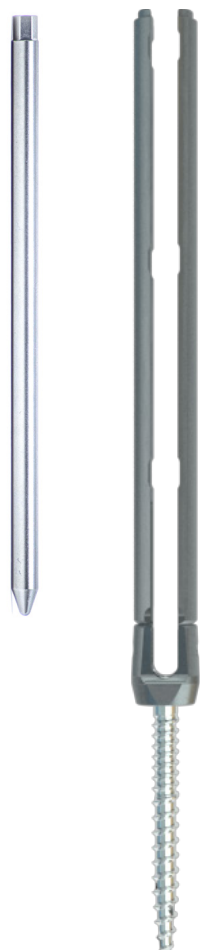


● CLOVER



misanno
MIS

CONCEPT & DESIGN



The Misano MIS system was designed with the goal of providing surgeons with a complete device for the treatment of various pathologies affecting the spine, whether degenerative, traumatic, or tumor, and for the treatment of deformities.

The self-threading screws can be inserted without tapping and feature double threads for easy insertion and improved pedicle hold.

The screws are also fenestrated to allow cementing. The head of the screws features a long tulip with an internal thread that simplifies the insertion of the nut and consequently the seating in place of the rod.

Appropriately used, the Misano MIS thoracolumbar-sacral stabilization system from Clover Orthopedics is indicated to promote the development of solid thoracic, lumbar and sacral arthrodesis. It is recommended in cases of spinal deformity, degenerative disc disease, traumatic vertebral fractures, vertebral tumors, spinal stenosis, spondylolisthesis, pseudoarthrosis, and previous unsuccessful attempts at vertebral arthrodesis. Any surgical decisions other than those recommended by the manufacturer are at the discretion and responsibility of the surgeon.

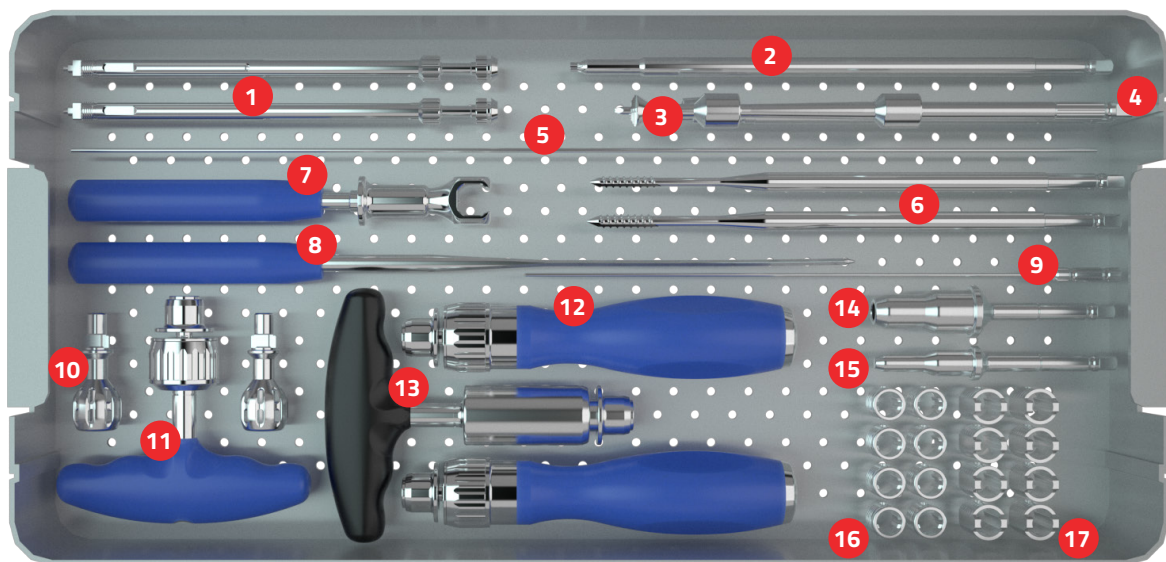
Do not use 4.5 mm diameter screws in the lumbar and lumbosacral spine, and do not couple 4.5 mm diameter screws with CoCr rods.

INSTRUMENTS



Clover has invested heavily in instrument design and care with the goal of creating ergonomic, functional, and compact instrumentation. Designed for the surgeon and his team.

