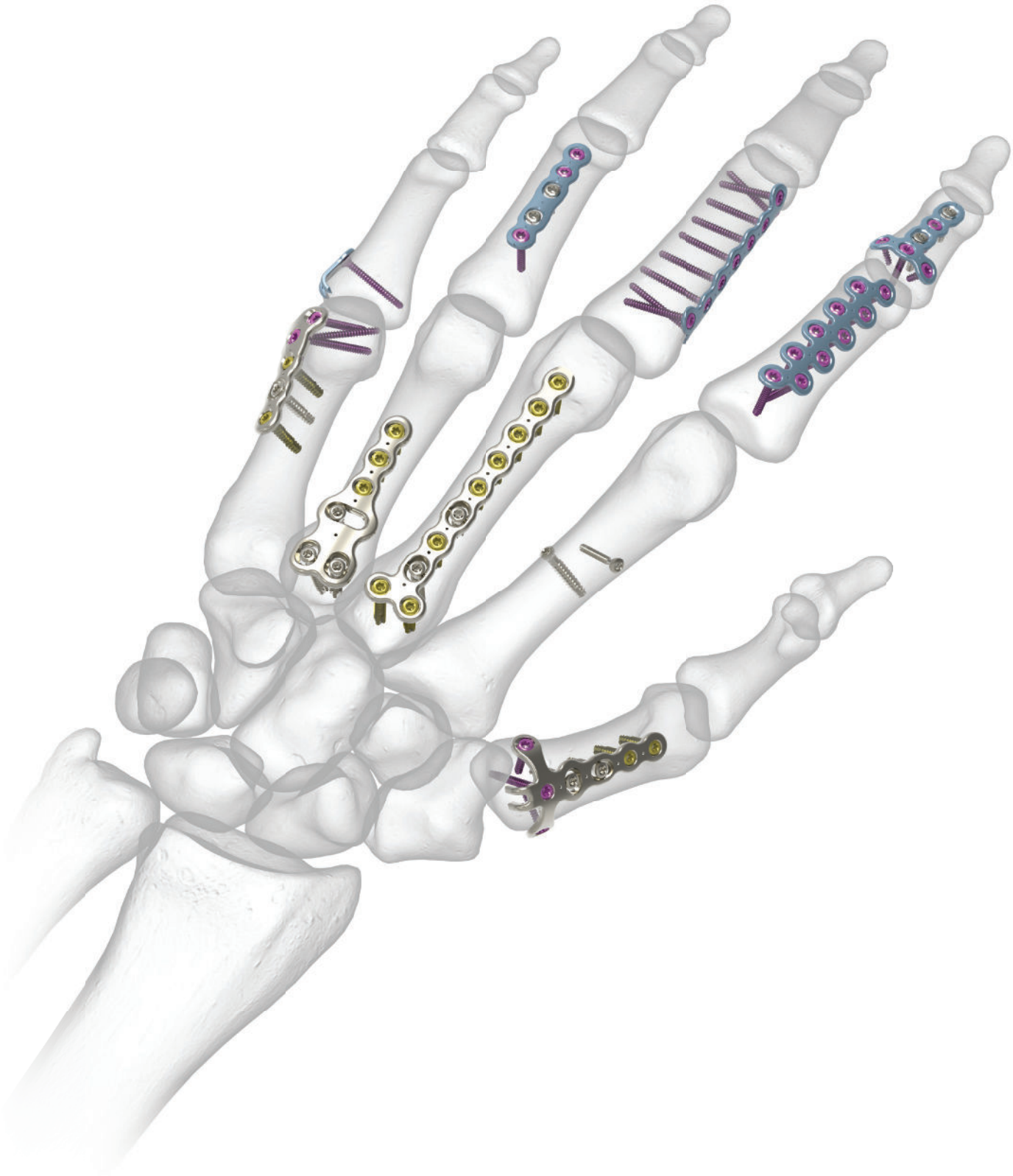
Surgical Technique



acumed® | Hand Fracture System

Acumed® is a global leader of innovative orthopaedic and medical solutions.

We are dedicated to developing products, service methods, and approaches that improve patient care.



Hand Fracture System
Design Surgeon
Randy Bindra, M.D., FRCS

Hand Fracture System
Design Surgeon
Mark S. Cohen, M.D.

Acumed® Hand Fracture System

The Acumed Hand Fracture System was designed to provide both standard and specific fixation for metacarpal and phalangeal fractures, fusions, and osteotomies. This comprehensive system contains plates for fractures and deformities of the metacarpal neck, fractures of the base of the first metacarpal, avulsion fractures, and rotational malunions. Additionally, the system contains standard-shaped, cut-to-length and bend-to-fit plates and lag screws for less complicated fractures.

Low-profile plates and screws and a rounded-edge plate cutter are designed to minimize soft tissue irritation. Versatile screws, customizable plates, and dedicated instrumentation offer a comprehensive system to streamline the surgical experience.

Acumed Hand Fracture System solutions:

- Specialty and standard plates
- Hexalobe MultiScrews and Hexalobe Lag Screws
- Threaded titanium K-wires
- Small Bone Fixator
- Small Bone Distractor

The Instructions for Use (IFU) for the Hand Fracture System can be found in PKGI-56, PKGI-57, PKGI-68, and PKGI-73.

Indications for Use: The Acumed Hand Fracture System is designed for the management of fractures, fusions, and osteotomies of the distal, middle, and proximal phalanges and metacarpals and other bones of appropriate size for the devices.

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Some products shown and/or described may not be available in your distribution area. Please contact your local Acumed sales representative for any further information.

Plate Features

The Acumed Hand Fracture System contains standard-shaped, cut-to-length and bend-to-fit plates, as well as plates specifically designed to treat fractures of the metacarpal neck, fractures of the base of the first metacarpal, avulsion fractures of the phalanges, and rotational malunions of the metacarpals.

0.8 mm Hand Plates

Plate Thickness



0.8 mm Compression Plate, 6-hole **(7005-08006)**



0.8 mm Straight Plate, 10-hole **(7005-08010)**



0.8 mm T-plate **(7005-08003)**



0.8 mm Offset Plate **(7005-08004)**



0.8 mm Curved Medial/Lateral Plate **(7005-08007)**



0.8 mm Avulsion Fracture Hook Plate **(7005-08001)**

1.3 mm Hand Plates

Plate Thickness



1.3 mm Compression Plate, 6-hole **(7005-13006)**



1.3 mm Straight Plate, 10-hole **(7005-13010)**



1.3 mm T-plate **(7005-13002)**



1.3 mm Metacarpal Neck Plate **(7005-1303L/R)**



1.3 mm Rolando Fracture Hook Plate **(7005-13004)**

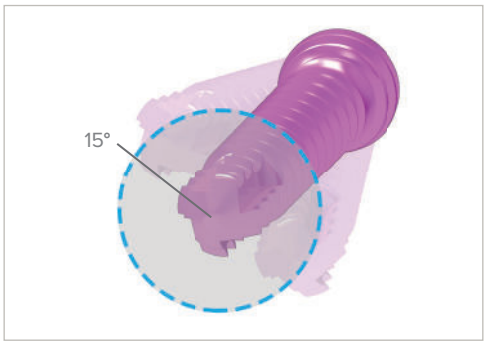


1.3 mm Rotational Correction Plate **(7005-13005)**

System Features

Hexalobe MultiScrew Technology

Designed to be used with any plate in Acumed's Hand Fracture System, 1.5 mm and 2.3 mm Hexalobe MultiScrews act as both nonlocking and variable angle locking screws in one. Hexalobe MultiScrews are made of titanium alloy, ASTM F136. Cutting flutes on the screw are intended to limit the need for a bone tap.



Locking Variable Angle

Hexalobe MultiScrews act as nonlocking screws when inserted into unthreaded slots and locking variable angle screws when inserted into threaded holes.

The Hexalobe MultiScrew design allows for angles of up to 15° in any direction for a total of 30°.



1.5 mm Hexalobe MultiScrew, 5–20 mm lengths
(3004-150XX)



2.3 mm Hexalobe MultiScrew, 5–20 mm lengths
(3004-230XX)



Any Size Hexalobe MultiScrew in Any Hole

1.5 mm and 2.3 mm Hexalobe MultiScrews can be used in either the 0.8 mm or 1.3 mm plate thickness.

The SaveLock Compression Sleeve (see page 8) is designed to aid with plate reduction and allows the 1.5 mm and 2.3 mm Hexalobe MultiScrews to function as both locking and nonlocking screws.

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System Features

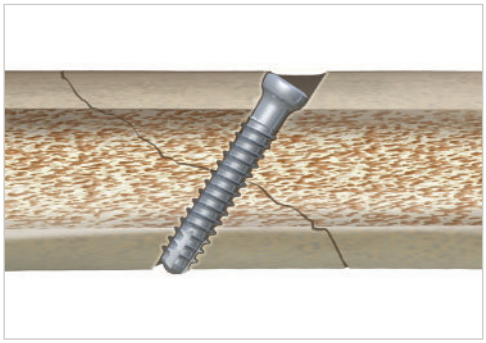
Hexalobe Lag Screw Technology

Designed to be used as an adjunct to plate fixation or for fractures which can be treated with lag screws alone, Acumed's 1.5 mm and 2.3 mm Hexalobe Lag Screws do not require overdrilling of the near cortex. Hexalobe Lag Screws are intended to be used independently of plates or through slotted plate holes only. When using lag screws as a nonlocking screw in plates, ensure the screw engages the far cortex since lag screws are partially threaded and unable to engage the near cortex. It is recommended to not use more than two lag screws per plate if they are being used as nonlocking screws.

No Overdrilling Required

Unlike other bones, the metacarpals and phalanges do not have much cancellous bone and are primarily composed of thick cortical bone. With little cancellous bone, there is nothing for the threads that cross the fracture line to engage; the only bony engagement with the Hexalobe Lag Screw occurs in the near and far cortices.

The MultiScrew Countersink (80-1807) can be used to manually create a countersink in the near cortex to recess the lag screw head.





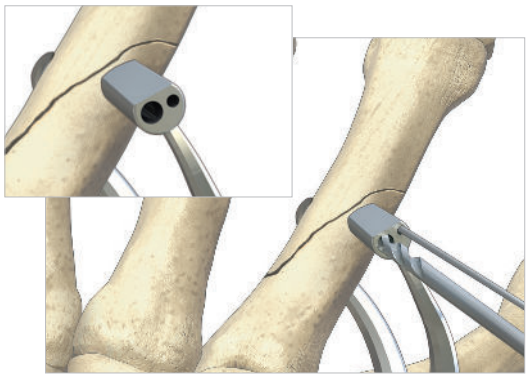
1.5 mm Hexalobe Lag Screw, 5–20 mm lengths **(3012-150XX)**

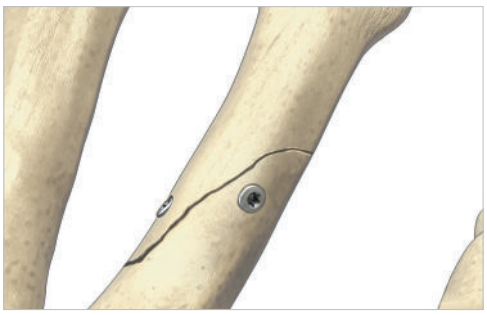


2.3 mm Hexalobe Lag Screw, 5–20 mm lengths **(3012-230XX)**

Straightforward Installation

The 1.1 mm/2.0 mm Percutaneous Bone Clamp (80-0684) is a double-barreled drill guide which aids in provisional fixation and drilling. One barrel can be used to insert a guide wire across the fracture, while the other barrel guides the drill.





