

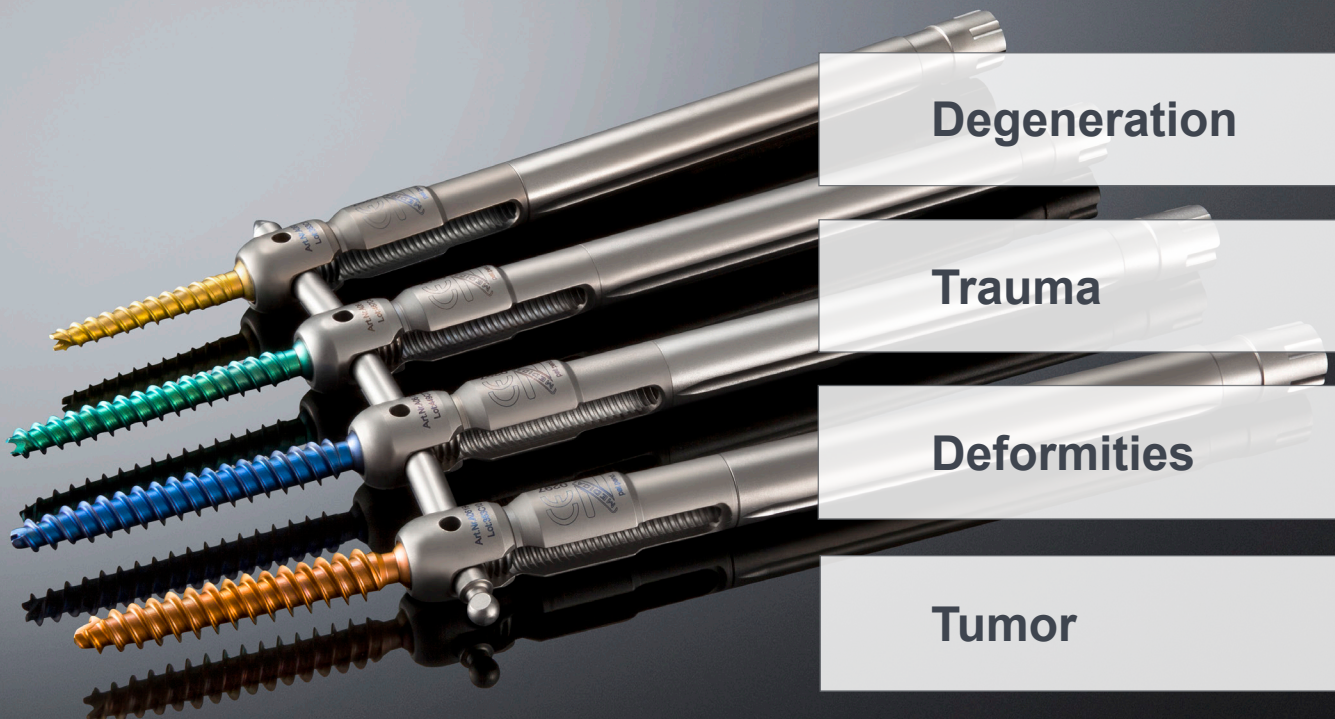


**SURGICAL
INNOVATIONS**



SURGICAL TECHNIQUE

MIS Z-PEDICLE SCREW SYSTEM



Degeneration

Trauma

Deformities

Tumor

MIS Z-PEDICLE SCREW SYSTEM

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The MIS Z-Pedicle Screw System with the pre-sterilized implants offer surgeons an ideal solution for their indication specific needs. Only one instrument set and the innovative implant design enable them to efficiently and cost effectively address the most common pathologies.

It is primarily designed for a minimally-invasive approach for less tissue disruption, blood loss and trauma as well as for open procedures. It is approved for Degenerative, Trauma, Tumor and Deformity application. Alignment after surgical correction of spondylolisthesis, reduction in fracture treatments and derotation in scoliosis treatments are achieved directly with the lengthening shaft, the pre-assembled set screw, the long reduction thread and the especially designed uniplanar fracture and deformity screws.

All Z-Pedicle Screws are cannulated, fenestrated and available in different axialities, diameters and lengths.

The Z-Pedicle Screws are indicated for fixation, reconstruction and stabilization of vertebrae. The screws can only be used in non-cervical spine region. Per segment 4 screws and 2 rods are necessary.

Consult instructions for use and follow the surgical technique before using implants and instruments.

I. INSTRUCTIONS

1. Application

Depending on the given structures of the vertebrae and indications, different cannulated, polyaxial, quattroaxial, quattroaxial trans., monoaxial screws with different diameters and lengths and the possibility of cement-augmentation can be selected. All screws are cannulated and must only be inserted manually by using only the Z-Guide Wires from our set. With the Screwdriver Pedicle Screw and the Z-Guide Wire the length of the screw can be determined. It makes sense to insert the Z-Guide Wire until it reaches the corticalis on the anterior cortical wall. Place the tip of the Screwdriver Pedicle Screw on the Z-Guide Wire and position it on the osseous surface of the pedicle.

The scale on the Screwdriver Pedicle Screw shows the depth of the Z-Guide Wire to determine the screw length. The seating of the Screwdriver Pedicle Screw is equipped with a drive that catches directly inside the screw head. There is a comfortable T-Handle with Ratchet included in the set. Previous opening of the cortical bone is not required as the Z-Pedicle Screw are self-drilling and self-tapping. As required the Awl and / or the Thread Drill from our set should be used. The Z-Guide Wire can be removed when Z-Pedicle Screws have reached about halfway of the final depth. Therefore the T-Handle with Ratchet has to be removed from the Screwdriver Pedicle Screw before removing the Z-Guide Wire.

For achieving permanent stability when treating osteoporotic vertebrae the Z-Pedicle Screws should be cement-augmented. Additionally, an osseous fusion should be aspired, which is accomplished by placing bone substitute at the cage and intervertebral space.

For cement-augmentation the Screwdriver Pedicle Screw has to stay connected to the drive inside the placed Z-Pedicle Screw (final position) until the cement-augmentation is finished. The surgeon should choose appropriate treatment (appropriate screws, number of instrumented levels, possible additional stabilisation, etc.) based on the biomechanics of the spine of the patient and patient's personal conditions (bone quality, age, weight, etc.). For cement-augmentation of the Z-Pedicle Screw the Bone Cement Filler Cannula for Screw Cementation from our set has to be applied. This has to be inserted into the Screwdriver Pedicle Screw until the stop is reached. The marking on the Screwdriver Pedicle Screw shows the correct depth and it has to stay in this position until the cement is dried. The cement manufacturer's application instructions are strictly to be adhered to. Only Z-Rods adapted to the system may be applied. Depending on the length of the rod a second incision might be necessary. To determine the rod length the Distraction- and Compression Instrument (Dico) can be used. The lengthening shafts of the Z-Pedicle Screws have to be aligned parallel to

determine the rod length. In the lengthening shaft are two guiding slots for the rod is integrated, so the Z-Rod can be guided by the Rod Inserter and be inserted extra corporally. The correct position of the Z-Rod inside the tulip has to be checked with the Screwdriver Pedicle Screw (marking).

The inserted Z-Rod is pushed in without auxiliary tools by screwing the Ini into the screw head and must be tightened by applying a pre-set torsional moment with the T-Handle with Torque Limiter. Only then the Rod Inserter is severed from the Z-Rod. After all Inis are fixed and tightened with the torsional moment, the lengthening shafts can be severed from the screw heads applying the severing instrument by placing it into lengthening shafts until it's final position and turning clockwise.

I. INSTRUCTIONS

2. Indications

The MIS Z-Pedicle Screw System is intended to provide immobilization and stabilization of the spinal segments for posterior, non-cervical pedicle fixation for the following indications:

- Degenerative disc disease (DDD) (defined as back pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies)
- Spondylolisthesis
- Trauma (i.e. fracture or dislocation)
- Spinal stenosis
- Curvatures (i.e. scoliosis, kyphosis and / or lordosis)
- Tumor
- Pseudoarthrosis
- Failed previous fusion

3. Contraindications

- Infection
- Known allergic reaction to materials the instrument is manufactured of
- Physiologically or psychologically inadequate patient
- Insufficient skin, bone or neurovascular condition
- Possibility of a conservative treatment
- Blood supply limitations and previous infections, which may retard healing
- All non-listed indications

I. INSTRUCTIONS

4. Precautions

- It is mandatory that the user, surgeon and surgery personnel are acquainted with the respective surgical technique for instruments and implants used.
- Surgical instruments and implants may only be used for surgeries, for which the designated Application of the instrument and implant is explicitly necessary and defined.
- The trained expert staff is obligated to examine the surgical implant and its sterile packaging for damages prior to each application i.e. use. In case of the implant or its packaging being damaged or deformed, it is not to be used!
- Only and exclusively Z-Medical's specially manufactured instruments and implants (contained in the respective set) are to be used! If using other instruments and implants, function, warranty and liability are omitted.
- After the shaft is broken off, it must be removed and properly disposed.

5. Warnings

- Surgical instruments and implants by Z-Medical might possibly have tips and sharp cutting edges, which can perforate skin!
- This product may only be used with accessories from the respective Z-Medical set. Application and use of other instruments or implants is not permitted.
- After having fixed the Ini with torque, releasing of the Ini and repositioning of the Z-Rod is not allowed. As a deformation of the rod and therefore a weakening can't be ruled out.
- Cutting edges, blades, tips etc. can be very sensitive to false handling. Thus, these instruments must be handled with care.
- The Z-Pedicle Screws and Z-Rods have not been evaluated for safety and compatibility in the MR environment. It has not been tested for heating or migration in the MR environment.
- Do not use the implants if the sterile packaging is damaged or defect.
- Additional stabilization may be required if the anterior part of the vertebral body is damaged.
- Because of the risk of cement embolism and the risk of the cement entering the spinal canal the injection of the cement must be done with radiographic support to control the cement flow.

