



# Intracs<sup>®</sup> *em*

## Integrated Navigation Tracking & Control System

### PINPOINTED AND MONITORED TO EVERY SPINAL TARGET

INSTRUMENT NAVIGATION  
DIRECTLY AT THE TIP  
IN 2D AND 3D IMAGING



# Vector-Tip-Target

[www.joimax.com](http://www.joimax.com)

## ELECTROMAGNETIC NAVIGATION – INTUITIVE AND SAFE



- Medical 22" Panel PC with Touch-Display; completely sealed and therefore easy to clean and disinfect
- Especially developed flexible holding arms for field generator and patient mapper
- Various sensors ensure **highly precise navigation** and thus short intervention time and **drastic reduction of radiation exposure**
- The registration of the real patient anatomy into the virtual environment of the navigation system is **independent of the C-arm model**
- Can also be used as a stand-alone solution

**Intracs® *em* – the smart navigation system is based on the latest electromagnetic tracking technology. By navigating at the tip of compatible instruments, it is particularly suitable for safe and gentle access to any target of the spine.**



### PANEL PC

The panel PC with integrated touch screen enables the control of the system as well as the display of the medical image data and the relative instrument position.



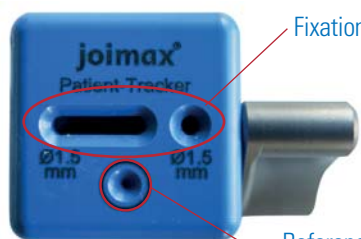
### FIELD GENERATOR

The field generator emits a low-intensity electromagnetic field and defines the tracking volume.



### PATIENT MAPPER

The patient mappers have radiolucent housings with integrated radiographic marker spheres. They are inserted into the beam path while acquiring the X-ray images. The Intracs® em Navigation System enables an automatic registration of the X-ray images within the tracking volume.



Fixation via K-wires

Reference point for instrument registration



### SENSOR CLIP

The sensor clip is a clamp with a fixation screw, which can be attached to compatible joimax® instruments. It enables the detection of the position within the tracking field.

### PATIENT TRACKER (REGISTRATION TOOL)

The patient tracker enables the detection of the spine within the tracking volume and serves as a reference point during navigation. Furthermore, the Patient Tracker also serves as registration tool for all navigable joimax® instruments. The patient tracker is fixed on the spine via common Kirschner-wires (K-wires) on the processus spinosus.



### SENSOR WIRE

The flexible sensor wires contains several sensors and features a LuerLock connector. It enables the detection of the position of compatible joimax® instruments directly at the tip.

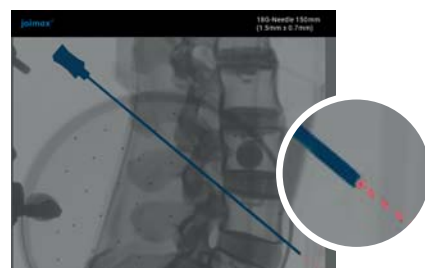
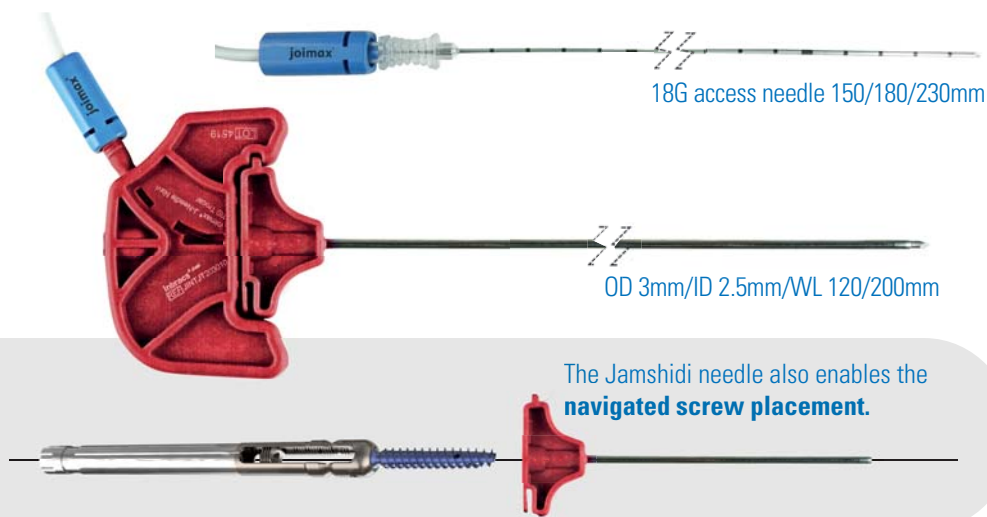




## COMPATIBLE INSTRUMENTS

All instruments that are typically used in endoscopic joimax® methods can be navigated. The two sensors (sensor wire and sensor clip) allow for navigating of several instruments at the same time.

