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Lumis[™]

Lumbar Mini Invasive System



Surgical Technique

Intended uses and Indications

When used for anterior screw fixation or as a posterior, non-pedicle system of the non-cervical spine, the U.L.I.S.™ and LUMIS™ systems are indicated for:

- degenerative disc disease (discogenic back pain with degeneration of the disc confirmed by history and radiographic studies)
- spondylolisthesis
- fracture
- spinal stenosis
- curvatures (i.e. scoliosis, kyphosis, and/or lordosis)
- tumors
- failed previous fusion (pseudoarthrosis)

The U.L.I.S.™ and LUMIS™ systems are pedicle screw systems indicated for skeletally mature patients who:

- have severe spondylolisthesis (Grades 3 and 4) at the L5-S1 vertebra;
- receive fusions using autogenous bone graft only;
- have the device fixed or attached to the lumbar and sacral spine (L3 to sacrum); and
- have the device removed after the development of a solid fusion.



Intended uses and Indications

In addition, the U.L.I.S.™ and LUMIS™ systems are pedicle screw systems intended to provide immobilization and stabilization of spinal segments in skeletally mature patients as an adjunct to fusion in the treatment of the following acute and chronic instabilities or deformities of the thoracic, lumbar, and sacral spine (T10-S1):

- Degenerative spondylolisthesis with objective evidence of neurologic impairment
- Fracture
- Curvatures (i.e. scoliosis, kyphosis, and/or lordosis)
- Spinal tumor
- Failed previous fusion (pseudoarthrosis)

This device can only be implanted by a surgeon with a good working knowledge of the device, its applications, the instruments and the required surgical technique.



The Universal Lumbar Intuitive System (U.L.I.S.™ System), and Lumbar Universal Minimally Invasive System (LUMIS™ System) instrumentations are designed for correction and surgical stabilization of the spine during development of solid bone fusion. It is recommended to remove the device as soon as effective solid bone fusion has been achieved.

- **Description:**

The Universal Lumbar Intuitive System (U.L.I.S.™ System), and Lumbar Universal Minimally Invasive System (LUMIS™ System) instrumentations are composed of pedicle screws and Titanium fusion rods from the UNI-Thread® System.

Their components can be rigidly assembled in a variety of constructs, each corresponding to the needs and anatomy of a specific patient.

These constructs are assembled using specific instruments.

The components of the U.L.I.S.™ system are made of titanium alloy (Ti-6Al-4V ELI) complying with ASTM F136 (ISO 5832-3) or ASTM F1537 Cobalt Chromium.

The components of the LUMIS™ system are made of titanium alloy (Ti-6Al-4V ELI) complying with ASTM F136 (ISO 5832-3).

Implants must never be reused.

Components of the U.L.I.S.™ and LUMIS™ systems must not be used with components derived from another manufacturer.

Contraindications include, but are not limited to:

- Allergy to the implanted material, mainly to metal (e.g. cobalt, chromium, nickel, etc.)
- Any other medical or surgical condition likely to compromise the success of instrumented surgery, such as the presence of a malignant tumour or serious congenital abnormalities, raised erythrocyte sedimentation rate not explained by other diseases, high white blood cell count or a tendency to low white blood cell count.
- All cases not described in the indications.
- Localized infection of the operative site.
- All patients with insufficient tissue cover of the operative site.
- Local signs of inflammation.
- Fever or leukocytosis.
- Pathological obesity.
- Pregnancy.

Contra-indications (2/2)

- Mental illness.
- Rapidly evolving joint diseases, bone absorption, osteopenia and/or osteoporosis. Osteoporosis is a relative contraindication, as this medical condition can limit the expected correction gain and stability of mechanical fixation.
- All cases not requiring bone graft or bone fusion.
- All cases requiring a combination of different metals.
- All patients not agreeing to comply with postoperative instructions.

The contraindications of these devices are similar to those of other spinal rod instrumentations. This spinal instrumentation is not designed, or intended or sold for uses other than those indicated.

Precautions and Warnings

- This instrumentation is not designed to be the only means of long-term support of the spine. The use of this product cannot be successful without a mechanically solid bone graft. In the absence of a solid bone graft, the implanted devices can become deformed, loose, dismantled and/or may break.
- The safety and effectiveness of pedicle screw spinal systems have been established only for spinal conditions with significant mechanical instability or deformity requiring fusion with instrumentation. These conditions are significant mechanical instability or deformity of the thoracic, lumbar, and sacral spine secondary to severe spondylolisthesis (grades 3 and 4) of the L5-S1 vertebra, degenerative spondylolisthesis with objective evidence of neurologic impairment, fracture, spinal tumor, and failed previous fusion (pseudoarthrosis). The safety and effectiveness of these devices for any other conditions are unknown.
- Compliance with preoperative and intraoperative procedures and recommendations, a good knowledge of surgical techniques, correct selection and positioning of implants as well as the quality of the reduction obtained are important factors determining success of the operation. Appropriate patient selection and patient cooperation also have a major influence on the results. High non-fusion rates have been demonstrated in smokers, obese subjects, alcoholics, patients with poor quality bone or muscle and/or suffering from paralysis. These patients must be informed of this risk and its consequences.
- In the case of a major bone defect of the anterior vertebral column, the surgeon must consider the use of additional support devices.



See package insert for labeling limitation

Interconnection of the parts and connection to other devices

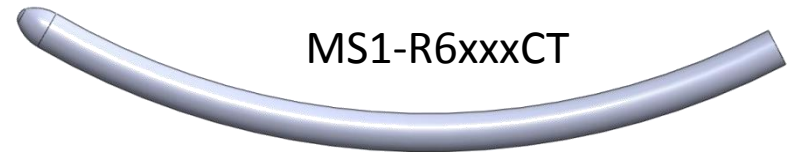
➤ Interconnection of the parts:

When used as a posterior pedicle screw based system, the LUMIS™ screws can be connected to :

- LUMIS™ percutaneous rods (Ref MS1-R6xxxT or MS1-R6xxxCT)



MS1-R6xxxT



MS1-R6xxxCT

- Uni-Thread™ rods (Ref L2-R6xxHT or L2-R6xxCHT)



L2-R6xxHT



L2-R6xxCHT

- LUMIS™ and UNI-Thread™ fusion rods are made of Titanium Ta6V Eli (ASTM F136)
- Diameter of rods : Ø6 mm



See package insert for labeling limitation

Interconnection of the parts and connection to other devices

➤ Connection to other devices:

	Screw extender (MS1-A211/MS1-A214)	GuideWire (MS1-WB1450)	Cannulated screwdriver (MS2-A221)	Setscrew Holder (MS1-A231)	T30 shaft (MS1-A411)
LUMIS™ multiaxial screw (MS2-MDXXT)	From the insertion of the screw into the pedicle until the closure of the implants	Insertion of the screw in the pedicle	Insertion of the screw in the pedicle		
LUMIS™ setscrew (MS1-L100T)				Setscrew placement	Final tightening

Lumis™

Lumbar Mini Invasive System

Screw system

Multi-Axial Screws MS2-M^DL^LT



D = diameter, **L** = length



Setscrew MS1-L100T



See package insert for labeling limitation

Titanium Alloy LUMIS™ percutaneous rods



MS1-R6xxxT (straight percutaneous rod)



MS1-R6xxxCT (prebent percutaneous rod)

Titanium Alloy LUMIS percutaneous rods (MS1-R6xxxT, MS1-R6xxxCT) are not available for sale in CANADA.

Titanium Alloy Uni-Thread™ rods







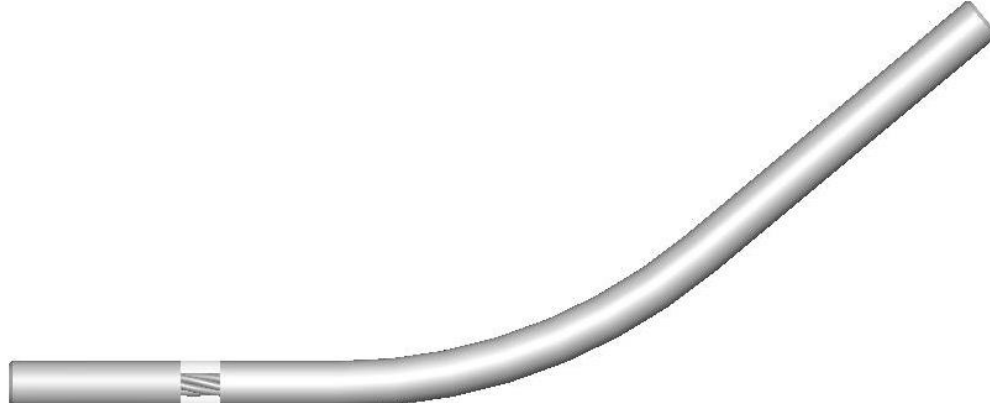
L2-R6XXHT (Hex rod)



L2-R6XXCHT (Prebent rod)

Hybrid and Dynamic Stabilization rods :

- F1-R1609T 
- F1-RH1609T 
- F1-RH2609T 
- F1-RHL1609T 

- F1-RH1609CT 

Hybrid and Dynamic stabilization rods (F1-R1609T, F1-RH1609T, F1-RH2609T, F1-RHL1609T, F1-RH1609CT) are not available for Sale in USA or Canada.

Instruments for pedicle preparation

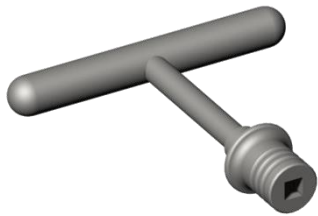


**Cannulated ratcheting handle
L2-ALIS411**

Guide wire diameter 1.4mm, length 500mm MS1-WB1450



Cannulated square awl MS1-A121



**T Handle
PL1-A011**



- Ø5mm cannulated tap MS1-A115**
- Ø6mm cannulated tap MS1-A116**
- Ø7mm cannulated tap MS1-A117**
- Ø8mm cannulated tap MS1-A118**

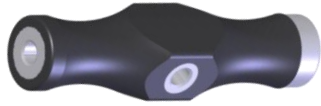


Expander 1 MS1-A110



Protection sleeve for taps MS1-A111

Instruments for screw insertion



**Dual purpose handle
U1-A622**



**Setscrew support
MS1-A251**



**Over handle
MS1-A315**



Extender Wrench MS1-A213



Screw extender MS1-A211



Enlarged screw extender MS1-A214

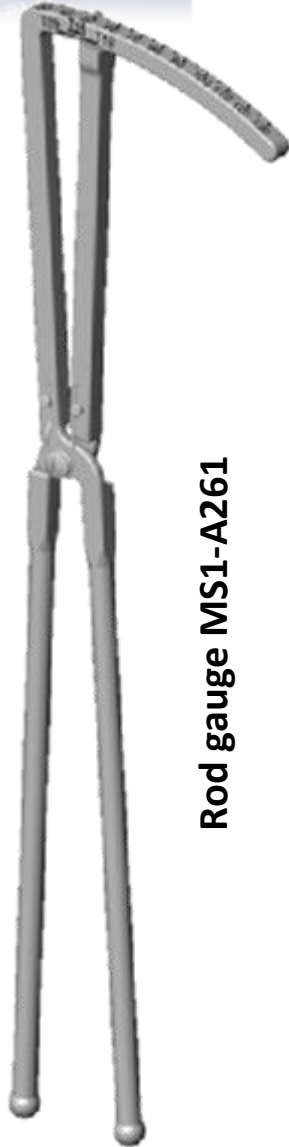


Lumis Universal Screwdriver MS2-A221



See package insert for labeling limitation

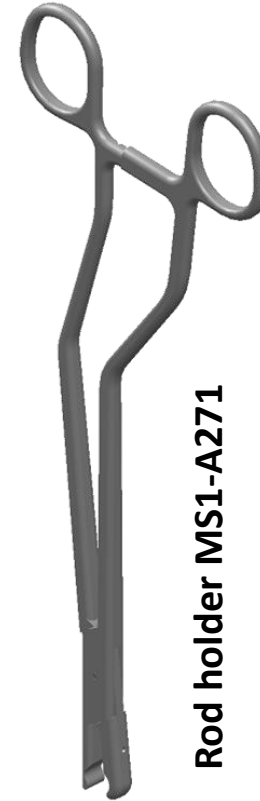
Instruments for rod placement




Rod gauge MS1-A261



**French bender
U1-A321**



Rod holder MS1-A271

 See package insert for labeling limitation

Lumis™

Lumbar Mini Invasive System

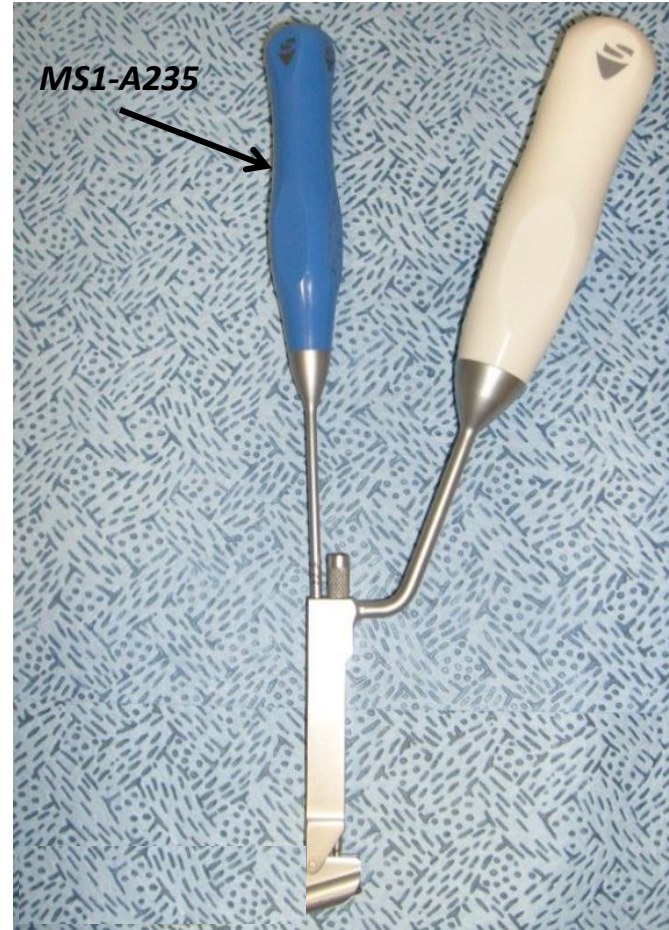
Instruments for rod placement



Rod introducer MS1-A274



Reversed rod introducer MS1-A275



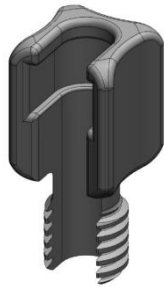
T10 screwdriver for rod introducer MS1-A235

