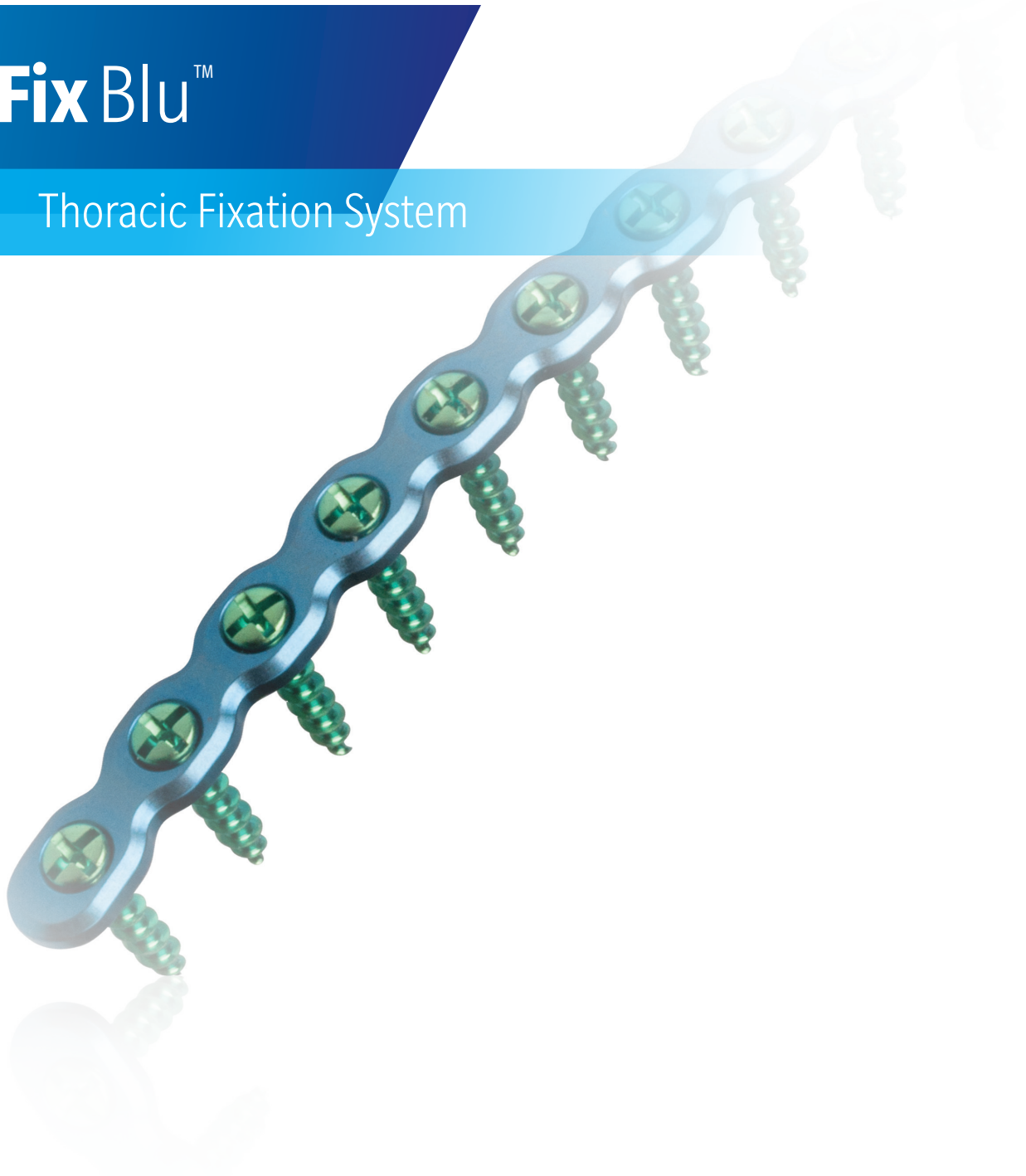


# RibFix Blu™

## Thoracic Fixation System



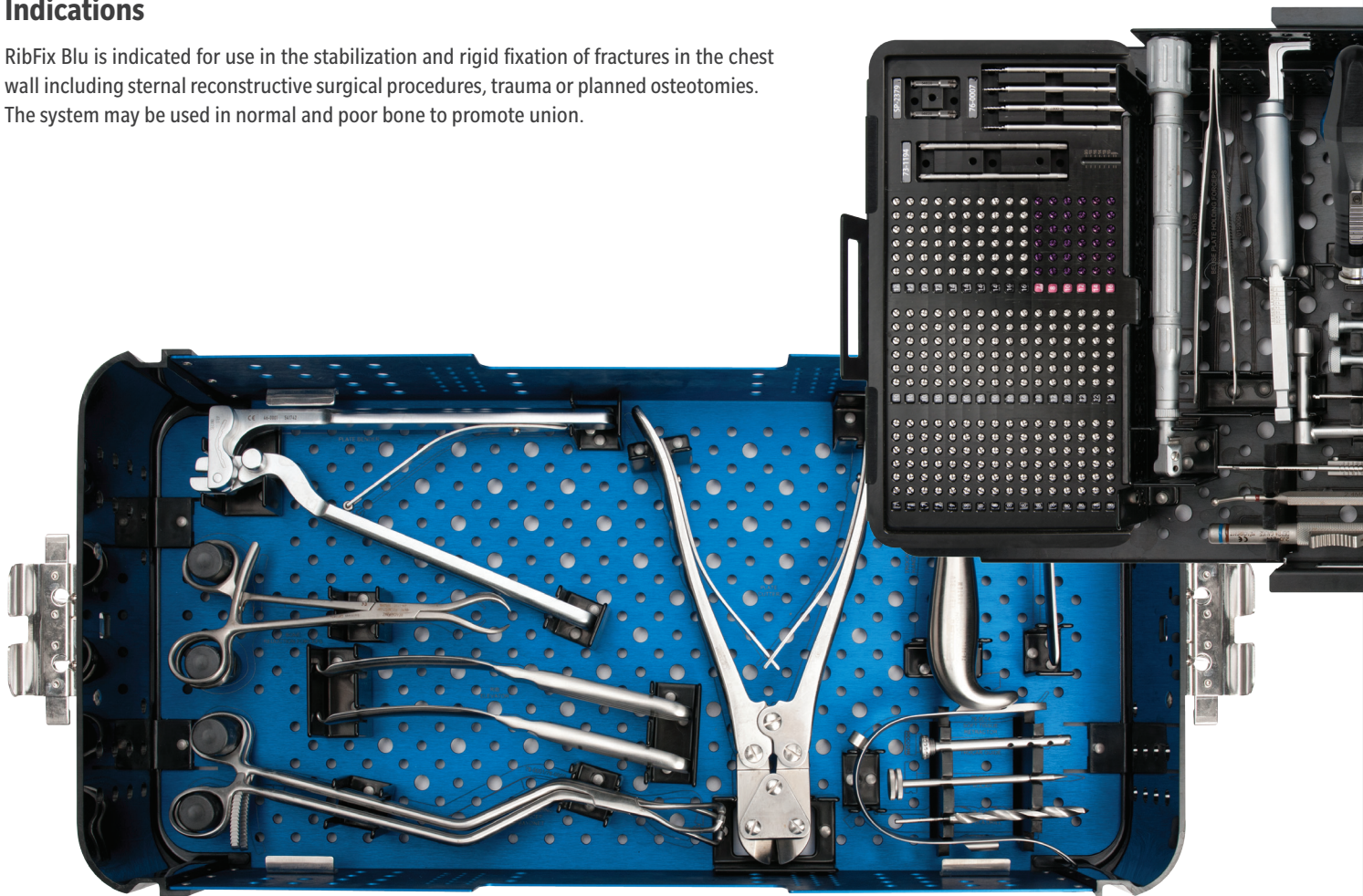
# The New Era of Rib Fixation Begins Now

## Designed by Trauma Surgeons for Trauma Surgeons

Your work matters and so do your patients. We are continually engineering new tools and techniques to help improve your efficiency in the operating room. The RibFix Blu Thoracic Fixation System is designed with this in mind. The system's innovative plate-to-bone approximation tools allow for the precise placement of plates along the rib, and unique plate-contouring instrumentation eliminates the need to remove the implant from the surgical field - saving you precious time when minutes matter.

