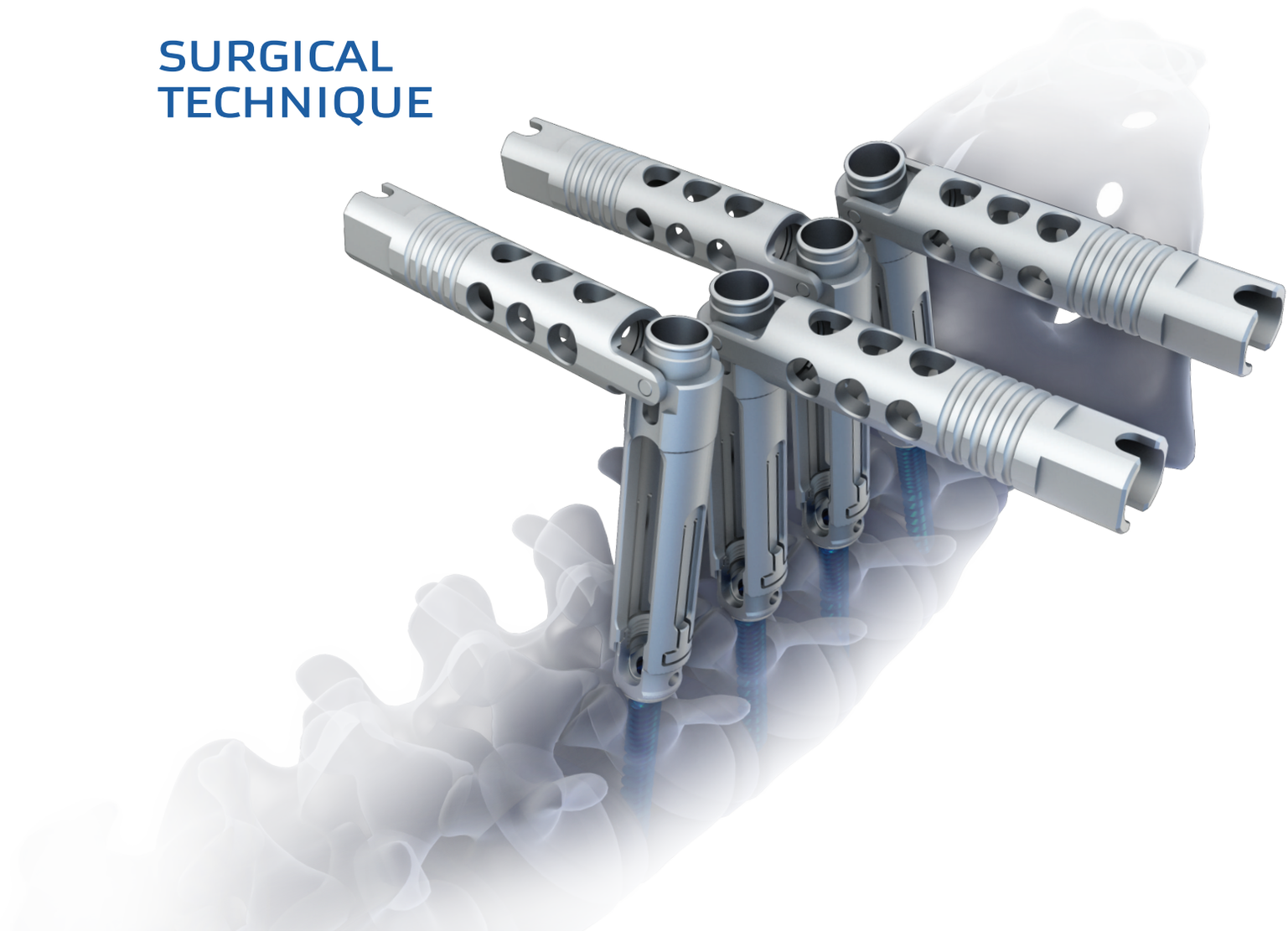
MANTIZ
ABOVE THE STANDARD

# QUATTRO™ GADGET™

MIS PERCUTANEOUS SCREW SYSTEM

## SURGICAL TECHNIQUE



Minimally invasive surgery is advantageous because it allow for less tissue trauma, less scarring, shorter hospital stays and less postoperative discomfort, thereby affording a decreased need for post-operative pain medication. QUATTRO-GADGET™ was created to offer a minimal invasive surgical option for pedicle screw placement.