Rotating rod introducer MS1-A276

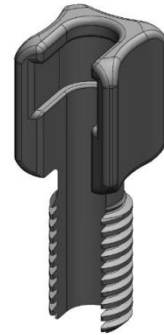


See package insert for labeling limitation

Instruments for rod placement



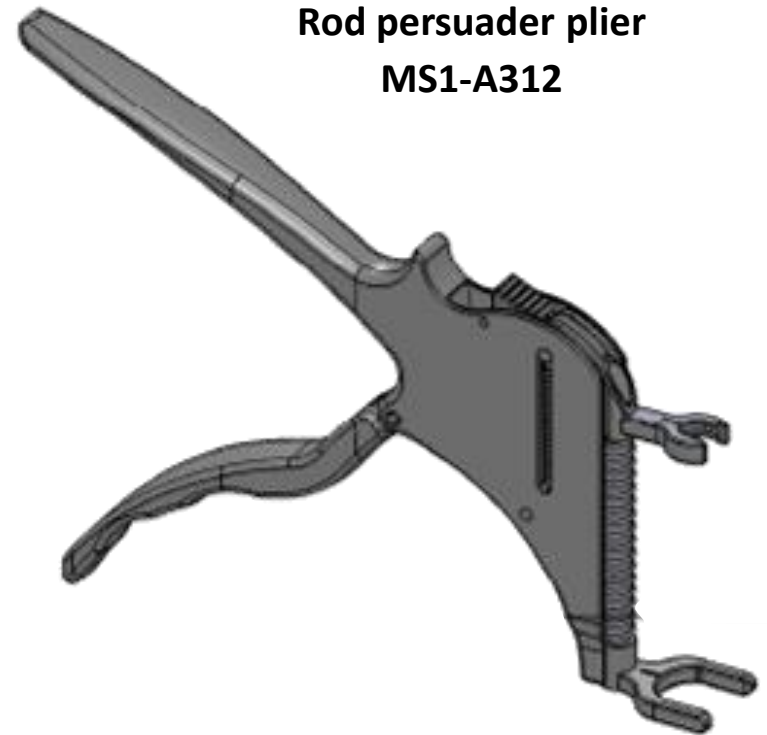
Screw for rod persuader
MS1-A313



Long screw
for rod persuader
MS1-A314



Over handle
MS1-A315



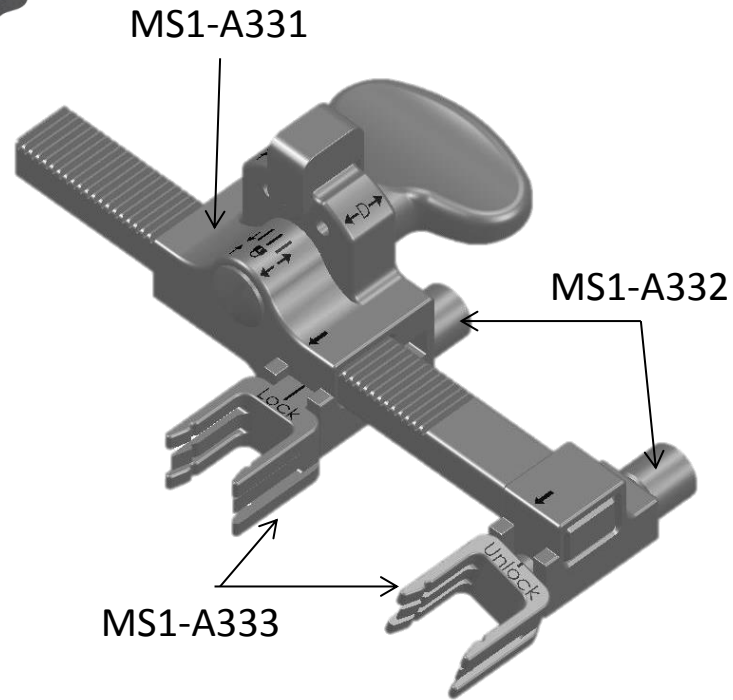
Instruments for compression-distraction



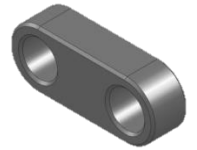
French bender
U1-A321



Spreader
MS1-A321



MS1-A334



MS1-A335



- Compressor-Distractor : MS1-A331 x 1
- Extender plug for distractor-compressor : MS1-A332 x 2
- Screw fixation for distractor-compressor : MS1-A333 x 2
- Fulcrum connector for distractor-compressor : MS1-A334 x 1
- Multiple connector for distractor-compressor : MS1-A335 x 1

Lumis™

Lumbar Mini Invasive System

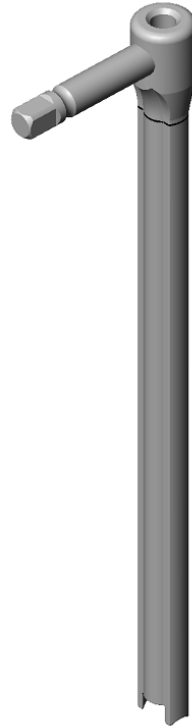
Instruments for final tightening



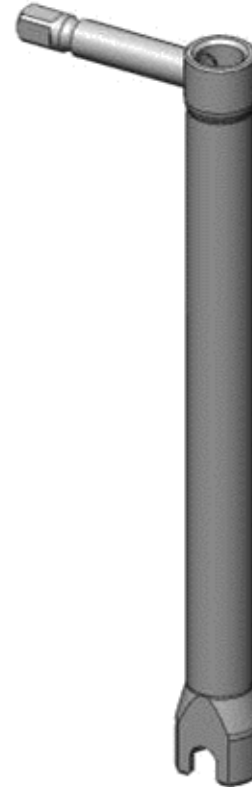
MIS torque limiting handle
MS1-A421



T30 shaft MS1-A411




Counter torque MS1-A432



Counter torque IS1-A431



Index ring for setscrew holder
MS1-A232

 See package insert for labeling limitation

Instruments for rescue procedure

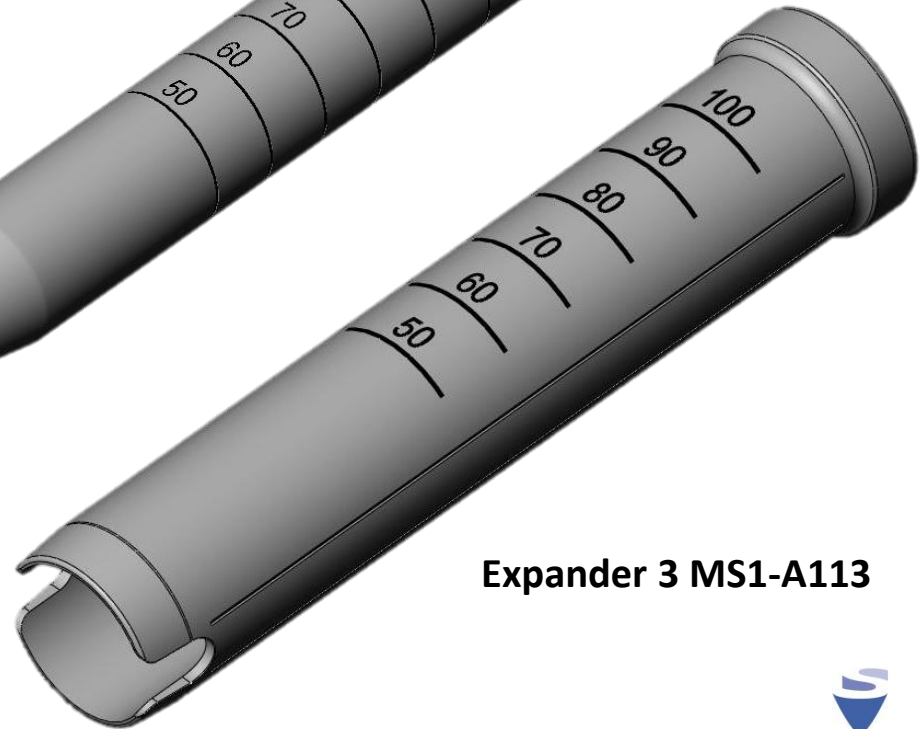


Rescue instrument MS1-A223

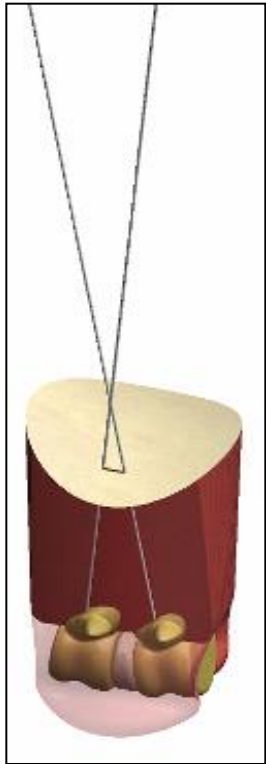
Expander 2 MS1-A112



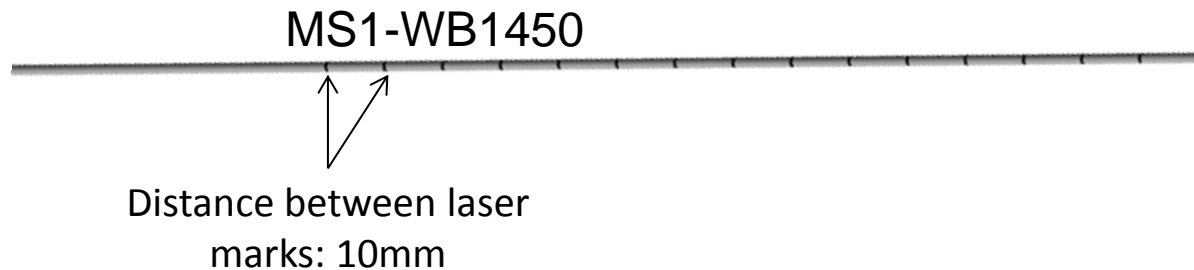
Expander 3 MS1-A113



Pedicle Preparation & Screw Insertion



Place Jamshidi needles (11 gauge) according to patient anatomy and place the guide wires (MS1-WB1450) inside the Jamshidi needles after having checked they are straight (ensure that the laser marks are visible after insertion to allow control of the guide wires positions).



Caution : K-wires must not be reused.



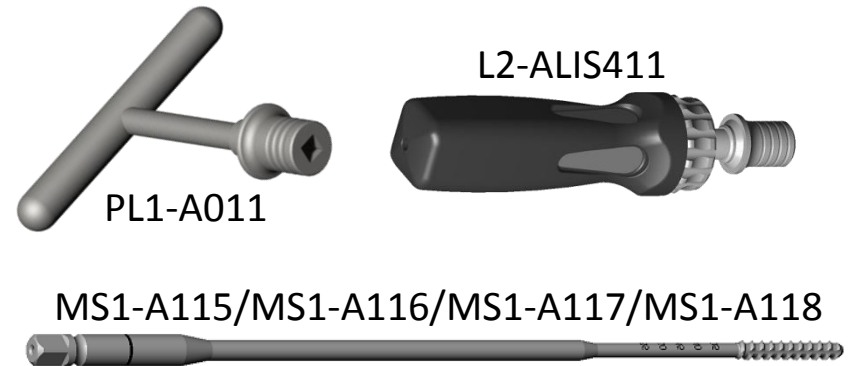
MS1-A121

Prepare the entry point with the cannulated square awl (MS1-A121)

Pedicle Preparation & Screw Insertion

If needed, and according to the bone condition, it is possible to use taps to facilitate screw insertion.

Cannulated taps (MS1-A115/MS1-A116/MS1-A117/MS1-A118) can be assembled with the cannulated ratcheting handle (L2-ALIS411) or dual purpose handle (U1-A622), or T handle (PL1-A011).



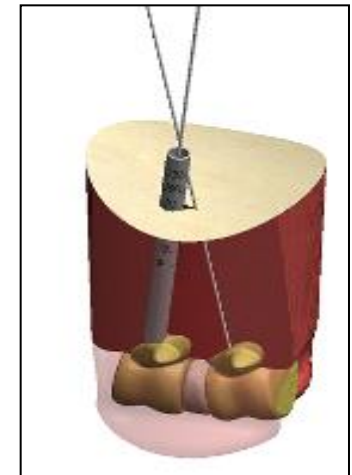
To protect soft tissue from the sharp edges of the taps, the expander 1 (MS1-A110) and the protection sleeve for taps (MS1-A111) can be inserted onto the guide wire prior to insertion of the cannulated tap. The laser marks must be located at the superior end to remain visible.



MS1-A110

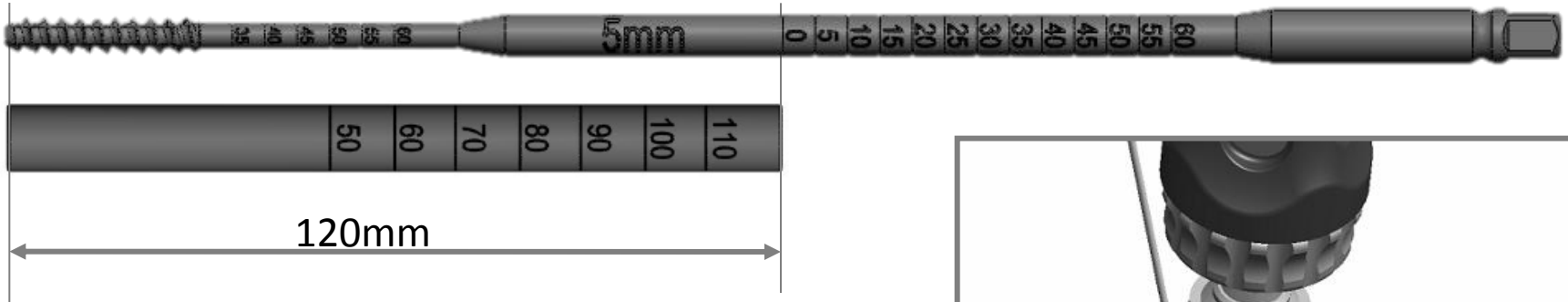


MS1-A111



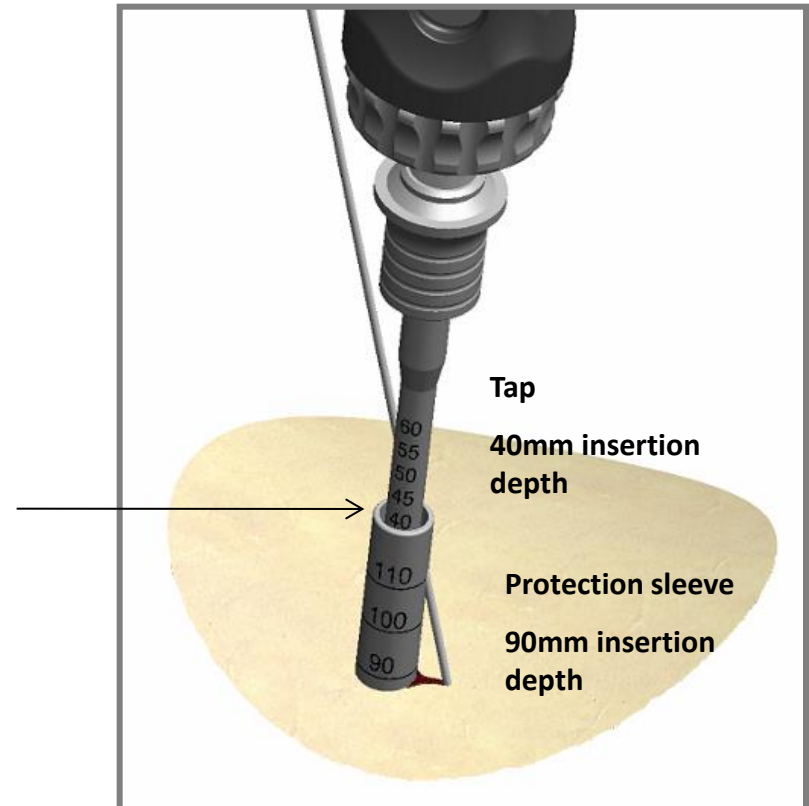
Pedicle Preparation & Screw Insertion

Insert the appropriate tap depending on the pedicle size (MS1-A115/MS1-A116/MS1-A117/MS1-A118) over the guide wire.