## Indications

RibFix Blu is indicated for use in the stabilization and rigid fixation of fractures in the chest wall including sternal reconstructive surgical procedures, trauma or planned osteotomies. The system may be used in normal and poor bone to promote union.





# Unique Instruments

## Plate-to-Bone Approximation Tools

Innovative temporary fixation screws and bayoneted plate-holding forceps reduce the plate flush to bone and aid with precise placement along the midline of the rib - freeing your hands to implant self-drilling screws.



Temporary Fixation Screws



Temporary Fixation Screw in Place Without Driver



Bayoneted Plate-Holding Forceps

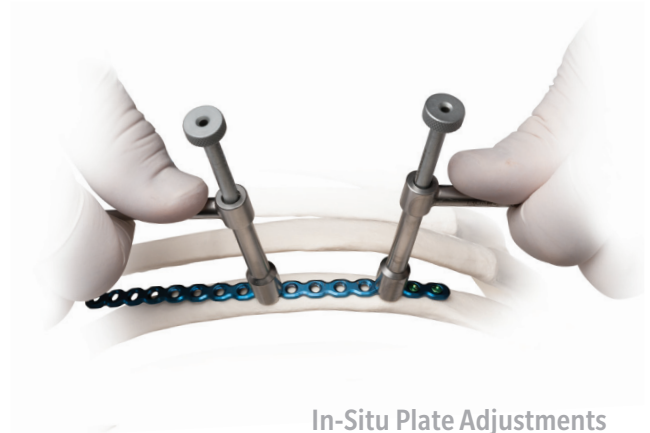
## Plate-Contouring Tools

Engineered with the goal of expanding bend options, the RibFix Blu Thoracic Fixation System includes threaded and in-situ plate benders. The benders allow for adjustments to the plate in all planes - including torsional - eliminating the need to remove the implant from the surgical field.

### Threaded Plate Benders



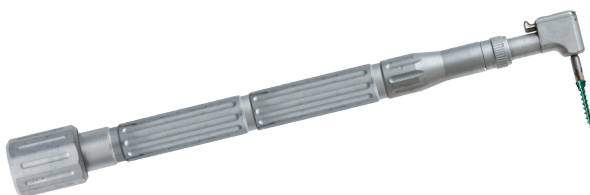
In-Situ Plate Benders



In-Situ Plate Adjustments

## MIS Instrumentation

The RibFix Blu Thoracic Fixation System offers minimally-invasive solutions for plating hard-to-reach rib fractures. Proximal posterior fractures that are generally inaccessible can be plated via trans-scapular or sub-scapular approaches using the MIS instrumentation. Both methods mobilize the scapula for easier maneuverability.