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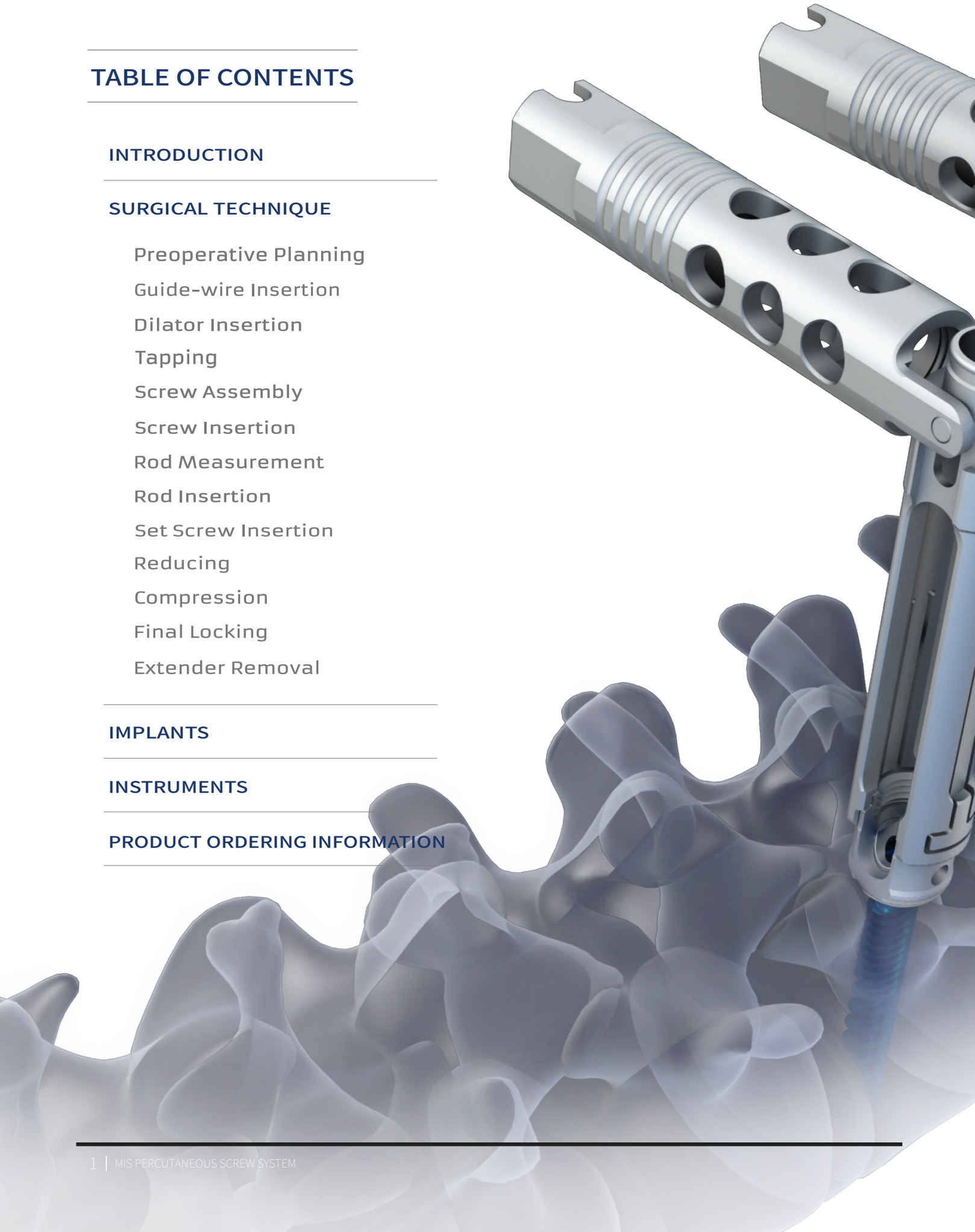
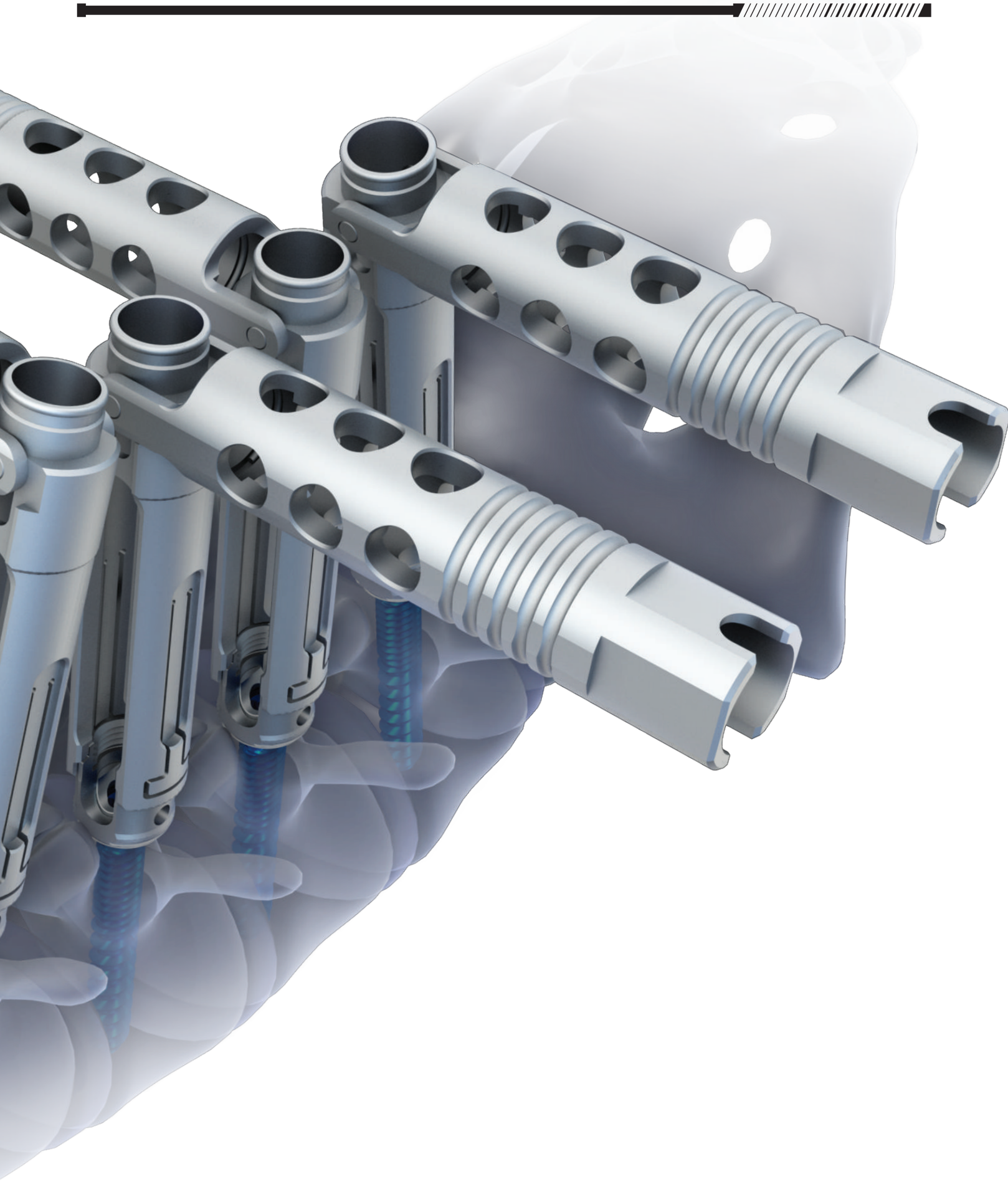