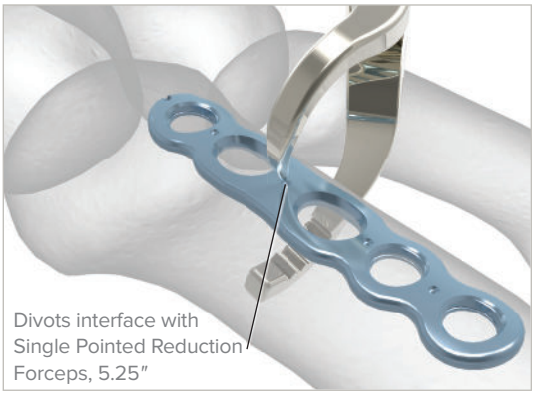
Instrumentation

Acumed's Hand Fracture System offers specialized instrumentation to aid in fracture reduction, plate placement, and rotational osteotomies all in one comprehensive system.



Rotational Osteotomy Cutting Guide (80-1828)
Designed to facilitate precise placement and orientation of cuts for rotational osteotomies of the metacarpals.





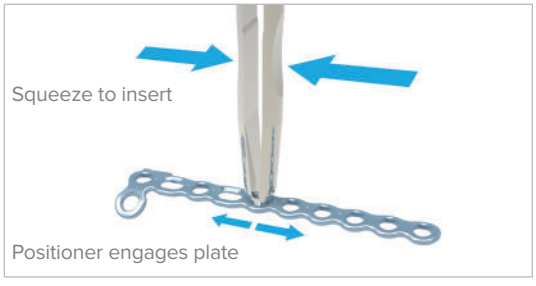
Single Pointed Reduction Forceps, 5.25″ (80-1811)
Forceps hold the plate onto the bone during plate placement and fracture reduction. Sharp end points engage the divots featured between screw holes on the plate to hold the plate securely to the bone.





1.1 mm/2.0 mm Percutaneous Bone Clamp (80-0684)
Reduction clamp with cannulations for 1.1 mm and 2.0 mm drills to aid in maintaining fracture reduction while drilling for lag screws.





0.8 mm/1.3 mm Plate Positioner (80-1958)
Plate Positioner helps to remove plates from plate caddy, transfer them to the fracture site, and aid in provisional plate placement.



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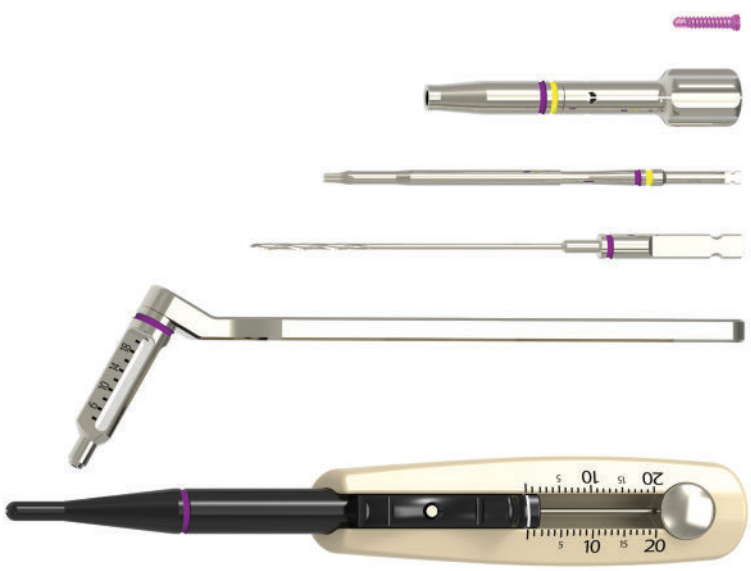
Instrumentation

Screw Instrumentation

- Color-coded screw caddies and screw installation instruments allow for easy selection of appropriate drill, drill guide, and depth gauge.
- Only nonlocking drill guides are needed for insertion of Hexalobe MultiScrews due to the variable angle screw head design.
- SaveLock Compression Sleeve (80-1955) aids in securing Hexalobe MultiScrews to the driver and provides compression between the plate and the bone.

1.5 mm Screw Instruments

Instruments to install the 1.5 mm Hexalobe MultiScrews and Hexalobe Lag Screws are banded in fuchsia.



1.5 mm Hexalobe MultiScrew, 5–20 mm lengths
(3004-150XX)

SaveLock Compression Sleeve
(80-1955)

T6 Stick Fit Driver Tip
(80-1756)

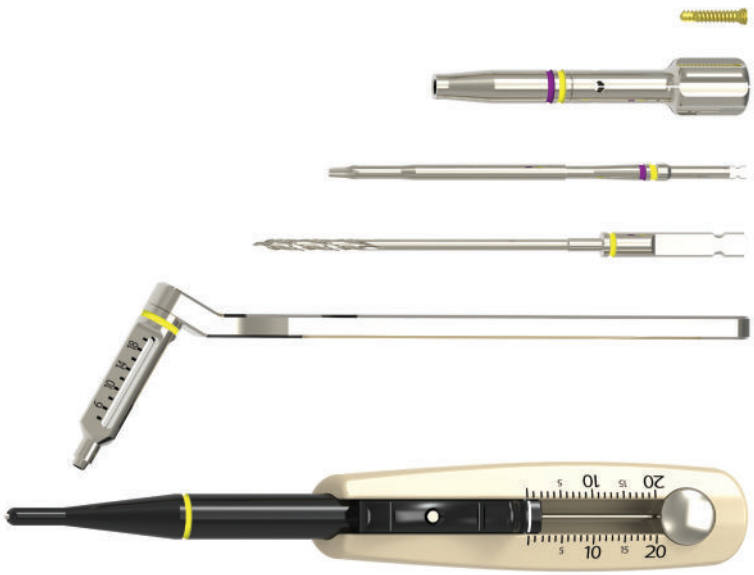
1.1 mm x 3.5″ QR Surgibit® Drill
(80-1794)

1.1 mm MultiScrew Drill Guide, 5–20 mm
(80-1805)

1.5 mm MultiScrew Depth Gauge
(80-1801)

2.3 mm Screw Instruments

Instruments to install the 2.3 mm Hexalobe MultiScrews and Hexalobe Lag Screws are banded in yellow.



2.3 mm Hexalobe MultiScrew, 5–20 mm lengths
(3004-230XX)

SaveLock Compression Sleeve
(80-1955)

T6 Stick Fit Driver Tip
(80-1756)

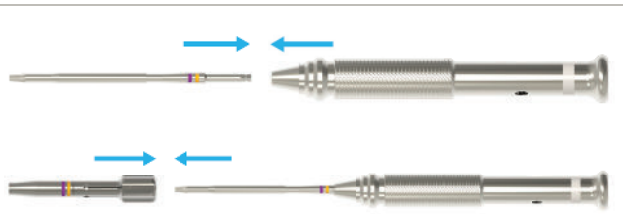
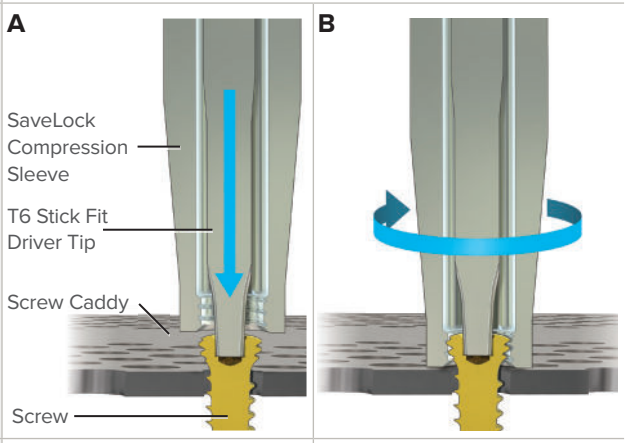
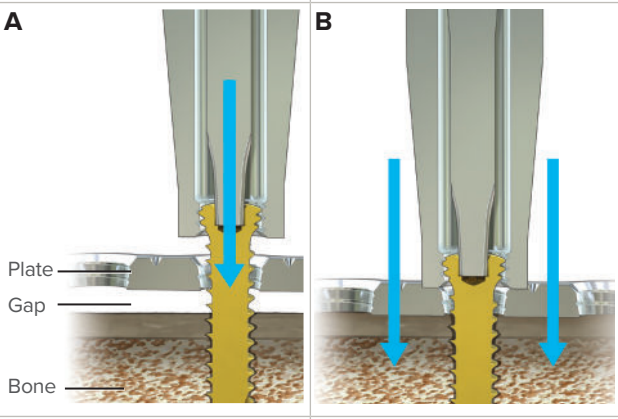
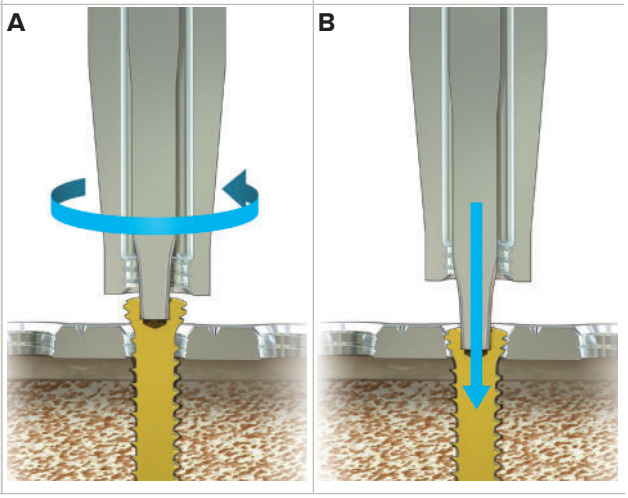
2.0 mm x 3.5″ QR Surgibit® Drill
(80-1796)

2.0 mm MultiScrew Drill Guide, 5–20 mm
(80-1809)

2.3 mm MultiScrew Depth Gauge
(80-1954)

SaveLock Compression Sleeve Technique

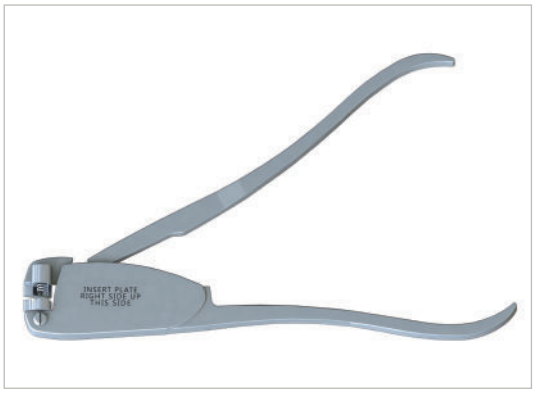
The SaveLock Compression Sleeve is utilized with the T6 Stick Fit Driver Tip and serves two functions: to lock the 1.5 mm or 2.3 mm Hexalobe MultiScrews on the driver tip and to compress the plate to the bone when inserting the screw. The sleeve is threaded over the screw head and prevents these threads from engaging the plate when inserting the screw shaft into the bone.