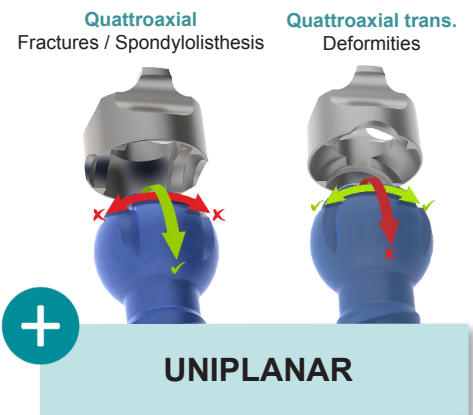
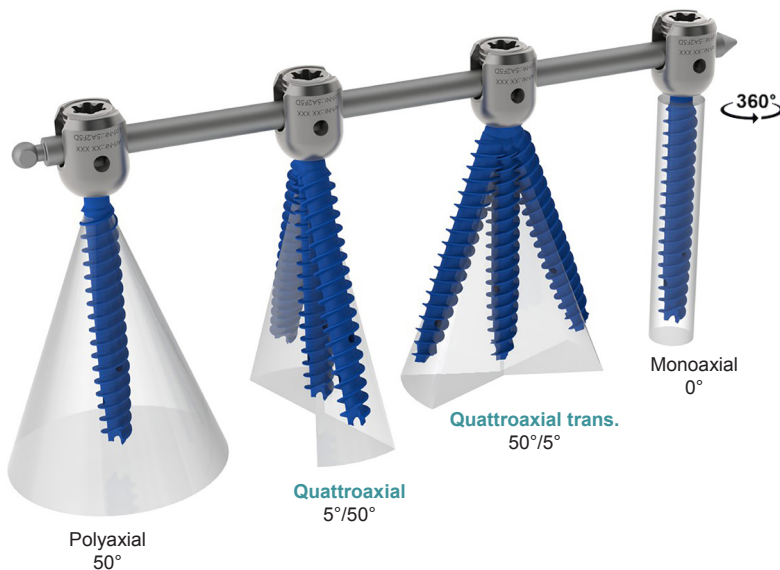
II. IMPLANTS (STERILE)

1. Z-Pedicle Screw

The Z-Pedicle Screws with pre-assembled Ini (Set Screw) and the Z-Rods are delivered single sterile packaged. All Z-Pedicle Screws are cannulated, fenestrated, available in different diameters, lengths as well as axialities and include a lengthening shaft connected by a rigid SnapOff technique:



Diameters [Ø]	5* / 6 / 7 / 8mm (* Screw Ø5mm is not available in length 55mm)
Lengths [mm]	35 / 40 / 45 / 50 / 55mm
Ini [Set Screw]	Pre-assembled
Screw Design	Multi-conical double thread, self-drilling and self-tapping
Axialities	Polyaxial, Quattroaxial, Quattroaxial trans., Monoaxial
Reduction of Rod Manipulation	Via reduction thread, 45mm
Up-righting Fractures	Via lengthening shaft
Derotation of Deformities	Via reduction thread
Connection Implant / Shaft	Connected by SnapOff-Technique
Break off Implant / Shaft	With patented Tulip Breaker
Cement-Augmentation Approval	With Bone Cement Filler Cannula through Screwdriver Pedicle Screw EWG 93/42 // 510(k)



2. Z-Rod

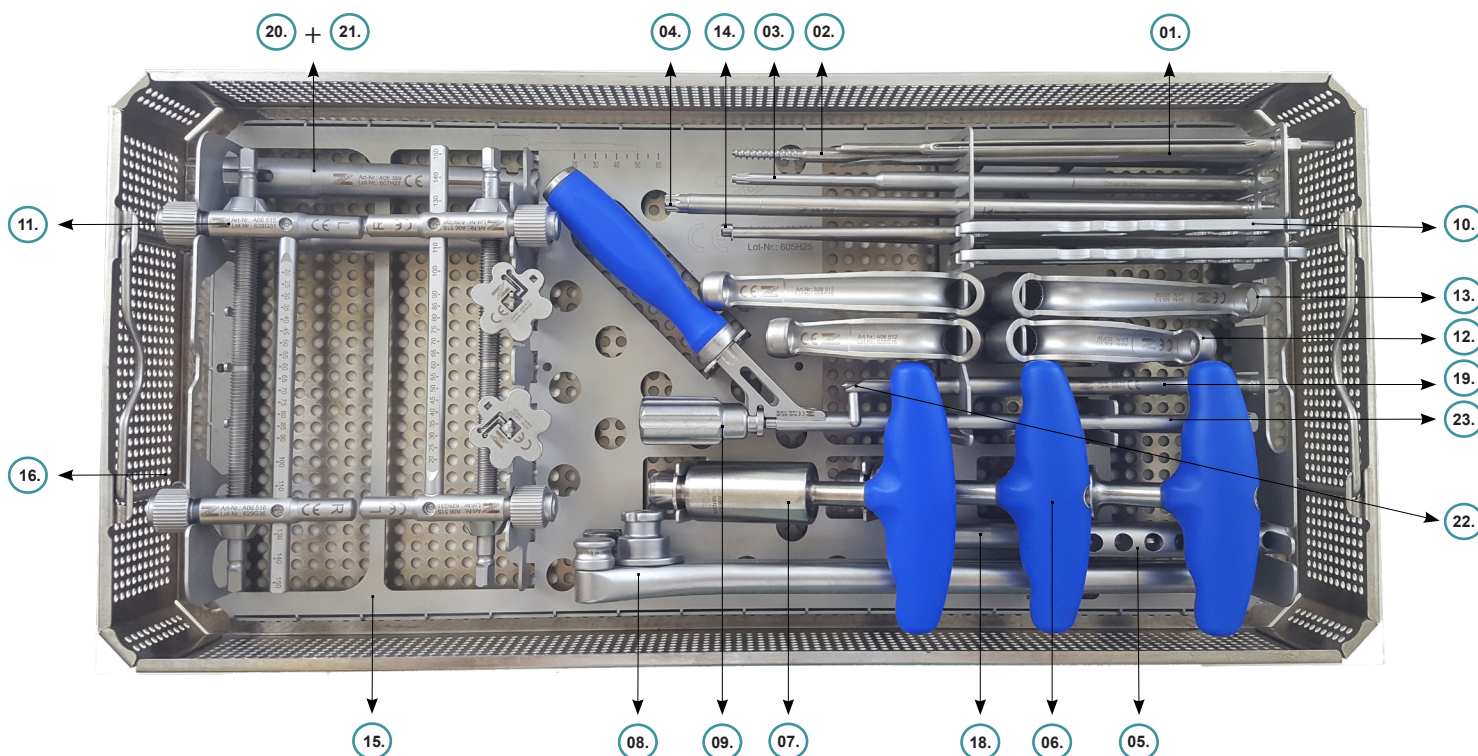
lordotically bent
20mm - 120mm

straight
130mm - 300mm



III. INSTRUMENTS

1. Instrument Set (Exemplary Overview)



Instruments		Art. No.	Quantity
01.	Awl Set	A06 530	1
02.	Thread Drill	A06 380	1
03.	Screwdriver Pedicle Screw	A06 006	2
04.	Screwdriver Ini	A06 005	2
05.	Z-Handle	C07 909	1
06.	T-Handle with Ratchet	A06 374	2
07.	T-Handle with Torque Limiter	A06 007	1
08.	Rod Bender	A06 381	1
09.	Rod Inserter	A06 300	2
10.	Counter Support	A06 373	2
11.	Distraction- and Compression Instrument (Dico)	A06 600	2
12.	Adapter short	A06 512	4
13.	Adapter long	A06 513	4
14.	Tulip Breaker	A06 370	2
Storage			
15.	Rack	A06 508	1
16.	Perforated Container Set	A06 488	1
17.	Sterilisation Container Set	A06 490	1
Instruments Optional			
18.	Reamer	A06 524	1
Instruments Extension / Revision			
19.	Screwdriver Revision	A06 310	1
20.	Tulip Adapter	A06 306	2
21.	Clamping Tube	A06 389	2
22.	Revision Instrument Inner Part	A06 384	1
23.	Chuck Rod	A06 385	1

III. INSTRUMENTS

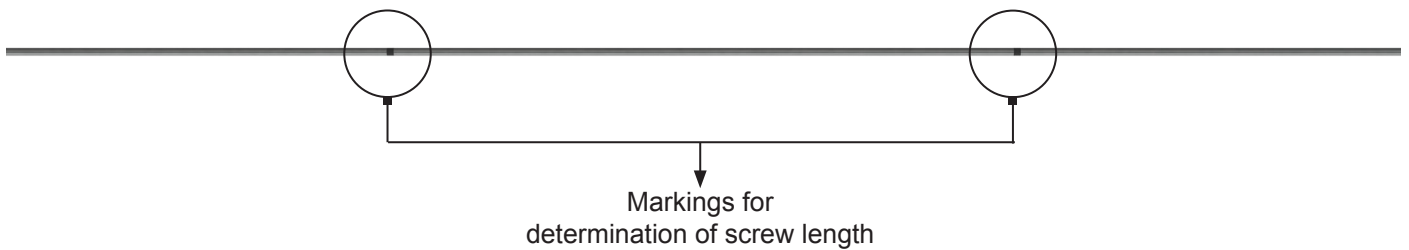
2. Instruments

Awl Set | A06 530
Assembled



Z-Guide Wire | A06 081 S

Are delivered sterile packaged (two pieces per packaging unit). These are rounded on both sides. They also have two markers.



Thread Drill | A06 380

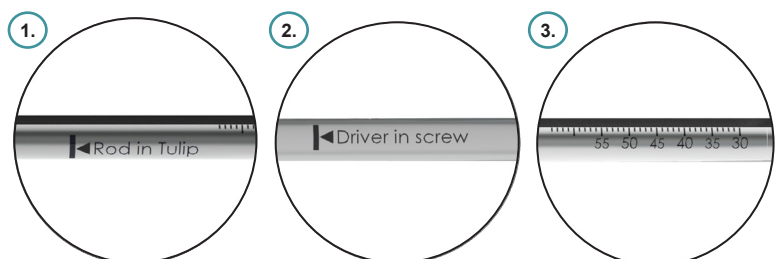


Screwdriver Pedicle Screw | A06 006

One instrument, three functions



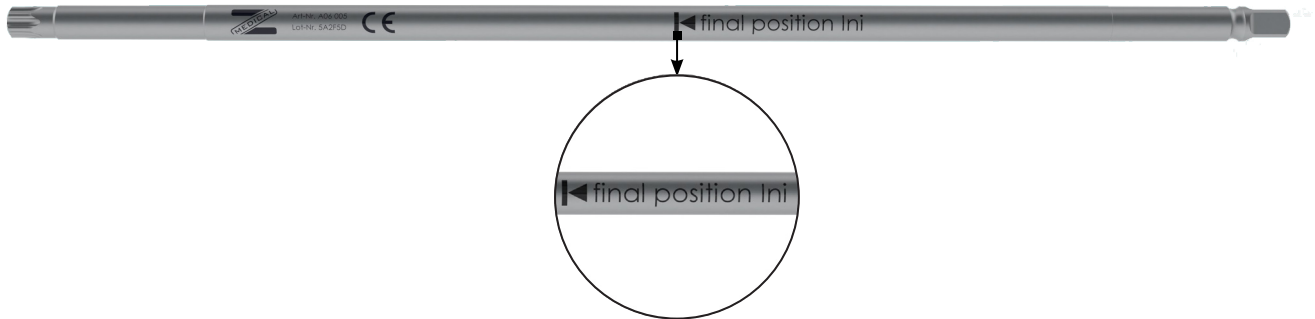
1. Control Rod in Tulip
2. Control Driver in screw (head)
3. Determination of screw length



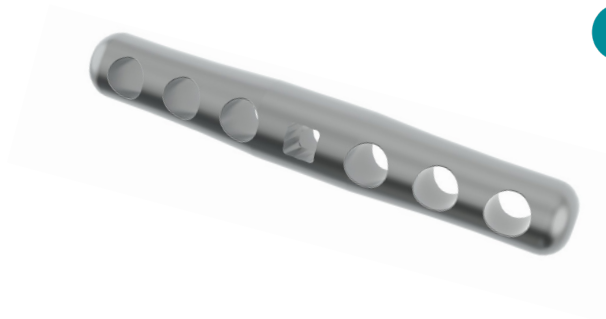
III. INSTRUMENTS

Screwdriver Ini | A06 005

With marking for final position Ini



Z-Handle | C07 909



Assembly Note:
Insert the coupling of the instrument as far as it will go into the **middle, round** opening of the handle!



