# M.U.S.T.® MINI

POSTERIOR CERVICAL SCREW SYSTEM

ONE SYSTEM, MULTIPLE OPTIONS

## Surgical Technique

Joint | **Spine** | Sports Med

Medacta International

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# 1. INTRODUCTION

The M.U.S.T. Mini posterior cervical screw system is a modular solution to fix and stabilize the posterior cervical and the upper thoracic spine.

The system design is simple and flexible; a comprehensive set of components allows the surgeon to assemble the desired construct according to the anatomy of the patient and the pathology that requires treatment.

The M.U.S.T. Mini posterior cervical screw system consists of polyaxial screws, three designs of occipital plate, hooks and multiple connectors

The M.U.S.T. Mini polyaxial screws are available in solid and cannulated options. The self-stabilising system of the tulip simplifies the rod insertion and the freedom of orientation is greater than 90° (±45°) at all angular position (360°). The set of implants includes fully threaded and partially threaded screws.

Three designs of laminar hooks are available to stabilize the posterior elements of the spine in different pathologies such as tumors, degenerative or deformity cases.

Head to head or standard (STD) cross connectors increase the torsional stiffness and the overall stability of the assembly. The connectors are available in several lengths to accommodate different patients' anatomy.

Finally, rod to rod connectors enable the system to be connected from cervical to the upper thoracic spine as well as the connection of rods of different diameters.

## 1.1 INDICATIONS

The M.U.S.T. Mini posterior cervical screw system is intended to provide immobilization and stabilization of spinal segments as an adjunct to fusion, in skeletally mature patient, for the following acute and chronic instabilities of the cervical spine (C1 to C7) and the thoracic spine from T1-T3: traumatic spinal fractures, and/or traumatic dislocations; instability or deformity; failed previous fusions (e.g., pseudarthrosis); tumors involving the cervical spine; degenerative disease, including intractable radiculopathy and/or myelopathy, neck and/or arm pain of discogenic origin as confirmed by radiographic studies, and degenerative disease of the facets with instability.

The M.U.S.T. Mini posterior cervical screw system is also intended to restore the integrity of the spinal column even in the absence of fusion for a limited time period in patients with advanced stage tumors involving the cervical spine in whom life expectancy is of insufficient duration to permit achievement of fusion.

In order to achieve additional levels of fixation, the M.U.S.T. Mini posterior cervical screw system may be connected to the M.U.S.T. system rods with the M.U.S.T. Mini rod connectors. Transition rods with differing diameters may also be used to connect the M.U.S.T. Mini posterior cervical screw system to the M.U.S.T. system. Refer to the M.U.S.T. system package insert for a list of the M.U.S.T. indications of use.

When used with the occipital plate the M.U.S.T. Mini posterior cervical screw system is also intended to provide immobilization and stabilization for the occipito-cervico-thoracic junction (occiput - T3) in treatment of the instabilities mentioned above, including occipitocervical dislocation.

## 1.2 CONTRAINDICATIONS

The M.U.S.T. Mini posterior cervical screw system is contraindicated in the following cases:

- Active infectious process or significant risk of infection (immunocompromised).
- Morbid obesity.
- Open wounds.
- Any case where the implant components selected for use would be too large or too small to achieve a successful result.
- Severe osteoporosis may preclude implant stability.
- Suspected or documented allergy or intolerance to the materials to be implanted.
- Any patient in which implant utilization would interfere with anatomical structures or expected physiological performance.
- Any patient having inadequate tissue coverage over the operative site or inadequate bone stock or quality.
- Any other medical or surgical condition which would preclude the potential benefit of spinal implant surgery, such as the presence of congenital abnormalities, elevation of sedimentation rate unexplained by other diseases, elevation of white blood count (WBC), or a marked left shift in the WBC differential count.
- Grossly distorted anatomy caused by congenital abnormalities.
- Any case not needing a bone graft and fusion.
- Any patient unwilling to follow post-operative instructions.
- Any case not described in the indications.

## 1.3 PRE-OPERATIVE PLANNING

The pre-operative material, MRI or CT images, is used to inspect the anatomy of the patient and the pathology that requires treatment, providing the surgeon with information to plan the surgery in advance.

**PRECAUTION:** Pre-operative planning prior to implantation of posterior cervical lateral mass and pedicle screw spinal systems should include review of cross-sectional imaging studies (e.g., CT and/or MRI imaging) to evaluate the patient's cervical anatomy including the transverse foramen and the course of the vertebral arteries. If any findings would compromise the placement of lateral mass or pedicle screws, other surgical methods should be considered. In addition, use of intraoperative imaging should be considered to guide and/or verify device placement, as necessary.

Use of posterior cervical pedicle screw fixation at the C3 through C6 spinal levels requires careful consideration and planning beyond that required for lateral mass screws placed at these spinal levels, given the proximity of the vertebral arteries and neurologic structures in relation to the cervical pedicles at these levels.

## 1.4 SURGICAL APPROACH

The patient is placed in the prone position on the operating table, the head and the neck are securely fixed. Caution should be taken to place the cervical spine in the physiological alignment to avoid undesired pressure points. The correct positioning should be checked by image intensifier or radiograph.

A posterior midline incision is made along the level to be treated and the soft tissues are gently moved laterally. Decortication is then carefully performed to expose the spinous process, the lamina, the facet joints and, if needed, the lateral masses of the vertebrae.

Care must be taken when performing dissection in order to avoid damage to the spinal cord, the interspinous ligament, the C2 nerve root or the vertebral arteries.

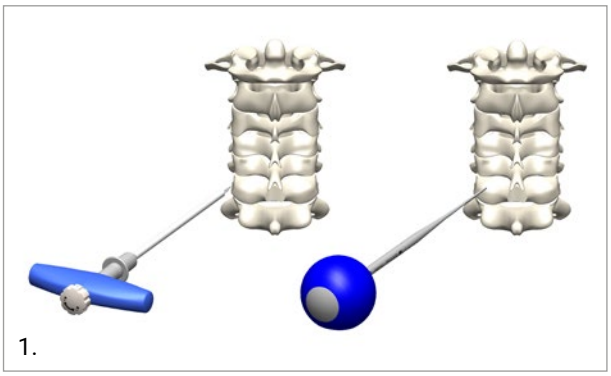
## 2. PEDICLE OR LATERAL MASS PREPARATION

The M.U.S.T. Mini polyaxial screw can be inserted inside the pedicle or inside the lateral mass of the vertebra according to the surgeon's preference.

The following surgical steps refer to polyaxial screw insertion inside the pedicle. The same steps can be followed to insert the screw inside the lateral masses. A combined approach is also possible according to the surgeon's needs.

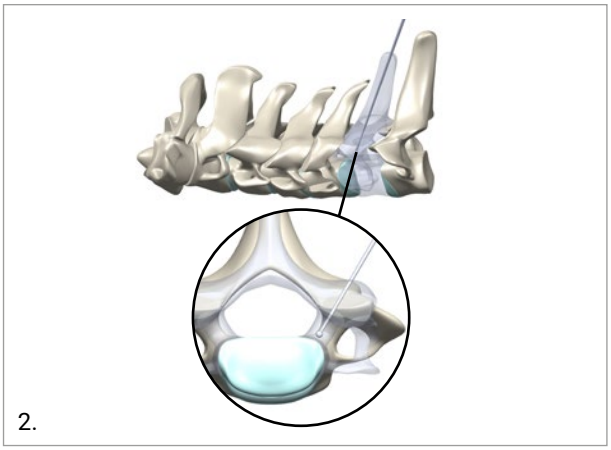
Locate the desired entry point of the screw and perforate the outer cortex with the pedicle awl.

Use the pedicle probe and gently open the pedicle canal. The pedicle probe is graduated, in 10mm incremental markings, to give an initial visual indication of the pedicle canal depth reached.



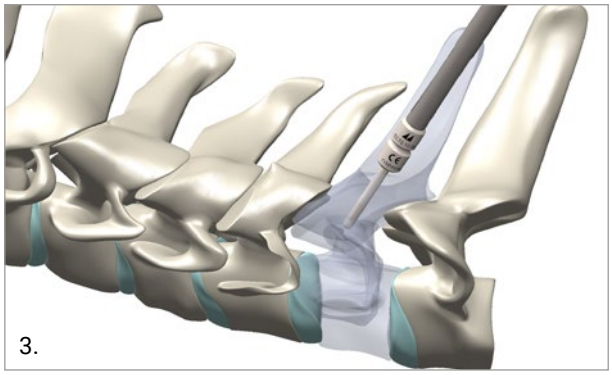
1.

Check, with the ball tip feeler, the pedicle walls in order to verify if a violation of the pedicle has occured.



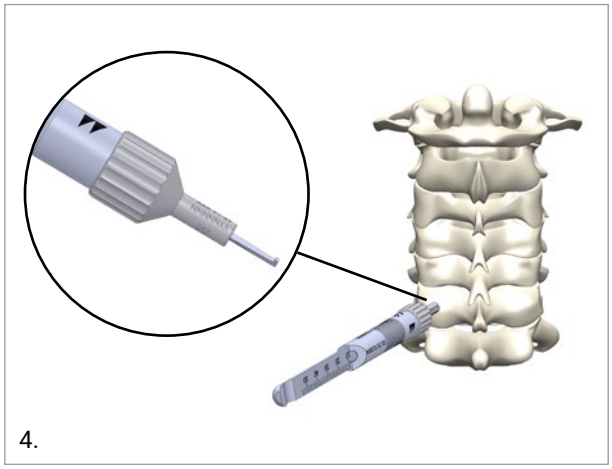
2.

Correct positioning can also be checked using the pedicle marker under radiographic control.



3.

The depth gauge is available to measure the canal depth and to help determine the length of the polyaxial screw.

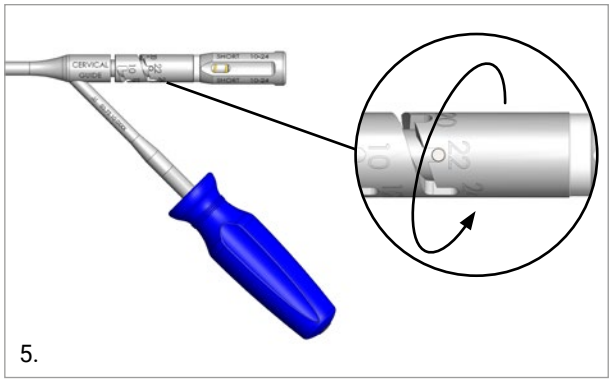


4.

**NOTE:** In case of sclerotic bone or any other reason that can cause high resistance avoid to strongly hammer the awl. A burr can be used to flatten the bone surface and facilitate insertion of the awl.

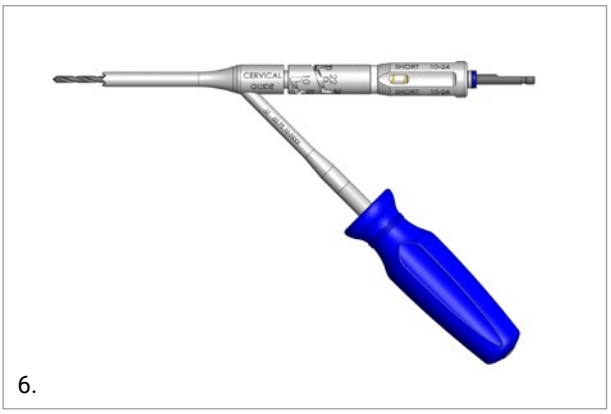
Open the pedicle canal using the drill guide.

Set the rotating outer wheel of the drille guide to the desired depth of the hole to be drilled (2mm increments).

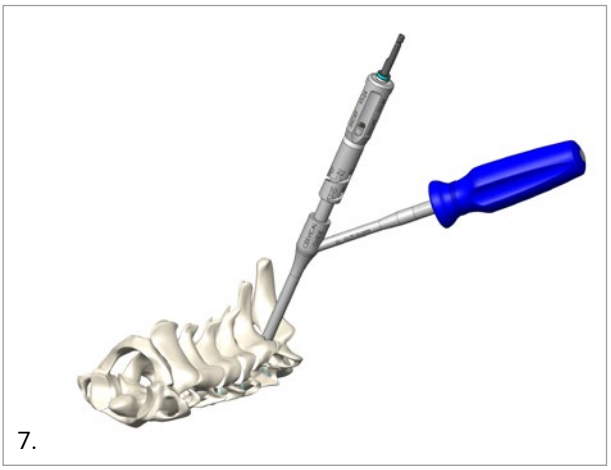


5.

Insert the drill bit into the drill guide and drill the pedicle until the mechanical stop is reached.

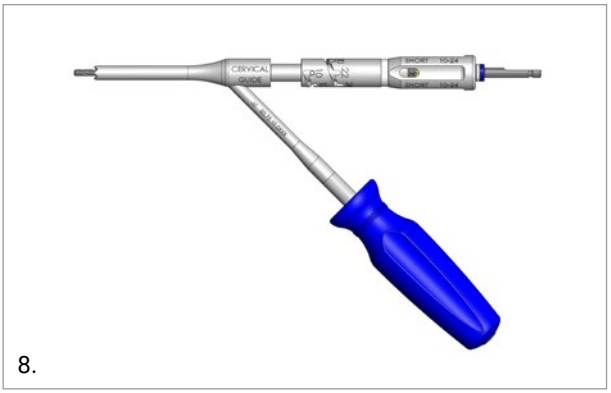


6.

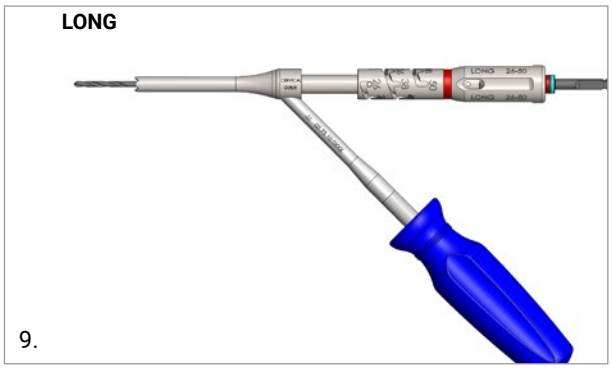


7.