STEP 1: Assembly	Assemble the T6 Stick Fit Driver Tip (80-1756) and the Cruciform Driver Handle (MS-2210). Slide the SaveLock Compression Sleeve (80-1955) over the T6 Stick Fit Driver Tip.	
STEP 2: Remove Hexalobe MultiScrew from Caddy	**A:** With the SaveLock Compression Sleeve installed, insert the T6 Stick Fit Driver Tip into the head of the Hexalobe MultiScrew (3004-XXXXX). **B:** Thread the SaveLock Compression Sleeve around the Hexalobe MultiScrew head and then remove the screw from the caddy. **Note:** The SaveLock Compression Sleeve must be positioned vertically during this step.	
STEP 3: Hexalobe MultiScrew Insertion	**A:** With the SaveLock Compression Sleeve engaged, insert the Hexalobe MultiScrew into the bone until the bottom surface of the SaveLock Compression Sleeve contacts the plate. **B:** Continue insertion of the Hexalobe MultiScrew with the SaveLock Compression Sleeve engaged until the plate is compressed to the bone.	
STEP 4: Lock Hexalobe MultiScrew into Plate	**A:** Holding the T6 Stick Fit Driver Tip in place, unthread the SaveLock Compression Sleeve from the Hexalobe MultiScrew head. **B:** Continue inserting the Hexalobe MultiScrew until locked into the plate. **Note:** When the SaveLock Compression Sleeve is released, the screw will have already locked into the bone and begun to engage with the plate. This maintains compression between the plate and bone.	

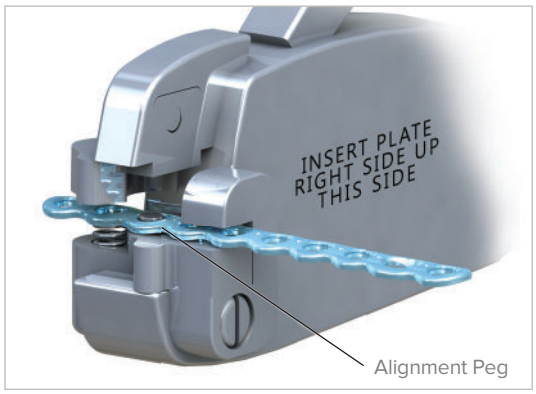
Some products shown and/or described may not be available in your distribution area. Please contact your local Acumed sales representative for any information.

Plate Cutting Technique

If required, plates may be cut to length using the 0.8 mm/1.3 mm Plate Cutters (80-0683).

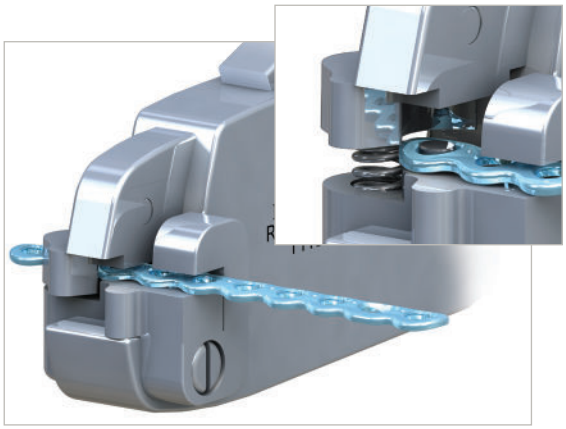


Place the plate with the marking side up into the plate cutter with the last screw hole you want to keep aligned with the alignment peg in the cutter.



Squeeze the handle of the cutters.

Note: The spring holds the cut portion of the plate in place until the handle is released.



The plate cutters leave a rounded edge.

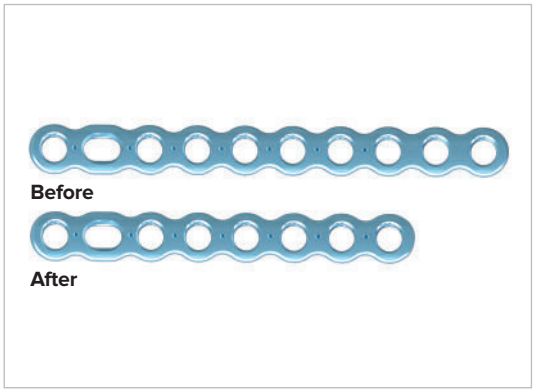
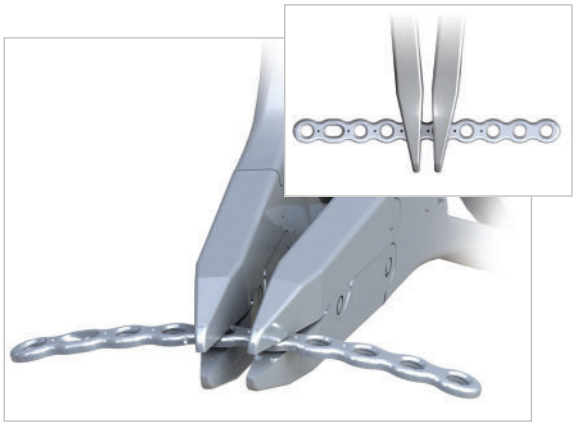


Plate Bending Technique



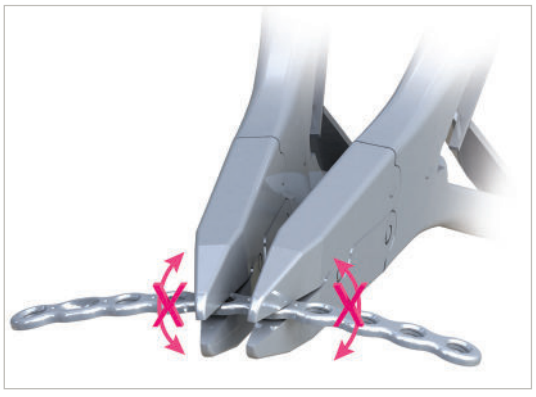
If required, plates can be bent using the 0.8 mm/1.3 mm Plate Bending Pliers (80-1757).



Bend plates between adjacent screw holes.



Do not bend plates across screw holes.



WARNING: Repeated bending of the plate in opposite directions may cause the plate to become weaker or break. Do not bend, unbend, and re-bend more than once.

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Standard Plate Surgical Technique

1 EXPOSURE AND FRACTURE REDUCTION

The patient's forearm is positioned to expose the surgical site. Make the appropriate incision; retract tendons and take care to protect nerve fibers and blood vessels.

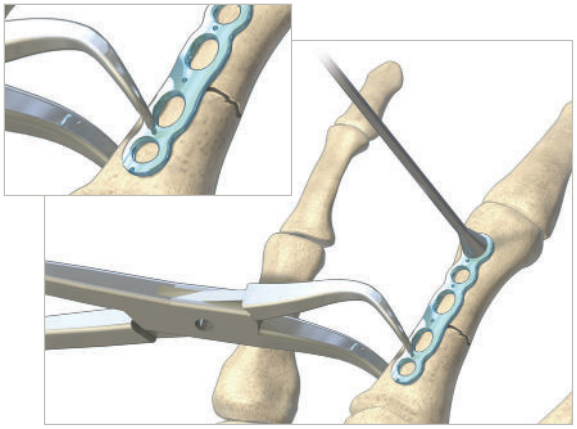
Reduce the fracture using standard reduction techniques. Provisional stability can be achieved with K-wires and evaluated under fluoroscopy.

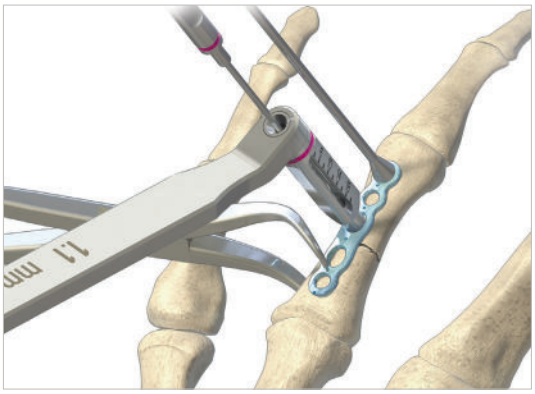


2 PLATE SELECTION AND PLACEMENT

After reduction and stabilization, select the appropriate plate size and shape. Bend and/or cut the plate as necessary. The plate is positioned dorsally (or medially or laterally for the 0.8 mm Curved Medial/Lateral Plate) on the metacarpal or phalanx with .040″ (1.02 mm) Plate Tacks (80-1759), the Single Pointed Reduction Forceps, 5.25″ (80-1811), or K-wires.

Note: Plate divots interface with Single Pointed Reduction Forceps, 5.25″ and Bone Reduction Forceps, 5.25″ (80-1810).





3 DRILLING SCREW HOLES

Drill with the 1.1 mm x 3.5″ QR Surgibit® Drill (80-1794) or 2.0 mm x 3.5″ QR Surgibit® Drill (80-1796) through the appropriate drill guide.

Note: Surgical technique highlights the Standard AO drills. The 1.1 mm and 2.0 mm drills are available in three different connection options as shown below. The Mini-AO and J-Latch are optional parts available upon request. Please contact your local Acumed sales representative for further information.



