

● CLOVER



MISANO

## CONCEPT & DESIGN



**Misano** is the first thoracolumbar stabilisation system using a **single pedicle screw** for the treatment of degenerative, traumatic or deformative pathologies.

The **self-tapping screws** can be inserted without the aid of a tap and feature a **double thread** that allows easy insertion and improved pedicle hold.

The screws are also **cannulated** to allow insertion with the aid of a guide wire and fenestrated to allow cementing.

The **Misano** thoracolumbar-sacral stabilisation system from **Clover Orthopedics** consists of single- and polyaxial pedicle screws, clamping nuts, straight and pre-curved bars, laminar and pedicle hooks and cross-links and is used to promote a solid arthrodesis of the part of the spine being treated.

Properly used, the Misano thoracolumbar-sacral stabilisation system from Clover Orthopedics is indicated to promote the development of a solid thoracic, lumbar and sacral arthrodesis.

It is recommended in cases of spinal deformities, degenerative disc disease, traumatic vertebral fractures, vertebral tumours, 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.

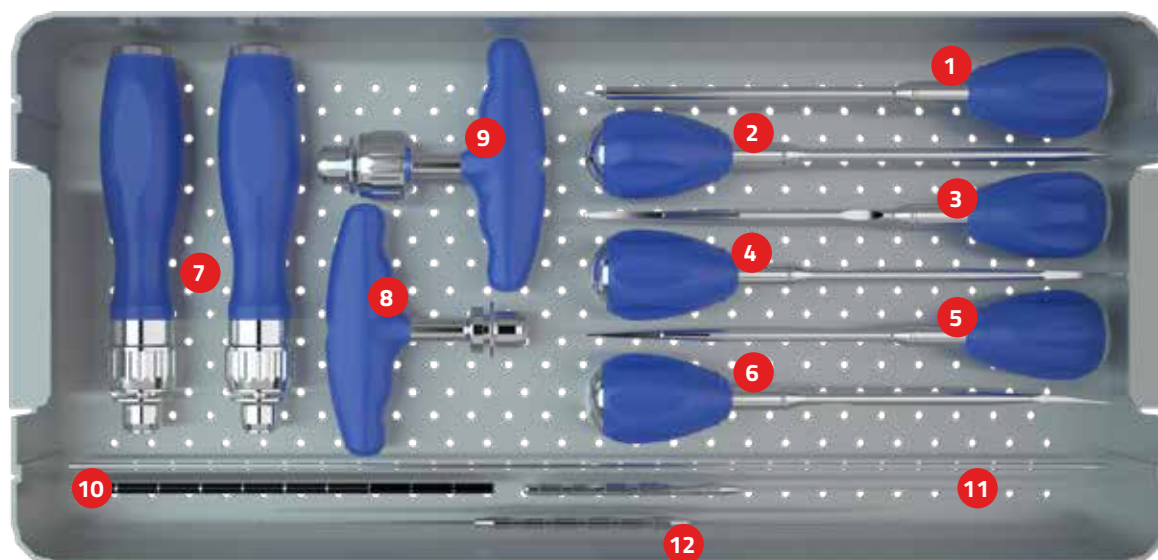
Do not use 4.5 mm diameter screws in the lumbar and lumbosacral spine and do not couple 4.5 mm diameter screws with CoCr rods.