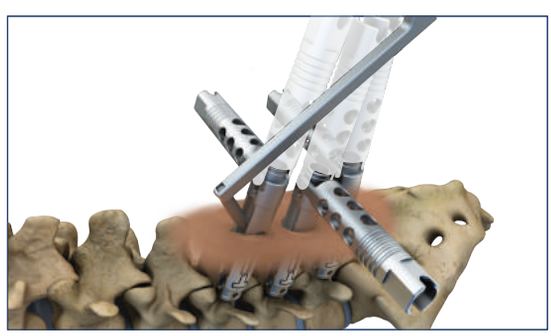


# QUATTRO™ GADGET™

QUATTRO - GADGET™ is created to offer a minimally invasive surgical option for pedicle screw placement. It also can provide the stabilization of acute and chronic instabilities or deformities of the thoracic and lumbar spine. The GADGET™ adopts functional mechanism on the screw extender, named “Flexible Hinge System”. The Flexible Hinge System allows to adjust the angle of the screw extender. It offers surgeons the convenience of minimizing operations through the various benefits of GADGET™.

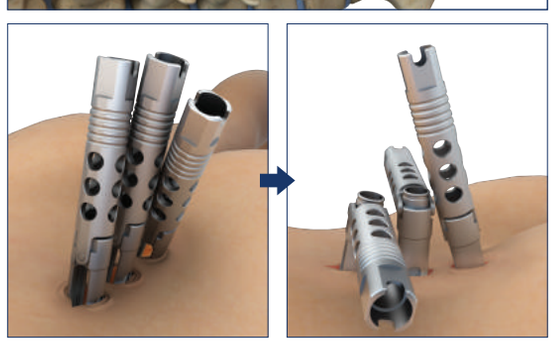
## Easy Rod Insertion

The rod is easily inserted with adjusting the hinge angle of screw extender without interruption between the instruments.



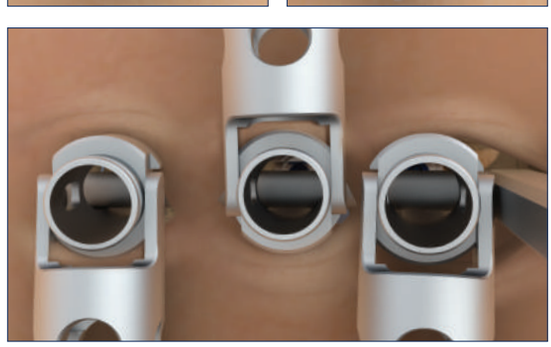
## Prevent the instrument Interruption

It can prevent cross interference between the screw extenders even in the increasing of lodotic angle like in the L5-S1’s lumbar.



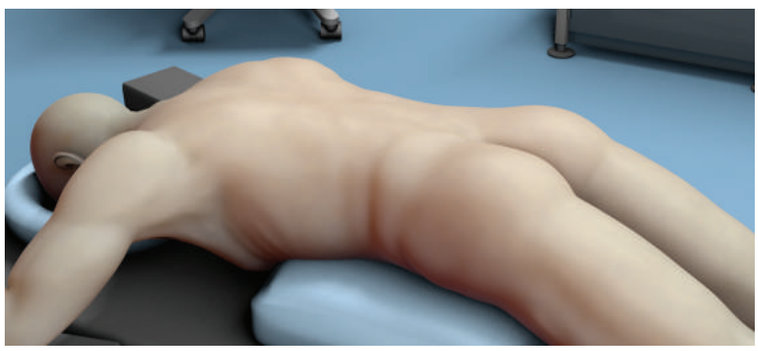
## Visualize the Rod Insertion

The location of the rod can be visually checked though the folded hinge hole of the screw.



# SURGICAL TECHNIQUE

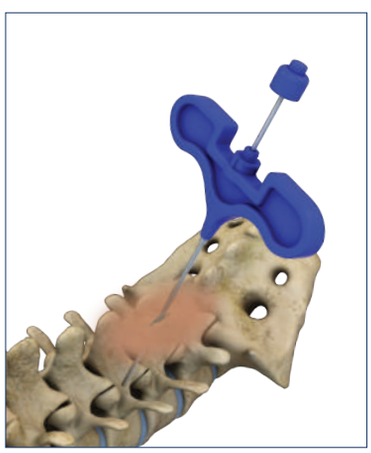
## 1. Preoperative Planning

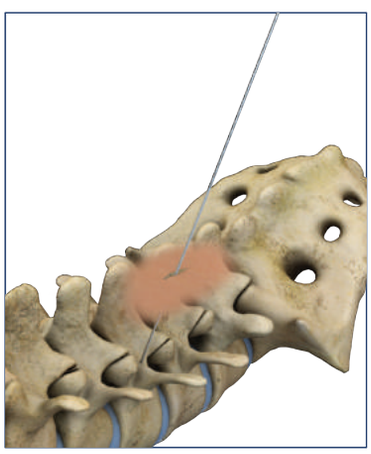


When using the GADGET™ MIS Screw System, the patient should be positioned prone on a radiolucent table. Chest rolls may be used, but the knee-to-chest position should be avoided.

**Ref.** This is intended as a guide only. There are multiple techniques for the insertion of pedicle screws and, as with any surgical procedure, a surgeon should be thoroughly trained before proceeding.

## 2. Guide-wire Insertion





| INSTRUMENTS | |
|---|---|
| A1B-1010 | Guide-wire |

### VP needle insertion

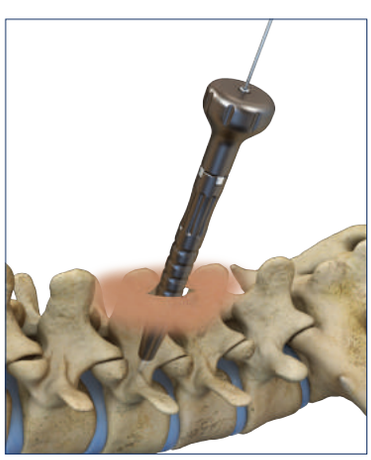
Using fluoroscopic imaging, it should be verified that the true views of both anterior-posterior (A/P) and lateral images of the spine are obtainable.