Standard AO



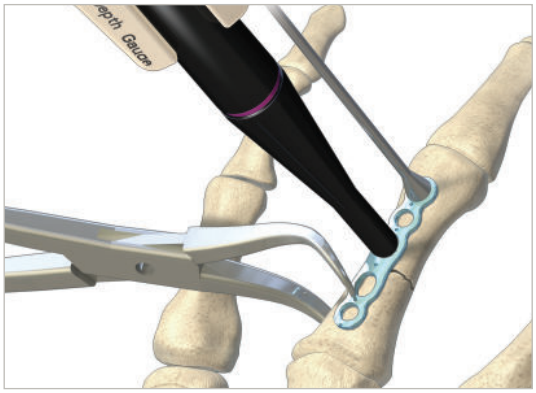
Mini-AO



J-Latch

1.1 mm and 2.0 mm Drill Connections	
Standard AO	1.1 mm x 3.5″ QR Surgibit® Drill (80-1794) 2.0 mm x 3.5″ QR Surgibit® Drill (80-1796)

1.1 mm and 2.0 mm Drill Connections (Optional Instruments)	
Mini-AO	1.1 mm x 3.5″ Mini-AO Surgibit® Drill (80-1795) 2.0 mm x 3.5″ Mini-AO Surgibit® Drill (80-1797)
J-Latch	1.1 mm x 3.5″ J-Latch Surgibit® Drill (80-1804) 2.0 mm x 3.5″ J-Latch Surgibit® Drill (80-1816)



4 DETERMINING SCREW LENGTH

Measure screw length using the corresponding 1.5 mm or 2.3 mm MultiScrew Depth Gauge (80-1801 or 80-1954).

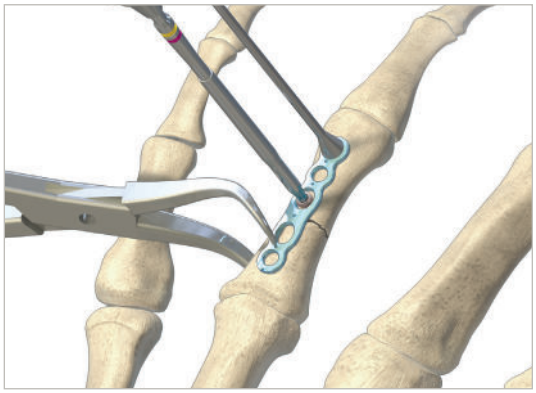
Note: The 1.1 mm MultiScrew Drill Guide, 5–20 mm (80-1805) or the 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809) can also be used to measure the screw lengths.

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5 SCREW INSERTION

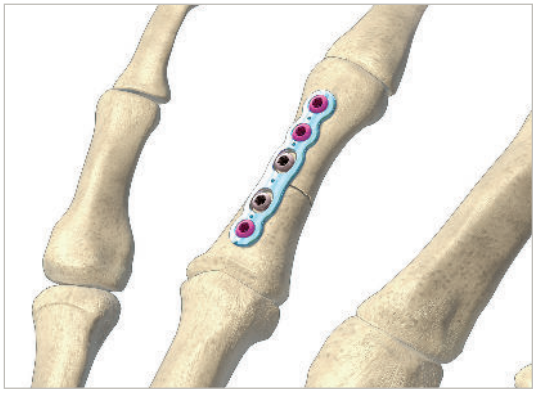
Using the SaveLock Compression Sleeve (80-1955) and the T6 Stick Fit Driver Tip (80-1756), secure the plate to the bone with 1.5 mm Hexalobe Lag Screws (3012-150XX) or 2.3 mm Hexalobe Lag Screws (3012-230XX) through the slots. Finish securing the plate to the bone with 1.5 Hexalobe MultiScrews (3004-150XX) or 2.3 mm Hexalobe MultiScrews (3004-230XX) through the remaining threaded holes.

Note: Hexalobe MultiScrews should be inserted using only the Cruciform Driver Handle (MS-2210) provided in the system and locked to "three-finger tight." This is generated by using only the thumb, index, and middle fingers. Unlike traditional nonlocking screws, there is no "hard stop" feature when Hexalobe MultiScrews are used as a nonlocking screw in an oblong slot, so they should be inserted only until they are "three-finger tight."



6 CLOSURE AND POSTOPERATIVE PROTOCOL

Perform a thorough radiographic evaluation to check fragment reduction, alignment, and screw placement. Verify that there is no gap between the bone and the plate in the lateral view. Close the wound and support the wrist according to bone quality and stability. Allow for early functional use of the hand and start immediate finger range of motion and forearm rotation postoperatively.



Metacarpophalangeal Joint Fusion Surgical Technique



Thumb



Index Finger

1 EXPOSURE

The patient's forearm is positioned to expose the dorsum of the hand. Make the appropriate skin incision; incise the extensor hood and the joint capsule. Release the collateral ligaments on either side of the joint to facilitate exposure of the articular surface.

2 BONE PREPARATION

Excise the metacarpal head with an oscillating saw. The angle of fusion is determined by the angle of the metacarpal head osteotomy. The base of the proximal phalanx is excised perpendicular to its long axis.

Alternatively, cup and cone reamers found in the Acumed Modular Hand System can be used to remove cartilage from the metacarpal head and base of the phalanx to prepare the joint surfaces for fusion.

Provisional stability of the fusion can be achieved with a longitudinal K-wire passed through the metacarpal head into the proximal phalanx. The position of the joint is evaluated under fluoroscopy.

Note: Further surgical images highlight the index finger.

Part Number	Part Description
MTP-F014	14 mm Concave MTP Reamer
MTP-F016	16 mm Concave MTP Reamer
MTP-M014	14 mm Convex MTP Reamer
MTP-M016	16 mm Convex MTP Reamer

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3 PLATE SELECTION

Select the appropriate 1.3 mm thick plate. If it is determined that the plate needs to be cut for the procedure, ensure the plate length is cut down to no less than five holes and that at least one of the holes is an oblong slot.

Bend the plate between the holes on either side of the joint line. The plate is recommended to be over-bent by 5° to prevent gapping of the far cortex.

The objective is to secure at least four cortices on either side of the fusion as well as an additional lag screw through the fusion site for compression.

Note: This technique shows the 1.3 mm Compression Plate, 6-hole (7005-13006) being utilized, but other 1.3 mm thick plates can be used as appropriate.



1.3 mm Compression Plate, 6-hole
(7005-13006)



1.3 mm Straight Plate, 10-hole
(7005-13010)



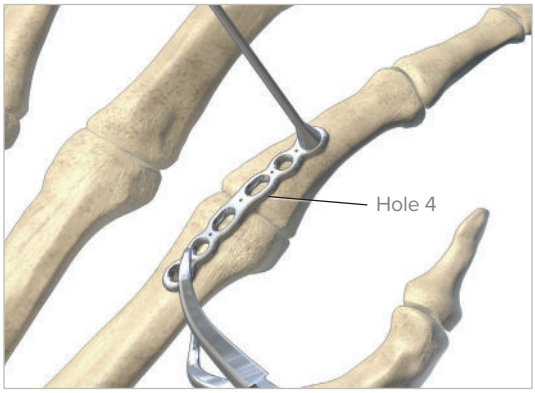
1.3 mm T-plate
(7005-13002)

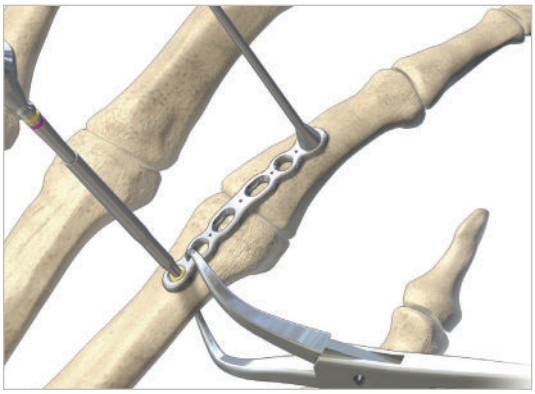
4 PLATE PLACEMENT

Position the plate dorsally bridging the metacarpophalangeal joint with .040″ (1.02 mm) Plate Tacks (80-1759), the Single Pointed Reduction Forceps, or K-wires.

If the plate has been cut down to five holes, position the plate with three holes on the metacarpal and two on the phalanx.

The first hole on the phalanx (hole 4) should preferably be a compression slot. Ensure that the rotational alignment of the finger is correct by passively closing all digits into a fist.





5 PROXIMAL SCREW INSERTION

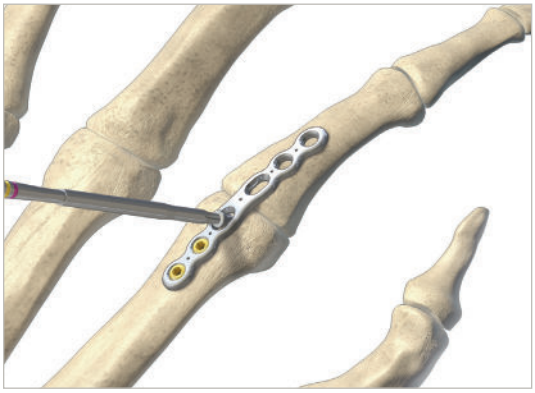
Beginning in the most proximal hole, drill with the 2.0 mm x 3.5″ QR Surgibit® Drill (80-1796) and 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809).

Measure screw length using the corresponding 2.3 mm Depth Gauge (80-1356).

Using the SaveLock Compression Sleeve (80-1955) and the T6 Stick Fit Driver Tip (80-1756), secure the plate to the bone with 2.3 mm Hexalobe MultiScrews (3004-230XX).

Note: With the exception of first metacarpal joint fusions or larger anatomy, it is recommended to use 1.5 mm screws in the phalanx and 2.3 mm screws in the metacarpal.

Note: Hexalobe MultiScrews should be inserted using only the Cruciform Driver Handle (MS-2210) provided in the system and locked to "three-finger tight." This is generated by using only the thumb, index, and middle fingers. Unlike traditional nonlocking screws, there is no "hard stop" feature when Hexalobe MultiScrews are used as a nonlocking screw in an oblong slot, so they should be inserted only until they are "three-finger tight."



6 LAG SCREW INSERTION

Additional compression and stability of the fusion is achieved with the insertion of an oblique lag screw across the fusion.

Drill with the 2.0 mm x 3.5″ QR Surgibit® Drill and the 2.0 mm MultiScrew Drill Guide, 5–20 mm, obliquely across the fusion site through the metacarpal head through the slot closest to the fusion.

Measure screw length using the corresponding 2.3 mm MultiScrew Depth Gauge (80-1954).

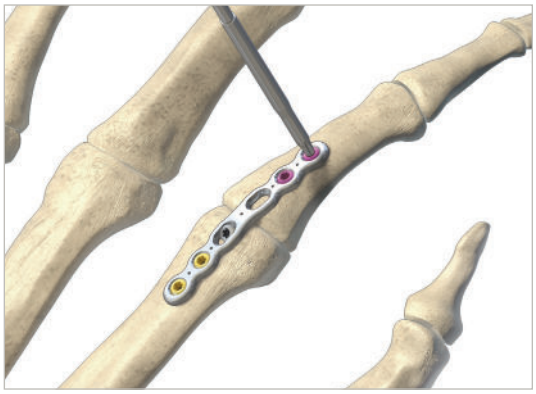
Using the T6 Stick Fit Driver Tip (80-1756), install the 2.3 mm Hexalobe Lag Screw (3012-230XX).

Some products shown and/or described may not be available in your distribution area. Please contact your local Acumed sales representative for any information.