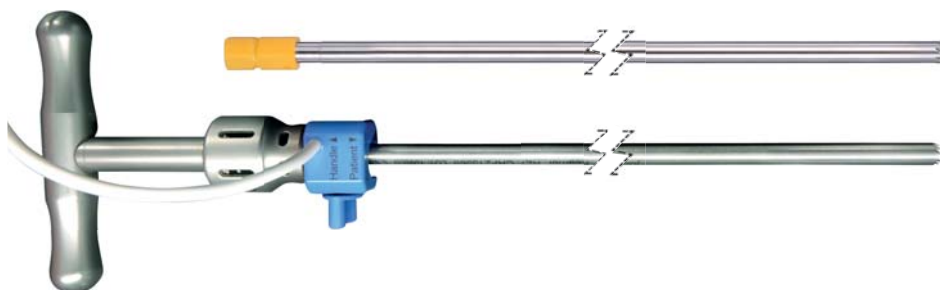
### ACCESS AND JAMSHIDI NEEDLES



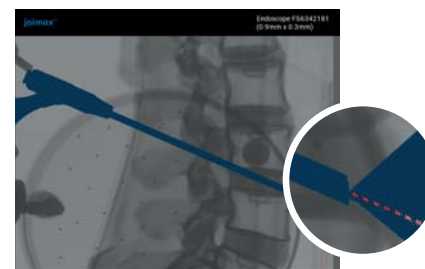
### GUIDING RODS NAVI



### REAMERS

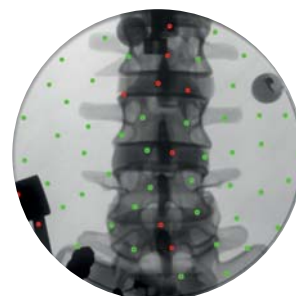


### ENDOSCOPES



## SIMPLE AND FAST PATIENT REGISTRATION

Only two X-rays are required for the entire registration – with one AP and one lateral image, the Patient Mapper enable accurate patient registration. This achieves the highest level of navigation accuracy, **drastically reduces radiation exposure** and shortens the intervention time.



### FIXATION AT THE PROCESSUS SPINOSUS SECURED AGAINST ROTATION



### PATIENT TRACKER – HIGHEST PRECISION IN THE MOST COMPACT FORM

The patient tracker enables the patient's position to be determined at any time during the operation. In addition, it allows the intuitive instrument registration in a sterile environment within seconds. The active instrument is immediately displayed on the monitor and the user can quickly switch between instruments in the sterile environment.

### THE ADVANTAGES OF THE PATIENT TRACKER

- Easy attachment to the spinous process close to the desired access point by means of two K-wires.
- Ensures highest precision in the most compact form



Registration  
in progress ...  
**81 %**



## NAVIGATION – THREE-DIMENSIONAL AND DIRECTLY AT THE TIP

The system can match the lateral and the AP X-ray, with previously prepared 3D CT scans. This procedure provides a three-dimensional image of the target region, and the target point can be set with pinpoint accuracy.

