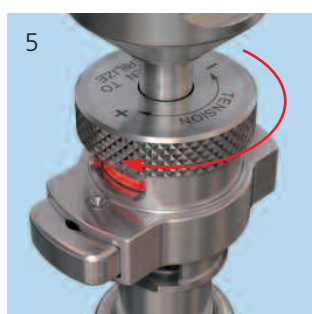
03.620.074 Retaining Sleeve for Pangea Polyaxial

If it is necessary to exert lateral force on the screw during insertion, the retaining sleeve provides rigid coupling to keep the screw firmly in place.

To assemble the retaining sleeve on the screwdriver shaft, press and hold down the assembly button while sliding the sleeve toward the handle to its full extension. Release the button and then push the outer knurled sleeve towards the handle (1). Ensure the tensioning knob is loosened (2).

Place the screwdriver tip firmly into the star recess of the screw in the screw rack (3). Turn the retaining sleeve T-handle to align the tip with the rod slot. Push the sleeve down to capture the screw and pick up the screw (4).

If additional screw coupling to the driver is required once the screw is loaded, the tensioning knob may be tightened to apply more retaining force to the screw. (5)



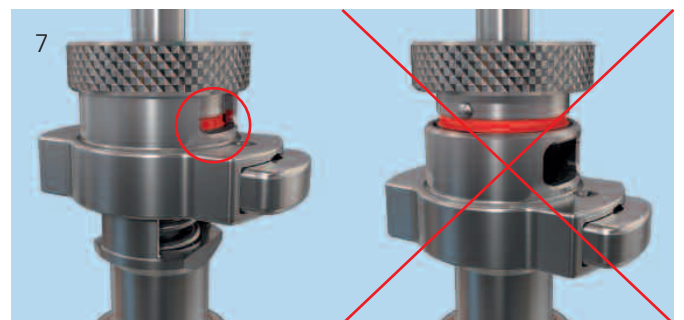
Insert the screw into the prepared pedicle. Hold the outer knurled sleeve during screw insertion if necessary. (6)

Notes

- Do not press the assembly button during screw insertion. Should this occur, remove the screw, reassemble the sleeve on the shaft and reload the screw.
 - The red indicator line will be visible in the viewing window when the screw is loaded correctly. (7)
-

To release the sleeve pull up on the outer knurled sleeve and remove the screwdriver. (8)

Repeat for each screw.



Monoaxial Screw Insertion

Instrument

03.622.004 Screwdriver with Silicone Handle, straight

Optional instrument

03.620.015 Alignment Tool

Use the self-retaining screwdriver to pick up a screw from the screw rack by inserting the tip of the screwdriver into the head of the appropriate monoaxial screw.

Insert the screw into the prepared pedicle.

Repeat for each screw site.

Note: The orientation of the screw can be adjusted using the alignment tool after screw insertion.



Option: Insert monoaxial screw with screwdriver and holding sleeve

Instruments

03.622.004	Screwdriver with Silicone Handle, straight
03.622.003	Holding Sleeve for Screwdriver

Assemble holding sleeve

Place the screwdriver through the outer sleeve and pull the sleeve back until it makes contact with the screwdriver handle. (1)

Place the inner sleeve over the screwdriver and under the outer sleeve. (2)

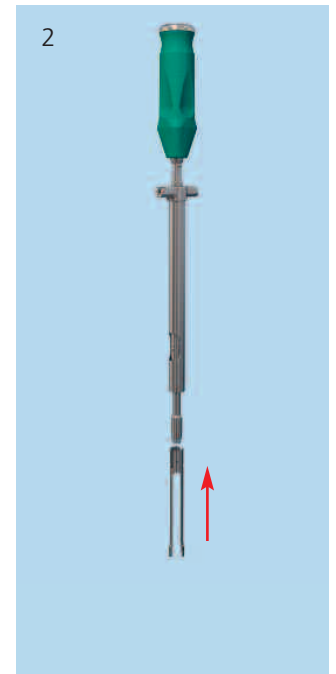
Use the window on the outer sleeve to monitor the keyway that will secure the inner sleeve to the screwdriver. Ensure the inner sleeve's keyway inserts into the protruding pin on the screwdriver shaft. Turn the inner sleeve in a slightly clockwise direction to secure. (3)

Insert screw into screwdriver

Ensure the outer sleeve is fully retracted and insert the screwdriver tip into the head of the appropriate monoaxial screw. Push the outer sleeve down to its full extension. (4)

Insert the Pangea monoaxial screw into the prepared pedicle.

Once the screw is inserted, pull the outer sleeve back to disengage the screwdriver from the screw.



Posterior Interbody Fusion

Instrument

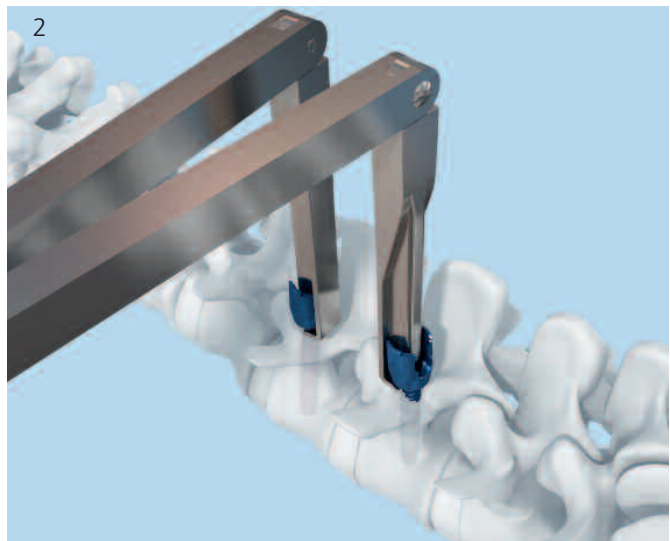
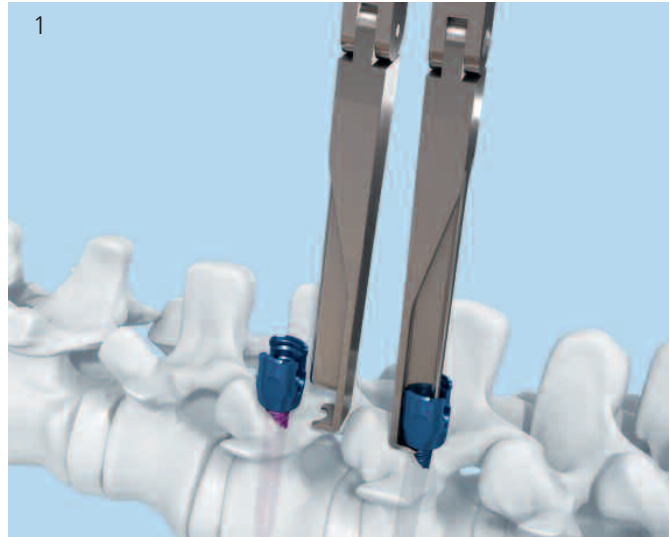
03.620.016 Distractor Pangea, with Hinge

If posterior interbody fusion is performed at this time, the distractor with hinge may be placed between Pangea screws to distract the interbody space.

Position screw heads to be the same distance to the bone. Engage one distractor leg below a polyaxial screw head. Engage second distractor leg below the second screw head. (1)

Fold distractor handle. Distract and tighten speed nut. Perform interbody procedure. (2)

Remove distractor and adjust screw heights to final positions.



Pedicle Hook Placement

1

Prepare pedicle for pedicle hook

Instruments

03.622.012	Pedicle Feeler, medium
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388.530	USS Chisel, width 9 mm
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Use the pedicle feeler to open the facet capsule and locate the pedicle.

Use the chisel to remove a small piece of the inferior articular process to ensure proper seating of the pedicle hook.

Note: Pedicle hooks must be placed with opening faced upwards.



2

Place pedicle hook

Instrument

03.622.040	Holding Forceps for lateral holding of Pangea Hooks
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Optional instrument

388.110	Positioner for Pangea Hooks
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Attach the pedicle hook to the holding forceps.

Place the pedicle hook in the desired location. Use the positioner for hooks to facilitate placement.

Repeat for each pedicle hook.



3

Drill hole for \varnothing 3.2 mm screw

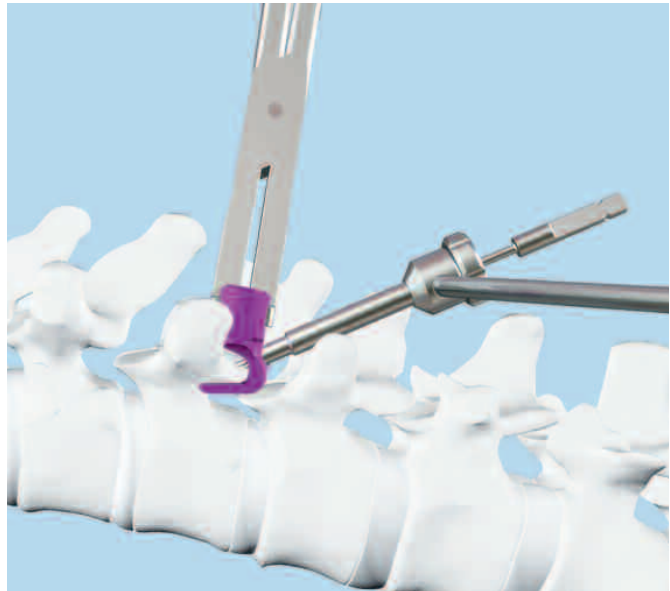
Instruments

315.190	Drill Bit \varnothing 2.0 mm, length 100/75 mm, 3-flute, for Quick Coupling
387.060	Handle for Drill Sleeve 2.0
388.581	Drill Sleeve 2.0

Securely anchor the pedicle hook to the pedicle by using a \varnothing 3.2 mm screw. Insert the screw through the hole at the back of the pedicle hook.

To drill the hole, use an oscillating drill together with the drill bit \varnothing 2.0 mm and the drill sleeve 2.0. Before operating, screw the handle for drill sleeve onto the drill sleeve.

Note: Do not operate the power drill if the drill bit does not make contact with bone after passing through the drill sleeve.



4

Determine screw length

Instrument

319.060	Depth Gauge
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Remove the drill sleeve and determine the screw length with the depth gauge.

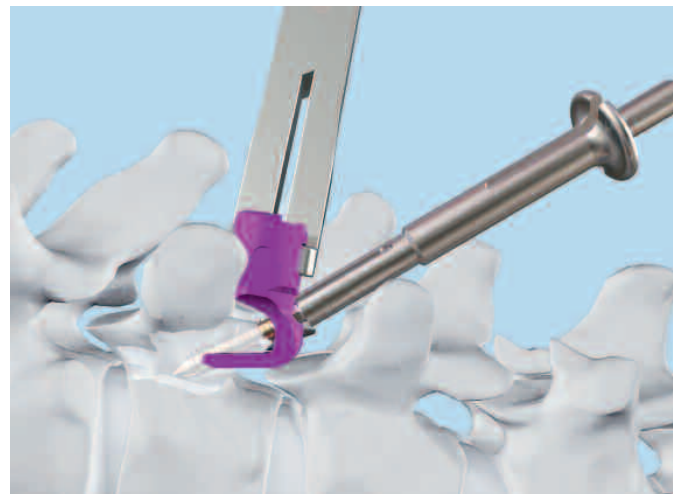
5

Insert \varnothing 3.2 mm screw

Instruments

314.070	Screwdriver, hexagonal, small, 2.5 mm, with Groove
388.381	Holding Sleeve for Fillister Head Screws

Pick up an appropriate screw for pedicle hooks using the holding sleeve and the hexagonal screwdriver. Insert the screw into the previously prepared drill hole. The pedicle hook should now be firmly attached to the pedicle.