**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.

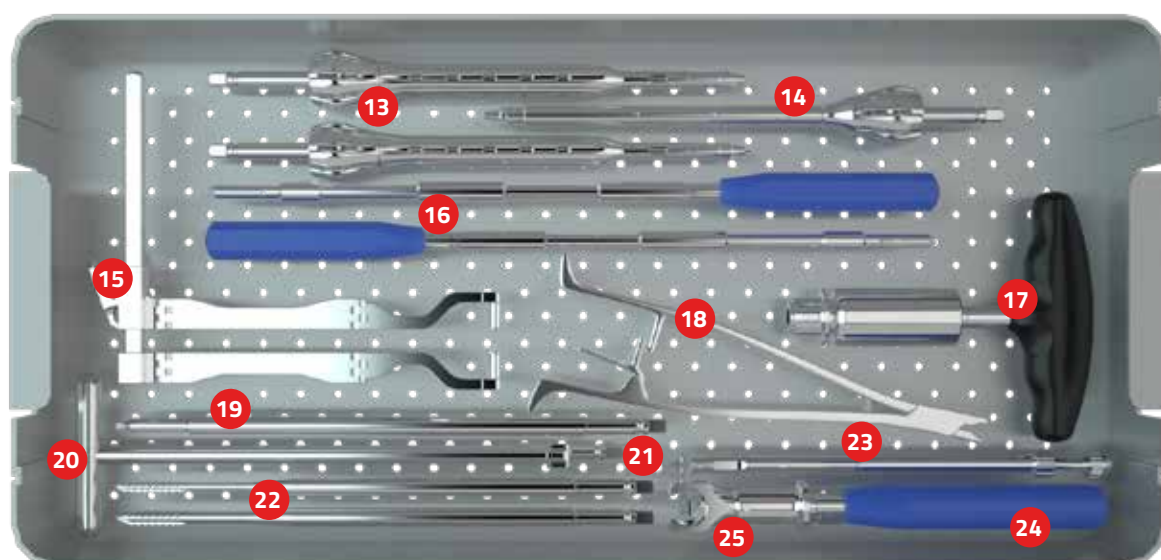
CASE 1 | TRAY 1



<b>1</b> THORACIC AWL	MSN-A0SS02510S	<b>7</b> RATCHETING HANDLE	MSN-H0SS00100S
<b>2</b> LUMBAR AWL	MSN-A0SS03208S	<b>8</b> T-HANDLE	MSN-H1SS00000S
<b>3</b> NARROW GEAR SHIFT PROBE CURVED	MSN-B1SS00000S	<b>9</b> RATCHETING T-HANDLE	MSN-H1SS00100S
<b>4</b> NARROW GEAR SHIFT PROBE STRAIGHT	MSN-B0SS00000S	<b>10</b> ROD TEMPLATE L200 D5.5	MSN-M0AL00000S
<b>5</b> GEAR SHIFT PROBE STRAIGHT	MSN-B0SS00001S	<b>11</b> SOUNDING 2MM	MSN-C0SS00000S
<b>6</b> GEAR SHIFT PROBE CURVED	MSN-B1SS00001S	<b>12</b> DOUBLE SOUNDING 2MM	MSN-C1SS00000S