Drill guides are available, in a short version and in a long version. Each guide is compatible only with the associated drill bit (same colour).

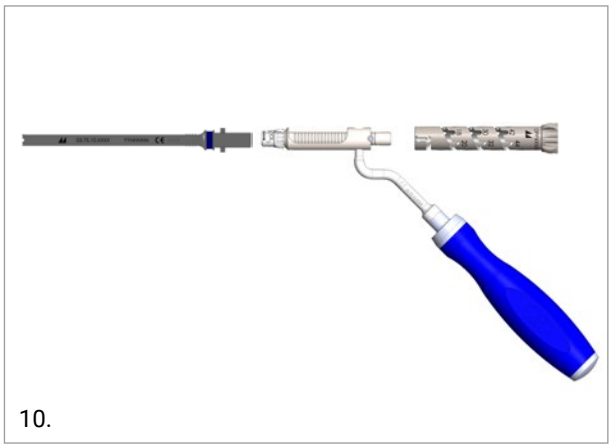


8.



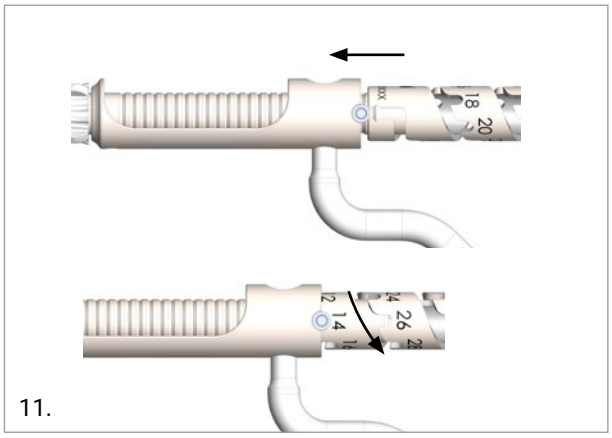

9.

A modular solution is also available to perform the screw pilot hole. The modular drill guide is coupled with an anterior sleeve and the size indicator element as shown in the picture below.



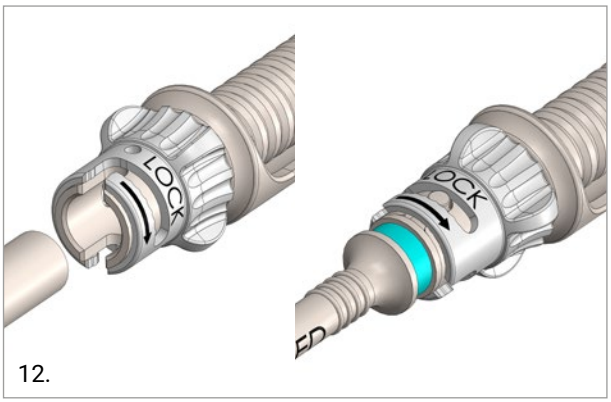
10.

Couple the posterior element into the drill guide. Push the pin into the groove and rotate the posterior element until the desired depth is reached. The reaming depth can be adjusted from 10 to 50mm, 2mm increments.



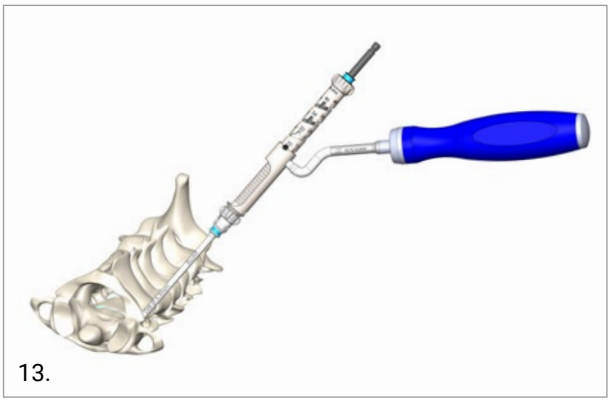
11.

Insert the anterior sleeve into the guide. Rotate the wheel of the guide to fully secure the sleeve.




12.

Position the drill guide at the desired level, attach a handle or a power tool to the drill bit and perform the drill.



13.

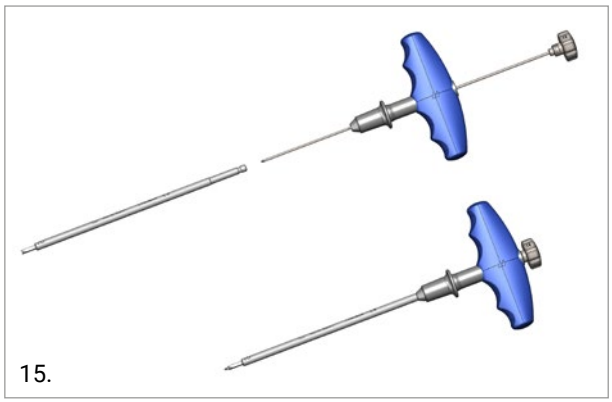
The sleeves are available in different diameters for both the drills and taps. They are available with blunt or notched tip designs.
Drills and taps come in both solid and cannulated designs. All the drills are also available in sterile and non sterile versions.
The matching capability between the sleeves, drills and taps is indicated by the marking on the components and the colored ring given on the proximal shaft.

14.

## CAUTION

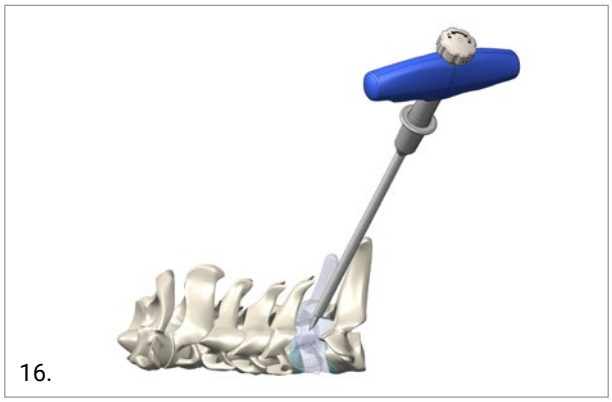
Drills and taps provided for the "modular drill guide" are not compatible with the "SHORT and LONG drill guide", and vice versa.

Another option to prepare the pedicle or the lateral mass of the vertebra to the screw insertion is to use a K-wire guided technique. Assemble the cannulated awl with the handle inner pin hand wheel.



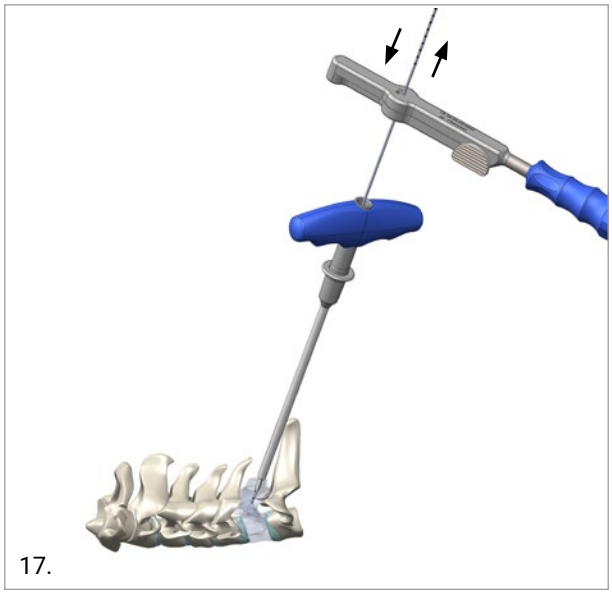
15.

Target the pedicle and perforate the outer cortex with the cannulated awl.



16.

Remove the pin hand wheel and insert the graduated (5mm increments) Kirschner wire. Check the K-Wire position under radiographic imaging. A K-wire holder, available in the M.U.S.T. Pecutaneous set, can be used for insertion or removal of the wire itself. The K-wire holder is used to either advance or remove Kirschner wires during the procedure.



17.

To use the K-wire holder, push the lock button and slide the tool over the Kirschner wire few centimeters above the end of the cannulated awl, then release the locking button. Lightly mallet the impaction surface of the holder to advance the Kirschner wire. Stop impacting before the tool reaches the top of the cannulated awl. If further K-wire insertion is needed, after checking fluoroscopy, slide the wire holder back and repeat the manoeuver. Once the K-wire has been inserted remove the K-wire holder and the cannulated awl.

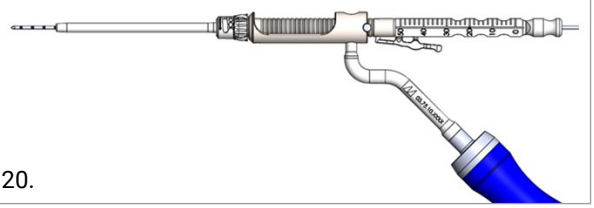
Another option of a K-wire guided technique is to use the modular drill guide in combination with the K-wire guide as shown in the following picture.

18.

Slide the adaptor into the guide until the mechanical stop is reached and lock it.

19.

Insert the K-wire through the guide until the desired depth in the bone is reached by reading the graduated scale on the K-wire guide.



20.

**CAUTION**
The K-wire guide is compatible with the Ø 1.4mm K-wire only.

**WARNING**
Make sure the K-wire does not slip off during the procedure. A variety of solid and cannulated drills and taps are available and may be used at the discretion of the surgeon. To drill/tap the pedicle, select the desired drill bit/tap and connect it with an AO connection handle.

**CAUTION**
In order to facilitate the insertion of the cervical polyaxial screw it is recommended to tap the pedicle.

**WARNING**
If the M.U.S.T. Mini dual lead thread screws are used (see chapter Implant Nomenclature), the tap of the M.U.S.T. system must be used. Please refer to the M.U.S.T. Surgical technique 99.46.12US.

## 2.1 POLYAXIAL SCREW FIXATION

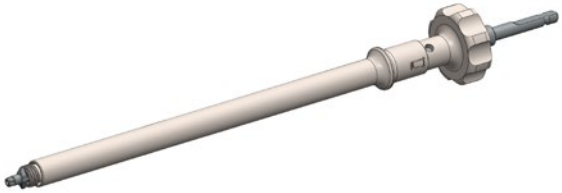
Once the canal has been prepared and eventually tapped the M.U.S.T. Mini posterior cervical screws can be inserted.

The size of the screw depends on the diameter and the length of the prepared pedicle canal, in relation to the vertebral anatomy.

The M.U.S.T. Mini posterior cervical screws can be inserted and fixed using the polyaxial screwdriver which has been specifically designed to easily align the screw to avoid wobbling.

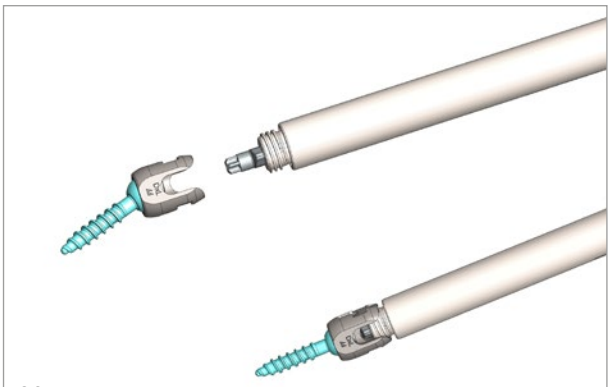
21.

The protection sleeve must be coupled with the shaft of the screwdriver.



22.

Insert the tip of the screwdriver into the screw head and lock the screw in the correct alignment as shown below.

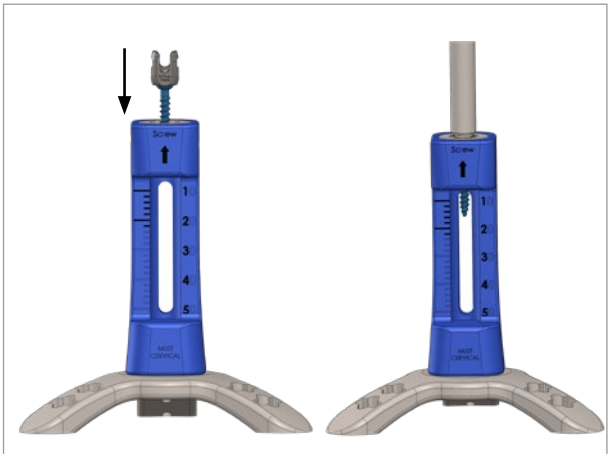


23.

**NOTE:** The correct polyaxial screw/polyaxial screwdriver coupling may be reached after a slight rotation and re-alignment of the screw body.

## OPTION

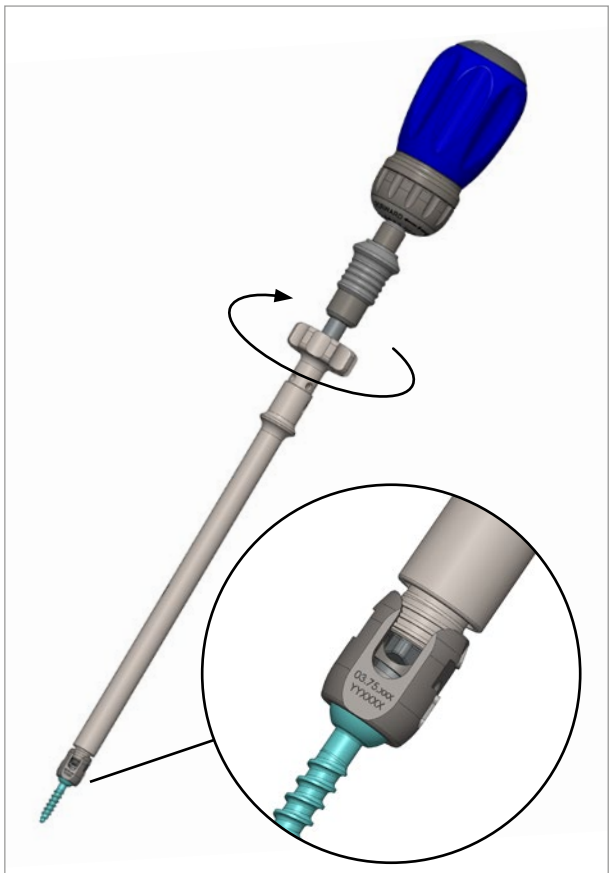
Place the screw in the dedicated loading station and insert the tip of the screwdriver in the screw head.