After that, make an incision and begin by inserting the front tip of the trocar in the pedicle. Remove the trocar from the VP needle after confirming placement with the A/P fluoroscopy.

### Guide-wire insertion

After inserting the Guide-wire, ensure the location of the Guide-wire when advancing it under the fluoroscopy. When the Guide-wire is in the place, remove the VP needle.

## 3. Dilator Insertion



| INSTRUMENTS | |
|---|---|
| A1B-1010 | Guide-wire |
| A1B-1012 | Dilator |

Insert the Dilator along the Guide-wire. Remove the Inner Dilator after the Dilator comes into contact with the pedicle surface.

## 4. Tapping

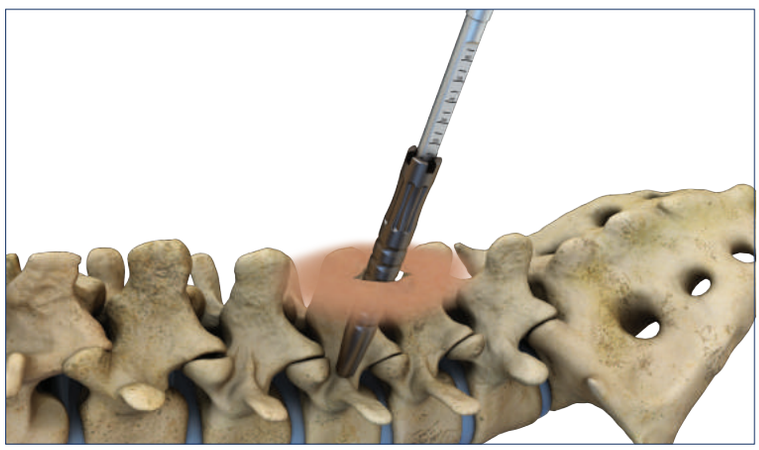
| INSTRUMENTS | |
|---|---|
| A1B-1010 | Guide-wire |
| A1B-1012 | Dilator |
| A1B-1013 | MIS Tap 5.5 |
| A1B-1014 | MIS Tap 6.5 |
| A1B-1015 | MIS Tap 7.0 |
| A1A-1047 | T-handle Ratchet |

i) Combine the handle with the properly sized MIS Tap.

ii) Insert the MIS Tap along the Guide-wire.

iii) Check the size marked on the MIS Tap shaft where it meets the top of the Large Dilator used to choose the length of screw.

iv) Remove the Dilator after the tapping.



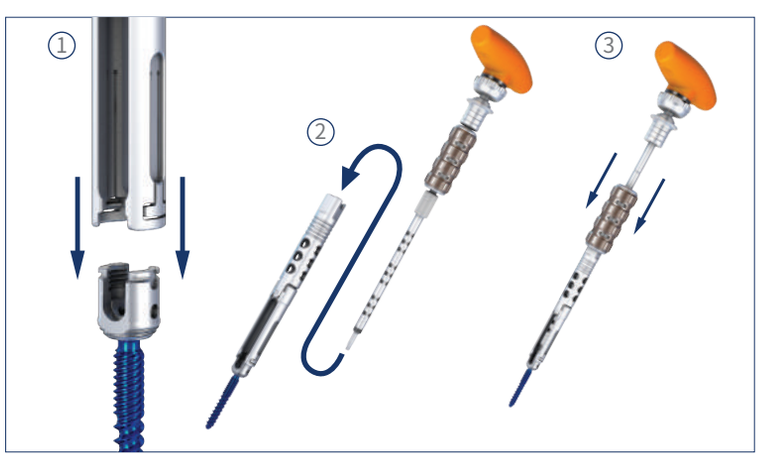
## 5. Screw Assembly

| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1017 | Screw Driver |
| A1A-1043 | Parm handle Ratchet |
| A1A-1047 | T-handle Ratchet |

i) Attach the screw to the bottom of the Screw Extender.

ii) Insert the Screw Driver into the Screw Extender and lock the screw until it is secure.

**Ref.** To verify that the screw is fully locked, ensure that the screw cannot be removed by pulling it away or rotating it.




## 6. Screw Insertion

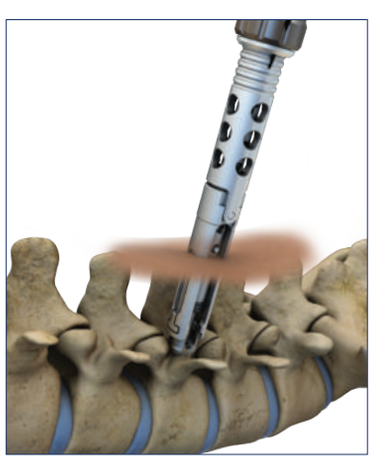
| INSTRUMENTS | |
|---|---|
| A1B-1010 | Guide-wire |
| A1B-1016 | Screw Extender |
| A1B-1017 | Screw Driver |
| A1A-1047 | T-handle Ratchet |

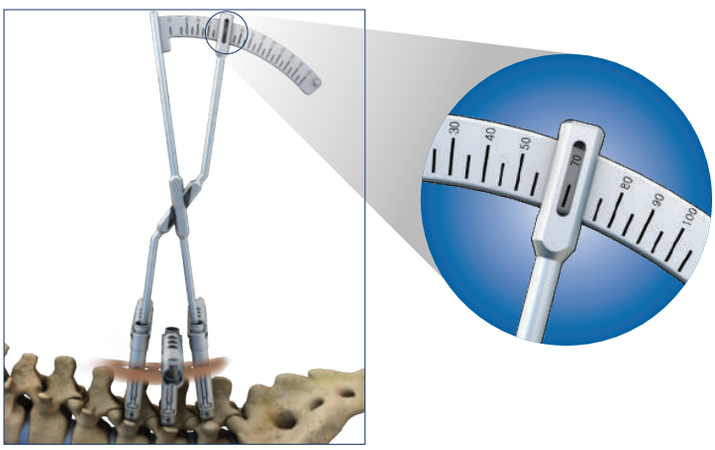
i) Insert the Screw Driver combined with the screw, into the pedicle along the Guide-wire.

ii) After inserting the screw, verify the location of the screw through the fluoroscopy.

iii) Remove the Guide - wire and Screw Driver after screw placement.

iv) Repeat the steps above to place all screws at the adjacent operable level.