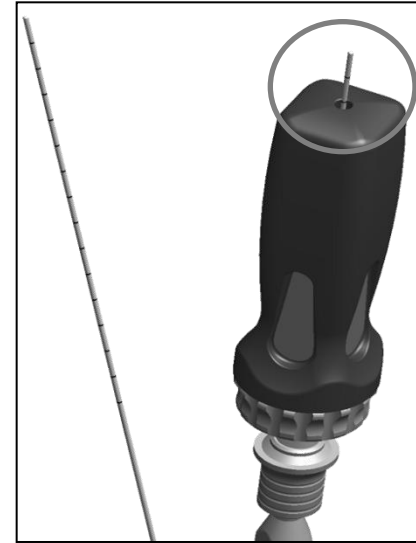


The insertion depth of the tap inside the vertebra is indicated by laser markings on the tap shaft.

Thus, the appropriate screw length can be determined.



Pedicle Preparation & Screw Insertion



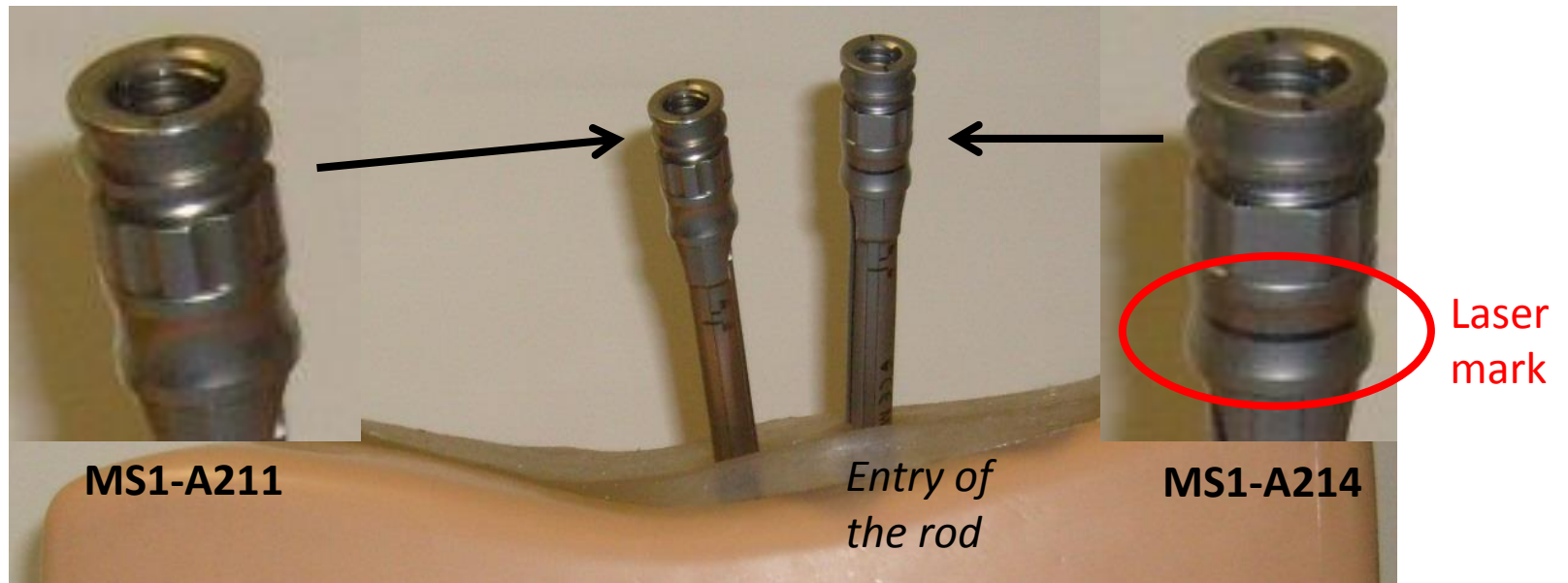
The laser marks on the upper extremity of the guide wire allow control of the guide wire position while tapping.

Forceps can be used to maintain the guide wire during tapping.

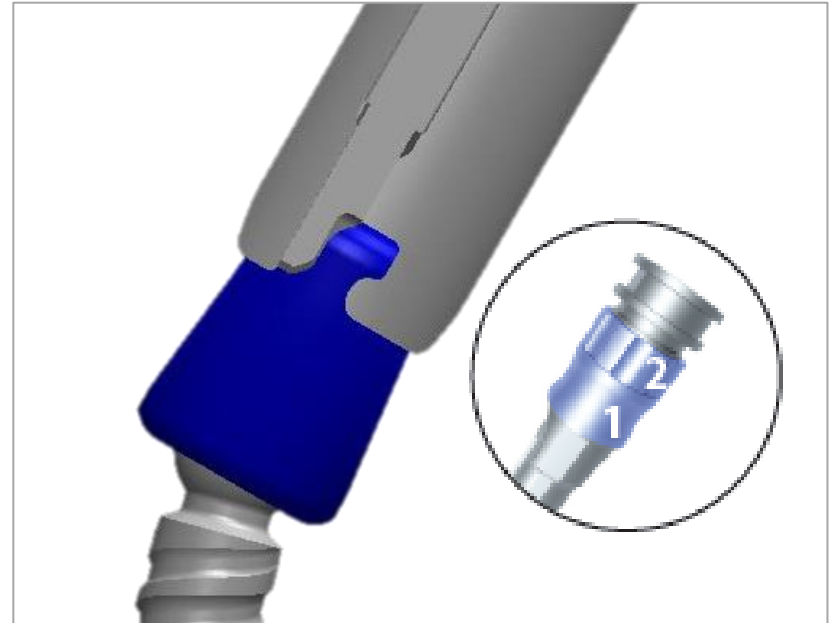
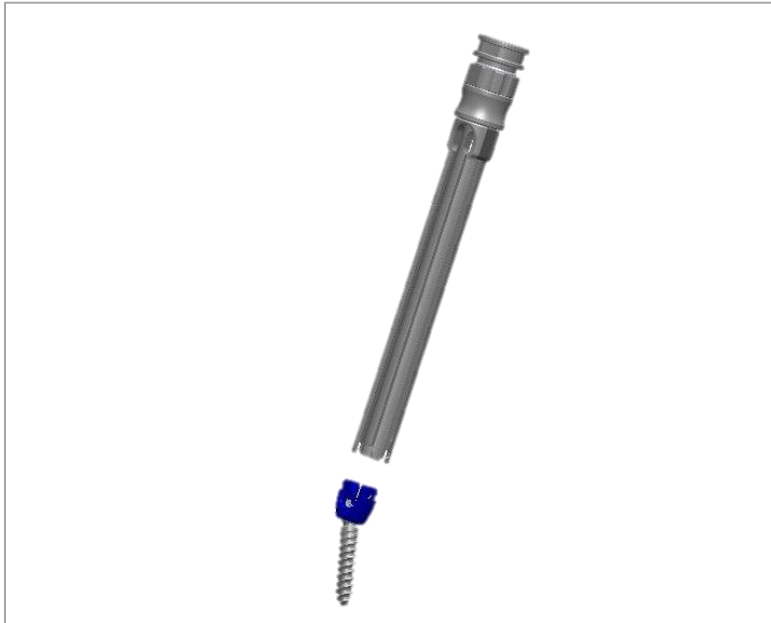
Selection of screw extender

The enlarged screw extender (MS1-A214) must be used on the end of the construct through which the rod will be introduced percutaneously as the rod introducers will not fit through the standard screw extender.

The enlarged screw extender can be identified by a single laser mark on the locking ring.



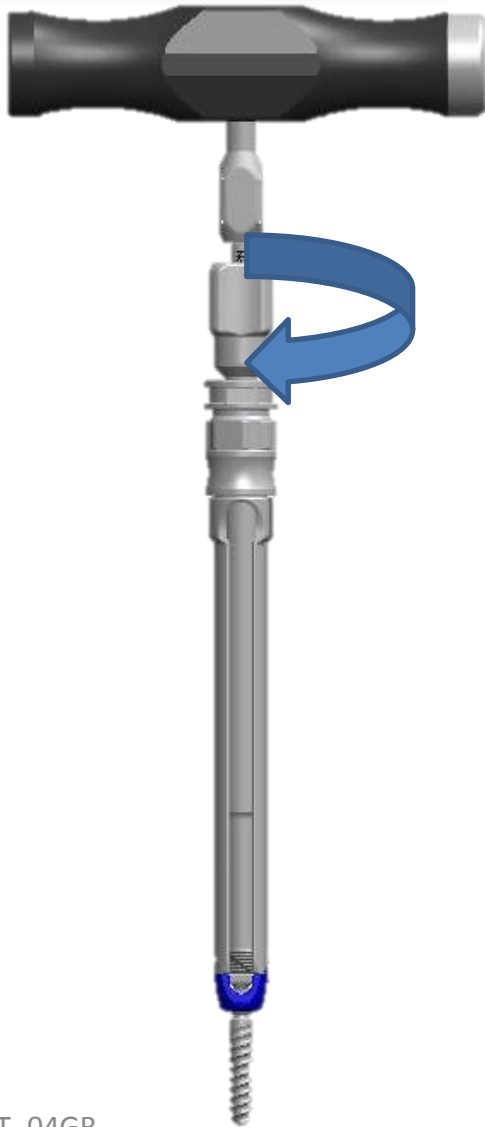
Pedicle Preparation & Screw Insertion



Attach the screw extender (MS1-A211/MS1-A214) to the screw (MS2-MxxxT) by sliding down the locking ring down (1) and locking the assembly by screwing the nut clockwise (2).

Laser markings indicate when the locking ring is in the locked position.

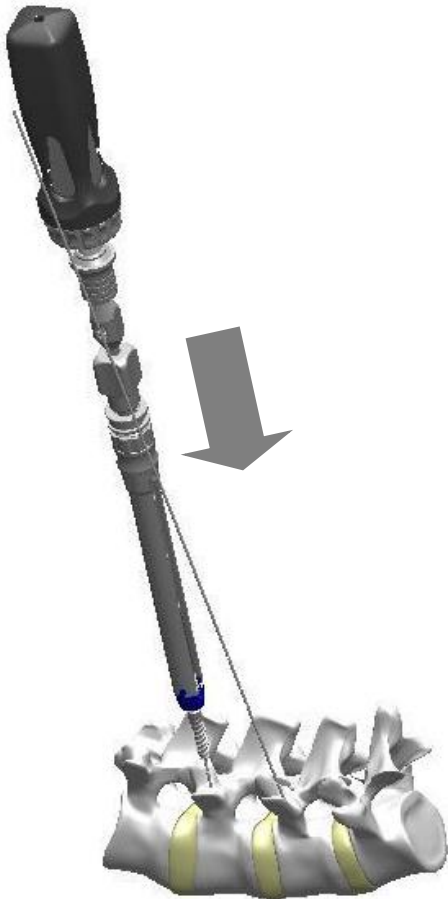
Pedicle Preparation & Screw Insertion



Insert the Lumis Universal Screwdriver (MS2-A221 + U1-A622) into the screwhead and screw extender to lock the screw's polyaxiality.

Ensure that the screwdriver is fully seated in the screw head. Turn the square piece to engage the screwdriver with the screw.

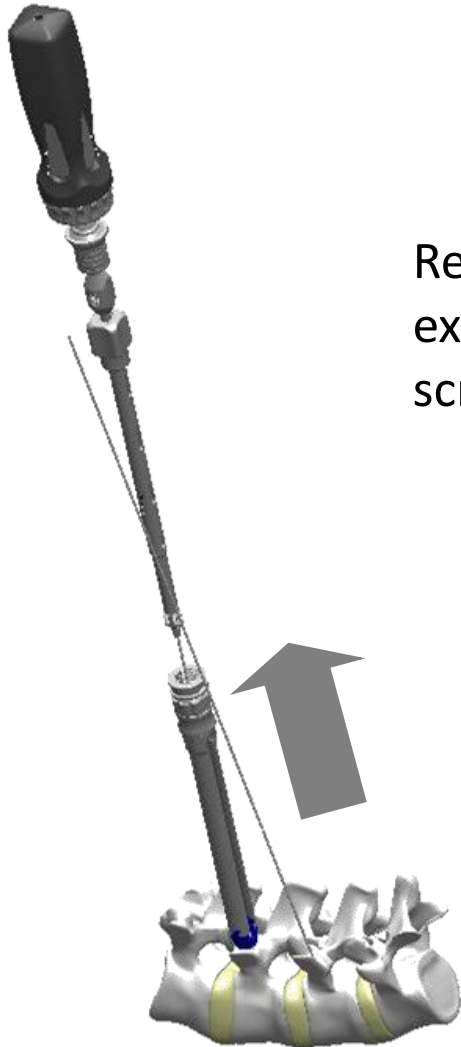
Pedicle Preparation & Screw Insertion



Insert the screw with the screwdriver/screw extension construct over the guide wire. Once the screw is advanced far enough into the vertebral body, it is recommended to remove the guide wire to prevent any breach of the anterior wall.