24.

Tighten the head of the polyaxial screw to the polyaxial screwdriver using the proximal gear, firmly turn it

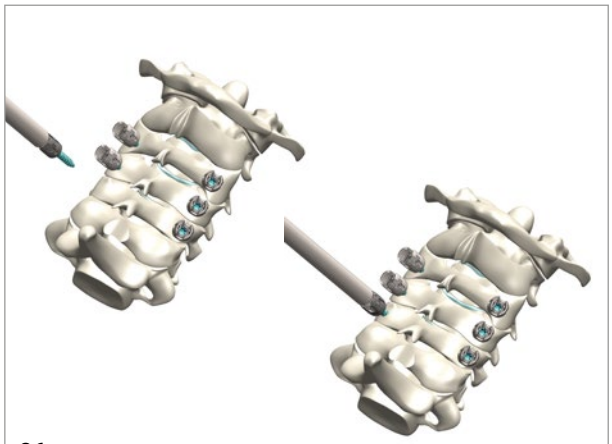
clockwise until the screw is fully tightened. Once secured, it is no longer possible for the screw to move as it is fully engaged with the polyaxial screwdriver.



25.

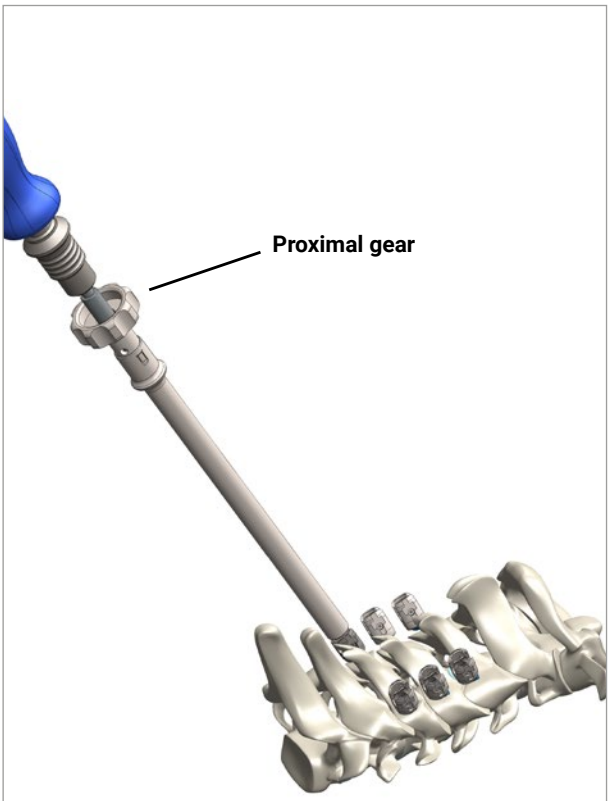
Insert the screw into the prepared pedicle canal by turning the Handle clockwise.

**NOTE:** Do not hold the proximal gear during the screw insertion to avoid screw disengagement from the screwdriver tip.



26.

Once the pedicle screw has been inserted disengage the polyaxial screwdriver by turning the proximal gear counter-clockwise.



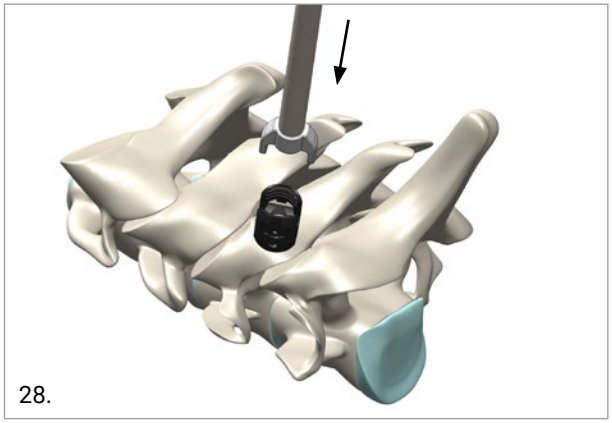

27.

**OPTION**

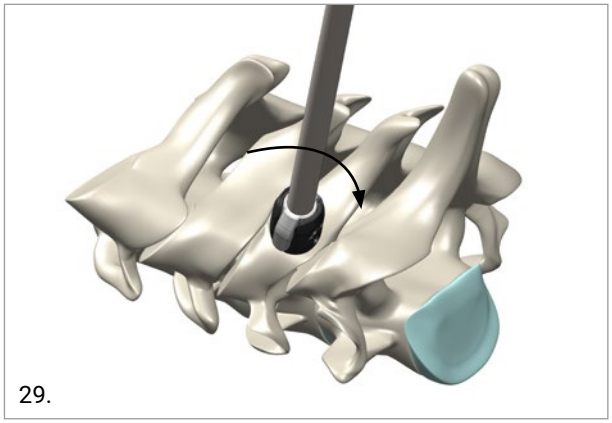
Cannulated screws are available and can be inserted following the K-wire trajectory. The screw insertion may be preceded by drilling and tapping depending on the surgeon's preferences.

## 2.2 HEAD ADJUSTING

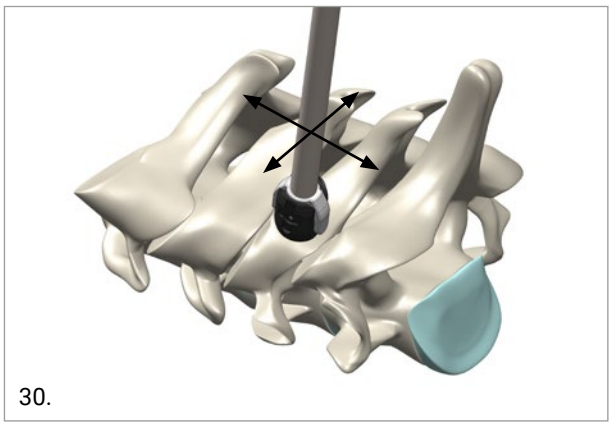
Before placing the rod, check the orientation of the polyaxial screw head. Use the head adjuster instrumentation to align the polyaxial screw head in the desired position.



28.



29.



30.

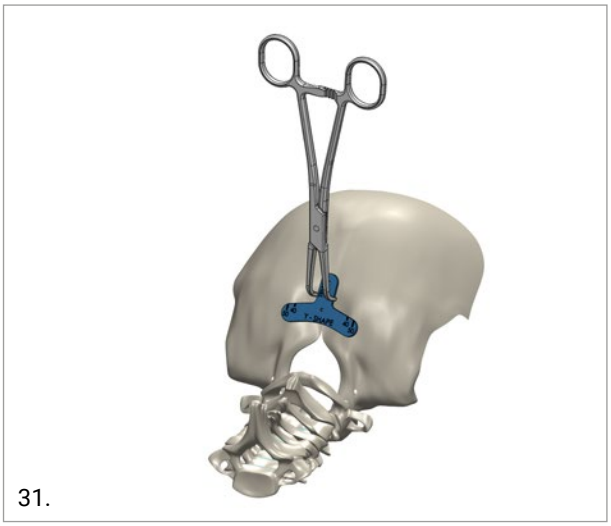
If the head of the polyaxial screw resists alignment, use the bone screwdriver to slightly unscrew it.

## 3. OCCIPITAL PLATE

The following paragraphs describe the steps to follow to implant the occipital plate.

### 3.1 OCCIPITAL PLATE SIZE SELECTION

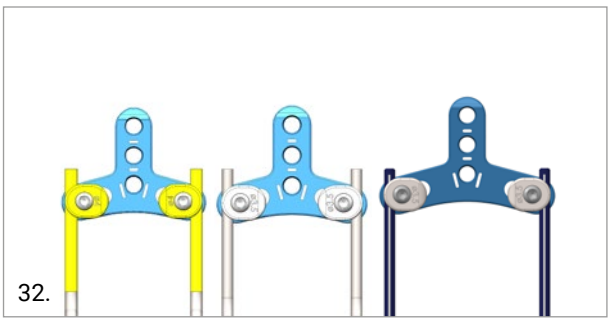
Once the occiput has been exposed use the occipital plate trial to determine the most appropriate size. Hold the trial with the dedicated forceps.



31.

**WARNING**

The occipital plate must be compatible with the rod to insert. The yellow connectors are compatible with the transiton Ø3.5- Ø4.0mm rod which are marked in yellow as well. The silver connectors are compatible with 3.5mm rods anodized or not anodized. The occipital plate connectors are also laser marked with the diameter of the rod to be engaged.

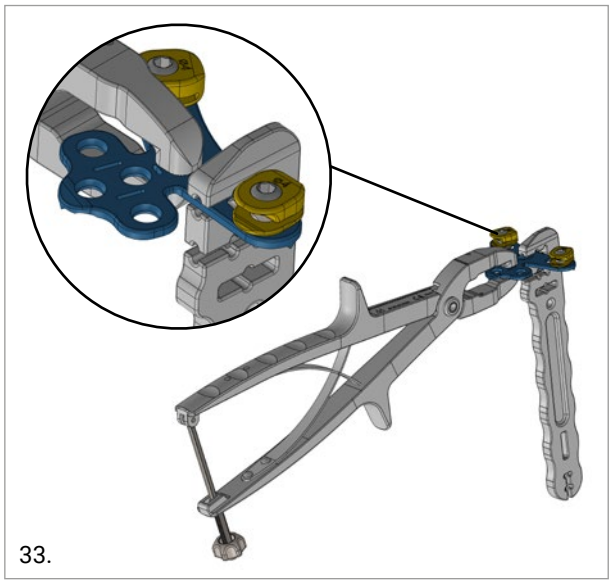


32.

Select the most suitable design of occipital plate to implant. Contour it with the dedicated instrument.

The occipital plate should only be bent using the plate bender included with the occipital M.U.S.T. Mini instrumentation.

The plate holder should be used to firmly hold the plate while contouring with the simple plate bender



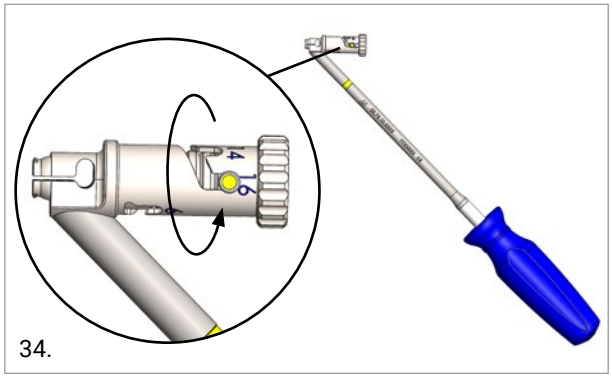
33.

**WARNING**

Repeated bending should be avoided to prevent compromising the integrity of the plate. When bending the lateral sides, it is recommended to hold the plate in the hole closest to the bending zone.

### 3.2 PILOT HOLE PREPARATION

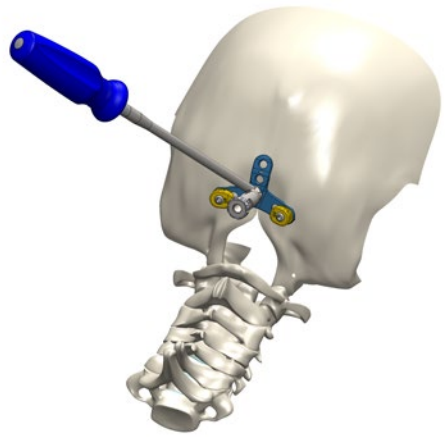
To create the hole for the screw insertion use the drill guide. Set the desired depth of the hole by rotating the outer wheel of the drill guide (2mm increment).



34.

Connect the drill guide with the occipital plate by snapping-in the tip in one of the plate holes.

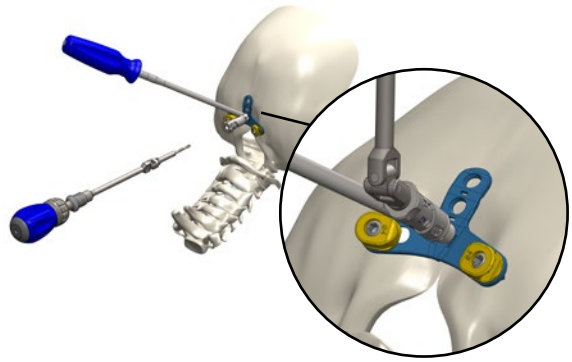
Position the occipital plate over the occiput. The occipital plate should be centered in the midline between the external occipital protuberance (EOP) and the posterior border of the foramen magnum, in order to maximize bone purchase.



35.

**NOTE:** The drill guide is compatible with: straight drills, U-joint drills and the 4.0mm tap.

Insert the drill bit into the drill guide and gently drill until the mechanical stop is reached.

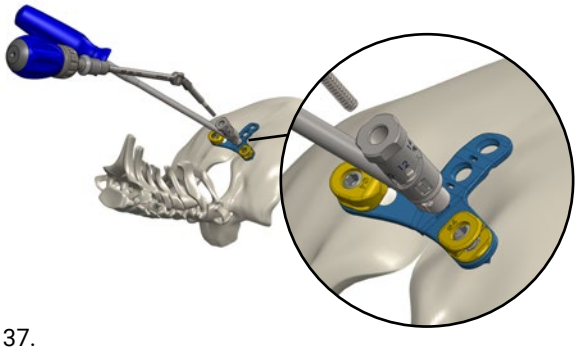


36.