Lamina Hook/Transverse Process Hook Placement

1a

Prepare lamina for lamina hook

Instrument

388.105	Lamina Feeler, medium
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Using the lamina feeler, separate the ligamentum flavum from the underside of the lamina to ensure good bony contact with the lamina hook.



1b

Prepare transverse process for transverse process hook

Instrument

03.622.030	Transverse Process Finder
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Using the transverse process finder, separate the ligamentum flavum from the underside of the transverse process.



2a

Place lamina hook

Instrument

03.622.040	Holding Forceps for lateral holding of Pangea Hooks
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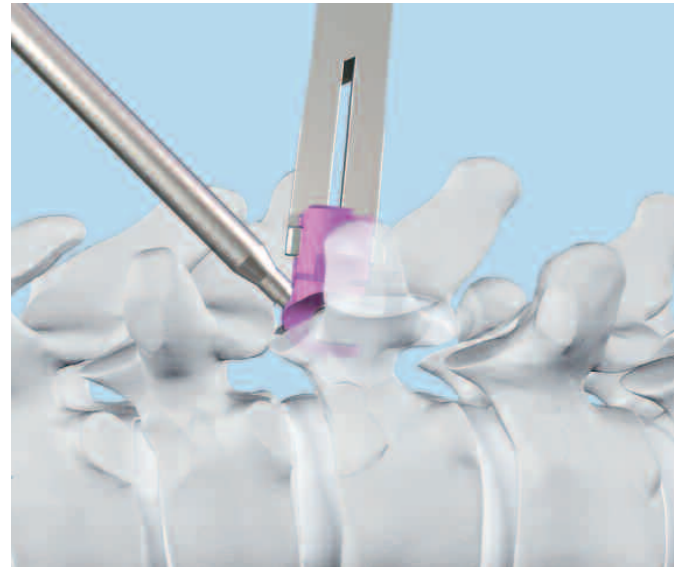
Optional instrument

388.110	Positioner for Pangea Hooks
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Attach the lamina hook to the holding forceps.

Place the lamina hook in the desired location. Use the positioner for hooks to facilitate placement.

Repeat for each lamina hook.



2b

Place transverse process hook

Instrument

03.622.040	Holding Forceps for lateral holding of Pangea Hooks
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Optional instrument

388.110	Positioner for Pangea Hooks
---------	-----------------------------

Attach the transverse process hook to the holding forceps.

Place the transverse process hook in the desired location. Use the positioner for hooks to facilitate placement.

Repeat for each transverse process hook.



Rod Contouring and Insertion

1

Determine rod contour and length

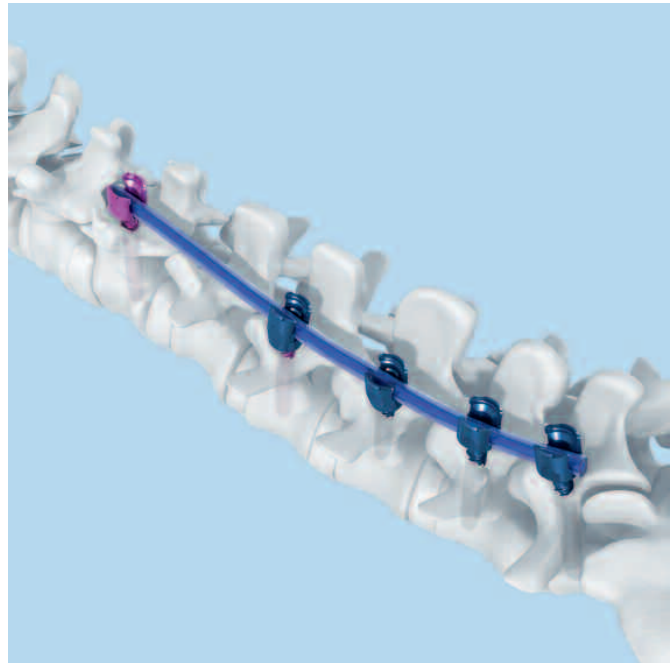
Instrument

388.902	Bending Template \varnothing 6.0 mm, length 150 mm
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Optional instrument

388.905	Bending Template for Rods \varnothing 6.0 mm, length 500 mm
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Determine the contour and length of the rod using a bending template. Cut the rod to the required length, using a \varnothing 6.0 mm rod cutter. The polyaxial Pangea screw head compensates for some lateral screw offset.



2

Contour the rod

Instrument

03.620.020	Rod Bender for Rods \varnothing 6.0 mm, with Radius Adjustment
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Optional instrument

03.622.060.02	Rod Bender with long handles for Pangea (Pair)
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Contour the rod to match the bending template using the rod bender with radius adjustment.

Note: Once bent, titanium rods should not be bent back again. Repeated bending can weaken the rod. Do not bend titanium rods more than 45°.



3

Insert rod

Instrument

388.440	Holding Forceps with broad tip, length 290 mm, for Rods Ø 6.0 mm
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Optional instruments

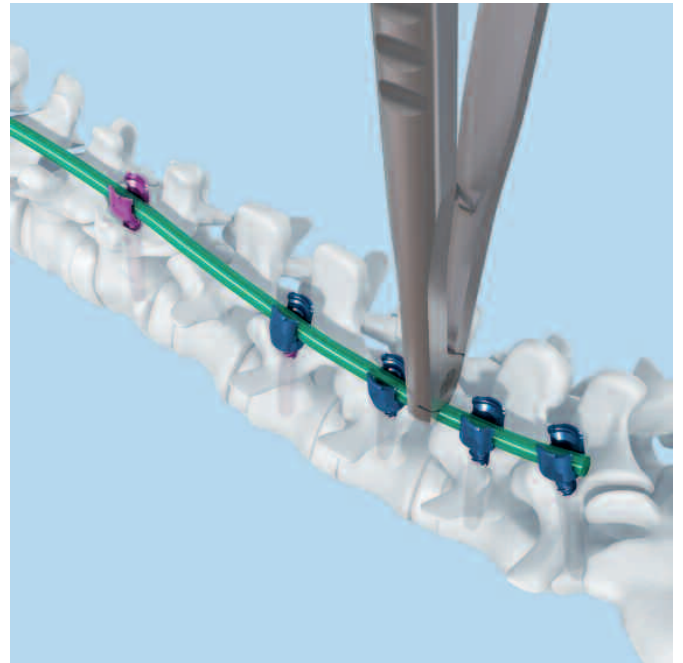
328.028	Holding Forceps, straight, for Rods Ø 6.0 mm
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388.460	Holding Forceps, angled, for Rods Ø 6.0 mm
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Insert the rod into the Pangea head using one of the holding forceps listed above.

In the case of polyaxial screws, typically a distinct snap is felt when the rod is pushed into the polyaxial screw head. This retention feature is designed to provide temporary hold during assembly.

Note: It is not necessary to feel the snap if the rod is seated.



Rod Reduction Techniques

The rod must be seated in the Pangea head in order to engage the locking cap. There are three alternative instruments to seat the rod in the screw head.

A

Reduction with rod pushers

Instruments

03.620.076	Rod Pusher/Counter Torque, short, keyed, for Pangea
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388.114	Rod Pusher for Rods \varnothing 6.0 mm
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Optional instrument

03.620.011	Rod Pusher/Counter Torque for Pangea
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Use the rod pusher/counter torque or the rod pusher to push the rod firmly into the screw head. For constructs with two or more levels, begin with the central screw.



B

Rod reduction with rocker forks

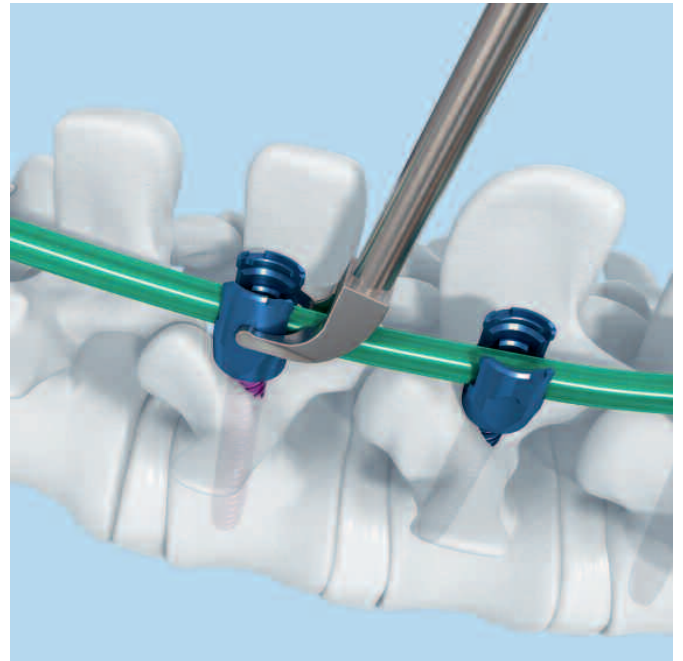
Instruments

03.620.009 Rocker Fork Pangea, small, straight shaft

03.620.010 Rocker Fork Pangea, small, curved shaft

Use the rocker fork with straight shaft or the rocker fork with curved shaft. Hook the fork under the head's reduction features from a cranial/caudal approach and rock it away from the screw to seat the rod into the head. The rocker fork with curved shaft requires less rod exposure, but more access to engage the head.

Note: Placing the fork on the side where the rod is higher is more effective in positioning the rod evenly in the head.



C

Rod reduction with rod introduction pliers for vertical reduction

Instrument

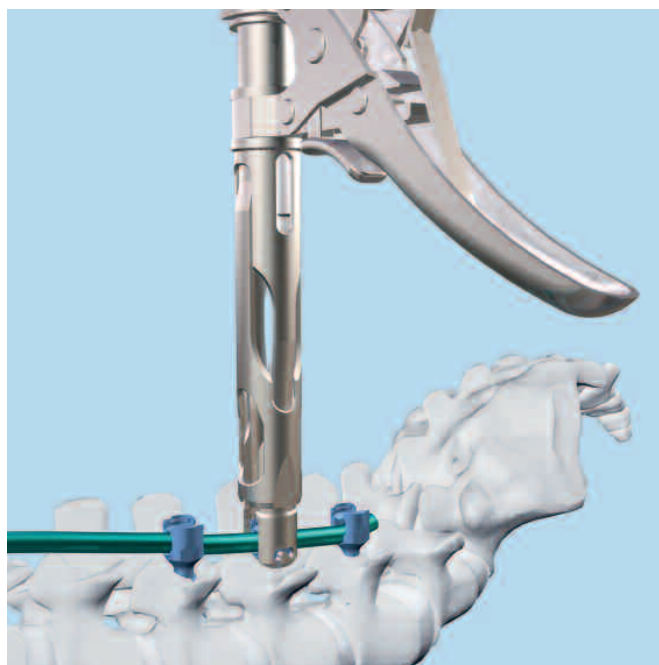
03.622.095 Rod Introduction Pliers, for vertical reduction

Optional instrument

03.620.008 Rod Persuader for Pangea

Attach the tips of the rod introduction pliers onto the head's reduction features. Center the instrument over the head and squeeze the handle to seat the rod in the head opening.