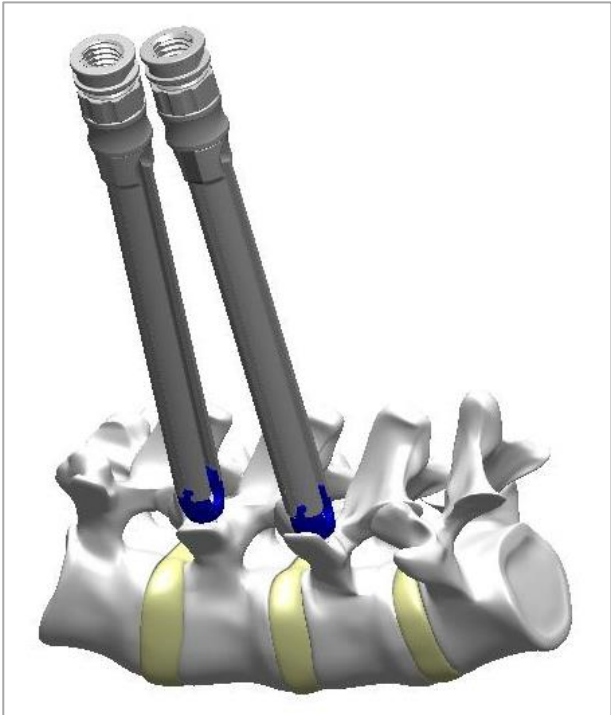
The screw can then be fully inserted.

Pedicle Preparation & Screw Insertion



Remove the screwdriver, leaving the screw with the extender by turning the square part of the cannulated screwdriver counter-clockwise.

Pedicle Preparation & Screw Insertion



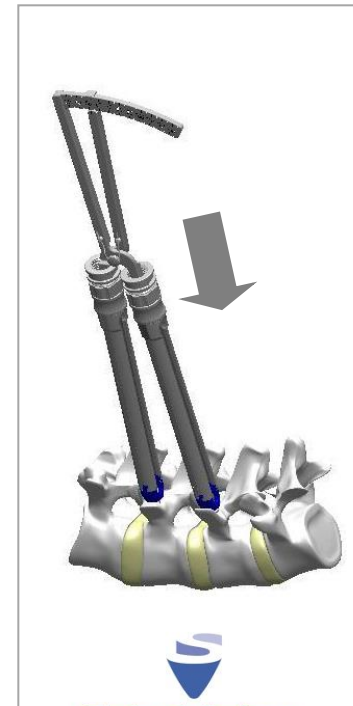
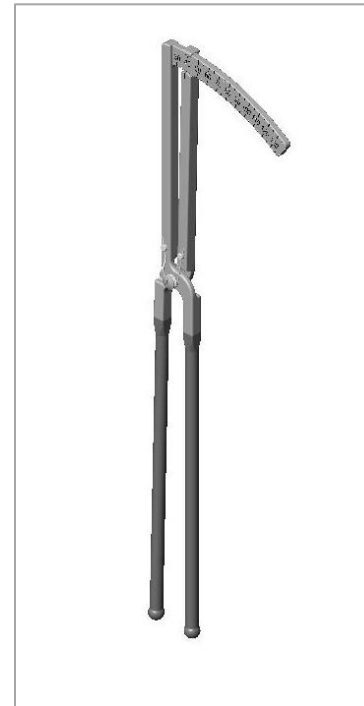
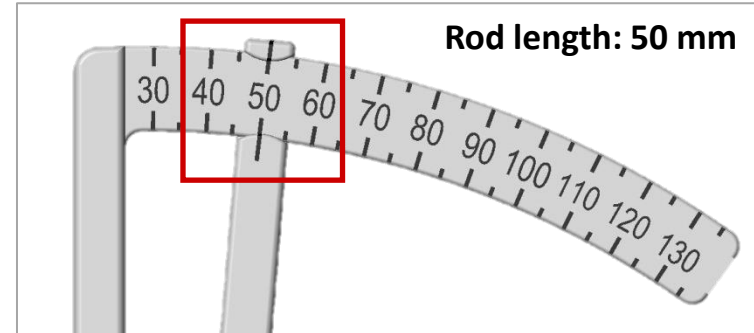
Repeat the previous surgical steps to insert as many pedicle screws as needed.

Rod Length Measurement

Once all screws are placed, rotate the extender sleeve so that the slots line up in the sagittal plane.

The rod gauge (MS1-A261) is inserted into the screw extenders until the ball tips rest in the heads of the pedicle screws.

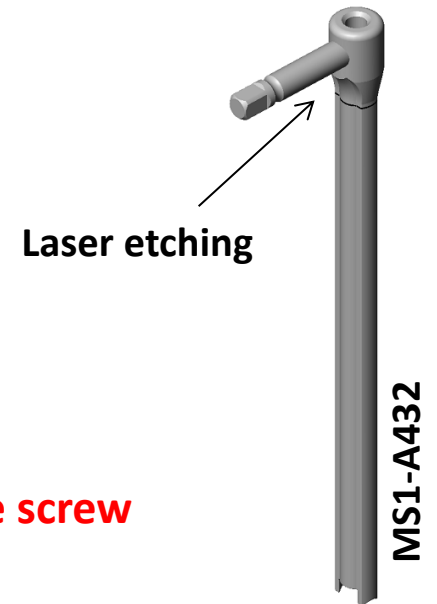
The rod length needed is indicated on top of the rod gauge.



Rod placement

To facilitate insertion of the rod, the counter torque (MS1-A432) can be used to adjust the positions of the screws heads by inserting it into the screw extenders until the laser etching is flush with the superior end of the screw extender.

CAUTION : the screw extenders must NEVER be used to change the screw alignment without first inserting the counter-torque.



If needed the rigid part of the rod can be contoured prior to insertion using the french bender (U1-A321).

Rod placement



MS1-A271

The rod holder (MS1-A271) can be used to insert the rod between the screw extenders when an incision is made between the screw extenders.

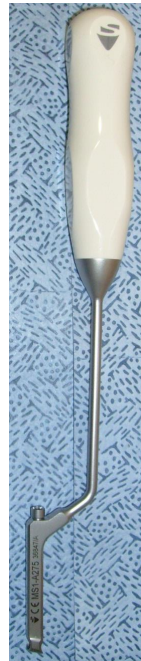


Three options for rod introduction are available for a percutaneous introduction.

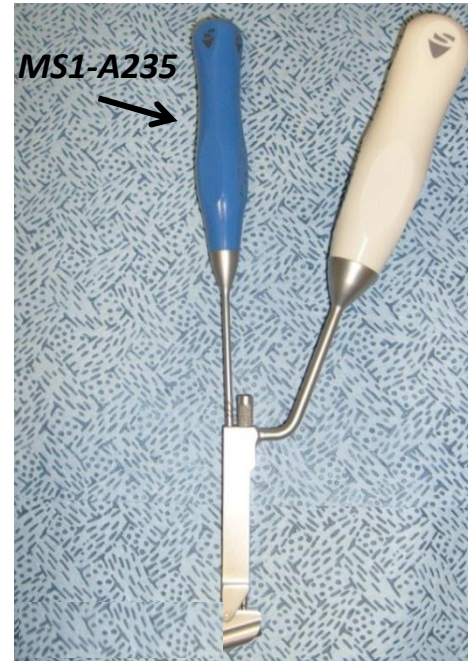
- Rod introducer : MS1-A274
- Reversed rod introducer : MS1-A275
- Rotating rod introducer : MS1-A276



Rod introducer MS1-A274



Reversed rod introducer MS1-A275

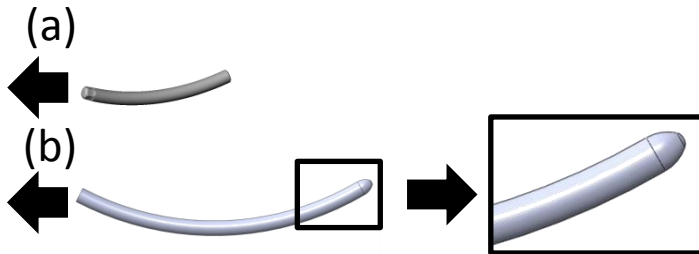


Rotating rod introducer MS1-A276

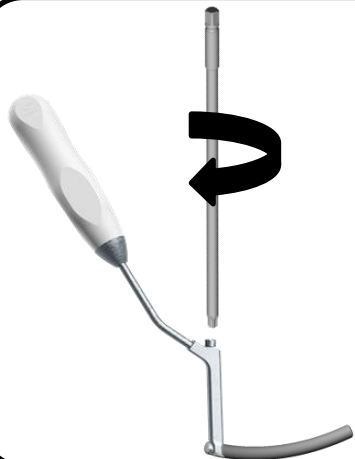
With the rod introducer : MS1-A274



Insert the rod (*UNI-Thread™ rod [a]* or *LUMIS™ percutaneous rod [b]*) into the slot located at the end of the instrument, ensuring that the end of the rod points up and away from the user.



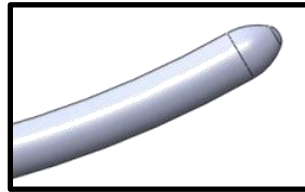
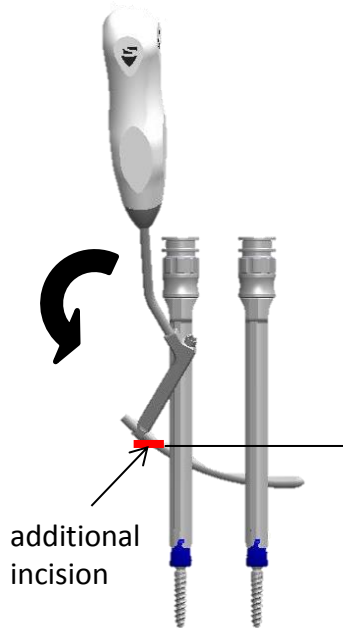
If the LUMIS™ percutaneous rod is used (MS1-R6xxxT/MS1-R6xxxCT), take care to insert the non-bulleted extremity in the rod introducer.



Lock the rod in the instrument by tightening the locking screw with the T30 shaft (MS1-A411) preassembled with the dual purpose handle (U1-A622).

With the rod introducer : MS1-A274

Insert the rod beneath the muscles by inserting its tip (UNI-Thread™ rod) or bullet nose (LUMIS™ percutaneous rod) and then rotating the rod introducer (MS1-A274).



Entry of the LUMIS™ percutaneous rod (MS1-R6xxxT/MS1-R6xxxCT)

Note : A small additional incision may be necessary to be able to insert the rod.

To release the rod, unscrew the locking screw with the T30 shaft (MS1-A411) preassembled with the dual purpose handle (U1-A622).

With the reversed rod introducer : MS1-A275



Insert the rod into the slot located at the end of the instrument, ensuring that the tip of the rod points up and towards the user. A laser mark indicates which side the rod must be placed.

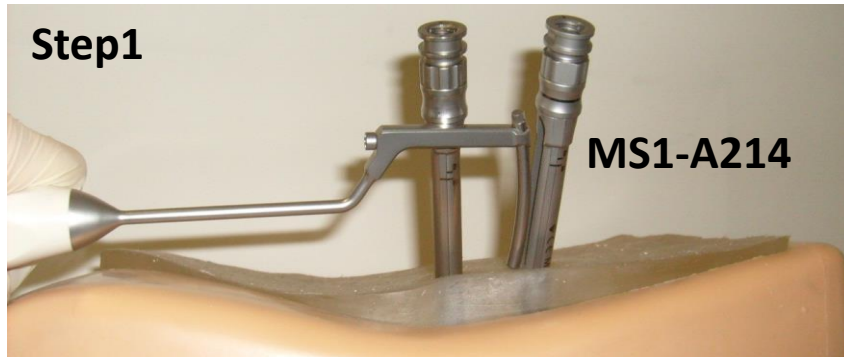
When the LUMIS™ percutaneous rod is used, take care to insert the non-bulleted extremity in the reversed rod introducer.

Extremity to insert into the reversed rod introducer



Lock the rod in the instrument by tightening the locking screw with the T30 shaft (MS1-A411) preassembled with the dual purpose handle (U1-A622).

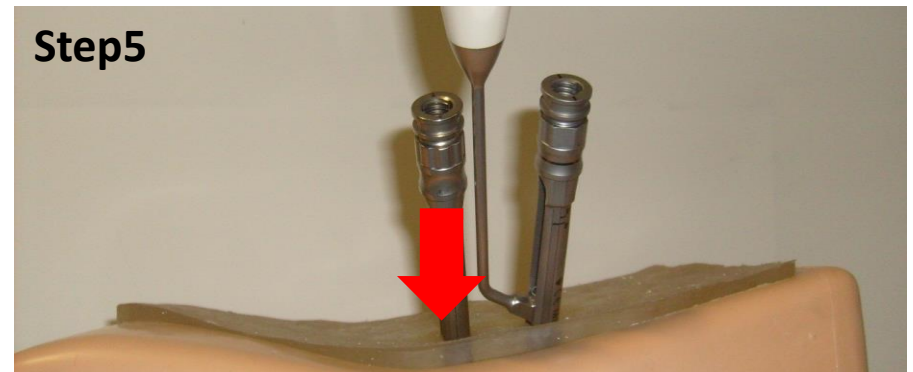
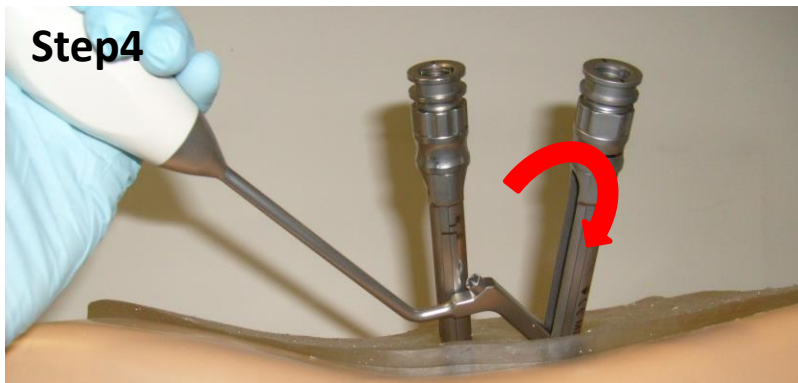
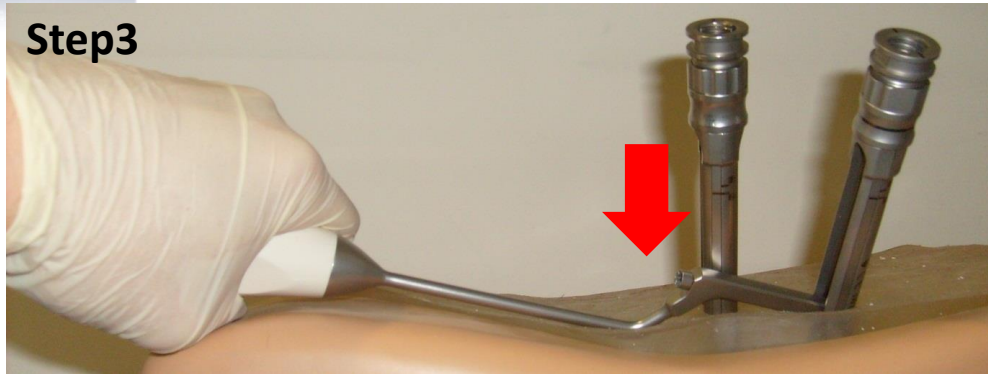
With the reversed rod introducer : MS1-A275



To avoid having to make an additional skin incision, it is necessary to use the enlarged screw extender (MS1-A214) in combination with the reversed rod introducer.