T-Handle with Ratchet | A06 374

Left, right, neutral position, cannulated

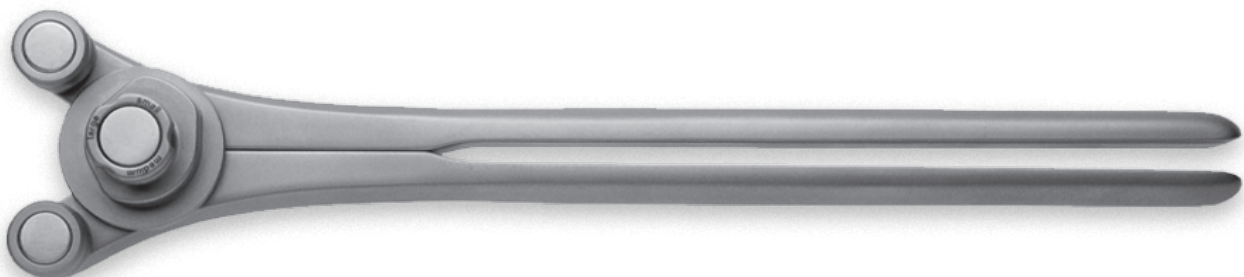


T-Handle with Torque Limiter | A06 007

With fixed torque 10Nm



Rod Bender | A06 381

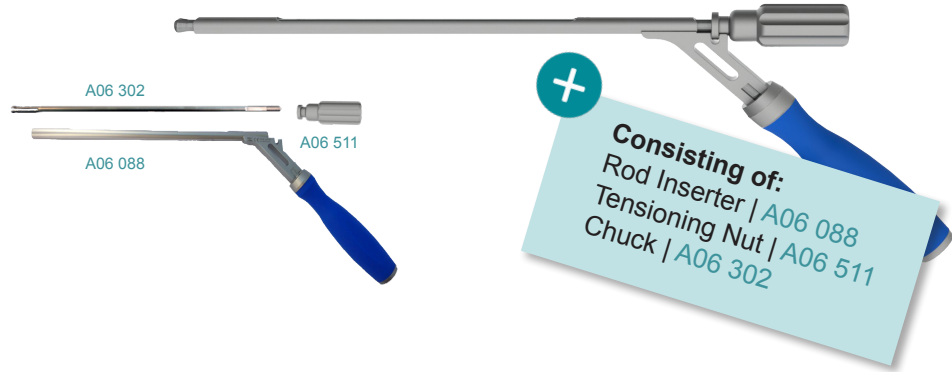


III. INSTRUMENTS

Rod Inserter Set | A06 300



Controlled rod insertion. When the Inis are inserted the rod maintain in position. Easy rod disconnection.



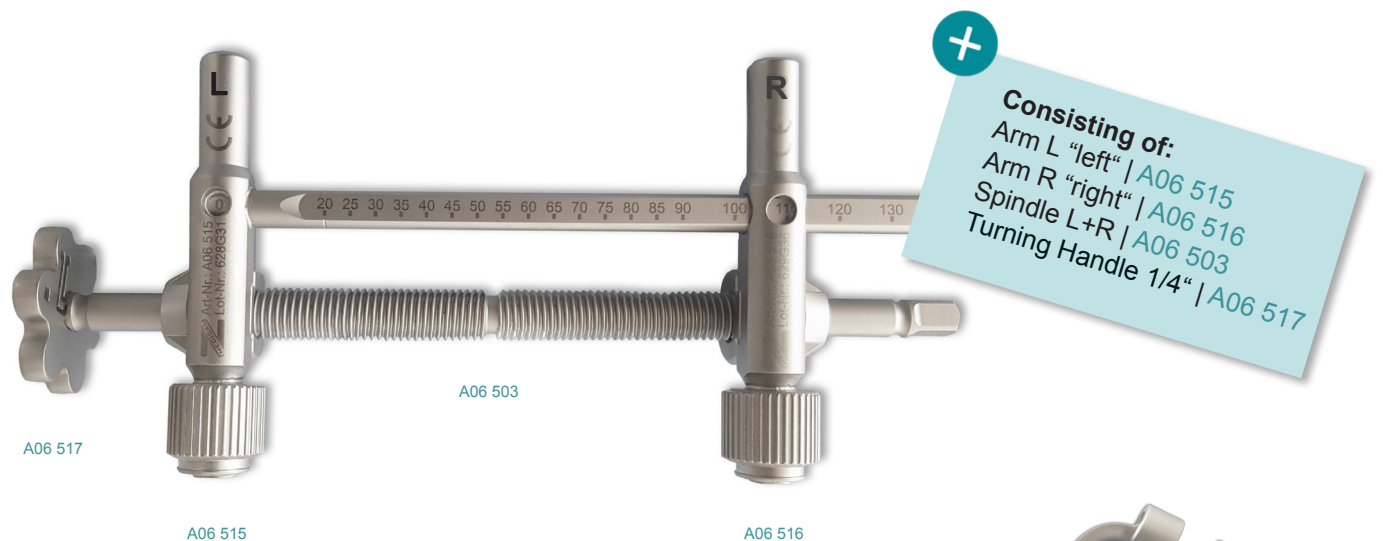
Counter Support | A06 373

One instrument, four functions

1. Connection Lengthening Shaft
2. Connection 1/4" (Screwdriver)
3. Removing Z-Guide Wire
4. Connection Awl Inner Part



Distraction- and Compression Instrument (Dico) | A06 600



Adapter short | A06 512



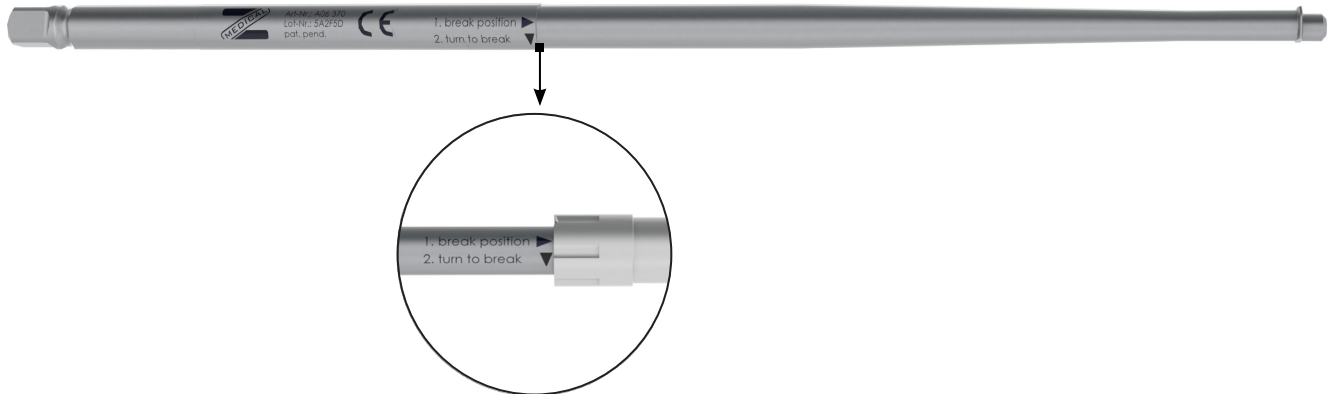
Adapter long | A06 513



III. INSTRUMENTS

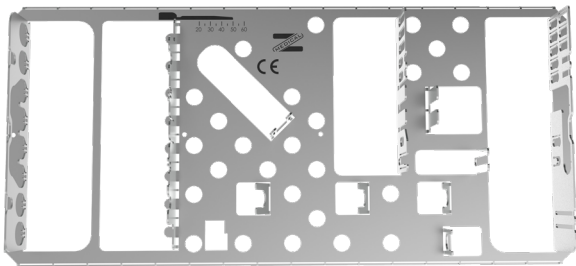
Tulip Breaker | A06 370

With marking for correct break position



3. Storage

Rack | A06 508



Perforated Container Set | A06 488



Consisting of:

Perforated Container Bottom | A06 488_01
Perforated Container Lid | A06 488_02

Sterilisation Container Set | A06 490

Non-Perforated Bottom / Perforated Lid



Consisting of:

Sterilisation Container Non-Perforated Bottom | A06 490_01
Sterilisation Container Perforated Lid | A06 490_02

III. INSTRUMENTS

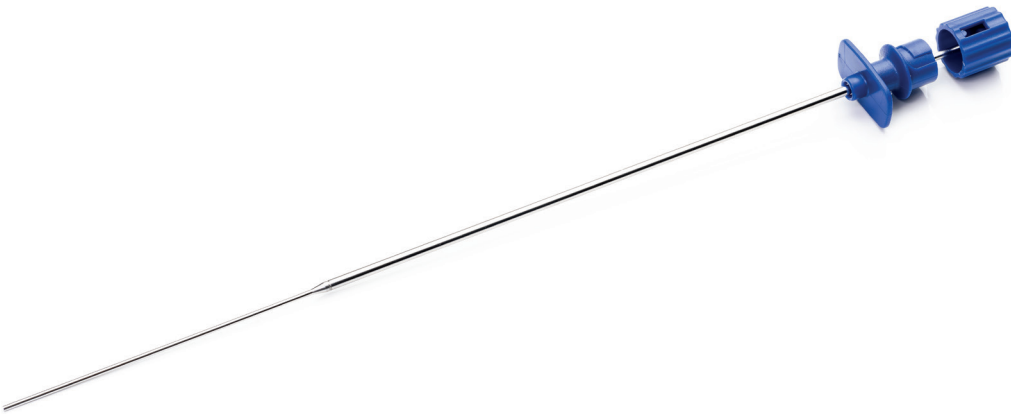
4. Instruments Optional

First Access Needle | [900140](#)



Bone Cement Filler Cannula for Screw Cementation | [900146](#)

Filling volume: 1.00 ml; Dead volume: 0.15ml



Reamer | [A06 524](#)



III. INSTRUMENTS

5. Instruments Extension / Revision

Screwdriver Revision | [A06 310](#)



Revision Instrument Inner Part | [A06 384](#)



Tulip Adapter | [A06 306](#)



Clamping Tube | [A06 389](#)



Chuck Rod | [A06 385](#)



IV. SURGICAL TECHNIQUE

1. Preparation for surgery

Place the patient in prone position on a radiolucent table.

To get an optimal visualisation of the spine in all views please ensure that there is enough space around the surgery table available for positioning of imaging systems. A precise imaging visualisation of the anatomic reference points as well as the pedicles is a mandatory requirement for the use of our system.

