

Surgical Procedure

Patient Positioning

Place the patient in the supine position with the injured extremity on a hand table. If desired, use finger traps. Fracture reduction can be performed using the Fixator. Alternatively, reduction can be accomplished using finger traps, traction devices or manual reduction.

Step One: Pin Placement

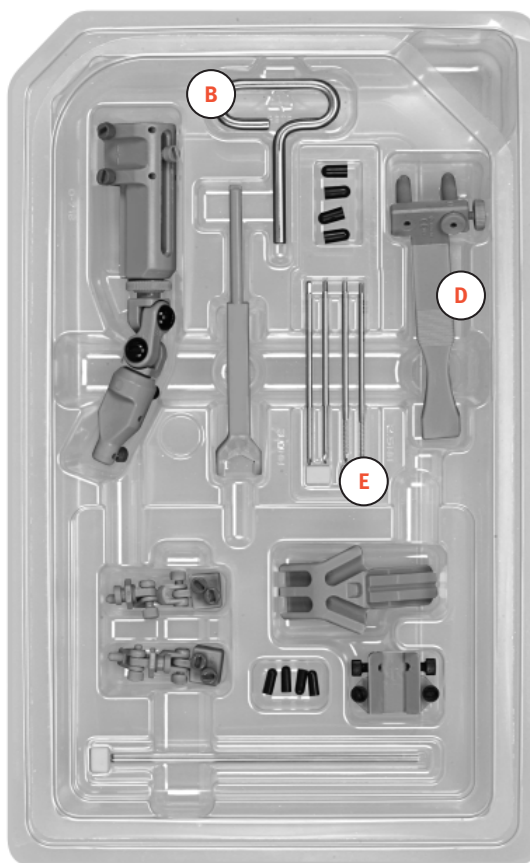
Proximal (Radial Shaft)

You will need the following components:

Power Driver (not provided)

- B) Pin Inserter/Remove
- D) Pin Guide
- E) 3.0mm Self-Drilling/
Self-Tapping Radial Pins

A direct (open) incision is used for inserting the Radial Pins. Identify and mark a skin location on the lateral aspect of the radial shaft approximately 8cm proximal to the radial styloid tip. An appropriate incision should be made centered on this point (Fig. 1). The distal end of the Radial Body Segment should line up with the fracture site.



The superficial radial nerve will be encountered with this approach. Identify and protect the nerve before dividing the deep tissue to expose the bone.

NOTE: When making the incision, take into account the width of the Pin Guide.

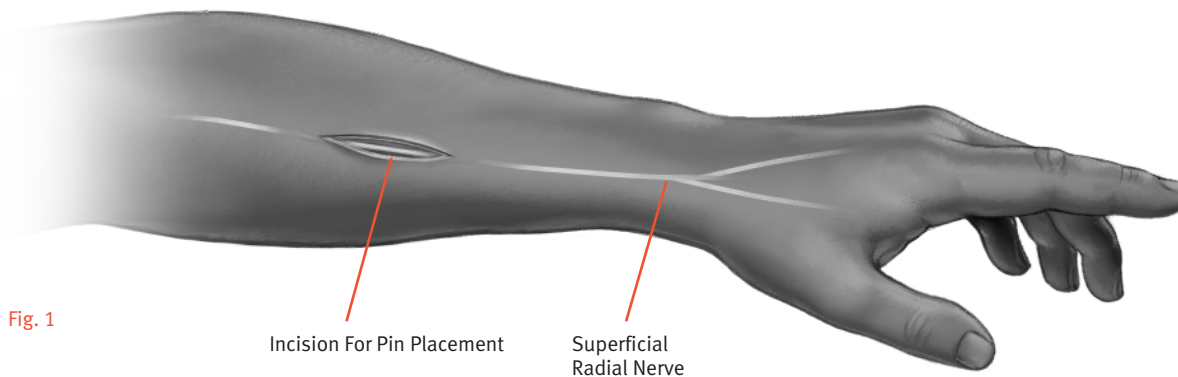


Fig. 1

Incision For Pin Placement

Superficial
Radial Nerve

NOTE: Care should be taken to ensure pin placement in the Mid-Lateral plane. Dorsal or volar angulation will cause the Dorsal Outrigger to be positioned in a non-anatomical orientation.