7 DISTAL SCREW INSERTION

Ensure that the plate is aligned longitudinally with the phalanx and that the fusion is compressed.

Insert the remaining screws in the plate to complete fixation. Bone grafting is not routinely necessary if compression has been achieved at the joint line. If there is a gap or bone loss, cancellous autograft may be used.



8 CLOSURE AND POSTOPERATIVE PROTOCOL

Perform a thorough radiographic evaluation to check joint compression, bone alignment, and screw placement. Verify that there is adequate compression of the fusion and that there is no gap between the bone and the plate in the lateral view.

Repair the extensor mechanism, close the wound, and support the wrist and hand according to bone quality and stability.

Allow for early range of motion of adjacent joints postoperatively and encourage functional use of the hand as tolerated.



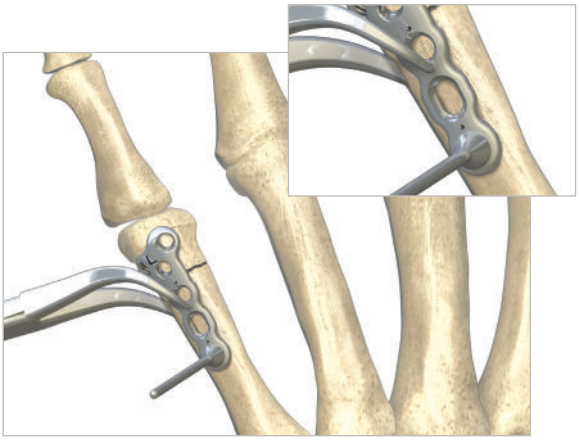
1.3 mm Metacarpal Neck Plate Surgical Technique



1 EXPOSURE AND FRACTURE REDUCTION

The patient's forearm is pronated and positioned to expose the surgical site. Make the appropriate incision; retract tendons taking care to protect nerve fibers and blood vessels.

Reduce the fracture using manual techniques. Provisional stability can be achieved with K-wires and evaluated under fluoroscopy.

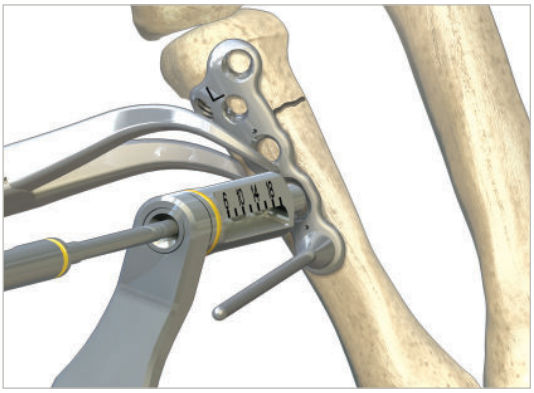


2 PLATE PLACEMENT

After reduction and stabilization, the appropriate 1.3 mm Metacarpal Neck Plate (7005-1303L or 7005-1303R) is positioned dorso-laterally just proximal to the ligamentous attachments on the metacarpal head with .040″ (1.02 mm) Plate Tacks (80-1759), the Single Pointed Reduction Forceps, 5.25″ (80-1811), or K-wires.

Note: Plate divots interface with Single Pointed Reduction Forceps, 5.25″ and Bone Reduction Forceps, 5.25″ (80-1810).

Note: If a medial placement is preferred, the plate opposite to the hand can be used, i.e. use the Right 1.3 mm Metacarpal Neck Plate (7005-1303R) on the left hand.



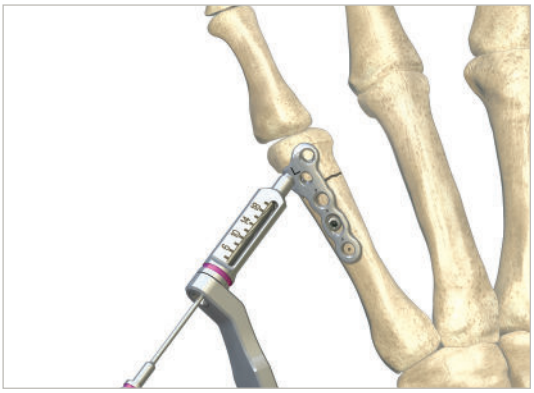
3 PROXIMAL SCREW INSERTION

Drill with the 2.0 mm x 3.5″ QR Surgibit® Drill (80-1796) and 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809) through the slot. Measure screw length using the 2.3 mm MultiScrew Depth Gauge (80-1954). Using the T6 Stick Fit Driver Tip (80-1756), secure the plate to the bone with a 2.3 mm Hexalobe Lag Screw (3012-230XX).

Some products shown and/or described may not be available in your distribution area. Please contact your local Acumed sales representative for any information.

4 DISTAL CLUSTER SCREW PREPARATION

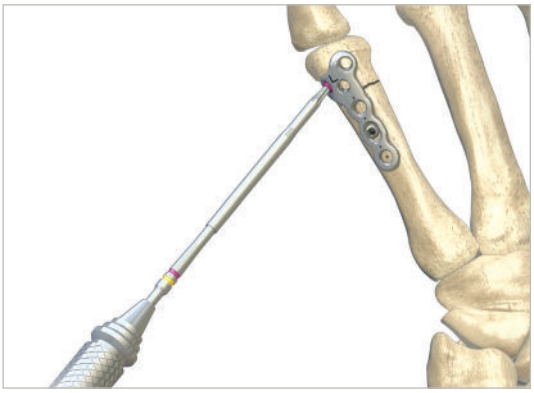
Drill the distal holes with the 1.1 mm x 3.5″ QR Surgibit® Drill (80-1794) and 1.1 mm MultiScrew Drill Guide, 5–20 mm (80-1805). Measure screw length using the 1.5 mm MulitScrew Depth Gauge (80-1801).

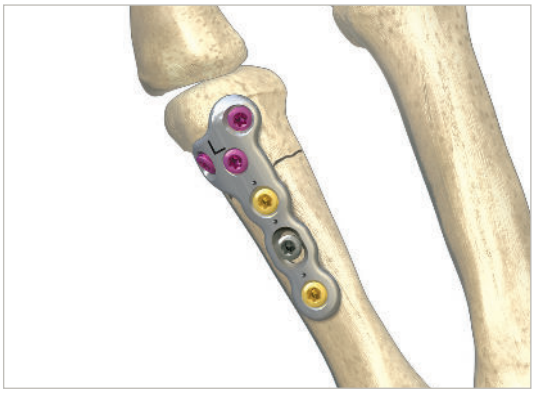


5 SCREW INSERTION

Using the SaveLock Compression Sleeve (80-1955) and the T6 Stick Fit Driver Tip (80-1756), insert the 1.5 mm Hexalobe MultiScrews (3004-150XX) in the distal oblique holes. For maximum stabilization, the use of all of the distal oblique holes is recommended. Finish drilling, measuring, and installing the remaining proximal shaft holes with 2.3 mm Hexalobe MultiScrews.

Note: Hexalobe MultiScrews should be inserted using only the Cruciform Driver Handle (MS-2210) provided in the system and locked to "three-finger tight." This is generated by using only the thumb, index, and middle fingers. Unlike traditional nonlocking screws, there is no "hard stop" feature when Hexalobe MultiScrews are used as a nonlocking screw in an oblong slot, so they should be inserted only until they are "three-finger tight."





6 CLOSURE AND POSTOPERATIVE PROTOCOL

Perform a thorough radiographic evaluation checking fragment reduction, alignment, and screw placement. Verify that there is no gap between the bone and the plate in the lateral view. Close the wound and support the wrist according to bone quality and stability. Allow for early functional use of the hand and start immediate finger range of motion and forearm rotation postoperatively.

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1.3 mm Rotational Correction Plate Surgical Technique

1 EXPOSURE

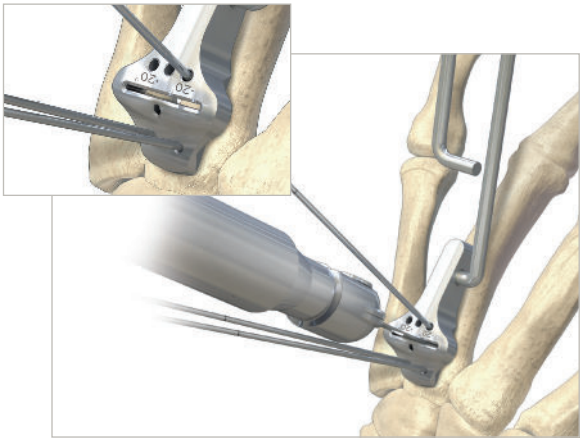
The patient's forearm is pronated and positioned to expose the surgical site. Make the appropriate incision; retract tendons taking care to protect nerve fibers and blood vessels.



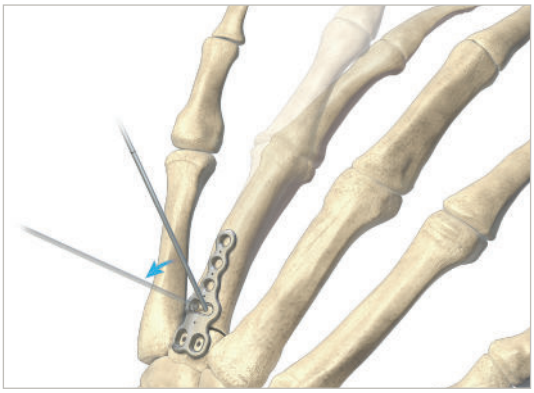
2 OSTEOTOMY CUT

Place the Rotational Osteotomy Cutting Guide (80-1828) on the base of the metacarpal requiring the osteotomy. Use two .045″ (1.14 mm) K-wires (WS-1106ST) for the proximal side and one .062″ (1.58 mm) K-wire (WS-1607ST) for the distal side to secure the cutting guide to the bone. Bend the two most proximal K-wires to move them out of the way of the saw blade. Perform the cut under thorough irrigation. Remove the two most proximal K-wires, then slide the guide off of the distal .062″ K-wire.

Note: The distal .062″ K-wire will be used for rotational correction.



Recommended Saw Blade Parameters	
Width	No greater than 7 mm
Length	Approximately 30 mm
Thickness	No greater than 0.5 mm



3 PLATE PLACEMENT AND ROTATIONAL CORRECTION

Position the 1.3 mm Rotational Correction Plate (7005-13005) by sliding it over the remaining K-wire through the transverse hole. Perform rotational correction using the .062″ (1.58 mm) K-wire as a joystick.