**INSTRUMENTS**

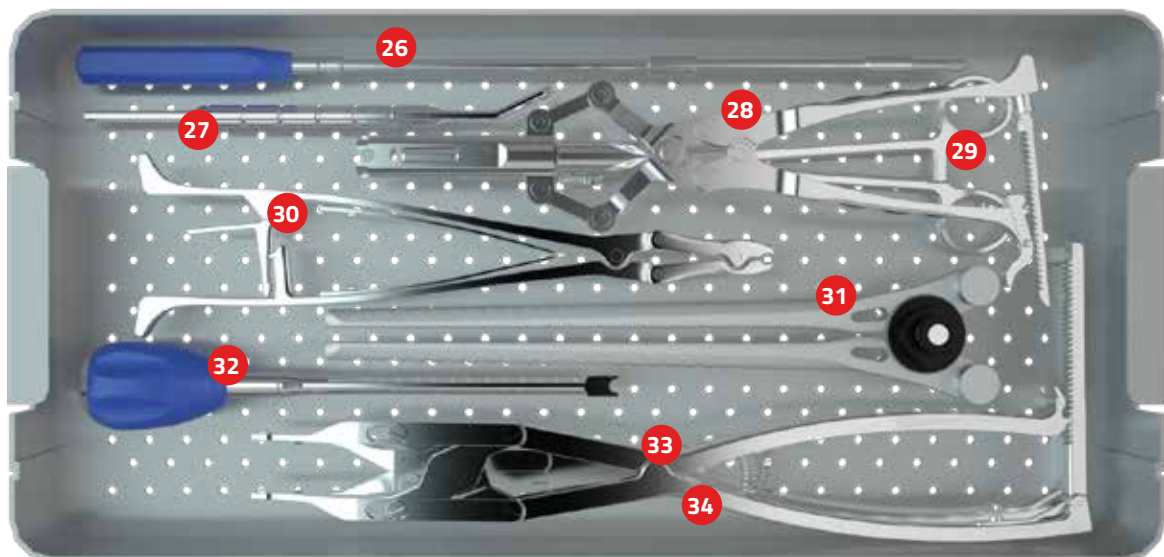
CASE 1 | TRAY 2



<b>13</b> POLYAXIAL SCREWDRIVER	MSN-I1SS25120S	<b>21</b> FREEHAND POLYAXIAL SCREWDRIVER	MSN-I1SS28520S
<b>14</b> POLYAXIAL CANNULATED SCREWDRIVER	MSN-I2SS23920S	<b>22</b> TAP 4.5MM	MSN-J0SS00045S
<b>15</b> CASPAR	MSN-N0SS00001S	TAP 5.5MM	MSN-J0SS00055S
<b>16</b> CAP HOLDER	MSN-I0SS30025S	TAP 6.5MM	MSN-J0SS00065S
<b>17</b> DINAMOMETRIC T-HANDLE 9Nm	MSN-H1SS00090S	TAP 7.5MM	MSN-J0SS00075S
<b>18</b> ROD HOLDER	MSN-D0SS00001S	<b>23</b> CEMENT NEEDLE ADAPTER	MSN-K0SS00200S
<b>19</b> CAP SCREWDRIVER	MSN-I1SS28525S	<b>24</b> COUNTER TORQUE HANDLE	MSN-Q0SS00000S
<b>20</b> TULIP ALIGNMENT	MSN-K0SS00227S	<b>25</b> LOSCKSCREW GUIDE TOWER	MSN-Q0SS00002S

**INSTRUMENTS**

CASE 2 | TRAY 1



<b>26</b> CAP HOLDER LONG	MSN-I05S38025S	<b>31</b> ROD BENDER	MSN-F05S00000S
<b>27</b> HAEXAGONAL WRENCH	MSN-Q05S00001S	<b>32</b> ROD PUSHER	MSN-P05S00000S
<b>28</b> PERSUADER	MSN-P05S00005S	<b>33</b> DISTRACTOR	MSN-N15S00000S
<b>29</b> ROCKER	MSN-P05S00003S	<b>34</b> COMPRESSOR	MSN-N05S00000S
<b>30</b> ROD GRIPPER	MSN-E15S00000S		