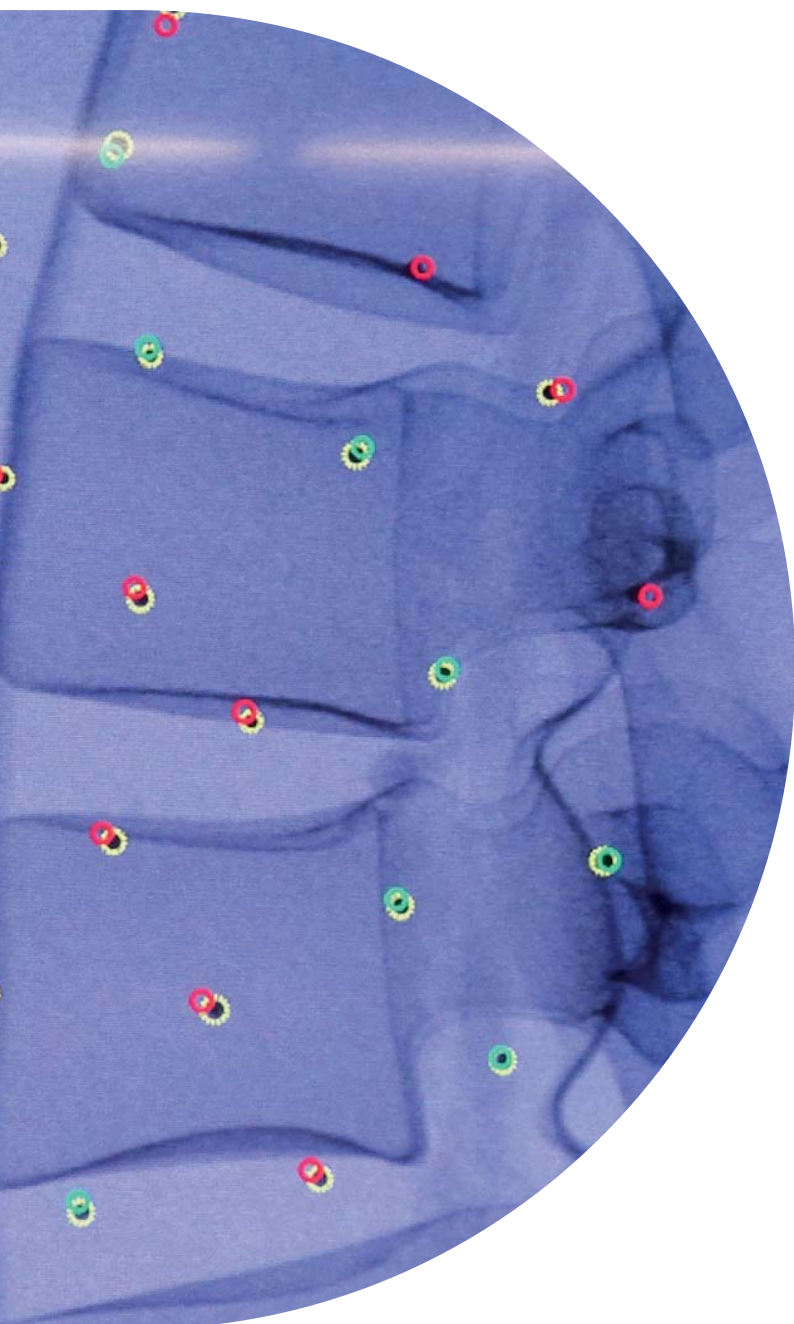
### NAVIGATION AT THE TIP

The instrument tip is permanently monitored by the sensor wire. The special software and the unique sensor technology ensure that all instruments are displayed with highest precision in the electro-magnetic field. Even the bending of flexible instruments, such as needles, has no effect on navigation accuracy.

All joimax® endoscopes are compatible with the Intracs® *em* system. An indicated visual cone allows a clear orientation in the patient.

### GUIDANCE VIEW

The Vector-Tip-Target principle assists the surgeon in navigating the instrument easily and very precisely to its target. This feature combines the instrument trajectory from lateral and AP X-rays with axial 3D CT scans. Thus the user can focus on one view, the joimax® Guidance view which fully implements the „Vector-Tip-Target principle.



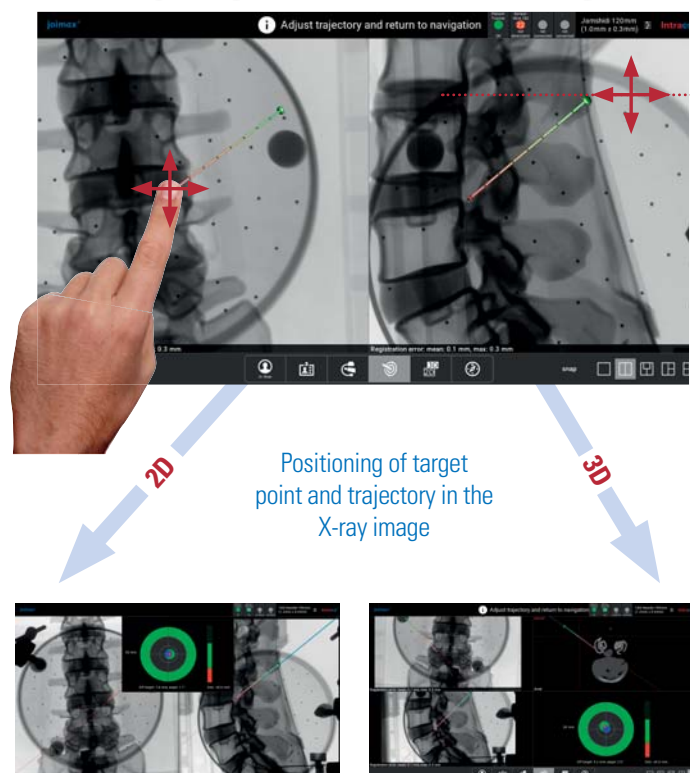
Indication of correct alignment:  
Color changing circle measuring the alignment of entry to target vector