The persuader has a ratchet handle for ease of use.



D

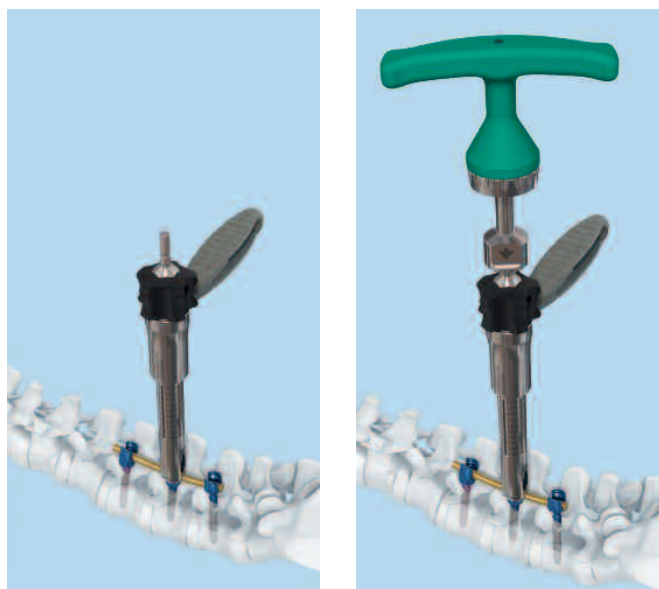
Spondylolisthesis reduction

Instrument

03.620.012 Reduction Instrument for Spondylolisthesis

Turn the black handle counterclockwise until the instrument is fully extended. Attach the tips of the reduction instrument onto the head's reduction features. Turn the black handle clockwise to reduce spondylolisthesis.

Note: The hexagonal coupling and the ratchet T-handle may be used to ease reduction.



E

Rod reduction with rod introduction pliers for biplanar reduction

Instruments

03.622.090	Rod Introduction Pliers, for biplanar reduction
03.622.091	Implant Holder for Rod Introduction Pliers

Use the rod introduction pliers and implant holder in situations where the rod is lateral to the implant opening (above or below the implant).

1

Assemble implant holder

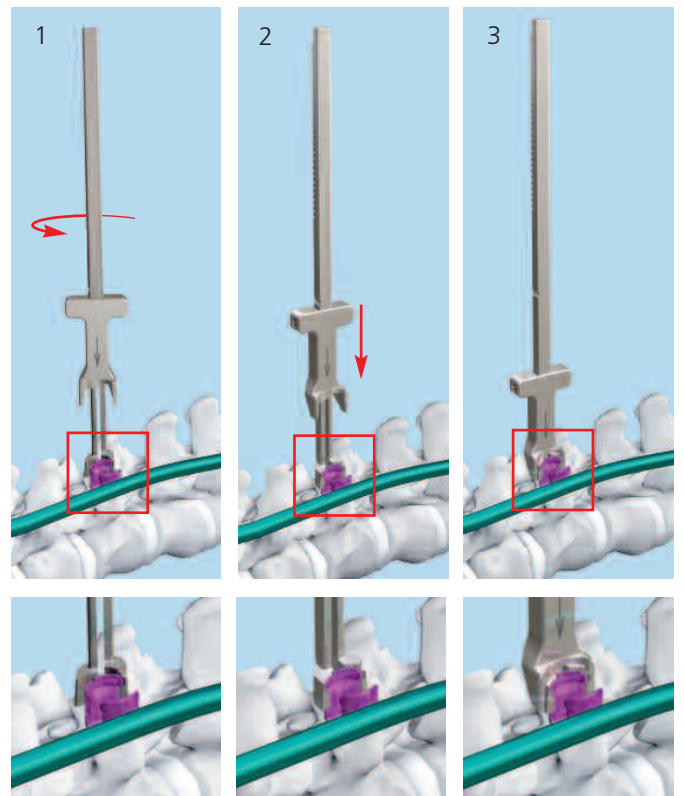
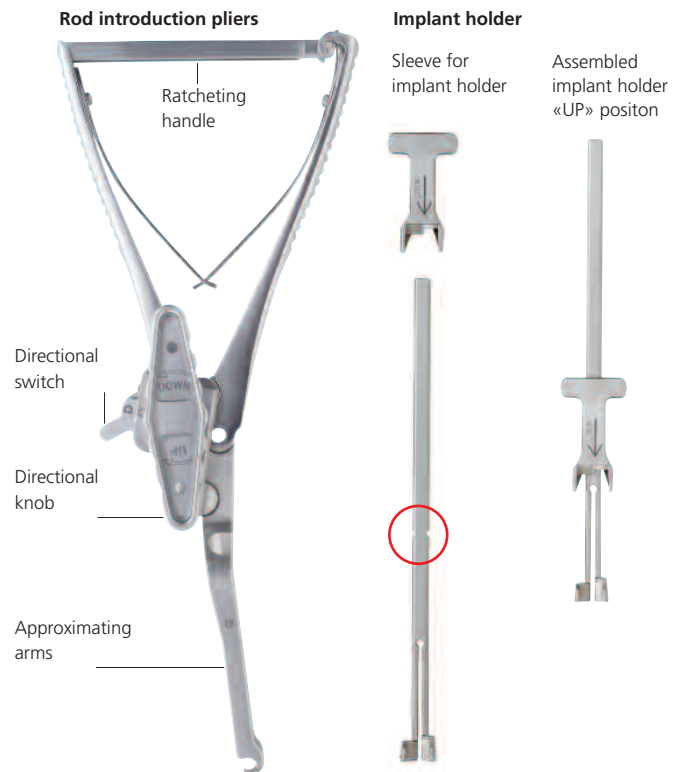
Slide the sleeve onto the implant holder so that the ball detents on the sleeve snap into the groove on the implant holder. This is the "UP" position of the sleeve on the implant holder.

2

Attach implant holder

Attach the implant holder to the screw or hook by snapping it on to the mating feature on the side of the implant. Use a rolling action to first snap on one side of the implant and then on the other side. Slide the sleeve down until it fully extends.

The implant holder is now firmly attached to the implant.



3

Place rod introduction pliers

Place the rod introduction pliers over the implant holder. Ensure the directional positioning switch is in the "DOWN" position.

Turn the silver directional knob to move the rod introduction pliers along the implant holder:

Down

To move the rod introduction pliers downwards, turn the directional positioning switch to the "D" (DOWN) position. Rotate the directional knob counterclockwise.

Up

To move the rod introduction pliers upwards, turn the directional positioning switch to the "U" (UP) position. Rotate the directional knob clockwise.

Engage the rod with the approximating arms. Squeeze the ratcheting handle to position the rod above the implant opening. Rotate the directional knob to firmly position the rod in the implant opening.



Down



Up



Notes

- The approximating arm can also be used to pull the rod up and over the side of the implant.
 - When using the rod introduction pliers to reduce the rod, the approximating arm guides the screwdriver when a locking cap is being assembled on to a screw or a hook.
-

After attaching a locking cap, the rod introduction pliers can be removed. To do so, turn the directional positioning switch to the “UP” position and rotate the directional knob until it disengages from the implant holder. Slide the sleeve up the implant holder and disconnect the holder from the implant.

Tip: The entire rod introduction pliers and implant holder assembly can also be removed in one step by pulling up the sleeve on the implant holder and releasing the rod introduction pliers from the implant.

Close Construct

1

Attach locking caps

Instruments

03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm
03.620.005	Ratchet T-Handle with Low Toggle with Hexagonal Coupling 6.0 mm
03.620.076	Rod Pusher/Counter Torque, short, keyed, for Pangea

Optional instruments

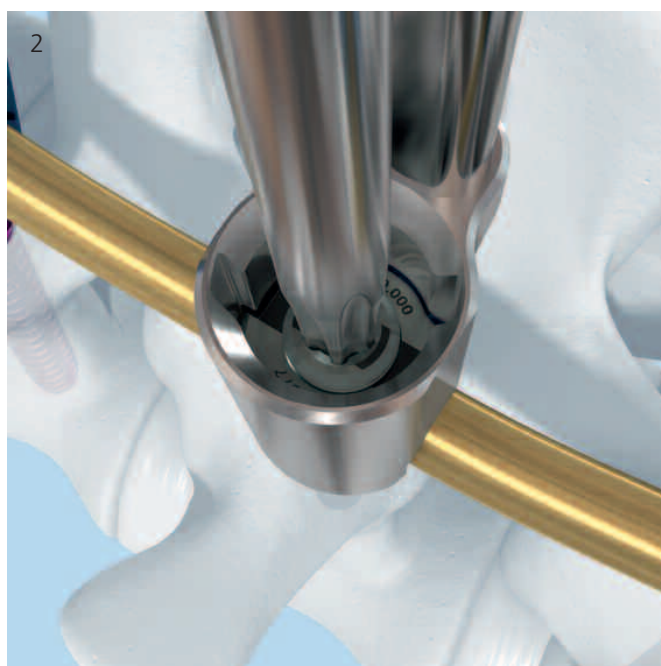
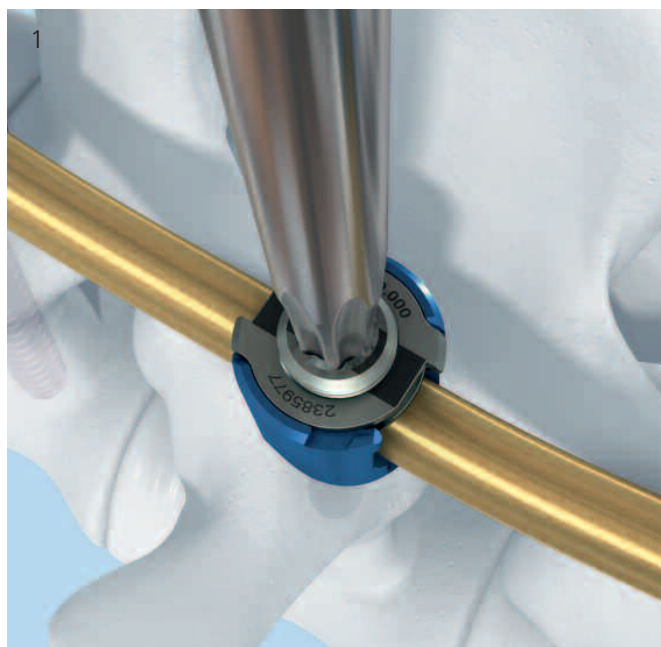
03.620.011	Rod Pusher/Counter Torque for Pangea
03.620.019	Torque-limiting Handle, 10 Nm, for Pangea
03.620.026	Pangea Locking Cap Introducer, keyed
03.620.002	Screwdriver Shaft Stardrive, T25, long, with Hexagonal Coupling 6.0 mm, for Pangea

The locking cap can be inserted by using the rod pusher/counter torque as a guide or by introducing it through a locking cap introducer. Alternatively, insert it using a rocker fork that is engaged.