Place the Pin Guide against the surface of the radius in the mid-lateral plane and centered within the incision. The V-surface of the Pin Guide will aid in the stabilization of the guide upon the surface of the bone. Insert the first 3.0mm Self-Drilling/Self-Tapping Radial Pin thru the Pin Guide until the tip penetrates the opposite cortex (Fig. 2).

NOTE: The pins may be inserted initially under power. Final adjustment of the pin depth should be performed manually with the Pin Inserter/Remover provided in the *Wristore* Sterile Kit.

Slide the fixed sleeve of the Pin Guide over the first radial pin until it contacts the bone. Then position the adjustable sleeve so it contacts the exposed radial shaft.

NOTE: The Pin Guide should be in a stable position with both sleeves firmly against the bone surface. Use of the Pin Guide will help ensure that the second Radial Pin position is parallel to the first with the appropriate span for application of the *Wristore* Fixator.

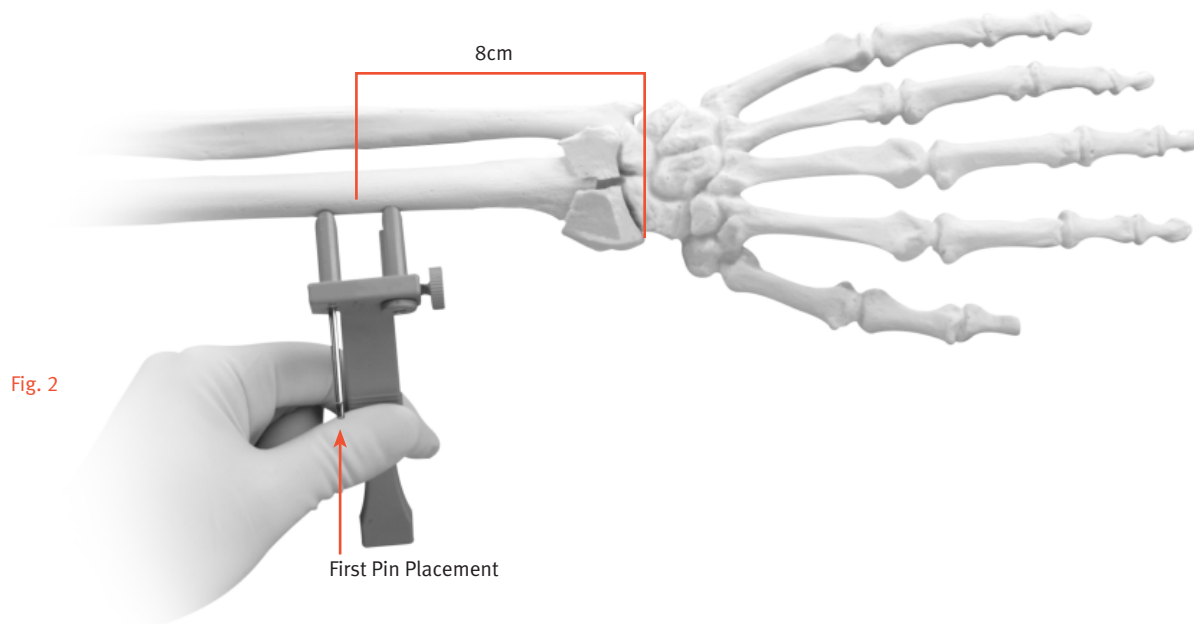


Fig. 2

Insert the second 3.0mm Self-Drilling/ Self-Tapping Radial Pin in the same manner as the first pin (Fig. 3). Confirm final pin depth using fluoroscopy and remove the Pin Guide.

Prior to inserting the Metacarpal Pins, confirm the correct orientation of the Radial Pins in the Mid-Lateral Plane by trialing the Fixator Body with the Dorsal Outrigger assembly.