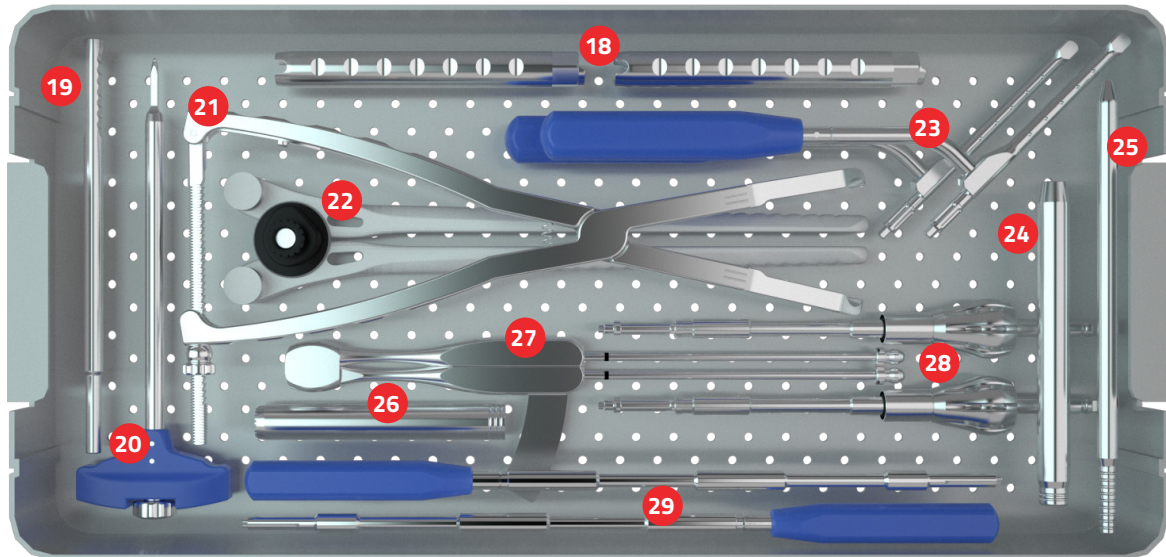
TRAY 1



1 CEMENT NEEDLE ADAPTER	MSN-K0SS00200S	8 TISSUE DISSECTOR	MSN-T0SS00000S
2 DUAL LEAD CAP SCREWDRIVER	MSN-I1SS28525S	9 PIPE CLEANER	MSN-J2SS00000S
3 REAMING AWL	MSN-A1SS03507S	10 TULIP ALIGNMENT	MSN-K0SS00055S
4 SCREW TAB REMOVER	MSN-Z2SS00002S	11 RATCHETING T HANDLE	MSN-H1SS00100S
5 GUIDE WIRE TROCAR	MSN-K0NT00500S	12 RATCHETING HANDLE	MSN-H0SS00100S
6 TAP 4.5MM	MSN-J0S 500045S	13 DINAMOMETRIC T HANDLE 9NM	MSN-H1SS00090S
TAP 5.5MM	MSN-J0SS00055S	14 PIVOT 2	MSN-Z1SS00002S
TAP 6.5MM	MSN-J0SS00065S	15 PIVOT 1	MSN-Z1SS00001S
TAP 7.5MM	MSN-J0SS00075S	16 SUPERIOR RING	MSN-K2SS00015S
7 COUNTER TORQUE HANDLE	MSN-H2SS00000S	17 SLIDING RING	MSN-K2SS00025S

INSTRUMENTS

TRAY 2



18 MIS GAUGE	MSN-K3SS001385	24 DILATOR N.2	MSN-L2SS14409S
19 MIS ROD PUSHER	MSN-P1SS000015	25 DILATOR N.1	MSN-L0SS20002S
20 MIS TROCAR	MSN-A1SS02922S	26 DILATOR N.3	MSN-L2SS11514S
21 MIS COMPRESSOR	MSN-N0SS00002S	27 MIS CALIPER	MSN-M1SS00000S
22 ROD BENDER	MSN-F0SS00000S	28 DUAL LEAD MIS SCREWDRIVER	MSN-I2SS24520S
23 MIS ROD HOLDER	MSN-D1SS00000	29 CAP HOLDER	MSN-I0SS30025S