Check the depth of the drilled hole with the depth gauge

**WARNING**
The depth gauge should be gently used in order to avoid possible soft tissue damage.

Insert the tap into the drill guide and tap to the desired screw length until the mechanical stop is reached.
Use the 4.0mm tap.



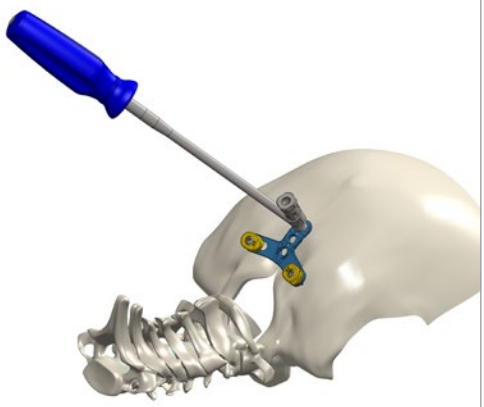
37.

The 5.0mm tap is not compatible with the drill guide. In case of revision surgery tap the hole directly with the 5.0mm tap.

**WARNING**
It is strongly recommend to always perform drill and tap before inserting the occipital screws.

### 3.3 OCCIPITAL SCREW INSERTION

Disengage the drill guide and attach it in another hole of the plate as showed in the picture.

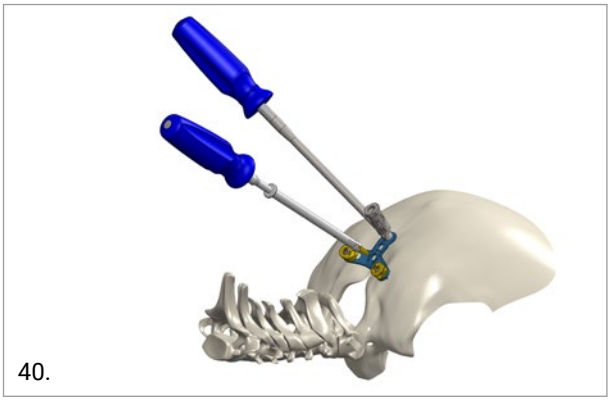


38.

Engage the screw with the long OC screwdriver.

39.

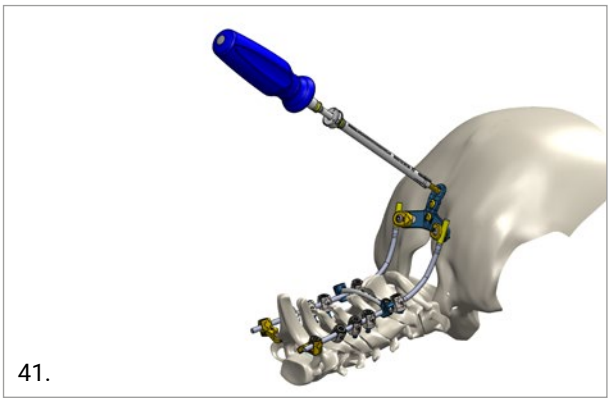
Insert the screw in the pre-drilled hole by turning clockwise until it is fully seated.



40.

Disengage the long OC straight screwdriver.

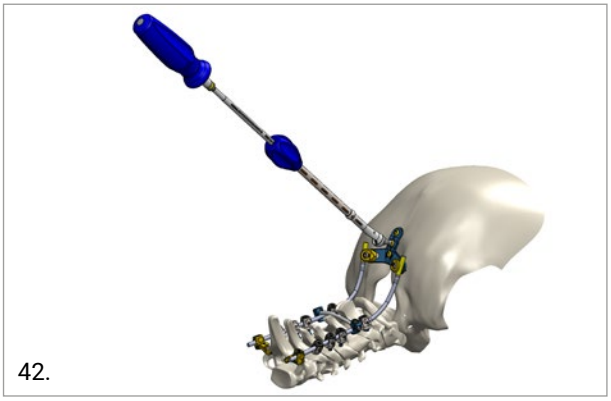
Repeat all the steps from the paragraph "pilot hole preparation" for all the remaining screws.



41.

**OPTION**
If necessary the OC-screws can be positioned with the short selfretaining straight screwdriver.

The 25° angled screwdriver can be use in conjunction with the straight screwdriver to finalize the screw insertion.



42.

**CAUTION**
Do not overtighten to prevent self-retaining short screwdriver failure.

### 3.4 ROD COUNTURING AND INSERTION

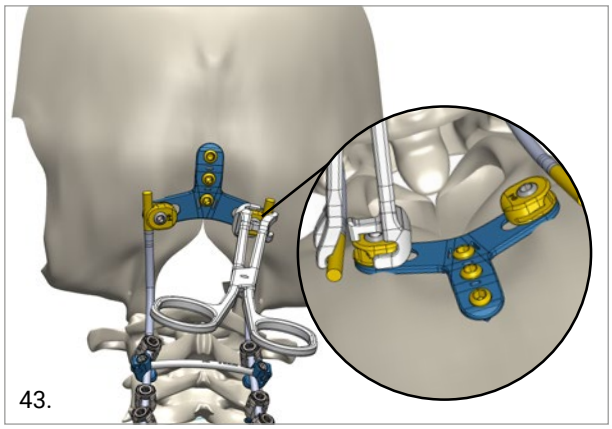
Use the malleable rod template to determine the rod curvature between the occiput and the upper cervical vertebrae and to choose the desired rod length.

**NOTE:** As described in paragraph 6.1 make sure that the color code of the rod matches the color code of the occipital plate connector.

Contour the rod with the rod bender to reach the desired shape and cut with the Rod cutter to reach the desired rod length.

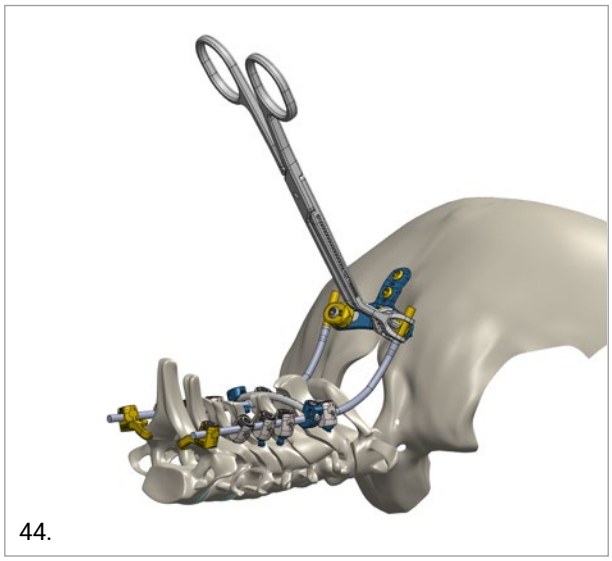
Use the rod insertion forceps to position the rod into the posterior cervical screws. Use the occipital plate rod Inserter to attach the rod with the connectors of the occipital plate.

Shift the occipital plate connector in M/L direction to obtain the desired position



43.

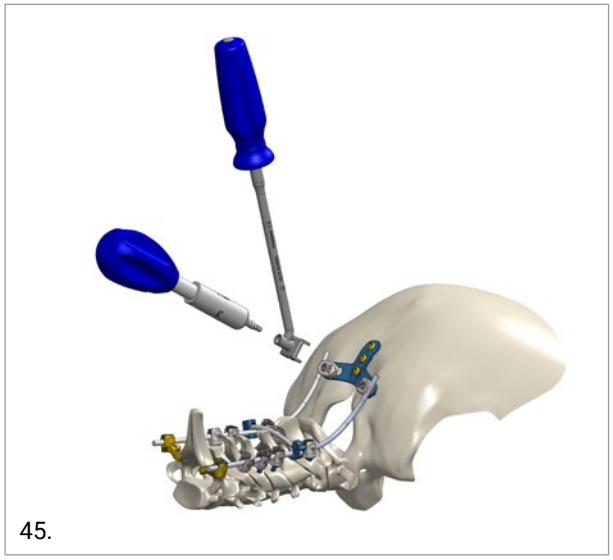
**OPTION**
The rod inserter is also available in angled versions (left and right).



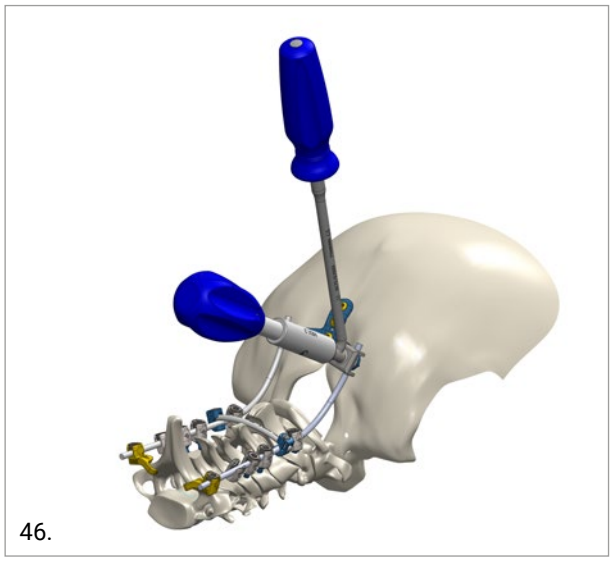
44.

### 3.5 FINAL TIGHTENING

Attach the counter torque to the occipital plate connector. Perform the final tightening of the screws with the torque limiter (3Nm) to lock the rods.

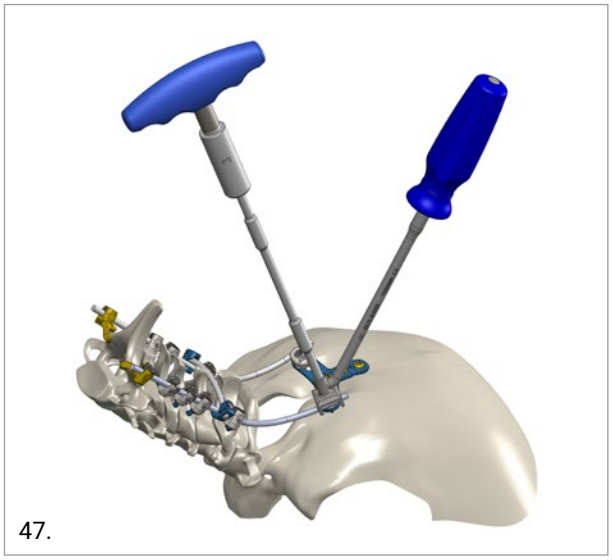


45.

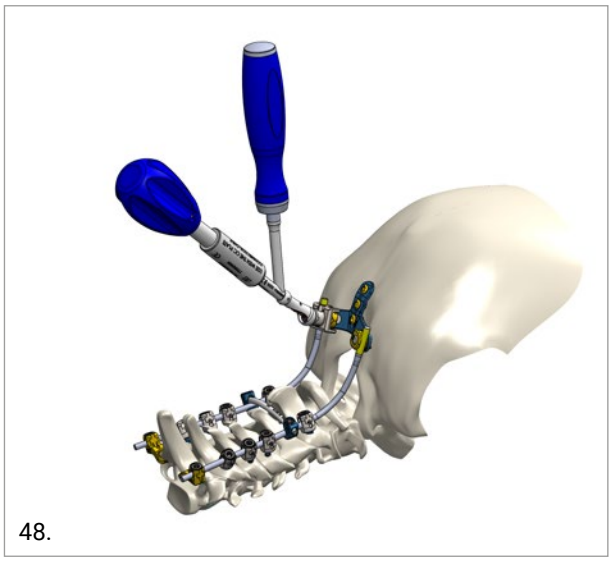


46.

The final tightening can also be performed with the M.U.S.T. Mini torque limiter, or with the 25° countertorque connected with the 3Nm OC plate torque limiter.



47.



48.

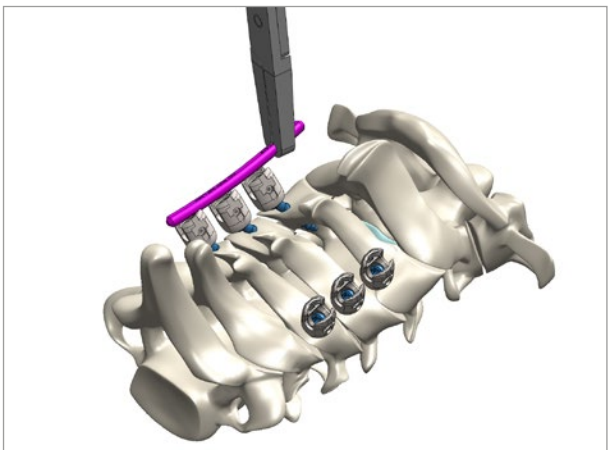
**CAUTION**

Do not perform final tightening on the occipital screws with Torque limiter screwdriver. Occipital screws are secured at the discretion of surgeon.

## 4. ROD CONTOURING AND INSERTION

All rods are available in both Titanium and CoCr alloy and in multiple lengths.

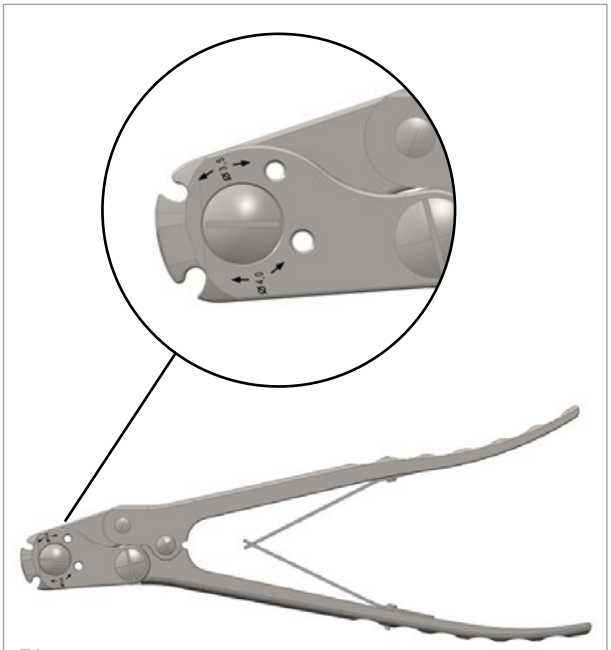
The surgeon can select the most appropriate rod length using the rod template.