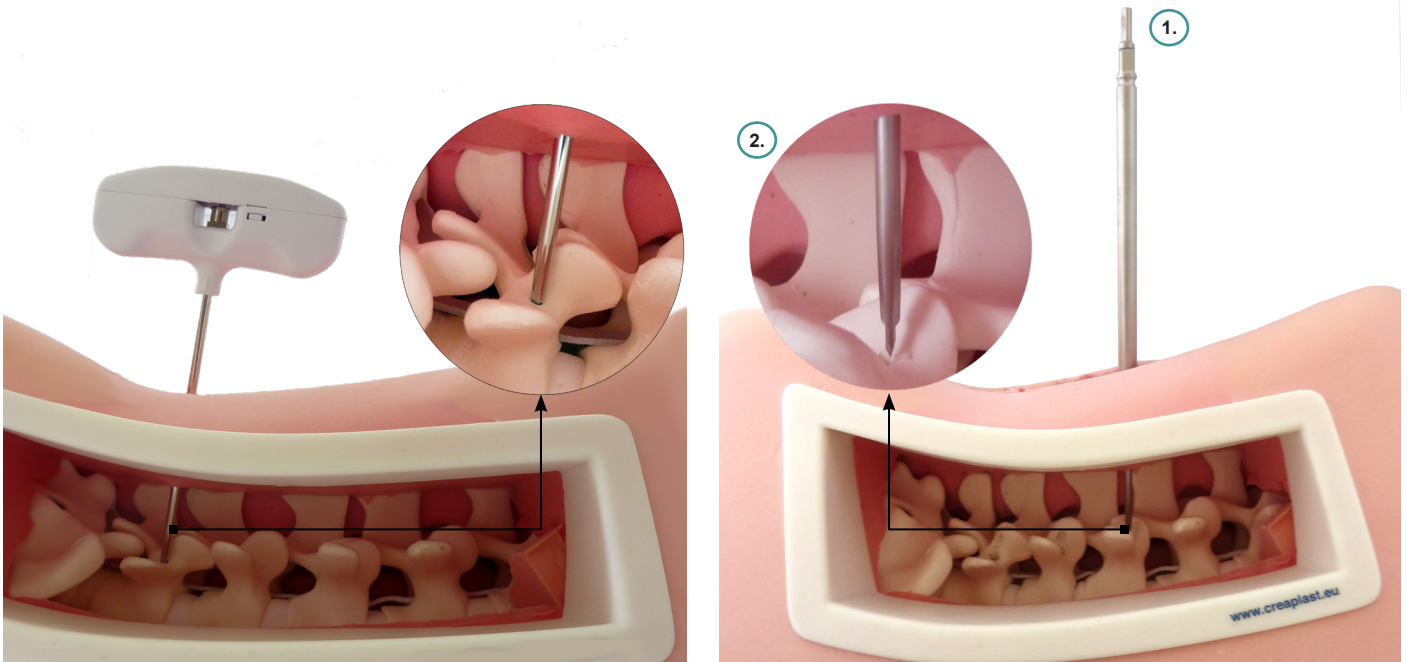
Locate the pedicles with imaging systems and determine the position for the skin incisions. Make a 10-15mm long skin incision with a scalpel and split the subcutaneous tissue down to the pedicle.

IV. SURGICAL TECHNIQUE

2. Instrumentation

Surgical Step 1 | Opening of Pedicle

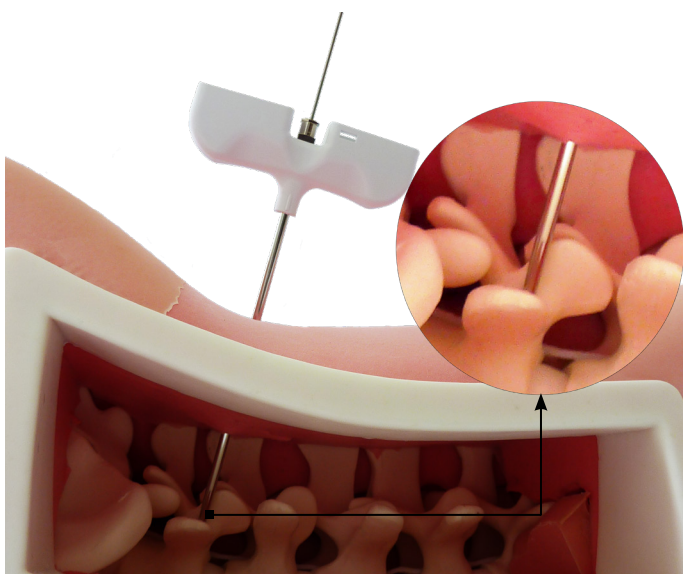
Open pedicle with First Access Needle or Awl Set, especially for special bone structures like sclerotic bones. For this purpose, the Awl Inner Part has to be assembled with the Awl by hand (1) and inserted into the pedicle using the common technique (2). Check position with imaging systems.



Surgical Step 2 | Insertion of Z-Guide Wire

Insert the Z-Guide Wire through either the First Access Needle or the Awl after removing the Awl Inner Part. Check final position (anterior cortical wall) with imaging systems.

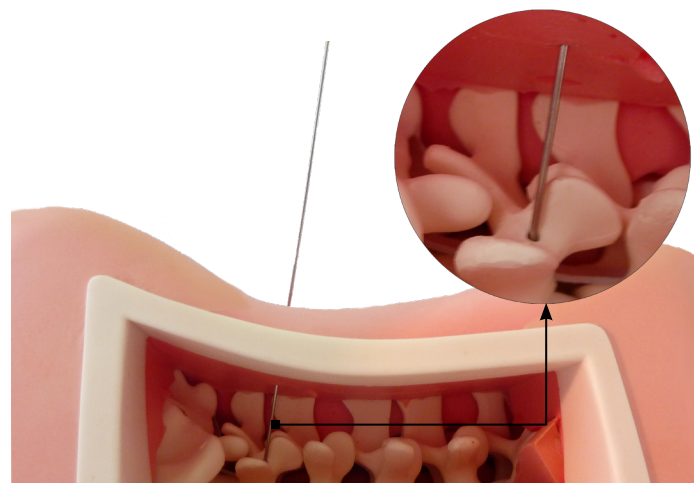
Note: Z-Guide Wire can be used on both sides.



Surgical Step 3 | Removing of First Access Needle

Remove the First Access Needle / Awl. The picture shows Z-Guide Wire in position. Check final position with imaging systems.

Note: Ensure, that the Z-Guide Wire is not slipping out before the Z-Pedicle Screw is placed. In order to prevent displacement the Z-Guide Wire can be removed when Z-Pedicle Screw has reached about halfway of the final depth.

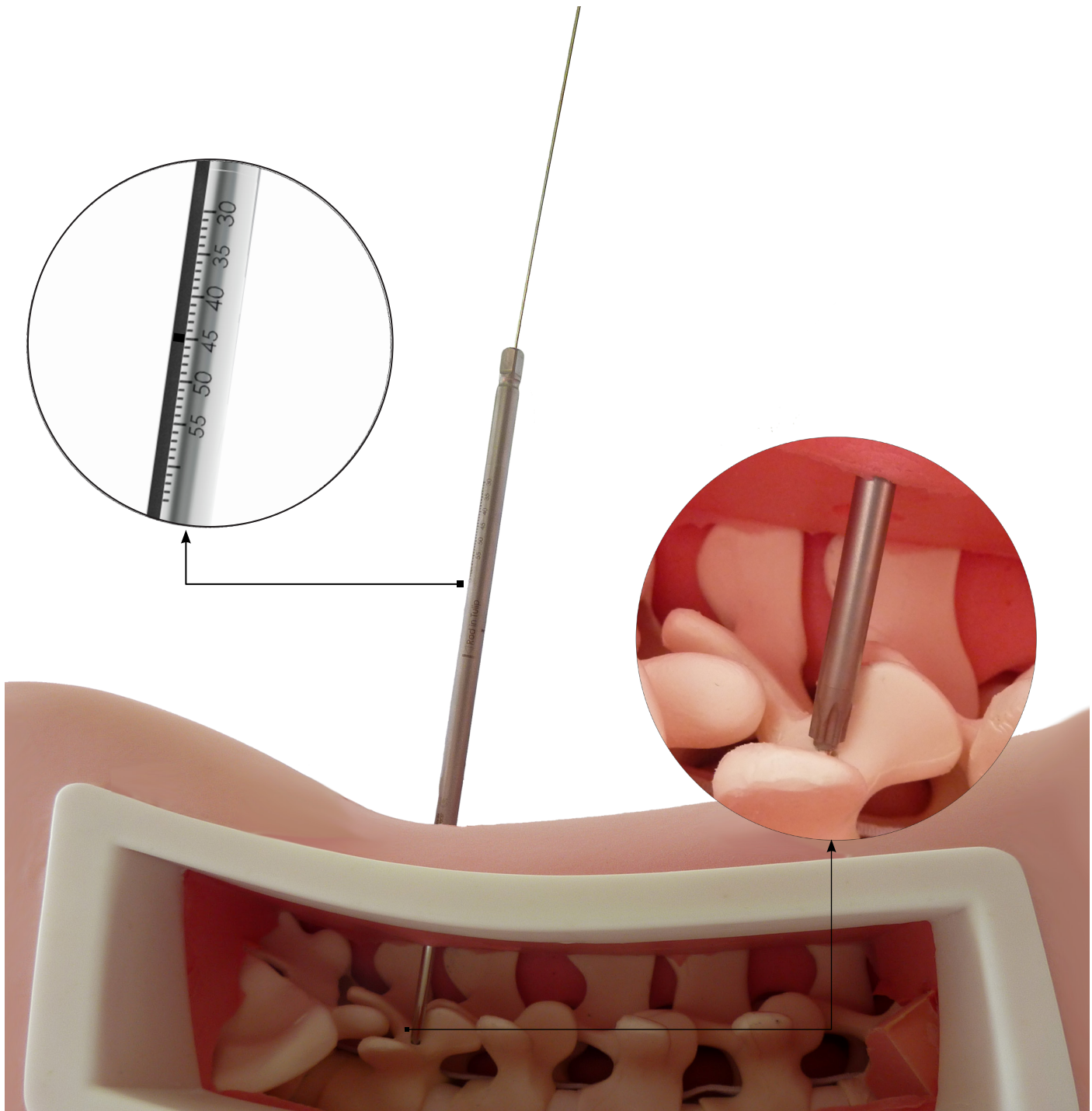


IV. SURGICAL TECHNIQUE

Surgical Step 4 | Determination of Screw Length

Determination of screw length with Screwdriver Pedicle Screw and Z-Guide Wire. The scale on the Screwdriver Pedicle Screw shows the length of the Z-Guide Wire inside the bone.

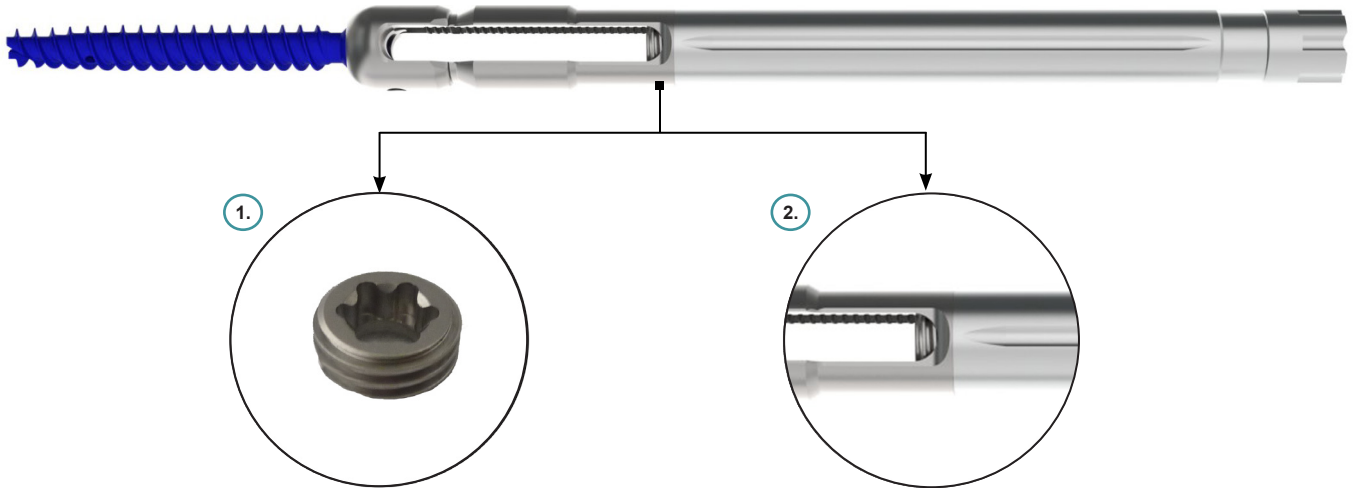
Note: The indicated screw length is an approximate value. The penetration depth of the Z-Guide Wire has to be checked by imaging systems. In addition, it is important that the Z-Guide Wire is in the end position (anterior cortical wall), otherwise deviations in the screw length measurement may occur. For the use of the Reamer see page 24, Optional: **Surgical Step | Reamer.**