Lower the rod into the enlarged screw extender on the end of the construct, and rotate the rod into the screw heads.

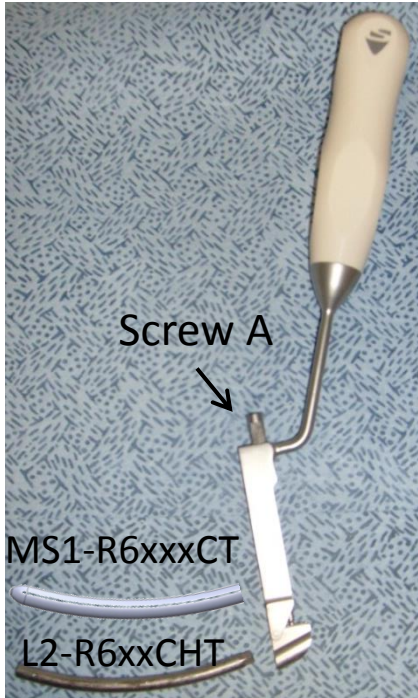
With the reversed rod introducer : MS1-A275



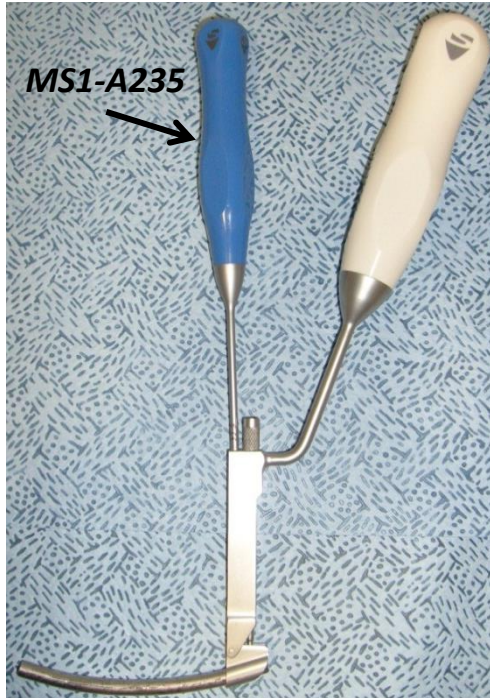
To release the rod, unscrew the locking screw with the T30 shaft (MS1-A411) preassembled with the dual purpose handle (U1-A622).

With the rotating rod introducer : MS1-A276

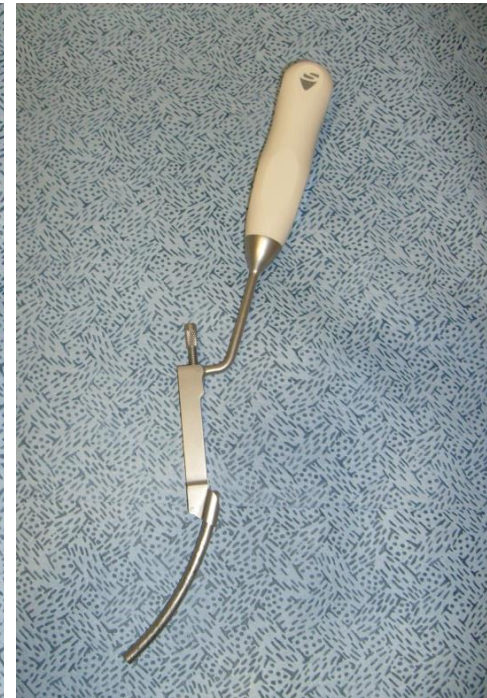
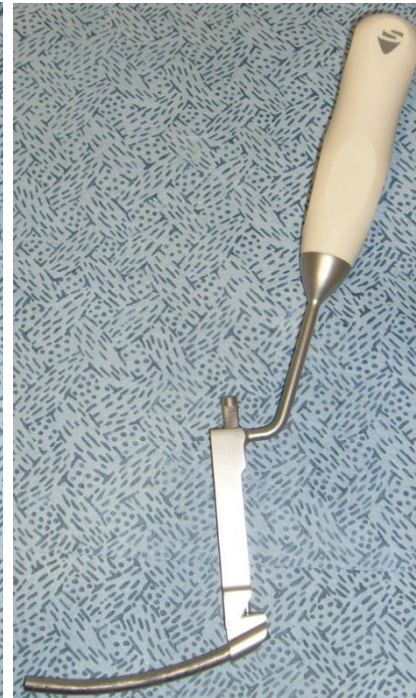
Step 1



Step 2



Step 3

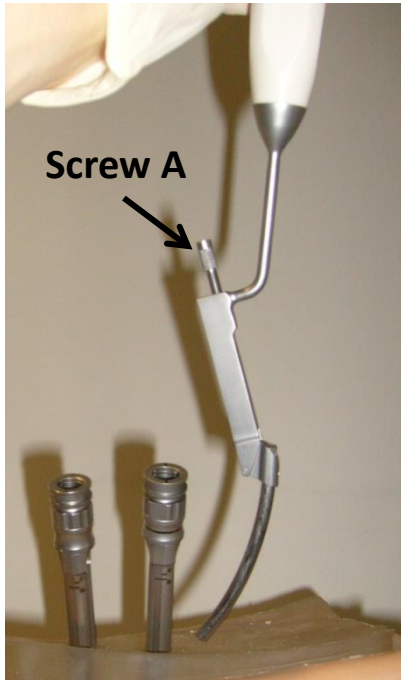


- Make sure that screw A is tightened (compatible with MS1-A411).
- Use the MS1-A235 screwdriver to attach the rod onto the rotating rod introducer (MS1-A276). Take care to place the non-bulleted extremity of the LUMIS™ percutaneous rod in the rotating rod introducer.
- Unscrew screw A to pivot the rod (with MS1-A411).

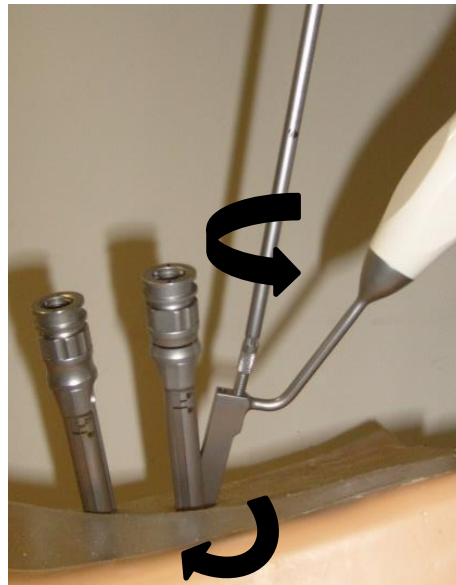


See package insert for labeling limitation

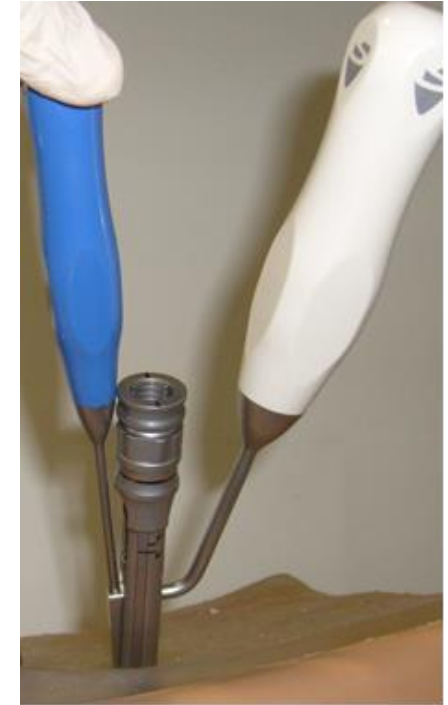
With the rotating rod introducer : MS1-A276



Ensure that the rod is vertically positioned by unscrewing screw A. Insert the rod into the enlarged screw extender.



Turn screw A clockwise using fingers or the T30 shaft with U1-A622, L2ALIS411, PL1-A011 to pivot the rod into the screw heads.

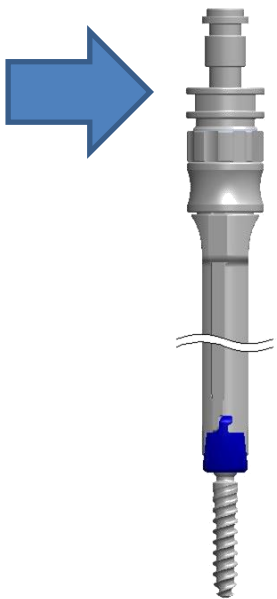


To release the rod, unscrew the locking screw with the MS1-A235 (T10 screwdriver for rod introducer).

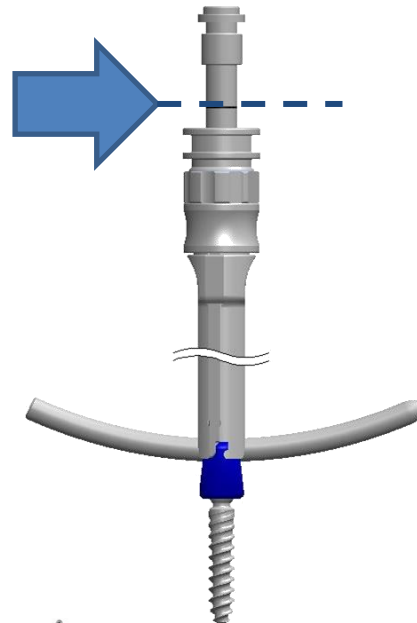
Rod placement check

To verify that the rod is fully seated in the screw heads, insert the MS1-A311 into the screw extender and check that the laser mark is visible.

The laser mark is not visible. There is no rod in the screw head.

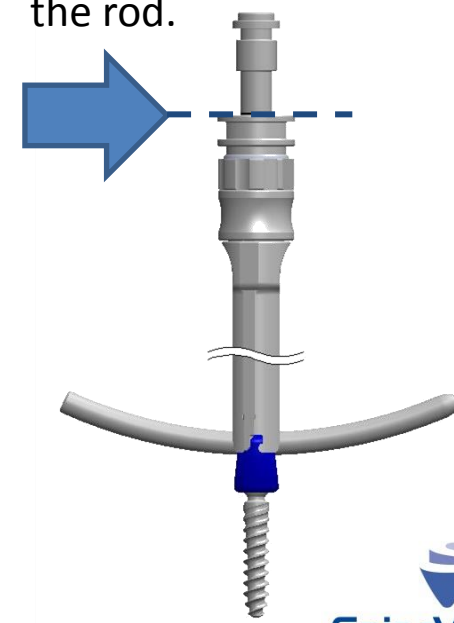


The laser mark is visible and not flush with the screw extender. Rod reduction is necessary.



See package insert for labeling limitation

The laser mark is visible and flush with the screw extender. There is no need to reduce the rod.



Rod placement

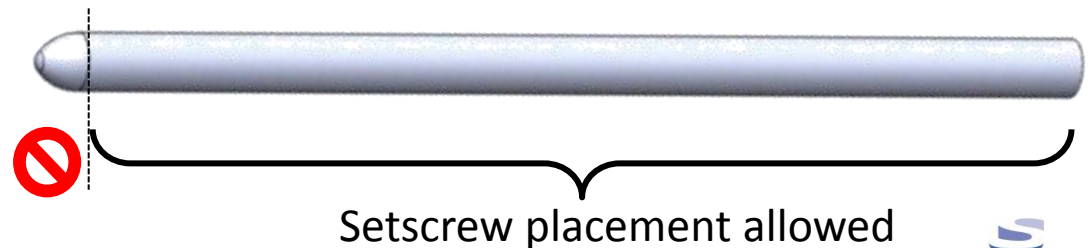


Regardless of which rod introducer is used, a set screw must be inserted into the screw next to the screw through which the rod was introduced.

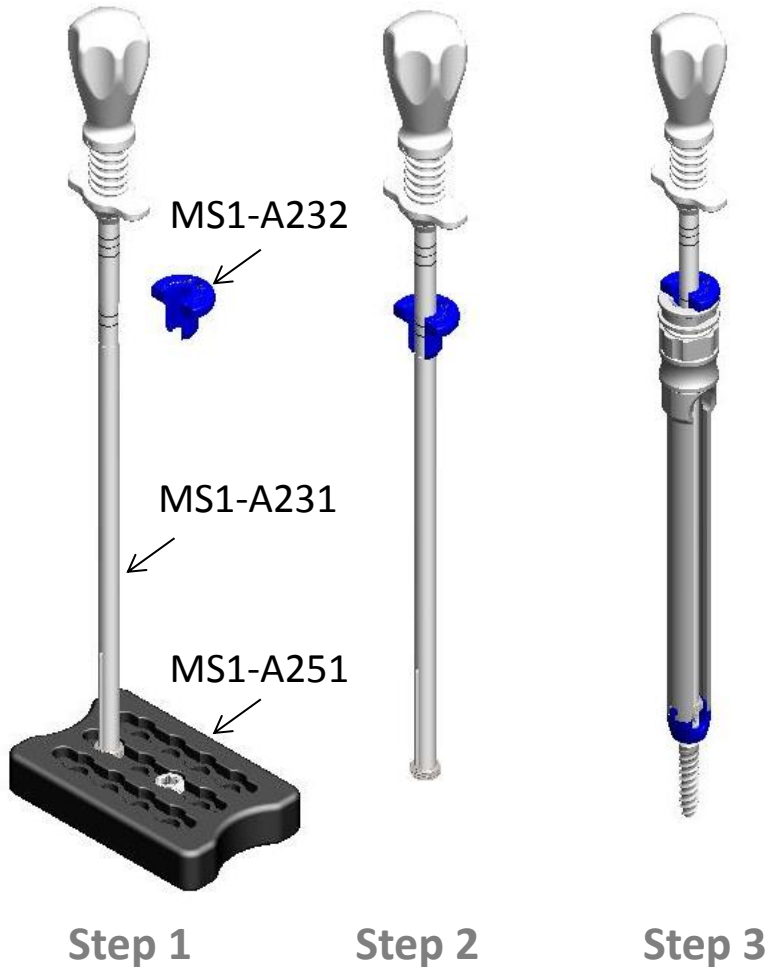
Doing this will secure the rod and the rod introducer to be used as a rod pusher.

There are three different options for rod reduction.

Caution : The setscrew must never be placed on the bulleted part of the rod.