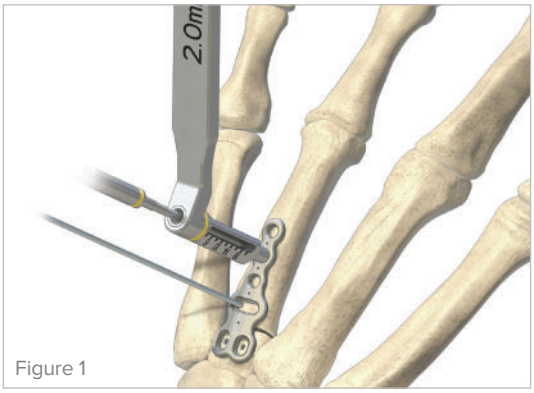


Figure 1

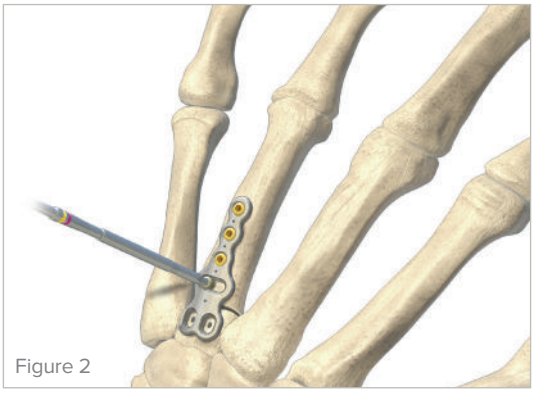


Figure 2

4 DISTAL SCREW INSERTION

Drill, measure, and insert the three 2.3 mm Hexalobe MultiScrews (3004-230XX) in the distal end of the plate (Figure 1) with the 2.0 mm x 3.5" Surgibit® Drill (80-1796).

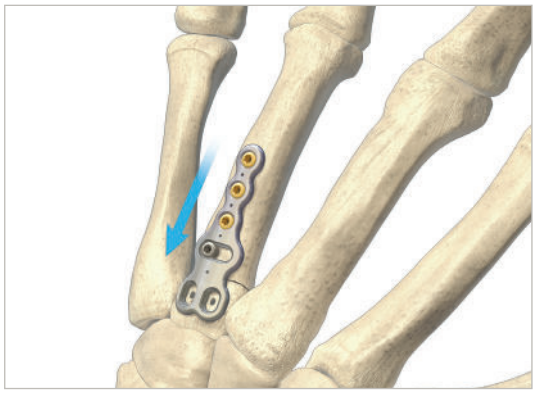
Remove the .062″ (1.58 mm) K-wire and open up the hole left with the 2.0 mm x 3.5″ Surgibit® Drill and 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809). Measure for and insert a 2.3 mm Hexalobe Lag Screw (3012-230XX) into this slot (Figure 2).

Note: Hexalobe MultiScrews should be inserted using only the Cruciform Driver Handle (MS-2210) provided in the system and locked to "three-finger tight." This is generated by using only the thumb, index, and middle fingers. Unlike traditional nonlocking screws, there is no "hard stop" feature when Hexalobe MultiScrews are used as a nonlocking screw in an oblong slot, so they should be inserted only until they are "three-finger tight."

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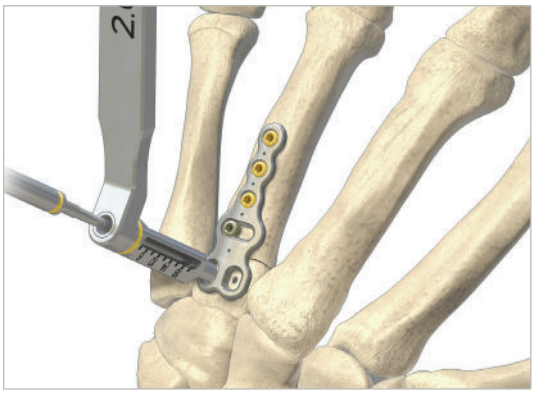
5 OSTEOTOMY COMPRESSION

Manually compress the osteotomy site.



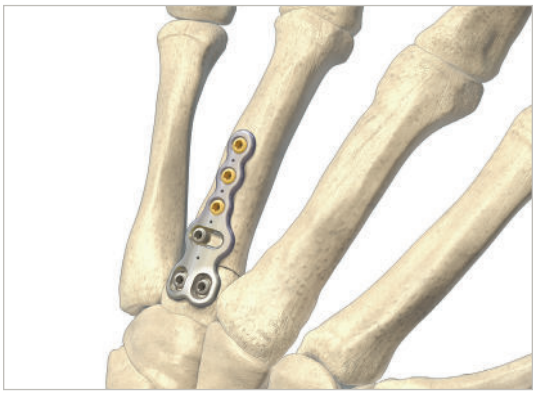
6 PROXIMAL SCREW INSERTION

Drill with the 2.0 mm x 3.5″ QR Surgibit® Drill and 2.0 mm MultiScrew Drill Guide, 5–20 mm. Measure and insert two 2.3 mm Hexalobe Lag Screws into the holes, using a T6 Stick Fit Driver Tip (80-1756) and 2.3 mm MultiScrew Depth Gauge (80-1954).

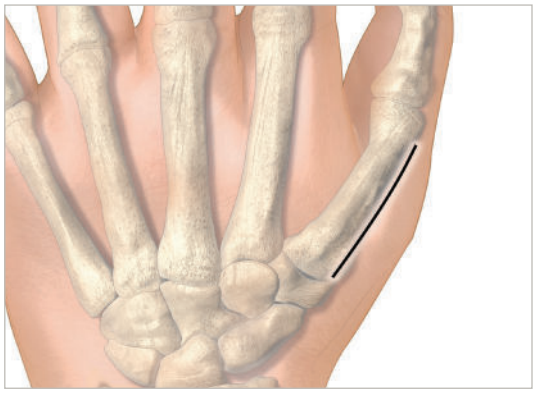


7 CLOSURE AND POSTOPERATIVE PROTOCOL

Perform a thorough radiographic evaluation to check fragment reduction, alignment, and screw placement. Verify that there is no gap between the bone and the plate in the lateral view. Close the wound and support the wrist according to bone quality and stability. Allow for early functional use of the hand and start immediate finger range of motion and forearm rotation postoperatively.

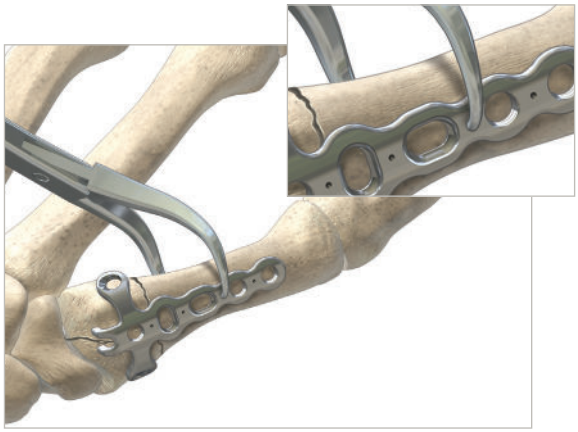


1.3 mm Rolando Fracture Hook Plate Surgical Technique



1 EXPOSURE

The patient's forearm is pronated and positioned to expose the surgical site. Make the appropriate incision; retract tendons taking care to protect nerve fibers and blood vessels.

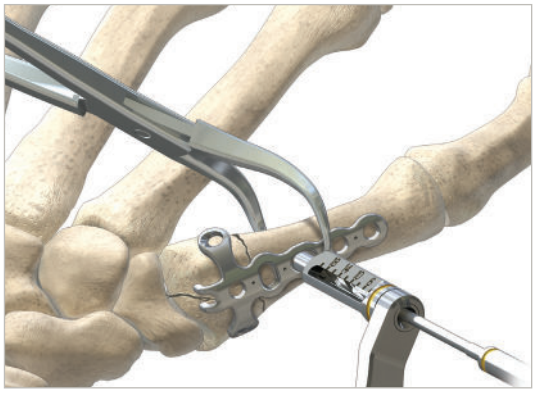


2 FRACTURE REDUCTION AND PLATE PLACEMENT

Reduce the fracture using manual techniques; provisional stability can be achieved with K-wires and evaluated under fluoroscopy.

After reduction and stabilization, the 1.3 mm Rolando Fracture Hook Plate (7005-13004) is positioned dorsally on the first metacarpal just distal to the ligamentous attachments on the metacarpal base with .040″ (1.02 mm) Plate Tacks (80-1759), the Single Pointed Reduction Forceps, 5.25″ (80-1811), or K-wires.

Note: Plate divots interface with Single Pointed Reduction Forceps, 5.25″ and Bone Reduction Forceps, 5.25″ (80-1810).



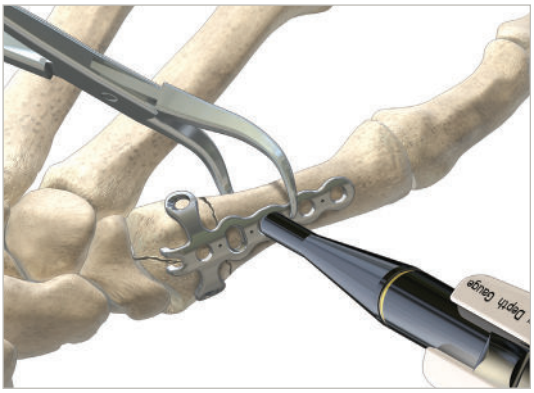
3 DRILLING DISTAL SCREW HOLE

Begin by drilling for the distal screw slot by using the 2.0 mm x 3.5″ Surgibit® Drill (80-1796) and 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809).

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4 DETERMINING SCREW LENGTH

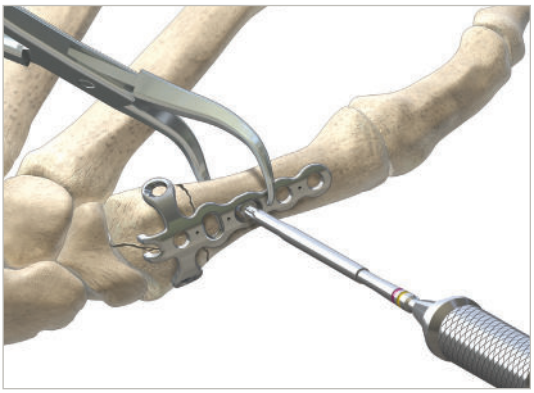
Measure screw length using the 2.3 mm MultiScrew Depth Gauge (80-1954).



5 SCREW INSERTION

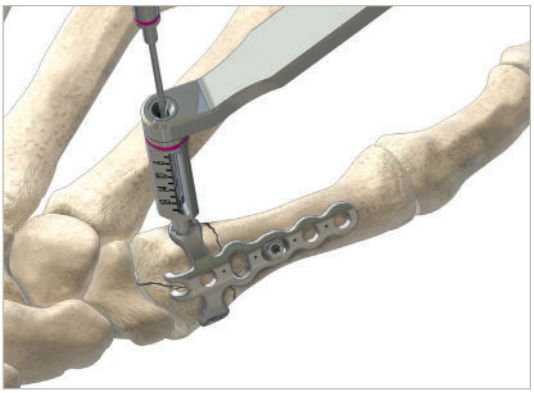
Using the T6 Stick Fit Driver Tip (80-1756), secure the plate the to the bone with a 2.3 mm Hexalobe Lag Screw (3012-230XX).