## 7. Rod Measurement

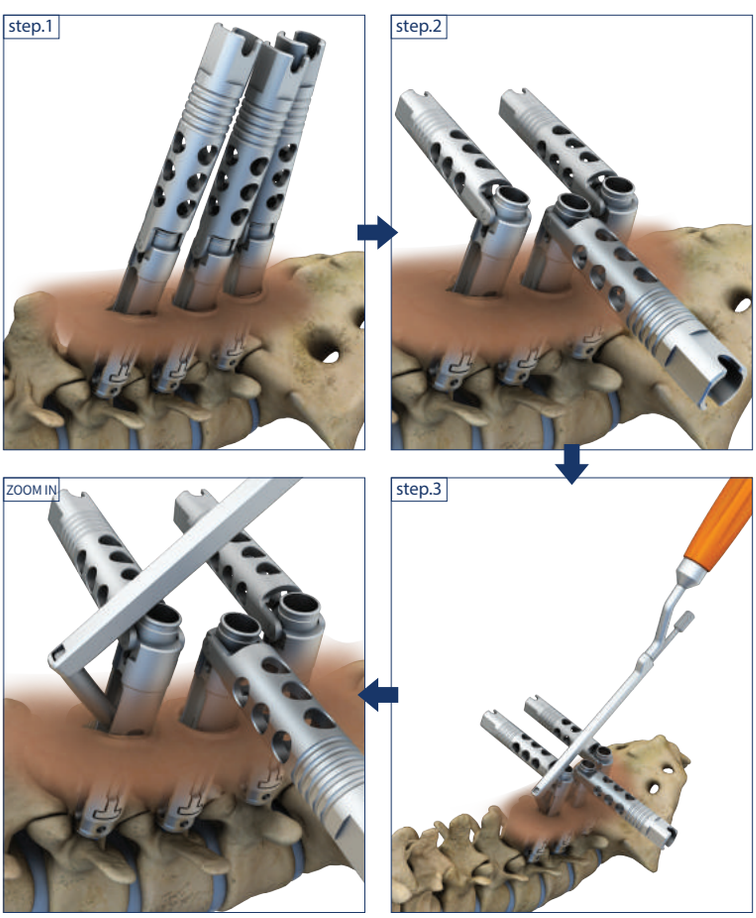
| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1018 | Rod Length Gauge |

i) Align the Screw Extenders.

ii) Assemble the Rod Length Gauge to the end of Screw Extenders.

iii) Measure the exact length through the size marked on the Rod Length Gauge and confirm the rod needed.

iv) After determining the Rod Length, remove the Rod Length Gauge.




## 8. Rod Insertion

| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1019 | Rod Holder |

Deflect the flexible hinge on the Screw Extender to set the Rod to be inserted freely.

i) Attach the rod to the Rod Holder and place it into the Screw Extender channels.

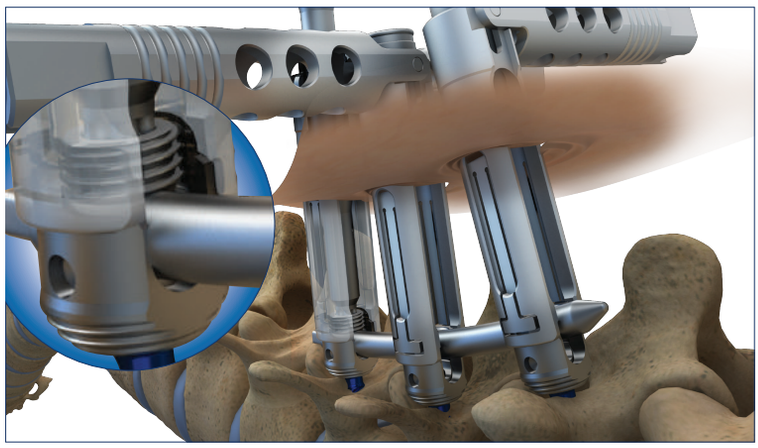
ii) Advance the Rod Holder down the channel and seat the rod into the bottom of the screw head.

iii) Verify the location of the rod through lateral Image of the fluoroscopy.

## 9. Set Screw Insertion

| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1020 | MIS Set Screw Driver(starter) |

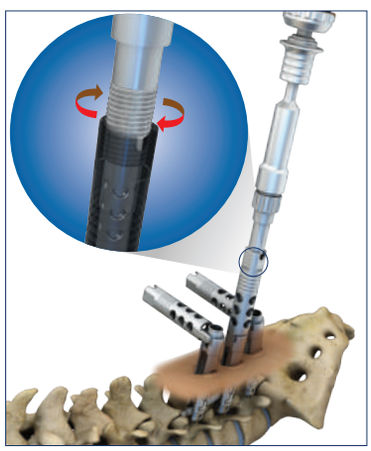
After verifying that the rod is seated on all screws, insert the set screw and lock it down by using the Set Screw Driver (starter).

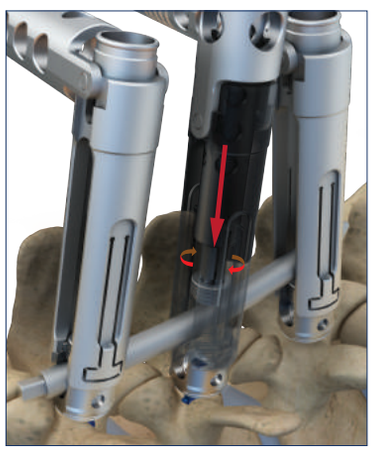


## 10. Reducing

| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1022 | Reducing Set Screw Driver |
| A1B-1028 | Reducing Handle connector |
| A1A-1047 | T-handle Ratchet |

In the case of Spondylolisthesis, use the assembled Reducing Set Screw Driver with the Reducing Handle Connector. The assembled Set Screw driver is rotated and fits into Screw Extender to push down the rod on the bottom of the screw head.