49.

The rod can be contoured with the rod bender to reach the desired shape.

To cut the Titanium rod use the handle rod cutter or a table rod cutter. The handle cutter can cut 3.5mm and 4.0mm rods.



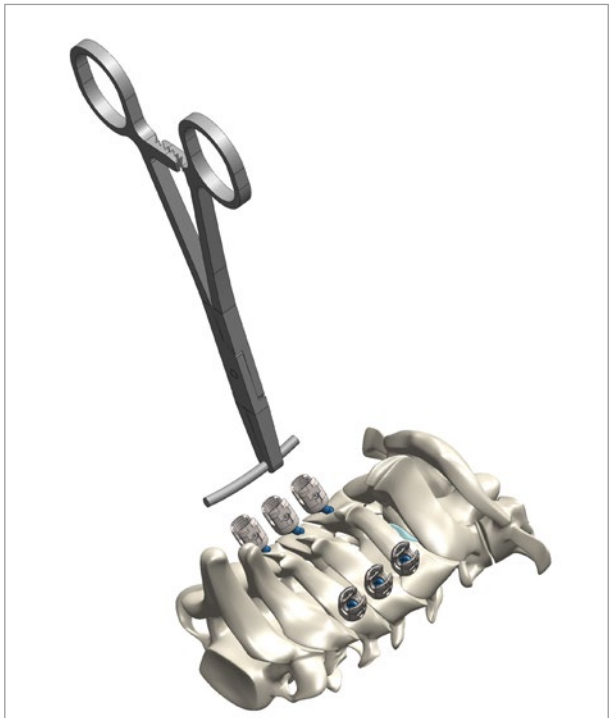
50.

The CoCr rod must be cut with the table rod cutter.

**WARNING**

Do not cut the the CoCr rod with the handle rod cutter.

Use the rod insertion forceps to position the rod into the selected heads.



51.

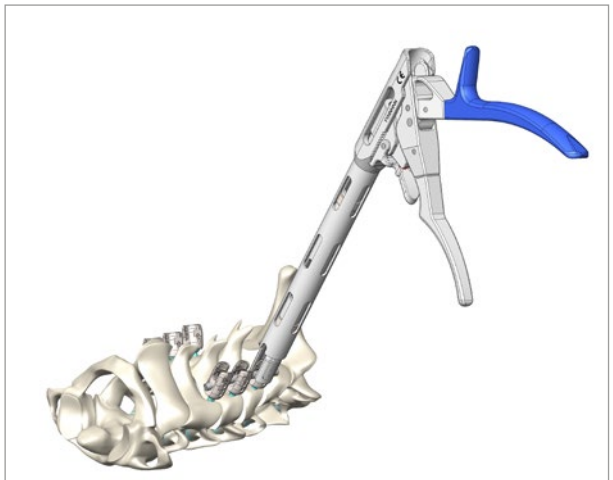
**CAUTION**

Rods should only be bent using the rod bender that is included with the standard M.U.S.T. Mini instrumentation. Never bend the rods more than once as repeated bending may result in weakening or fracture of the rod.

## 5. ROD REDUCTION TECHNIQUES

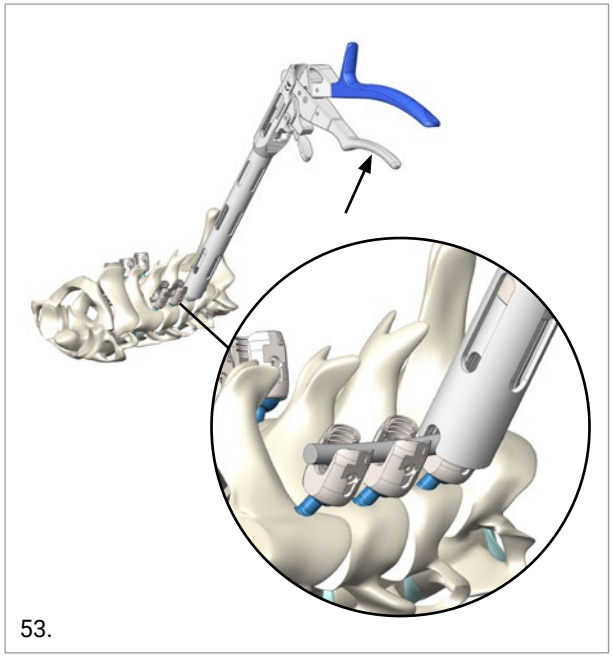
The rod must be completely seated within the screw heads to allow final rod manipulation and construct positioning. Rod reduction can be performed with the rod reduction device.

Place the rod reduction device on the polyaxia screw head until mechanical stop.



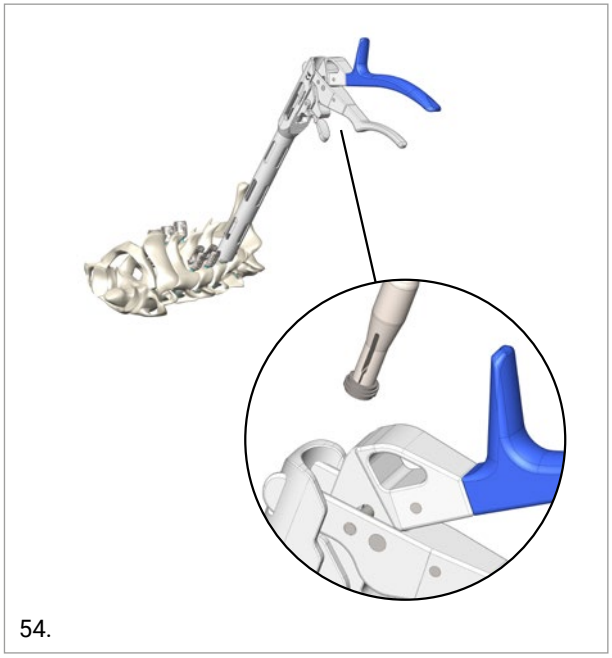
52.

Tighten the handle until the rod is fully seated in the screw head.



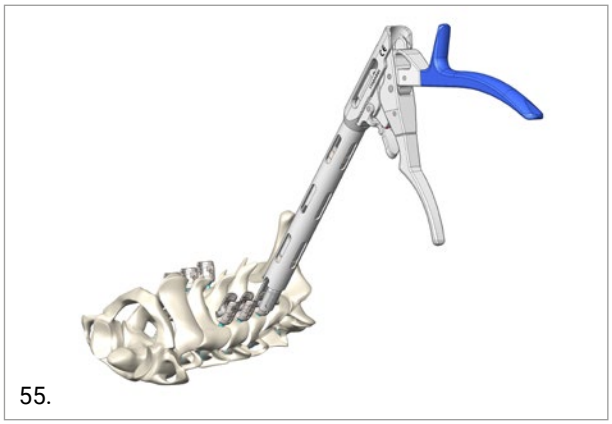
53.

Engage the set screw with the dedicated temporary set screwdriver. Insert the screwdriver through the rod reduction shaft and tighten the set screw on the polyaxial screw head.



54.

Once the set screw has been inserted squeeze the trigger of the rod reduction device for the release and disengage the instrument from the polyaxial screw head.



55.

**OPTION**

A rod pusher is also available to perform the rod reduction. Couple the rod pusher with the polyaxial screw head and the rod. Perform the reduction. The rod pusher can also be used as a counter torque during the temporary set screw tightening.

**CAUTION**

Do not use the temporary set screwdriver for the final locking as this instrument should only be used for temporary locking of the set screw.

## CAUTION

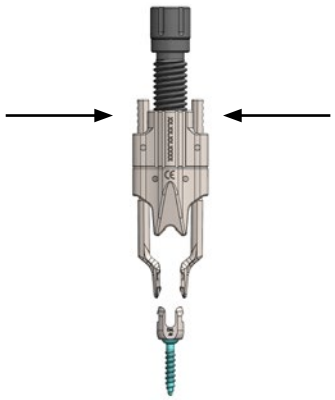
It is recommended to insert the set screw through the cannulation of the available instrument device to prevent implant failure.

## OPTION

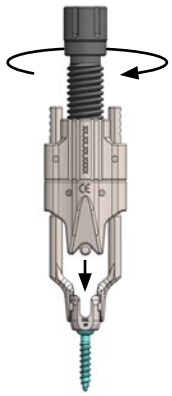
The third option for performing rod reduction is to use the short reducer. Set the instrument in the open position by turning the screw counterclockwise.

56.

Connect the instrument to the screw by pushing the handle on both sides, as shown in the following picture

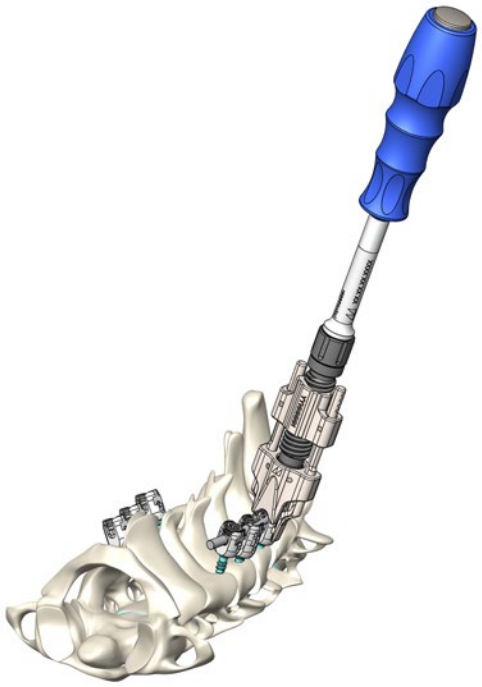


57.



58.

Perform the rod reduction advancing the screw. Use the dedicated handle to facilitate the reduction.



59.

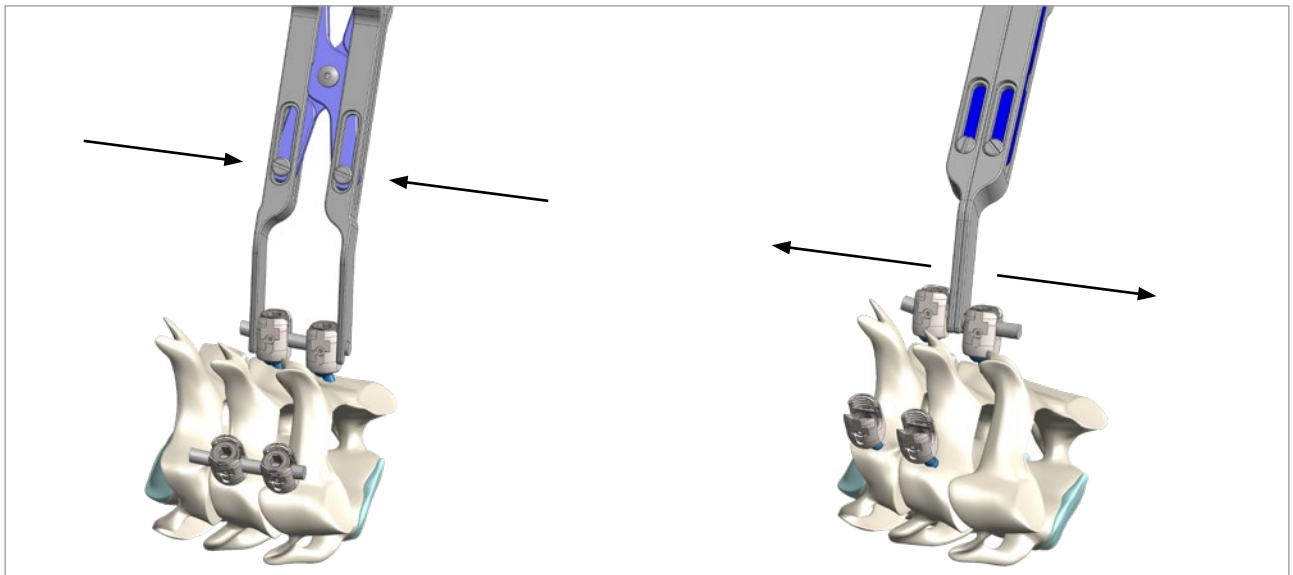
The setscrew can be inserted with the temporary set screwdriver through the short reducer.

60.

## 6. COMPRESSION OR DISTRACTION

Before the set screw is finally tightened, compression or distraction may be performed.

Use the compression forceps to achieve compression or the distraction forceps to achieve distraction. Once the desired position has been reached tighten the set screw as described in the section 'Final Tightening'.



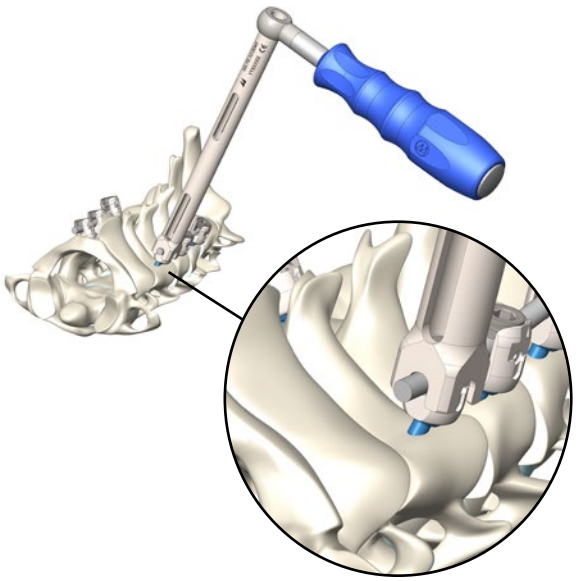
61.