Planned access point (blue) and target point (green, with red center when aligned correctly)

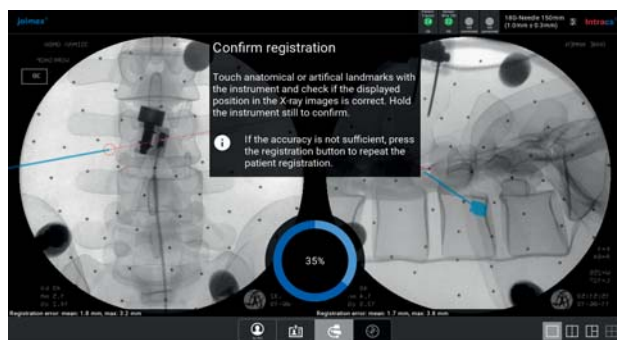
Depth control via color bar

## VECTOR-TIP-TARGET

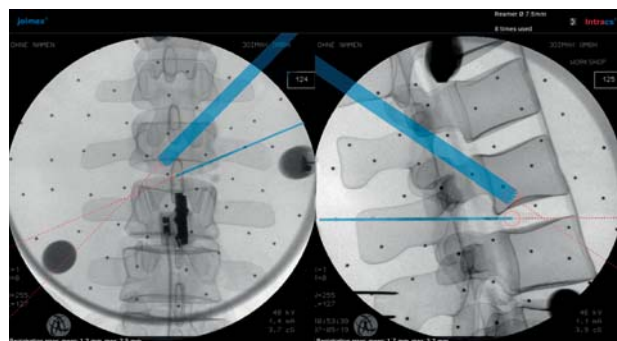




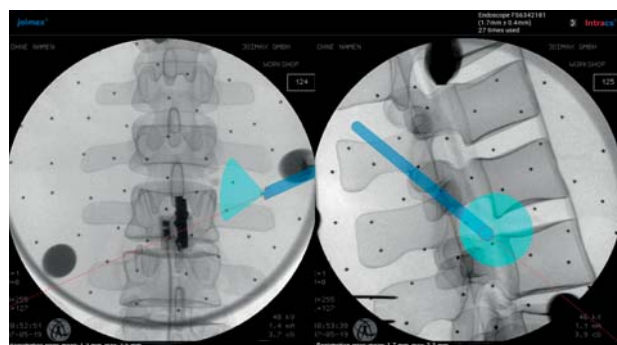
## NAVIGATION FOR ENDOSCOPIC DECOMPRESSION OF THE SPINE



After successful registration the navigation of various instruments can begin.



Multiple instruments can be navigated at the same time (e. g. needle and reamer are displayed synchronously).



Navigation of the endoscope: the viewing angle and direction are displayed accordingly.

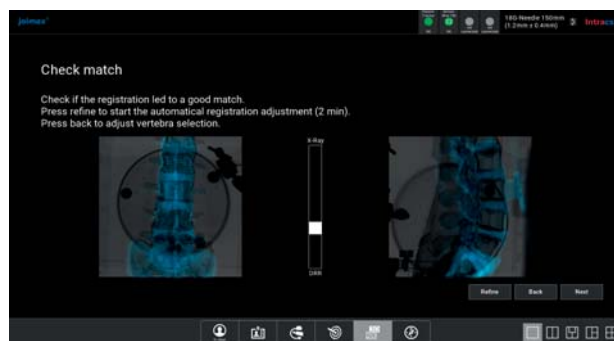


Navigated endoscope (1 + 2 view) with synchronized display of endoscopic and X-ray images.