INSTRUMENTS

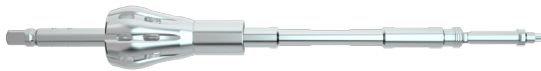
CEMENT NEEDLE ADAPTER MSN-K05S00200S



CAP SCREWDRIVER MSN-I15S28525S



DUAL LEAD MIS SCREWDRIVER MSN-I25S24520S



GUIDE WIRE TROCAR MSN-KONT00500S



COUNTER TORQUE HANDLE MSN-H25S00000S



TAP 4.5MM MSN-J05S00045S



TAP 5.5MM MSN-J05S00055S



TAP 6.5MM MSN-J05S00065S



TAP 7.5MM MSN-J05S00075S



TAP 8.5MM MSN-J05S00085S



INSTRUMENTS

RATCHETING HANDLE MSN-H05S001005



TULIP ALIGNMENT MSN-K05S000555



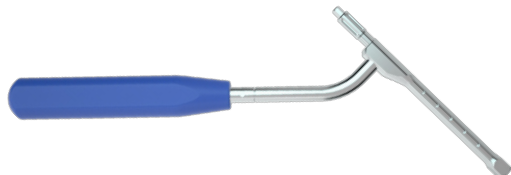
RATCHETING T HANDLE MSN-H15S001005



DINAMOMETRIC T HANDLE 9Nm MSN-H15S000905



MIS ROD HOLDER MSN-D15S00000



DILATOR N.1 MSN-L05S200025



DILATOR N.2 MSN-L25S144095



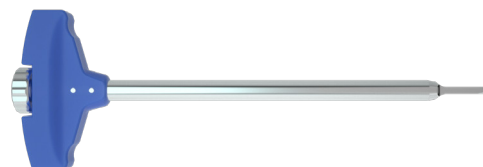
DILATOR N.3 MSN-L25S115145



MIS ROD PUSHER MSN-P15S000015



MIS TROCER MSN-A15S029225



INSTRUMENTS

CAP HOLDER

MSN-I2SS24520S



REAMING AWL

MSN-A1SS13507S



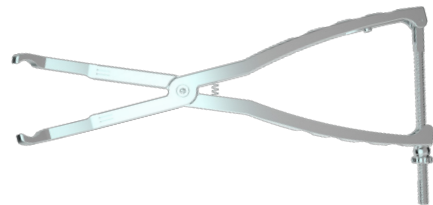
MIS CALIPER

MSN-M1SS00000S



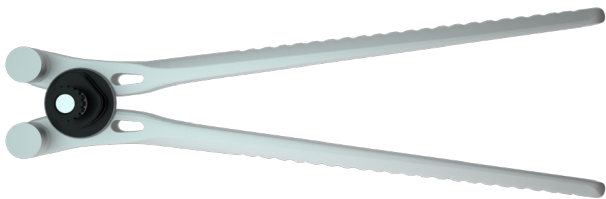
MIS COMPRESSOR

MSN-N0SS00002S



ROD BENDER

MSN-F0SS00000S



PIPE CLEANER

MSN-J2SS00000S



TISSUE DISSECTOR

MSN-T0SS00000S



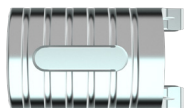
MIS GAUGE

MSN-K3SS00138S



SLIDING RING

MSN-K2SS00025S



SUPERIOR RING

MSN-K2SS00015S



INSTRUMENTS

PIVOT 1

MSN-Z15S000015



PIVOT 2

MSN-Z15S000025



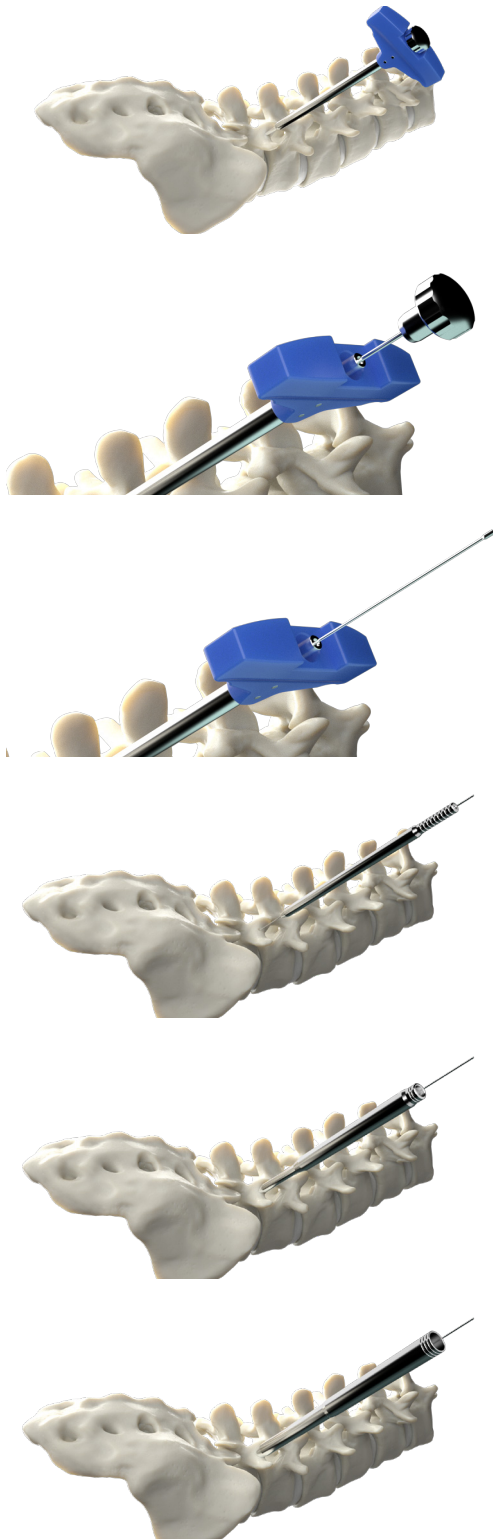
SCREW TAB REMOVER

MSN-Z25S000025



MIS SURGICAL TECHNIQUE

1 —



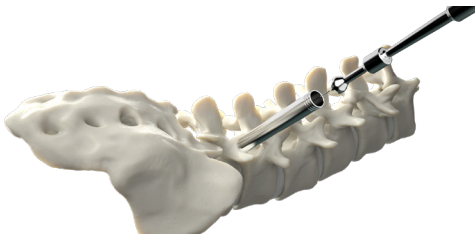
Preparation of the pedicle

After locating the access point, place the **trocar** and through radiographic control proceed inside the pedicle.

Once the appropriate depth is reached remove the core and handle, and insert the **guide wire** making sure it intercepts the vertebral body to ensure minimal anchorage to it.

