Smith+Nephew

MAVERICK◊ MINI
External Fixation System

Surgical Technique for forearm

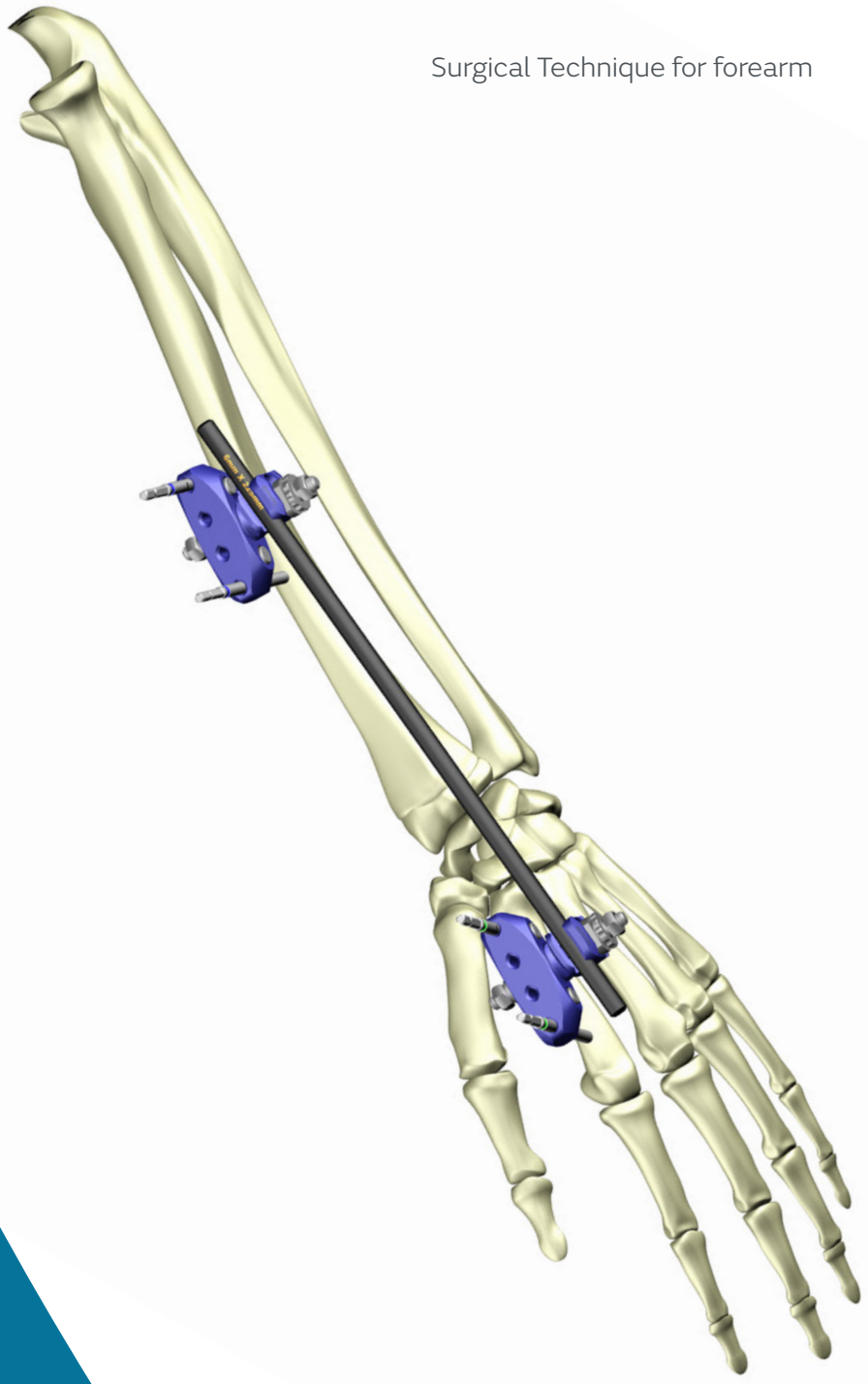


Table of Contents

System Overview 2
Patient Prep 3
Surgical Technique 4
Frame removal 7
MR Safety Information 7
Catalog Information 8