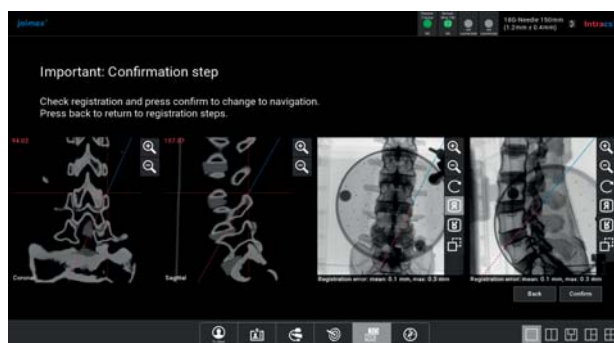
## NAVIGATION FOR ENDOSCOPIC (MINIMALLY INVASIVE) FUSION



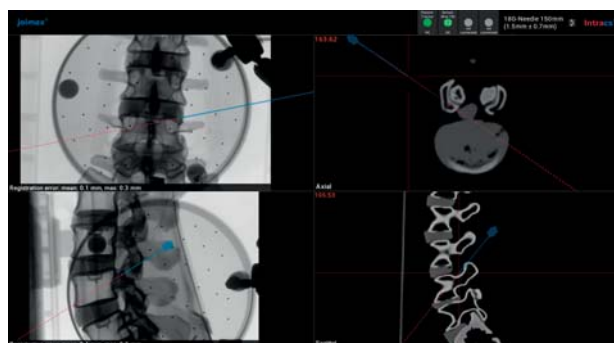
Marking of a vertebra in 3D and 2D view to define the target region.



Control of the matching results by overlaying 3D and 2D images with blue-colored merge control

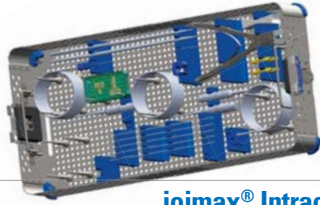


Confirmation of matching registration of 3D CT scan and 2D X-ray images.



3D navigation is ready for setting target point and trajectory.

REF	Description
<b>JINT01S</b>	<b>joimax® Intracs® em System</b> Panel PC, Control Unit, Field Generator, Patient Mapper LAT & AP, USB Stick 16GB, Mounting Arms for Patient Mapper, Mounting Arm for Field Generator, joimax® HDMI-2-DVI Cable

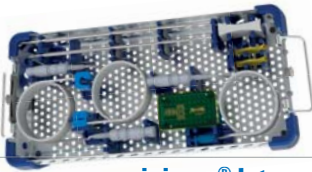


<b>JINTST15</b>	<b>joimax® Intracs® em Sensor Tray 150</b> with Sensor Wire 150 Sensor Clip, Sensor Wire, Patient Tracker, Wire Cutter, Drill Guide, 5x K-Wire, Guiding Rods (yellow and red), 2x Y-Adapter, Container
<b>JINTST18</b>	joimax® Intracs® em Sensor Tray 180 with Sensor Wire 180
<b>JINTST23</b>	joimax® Intracs® em Sensor Tray 230 with Sensor Wire 230

## SENSORS

<b>JINTPT2235</b>	joimax® Intracs® em Patient Tracker*
<b>JINTSC2205</b>	joimax® Intracs® em Sensor Clip*
<b>JINTSW2215</b>	joimax® Intracs® em Sensor Wire 150*
<b>JINTSW2218</b>	joimax® Intracs® em Sensor Wire 180*
<b>JINTSW2223</b>	joimax® Intracs® em Sensor Wire 230*

\* Limited period of use



<b>JINTSTAT15</b>	<b>joimax® Intracs® em Accessory Tray</b> with Sensor Wire 150 Sensor Clip, Sensor Wire, Patient Tracker, Drill Guide, 5x K-Wire Optional: Guiding Rods (yellow and red), 2x Y-Adapter
<b>JINTSTAT18</b>	joimax® Intracs® em Accessory Tray with Sensor Wire 180
<b>JINTSTAT23</b>	joimax® Intracs® em Accessory Tray with Sensor Wire 230

## ACCESSORIES

<b>JINTMA1135C</b>	Sterile Cover for Fiel Generator and Mounting Arm
<b>JINTMAP1136C</b>	Sterile Cover for Patient Mapper and Mounting Arm
<b>JKW1515</b>	K-Wire Trocar Tip, 15mm thread
<b>JEST1390N</b>	joimax® Navigation Cart/Trolley

## ENDOSCOPIC DEVICES

The expert solution for interventions on the spinal column and in neurosurgery. All devices are aligned with each other and have been specially developed for sensitive structures.



Intracs® em is not yet FDA cleared, registration in process

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