Insert the screwdriver tip firmly into a locking cap and remove the cap from the module. Align black marks on the locking cap parallel with the rod. When the cap is in the correct position, it will drop slightly into the Pangea head. Push down on the cap to snap it into the head. (1)

If keyed rod pusher/counter torque or locking cap introducer is used, align the dovetails of the locking cap with the guiding grooves in the instrument. This ensures the black marks are automatically parallel with the rod. (2)

Note: If using the rod introduction pliers for rod reduction, use the long screwdriver shaft (03.620.002) to attach the locking cap.



Rotate the screwdriver ¼ turn to the right to engage the cap and capture the rod. There is a distinct snap as the cap turns into place.

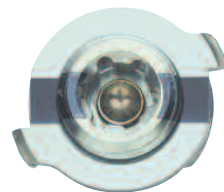
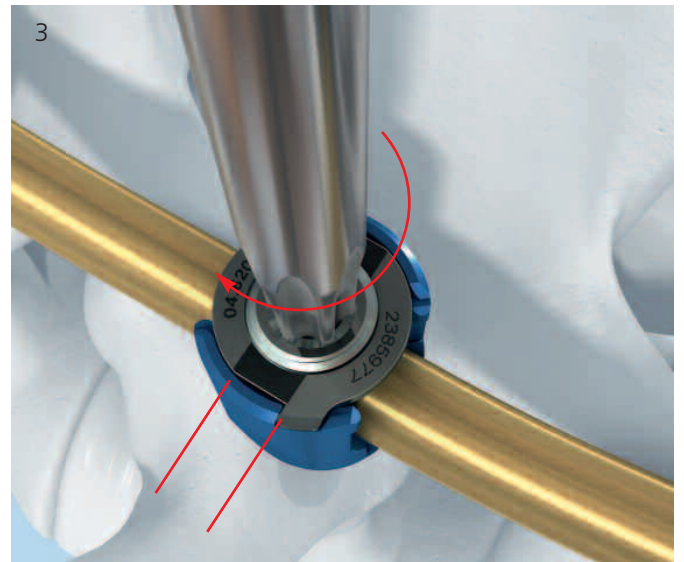
The black marks on the locking cap are now perpendicular to the rod. The rod is free to slide within the head of the screw and the head retains polyaxial mobility. (3)

Note: All locking caps must be in place before tightening the setscrews.

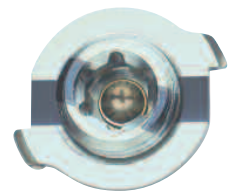
If provisional tightening is required, turn the screwdriver further to drive the setscrew down and lock the rod and the head. Tighten until the torque-limiting handle slips.

Repeat for all locking caps.

Note: It is possible to visually identify locking caps that have had their initial preload disturbed by examining the alignment of the setscrew to the cap. If the etch marks are not aligned, the setscrew cannot carry the cap through the ¼ turn. The cap driver should be used in this situation.



Set



Not set

Alternatively: If the setscrew turns freely within the cap and/or the locking caps have had their initial preload disturbed as indicated by the alignment of the etch marks, use the locking cap driver with T-handle to turn the cap.

Instrument

03.620.013	Locking Cap Driver with T-Handle, for Pangea
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Optional instruments

03.622.016	Sleeve for Locking Cap Driver, for Pangea
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03.620.029	Locking Cap Driver with Release
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Place the screwdriver tip into the setscrew. (1)

Apply pressure against a hard surface to avoid pushing the cap off the shaft.

Slide the locking cap driver down on to the top of the setscrew. Thread the locking cap driver clockwise on to the top of the setscrew until it is snug. (2)

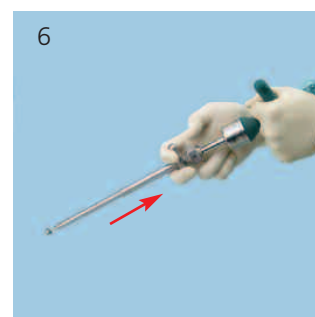
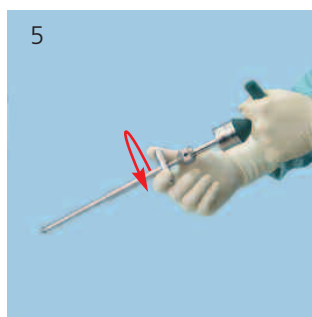
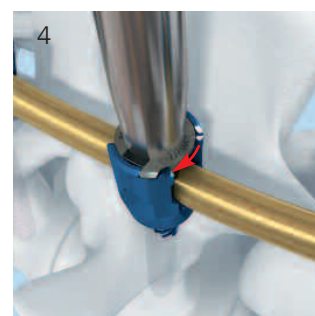
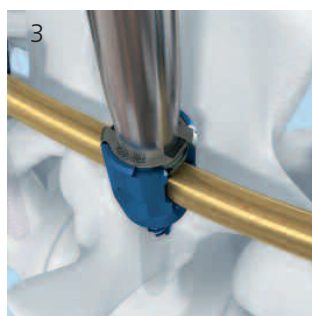
Insert locking cap as outlined in the previous section with etch marks parallel to the rod. (3)

Turn the locking cap driver clockwise to rotate the cap $\frac{1}{4}$ turn while only holding the handle of the locking cap driver. (4)

Notes

- Unthread the locking cap driver counterclockwise (5) (while holding on to screwdriver handle) and retract it before driving the setscrew further with the Stardrive screwdriver to avoid locking the instruments to the locking cap. (6)
 - If using the rod introduction pliers, use the sleeve for for locking cap driver (03.622.016).
-

If the optional locking cap driver with release (03.620.029) is used, push down the tip of the instrument before threading it onto the setscrew of the locking cap.



Compress or Distract

Controlled compression or distraction is possible by applying forces at the posterior aspect of the vertebral bodies (lordotic) or across the entire vertebral body (parallel). Lordotic compression will control the amount of resulting lordosis. Parallel compression will result in more uniform forces across to the anterior aspect of the vertebral body.

Instruments

03.620.017	Compression Forceps, for Lumbar Spine
03.620.018	Distraction Forceps, for Lumbar Spine
03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm, for Pangea
03.620.076	Rod Pusher/Counter Torque for Pangea

Optional instrument

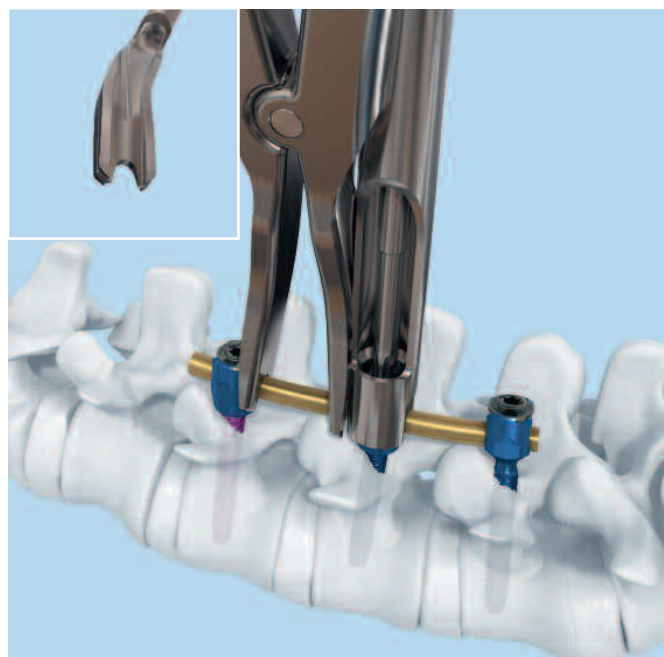
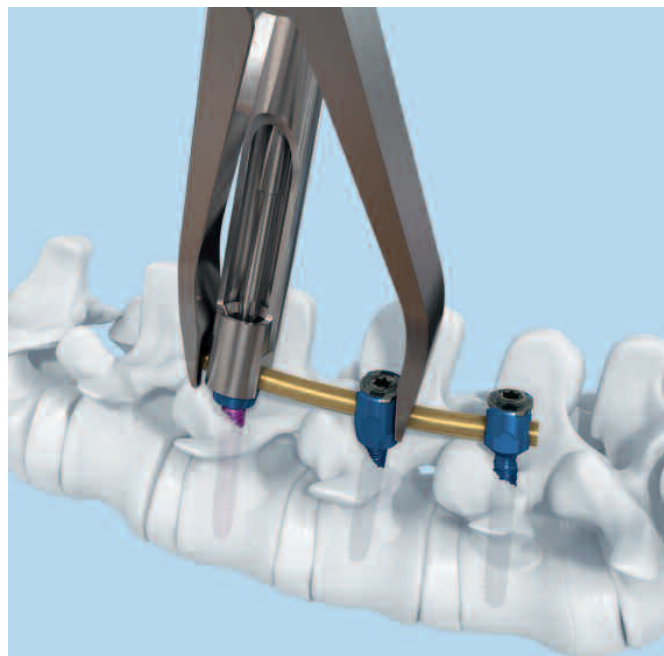
03.620.011	Rod Pusher/Counter Torque for Pangea
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Lordotic compression/distraction

Lordotic compression or distraction with mobile Pangea screw heads is only possible when the locking cap setscrews have not been tightened. Use the compression forceps to achieve compression, or the distraction forceps to achieve distraction.

Once compression/distraction is achieved, tighten the setscrew with the screwdriver shaft Stardrive. If final tightening is required, insert the screwdriver shaft attached to the torque-limiting handle through the rod pusher/counter torque and tighten setscrew.

Note: The distraction forceps have narrow wedge tips that can be pushed between very tightly spaced implants.



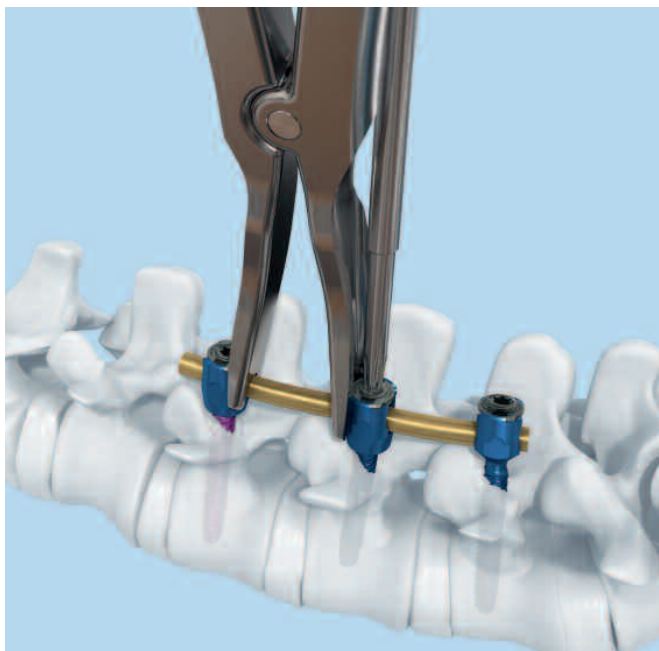
Parallel compression/distract

Parallel compression or distraction is possible with locked polyaxiality in screw heads where the locking cap setscrews have been tightened and then loosened.