IV. SURGICAL TECHNIQUE

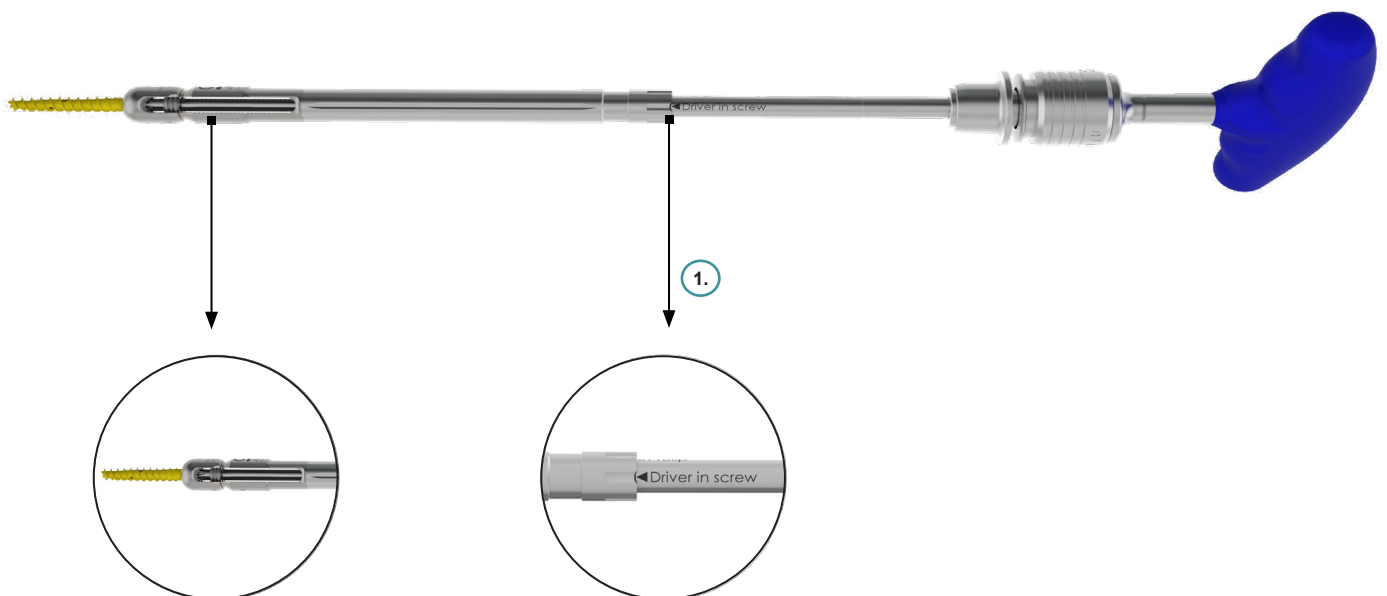
Surgical Step 5 | Removal of the implant

Remove the Z-Pedicle Screw from the sterile packaging. Ensure that the Ini **1.** (Ini = Set Screw), is placed in the shown position **2.**



Surgical Step 6 | Insertion of Screwdriver Pedicle Screw

Screwdriver Pedicle Screw is properly inserted, if the marking on the Screwdriver Pedicle Screw („Driver in screw“) **1.** is visible at the end of the lengthening shaft.

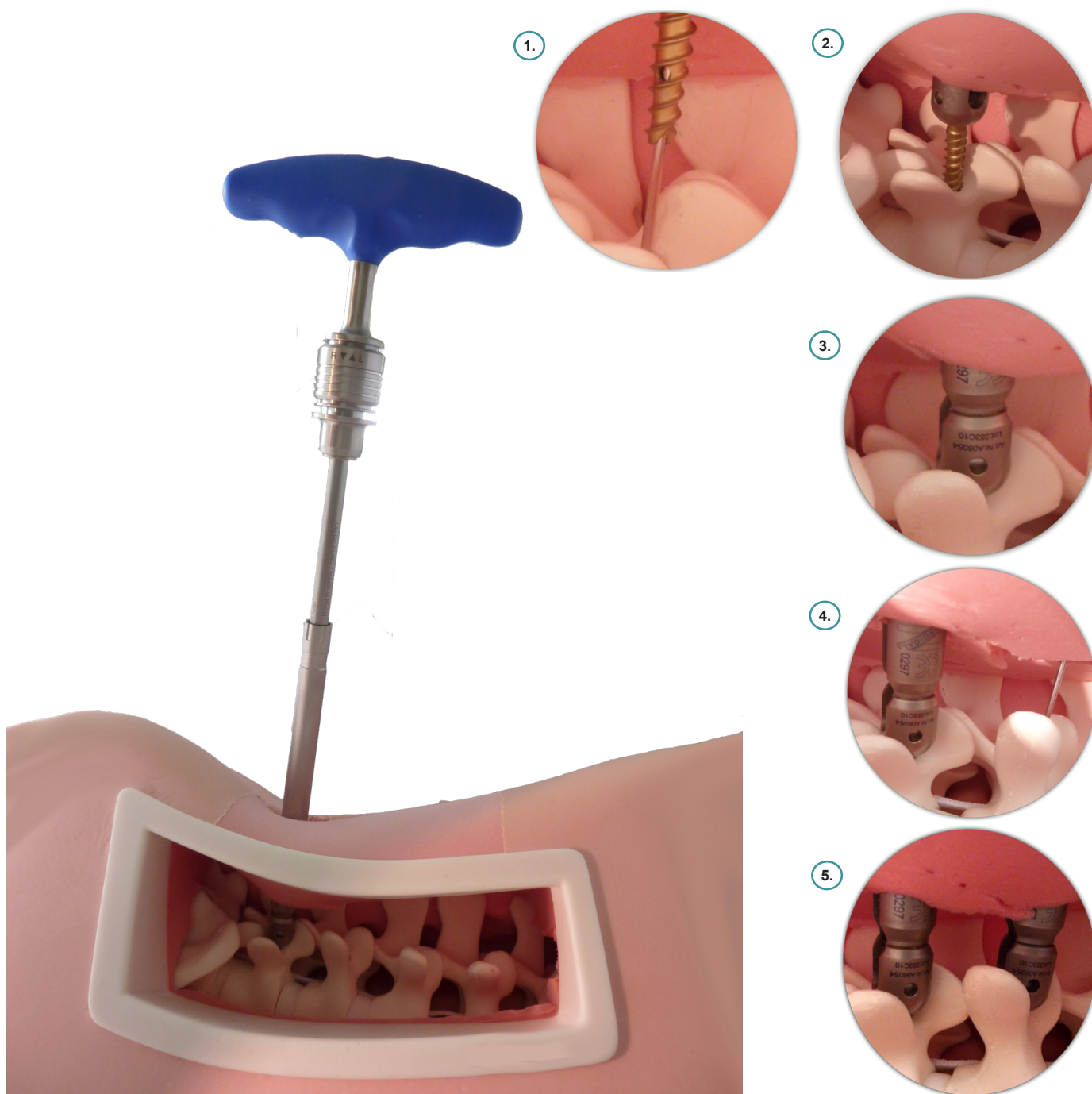


IV. SURGICAL TECHNIQUE

Surgical Step 7 | Insertion of Z-Pedicle Screw

Insert Z-Pedicle Screw with the Screwdriver Pedicle Screw. Removal of Z-Guide Wire when Z-Pedicle Screw has reached about halfway of the final depth. Place more Z-Pedicle Screws as described in steps 1.-7. Check position with imaging systems.

Note: The Screwdriver Pedicle Screw is slightly self-holding in the screw head. Make sure that the Z-Pedicle Screw doesn't come loose from the Screwdriver Pedicle Screw while handing over to the surgeon. For extension, stuck screw or no access to drive of screw, use the Screwdriver Revision to turn the Z-Pedicle Screw into desired position (see page 28, Optional: **Surgical Step | Extension**). For special bone conditions like sclerotic bones, the Thread Drill have to be used.

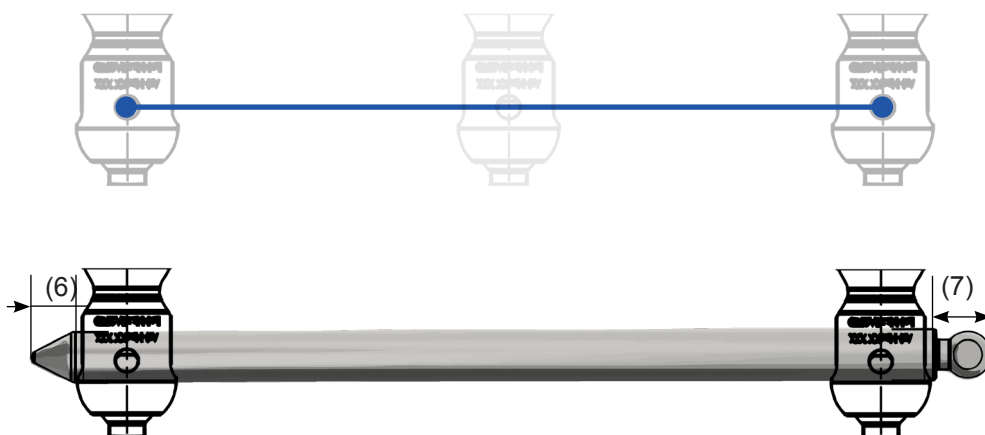
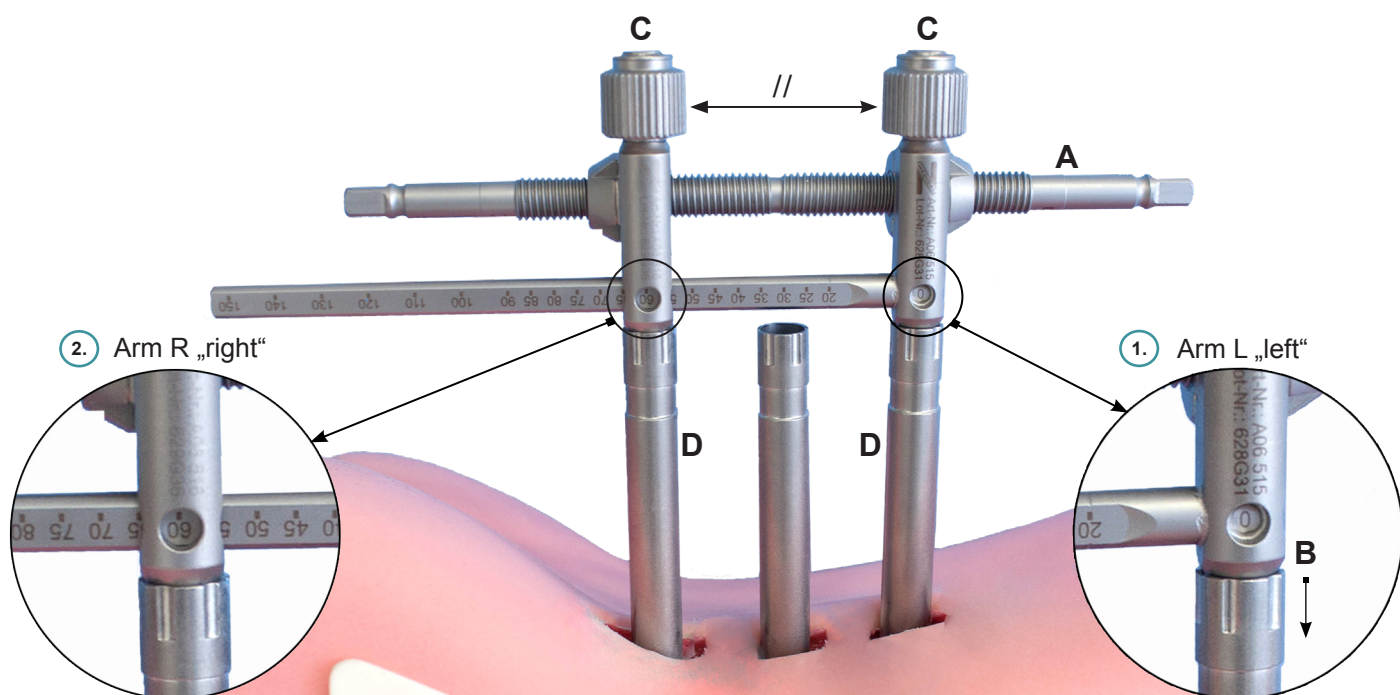