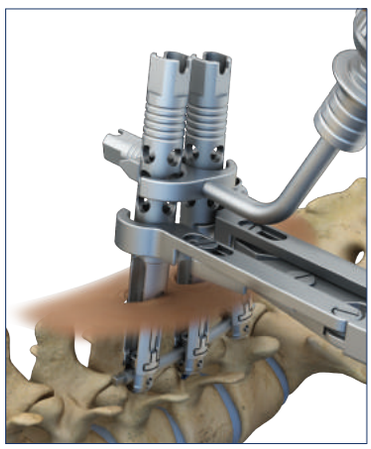
## 11. Compression

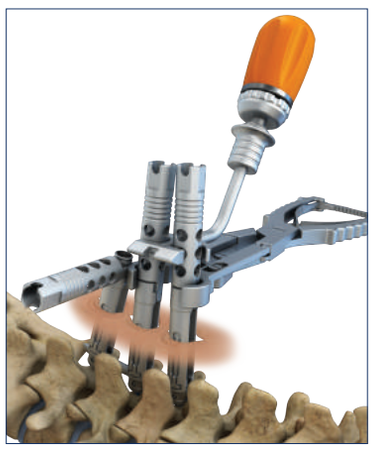
| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1023 | Compression Guide 6mm |
| A1B-1024 | Compression Guide 12mm |
| A1B-1025 | Compressor |
| A1A-1047 | T-handle Ratchet |

Use the Compressor and the Compression Guide to perform the Compression and Distraction as necessary.

i) Compression: Place the Compression Guide **above** the compressor attaching point.

ii) Distraction: Place the Compression Guide **below** the Compressor attaching point.





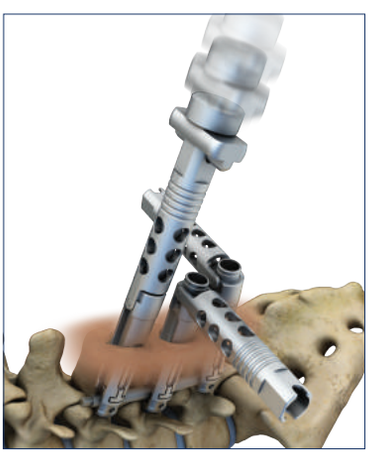
## 12. Final Locking

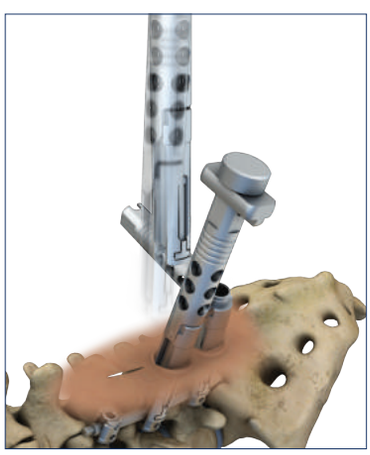
| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1021 | MIS Set Screw Driver(final) |
| A1B-1026 | MIS Anti-torque Wrench |
| A1A-1044 | Torque Limited handle 12N |

i) Attach the MIS Anti-torque Wrench on the top of the Screw Extender.

ii) Assemble the Torque Limited Handle with the MIS Set Screw Driver(final) and advance it through the Screw Extender into the Set Screw.

iii) Turn the Torque Limited Handle clockwise. Final locking is achieved when the Torque Limited Handle audibly clicks. It is applied 12Nm of Torque.



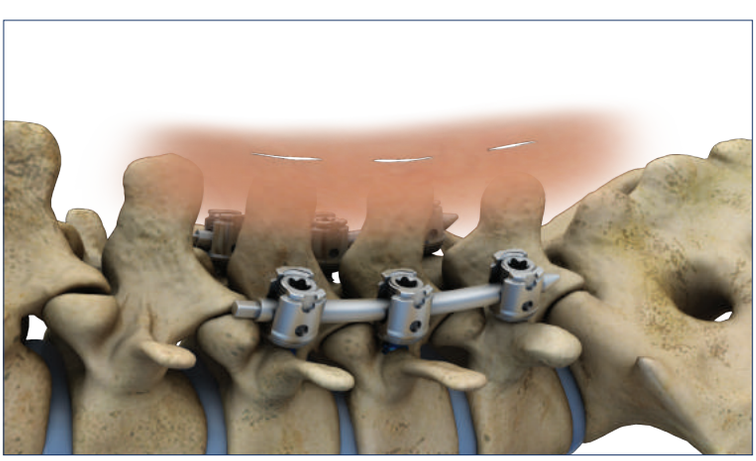


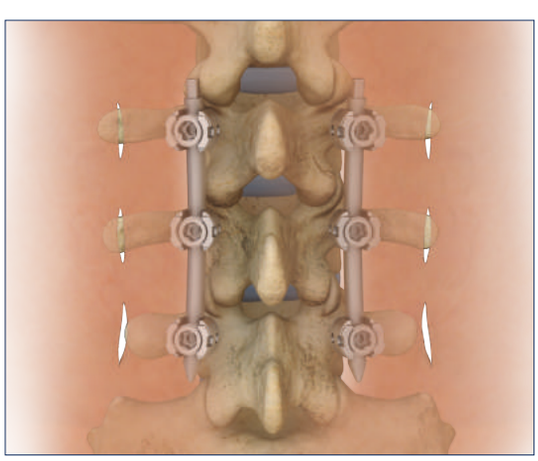
## 13. Extender Removal

| INSTRUMENTS | |
|---|---|
| A1B-1016 | Screw Extender |
| A1B-1027 | Remover |

i) Attach the Remover into the Screw Extender after finishing the final locking operation on all screws.

ii) The Screw Extender can be disassembled from the screw head when the top button on the Remover is pushed.