Positioning of the Fixator with the Outrigger assembled onto the Radial Pins should result in an Outrigger position which coapts with the distal radial anatomy with approximately 1cm of clearance above the skin (Fig. 4).

Fig. 3

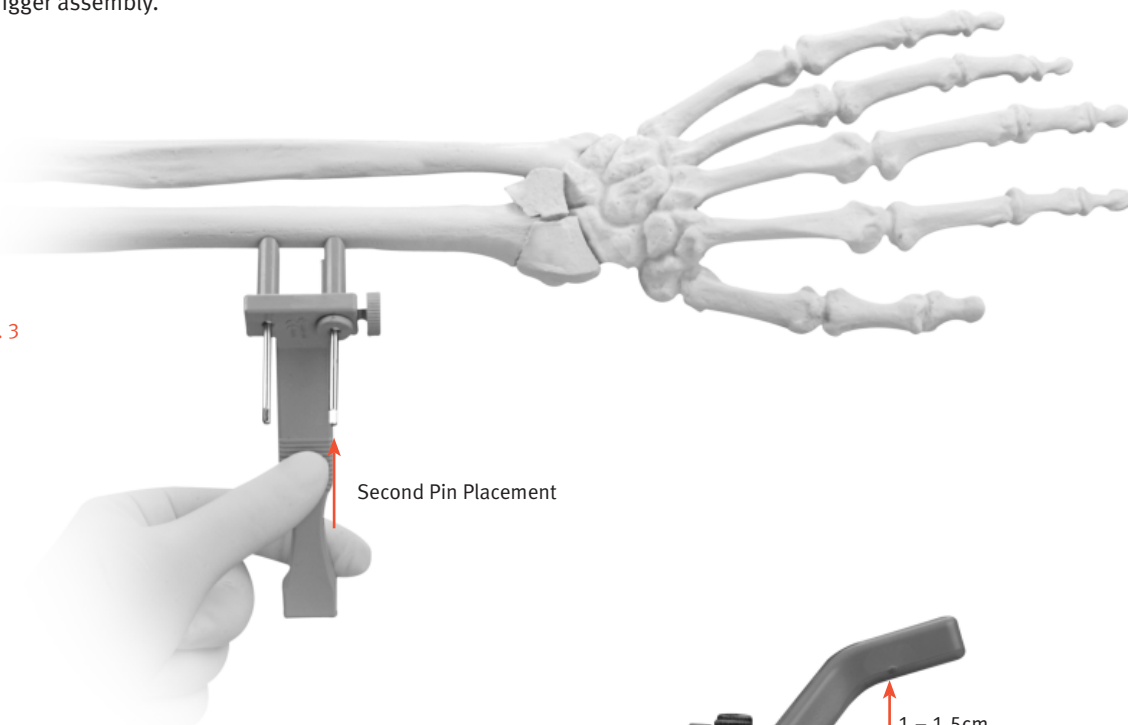
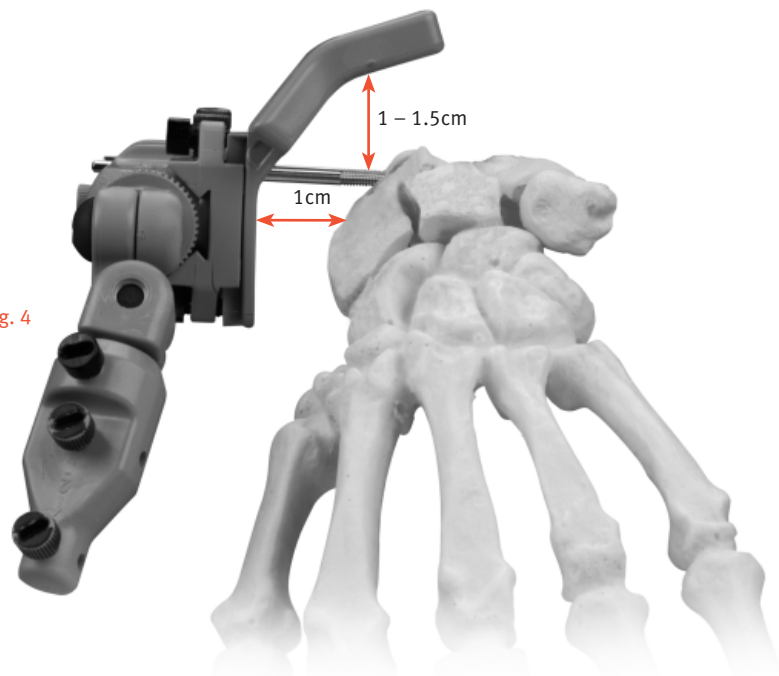