IV. SURGICAL TECHNIQUE

Surgical Step 8 | Determination of Z-Rod Length

Determination of the Z-Rod length with the Distraction- and Compression Instrument (Dico). Ensure that both lengthening shafts are parallel to each other. The measurement takes place from middle to middle of each Z-Pedicle Screw. The measured length is according to the information on the packaging label. Turn the Spindle L+R **A** with the Turning Handle $1/4''$ until you can insert the pins **B** of the Arms **C** into the lengthening shafts **D**. The Arm L „left“ of the Dico **1.** indicates position „0“. The measured Z-Rod length can now be read off the Arm R „right“ of the Dico **2.**

Note: For distraction or compression over the Z-Rod the distance of the distraction have to be taken into account for the determination of the rod length.



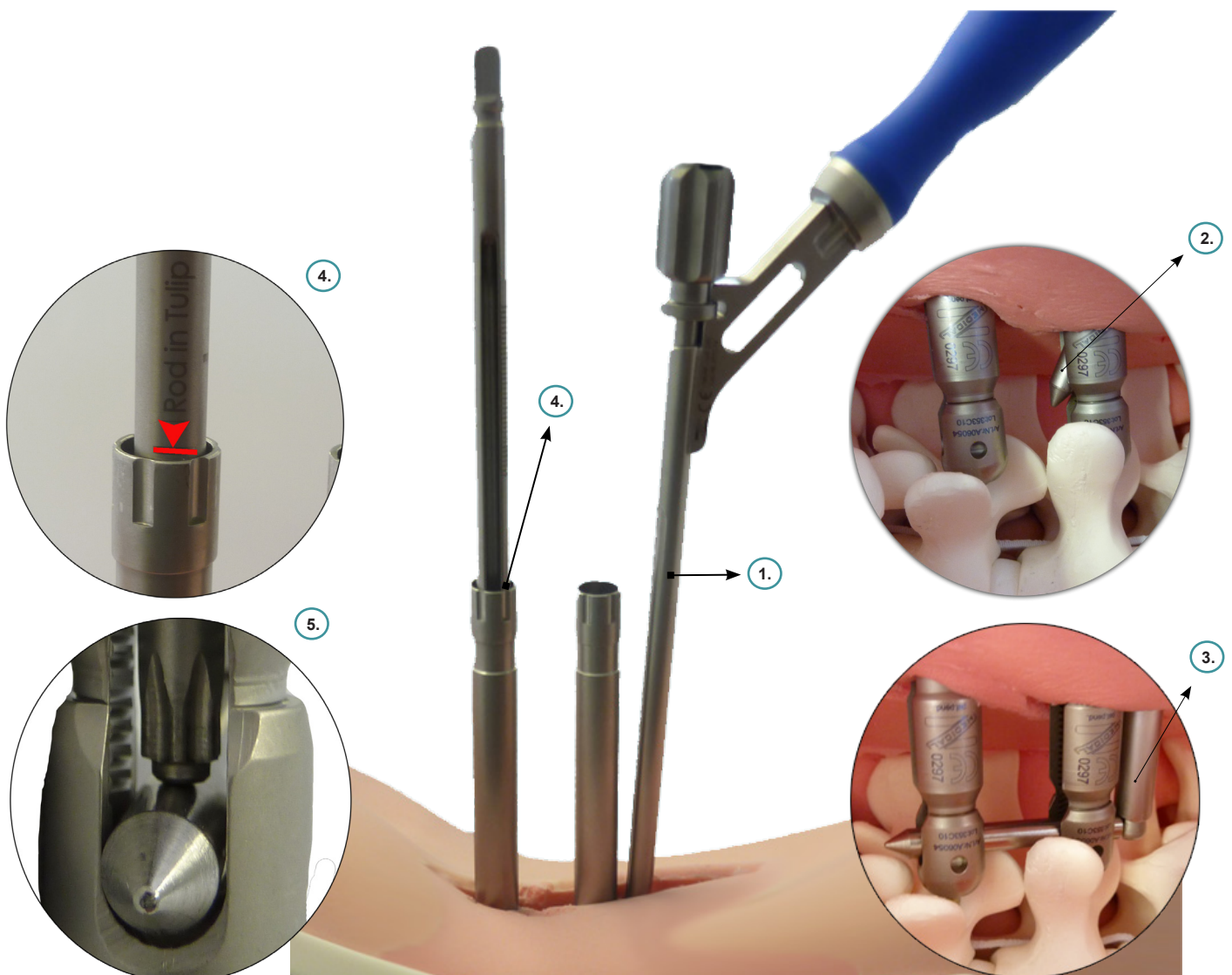
Note: actual length = measured length + 25 mm

IV. SURGICAL TECHNIQUE

Surgical Step 10 | Insertion of Z-Rod into Final Position

Insert the Rod Inserter percutaneously (1). Avoid pinching of tissue (2). The Z-Rod have to be below the fascia and positioned as deep as possible in the tulip (3). Insert the Screwdriver Ini and persuade down the Ini in order to reach the final position of the Z-Rod.

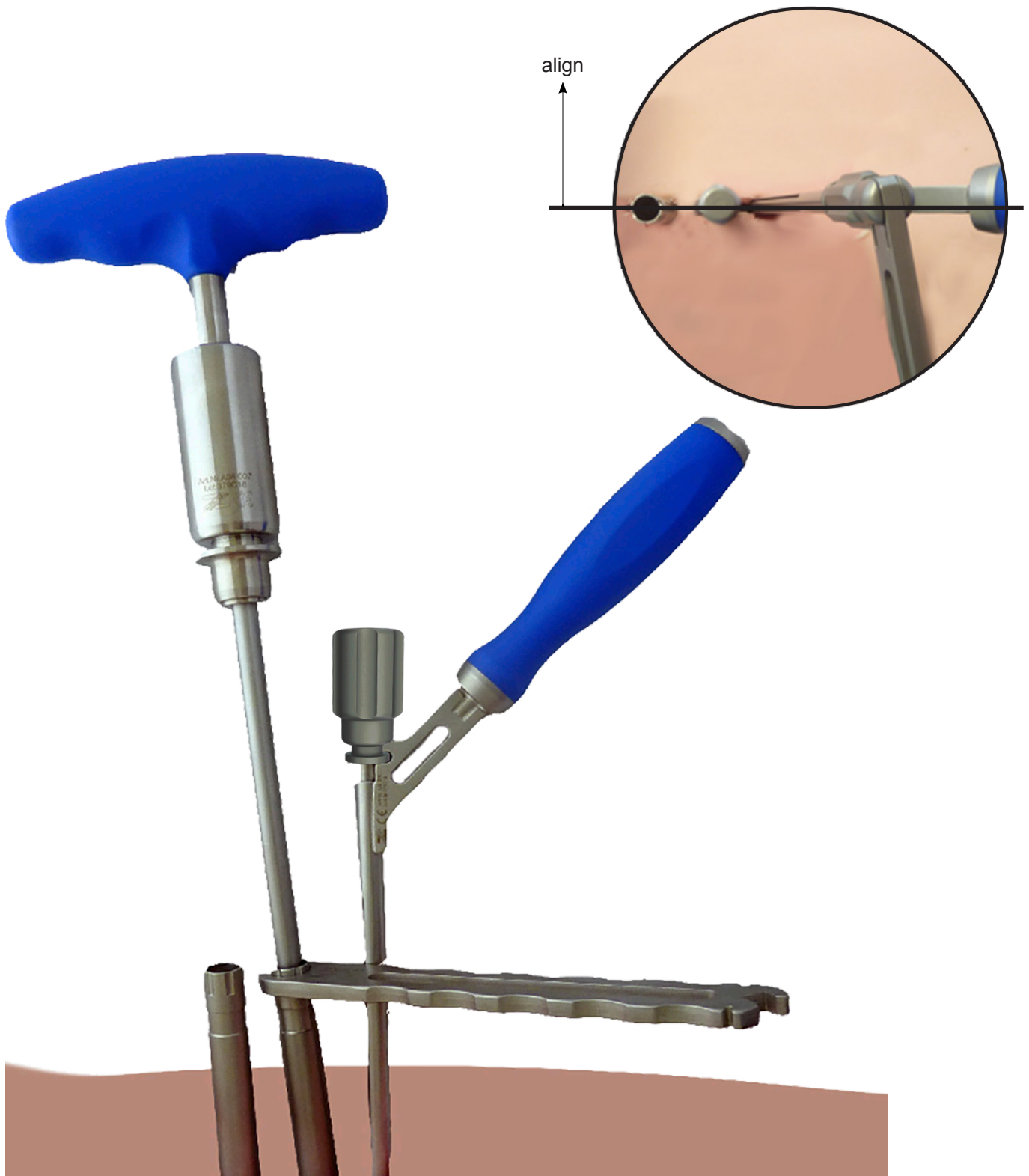
Note: The Z-Rod is in final position (5), if the marking of the Screwdriver Pedicle Screw „Rod in Tulip“ (4) is visible. Check position with imaging systems.



IV. SURGICAL TECHNIQUE

Surgical Step 11 | Tightening of Ini

Align the Rod Inserter and the Z-Pedicle Screws in the desired plane. In order to fasten the Inis use the T-Handle with Torque Limiter and Counter Support. The torque (10Nm) is obtained if a click occurs. Repeat this process until all Inis are fastened with torque.