Contra-Angle Screwdriver



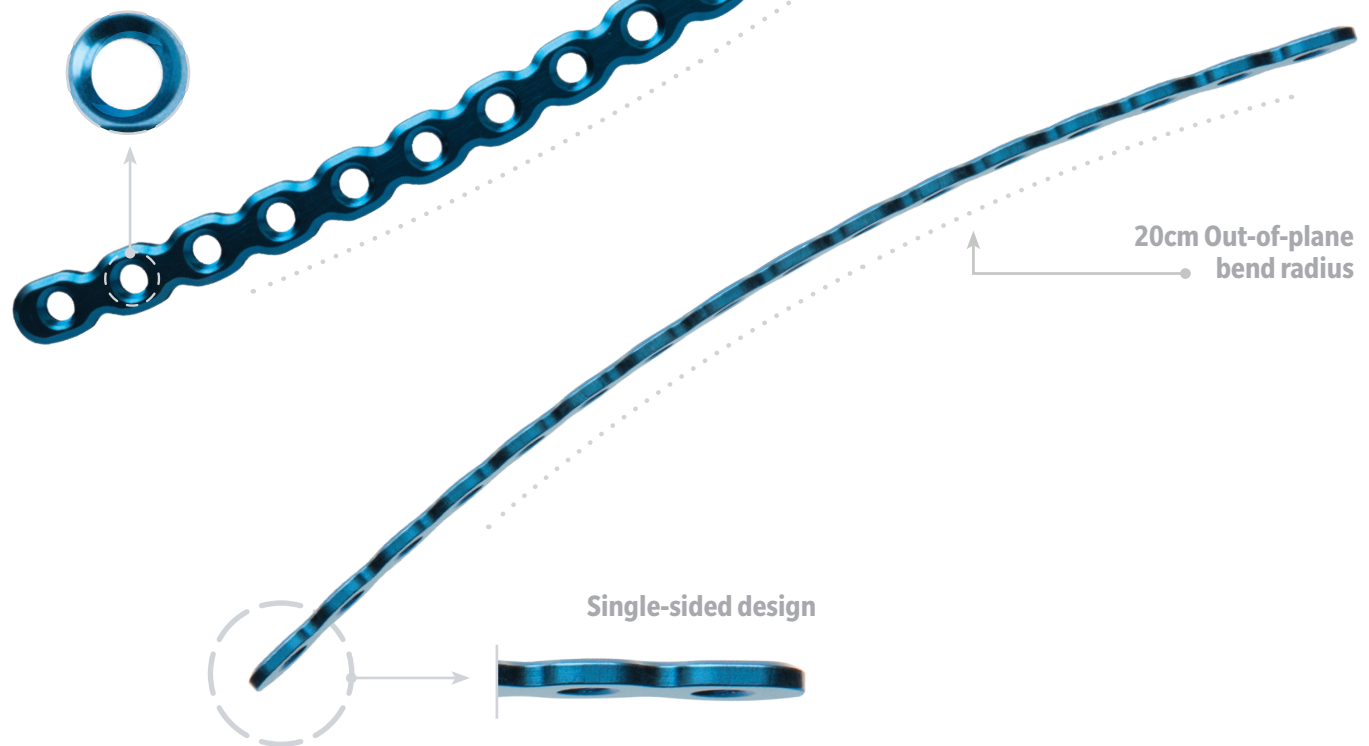
Trocar Assembly

# Innovative Implant and Screw Design

## Implant Design Features

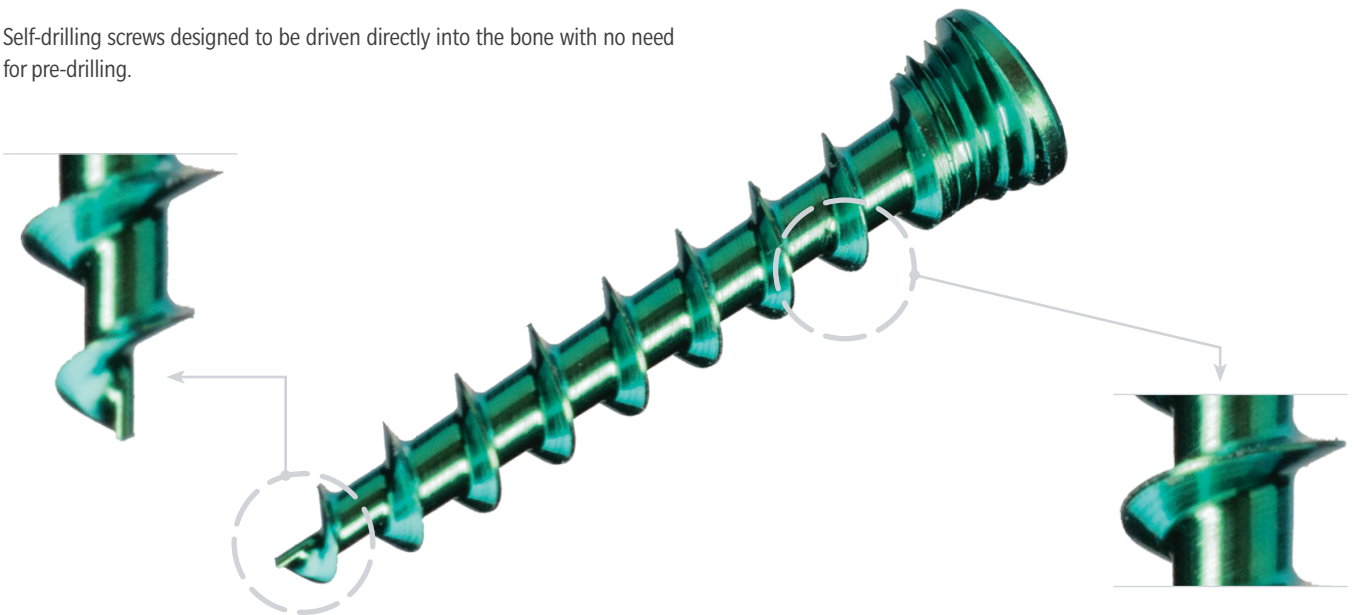
- Pre-contoured in two planes to fit the average anatomical rib shape
- Narrow plate design for easy alignment and minimal intra-operative contouring
- Universal plate selection - any plate can be applied to any rib on either the left or right side
- 1.6mm profile and deep counter-sunk screw holes provide minimal palpability
- Commercially-pure titanium for flexibility and strength

### Deep counter-sink of threaded screw hole



## Self-Drilling Screw

Self-drilling screws designed to be driven directly into the bone with no need for pre-drilling.



## Cancellous Screw Design

Deeper screw threads provide optimal engagement into the cancellous bone of the chest wall.

## Innovative Locking Technology

Screw threads lock into the plate while the tip engages the posterior cortex of the rib. These dual points of stability are crucial for the dynamic motions of the chest wall.