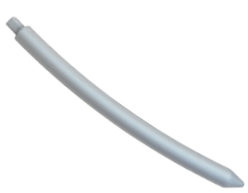
# IMPLANTS

## Polyaxial Cannulated Screw (Quad)

| Cat' No. | Description | Cat' No. | Description | Cat' No. | Description |
|---|---|---|---|---|---|
| A1-4525-A15 | Ø4.5-25mm | A1-6030-A15 | Ø6.0-30mm | A1-7030-A15 | Ø7.0-30mm |
| A1-4530-A15 | Ø4.5-30mm | A1-6035-A15 | Ø6.0-35mm | A1-7035-A15 | Ø7.0-35mm |
| A1-4535-A15 | Ø4.5-35mm | A1-6040-A15 | Ø6.0-40mm | A1-7040-A15 | Ø7.0-40mm |
| A1-4540-A15 | Ø4.5-40mm | A1-6045-A15 | Ø6.0-45mm | A1-7045-A15 | Ø7.0-45mm |
| A1-4545-A15 | Ø4.5-45mm | A1-6050-A15 | Ø6.0-50mm | A1-7050-A15 | Ø7.0-50mm |
| A1-4550-A15 | Ø4.5-50mm | A1-6055-A15 | Ø6.0-55mm | A1-7055-A15 | Ø7.0-55mm |
| A1-4555-A15 | Ø4.5-55mm | A1-6060-A15 | Ø6.0-60mm | A1-7060-A15 | Ø7.0-60mm |
| | | A1-6065-A15 | Ø6.0-65mm | A1-7065-A15 | Ø7.0-65mm |
| A1-5030-A15 | Ø5.0-30mm | A1-6070-A15 | Ø6.0-70mm | A1-7070-A15 | Ø7.0-70mm |
| A1-5035-A15 | Ø5.0-35mm | A1-6075-A15 | Ø6.0-75mm | A1-7075-A15 | Ø7.0-75mm |
| A1-5040-A15 | Ø5.0-40mm | A1-6080-A15 | Ø6.0-80mm | A1-7080-A15 | Ø7.0-80mm |
| A1-5045-A15 | Ø5.0-45mm | | | | |
| A1-5050-A15 | Ø5.0-50mm | A1-6530-A15 | Ø6.5-30mm | A1-7530-A15 | Ø7.5-30mm |
| A1-5055-A15 | Ø5.0-55mm | A1-6535-A15 | Ø6.5-35mm | A1-7535-A15 | Ø7.5-35mm |
| A1-5060-A15 | Ø5.0-60mm | A1-6540-A15 | Ø6.5-40mm | A1-7540-A15 | Ø7.5-40mm |
| A1-5065-A15 | Ø5.0-65mm | A1-6545-A15 | Ø6.5-45mm | A1-7545-A15 | Ø7.5-45mm |
| | | A1-6550-A15 | Ø6.5-50mm | A1-7550-A15 | Ø7.5-50mm |
| A1-5530-A15 | Ø5.5-30mm | A1-6555-A15 | Ø6.5-55mm | A1-7555-A15 | Ø7.5-55mm |
| A1-5535-A15 | Ø5.5-35mm | A1-6560-A15 | Ø6.5-60mm | A1-7560-A15 | Ø7.5-60mm |
| A1-5540-A15 | Ø5.5-40mm | A1-6565-A15 | Ø6.5-65mm | A1-7565-A15 | Ø7.5-65mm |
| A1-5545-A15 | Ø5.5-45mm | A1-6570-A15 | Ø6.5-70mm | A1-7570-A15 | Ø7.5-70mm |
| A1-5550-A15 | Ø5.5-50mm | A1-6575-A15 | Ø6.5-75mm | A1-7575-A15 | Ø7.5-75mm |
| A1-5555-A15 | Ø5.5-55mm | A1-6580-A15 | Ø6.5-80mm | A1-7580-A15 | Ø7.5-80mm |
| A1-5560-A15 | Ø5.5-60mm | | | | |
| A1-5565-A15 | Ø5.5-65mm | | | | |
| A1-5570-A15 | Ø5.5-70mm | | | | |
| A1-5575-A15 | Ø5.5-75mm | | | | |

## MIS Pre-Bent Rod

| Cat' No. | Description | Cat' No. | Description | Cat' No. | Description |
|---|---|---|---|---|---|
| AZ-5504-030 | Ø5.5x30mm | AZ-5504-070 | Ø5.5x70mm | AZ-5504-120 | Ø5.5x120mm |
| AZ-5504-035 | Ø5.5x35mm | AZ-5504-075 | Ø5.5x75mm | AZ-5504-130 | Ø5.5x130mm |
| AZ-5504-040 | Ø5.5x40mm | AZ-5504-080 | Ø5.5x80mm | AZ-5504-140 | Ø5.5x140mm |
| AZ-5504-045 | Ø5.5x45mm | AZ-5504-085 | Ø5.5x85mm | AZ-5504-150 | Ø5.5x150mm |
| AZ-5504-050 | Ø5.5x50mm | AZ-5504-090 | Ø5.5x90mm | AZ-5504-160 | Ø5.5x160mm |
| AZ-5504-055 | Ø5.5x55mm | AZ-5504-095 | Ø5.5x95mm | AZ-5504-170 | Ø5.5x170mm |
| AZ-5504-060 | Ø5.5x60mm | AZ-5504-100 | Ø5.5x100mm | AZ-5504-180 | Ø5.5x180mm |
| AZ-5504-065 | Ø5.5x65mm | AZ-5504-110 | Ø5.5x110mm | AZ-5504-200 | Ø5.5x200mm |