MAVERICK MINI External Fixator

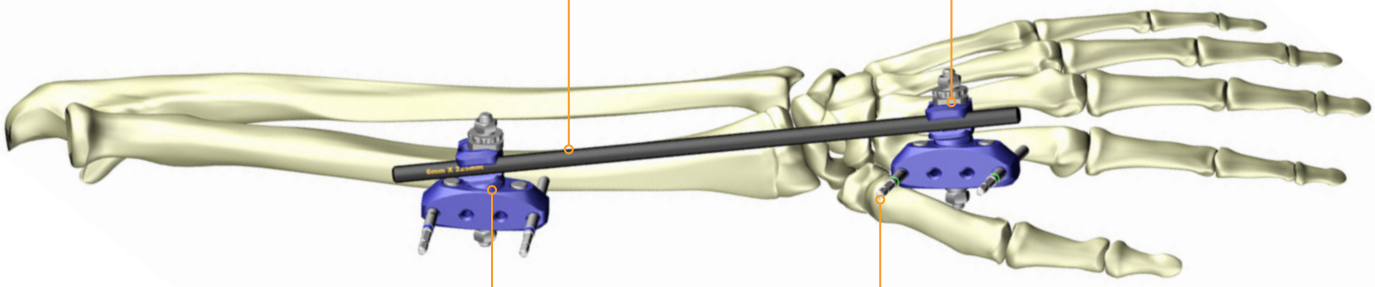
The MAVERICK MINI External Fixation System offers a simple solution for the treatment of forearm including distal radial fractures. The MAVERICK MINI Double Pin Clamp is designed to facilitate fracture reduction while providing stability in a low profile and lightweight design.

Note Bena

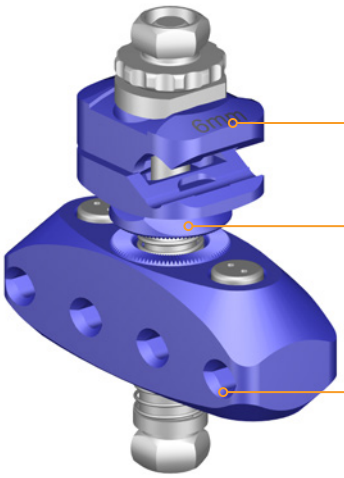
The following technique is for informational and educational purposes only. It is not intended to serve as medical advice. It is the responsibility of treating physicians to determine and utilize the appropriate products and techniques according to their own clinical judgment for each of their patients. For more information on the (MAVERICK MINI External Fixation System), including its indications for use, contraindications, and product safety information, please refer to the product's label and the Instructions for Use packaged with the product.

System Overview

MAVERICK MINI External Fixation System



MAVERICK MINI Double Pin Clamp

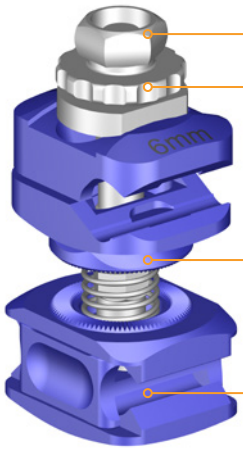


Bar side of the clamp connects to 6mm Bar

Swivel allows 30° arc of angulation

Pin side of the clamp accepts pins with a 4mm shank. Multiple parallel pin placement options are available to better fit patient anatomy and ensure frame stability.