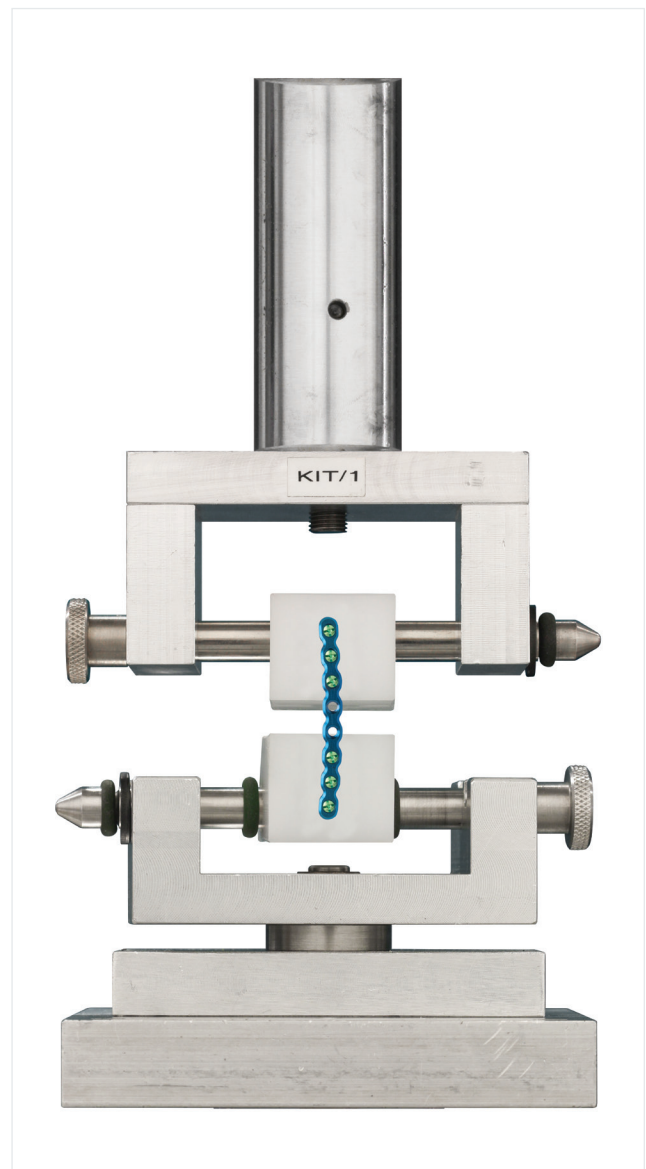
## RibFix Blu - Bench Testing

The RibFix Blu Thoracic Fixation System was tested in plastic blocks under dynamic motion testing using ASTM F1717 as a guide and subjected to bending loads of  $400\text{Nmm}^1$  for 1,000,000 cycles<sup>2</sup>. This is equivalent to 10X the normal respiratory loading and more than six weeks of fracture healing. All constructs were able to withstand the exaggerated loading without any failures.

### Dynamic Motion Bending Test

RibFix Blu plates and screws were fixated onto plastic blocks. Side supports were then connected to the plastic blocks with hinge pins. The inferior support was attached to the load cell base plate while the superior support was rigidly attached to the hydraulic actuator. The load cell base plate remained stationary while the hydraulic actuator pushed downward creating rotation in the vertical axis. ASTM F1717 was used as a guide because the dynamic compression motion of the test simulates the motion that a rigid implant for the ribs would experience.

<sup>1</sup>Rehm KE. Die Osteosynthese der thoraxwandinstabilitaeten. Hefte zur Unfallheilkunde. 1986;175. <sup>2</sup>The estimate for the amount of cycles representative of fracture healing is based on 14.1 breaths per minute.





## Test Summary

The RibFix Blu Thoracic Fixation System was tested in human cadaveric osteopenic rib bones. Fractured ribs were stabilized with the RibFix Blu Fixation System and subjected to 5X the normal respiratory loads for 360,000 cycles, simulating a two-week fracture healing period. All constructs were able to withstand the exaggerated loading without any failures.

### Figure 1.

The intact osteopenic rib was situated in the frame for biomechanical cadaveric testing.

### Figure 2.

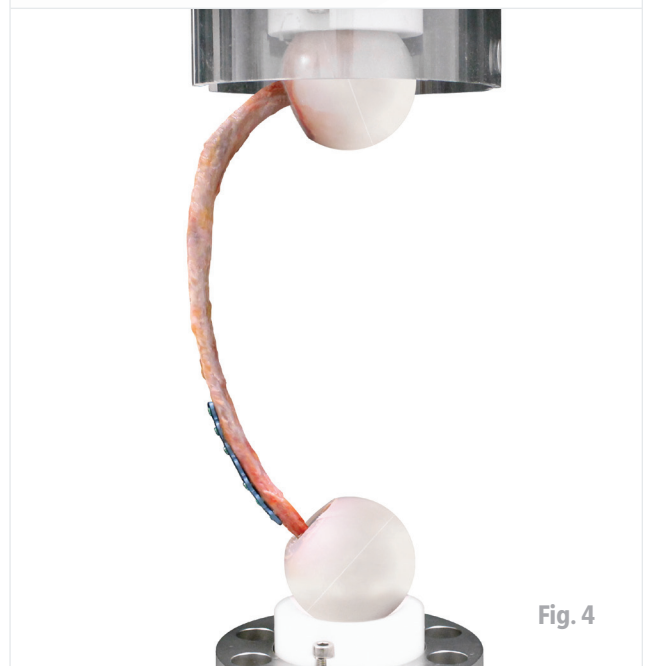
Compressive loads were applied to create a realistic fracture pattern within the rib.

