

stryker

Mako

Spine



Introducing **Mako 4**

With more than 1.5 million hip and knee Mako procedures performed around the world, including in 45 countries and in every U.S. state over the last 19 years,¹ you can trust us to be your reliable ally in robotics. The arrival of Mako 4 brings us into our fourth generation of surgical robotics.



Mako has been featured in over **500** peer-reviewed manuscripts,¹ establishing it as a well-studied technology

Mako Systems are installed across **45** countries¹

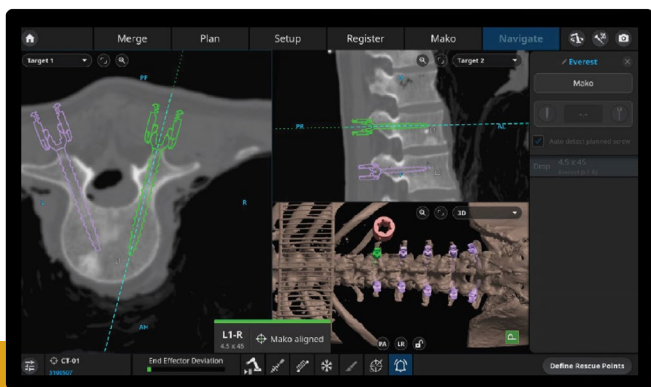
Mako is a trusted technology with a footprint across sites of care including **ASC's and teaching institutions**²⁻⁴

Mako Spine comes with **marketing resources, a comprehensive service program, surgeon training, and clinical and technical support** from our Clinical Specialist team

Mako SmartRobotics™

Welcome to **more**

Simplify planning and performance with **Mako Spine**



Confidence with AccuStop™ haptic technology

Mako Spine is designed to give you confidence that you're executing your procedure to plan.

Mako Spine

- Designed to support correct level selection with visual level indication and haptic feedback
- Validation testing has demonstrated accurate and repeatable trajectory guidance for drilling, tapping and placing pedicle screws¹

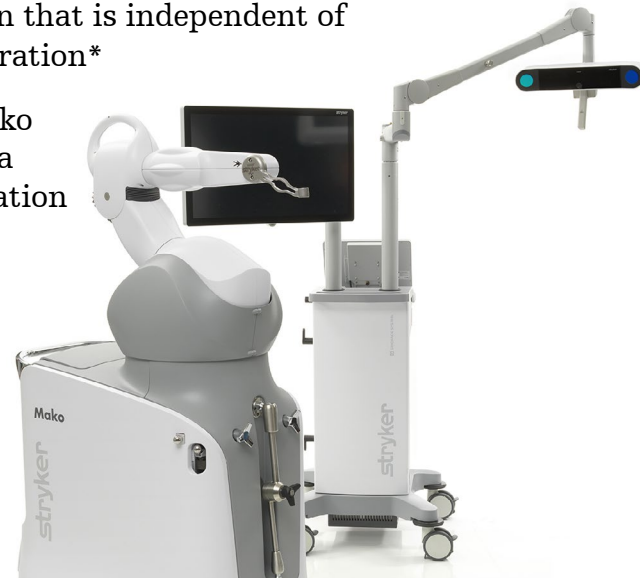
Mako puts the control in your hands

Mako Spine allows for free positioning of the unit and robotic-arm, unrestricted level selection and lock-and-hold features to help provide stability within haptic boundaries.

Surgeon driven, robotic-arm guided

- Once you have moved the robotic-arm to the area of interest and a vertebral level is identified, Mako Spine is designed to leverage AccuStop™ haptic technology to enable alignment to, and help provide stability within, the haptic boundaries of a pre-planned trajectory that has been suggested by the software and confirmed by you, based on a patient's unique anatomy.
- Mako Spine is designed to give you the flexibility to move the robotic-arm to the vertebral level you're ready to instrument next and the freedom to transition between navigated and non-navigated workflows.
- The Mako System can be repositioned or rolled away from the table following screw placement thanks to patient registration that is independent of robotic-arm registration*
- Complete your Mako Spine set-up with a single-step registration process

* When in use, the Mako Robotic-Arm must be positioned within view of the Q Guidance FP8000 camera.