MAVERICK MINI Swivel Clamp



Single point tightening

Thumbscrew provides an easy-to-grip surface for provisional tightening

Swivel allows 30° of angulation

Functions as Bar-to-Bar and Bar-to-Pin clamp

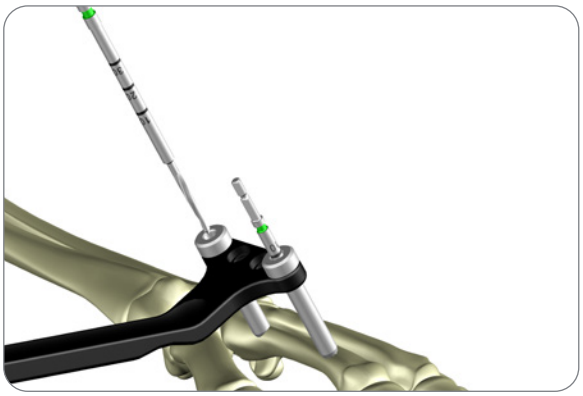
Patient Prep

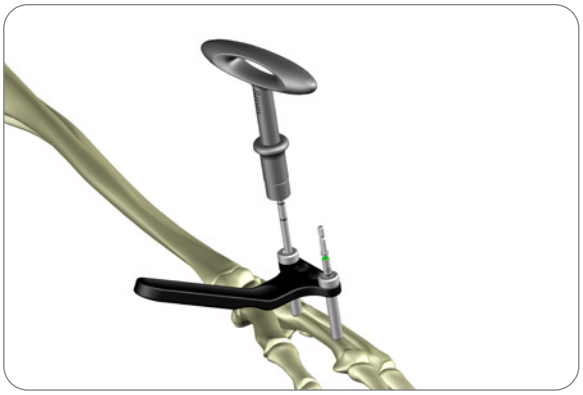
Patient positioning

Under the appropriate anesthesia, the affected upper extremity is prepared sterile over an arm table. The arm can be positioned with a counter-traction post at the elbow, placing the thumb and index finger in sterile finger traps to apply initial traction and aid in fracture reduction.

Alternative patient positioning

The frame can be applied and traction achieved manually with the frame as a reduction device.





Surgical Technique

Metacarpal pin placement

Pins with a 15mm thread length are suited for use in the metacarpal. An adequate incision is made along the palpable edge of the index metacarpal to expose the metacarpal surface. This ensures that the extensor tendon is protected during drill and pin insertion. A small elevator should be used in a side-to-side motion to ensure that no extensor mechanism will be entrapped in metacarpal pins. Retract soft tissues for Drill Guide placement down to bone.

The Tissue Protectors are inserted through the Tissue Protector Handle to provide a Drill Guide/ Sleeve assembly.

Note: To ensure a stable construct, pin spacing should be maximized when possible. Care should be taken to prevent pin placement in the mid-diaphyseal metacarpal shaft due to stress riser concerns.

The Drill Guide/Sleeve assembly is placed such that the metacarpal pins are oriented 40° to 60° dorsal to the coronal plane.

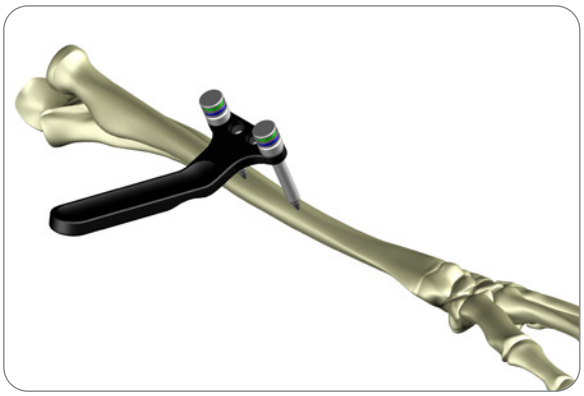
Metacarpal pin insertion

The first pin site is predrilled using the 2.4mm Drill through the Drill Guide/Sleeve assembly. A 3mm Half Pin is then inserted using the Pin Driver until both cortices are engaged.

Repeat the process to insert the second 3mm metacarpal pin.

Note: Pre-drilling is optional. MAVERICK MINI Half Pins are self-drilling and self-tapping.