Fig. 4



Distal (Metacarpal)

You will need the following components:

Power Driver (not provided)

B) Pin Inserter/Remover

D) Pin Guide

F) 2.5mm Self-Drilling/Self-Tapping Metacarpal Pins

A direct (open) or percutaneous insertion can be utilized for the Metacarpal Pins depending upon the surgeon's preference. For direct insertion, make a mark on the skin at the second metacarpal, approximately 5mm distal to the metacarpal/carpal joint. Then, beginning at the mark, make an appropriate incision and dissect soft tissues to bone (Fig. 5). Place the Pin Guide against the surface of the second Metacarpal.

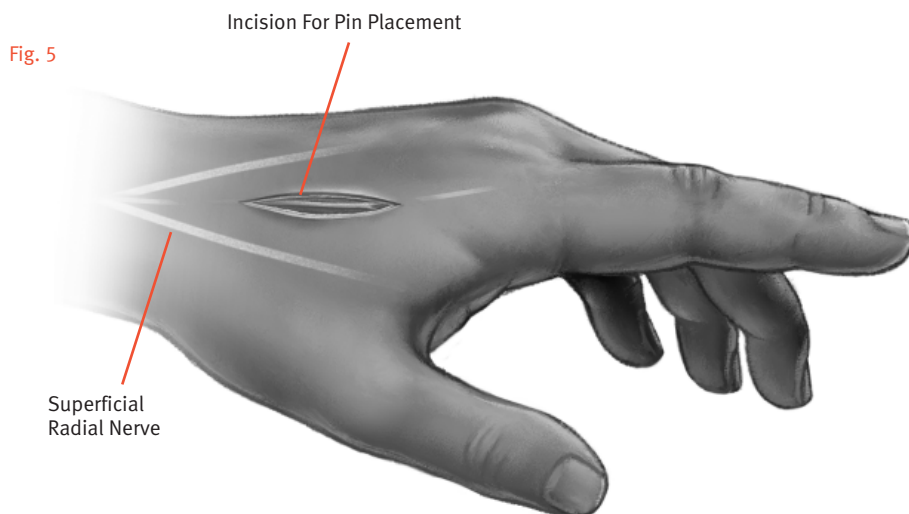
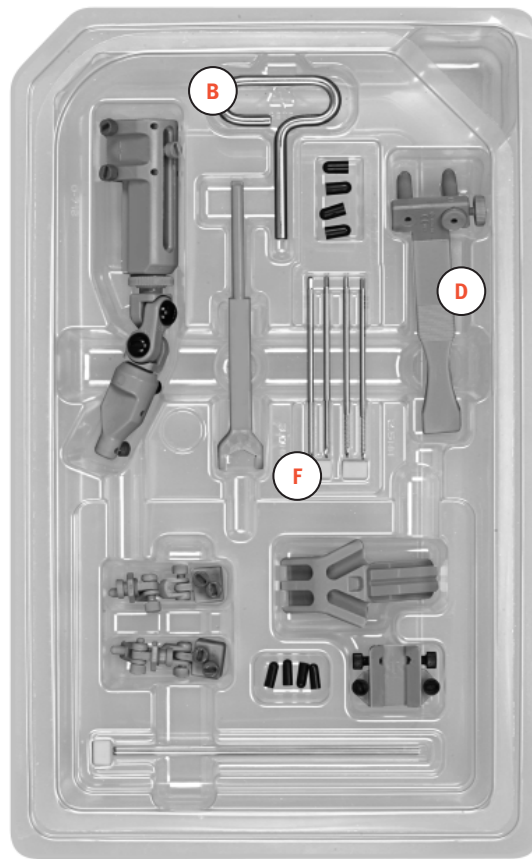