Continue with the insertion of **dilator tube No. 1** and then **dilator tube No. 2** and **dilator tube No. 3**, which, thanks to the toothed termination allows anchorage to the articular process to prevent unintended translation or displacement during maneuvers.

MIS SURGICAL TECHNIQUE



Then remove **dilator tube No. 1**, checking that the guide wire remains in place, and should the operator wish to do so, prepare the screw housing with the **tapping tool**, which should be one size undersized in diameter from that of the screw you intend to place.

In case it is deemed appropriate, after removing **dilator tube No. 2** use the **reaming awl** to enable better positioning of the screw.

2 —



Screw assembly

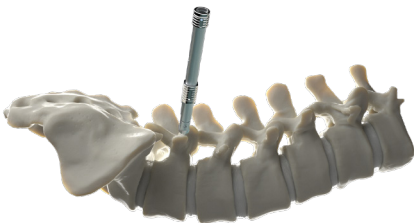
Next proceed to the assembly of the screw.

Hook the **MIS screwdriver** onto the **ratcheting handle**.

Next assemble the screw to the **screwdriver** by inserting it inside the tulip and turn the ferrule clockwise to make the final tightening.

MIS SURGICAL TECHNIQUE

3 —



Screw insertion

Proceed to insert the screw inside the stalk following the **guide wire** and tighten.

Then slide out the **screwdriver**, turning counterclockwise the ferrule previously used to tighten the screw, **guide wire** and **dilator tube No. 3**.

Insert the **sliding ring** along the tulip of the screw to prevent premature breakage of the screw, and if deemed appropriate, also insert the **superior ring** to prevent the screws from interfering with each other during subsequent operations.

Repeat the same operations for the insertion of subsequent screws.

4 —



Rod insertion

After positioning the screws, perform the measurement of the distance between them using appropriate **MIS caliper** in order to choose the appropriate bar.

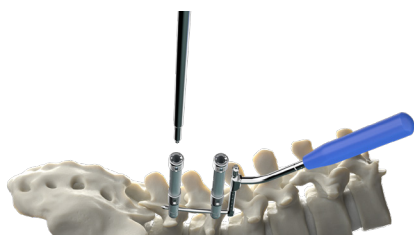
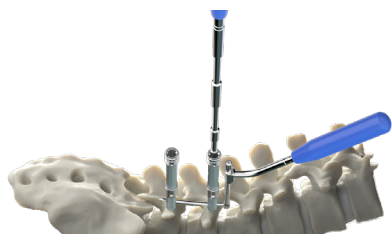
Please note that the gauge shows the actual measurement between the screw heads, so it is recommended to insert a bar with a length at least 5 mm longer than that shown on the **MIS caliper**.