## 7. IN SITU ROD BENDING AND ROTATION

If further contouring of the rods is required to achieve the desired alignment, it is also possible to bend the rods using the dedicated bending instruments. These bending instruments are available to perform in situ coronal and sagittal rod bending as well as rod rotation.

## 8. FINAL TIGHTENING

To perform the final tightening engage the counter torque to the pedicle screw head.



62.

Insert the torque limiter into the counter torque. Firmly grip the counter torque and perform final fixation until the audible noise indicates that the required torque has been reached.


63.

**OPTION**

Final tightening can be performed with the rod reducer device. In this case only the long torque limiter can be used.

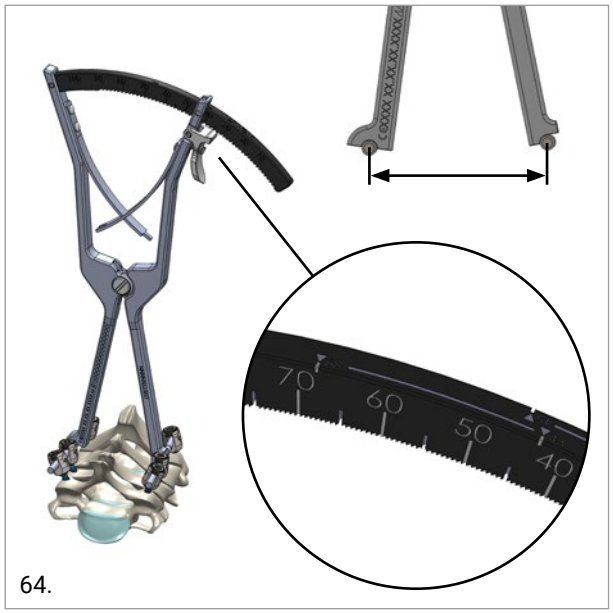
**CAUTION**

If, after final tightening has been performed, repositiong of the set screw is necessary, it is advisable to untighten the set screw and replace it with a new one.

## 9. CROSS CONNECTOR

The construct can be reinforced by adding the cross connectors according to the anatomy of the patient and the available space between the polyaxial screw heads.

Measure the distance between the rods using the M.U.S.T. Mini cross connector sizer.



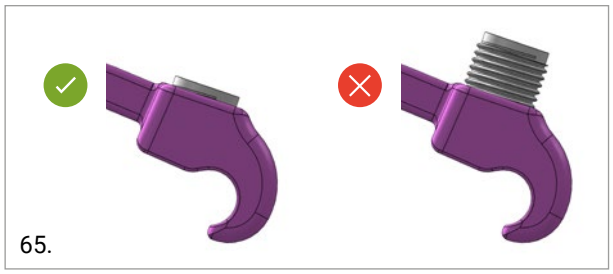

64.

The instrument measures the distance from center-to -center. It has a scale on the top side that suggests the size range of the top loading cross connector to be inserted. If the STD cross connector or the head-to-head cross connectors are used, refer to the lateral side.

Engage the top loading cross connector with two temporary set screwdrivers or with one temporary set screwdriver and a forceps. The temporary set screwdriver has a self-retaining tip, which allows for engaging the implant and for positioning it over the M.U.S.T. Mini rods. The temporay set screwdrivers are available in different configurations, as shown in the following pictures.

**CAUTION**

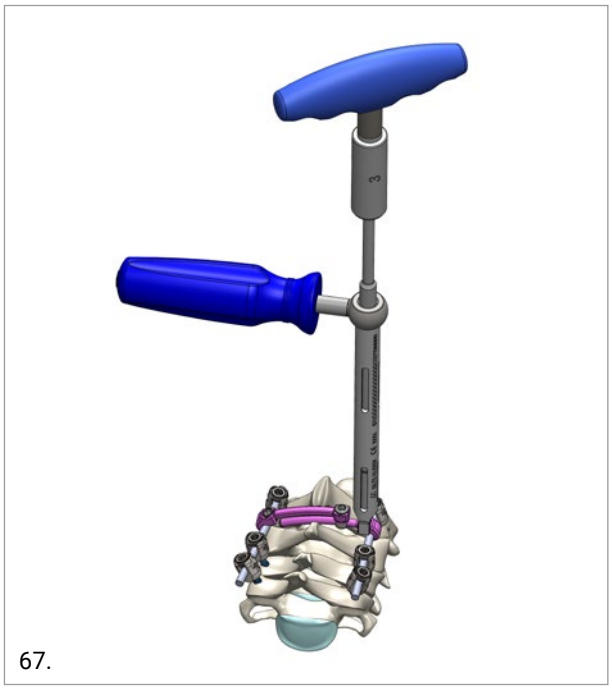
Locking screws are pre-assembled. In order to avoid damaging, do not overtighten counterclockwise to prevent complete release of the screws.



65.

66.

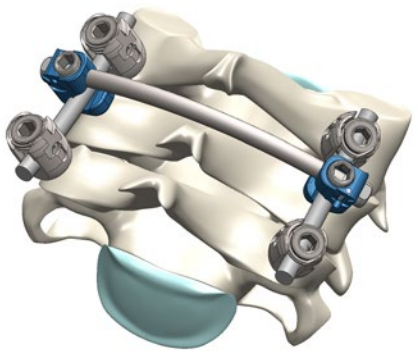
Secure the cross connector with the counter torque and the 3.0Nm torque limiter. All the screws must be tightened at 3.0Nm.



67.

### OPTION

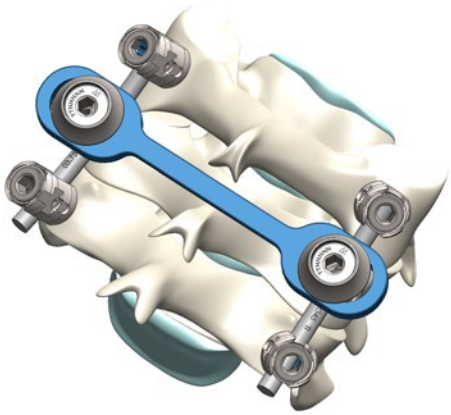
The STD cross connector with or without mechanical stop are also available. The instrument to insert and fix these connectors are the same used for the top loading design.



68.

### OPTION

The screw-to-screw cross connector is coupled directly on the M.U.S.T. Mini screw head. It is positioned using the same instruments showed for the top loading version and locked with a 3.0Nm torque limiter. The counter torque is not needed to perform the final tightening.

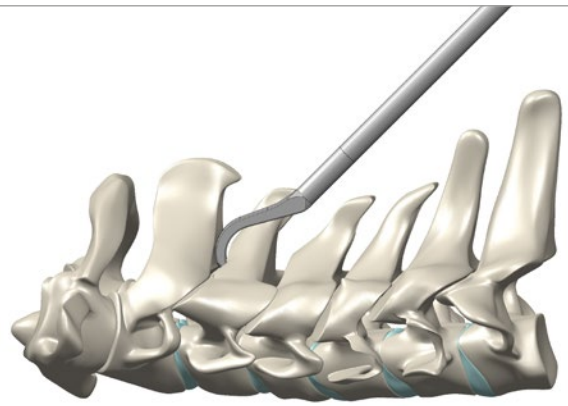


69.

## 10. HOOKS

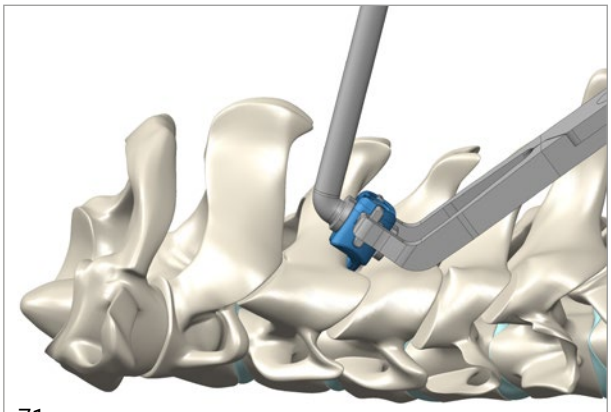
A comprehensive set of laminar hooks is available for the surgeon to choose the most suitable implant that matches the thickness of the vertebral lamina.

Before inserting the laminar hook care must be taken to dissect the ligament flavum and to expose the vertebral lamina ensuring a good contact between the hook and the bone. Use the lamina elevator to separate the ligamentum flavum from the lamina.



70.

Select the appropriate hook to implant using the trial sample. Attach the hook to the hook forceps and place it on the lamina, using the hook pusher if needed.



71.

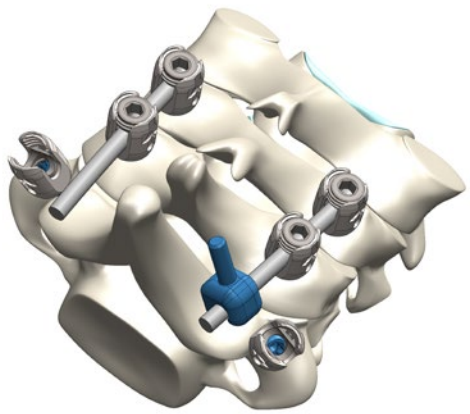
Repeat the process for each lamina, then perform as described above the following surgical steps:

- Rod contouring and insertion
- Rod reduction
- Compression and distraction
- Final tightening

## 11. LATERAL CONNECTORS

The lateral connectors are used to compensate the medio/lateral offset between the screw head and the rod. The lateral connectors are available in short and long versions.

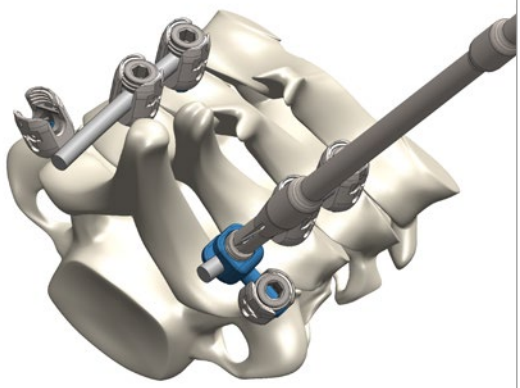
Once the desired lateral connector has been chosen, engage the connector on the rod as shown in the following picture.



72.

Rotate the connectors to engage it with the head of the polyaxial screw.

Use the temporary set screwdriver and temporary lock the lateral connector and the pedicle screw.



73.

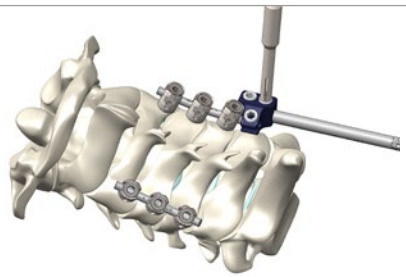
Perform the final tightening of both set screws with the 3.0 N·m torque limiter as described in section 10 'Final Tightening'.

## 12. ROD TO ROD CONNECTORS

The rod to rod connectors allows to connect Ø3.5mm rod to Ø5.5mm rod or to connect two rods of Ø3.5mm. All the available rod to rod connectors design are reported in the chapter implants nomenclature.

### 12.1 ROD-TO-ROD CONNECTORS POSITIONING

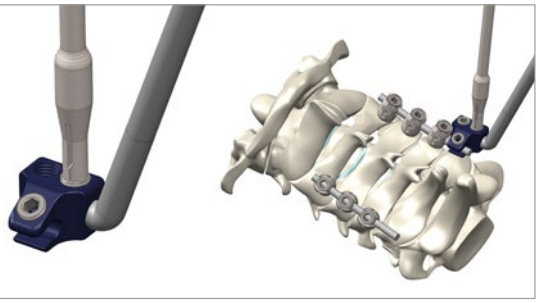
Hold the connector and place it in the already positioned rod. Temporarily lock the set screws with the temporary set screwdriver. Insert the second rod and proceed with the final tightening of the set screws using the 3.0 N·m torque limiter. If needed use standard forceps to hold the connector.



74.

**OPTION**

In combination with a M.U.S.T. Ø5.5mm rod , the M.U.S.T. connector inserter can be used. Attach the connector inserter to the implant by tightening the set screw using the temporary set screwdriver.



75.

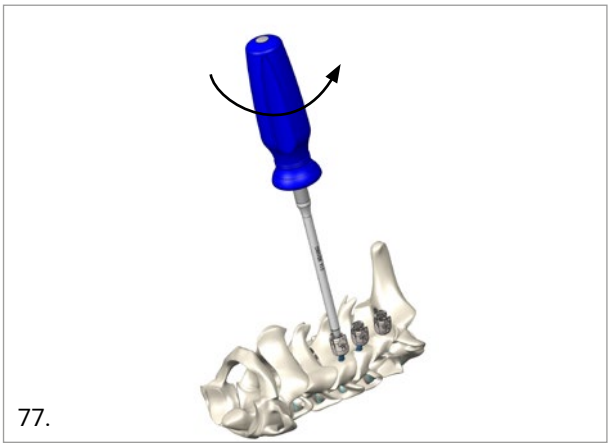
Insert the rod to rod connectors into the rod that is already in position and lock the set screws temporarily with the temporary set screwdriver. Slide out the connector inserter, insert the rod to be connected and proceed with the final tightening of the set screws using the 3.0 N·m torque limiter.

## 13. REMOVAL AND REVISION PROCEDURES

Remove the set screw from the polyaxial screw using the torque limiter and the dedicated counter torque.

76.

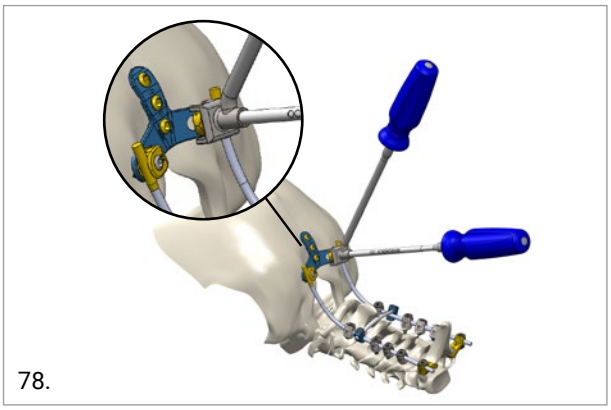
Remove the M.U.S.T. Mini polyaxial screw with the bone screwdriver.