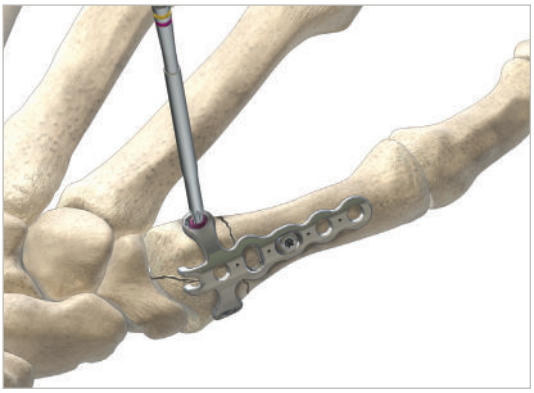
Note: Hexalobe MultiScrews should be inserted using only the Cruciform Driver Handle (MS-2210) provided in the system and locked to "three-finger tight." This is generated by using only the thumb, index, and middle fingers. Unlike traditional nonlocking screws, there is no "hard stop" feature when Hexalobe MultiScrews are used as a nonlocking screw in an oblong slot, so they should be inserted only until they are "three-finger tight."



6 DRILLING PROXIMAL HOLES

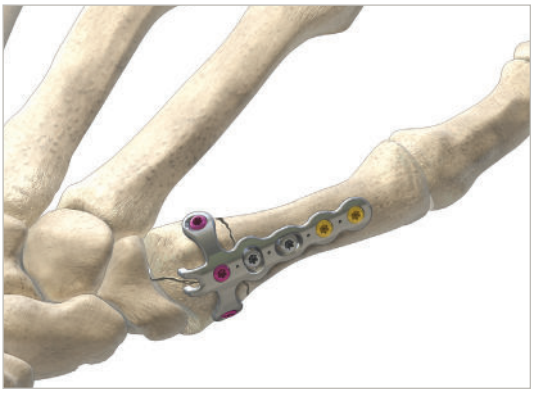
Drill the proximal holes with the 1.1 mm x 3.5″ QR Surgibit® Drill (80-1794) and 1.1 mm MultiScrew Drill Guide, 5–20 mm (80-1805) and measure the screw length.





7 PROXIMAL SCREW INSERTION

Using the T6 Stick Fit Driver Tip, insert the 1.5 mm Hexalobe MultiScrews (3004-150XX) into the proximal screw cluster. To maximize stabilization, the use of all proximal holes is recommended.



8 FINAL SCREW INSERTION

Finish drilling, measuring, and installing the remaining distal shaft holes with 2.3 mm Hexalobe MultiScrews, and install a 2.3 mm Hexalobe Lag Screw in the slot.

9 CLOSURE AND POSTOPERATIVE PROTOCOL

Perform a thorough radiographic evaluation to check fragment reduction, alignment, and screw placement. Verify that there is no gap between the bone and the plate in the lateral view. Close the wound and support the wrist according to bone quality and stability. Allow for early functional use of the hand and start immediate finger range of motion and forearm rotation postoperatively.

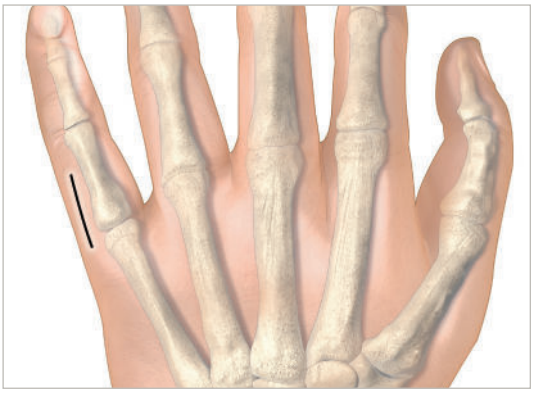
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0.8 mm Avulsion Hook Plate Surgical Technique

1 EXPOSURE AND FRACTURE REDUCTION

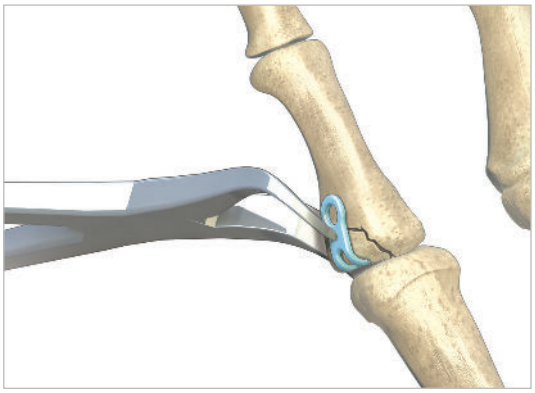
The patient's forearm is pronated and positioned to expose the surgical site. Make the appropriate incision; retract tendons taking care to protect nerve fibers and blood vessels.

Reduce the fracture using manual techniques; provisional stability can be achieved with K-wires and evaluated under fluoroscopy.



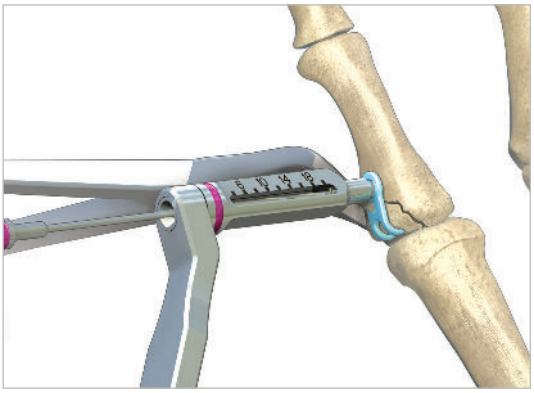
2 PLATE PLACEMENT

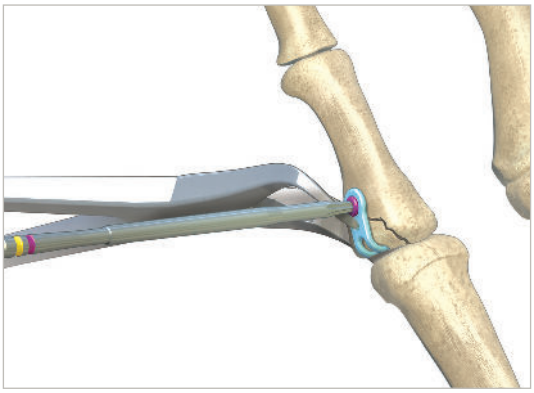
After reduction and stabilization, the 0.8 mm Avulsion Hook Plate (7005-08001) is positioned dorsally, medially, or laterally. Determine if a 1.5 mm or 2.3 mm MultiScrew is desired.



3 DRILLING AND DETERMINING SCREW LENGTH

Drill with the 1.1 mm x 3.5″ QR Surgibit® Drill (80-1794) or 2.0 mm x 3.5″ QR Surgibit® Drill (80-1796) and corresponding MultiScrew Drill Guide (80-1805 or 80-1809) through the screw hole. Measure screw length using the appropriate 1.5 mm or 2.3 mm MultiScrew Depth Gauge (80-1801 or 80-1954).

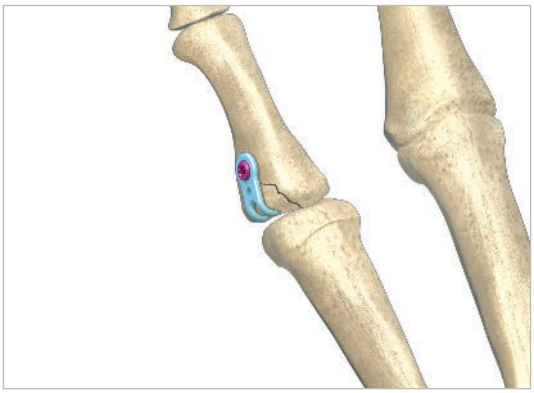




4 SCREW INSERTION

Using the SaveLock Compression Sleeve (80-1955) and the T6 Stick Fit Driver Tip (80-1756), secure the plate to the bone with a 1.5 mm or 2.3 mm Hexalobe MultiScrew (3004-150XX or 3004-230XX).

Note: Hexalobe MultiScrews should be inserted using only the Cruciform Driver Handle (MS-2210) provided in the system and locked to "three-finger tight." This is generated by using only the thumb, index, and middle fingers. Unlike traditional nonlocking screws, there is no "hard stop" feature when Hexalobe MultiScrews are used as a nonlocking screw in an oblong slot, so they should be inserted only until they are "three-finger tight."



5 CLOSURE AND POSTOPERATIVE PROTOCOL

Perform a thorough radiographic evaluation to check fragment reduction, alignment, and screw placement. Verify that there is no gap between the bone and the plate in the lateral view. Close the wound and support the wrist according to bone quality and stability. Allow for early functional use of the hand and start immediate finger range of motion and forearm rotation postoperatively.

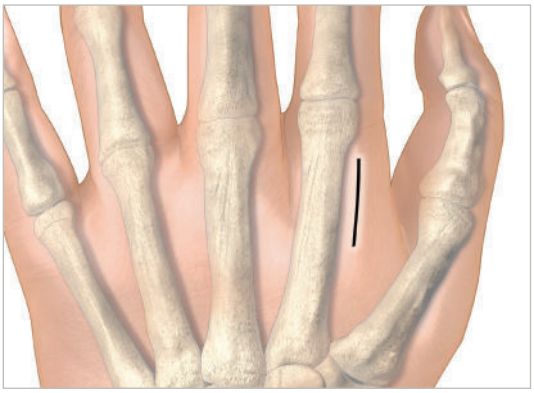
Some products shown and/or described may not be available in your distribution area. Please contact your local Acumed sales representative for any information.

1.5 mm and 2.3 mm Hexalobe Lag Screw Surgical Technique

1 EXPOSURE AND FRACTURE REDUCTION

The patient's forearm is pronated and positioned to expose the surgical site. Make the appropriate incision; retract tendons taking care to protect nerve fibers and blood vessels.

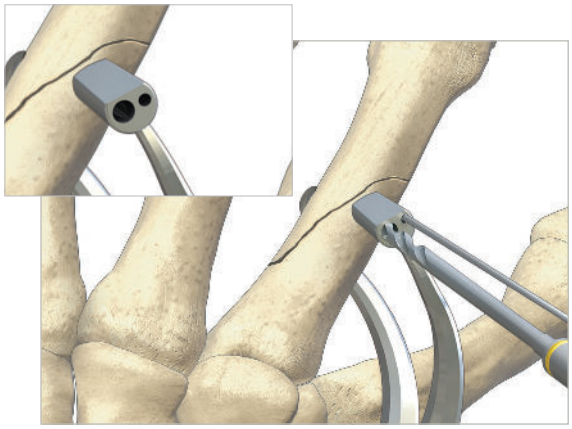
Reduce the fracture using manual techniques; provisional stability can be achieved with K-wires and evaluated under fluoroscopy.