Connect the bar to the **MIS rod holder** by inserting the hexagonal part of the bar into the appropriate hole on the gauge and secure it to the gauge by turning the locking crown clockwise.

Then insert the bar by passing inside the tulips previously aligned according to a hypothetical sagittal plane.

MIS SURGICAL TECHNIQUE

5 —



Inserting the tightening nut

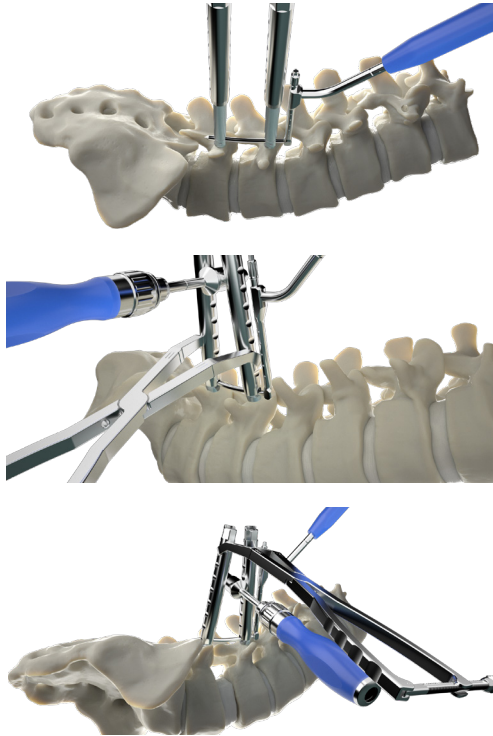
When you are certain that the rod has been properly seated in all the screws, insert the nuts with the appropriate **cap holder**.

Once the nuts are in place, attach the **ratcheting handle** to the **cap screwdriver** and tighten the locknuts until the rod is pushed into the tulips.

Once the rod is secured to the screws, pull the rings out of the tulips.

MIS SURGICAL TECHNIQUE

6 —



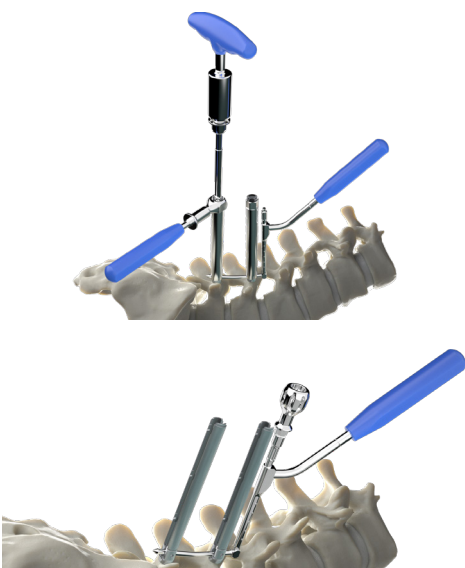
Compression and distraction

Cover the tulips with **MIS gauge** and use **pivot 1** or **pivot 2** as the fulcrum of action in the center of the cannulas-after securing them to a handle.

To perform a compression, use the **MIS compressor** and compress below the **pivot**.

To perform a distraction, use the **MIS compressor** and compress above the **pivot**.

7 —



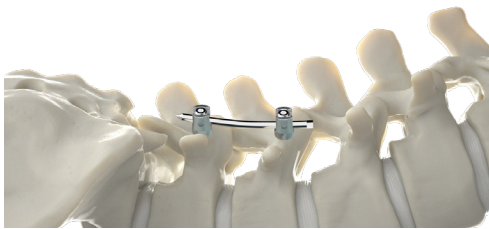
Final tightening

With the help of the **counter torque handle** connected to the **MIS gauge** make the final closure with the **9Nm dynamometric T-handle** assembled to the **cap screwdriver**.

Pull the **MIS gauge** out of the tulips and then unscrew the **rod holder** using the locking crown and then remove the gauge.

MIS SURGICAL TECHNIQUE

8 —



Tulip removal

Using the **screw tab removal** coupled with a **handle**, hook each individual tulip and then pry it loose from the screw cup.

—



Cementing

Connect the **cement needle adapter** by inserting its tip inside the screw, and then turn the guide ring clockwise to make the final tightening.

After checking that the two elements are firmly seated together, proceed to introduce the disposable bone filler to cement the screw.

Before injecting the cement, make sure that the bone filler has come to rest against the screw stem.



misano 

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