### Figure 3.

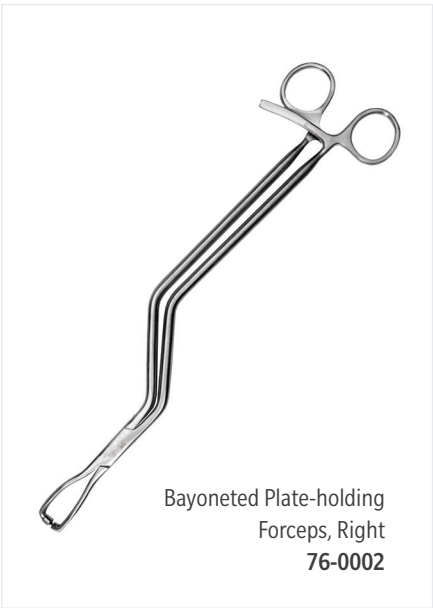
The rib was measured, and the fracture segments were reduced and plated using the appropriate size RibFix Blu plate and appropriate length screws, ensuring a minimum of three screws were implanted on both sides of the fracture.

### Figure 4.

Biomechanical testing was repeated on the fixated rib in a humid environment resembling physiologic conditions.



RibFix Blu - Instruments



Items not to scale

## RibFix Blu - Instruments



Trocar, Long  
76-0016



Threaded Plate Bender,  
Cannulated  
76-1195



In-Situ Plate Bender  
76-1196



Contra-angle Screwdriver  
Torque Handle  
76-0008



Contra-angle Screwdriver  
24-1189



2.4mm Plate-holding Wand  
76-0006



Depth Gauge, 45mm Long  
01-9125



Plate-holding Forceps  
01-9095

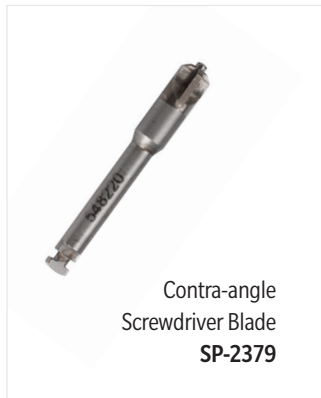
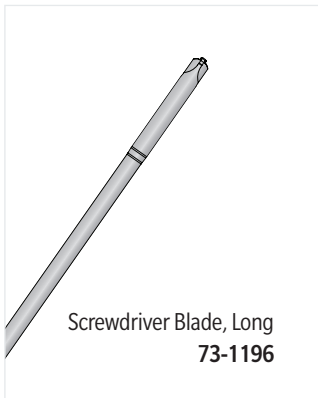


Fiber Optic Cable  
01-0371

# RibFix Blu - Instruments



## Drills, Blades, Drivers





## 2.4mm/2.7mm Screws

### Self-Drilling Locking Screws (Green)



Part No.	Description
76-2407	2.4 x 7mm
76-2408	2.4 x 8mm
76-2410	2.4 x 10mm
76-2412	2.4 x 12mm
76-2414	2.4 x 14mm
76-2416	2.4 x 16mm

### Self-Tapping Screws (Silver)



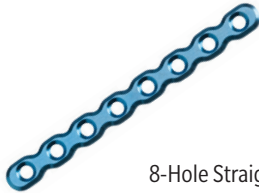
Part No.	Description
76-2507	2.4 x 7mm
76-2508	2.4 x 8mm
76-2510	2.4 x 10mm
76-2512	2.4 x 12mm
76-2514	2.4 x 14mm
76-2516	2.4 x 16mm

### Emergency Screws (Purple)



Part No.	Description
76-2707	2.7 x 7mm
76-2708	2.7 x 8mm
76-2710	2.7 x 10mm
76-2712	2.7 x 12mm
76-2714	2.7 x 14mm
76-2716	2.7 x 16mm