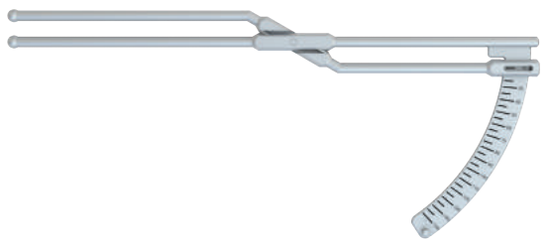
## Set Screw

| Cat' No. | Description |
|---|---|
| A1-0000-A01 | |

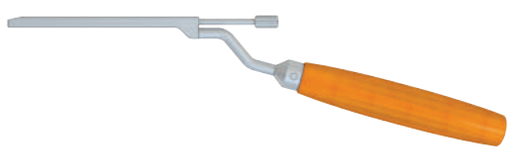
# INSTRUMENTS

| | | |
|---|---|---|
| | A1B-1010 | Catalog No. |
| | Guide-wire | Description |
|  | A1B-1011 | Catalog No. |
| | Guide-wire Driver | Description |
|  | A1B-1012 | Catalog No. |
| | Dilator | Description |
|  | A1B-1013 | Catalog No. |
| | MIS Tap 5.5 | Description |
|  | A1B-1014 | Catalog No. |
| | MIS Tap 6.5 | Description |
|  | A1B-1015 | Catalog No. |
| | MIS Tap 7.0 | Description |
|  | A1B-1016 | Catalog No. |
| | Screw Extender | Description |
|  | A1B-1017 | Catalog No. |
| | Screw Driver | Description |

Catalog No. A1B-1018
Description Rod Length Gauge



Catalog No. A1B-1019
Description Rod Holder



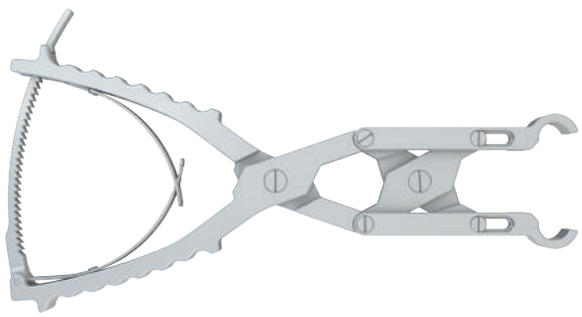
Catalog No. A1B-1020
Description MIS Set Screw Driver(starter)

Catalog No. A1B-1021
Description MIS Set Screw Driver(final)

Catalog No. A1B-1022
Description Reducing Set Screw Driver

Catalog No. A1B-1023
Description Compression Guide 6mm

Catalog No. A1B-1024
Description Compression Guide 12mm



A1B-1025 Catalog No.
Compressor Description

A1B-1026 Catalog No.
MIS Anti-torque Wrench Description

A1B-1027 Catalog No.
Remover Description

A1B-1028 Catalog No.
Reducing Handle connector Description

A1A-1043 Catalog No.
Parm Handle Ratchet Description

A1A-1044 Catalog No.
Torque Limited Handle 12N Description

A1A-1047 Catalog No.
T-handle Ratchet Description

# PRODUCT ORDERING INFORMATION

## IMPLANTS

| Cat' No. | Description | Qty in Set |
|---|---|---|
| A1-5530-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø5.5-30mm | 8 |
| A1-5535-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø5.5-35mm | 8 |
| A1-5540-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø5.5-40mm | 8 |
| A1-5545-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø5.5-45mm | 8 |
| A1-6535-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø6.5-35mm | 8 |
| A1-6540-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø6.5-40mm | 8 |
| A1-6545-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø6.5-45mm | 8 |
| A1-6550-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø6.5-50mm | 8 |
| A1-7540-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø7.5-40mm | 8 |
| A1-7545-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø7.5-45mm | 8 |
| A1-7550-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø7.5-50mm | 8 |
| A1-7555-A15 | QUATTRO™ Polyaxial Cannulated Screw (Quad) Ø7.5-55mm | 8 |
| | | |
| AZ-5504-035 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x35mm | 4 |
| AZ-5504-040 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x40mm | 4 |
| AZ-5504-045 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x45mm | 4 |
| AZ-5504-050 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x50mm | 4 |
| AZ-5504-060 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x60mm | 4 |
| AZ-5504-070 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x70mm | 4 |
| AZ-5504-080 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x80mm | 4 |
| AZ-5504-090 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x90mm | 4 |
| AZ-5504-100 | QUATTRO™ MIS Pre-Bent Rod Ø5.5x100mm | 2 |
| | | |
| A1-0000-A01 | QUATTRO™ Set Screw | 20 |

## INSTRUMENTS

| Cat' No. | Description | Qty in Set |
|---|---|---|
| A1B-1010 | Guide-wire | |
| A1B-1011 | Guide-wire Driver | 1 |
| A1B-1012 | Dilator | 1 |
| A1B-1013 | MIS Tap 5.5 | 1 |
| A1B-1014 | MIS Tap 6.5 | 1 |
| A1B-1015 | MIS Tap 7.0 | 1 |
| A1B-1016 | Screw Extender | 6 |
| A1B-1017 | Screw Driver | 2 |
| A1B-1018 | Rod Length Gauge | 1 |
| A1B-1019 | Rod Holder | 2 |
| A1B-1020 | MIS Set Screw Driver(starter) | 2 |
| A1B-1021 | MIS Set Screw Driver(final) | 1 |
| A1B-1022 | Reducing Set Screw Driver | 2 |
| A1B-1023 | Compression Guide 6mm | 1 |
| A1B-1024 | Compression Guide 12mm | 1 |
| A1B-1025 | Compressor | 1 |
| A1B-1026 | MIS Anti-torque Wrench | 1 |
| A1B-1027 | Remover | 1 |
| A1B-1028 | Reducing Handle connector | 1 |
| A1A-1043 | Parm Handle Ratchet | 1 |
| A1A-1044 | Torque Limited handle 12N | 1 |
| A1A-1047 | T-handle Ratchet | 1 |

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# QUATTRO™ GADGET™

MIS PERCUTANEOUS SCREW SYSTEM


MANTIZ
ABOVE THE STANDARD

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