Use the compression forceps to achieve compression, or the distraction forceps to achieve distraction, then tighten the setscrews by inserting the screwdriver shaft through the rod pusher/counter torque. Tighten the setscrew while holding the rod pusher/counter torque.

Note: Do not use the torque-limiting handle to loosen setscrews.

Repeat as desired for each segment.



Deformity Correction Techniques

Deformity correction can be assisted by additional manipulation of implants. If necessary apply the following techniques for deformity correction.

A

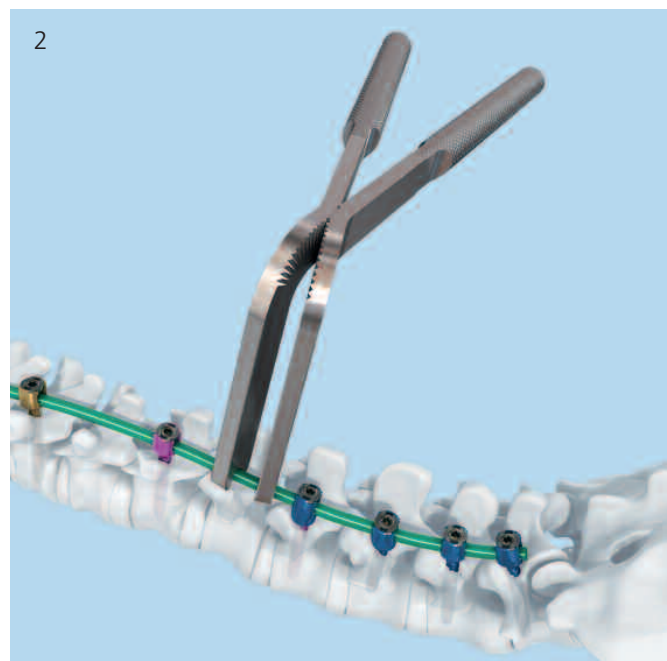
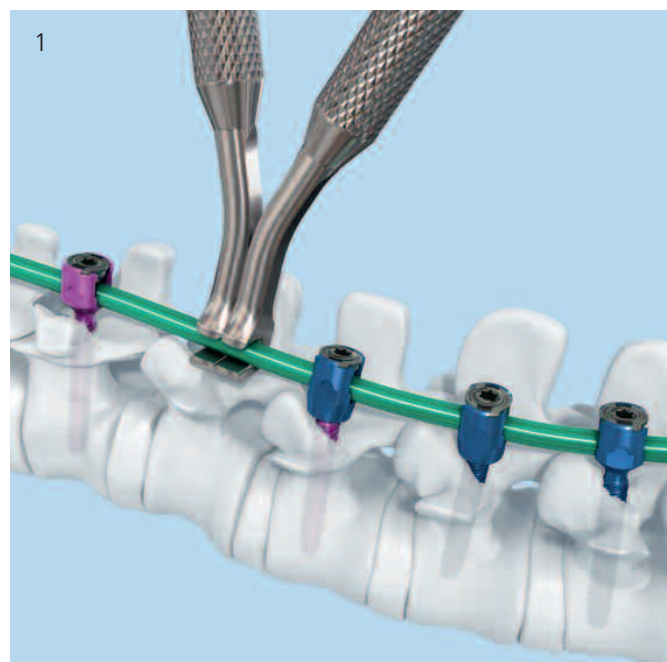
In-situ bending

Instruments

388.112	In-situ Bender, right
388.113	In-situ Bender, left
03.622.061	Bending Iron for Rods \varnothing 6.0 mm, left, for Coronal Plane
03.622.062	Bending Iron for Rods \varnothing 6.0 mm, right, for Coronal Plane

Use the in-situ benders to contour the rod in the sagittal plane (1) and the bending irons to contour the rod in the coronal plane (2).

Note: Once bent, titanium rods should not be bent back again. Do not bend titanium rods more than 45°.



B**Rod rotation**

Ensure that the locking cap setscrews are not tightened during rod rotation.

Instruments

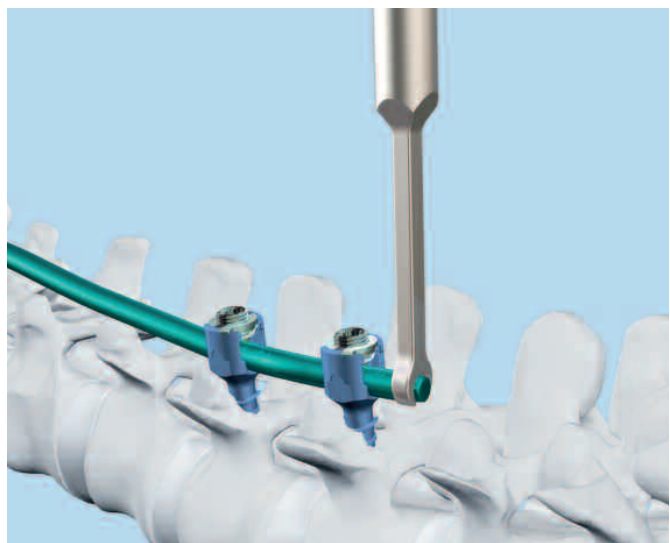
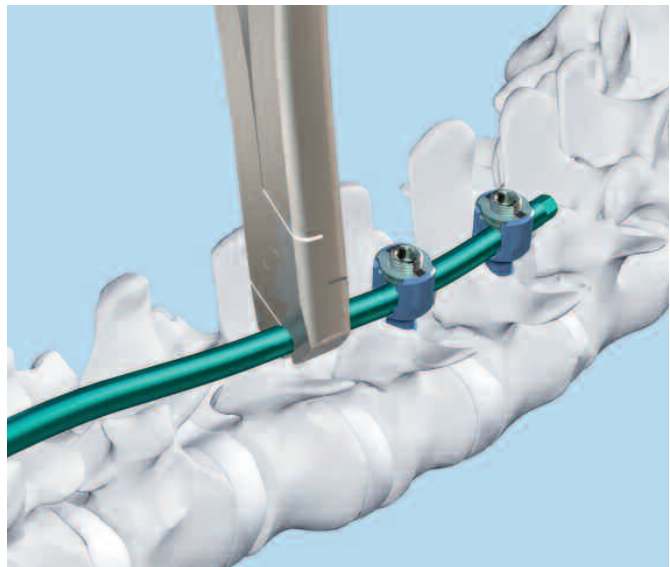
388.440	Holding Forceps with broad tip, for Rods Ø 6.0 mm
03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm, for Pangea
03.620.019	Torque-limiting Handle, 10 Nm, for Pangea

Use the holding forceps to grasp the rod and slowly rotate it in the desired direction. Use the Stardrive screwdriver to tighten setscrews after achieving the desired rod rotation.

Option for rods with hexagonal end**Instruments**

03.622.084	Wrench, hexagonal, angled, for Rods Ø 6.0 mm, for Pangea
03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm, for Pangea
03.620.019	Torque-limiting Handle, 10 Nm, for Pangea

If rods with hexagonal ends are used for the construct, the wrench can be applied to the hexagonal end of the rod and rotated. Use the Stardrive screwdriver to tighten setscrews after achieving the desired rod rotation.



C

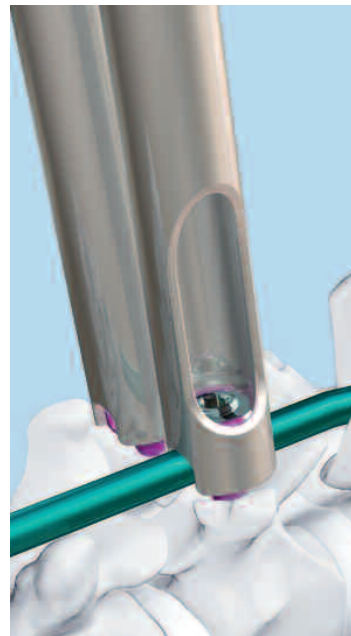
Derotation

Instruments

03.622.007	Derotation Instrument for Screws and Hooks
03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm, for Pangea
03.620.019	Torque-limiting Handle, 10 Nm, for Pangea

If a derotation maneuver is desired, ensure that the locking cap setscrews are not tightened.

Place the derotation instruments (tubes) over the screws. Use the tubes as a lever to maneuver the vertebral bodies. Insert the Stardrive screwdriver through the tubes to tighten setscrews.



Final Tightening

Instruments

03.620.076	Rod Pusher/Counter Torque, short, keyed, for Pangea
03.620.066	Centering Sleeve for Pangea
03.620.022	Screwdriver Shaft Stardrive, T25, short, with Hexagonal Coupling, for Pangea
03.620.019	Torque-limiting Handle, 10 Nm, for Pangea

Optional instruments

03.620.011	Rod Pusher/Counter Torque for Pangea
03.622.018	Counter Torque Instrument for T25, for Pangea
03.620.069	Rod Pusher/Counter Torque, short, for Pangea
03.620.061	T-Handle with Ratchet Wrench and with Torque Limiter, 10 Nm



Place the rod pusher/counter torque over the screw head. Attach the screwdriver shaft to the torque-limiting handle and insert the shaft through the rod pusher/counter torque and into the locking cap setscrew. Tighten to the audible click, which indicates that 10 Nm of torque has been applied.

The centering sleeve can be inserted into the top of the rod pusher/counter torque for additional guidance during screwdriver shaft insertion and final tightening.

Repeat for all locking caps.

Notes

- Do not use the torque-limiting handle to loosen setscrews.
 - Do not use the locking cap introducer to counter-torque at final tightening.
-

Connecting Rods with Cross-Link Clamps and Rods

Cross-link clamps with rod are used to stabilize the construct and to increase rotational stability.