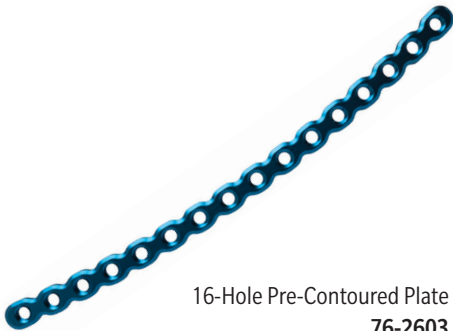
### Plates



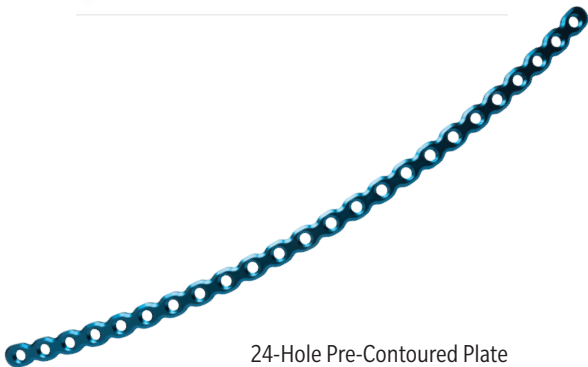
8-Hole Straight Plate  
76-2601



12-Hole Pre-Contoured Plate  
76-2602



16-Hole Pre-Contoured Plate  
76-2603



24-Hole Pre-Contoured Plate  
76-2604

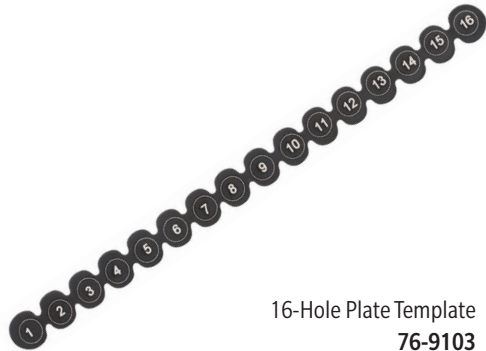
### Templates



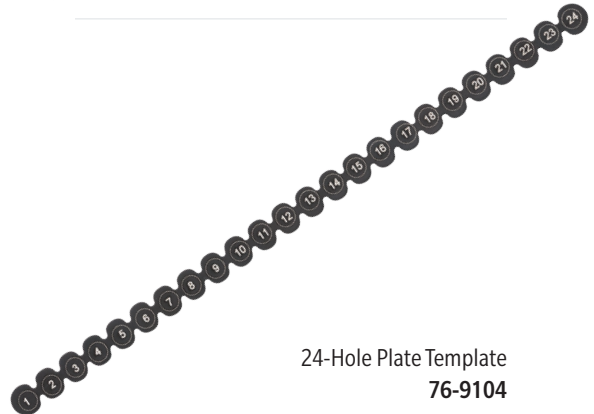
8-Hole Plate Template  
76-9101



12-Hole Plate Template  
76-9102

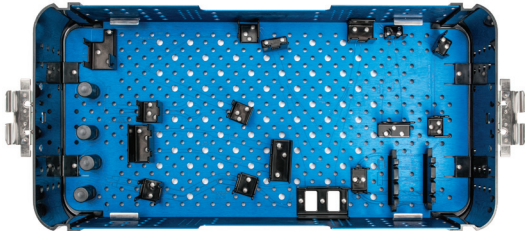


16-Hole Plate Template  
76-9103



24-Hole Plate Template  
76-9104

Containers and Tray Components



Outer Container Base  
76-5006-02



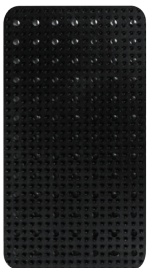
Screw Caddy\*  
76-5003



Implant Caddy\*  
76-5001



Instrument Tray Insert  
76-5007



Mat, Short  
76-5011



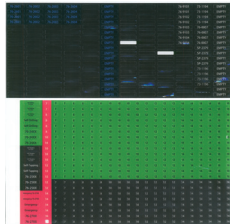
Mat, Long  
76-5012



Complete Tray  
76-5006



Power Driver Tray  
76-5009  
(tray only)



Tray ID Set  
76-5010

Container Lid  
76-5006-01

\*Caddies only. No Implants or screws included

Items not to scale

For more information on RibFix Blu and other thoracic fixation solutions, please contact us at:

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