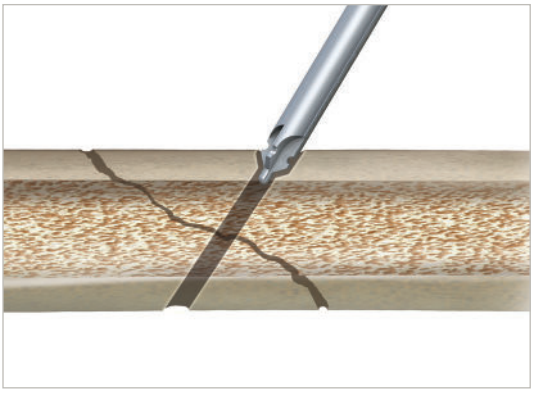
2 SCREW PLACEMENT

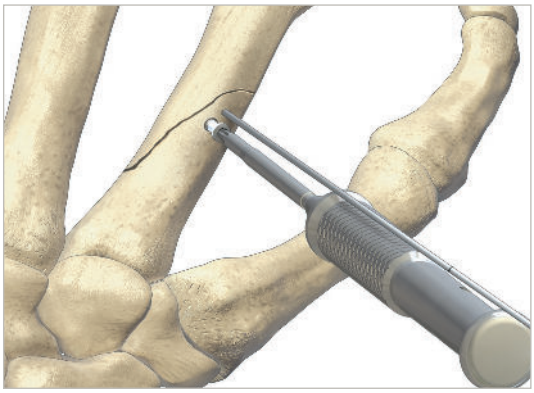
After reduction and stabilization with the 1.1 mm/2.0 mm Percutaneous Bone Clamp (80-0684), drill perpendicular to the fracture through the integrated drill guide with the 1.1 mm or 2.0 mm x 3.5″ Surgibit® Drill (80-1794 or 80-1796).

Note: A K-wire can be inserted through the other clamp hole to provide additional provisional fixation.



Optional: The MultiScrew Countersink (80-1807) can be used to manually create a countersink in the near cortex to recess the lag screw head.

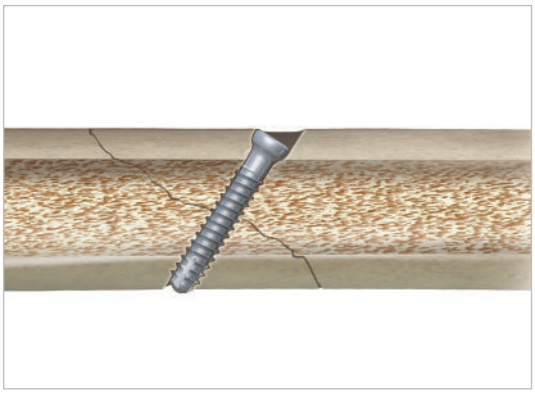


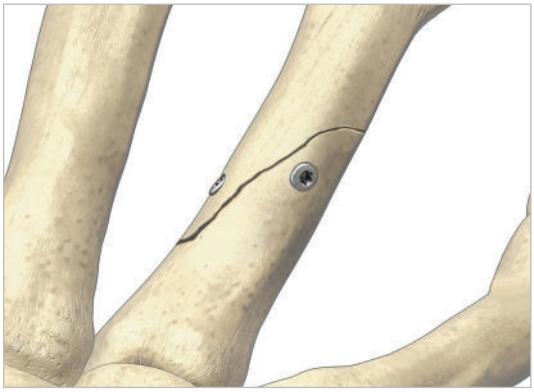


3 SCREW INSERTION

Measure screw length using the appropriate depth gauge. Using the T6 Stick Fit Driver Tip (80-1756), insert the 1.5 mm or 2.3 mm Hexalobe Lag Screw. (3012-150XX or 3012-230XX).

Note: Unlike other bones, the metacarpals and phalanges do not have much cancellous bone and are primarily composed of thick cortical bone. With little cancellous bone, there is nothing for the threads that cross the fracture line to engage; the only bony engagement with the Hexalobe Lag Screw occurs in the near and far cortices.





4 CLOSURE AND POSTOPERATIVE PROTOCOL

Perform a thorough radiographic evaluation to check fragment reduction, alignment, and screw placement. Close the wound and support the wrist according to bone quality and stability. Allow for early functional use of the hand and start immediate finger range of motion and forearm rotation postoperatively.

Some products shown and/or described may not be available in your distribution area. Please contact your local Acumed sales representative for any information.

Ordering Information

Hand Plates

0.8 mm Compression Plate, 6-hole	7005-08006
0.8 mm Straight Plate, 10-hole	7005-08010
0.8 mm T-Plate	7005-08003
0.8 mm Offset Plate	7005-08004
0.8 mm Curved Medial/Lateral Plate	7005-08007
0.8 mm Avulsion Hook Plate	7005-08001
1.3 mm Compression Plate, 6-hole	7005-13006
1.3 mm Straight Plate, 10-hole	7005-13010
1.3 mm T-Plate	7005-13002
1.3 mm Metacarpal Neck Plate, Left	7005-1303L
1.3 mm Metacarpal Neck Plate, Right	7005-1303R
1.3 mm Rolando Fracture Hook Plate	7005-13004
1.3 mm Rotational Correction Plate	7005-13005

2.3 mm Hexalobe MultiScrews

2.3 mm x 5 mm Hexalobe MultiScrew	3004-23005
2.3 mm x 6 mm Hexalobe MultiScrew	3004-23006
2.3 mm x 7 mm Hexalobe MultiScrew	3004-23007
2.3 mm x 8 mm Hexalobe MultiScrew	3004-23008
2.3 mm x 9 mm Hexalobe MultiScrew	3004-23009
2.3 mm x 10 mm Hexalobe MultiScrew	3004-23010
2.3 mm x 11 mm Hexalobe MultiScrew	3004-23011
2.3 mm x 12 mm Hexalobe MultiScrew	3004-23012
2.3 mm x 13 mm Hexalobe MultiScrew	3004-23013
2.3 mm x 14 mm Hexalobe MultiScrew	3004-23014
2.3 mm x 16 mm Hexalobe MultiScrew	3004-23016
2.3 mm x 18 mm Hexalobe MultiScrew	3004-23018
2.3 mm x 20 mm Hexalobe MultiScrew	3004-23020

1.5 mm Hexalobe MultiScrews

1.5 mm x 5 mm Hexalobe MultiScrew	3004-15005
1.5 mm x 6 mm Hexalobe MultiScrew	3004-15006
1.5 mm x 7 mm Hexalobe MultiScrew	3004-15007
1.5 mm x 8 mm Hexalobe MultiScrew	3004-15008
1.5 mm x 9 mm Hexalobe MultiScrew	3004-15009
1.5 mm x 10 mm Hexalobe MultiScrew	3004-15010
1.5 mm x 11 mm Hexalobe MultiScrew	3004-15011
1.5 mm x 12 mm Hexalobe MultiScrew	3004-15012
1.5 mm x 13 mm Hexalobe MultiScrew	3004-15013
1.5 mm x 14 mm Hexalobe MultiScrew	3004-15014
1.5 mm x 16 mm Hexalobe MultiScrew	3004-15016
1.5 mm x 18 mm Hexalobe MultiScrew	3004-15018
1.5 mm x 20 mm Hexalobe MultiScrew	3004-15020

1.5 mm Hexalobe Lag Screws

1.5 mm x 5 mm Hexalobe Lag Screw	3012-15005
1.5 mm x 6 mm Hexalobe Lag Screw	3012-15006
1.5 mm x 7 mm Hexalobe Lag Screw	3012-15007
1.5 mm x 8 mm Hexalobe Lag Screw	3012-15008
1.5 mm x 9 mm Hexalobe Lag Screw	3012-15009
1.5 mm x 10 mm Hexalobe Lag Screw	3012-15010
1.5 mm x 11 mm Hexalobe Lag Screw	3012-15011
1.5 mm x 12 mm Hexalobe Lag Screw	3012-15012
1.5 mm x 13 mm Hexalobe Lag Screw	3012-15013
1.5 mm x 14 mm Hexalobe Lag Screw	3012-15014
1.5 mm x 16 mm Hexalobe Lag Screw	3012-15016
1.5 mm x 18 mm Hexalobe Lag Screw	3012-15018
1.5 mm x 20 mm Hexalobe Lag Screw	3012-15020

Ordering Information

2.3 mm Hexalobe Lag Screws

2.3 mm x 5 mm Hexalobe Lag Screw	3012-23005
2.3 mm x 6 mm Hexalobe Lag Screw	3012-23006
2.3 mm x 7 mm Hexalobe Lag Screw	3012-23007
2.3 mm x 8 mm Hexalobe Lag Screw	3012-23008
2.3 mm x 9 mm Hexalobe Lag Screw	3012-23009
2.3 mm x 10 mm Hexalobe Lag Screw	3012-23010
2.3 mm x 11 mm Hexalobe Lag Screw	3012-23011
2.3 mm x 12 mm Hexalobe Lag Screw	3012-23012
2.3 mm x 13 mm Hexalobe Lag Screw	3012-23013
2.3 mm x 14 mm Hexalobe Lag Screw	3012-23014
2.3 mm x 16 mm Hexalobe Lag Screw	3012-23016
2.3 mm x 18 mm Hexalobe Lag Screw	3012-23018
2.3 mm x 20 mm Hexalobe Lag Screw	3012-23020

Instruments

T6 Stick Fit Driver Tip	80-1756
1.1 mm x 3.5″ QR Surgibit® Drill	80-1794
1.1 mm x 3.5″ Mini-AO Surgibit® Drill	80-1795
1.1 mm x 3.5″ J-Latch Surgibit® Drill	80-1804
2.0 mm x 3.5″ QR Surgibit® Drill	80-1796
2.0 mm x 3.5″ Mini-AO Surgibit® Drill	80-1797
2.0 mm x 3.5″ J-Latch Surgibit® Drill	80-1816
MultiScrew Countersink	80-1807
.040″ Plate Tack	80-1759

Unthreaded Stainless Steel K-wires

.035″ x 5.75″ ST Guide Wire	WS-0906ST
.045″ x 6″ ST Guide Wire	WS-1106ST
.062″ x 6″ Guide Wire	WS-1607ST

Threaded Titanium K-wires

.035″ x 5.75″ STT Guide Wire, Titanium	WT-0906STT
.045″ x 5.75″ STT Guide Wire, Titanium	35-0011
.062″ x 5.75″ STT Guide Wire, Titanium	WT-1606STT

Small Bone Fixator part numbers can be found in **HNW10-08-A.**

To learn more about the full line of Acumed® innovative surgical solutions, please contact your local Acumed sales representative, call 888.627.9957, or visit acumed.net.

Notes:

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HNW10-07-B
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