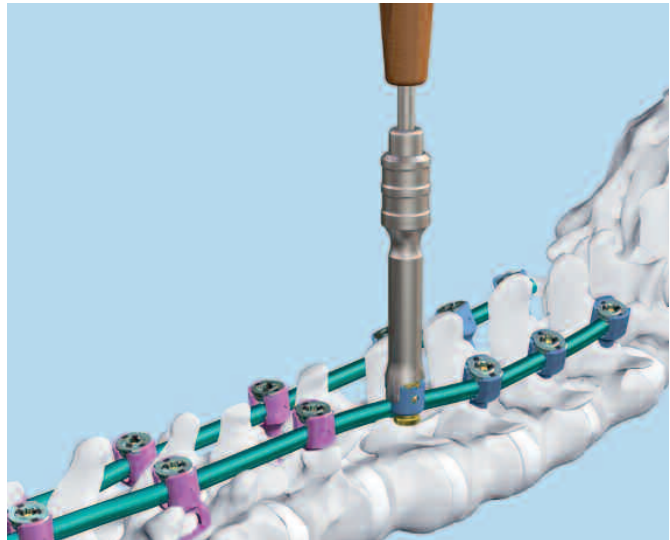
1

Mount first cross-link clamp

Instruments

388.395	Screwdriver, hexagonal, long, 2.5 mm, length 293 mm
388.363	Holding Sleeve with Catches, for No. 314.070

Assemble the small hexagonal screwdriver and the holding sleeve with catches. Pull back the holding sleeve. To pick up the preassembled cross-link clamp, insert the hexagonal screwdriver into the setscrew of the clamp, push down the holding sleeve and clip the catches onto the sleeve of the preassembled clamp. Pull the holding sleeve back slightly, place the clamp onto the rod and release the holding sleeve.



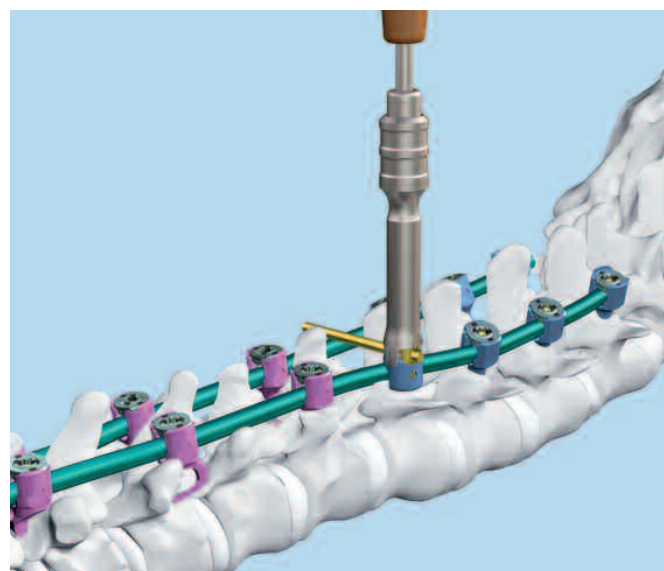
2

Introduce cross-link rod

The special design of the cross-link clamp with its two recesses on top allows the cross-link rod to be angled up to $\pm 20^\circ$, depending on the anatomical situation.

Determine the appropriate length of the \varnothing 3.5 mm crosslink rod.

Hold the clamp with the small hexagonal screwdriver and introduce the \varnothing 3.5 mm cross-link rod through the hole in the cross-link clamp. Tighten the setscrew of the cross-link clamp with the small hexagonal screwdriver.



3

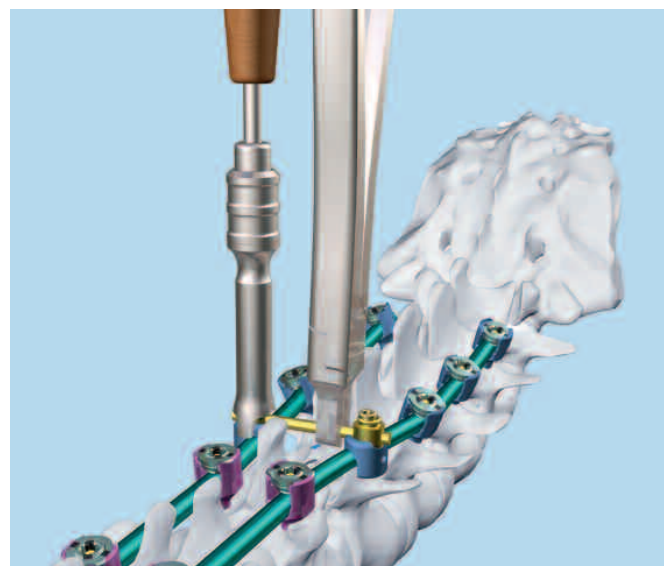
Mount second cross-link clamp

Instruments

388.395	Screwdriver, hexagonal, long, 2.5 mm, length 293 mm
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388.363	Holding Sleeve with Catches, for No. 314.070
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Repeat step 1 for the second clamp on the opposite rod. Introduce the \varnothing 3.5 mm cross-link rod through the second clamp, so that it protrudes by 5 mm beyond the clamp. Tighten the setscrew with the hexagonal screwdriver.



Connecting Rods with Transverse Connectors

The transverse connectors are used to stabilize the construct and to increase rotational stability.

Instruments

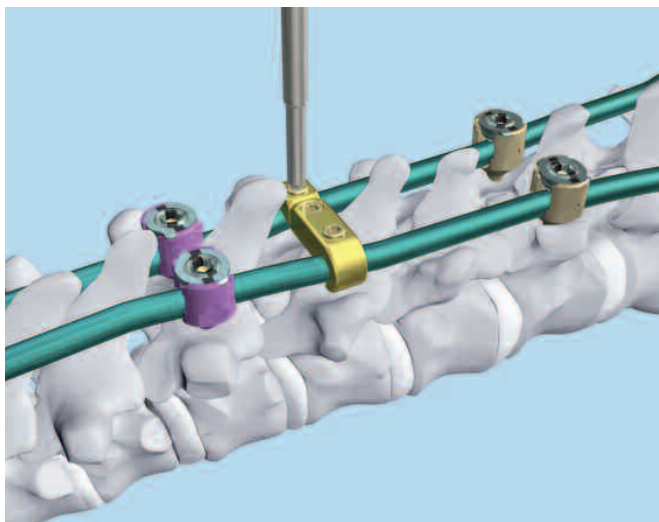
388.395	Screwdriver, hexagonal, long, 2.5 mm, length 293 mm
03.620.021	Template for Transverse Connectors, for Rods \varnothing 6.0 mm

Use the template for transverse connectors to measure the distance between the two rods. Choose a transverse connector of the appropriate length.

Ensure the setscrews of the transverse connector are not advanced. Apply the transverse connector to the rods. To secure the transverse connector to the rods, tighten the setscrews on each end.

For a transverse connector with angular adjustment, tighten the large setscrew to lock the angle between the rods. To adjust the length of the transverse connector, slide the ends to the appropriate length and tighten the center setscrew.

Note: If any part of the construct requires further adjustment, all transverse connector setscrews must be loosened. After final adjustment, tighten the setscrews once again.



Attach Rod Connectors

Instruments

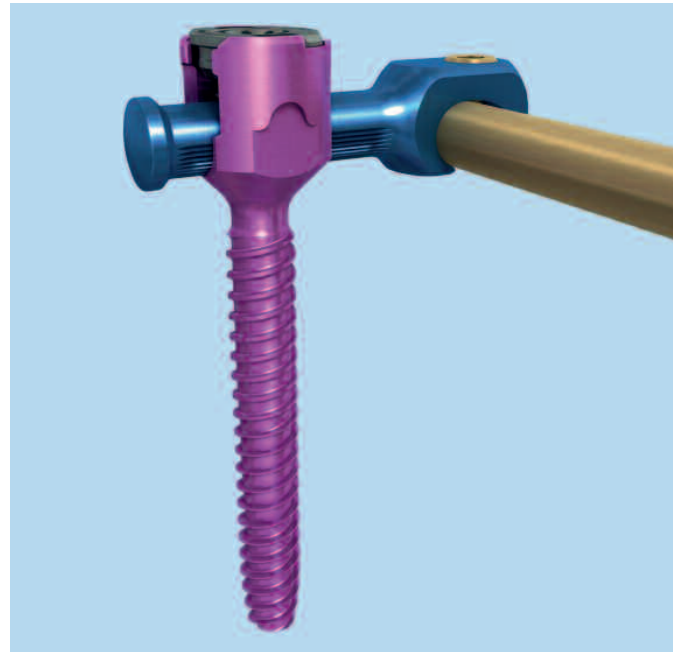
388.114	Rod Pusher for Rods Ø 6.0 mm
388.395	Screwdriver, hexagonal, long, 2.5 mm, length 293 mm

Place the opening of the rod connector over the rod. Loosely attach the rod connector to the rod by tightening the setscrew with the hexagonal screwdriver.

Introduce the rod connector into the screw or transverse hook opening. Use the rod pusher if necessary.

Secure the rod connector to the hook or screw by inserting the locking cap and tightening the setscrew.

Secure the rod connector to the rod by tightening the setscrew firmly.



Additional Techniques

A

Removal of locking caps

Instruments

03.620.005	Ratchet T-Handle with Low Toggle with Hexagonal Coupling 6.0 mm
03.620.003	Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm, for Pangea

Insert a Stardrive screwdriver into the setscrew of the locking cap. Turn the screwdriver counterclockwise until the cap rotates back to its original insert position with the black marks parallel to the rod. Tilt the shaft along the rod and lift the cap out.

Note: Do not use the torque-limiting handle to remove or loosen caps or screws.



B

Remobilization of Pangea screw heads

Instrument

03.620.014 Remobilization Tool for Pangea

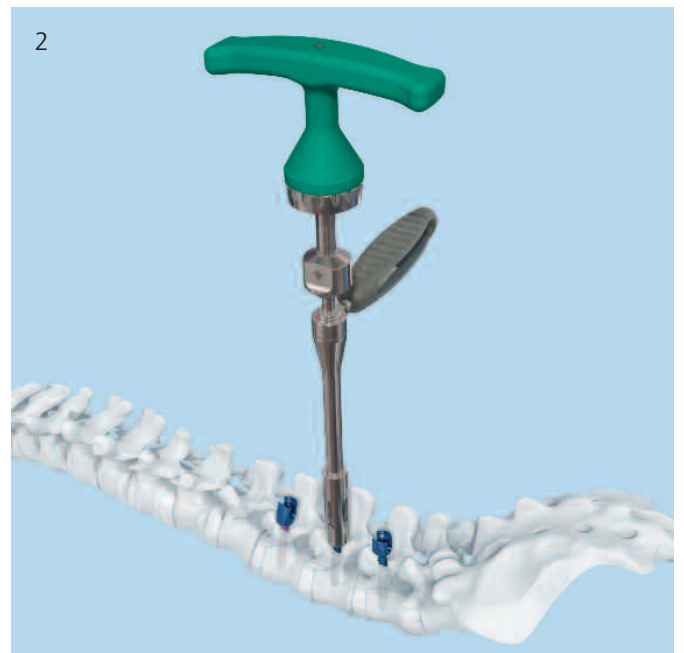
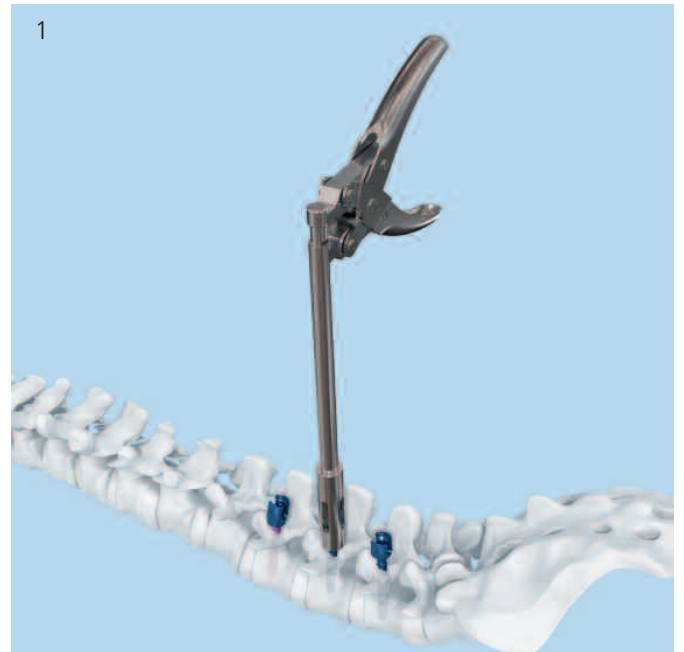
Optional instrument

03.620.075 Threaded Remobilization Tool

The polyaxial heads can be remobilized with the remobilization tool. After removing the locking caps and the rod, insert the remobilization tool into the screw head, and squeeze the handle completely. Angle the tool to loosen the screw head (1).