Rod Reduction



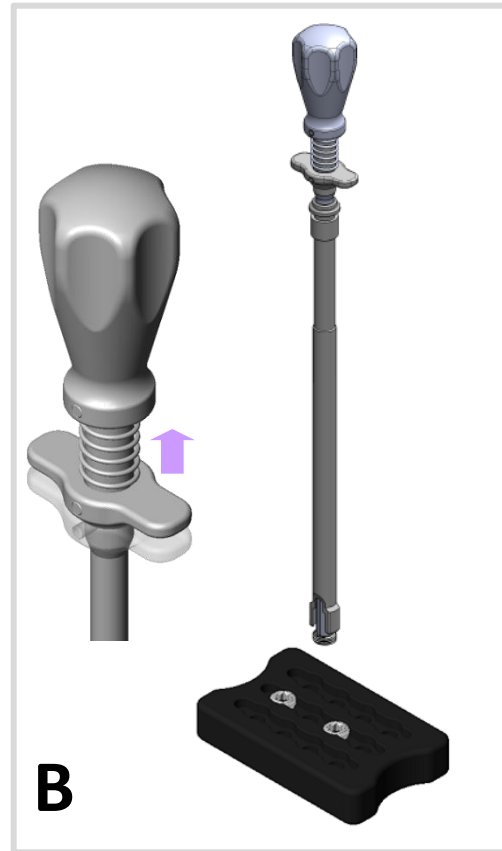
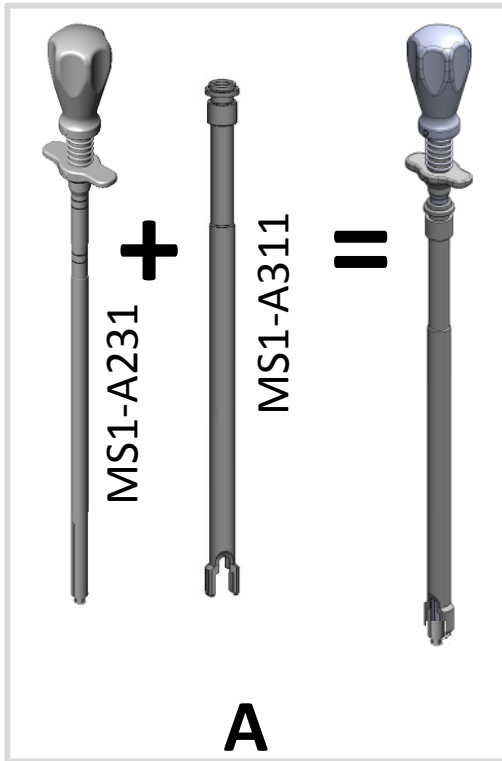
If the rod is perfectly seated in the head of the screw, it is possible to engage the setscrew using only the index ring (MS1-A232) and setscrew holder (MS1-A231).

Step 1: Engage a setscrew from the screw support (MS1-A251) by pulling on the trigger of MS1-A231.

Step 2 : Attach the index ring for the setscrew holder (MS1-A232) onto the narrowest part of the setscrew holder (MS1-A231)

Step 3: Slide the assembly into the screw extender and turn the upper part of the setscrew holder clockwise to engage the setscrew with the screw head.

Rod Reduction



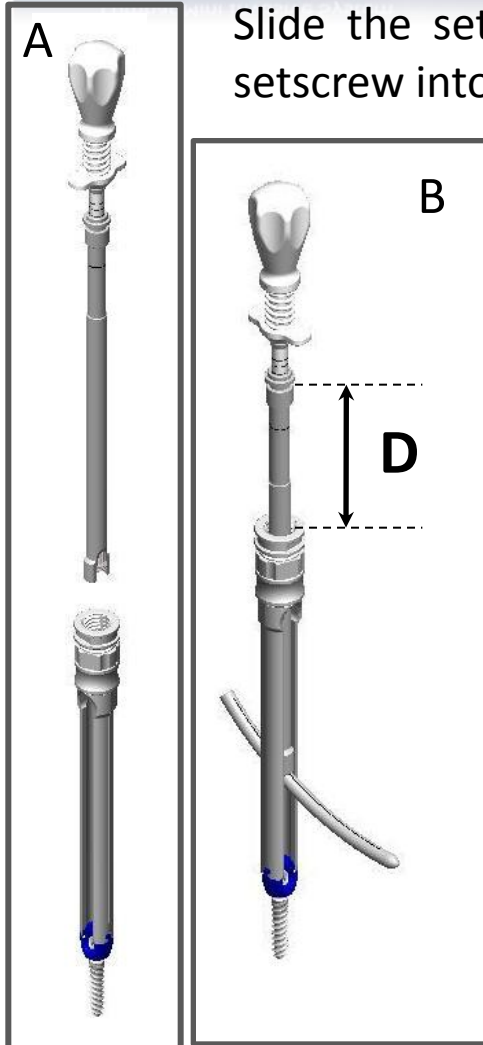
MS1-A251

If the rod is not perfectly seated inside the head of the screw:

Slide the setscrew holder (MS1-A231) into the rod persuader (MS1-A311) (A).

Engage a setscrew from the setscrew support (MS1-A251) by pulling on the trigger of MS1-A231 (B).

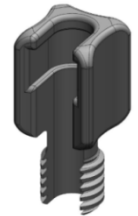
Rod Reduction



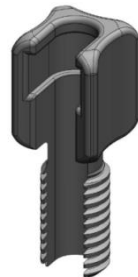
Slide the setscrew holder assembled with the rod persuader and the Lumis setscrew into the screw extender (A).

Depending on the distance (D) between the rod and the head of the screw (B), 3 options are possible.

Option 1 : If $D < 38\text{mm}$ then the screw for the rod persuader (MS1-A313) can be used to reduce the rod.

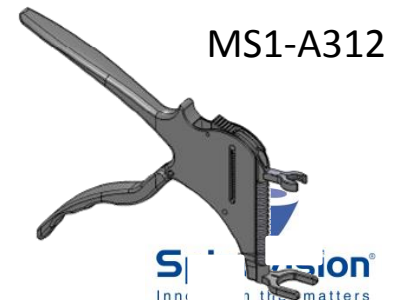


MS1-A313



Option 2 : If $35\text{mm} < D < 45\text{mm}$, then the long screw for the rod persuader (MS1-A314) can be used to reduce the rod.

Option 3 : If $45\text{mm} < D$, then the rod persuader plier (MS1-A312) can be used to well position the rod.

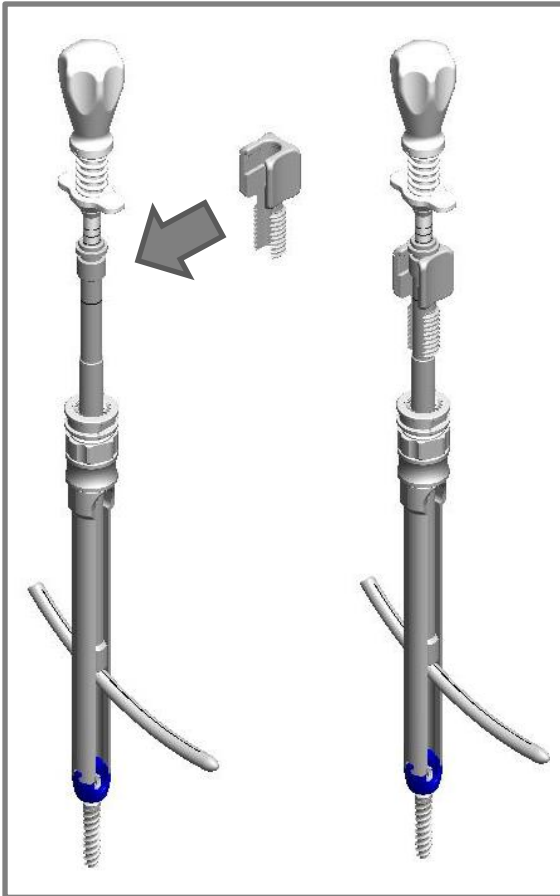


MS1-A312

Options 1 & 2

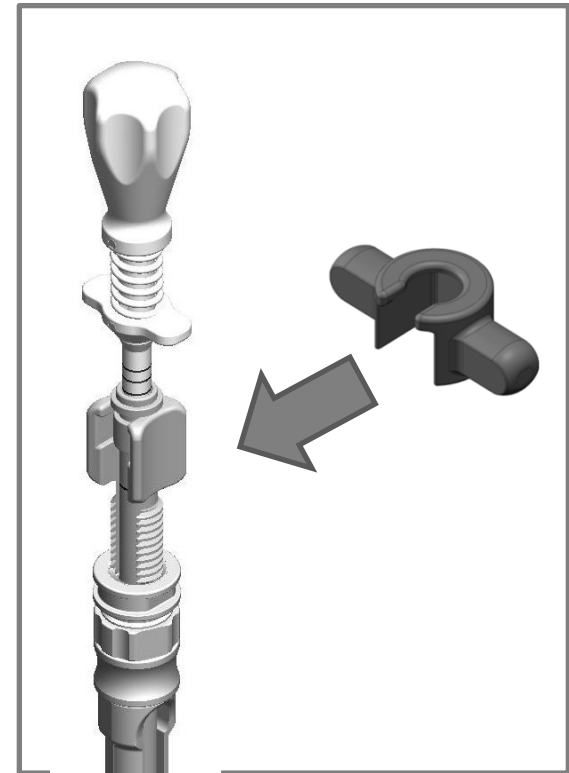
Assemble the screw (MS1-A313/MS1-A314) and the rod persuader (MS1-A311), by sliding the square piece onto the end of the rod persuader.

By turning the screw, the rod is pushed down to the screw heads.



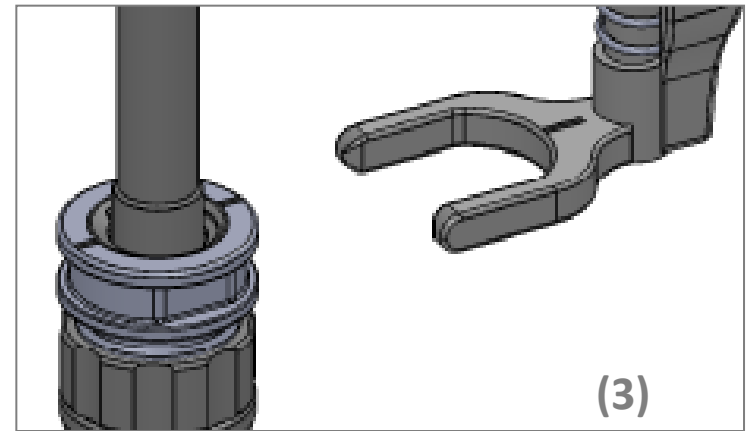
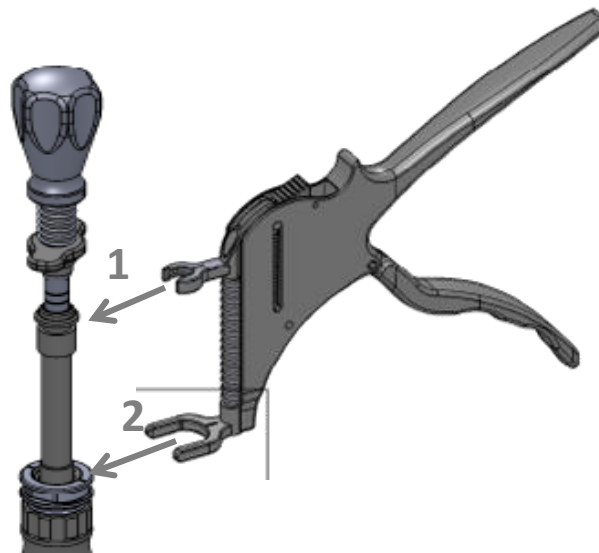
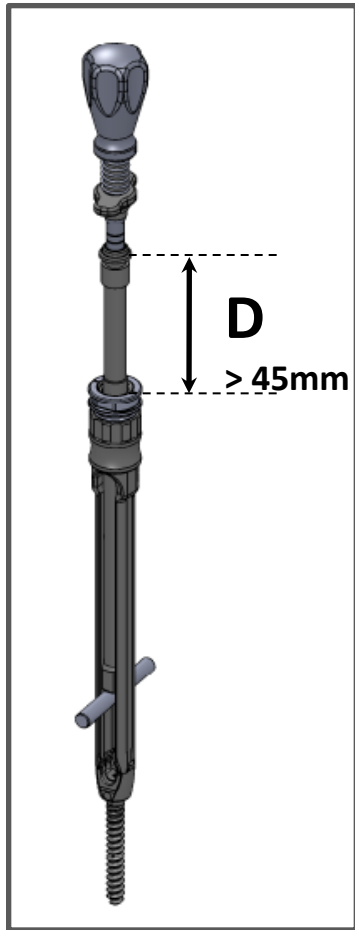
Rod Reduction

For extra leverage, it is possible to use the over handle (MS1-A315).

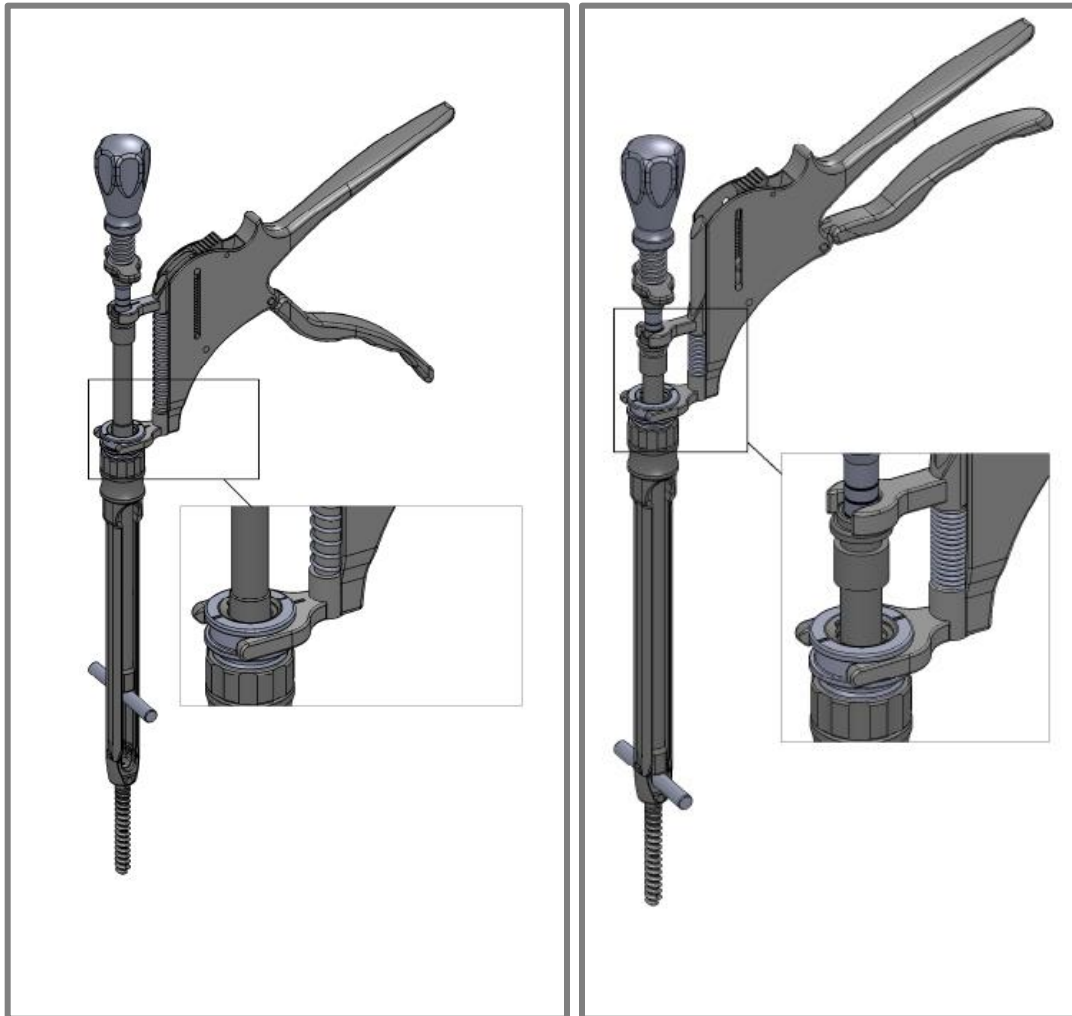


Option 3

- (1) The upper fork must be slid onto the upper ring of the rod persuader,
- (2) The lower fork must be slid onto the upper ring of the screw extender. Use the laser marks (3) to find the appropriate position for the rod persuader plier.