Catalog Item	Pin size	Drill	Catalog Item
71093515	**3mm x 80mm x 15mm**	**2.4mm**	**71093524**
71093530	**3mm x 120mm x 30mm**	**2.4mm**	**71093524**
71094515	4mm x 80mm x 15mm	3.2mm	71094532
71094530	4mm x 120mm x 30mm	3.2mm	71094532

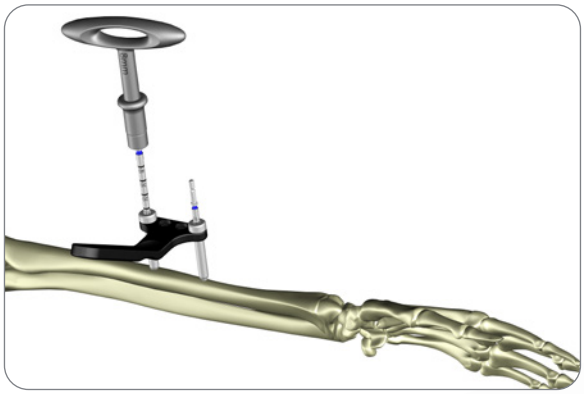


Radial pin placement

Pins with a 30mm thread length are provided for use in the radius, in both 3mm and 4mm. An adequate incision is made at the planned site for pin insertion in the radius. Bluntly dissect down to bone, placing the Tissue Protectors with Trocars in place. Care should be taken to avoid the superficial radial nerve that is at risk in this area.

The Tissue Protector assembly is placed such that the proximal radial pins are oriented 40° to 60° dorsal to the interosseous plane.

Catalog Item	Pin size	Drill	Catalog Item
71093515	3mm x 80mm x 15mm	2.4mm	71093524
71093530	**3mm x 120mm x 30mm**	**2.4mm**	**71093524**
71094515	4mm x 80mm x 15mm	3.2mm	71094532
71094530	**4mm x 120mm x 30mm**	**3.2mm**	**71094532**



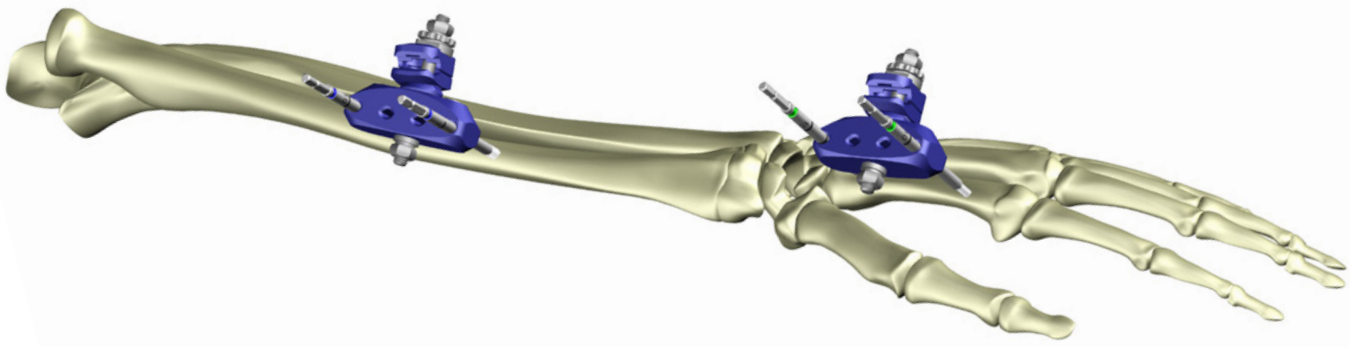
Radial pin insertion

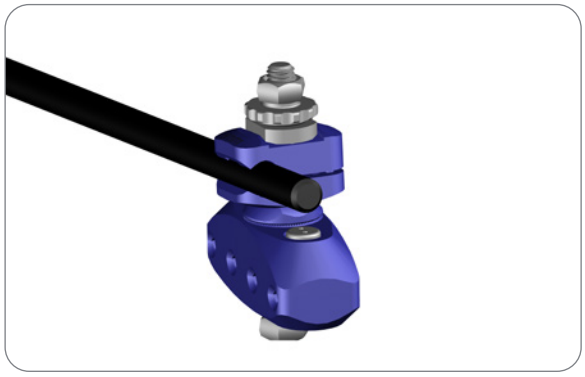
The first pin site is pre-drilled using the 2.4mm or 3.2mm Drill through the Drill Guide/Sleeve assembly.