If using the threaded remobilization tool, turn the inner shaft clockwise with the assistance of a ratchet T-handle (2). When the shaft does not advance further, the screw head is loose again.

Before removing the instrument thread the shaft counterclockwise until a red line becomes visible.



Set Configuration

Polyaxial Screws

68.622.005	Vario Case for Implants Pangea Polyaxial, with Lid, without Contents
68.620.029	Rack for Pedicle Screws Pangea Polyaxial, short, without Contents (for screws up to 60 mm length)
68.620.023	Module for Pedicle Screws Pangea Polyaxial, for Vario Case (for screws up to 100 mm length)

Monoaxial Screws

68.622.006	Vario Case for Implants Pangea Monoaxial, with Lid, without Contents
68.622.001	Rack for Pedicle Screws Pangea Monoaxial, short, without Contents (for screws up to 60 mm length)
68.622.002	Rack for Pedicle Screws Pangea Monoaxial, long, without Contents (for screws up to 60 mm length)

Miscellaneous Implants

68.622.007	Vario Case for Implants Pangea, with Lid, without Contents
68.622.009	Module, empty, for Pangea
68.622.010	Module for Locking Caps, for Pangea
68.622.011	Module for Cross-Link Clamps with Rods
68.622.012	Module for Transverse Connectors low profile
68.622.013	Module for Connectors, for Pangea

Hooks

68.622.170	Vario Case for Pangea Hooks, with Lid, without Contents
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Basic Instruments

68.622.014	Vario Case for Basic Instruments for Pangea, with Lid, without Contents
68.622.021	Vario Case for Basic Instruments (part 1), for Pangea, with Lid, without Contents
68.622.022	Vario Case for Basic Instruments (part 2), for Pangea, with Lid, without Contents

Optional Instruments (needed for deformity surgery)

68.622.015	Vario Case for Optional Instruments for Pangea, with Lid, without Contents
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Implants

1. Rods

- Standard straight and curved rods, \varnothing 6 mm
- Rods with hexagonal ends to facilitate rod rotation with wrench
- Available in Titanium Alloy (TAN) and Pure Titanium (TiCP)

1.1 Rods, curved, soft, TiCP

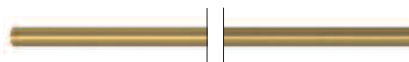
- Lengths 35 mm to 85 mm in 5 mm increments reduce the need to contour or cut
- Same mechanical properties as straight rods

Art. No.	Length (mm)
04.620.135*	35
04.620.140*	40
498.139*	45
04.620.150*	50
498.140*	55
04.620.160*	60
498.141*	65
04.620.170*	70
498.142*	75
04.620.180*	80
498.143*	85



1.2 Rods, straight, hard, TiCP

Art. No.	Length (mm)
498.102*	50
498.103*	75
498.104*	100
498.105*	125
498.106*	150
498.108*	200
498.112*	300
498.116*	400
498.119*	500



*All Implants are also available sterile packed. Add suffix "S" to article number.

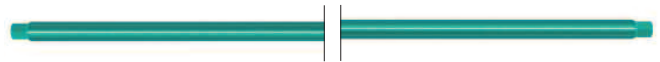
1.3 Rods, hard, Titanium Alloy (TAN)

Art. No.	Length (mm)
498.290*	200
498.291*	250
498.292*	300
498.294*	400
498.296*	500



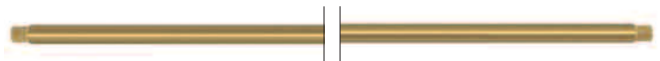
1.4 Rods with hexagonal end, Titanium Alloy (TAN)

Art. No.	Length (mm)
04.622.352*	200
04.622.353*	300
04.622.354*	400
04.622.355*	500



1.5 Rods with hexagonal end, Pure Titanium (TiCP)

Art. No.	Length (mm)
04.622.314*	200
04.622.315*	300
04.622.316*	400
04.622.317*	500



*All Implants are also available sterile packed. Add suffix "S" to article number.

2. Polyaxial pedicle screws

- Top loading for easy rod introduction
- Preassembled polyaxial head offers 25° of angulation allowing the implant to adjust readily to the rod
- Rod snaps into head to stabilize construct before locking cap installation
- Dual-core design and double-lead thread

Pedicle Screw Pangea Polyaxial, preassembled, Titanium Alloy (TAN)

Art. No.	Outer Ø mm	Cortical core Ø mm	Cancellous core Ø mm	Lengths mm
04.620.420–445*	4.0	3.4	3.0	20–45
04.620.525–555*	5.0	4.0	3.6	25–55
04.620.625–665*	6.0	5.0	4.3	25–65
04.620.725–799*	7.0	6.0	5.3	25–100
04.620.825–899*	8.0	6.5	5.8	25–100
04.620.930–999*	9.0	7.5	6.8	30–100



Pedicle Screw Pangea Polyaxial, cannulated, preassembled, Titanium Alloy (TAN)

Cannulated Pangea screws are additionally available. For detailed information refer to technique guide 036.000.941.



*All Implants are also available sterile packed. Add suffix "S" to article number.

3. Monoaxial pedicle screws

- Top loading for easy rod introduction
- Dual-core design and double-lead thread

Pedicle Screw Pangea Monoaxial, Titanium Alloy (TAN)

Art. Nos.	Outer Ø mm	Cortical core Ø mm	Cancellous core Ø mm	Lengths mm
04.622.420–445*	4.0	3.4	3.0	20–45
04.622.525–555*	5.0	4.0	3.6	25–55
04.622.625–665*	6.0	5.0	4.3	25–65
04.622.725–799*	7.0	6.0	5.3	25–100
04.622.825–899*	8.0	6.5	5.8	25–100
04.622.930–999*	9.0	7.5	6.8	30–100



4. Hooks

- Multiple hook geometries for use around the lamina, pedicle, or transverse process
- Low-profile design minimizes soft tissue interference
- Specialized lamina hooks for thoracic and lumbar applications
- Color-coded by size
- Fixation screws for pedicle hooks
- Titanium Alloy (TAN)



For details see page "Hook range and availability".

*All Implants are also available sterile packed. Add suffix "S" to article number.

4.1. Screws for pedicle hooks


- Used to attach and secure a pedicle hook to the pedicle
- Outer screw diameter 3.2 mm
- Titanium Alloy (TAN)

Art. No.	Length (mm)
498.024*	20
498.025*	25
498.026*	30





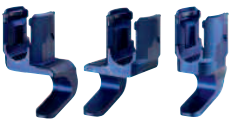


*All Implants are also available sterile packed. Add suffix "S" to article number.

Hook range and availability

Implant	Sizes				Blade direction	Description
	XS	S	M	L		
Pedicle hook						
		04.622.101**	04.622.102**		Up	Blade tip grips pedicle for secure hook placement
Pedicle hook, transverse						
		04.622.301**	04.622.302**		Up	For use with rod connectors
Lamina hook						
	04.622.010*	04.622.011**	04.622.012**	04.622.013**	Up/down	Multiple hook sizes fit various patient anatomies
Lamina hook, transverse						
	04.622.200*	04.622.201**	04.622.202**	04.622.203*	Up/down	For use with rod connectors
Lamina hook, with offset						
			04.622.120** offset right 04.622.121** offset left		Up/down	Eases rod introduction when hook is not aligned with rod, offset right or left

*Additionally available
 **All Implants are also available sterile packed. Add suffix "S" to article number.





Hook range and availability

Implant	Sizes				Blade direction	Description
	XS	S	M	L		
Tall body lamina hook*						
	04.622.020**	04.622.021**	04.622.022**	04.622.023**	Up/down	Increased body height eases rod introduction in dorso-ventral plane
Tall body lamina hook, transverse*						
	04.622.220**	04.622.221**	04.622.222**	04.622.223**	Up/down	For use with rod connectors
Lamina hook, angled downwards*						
			04.622.140** offset right 04.622.141** offset left 04.622.142** no offset		Up	For optimal fit in lumbar spine, with offset right or left or without offset
Lamina hook, angled, transverse*						
			04.622.312**		Up	For use with rod connectors
Lamina hook, angled upwards*						
			04.622.130** offset right 04.622.131** offset left 04.622.132** no offset		Down	For optimal fit in lumbar spine, with offset right or left or without offset

*Additionally available

**All Implants are also available sterile packed. Add suffix "S" to article number.

Hook range and availability

Implant	Sizes				Blade direction	Description
	XS	S	M	L		
Lamina hook, thoracic						
			04.622.018**		Down	For optimal fit in thoracic spine
Lamina hook, thoracic, transverse*						
			04.622.208**		Down	For use with rod connectors
Transverse process hook						
			04.622.110** offset right 04.622.111** offset left		Up/down	Fit on transverse process, offset right or left
Transverse process hook for rod connector						
			04.622.310** right angled 04.622.311** left angled		Up/down	For use with rod connectors, right or left angled

*Additionally available
 **All Implants are also available sterile packed. Add suffix "S" to article number.

5. Locking cap

- Quarter turn rod capture
- Rod gripping ridges
- Self-aligning saddle
- Visual markings for alignment
- Tactile feedback for insertion and quarter-turn engagement
- Titanium Alloy (TAN)

Art. No.	04.620.000*
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6. Cross-link clamps with rods

- Preassembled, for rods \varnothing 6.0 mm
- Rods \varnothing 3.5 mm for cross-link clamps
- Titanium Alloy (TAN)

6.1 Clamp, preassembled

Art. No.	
498.813*	Cross-Link Clamp for Rods \varnothing 6.0 mm, preassembled, dark blue



6.2 Rods for cross-link clamp

Art. No.	Length (mm)
496.920*	30
496.930*	40
496.940*	45
496.950*	50
496.960*	55
496.970*	60
496.980*	70
498.120*	80
496.995*	90
496.999*	100



*All Implants are also available sterile packed. Add suffix "S" to article number.