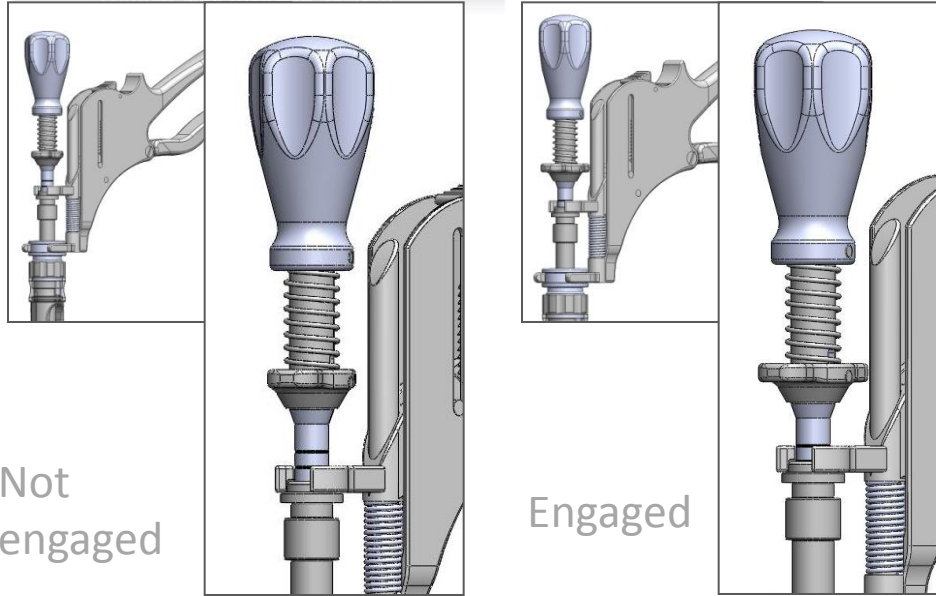


Rod Reduction



Squeeze the persuader plier (MS1-A312) to reduce the rod.

Setscrew Placement



Once the rod has been pushed down into the screw head, it is possible to engage the setscrew by turning the superior part of the setscrew holder (MS1-A231) clockwise.

Laser etchings will indicate when the setscrew is engaged.

Caution : The MS1-A231 must not be used to finally tighten the setscrew.

Once the setscrew is engaged, pull on the trigger to release the setscrew and remove the setscrew holder.

- Then,
- Rod reduction Options 1 & 2 : unscrew the screw for the rod persuader and remove the rod persuader (MS1-A313/MS1-A314 + MS1-A311)
 - Rod reduction Option 3 : release the rod persuader plier (MS1-A312) and remove the rod persuader (MS1-A311)

Final Tightening (percutaneous)

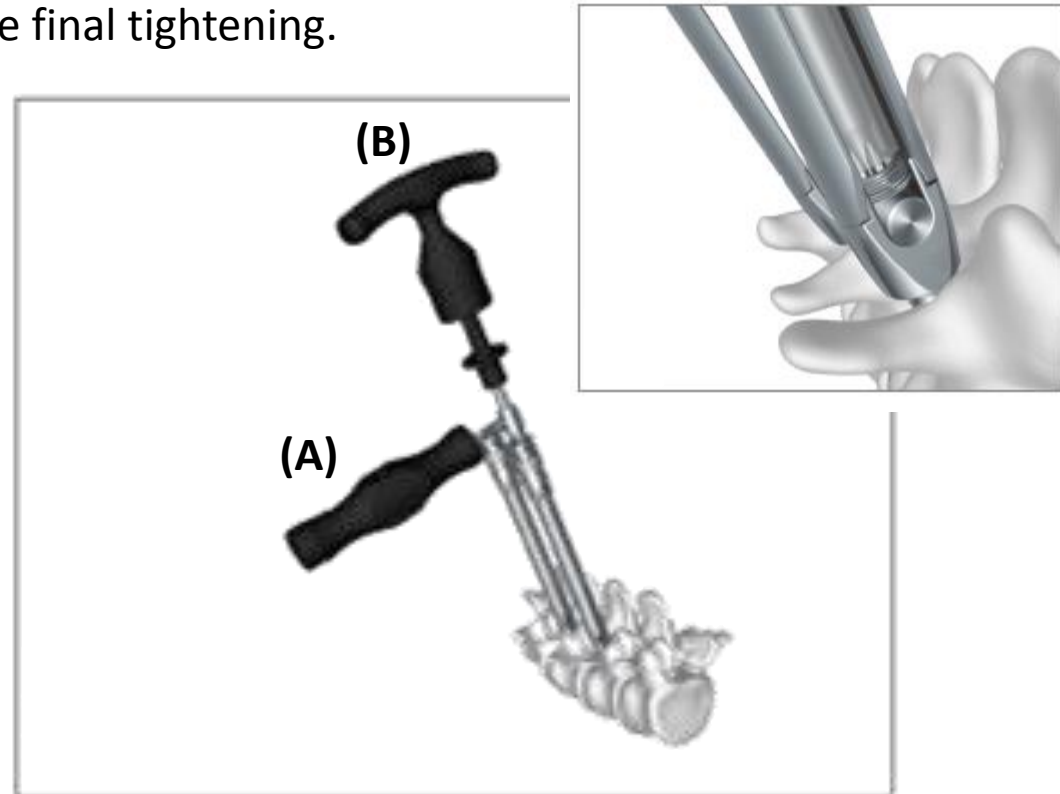
Pre-assemble the instruments for the final tightening.

-MS1-A432 + U1-A622 **(A)**

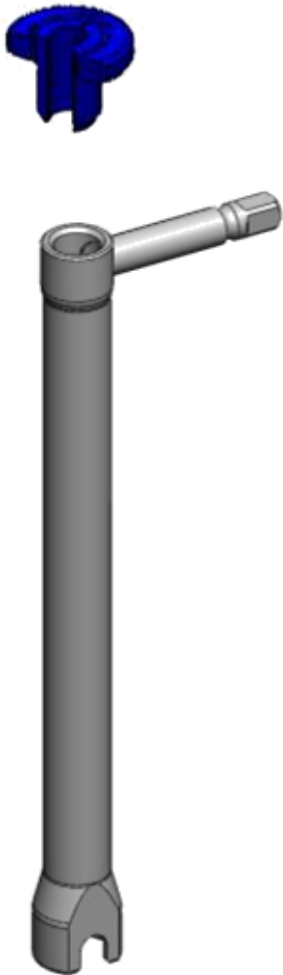
-MS1-A411 + MS1-A421 **(B)**

Place the counter torque into the screw extender and insert the T30 shaft to tighten the set screw.

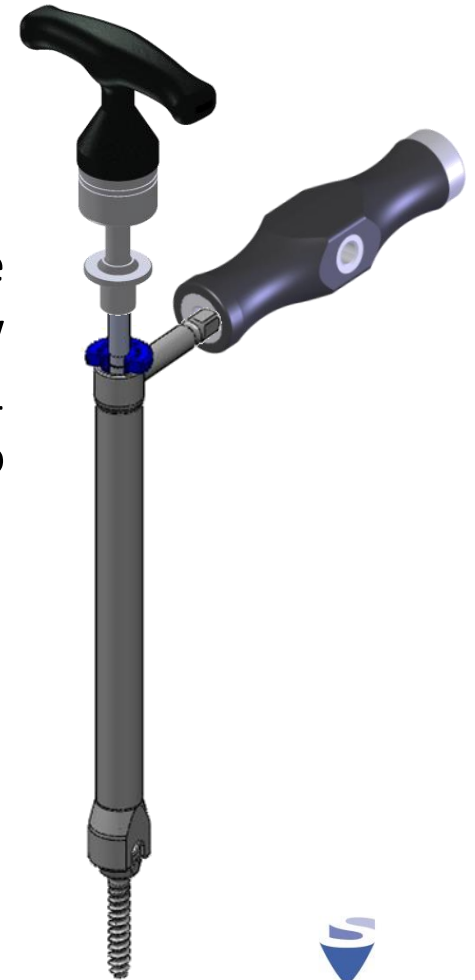
Final locking is achieved by applying a 8.5N.m torque.



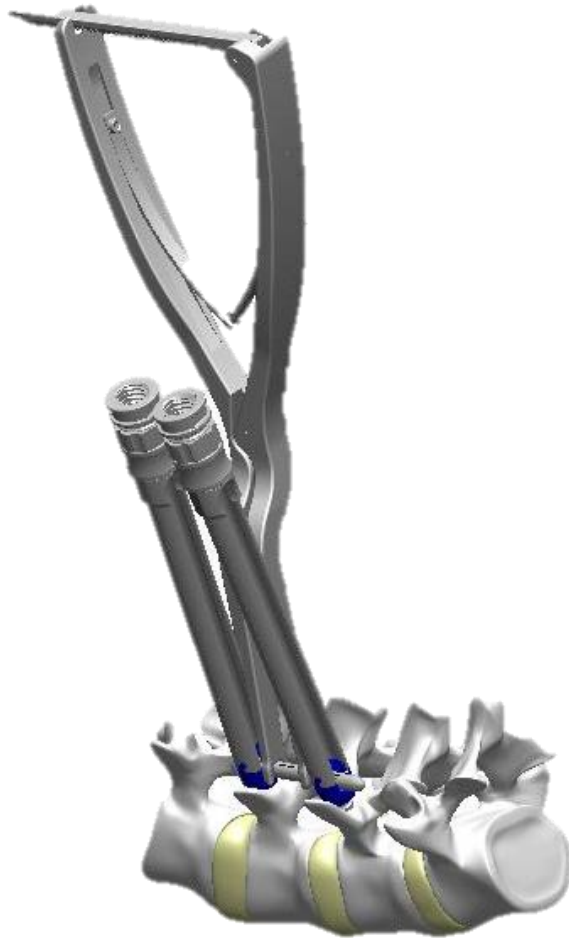
Option for final tightening (mini-open)



In case the surgeon wants to perform the final tightening without the screw extenders, it is possible to use the IS1-A431 in combination with the MS1-A232, to eliminate any cross-threading.



Distraction with the spreader

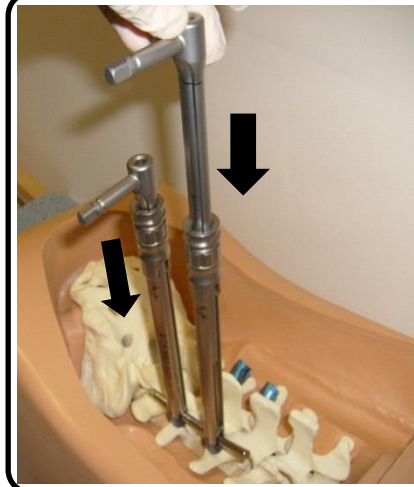


Distraction with the spreader
(MS1-A321)

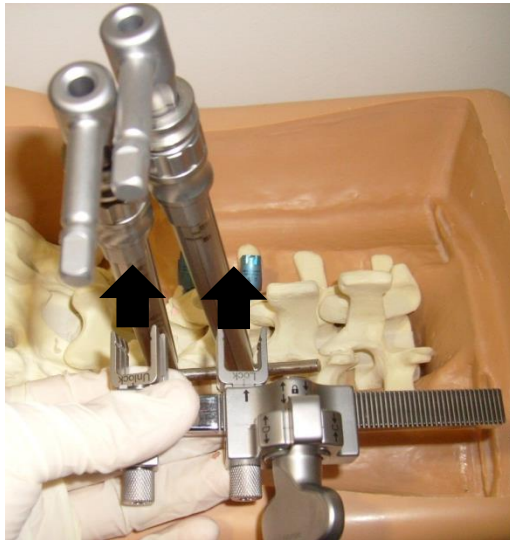
Compression-Distraction



Make sure that one setscrew is sufficiently tightened to be used as a reference for compression-distraction



Place two counter torques (MS1-A432) into the screw extenders.



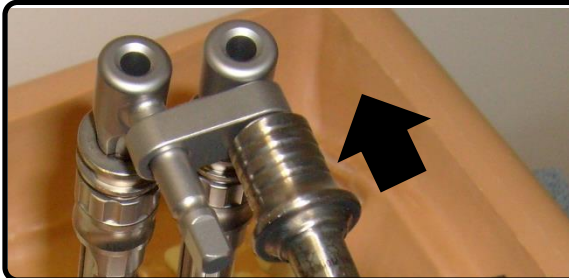
Place the compressor-distractor over the screw extenders

Compression-Distraction



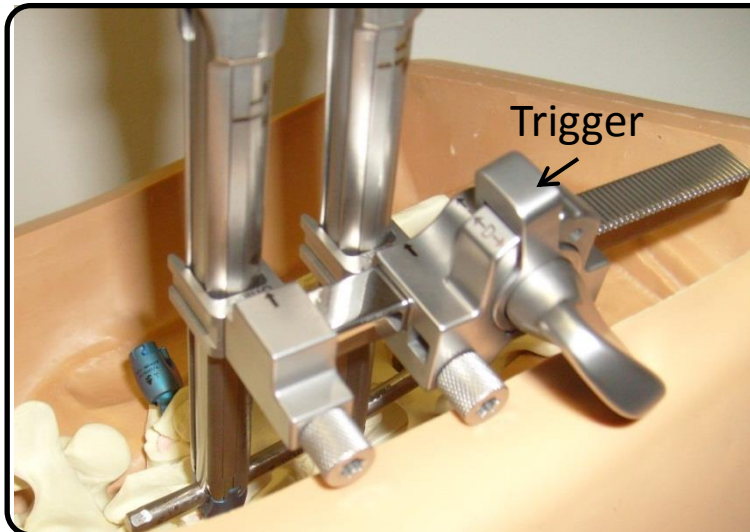
Depending on the space between the two counter-torques, choose the appropriate fulcrum:

- MS1-A334: Fulcrum connector for distractor-compressor
- MS1-A335: Multiple connector for distractor-compressor



It is recommended to place one handle (U1-A622, PL1-A011) on one of the counter-torques to secure the fulcrum.