**INSTRUMENTS**

THORACIC AWL MSN-A0SS02510S



LUMBAR AWL MSN-A0SS03208S



NARROW GEAR SHIFT  
PROBE CURVED MSN-B1SS00000S



NARROW GEAR SHIFT  
PROBED STRAIGHT MSN-B0SS00000S



GEAR SHIFT  
PROBE CURVED MSN-B1SS00001S



GEAR SHIFT  
PROBE STRAIGHT MSN-B0SS00001S



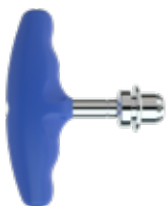
RATCHETING HANDLE MSN-H0SS00100S



RATCHETING T HANDLE MSN-H1SS00100S



T HANDLE MSN-H1SS00000S



ROD TEMPLATE L200 D5.5 MSN-M0AL00000S



**INSTRUMENTS**

SOUNDING 2MM MSN-C05S000005



SOUNDING 2MM DOUBLE MSN-C15S000005



POLYAXIAL SCREWDRIVER MSN-I15S251205



POLYAXIAL CANNULATED SCREWDRIVER MSN-I25S239205



FREEHAND POLYAXIAL SCREWDRIVER MSN-I15S285205



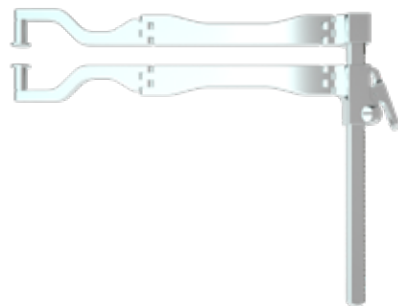
CAP HOLDER MSN-I05S300255



CAP SCREWDRIVER MSN-I15S285255



CASPAR MSN-N05S000015



ROD HOLDER MSN-D05S000015



DINAMOMETRIC T HANDLE 9Nm MSN-H15S000905



**INSTRUMENTS**

TULIP ALIGNMENT MSN-K0SS00227S



TAP 4.5MM MSN-J0SS00045S



TAP 5.5MM MSN-J0SS00055S



TAP 6.5MM MSN-J0SS00065S



TAP 7.5MM MSN-J0SS00075S



TAP 8.5MM MSN-J0SS00085S



COUNTER-TORQUE HANDLE MSN-Q2SS00000S



LOCKSCREW GUIDE  
DEROTATION TOWER MSN-Q0SS00002S



ROD PUSHER MSN-P0SS00000S



HEAXGONAL WRENCH MSN-Q0SS00001S

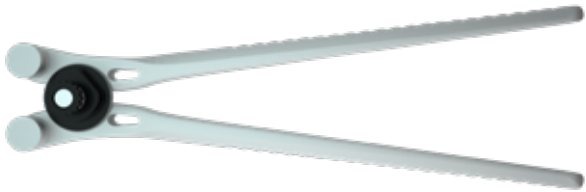




**INSTRUMENTS**

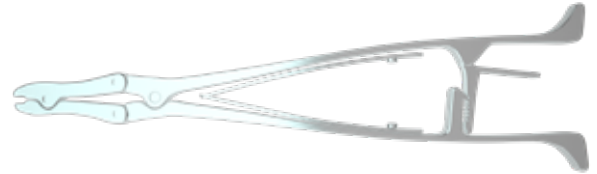
ROD BENDER

MSN-F0SS000005



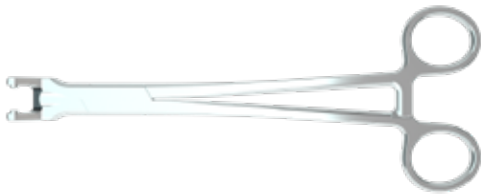
ROD GRIPPER

MSN-E1SS000005



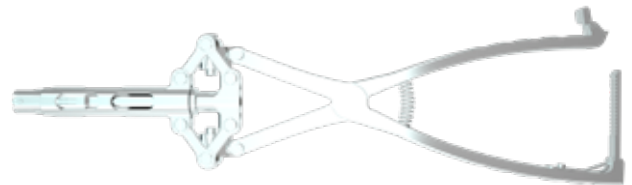
ROCKER FORCEPS

MSN-P0SS000035



PERSUADER

MSN-P0SS000055



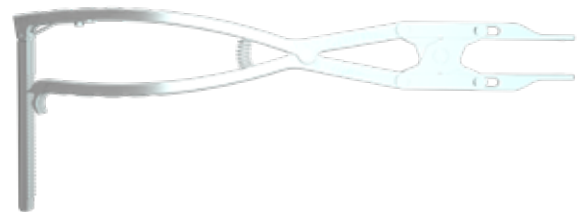
CEMENT NEEDLE ADAPTER

MSN-K0SS002005



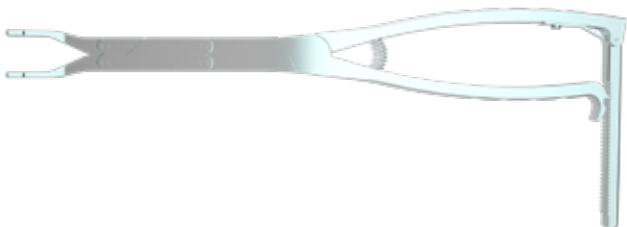
PARALLEL DISTRACTOR

MSN-N1SS000005



PARALLEL COMPRESSOR

MSN-N0SS000005



## OPEN SURGICAL TECHNIQUE

1 —



### Preparation of the pedicle screw

After determining the entry point proceed via **thoracic or lumbar awl** through the pedicle.

Subsequently, open the pedicle canal with the **curved or straight gear shift**.

Use the **straight or curved sounding** to assess the integrity of the pedicle walls.

Although Misano pedicle screws are self-tapping, **taps** can be used to prepare the screw housing. Tapping undersized by one size relative to the selected screw size is recommended. The taps - available in diameters 4.5 mm, 5.5 mm, 6.5 mm, 7.5 mm and 8.5 mm - must be assembled to the **handle**. The thread length is 30 mm.

All of the above tools are laser-marked at 10 mm intervals to display depth and aid in selecting the appropriate screw length.