Fig. 5

The V-surface of the Pin Guide will aid in the stabilization of the guide upon the surface of the bone. Insert the first 2.5mm Self-Drilling/Self-Tapping Metacarpal Pin thru the Pin Guide until the tip penetrates the opposite cortex and enters the third metacarpal (Fig. 6). The pins may be inserted initially under power. Final adjustment of the pin depth should be performed manually with the Pin Inserter/Remover provided in the *Wristore* Sterile Kit.

Slide the fixed sleeve of the Pin Guide over the first metacarpal pin until it contacts the bone. Then position the adjustable sleeve so it contacts the exposed metacarpal shaft next to the first pin.

NOTE: The Pin Guide should be in a stable position with both sleeves firmly against the bone surface. Use of the Pin Guide will help ensure that the second Metacarpal Pin position is parallel to the first with the appropriate span for application of the *Wristore* Fixator.

Insert the second 2.5mm Self-Drilling/Self-Tapping Metacarpal Pin in the same manner as the first pin, stopping when the pin penetrates the opposite cortex (Fig. 7). Confirm final pin depth using fluoroscopy and remove the Pin Guide.



Fig. 6



Fig. 7

Step Two: Fixator Application

You will need the following components:

- A) Fixator Body
- L) Wrench/Driver

Once the Radial and Metacarpal Pins are placed, the Fixator can be applied.

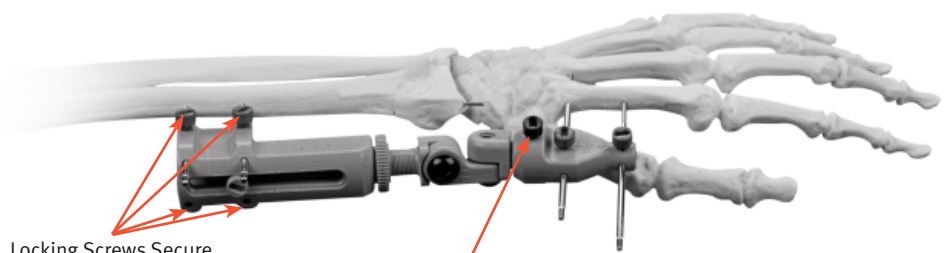
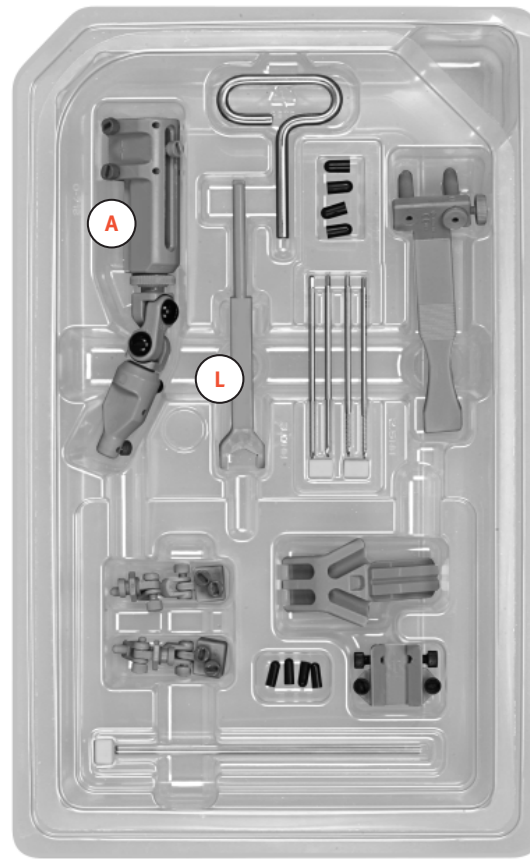
Loosen (but do not remove) all the screws on the Fixator assembly.

NOTE: The Radial and Metacarpal Segments can be separated before installation by removing the black Universal Connector Screw. After installation, the screw is replaced to reattach the segments.