77.

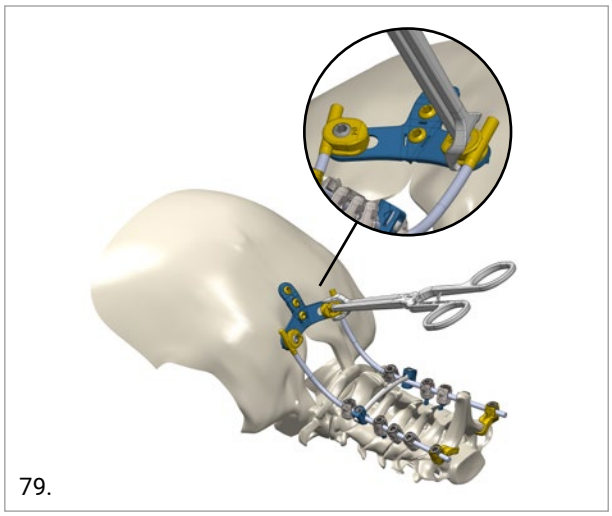
The occipital plate removal is done in two steps:

Unlock the occipital plate connector using the counter torque and the dedicated torque limiter.



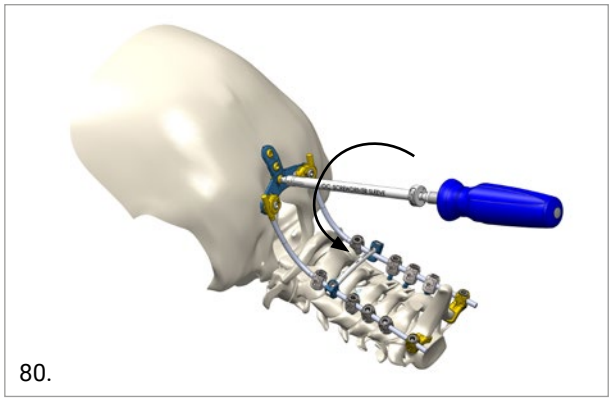
78.

Disengage the rod from the occipital plate connector with the occipital rod remover.

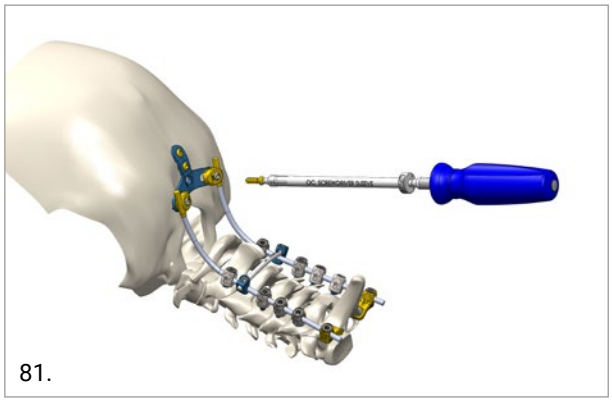


79.

Remove the occipital screw with the long OC screwdriver equipped with the retaining sleeve.



80.



81.

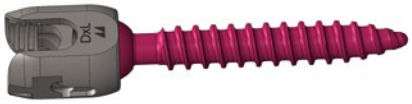
**CAUTION**

Check carefully that no metal fragments from the removed implants remain in situ.

# 14. IMPLANT NOMENCLATURE

## 14.1 STERILE SINGLE PACKAGE

### POLYAXIAL SCREW SOLID - FULL THREAD



| REFERENCE [1] | DIAMETER (mm) | LENGTH (mm) |
|---|---|---|
| 03.75.000* | ø 3.5 | 10 |
| 03.75.001 | | 12 |
| 03.75.002 | | 14 |
| 03.75.003 | | 16 |
| 03.75.004 | | 18 |
| 03.75.005 | | 20 |
| 03.75.006 | | 22 |
| 03.75.007 | | 24 |
| 03.75.008 | | 26 |
| 03.75.009 | | 28 |
| 03.75.010 | | 30 |
| 03.75.011 | | 32 |
| 03.75.012* | | 34 |
| 03.75.013* | | 36 |
| 03.75.014* | | 38 |
| 03.75.015* | | 40 |
| 03.75.100* | ø 4 | 10 |
| 03.75.101* | | 12 |
| 03.75.102* | | 14 |
| 03.75.103* | | 16 |
| 03.75.104* | | 18 |
| 03.75.105* | | 20 |
| 03.75.106* | | 22 |
| 03.75.107* | | 24 |
| 03.75.108* | | 26 |
| 03.75.109* | | 28 |
| 03.75.110* | | 30 |
| 03.75.111* | | 32 |
| 03.75.112* | | 34 |
| 03.75.113* | | 36 |
| 03.75.114* | | 38 |
| 03.75.115* | | 40 |

| REFERENCE [1] | DIAMETER (mm) | LENGTH (mm) |
|---|---|---|
| 03.75.302* | ø 4.5 | 14 |
| 03.75.303* | | 16 |
| 03.75.304* | | 18 |
| 03.75.305* | | 20 |
| 03.75.306* | | 22 |
| 03.75.307* | | 24 |
| 03.75.308* | | 26 |
| 03.75.309* | | 28 |
| 03.75.310* | | 30 |
| 03.75.311* | | 32 |
| 03.75.312* | | 34 |
| 03.75.313* | | 36 |
| 03.75.314* | | 38 |
| 03.75.315* | | 40 |
| 03.75.316* | | 42 |
| 03.75.317* | | 44 |
| 03.75.318* | | 46 |
| 03.75.319* | | 48 |
| 03.75.320* | | 50 |

[1] includes 1 screw and 1 set screw

### POLYAXIAL SCREW CANNULATED - FULL THREAD

| REFERENCE [1] | DIAMETER (mm) | LENGTH (mm) |
|---|---|---|
| 03.75.200* | ø 4.0 | 10 |
| 03.75.201 | | 12 |
| 03.75.202 | | 14 |
| 03.75.203 | | 16 |
| 03.75.204 | | 18 |
| 03.75.205 | | 20 |
| 03.75.206 | | 22 |
| 03.75.207 | | 24 |
| 03.75.208 | | 26 |
| 03.75.209 | | 28 |
| 03.75.210 | | 30 |
| 03.75.211 | | 32 |
| 03.75.212* | | 34 |
| 03.75.213* | | 36 |
| 03.75.214* | | 38 |
| 03.75.215* | | 40 |
| 03.75.402* | ø 4.5 | 14 |
| 03.75.403* | | 16 |
| 03.75.404* | | 18 |
| 03.75.405* | | 20 |
| 03.75.406* | | 22 |
| 03.75.407* | | 24 |
| 03.75.408* | | 26 |
| 03.75.409 | | 28 |
| 03.75.410 | | 30 |
| 03.75.411 | | 32 |
| 03.75.412 | | 34 |
| 03.75.413 | | 36 |
| 03.75.414 | | 38 |
| 03.75.415 | | 40 |
| 03.75.416* | | 42 |
| 03.75.417* | | 44 |
| 03.75.418* | | 46 |
| 03.75.419* | | 48 |
| 03.75.420* | | 50 |

### POLYAXIAL SCREW SOLID - PARTIAL THREAD

| REFERENCE [1] | DIAMETER (mm) | LENGTH (mm) |
|---|---|---|
| 03.75.471* | ø 3.5 | 26 |
| 03.75.472* | | 28 |
| 03.75.473* | | 30 |
| 03.75.474* | | 32 |
| 03.75.475* | | 34 |
| 03.75.476* | | 36 |
| 03.75.477* | | 38 |
| 03.75.478* | | 40 |
| 03.75.500* | ø 4.0 | 26 |
| 03.75.501* | | 28 |
| 03.75.502* | | 30 |
| 03.75.503* | | 32 |
| 03.75.504* | | 34 |
| 03.75.505* | | 36 |
| 03.75.506* | | 38 |
| 03.75.507* | | 40 |
| 03.75.508* | | 42 |
| 03.75.509* | | 44 |
| 03.75.510* | | 46 |
| 03.75.511* | | 48 |
| 03.75.512* | | 50 |
| 03.75.548* | ø 4.5 | 26 |
| 03.75.549* | | 28 |
| 03.75.550* | | 30 |
| 03.75.551* | | 32 |
| 03.75.552* | | 34 |
| 03.75.553* | | 36 |
| 03.75.554* | | 38 |
| 03.75.555* | | 40 |
| 03.75.556* | | 42 |
| 03.75.557* | | 44 |
| 03.75.558* | | 46 |
| 03.75.559* | | 48 |
| 03.75.560* | | 50 |

[1] includes 1 screw and 1 set screw

## POLYAXIAL SCREW CANNULATED - PARTIAL THREAD

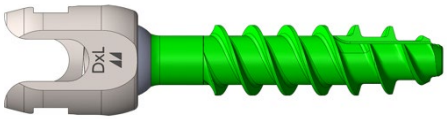
| REFERENCE [1] | DIAMETER (mm) | LENGTH (mm) |
|---|---|---|
| 03.75.524 | ø 4.0 | 26 |
| 03.75.525 | | 28 |
| 03.75.526 | | 30 |
| 03.75.527 | | 32 |
| 03.75.528 | | 34 |
| 03.75.529 | | 36 |
| 03.75.530* | | 38 |
| 03.75.531* | | 40 |
| 03.75.532* | | 42 |
| 03.75.533* | | 44 |
| 03.75.534* | | 46 |
| 03.75.535* | | 48 |
| 03.75.536* | | 50 |
| 03.75.572 | ø 4.5 | 26 |
| 03.75.573 | | 28 |
| 03.75.574 | | 30 |
| 03.75.575 | | 32 |
| 03.75.576 | | 34 |
| 03.75.577* | | 36 |
| 03.75.578* | | 38 |
| 03.75.579* | | 40 |
| 03.75.580* | | 42 |
| 03.75.581* | | 44 |
| 03.75.582* | | 46 |
| 03.75.583* | | 48 |
| 03.75.584* | | 50 |

[1] includes 1 screw and 1 set screw

## POLYAXIAL SCREW DUAL LEAD - SOLID

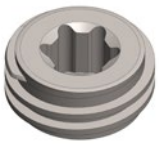
| REFERENCE | DIAMETER (mm) | LENGTH (mm) |
|---|---|---|
| 03.75.250 | ø 4.0 | 20 |
| 03.75.251 | | 25 |
| 03.75.252 | | 30 |
| 03.75.253 | | 35 |
| 03.75.254 | | 40 |
| 03.75.255 | | 45 |
| 03.75.256 | | 50 |
| 03.75.260 | ø 4.5 | 20 |
| 03.75.261 | | 25 |
| 03.75.262 | | 30 |
| 03.75.263 | | 35 |
| 03.75.264 | | 40 |
| 03.75.265 | | 45 |
| 03.75.266 | | 50 |
| 03.75.270 | ø 5.0 | 20 |
| 03.75.271 | | 25 |
| 03.75.272 | | 30 |
| 03.75.273 | | 35 |
| 03.75.274 | | 40 |
| 03.75.275 | | 45 |
| 03.75.276 | | 50 |
| 03.75.280 | ø 6.0 | 25 |
| 03.75.281 | | 30 |
| 03.75.282 | | 35 |
| 03.75.283 | | 40 |
| 03.75.284 | | 45 |
| 03.75.285 | | 50 |

### POLYAXIAL DUAL LEAD - CANNULATED




| REFERENCE | DIAMETER (mm) | LENGTH (mm) |
|---|---|---|
| 03.75.350 | ø 4.5 | 20 |
| 03.75.351 | | 25 |
| 03.75.352 | | 30 |
| 03.75.353 | | 35 |
| 03.75.354 | | 40 |
| 03.75.355 | | 45 |
| 03.75.356 | | 50 |
| 03.75.360 | ø 5.0 | 20 |
| 03.75.361 | | 25 |
| 03.75.362 | | 30 |
| 03.75.363 | | 35 |
| 03.75.364 | | 40 |
| 03.75.365 | | 45 |
| 03.75.366 | | 50 |
| 03.75.370 | ø 6.0 | 25 |
| 03.75.371 | | 30 |
| 03.75.372 | | 35 |
| 03.75.373 | | 40 |
| 03.75.374 | | 45 |
| 03.75.375 | | 50 |

### SET SCREW



| REFERENCE | TYPE |
|---|---|
| 03.75.900 | M.U.S.T. Mini Setscrew (ste) |
| 03.75.901 | M.U.S.T. Mini Setscrew 4x (ste) |
| 03.75.902 | M.U.S.T. Mini Setscrew 6x (ste) |

### HOOK

| REFERENCE[2] | TYPE | L/R | SIZE |
|---|---|---|---|
| 03.75.905 | STD | N.A. | 4.5 |
| 03.75.906 | STD | N.A. | 6 |
| 03.75.915 | ANGLED | L | 4.5 |
| 03.75.916 | ANGLED | L | 6 |
| 03.75.926 | ANGLED | R | 4.5 |
| 03.75.927 | ANGLED | R | 6 |
| 03.75.935 | OFFSET | L | 4.5 |
| 03.75.936 | OFFSET | L | 6 |
| 03.75.945 | OFFSET | R | 4.5 |
| 03.75.946 | OFFSET | R | 6 |