7. Transverse connectors

- Used as a construct stabilizer to reduce rotation
- Preassembled for ease of placement
- Four fixed lengths and eight adjustable lengths
- Eight adjustable lengths allow for angular adjustment
- Titanium Alloy (TAN)

Lengths

Art. No.	Length (mm)
497.791*	15
497.792*	18
497.793*	21
497.794*	24
497.795*	25.5–30.5
497.796*	31.5–34
04.620.203*	33–36.5
497.797*	35–41
04.620.204*	38.5–48
497.798*	42–55
04.620.205*	49–69
497.799*	56–83



*All Implants are also available sterile packed. Add suffix "S" to article number.

8. Rod connectors

- Provide a lateral extension from the \varnothing 6 mm rod to the screw or transverse hook
- Eliminate the need for severe rod contours which might otherwise be required for direct hook- or screw-to-rod connection
- Titanium Alloy (TAN)

Art. No.	Length (mm)
499.450*	15
499.451*	20
499.452*	25
499.453*	30



9. Fixation ring

- Used as point of fixation against which to distract or compress
- Titanium Alloy (TAN)

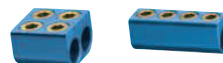
Art. No.	
498.910*	Fixation Ring for Rods \varnothing 6.0 mm



10. Parallel and extension connectors

- Used to connect two 6.0 mm rods
- Titanium Alloy (TAN)

Art. No.	Configuration
498.160*	Parallel
498.165*	Extension



*All Implants are also available sterile packed. Add suffix "S" to article number.

Instruments for pedicle preparation

388.551 Pedicle Awl \varnothing 3.0 mm, length 230 mm,
for Screws \varnothing 4.0 mm and 4.2 mm



388.656 Pedicle Awl \varnothing 4.0 mm with Silicone
Handle, length 255 mm, for Pedicle Screws
 \varnothing 5.0 to 7.0 mm



388.536 Pedicle Probe for Screws \varnothing 4.2 mm,
length 240 mm



388.655 Pedicle Probe \varnothing 3.7 mm with Silicone
Handle, length 240 mm, for Pedicle Screws
 \varnothing 5.0 to 7.0 mm



03.622.005* Pedicle Probe, thoracic



388.545 Feeler for Screw Channel, straight,
 \varnothing 2.3 mm, length 275 mm



388.546 Feeler for Screw Channel, curved,
 \varnothing 2.3 mm, length 275 mm



388.532 Reamer for preassembled Pedicle Screws



* Additionally available

Taps for dual-core screws, with 6 mm hex coupling

Art. No	Ø mm
03.620.104	4.0
03.620.105	5.0
03.620.106	6.0
03.620.107	7.0
03.620.108	8.0
03.620.109	9.0



Used with Ratchet T-Handle with Low Toggle with Hexagonal Coupling 6.0 mm (03.620.005) for tapping a hole for Pangea screws.

Instruments for screw insertion

03.620.001 Screwdriver Stardrive, T25, with T-Handle, for Pangea



03.620.006 Screwdriver Stardrive, T25, with straight handle, for Pangea



03.620.031 Screwdriver Stardrive, T25, long, with T-Handle, with Hexagonal Coupling, for Pangea



03.620.002 Screwdriver Shaft Stardrive, T25, long, with Hexagonal Coupling 6.0 mm, for Pangea



03.620.003 Screwdriver Shaft Stardrive, T25, with Hexagonal Coupling 6.0 mm, for Pangea Degen



03.620.022 Screwdriver Shaft Stardrive, T25, short, with Hexagonal Coupling, for Pangea



03.622.004 Screwdriver with Silicone Handle, straight, for Pedicle Screw Pangea Monoaxial



03.622.003 Holding Sleeve for Screwdriver, for Pangea



03.620.015 Alignment Tool



Alternate instruments for screw insertion

Instrument shafts mate with handles that have 6 mm hexagonal couplings

03.620.005 Ratchet T-Handle with Low Toggle with Hexagonal Coupling 6.0 mm

Used with either the 6 mm hexagonal coupling taps, for preparing bone or screwdriver shaft for insertion of Pangea screws and locking caps.



03.620.100 Handle with Ratchet, straight, with Quick Coupling, for Pangea

An alternate method used with a 6 mm hexagonal coupling screwdriver shaft for insertion of Pangea screws and locking caps.



03.620.023 Retaining Sleeve for Pangea Polyaxial screws



03.620.074 Retaining Sleeve for Pangea Polyaxial



Used with screwdrivers and screwdriver shaft (03.620.001, 03.620.006, 03.620.003). Rigidly couples screwdriver and polyaxial screw during insertion.

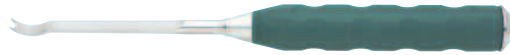
03.620.004 Stabilization Sleeve for Pangea Polyaxial screws

Optionally used with screwdrivers and screwdriver shaft (03.620.001, 03.620.006, 03.620.003). Stabilizes polyaxial head during screw insertion.



Instruments for hook preparation

03.622.012 Pedicle Feeler, medium, for Pangea



388.105 Lamina Feeler, medium, for Pangea



03.622.030 Transverse Process Finder, for Pangea



388.530 USS Chisel, width 9 mm



Instruments for hook placement

03.622.040 Holding Forceps for lateral holding of Pangea Hooks



388.110 Positioner for Pangea Hooks



315.190 Drill Bit \varnothing 2.0 mm, length 100/75 mm, 3 Flute, for Quick Coupling



387.060 Handle for Drill Sleeve 2.0



388.581 USS Drill Sleeve 2.0



319.060 Depth Gauge for Screws \varnothing 1.5 to 2.0 mm, measuring range up to 38 mm



314.070 Screwdriver, hexagonal, small, 2.5 mm, with Groove



388.381 Holding Sleeve for Fillister Head Screw



Instruments for rod preparation and insertion

388.902 Bending Template Ø 6.0 mm,
length 150 mm, single use



388.905 Bending Template for Rods Ø 6.0 mm,
length 500 mm



03.620.020 Rod Bender for Rods Ø 6.0 mm,
with Radius Adjustment



03.622.060.02* Rod Bender with long Handles for Pangea
(Pair)



388.440 Holding Forceps with broad tip,
length 290 mm, for Rods Ø 6.0 mm



328.028 Holding Forceps, straight, for Rods
Ø 6.0 mm



Used to place the rod into the Pangea head. Narro jaws allow rod insertion into tight spaces between screws.

388.460 Holding Forceps, angled, with Scissors
Grip, for Rods Ø 6.0 mm



* Additionally available

03.620.076 Rod Pusher/Counter Torque, short, keyed,
for Pangea



03.620.011 Rod Pusher/Counter Torque for Pangea

Helps seat the rod. Provides counter
torque on the rod during final tightening



388.114 Rod Pusher for Rod \varnothing 6.0 mm

Assists in placing rod into implant opening



* Additionally available

03.622.095 Rod Introduction Pliers Pangea,
for vertical reduction

Provides up to 15 mm reduction.



03.620.008 Rod Persuader for Pangea

Introduces the rod into the Pangea screw head and facilitates locking cap introduction. Provides 10 mm of reduction.



03.620.009* Rocker Fork Pangea, small, straight shaft

Provides vertical reduction of rod into implant.



03.620.010 Rocker Fork Pangea, small, curved shaft

Provides vertical reduction of rod into implant requiring less rod exposure.

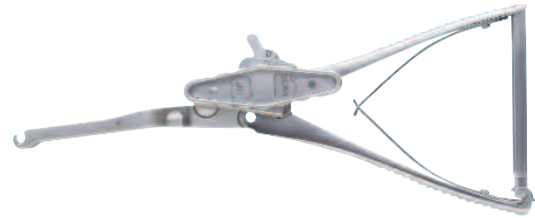


* Additionally available

03.620.012 Reduction Instrument for
Spondylolisthesis, for Pangea



03.622.090 Rod Introduction Pliers Pangea,
for biplanar reduction



03.622.091 Implant Holder for Rod Introduction
Pliers Pangea No. 03.622.090



Instruments for construct assembly

03.620.026 Pangea Locking Cap Introducer, keyed



03.620.066 Centering Sleeve for Pangea



03.622.018 Counter Torque Instrument for T25, for Pangea



03.620.013 Locking Cap Driver with T-Handle, for Pangea

Used with screwdrivers and screwdriver shaft (03.620.001, 03.620.006, 03.620.003) to drive Pangea Locking Cap trough ¼ turn lock.



03.620.029 Locking Cap Driver with Release



03.622.016 Sleeve for Locking Cap Driver, for Pangea



03.620.019 Torque-limiting Handle, 10 Nm, for Pangea

Used with a 6 mm hexagonal coupling screw driver shaft for final tightening of the locking cap to apply a torque of 10 Nm to the locking cap setscrew.

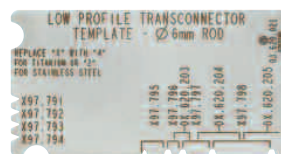


03.620.061 T-Handle with Ratchet Wrench and with Torque Limiter, 10 Nm



03.620.021 Template for Transverse Connectors low profile, for Rods Ø 6.0 mm

Helps to determine appropriate transverse connector length.



388.395 Screwdriver, hexagonal, long, 2.5 mm, length 293 mm

Used to secure transconnector.



388.363 Holding Sleeve with Catches, for No. 314.070



Instruments for deformity correction

03.622.007 Derotation Instrument for Screws and Hooks, for Pangea



03.622.061* Bending Iron for Rods Ø 6.0 mm, left, for Coronal Plain



03.622.062* Bending Iron for Rods Ø 6.0 mm, right, for Coronal Plain



03.622.084 Wrench, hexagonal, angled, for Rods Ø 6.0 mm, for Pangea



388.112 In-situ Bender, right



388.113 In-situ Bender, left



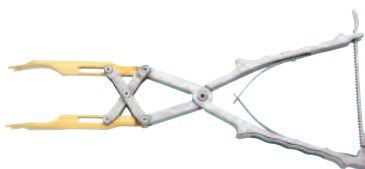
03.620.017 Compression Forceps, for Lumbar Spine



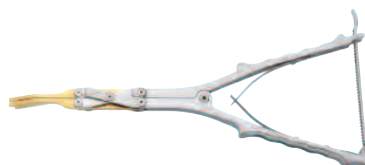
03.620.018 Distraction Forceps, for Lumbar Spine



03.622.070* Compression Forceps, parallel, for Rods Ø 6.0 mm, for Pangea



03.622.071* Spreader Forceps, parallel, for Rods Ø 6.0 mm, for Pangea



* Additionally available

Instruments for extraction

-
- 03.620.014 Remobilization tool for Pangea
- Remobilizes Pangea screw heads after setscrews tightening.



-
- 03.620.075 Threaded Remobilization Tool, for Pangea



-
- 03.611.035 Extractor for setscrew \varnothing 4.0 mm
- Mates with square tip of Extender, 6 mm hex coupling (03.611.059) and Ratchet T-Handle (03.620.005) to remove damaged Pangea screw or cap.



-
- 03.611.059 Extender for No. 03.611.035
- Used with Extractor for setscrew \varnothing 4.0 mm (03.611.035).