Place the Fixator Body on the Radial Pins using the dorsal holes.

Leaving approximately 1.5cm of clearance between the fixator and the skin, tighten the blue locking screws to secure the Fixator Body to the Radial Pins.

NOTE: If the fixator is too close to the skin, it may not be possible to capture a radial styloid K-wire.



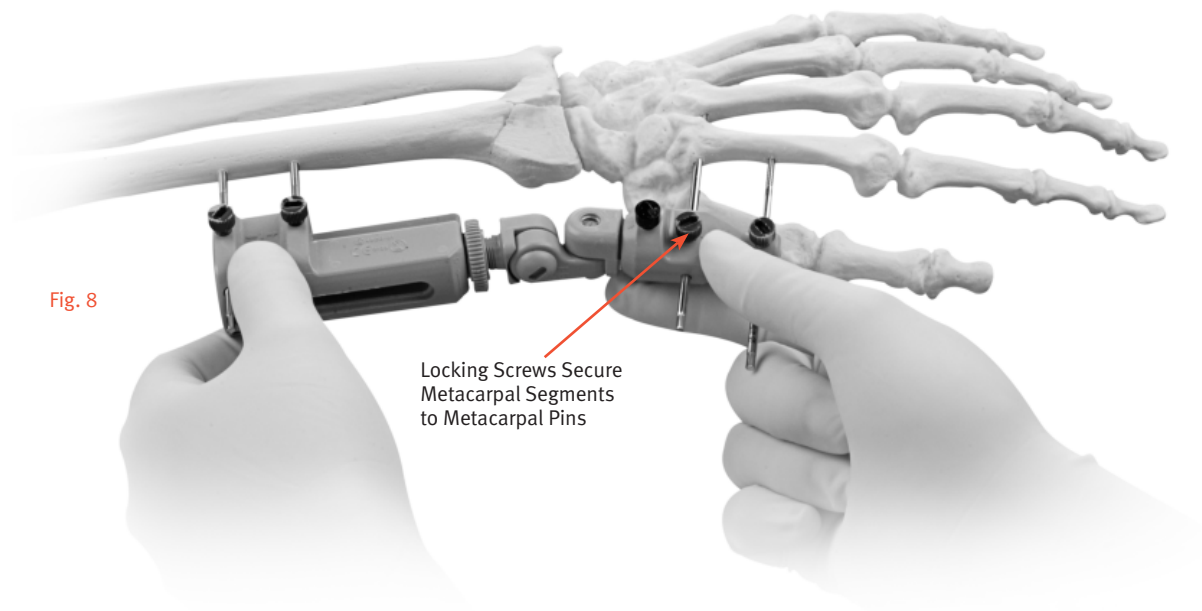
Locking Screws Secure Fixator Body to Radial Pins

Universal Connector Screw Used to Separate the Radial and Metacarpal Bodies

Place the Metacarpal Segment onto the Metacarpal Pins, again leaving approximately 1.5cm of clearance between the Fixator and the skin. Tighten the blue locking screws to secure the Metacarpal Segment to the Metacarpal Pins (Fig. 8).

NOTE: Ultem screws and fixator components have different strength characteristics than metallic components. Care should be taken to secure, but not overtighten screws.

Fig. 8



Locking Screws Secure
Metacarpal Segments
to Metacarpal Pins

Fracture Reduction

Reduce fracture manually or by using the Fixator as a traction device. While holding the hand in the desired position, tighten the rotational locking screw, and the Universal Joint locking screws to maintain the position. In this manner, the Fixator may be utilized to hold the wrist in the desired orientation, thus maintaining anatomic reduction for placement of percutaneous K-wires.

To achieve minor adjustments, the Fixator allows selective positioning of: (see figures 9 and 10)

- Compression/Distracton (CD)
- Radial/Ulnar Deviation (RU)
- Pronation/Supination (PS)
- Flexion/Extension (FE)

Confirm the fracture reduction with fluoroscopy.

NOTE: K-wires can be inserted to assist in fracture reduction.