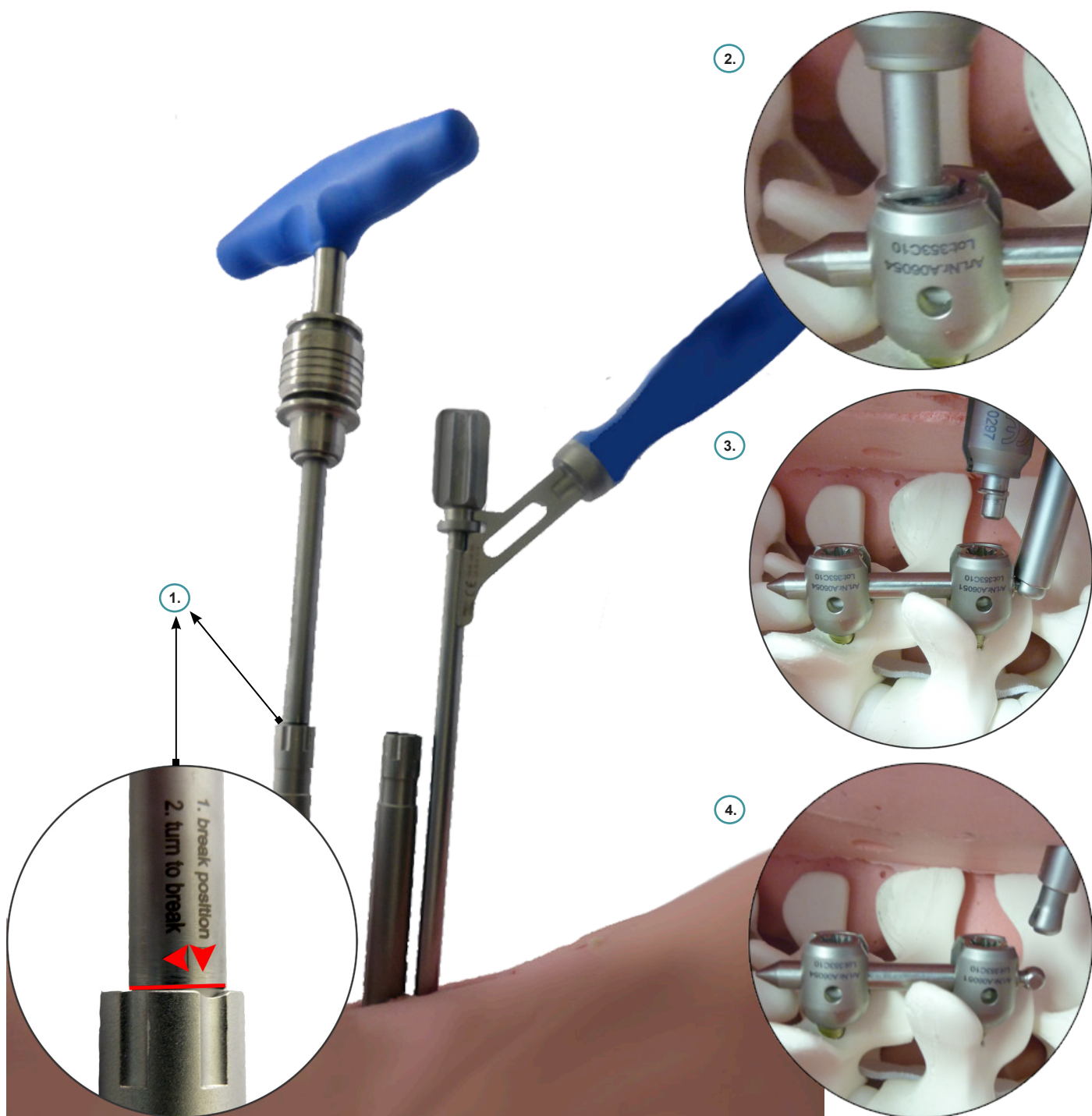


IV. SURGICAL TECHNIQUE

Surgical Step 12 | Breaking off the Tulips

Before breaking off the tulips the Inis must be fastened with torque. Check final position of all implants with imaging systems. Check the correct position of the Tulip Breaker by using the marking „break position“ (1.), before breaking off the tulips. In order to break off the lengthening shafts, the Tulip Breaker has to be turned at least one entire turn clockwise (2.).

Remove the broken shaft and the Tulip Breaker (3.) (repeat this for all tulips / screws). Remove afterwards the Rod Inserter (4.) by loosen the tightening nut with a maximum of approximately five turns, followed by little tension and lateral tilt of the Rod Inserter. Ensure that all parts have been removed from the body.



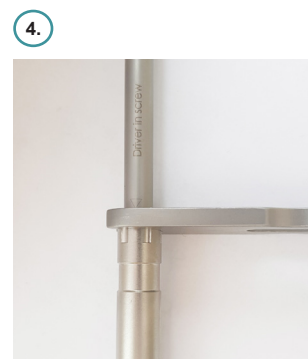
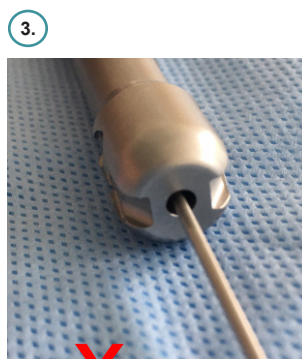
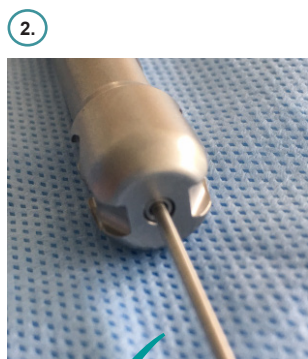
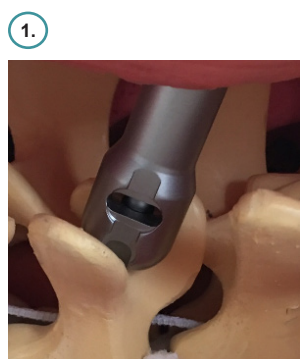
IV. SURGICAL TECHNIQUE

3. Optional

Surgical Step | Reamer

According to the bone structures space for the tulip can be created with the Reamer beforehand (1.). While doing so the Screwdriver Pedicle Screw is inserted into the Reamer and placed over the Z-Guide Wire until the Reamer reaches the entry point (pedicle). The Reamer is at its distal end "side cutting". With two cutting edges on both sides it can be turned by means of the Counter Support clockwise respectively counter clockwise 1/8 turn. An excessive weakening of the load-bearing structure must be avoided.

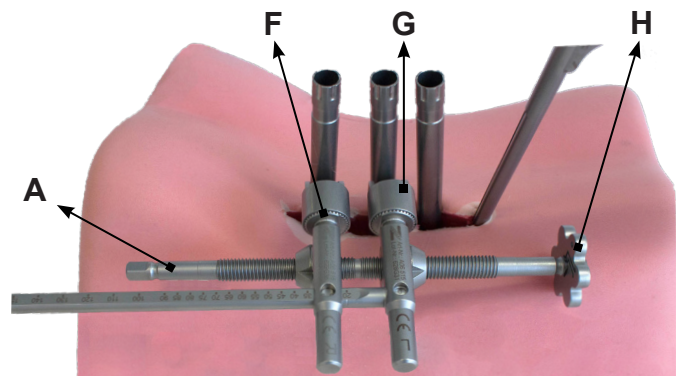
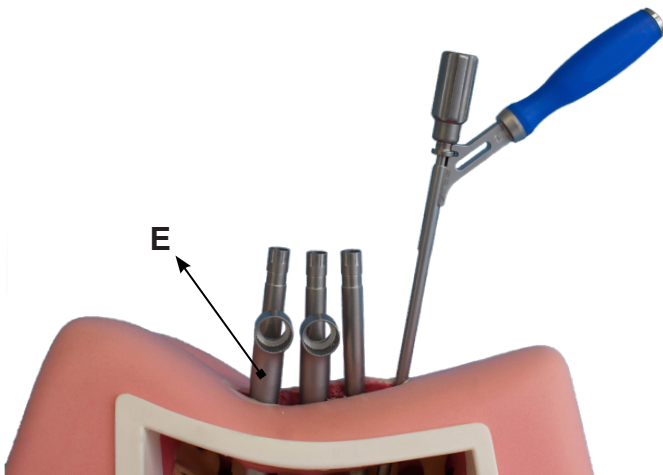
Note: To determine the screw length the Reamer can stay in place. Ensure that the Screwdriver Pedicle Screw is correctly placed inside the distal end of reamer (2.+3.). The marking „Driver in screw“ (4.) indicates the correct positioning of the Screwdriver Pedicle Screw inside the Reamer. Please refer to page 16, **Surgical Step 4 | Determination of Screw Length.**



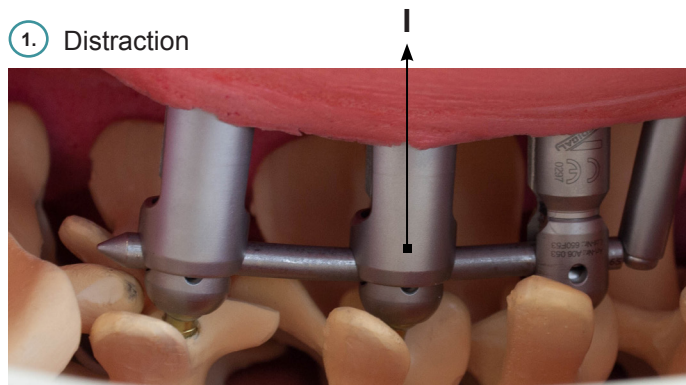
IV. SURGICAL TECHNIQUE

Surgical Step | Distraction / Compression

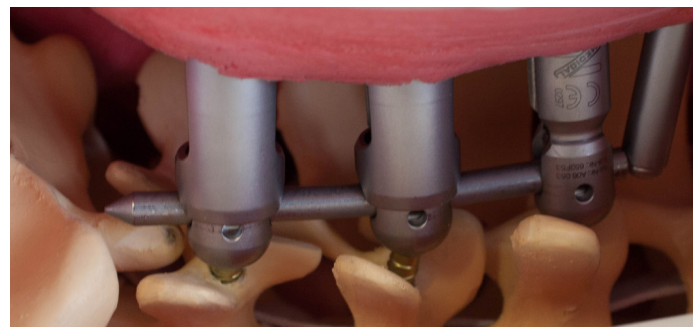
The Z-Rod has to be in final position. For distraction (1.) or compression (2.) one of the Inis has to be tightened to the Z-Rod (as described in **Surgical Step 11 | Tightening of Ini**), while the others are still untightened (maximum 1/8 turn less from final position). When using Z-Pedicle Screws a parallel distraction respectively compression along the Z-Rod can be obtained with the Distraction- and Compression Instrument (Dico).



1. Distraction



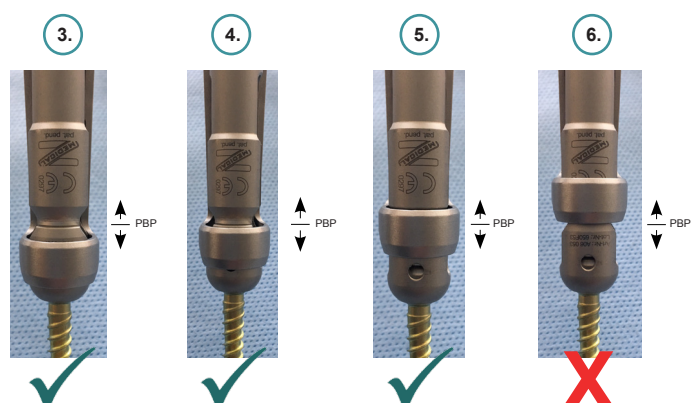
2. Compression



The instrument can be used in both open and minimally invasive procedures. For the latter, place the Adapters **E** over the lengthening shafts of two Z-Pedicle Screws until they are direct upon the Z-Rod (1.)+(2.). Place the Knurl **F** of the Dico into the Sockets **G** of the two Adapters. In order to receive the required distraction or compression turn the Spindle **A** by the use of the Turning Handle 1/4" **H**.

For distraction without the Z-Rod in place e.g. during a discectomy and / or when inserting a cage, the Adapter rings **I** have to be inserted over the tulip as deep as possible.

Attention: Ensure that the lower edge of the Adapter's ring **I** is not placed above the predetermined breaking point (PBP) (6.).