OPEN SURGICAL TECHNIQUE

2 —



Inserting the screw

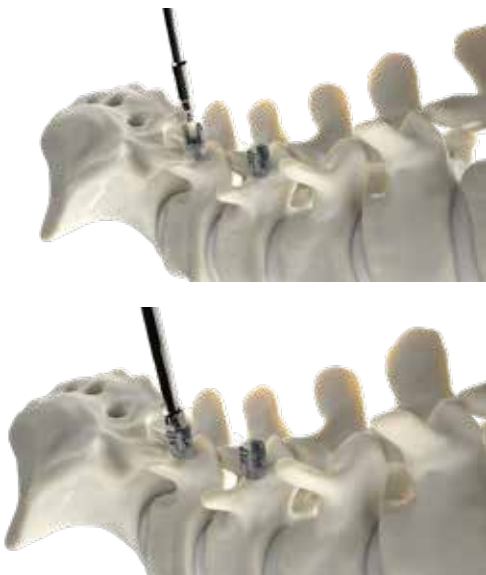
Connect the **polyaxial screwdriver** to the **ratcheting handle**:

- connect the **screwdriver** to the screw by inserting its tip inside the tulip until the thread reaches the head of the screw and then turn the screwdriver nut clockwise to make the final tightening;

- proceed to implant the screw.

Once the desired insertion depth is reached, the screwdriver is disengaged from the screw by turning the screwdriver nut counterclockwise.

3 —



Adjustment of the screw head

If necessary, you can use the **freehand screwdriver** by placing the tip of the screwdriver directly in contact with the stem of the screw. Tighten or unscrew the screw to the desired depth.

The head of the polyaxial screw can be aligned using the **tulip alignment**.

## OPEN SURGICAL TECHNIQUE

Opt. —



### 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.

4 —



### Rod preparation

Once all screws are in place use the **rod template** to determine the length of the final bar.

If necessary to bend and shape the bars you can use the **rod bender**.



5 —

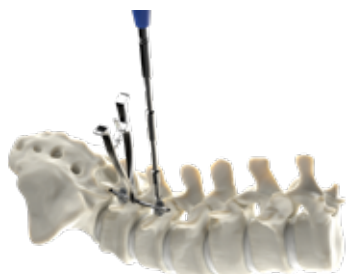


### Positioning the rod

Place the previously selected bar inside the screw head with the **rod holder**.

OPEN SURGICAL TECHNIQUE

6A —



Positioning of the clamping nut — A

To ensure proper positioning of the clamping nut on the screw, the **lockscrew guide derotation tower** can be used. The latter has a slightly larger distal end that is positioned over the head of the screw. At the same time, by exerting downward pressure, you properly seat the bar inside the screw. You can then proceed to position the clamping nut with the **cap holder**.

If necessary, the **rod pusher** can be used.

6B —



Positioning of the clamping nut — B

As an alternative to the **rod pusher**, the **rocker** can be used. Grasp the waist head with the rocker, subsequently deflect the rocker downward until the bar is fully inserted into the screw head. Then insert a clamping nut using the **cap holder**.

OPEN SURGICAL TECHNIQUE

6C —



Positioning of the clamping nut — C

Alternatively, it is possible to use the **axial persuader with folding handle**, which allows, with greater force, the bar to be brought closer to the head of the screw and the tightening nut then positioned.

With the handles fully open, engage the persuader to the tulip of the screw. By then tightening the handles, the mechanism lowers the bar until it is inserted into the head of the screw.

Next, introduce the clamping nut inside the persuader using the long clamping **cap holder**.

Then release the persuader from the screw tulip by releasing the handles.

7 —



Rod rotation

If it is necessary to rotate the bar before final clamping, use the **rod gripper**.

Alternatively, the hexagonal end of the bar allows the additional use of the **hexagonal wrench**.

OPEN SURGICAL TECHNIQUE

8 —



Compression and Distraction

Once the bar has been fully inserted into all polyaxial screw heads and the clamping nuts are in place, distraction or compression can be performed using the **distractor** or **compressor**.

9 —



Final tightening

Proceed to the final tightening of the system.

Final tightening is carried out using the **countertorque** system, consisting of the **countertorque handle** connected to the **lock screw guide derotation tower**, and the **cap screwdriver** previously assembled to the **9Nm dynamometric T-handle**.



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