A 3mm or 4mm Half Pin is then inserted using the Pin Driver until both cortices are engaged. Repeat the process to insert the second 3mm Half Pin.

Frame application

The Double Pin Clamps are placed over the metacarpal and radial pin groups. Ensure proper soft tissue clearance. The Double Pin Clamps can be tightened to the Pins at this stage, or optionally, tightened after Bar insertion.



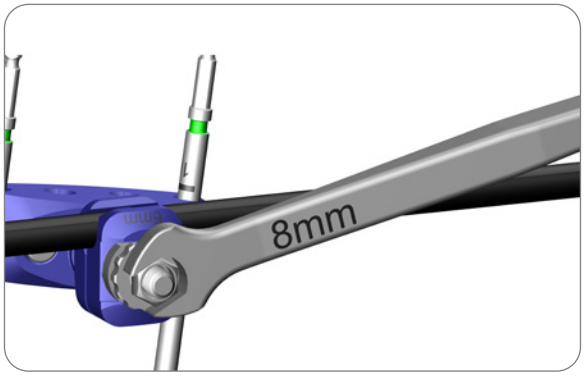


Fracture reduction

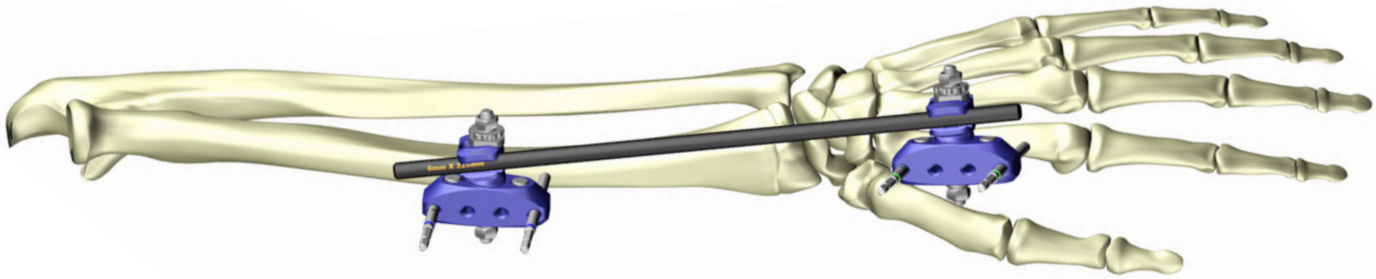
The 6mm Bar should now be attached to the Clamps.

Ensure that the fracture is properly reduced.

The frame can be used to help reduce the fracture. Each pin cluster can be used as a handle to manipulate the fracture until adequate reduction is achieved. Minor adjustments can be made to perfect the reduction if necessary.
Once reduction is satisfactory, tighten the Clamp on the metacarpal Pin Clamp using the 8mm Wrench. The frame is then locked by tightening the Clamp on the radial Pin Clamp.



Check the frame to ensure that all tightening points on the clamps are locked.



Frame removal

Frame removal is performed at the discretion of the surgeon, typically when the patient is ready for definitive fracture fixation.

1. Loosen all Clamps using a 8mm Wrench and turning the nut or screw counter-clockwise.
2. Remove the Bars from the Clamps by pushing them out of the loosened jaws.
3. Remove Clamps from Pins by pushing them off the Pin. It may help to twist the Clamps slightly as you push it off the Post or Pin.
4. Remove the Pins from the bone by unscrewing them counter-clockwise.
   A. If the pin is intact, the standard T-handles can be used on the quick connect end.
   B. If the pin has been cut, use a T-handle Jacob's Chuck to grip the remaining end of the pin and unscrew the pin from the bone.

MAVERICK and JET-X◊ components are intended for Single Patient Use and should be discarded in line with local Biohazardous Waste Protocol.

MR safety information

MAVERICK is MR conditional.