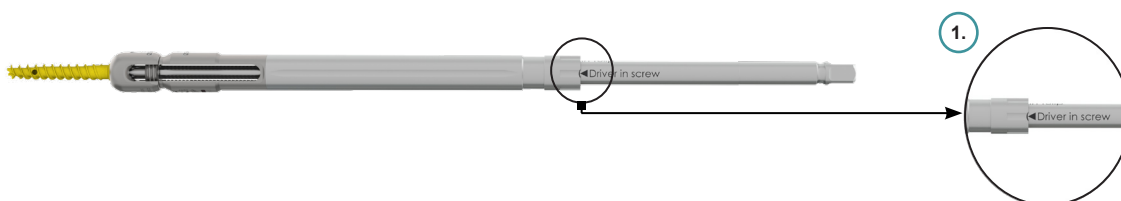


IV. SURGICAL TECHNIQUE

Surgical Step | Cement-Augmentation

If necessary a controlled cementation with the Bone Cement Filler Cannula for Screw Cementation through the Screwdriver Pedicle Screw is possible. A specific for percutaneous vertebral column augmentation procedures developed, high-viscosity, X-ray positive bone cement have to be used, for example V-Steady™ Radiopaque Bone Cement of the cement manufacturer G21 srl. Preparation, handling and application of bone cement must be performed only by qualified healthcare professionals, specifically trained to the procedure and under the direct supervision of the physician responsible for the procedure.

For each Z-Pedicle Screw one Screwdriver Pedicle Screw and one Bone Cement Filler Cannula for Screw Cementation must be used. Before cementation, it is necessary to check the position of the Screwdriver Pedicle Screw inside the Z-Pedicle Screw with the marking "Driver in screw" ①.



Before using the cement the surgeon should become familiar with its properties, handling, application during vertebral augmentation procedures and with the handling of other devices which come in contact with the bone cement or are going to be used during vertebral augmentation. Follow strictly the cement manufacturer's instruction for use.

Note:

The characteristics of the bone cement and the processing times of the individual operating phases are depending on the ambient temperature, the humidity and the mixing technique.

Preparation and application of the bone cement is performed through four subsequent phases:

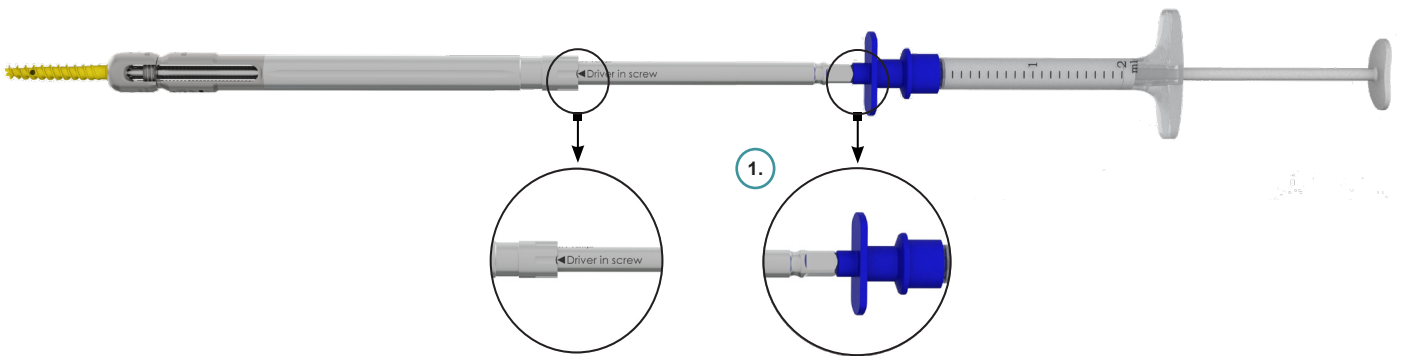
- I. Mixing
- II. Waiting and pull into suitable injection systems
- III. Application
- IV. Setting

- The duration of phase II to IV is reliant on ambient temperature and humidity. Higher temperature accelerates hardening, while lower temperature slows is down / delays hardening.
- Compound the powder and the fluid. Wait until the cement has the appropriate viscosity. Follow strictly the cement manufacturer's instruction for use.
- The cement needs to be aspirated into a syringe (maximum of 2ml syringe with luer / luer lock) approved for vertebral augmentation treatments immediately after mixing phase, because in this phase the viscosity is low and the fluid can be easily transferred into the syringe.
- Ensure that Bone Cement Filler Cannula for Screw Cementation is clear of cement at the luer / luer lock connection.
- Pre-fill the Bone Cement Filler Cannula for Screw Cementation outside of the Screwdriver Pedicle Screw. Filling volume: 1,0ml.
- Follow the instructions of the injection systems manufacturer (syringe + Bone Cement Filler Cannula for Screw Cementation).



IV. SURGICAL TECHNIQUE

- Wait until the cement is pasty before the start of the application.
- Already leaked cement has to be removed / wiped before inserting the Screwdriver Pedicle Screw.
- Ensure while inserting the Bone Cement Filler Cannula for Screw Cementation into the Screwdriver Pedicle Screw as well as the application of the cement that the Bone Cement Filler Cannula for Screw Cementation is flush with the end of the lengthening shaft (1).



According to the amount applied, use initially the syringe for insertion of the cement before pressing the cement out of the Bone Cement Filler Cannula with the plunger. Dead volume: 0,15ml.

It is mandatory to execute vertebral augmentation procedure under real time RX imaging guidance, to see the distribution of bone cement in the entire extension of vertebral body and enabling the operator to avoid leakage outside of vertebral body.

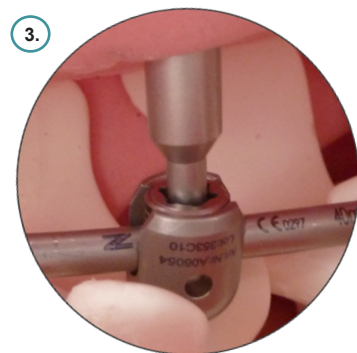
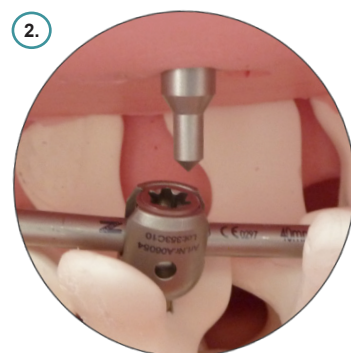


The Bone Cement Filler Cannula for Screw Cementation can be removed once the cement is set. Follow the manufacturer's instructions of the cement setting times. If the removal of the Bone Cement Filler Cannula for Screw Cementation occurs before the recommended setting times there is the risk of cement leaking in the screw head.

IV. SURGICAL TECHNIQUE

Surgical Step | Extension

Insert the Revision Instrument Inner Part with common techniques (1). Ensure that the tip of the instrument is properly inside the drive of the Ini (2.+3.). Thereafter the Tulip Adapter is placed over the Revision Instrument Inner Part (4). Under little pressure make sure that the Tulip Adapter engages with the tulip with a click. (5). Afterwards the Clamping Tube is placed over the Tulip Adapter (6.), so that the proximal end of the instrument is flush with the circumferential groove. Remove the Revisions Instrument Inner Part (7.). The Counter Support has to be placed over the Tulip Adapter. The Ini can be loosened and turned back with the Screwdriver Ini. The Z-Rod is free for replacement. Apply the Chuck or the Chuck Rod into the Rod Inserter (for assembly see page 20, **Surgical Step 9 | Insertion of Z-Rod**) and grab the Z-Rod for replacement (8.).

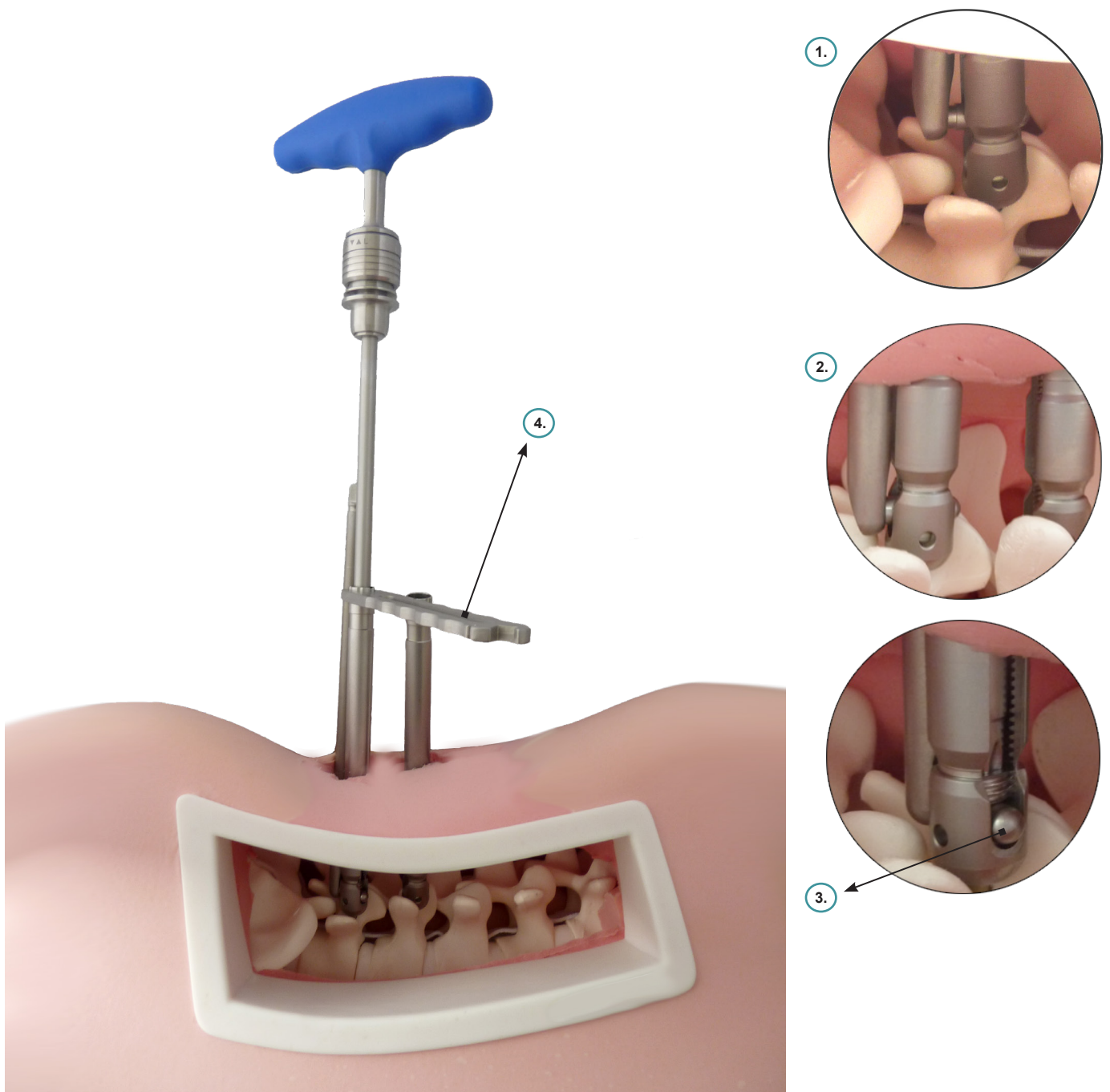




IV. SURGICAL TECHNIQUE

Surgical Step | Revision

Insert the Screwdriver Revision along the lengthening shaft (1.) + (2.) into the tulip. Turn the Ini with the Screwdriver Ini into the tulip and fasten the bolt (3.) with the Ini. Thereby use the Counter Support (4.). Remove the Screwdriver Ini. Place the T-Handle with Ratchet on the Screwdriver Revision and turn the Z-Pedicle Screw into the required position.





Further information can be found
on www.z-medical.de

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