[2] includes 1 screw and 1 set screw

### STRAIGHT RODS - Ti6AL4V

| REFERENCE | MATERIAL | DIAMETER x LENGTH (mm) |
|---|---|---|
| 03.75.632* | Ti6Al4V | ø3.5 x 30mm |
| 03.75.633* | Ti6Al4V | ø3.5 x 35mm |
| 03.75.634* | Ti6Al4V | ø3.5 x 40mm |
| 03.75.593* | Ti6Al4V | ø3.5 x 45mm |
| 03.75.594* | Ti6Al4V | ø3.5 x 50mm |
| 03.75.595* | Ti6Al4V | ø3.5 x 55mm |
| 03.75.596* | Ti6Al4V | ø3.5 x 60mm |
| 03.75.597* | Ti6Al4V | ø3.5 x 65mm |
| 03.75.598* | Ti6Al4V | ø3.5 x 70mm |
| 03.75.599* | Ti6Al4V | ø3.5 x 75mm |
| 03.75.600 | Ti6Al4V | ø3.5 x 80mm |
| 03.75.692* | Ti6Al4V | ø3.5 x 85mm |
| 03.75.693* | Ti6Al4V | ø3.5 x 90mm |
| 03.75.694* | Ti6Al4V | ø3.5 x 95mm |
| 03.75.695* | Ti6Al4V | ø3.5 x 100mm |
| 03.75.696* | Ti6Al4V | ø3.5 x 105mm |
| 03.75.697* | Ti6Al4V | ø3.5 x 110mm |
| 03.75.698* | Ti6Al4V | ø3.5 x 115mm |
| 03.75.601 | Ti6Al4V | ø3.5 x 120mm |
| 03.75.602 | Ti6Al4V | ø3.5 x 240mm |
| 03.75.603* | Ti6Al4V | ø3.5 x 350mm |

*On demand

## STRAIGHT RODS - CoCr

| REFERENCE | MATERIAL | DIAMETER x LENGTH (mm) |
|---|---|---|
| 03.75.635* | CoCr | ø3.5 x 30mm |
| 03.75.636* | CoCr | ø3.5 x 35mm |
| 03.75.637* | CoCr | ø3.5 x 40mm |
| 03.75.638* | CoCr | ø3.5 x 45mm |
| 03.75.639* | CoCr | ø3.5 x 50mm |
| 03.75.640* | CoCr | ø3.5 x 55mm |
| 03.75.641* | CoCr | ø3.5 x 60mm |
| 03.75.642* | CoCr | ø3.5 x 65mm |
| 03.75.643* | CoCr | ø3.5 x 70mm |
| 03.75.644* | CoCr | ø3.5 x 75mm |
| 03.75.604* | CoCr | ø3.5 x 80mm |
| 03.75.645* | CoCr | ø3.5 x 85mm |
| 03.75.646* | CoCr | ø3.5 x 90mm |
| 03.75.647* | CoCr | ø3.5 x 95mm |
| 03.75.648* | CoCr | ø3.5 x 100mm |
| 03.75.649* | CoCr | ø3.5 x 105mm |
| 03.75.690* | CoCr | ø3.5 x 110mm |
| 03.75.691* | CoCr | ø3.5 x 115mm |
| 03.75.605* | CoCr | ø3.5 x 120mm |
| 03.75.606* | CoCr | ø3.5 x 240mm |
| 03.75.607* | CoCr | ø3.5 x 350mm |

*On demand

## STRAIGHT RODS ANODIZED

| REFERENCE | DESCRIPTION |
|---|---|
| 03.75.614 | M.U.S.T. MINI straight anodized rod Ti 3.5x80mm (ste) |
| 03.75.615 | M.U.S.T. MINI straight anodized rod Ti 3.5x120mm (ste) |
| 03.75.616 | M.U.S.T. MINI straight anodized rod Ti 3.5x240mm (ste) |
| 03.75.617 | M.U.S.T. MINI straight anodized rod Ti 3.5x350mm (ste) |
| 03.75.618 | M.U.S.T. MINI straight anodized rod Ti 3.5x420mm (ste) |

## PRE-CURVED ANODIZED ROD

| REFERENCE | DESCRIPTION |
|---|---|
| 03.75.650 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x30mm (ste) |
| 03.75.651 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x35mm (ste) |
| 03.75.652 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x40mm (ste) |
| 03.75.653 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x45mm (ste) |
| 03.75.654 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x50mm (ste) |
| 03.75.655 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x55mm (ste) |
| 03.75.656 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x60mm (ste) |
| 03.75.657 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x65mm (ste) |
| 03.75.658 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x70mm (ste) |
| 03.75.659 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x75mm (ste) |
| 03.75.660 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x80mm (ste) |
| 03.75.661 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x85mm (ste) |
| 03.75.662 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x90mm (ste) |
| 03.75.663 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x95mm (ste) |
| 03.75.664 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x100mm (ste) |
| 03.75.665 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x105mm (ste) |
| 03.75.666 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x110mm (ste) |
| 03.75.667 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x115mm (ste) |
| 03.75.668 | M.U.S.T. MINI pre-curved anod rod Ti 3.5x120mm (ste) |

## TRANSITION RODS

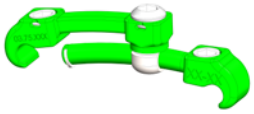
| REFERENCE | MATERIAL | ø x L (mm) |
|---|---|---|
| 03.75.610 | Titanium | 3.5/ 5.5 x 420 |
| 03.75.612 | Cobalt-Chrome | 3.5/5.5 x 420 |
| 03.75.611* | Titanium | 3.5 / 5.5mm x 600mm |
| 03.75.613* | CobaltChrome | 3.5 / 5.5mm x 600mm |

## CLAMP FOR CROSS CONNECTOR

| REFERENCE[4] | DESCRIPTION |
|---|---|
| 03.75.712 | Cross connectors clamp |

[4] includes 1 Screw M5

## TOP LOADING CROSS CONNECTORS



| REFERENCE | TYPE | LENGTH (mm) |
|---|---|---|
| 03.75.735 | Top loading | 21-26 |
| 03.75.736 | Top loading | 25-33 |
| 03.75.737 | Top loading | 31-45 |
| 03.75.738 | Top loading | 43-68 |

## LOCKING SCREW

| REFERENCE | TYPE |
|---|---|
| 03.75.732 | Screw M5 HEX3 |

## STD CROSS CONNECTORS

| REFERENCE[3] | TYPE | LENGTH (mm) |
|---|---|---|
| 03.75.713* | WITH MEC.STOP | 23 |
| 03.75.714* | WITH MEC.STOP | 30 |
| 03.75.715* | WITH MEC.STOP | 37 |
| 03.75.716* | WITH MEC.STOP | 44 |
| 03.75.717* | WITH MEC.STOP | 51 |
| 03.75.718* | WITH MEC.STOP | 58 |
| 03.75.719 | WITH MEC.STOP | 65 |

[3] includes 1 STD cross connectors and 2 cross connector clamp and 2 screw M5

## STD CROSS CONNECTORS

| REFERENCE[3] | TYPE | LENGTH (mm) |
|---|---|---|
| 03.75.710* | STD | 35 |
| 03.75.711* | STD | 60 |

[3] includes 1 STD cross connectors and 2 cross connector

* Special order

## SCREW-TO-SCREW CROSS CONNECTORS

| REFERENCE[6] | TYPE | LENGTH (mm) |
|---|---|---|
| 03.75.721* | Screw-to-screw | 22-30 |
| 03.75.722* | Screw-to-screw | 29-37 |
| 03.75.723* | Screw-to-screw | 36-44 |
| 03.75.724* | Screw-to-screw | 43-51 |
| 03.75.725* | Screw-to-screw | 50-58 |

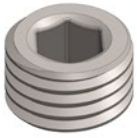
[6] includes 1 screw-to-screw cross connectors and 2 Screw with Washer

## LATERAL CONNECTORS

| REFERENCE[5] | SIZE |
|---|---|
| 03.75.730* | 10mm |
| 03.75.731* | 15mm |
| 03.75.727* | 20mm |
| 03.75.728* | 25mm |
| 03.75.729* | 30mm |

[5] includes lateral connector and 1 screw M6

## LOCKING SCREW



| REFERENCE | TYPE |
|---|---|
| 03.75.700 | M6 HEX3 |

* Special order

## SCREW WITH WASHER

| REFERENCE | DESCRIPTION |
|---|---|
| 03.75.720* | Screw with washer |

**ROD TO ROD CONNECTORS**

| REFERENCE [7] | TYPE | PICTURE |
|---|---|---|
| 03.75.703 | STD rod to rod connector+4 nuts (ste)<br>3.5mm-5.5mm |  |
| 03.75.705* | Angled rod to rod connector+3 nuts(ste)<br>3.5mm-5.5mm |  |
| 03.75.707 | Open rod to rod connector+3 nuts (ste)<br>3.5mm-5.5mm |  |
| 03.75.709* | M.U.S.T. MINI Adjus. rod to rod connector+3 nuts(ste) |  |
| 03.75.746 | Parallel rod to rod connector 3.5-5.5 +2 nuts (ste)<br>3.5mm-5.5mm |  |
| 03.75.747 | Parallel rod to rod connector<br>3.5mm-3.5mm +2 nuts (ste) |  |
| 03.75.748 | Parallel rod to rod connector open<br>3.5mm-3.5mm +2 nuts (ste) |  |
| 03.75.749 | M.U.S.T. MINI Parallel rod to rod connector open<br>3.5mm-5.5mm +2 nuts (ste) |  |

| REFERENCE [7] | TYPE | PICTURE |
|---|---|---|
| 03.75.750 | In-line rod to rod connector short<br>3.5mm-3.5mm +2 nuts (sterile) |  |
| 03.75.751 | In-line rod to rod connector long<br>3.5mm-3.5mm +4 nuts (ste) |  |
| 03.75.752 | In- line rod to rod connector short open<br>3.5mm-3.5mm +2 nuts (ste) |  |
| 03.75.753 | In-line rod to rod connector long open<br>3.5mm -3.5mm +4 nuts (ste) |  |
| 03.75.754 | In-line rod to rod connector short<br>3.5mm -5.5mm +2 nuts (ste) |  |
| 03.75.755 | In-line rod to rod connector long<br>3.5mm-5.5mm +4 nuts (ste) |  |

[7] includes 1 rod to rod connector and M6 set screws

### OCCIPITAL PLATE Ø 4mm ROD COMPATIBLE

| REFERENCE | TYPE | SIZE |
|---|---|---|
| 03.75.890* | X | Small |
| 03.75.891* | X | Large |
| 03.75.894 | T | Small |
| 03.75.895 | T | Large |

### OCCIPITAL PLATE Ø 3.5mm ROD COMPATIBLE

| REFERENCE | TYPE | SIZE |
|---|---|---|
| 03.75.840* | X | Small |
| 03.75.841* | X | Large |
| 03.75.844 | T | Small |
| 03.75.845 | T | Large |

### TRANSITION RODS Ø 3.5 / 4.0mm



| REFERENCE | MATERIAL | ø x L (mm) |
|---|---|---|
| 03.75.898 | Titanium | 3.5 / 4.0mm x 240mm |
| 03.75.899 | Titanium | 3.5 / 4.0mm x 350mm |

### TRANSITION PRE BENT RODS Ø 3.5 / 4.0mm

| REFERENCE | MATERIAL | DIAMETER x LENGTH (mm) |
|---|---|---|
| 03.75.846* | Titanium / 45° | 3.5 / 4.0 x 120 |
| 03.75.847 | Titanium / 45° | 3.5 / 4.0 x 200 |
| 03.75.848* | Titanium / 60° | 3.5 / 4.0 x 120 |
| 03.75.849 | Titanium / 60° | 3.5 / 4.0 x 200 |
| 03.75.896* | Titanium / 75° | 3.5 / 4.0 x 120 |
| 03.75.897 | Titanium / 75° | 3.5 / 4.0 x 200 |

*Special order

### PRE BENT RODS Ø 3.5

| REFERENCE | MATERIAL | ø x L (mm) |
|---|---|---|
| 03.75.620* | Titanium / 45° | 3.5mm x 120mm |
| 03.75.621 | Titanium / 45° | 3.5mm x 200mm |
| 03.75.622* | Titanium / 60° | 3.5mm x 120mm |
| 03.75.623 | Titanium / 60° | 3.5mm x 200mm |
| 03.75.624* | Titanium / 75° | 3.5mm x 120mm |
| 03.75.625 | Titanium / 75° | 3.5mm x 200mm |

**OCCIPITAL SCREW – PRIMARY**

| REFERENCE | Ø (mm) | L (mm) |
|---|---|---|
| 03.75.800 | ø 4 | 6 |
| 03.75.801 | | 7 |
| 03.75.802 | | 8 |
| 03.75.803 | | 9 |
| 03.75.804 | | 10 |
| 03.75.805 | | 11 |
| 03.75.806 | | 12 |
| 03.75.807 | | 13 |
| 03.75.808 | | 14 |
| 03.75.809* | | 15 |
| 03.75.810* | | 16 |

*Special order

**OCCIPITAL SCREW – REVISION**

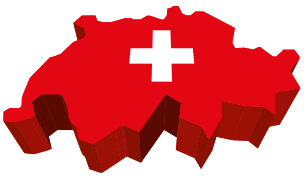
| REFERENCE | Ø (mm) | L (mm) |
|---|---|---|
| 03.75.820 | ø 5 | 6 |
| 03.75.821 | | 7 |
| 03.75.822 | | 8 |
| 03.75.823 | | 9 |
| 03.75.824 | | 10 |
| 03.75.825 | | 11 |
| 03.75.826 | | 12 |
| 03.75.827 | | 13 |
| 03.75.828 | | 14 |
| 03.75.829* | | 15 |
| 03.75.830* | | 16 |

*Special order

Part numbers subject to change.

## NOTE FOR STERILIZATION

The instrumentation is not sterile upon delivery. Instruments must be cleaned before use and sterilized in an autoclave, respecting the US regulations and directives where applicable, and following the instructions for use of the autoclave's manufacturer. For detailed instructions, please refer to the document "Recommendations for cleaning, decontamination and sterilization of Medacta International orthopaedic devices" available at www.medacta.com.



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