Non-clinical testing demonstrated that Smith+Nephew's MAVERICK External Fixation System are MR Conditional only outside the MRI scanner bore.[1] A patient with the MAVERICK External Fixation System can be scanned safely in an MR system meeting the following conditions:

- The External Fixator must remain entirely outside of the MRI scanner bore.
- If a MAVERICK External Fixator contains any components that are MR Unsafe, the entire external fixator should be considered MR Unsafe.
- Whole body RF transmit coil.
- Static magnetic field of 1.5-Tesla (1.5T) or 3-Tesla (3T).
- Maximum spatial field gradient of 3,000 G/cm (30.0 T/m).
- Whole body averaged specific absorption rate (SAR) of 2.0 W/kg.

The scanner SAR restrictions above apply to a whole-body RF coil using a circularly polarized transmit mode.

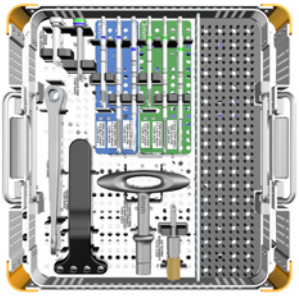
Under the scan conditions defined above, Smith+Nephew's MAVERICK External Fixation System are expected to produce a maximum temperature rise less than or equal to 1.1º C after 15 minutes of continuous scanning at 1.5T and less than or equal to 1.1º C at 3T.

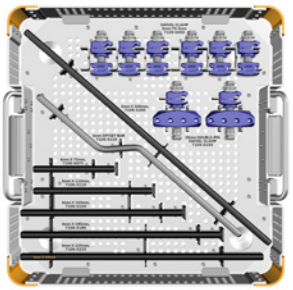
In non-clinical testing using gradient echo and spin echo sequences, Smith+Nephew external fixation systems will not cause image artifact or image distortion when they are located outside of the MRI scanner bore during imaging.[1]

Catalog Information

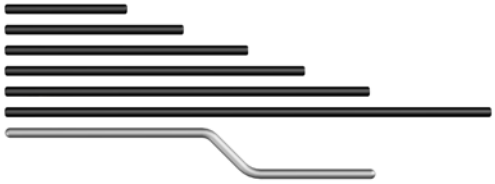
MAVERICK MINI External Fixation

Set. No. 71095550A and 71095550





71095550A	MAVERICK MINI Instruments	Set Qty	
71095500	MAVERICK MINI Ratcheting Combination Wrench 8mm	1	
71095501	MAVERICK MINI T-Handle Quick Connect With 8mm Socket	1	
71751153	AO MINI Connector	1	
71095503	MAVERICK MINI Tissue Protector Handle	1	
71095504	MAVERICK MINI Tissue Protector	2	
71095505	MAVERICK MINI Trocar	2	
71095000	MAVERICK MINI Outer Tray	1	
71095001	MAVERICK MINI Inner Tray	1	
71095002	MAVERICK MINI Tray Lid	1	

71095550	MAVERICK MINI Components	Set Qty	
71095050	MAVERICK MINI Swivel Clamp 6mm to 4mm	6	
71095100	MAVERICK MINI Double-Pin Swivel Clamp	2	
71065075	MAVERICK MINI Bar 6mm x 75mm	2	
71065110	MAVERICK MINI Bar 6mm x 110mm	2	
71065150	MAVERICK MINI Bar 6mm x 150mm	2	
71065185	MAVERICK MINI Bar 6mm x 185mm	2	
71065225	MAVERICK MINI Bar 6mm x 225mm	2	
71095300	MAVERICK MINI Bar 6mm x 300mm	1	
71095229	MAVERICK MINI 6mm Offset Bar	1	
71093515	MAVERICK MINI Half Pin 3 x 80 x 15mm	4	
71093530	MAVERICK MINI Half Pin 3 x 120 x 30mm	4	
71094515	MAVERICK MINI Half Pin 4 x 80 x 15mm	4	
71094530	MAVERICK MINI Half Pin 4 x 120 X 30mm	4	
71093524	MAVERICK MINI 2.4mm Step Drill for 3mm Pin	2	
71094532	MAVERICK MINI 3.2mm Step Drill for 4mm Pin	2	

Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Smith+Nephew representative or distributor if you have questions about the availability of Smith+Nephew products in your area.

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References

1. Smith+Nephew 2021. TM-21-200.