Integrated technologies **maximized for Mako Spine**

GE HealthCare's OEC 3D c-arm



- Automatic integration and patient registration with Spine Guidance 5 Software⁵
- True 3D/2D intraoperative imaging c-arm for precise and efficient imaging⁵
- Large (19cm x 19cm x 19cm) scan volume⁵

Ziehm's RFD 3D c-arm

- Automatic integration and patient registration with Spine Guidance 5 Software⁶
- Complete 2D and 3D information in one device⁶
- Provides excellent navigation image quality and the ability to view several vertebral levels with a single 3D image acquisition⁶



FP8000 camera

- Up to 15x faster than leading competitors¹



Flexibility

- Multiple tracking methods, including full spectrum active/passive hybrid optical tracking



Dual PCs

- Designed to ensure consistent, low latency computation of position and orientation of tracked instruments, independent of workload running on application PC¹

Q Guidance
System



Copilot

Smart Zones for bone resection*

Follow your plan in near real-time regardless of hand position or drill orientation

Smart Zones

Collision alerts with the high speed drill are designed to give assurance, allowing you to hear and feel when you cross pre-planned boundaries of anatomical no-fly zones

Smart Tracking with 360 ActiveTrack technology

Powered by ActiveTrack technology and enabled by our FP8000 camera, Copilot Q 360 Tracker allows you to follow your plans in near real-time, regardless of your hand position or drill orientation.

*Mako Spine is intended for use during pedicle preparation and screw placement, and can be used together with the Q Pedicle Instruments and Copilot Smart Driver. Mako Spine is not intended for use with Copilot during bone resection.

- Smart Segmentation
- Automatic and customizable screw suggestions
- Auto-detect planned screw
- Screw guidance view
- Specialized algorithms designed to optimize screw placement and reduce the occurrence of screw breaching
- Extended tab visualization for MIS screw system
- Rod visualization and length estimation

Spine Guidance 5 Software

Smart screw placement with automatic depth stop

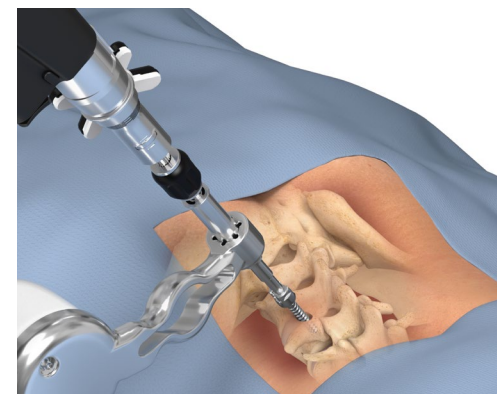
Once a vertebral level is identified, Mako Spine holds a guide tube in place, allowing you to drill, tap, and place pedicle screws in a pre-planned size and trajectory that have been automatically suggested by the software and confirmed by you, based on a patient's unique anatomy.

Automatic depth stop

The Copilot Smart Driver stops automatically when it reaches a pre-planned depth, supporting precision during pedicle screw placement

Compatible with the following VB Spine screw systems:

- | | |
|-----------------|-----------|
| • ES2 | • Mesa 2 |
| • Everest | • Serrato |
| • Everest MI | • Xia 3 |
| • Everest MI XT | |



Mako SmartRobotics™

combines 3D CT-based planning and AccuStop™ haptic technology for level and trajectory guidance in spine surgery





Mako Spine seamlessly integrates with select OR technologies, simplifying image registration, planning, and surgical execution

Imaging

Seamless integration and automatic registration with GE HealthCare's OEC 3D c-arm and Ziehm's RFD 3D c-arm imaging systems

Planning

Streamlined and simplified surgical planning and workflow thanks to Smart Segmentation and automatic screw suggestion

Execution

SmartRobotics™ takes Copilot's capabilities to the next level, enabling screw placement confidence with automatic depth stop

The next generation of Mako isn't just about what it does. It's about who it serves - more surgeons, more patients, across more specialties and more procedures.

Mako means more than ever.
Let us show you all the possibilities.



References

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3. Sicut CS, Buchalter DB, Luthringer TA, Schwarzkopf R, Vigdorchik JM. Intraoperative Technology Use Improves Accuracy of Functional Safe Zone Targeting in Total Hip Arthroplasty. *J Arthroplasty.* 2022;37(7S):S540-S545
4. Kayani B, Konan S, Tahmassebi J, Rowan FE, Haddad FS. An assessment of early functional rehabilitation and hospital discharge in conventional versus robotic-arm assisted unicompartmental knee arthroplasty: a prospective cohort study. *Bone Joint J.* 2019;101-B(1):24-33
5. GE HealthCare. OEC 3D c-arm web page. GE HealthCare Website. <https://www.gehealthcare.com/products/surgical-imaging/oec-3d>. Published 2025. Accessed May 15, 2025.
6. Ziehm Imaging. Ziehm Vision RFD 3D web page. Ziehm Imaging Website. <https://www.ziehm.com/en/us/product-portfolio/ziehm-vision-rfd-3d/>. Published 2025. Accessed May 15, 2025.

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