Compression-Distraction



Select the desired action (compression, distraction) with the trigger, and turn the turnkey.

Distraction



Compression

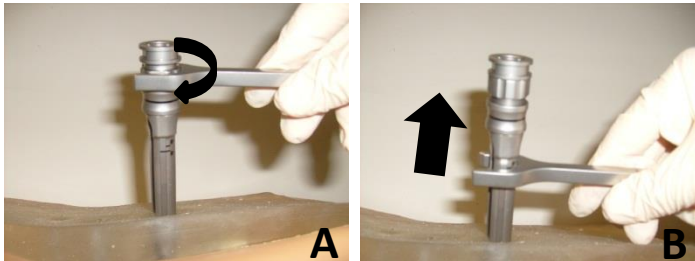
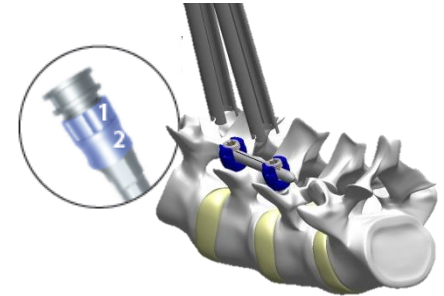


Once the correction has been performed, it is possible to perform the final tightening on the setscrew which was not used as the reference screw, while maintaining the compressor-distractor in position.

Remove the distractor-compressor by pulling it from the screw-extendors and removing the two counter-torques.

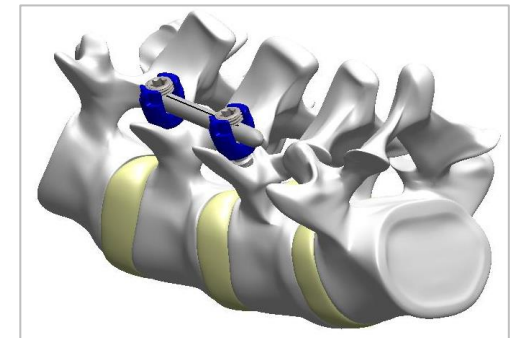
Screw Extender Removal

Release the screw extender (MS1-A211/MS1-A214) by screwing the nut (1) counter clockwise and sliding the ring (2) up to unlock the assembly.



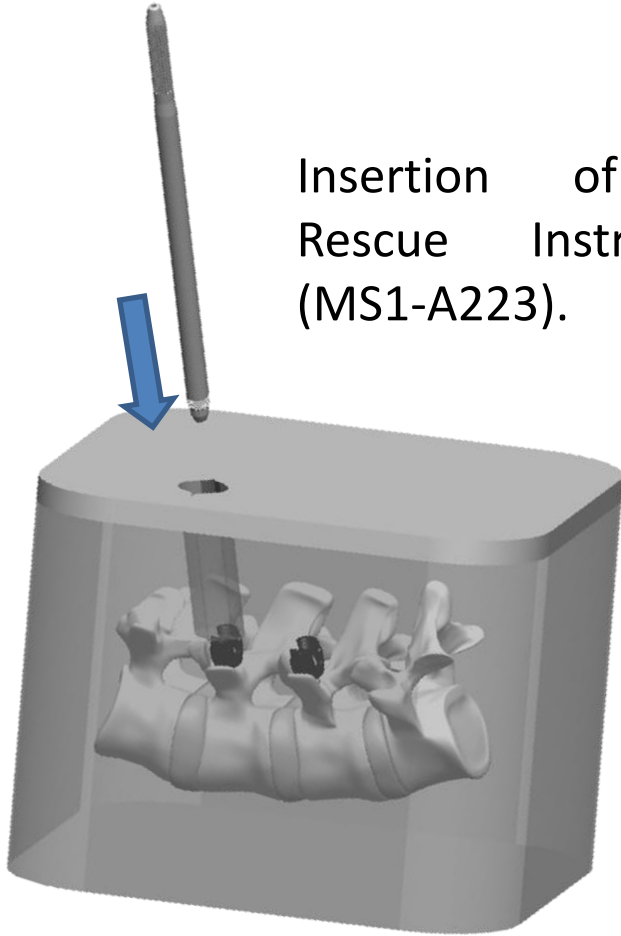
The Extender Wrench (MS1-A213) can be used to help unlock and remove the screw extender by unscrewing the nut (1)[A] or by lifting up below the ring (2)[B].

Repeat the previous surgical steps for all screws

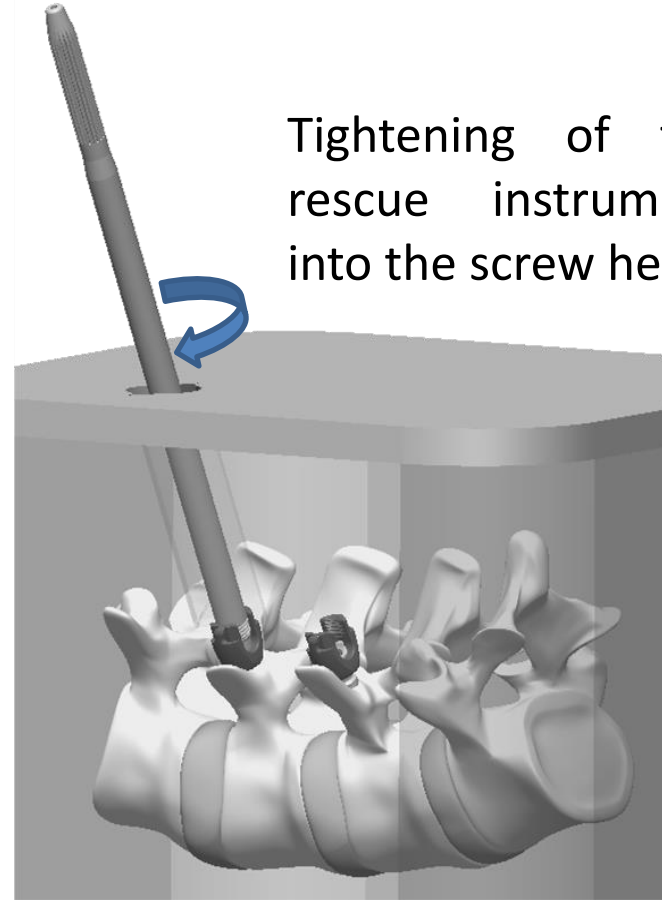


Rescue Instrument

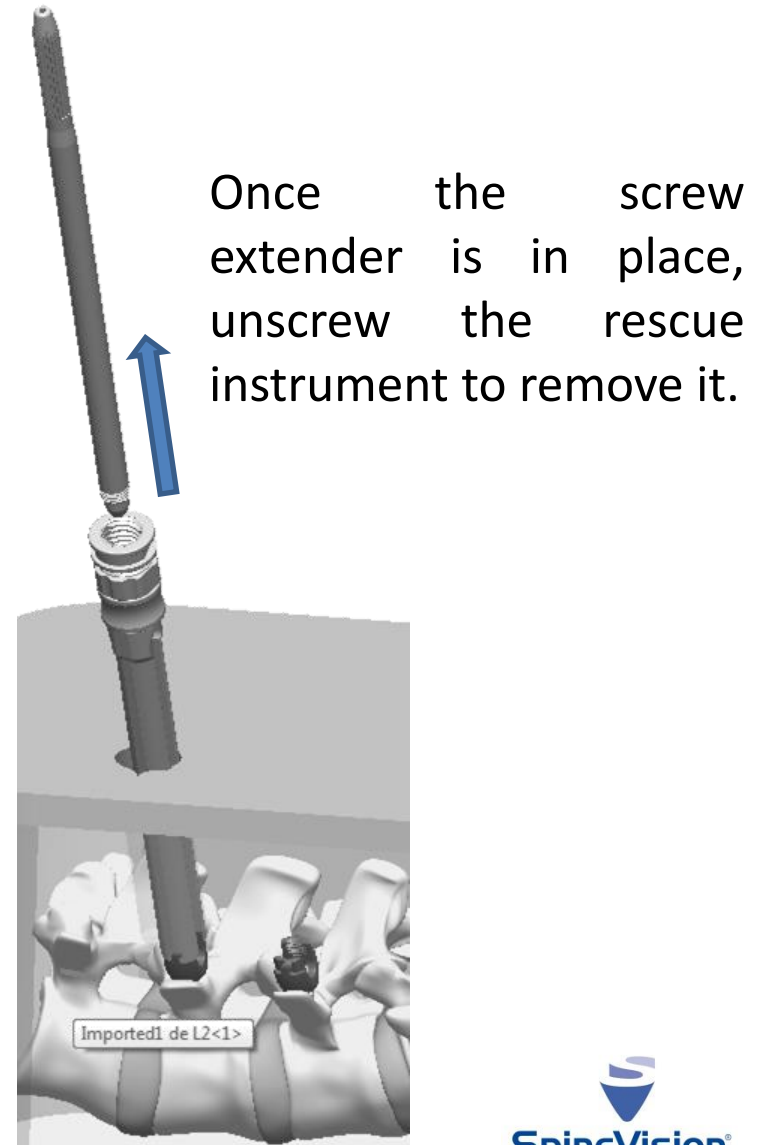
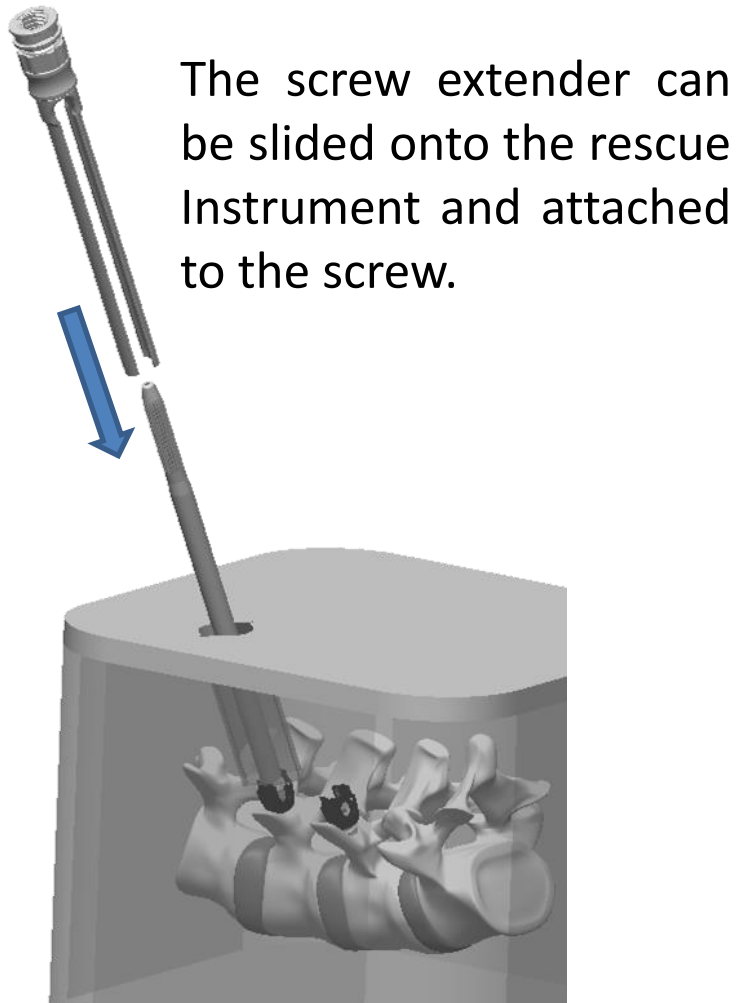
Insertion of the
Rescue Instrument
(MS1-A223).



Tightening of the
rescue instrument
into the screw head.



Rescue Instrument



Percutaneous rescue instruments



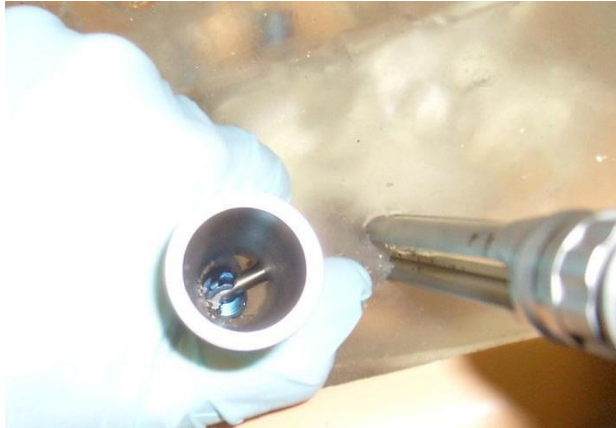
The dilators can be inserted one over the other.

Rescue procedure, before rod placement



The rescue instrument can be inserted into the screw head through the largest dilator, followed by a screw extender.

Rescue procedure, once the rod has been placed



Laser marks indicate
which way the screw
extender must be
placed

Removal or revision procedure

- List of needed items for Lumis™ screws removal using an open approach
 - 2 x U1-A622 (Dual Purpose Handle)
 - 1 x IS1-A431 (Counter torque)
 - 1 x U1-A213N1 (Rod holder)
 - 1 x MS1-A411 (T30 shaft)
 - 1 x MS1-A231 (Setscrew holder)
 - 1 x MS2-A221 (Lumis Universal Screwdriver)



Removal or revision procedure

- Unlock the setscrew using the counter-torque (IS1-A431) and the T30 shaft (MS1-A411)

U1-A622

MS1-A411

U1-A622

IS1-A431

Note : The counter torque must be placed perpendicularly to the patient axis to ensure a proper leverage while unlocking the setscrew.

Removal or revision procedure

- Once the setscrew is unlocked, the setscrew holder (MS1-A231) can be used to finish the unscrewing and remove the setscrew.
- Pull the trigger of the setscrew holder to catch/release the set screw.



Lumis™

Lumbar Mini Invasive System



Removal or revision procedure

- Once all setscrews have been removed, it is possible to remove the rod using the rod holder (U1-A213N1)
- Place the Lumis Universal Screwdriver (MS2-A221) into the head of the screw and turn the handle counter-clockwise to remove each screw.