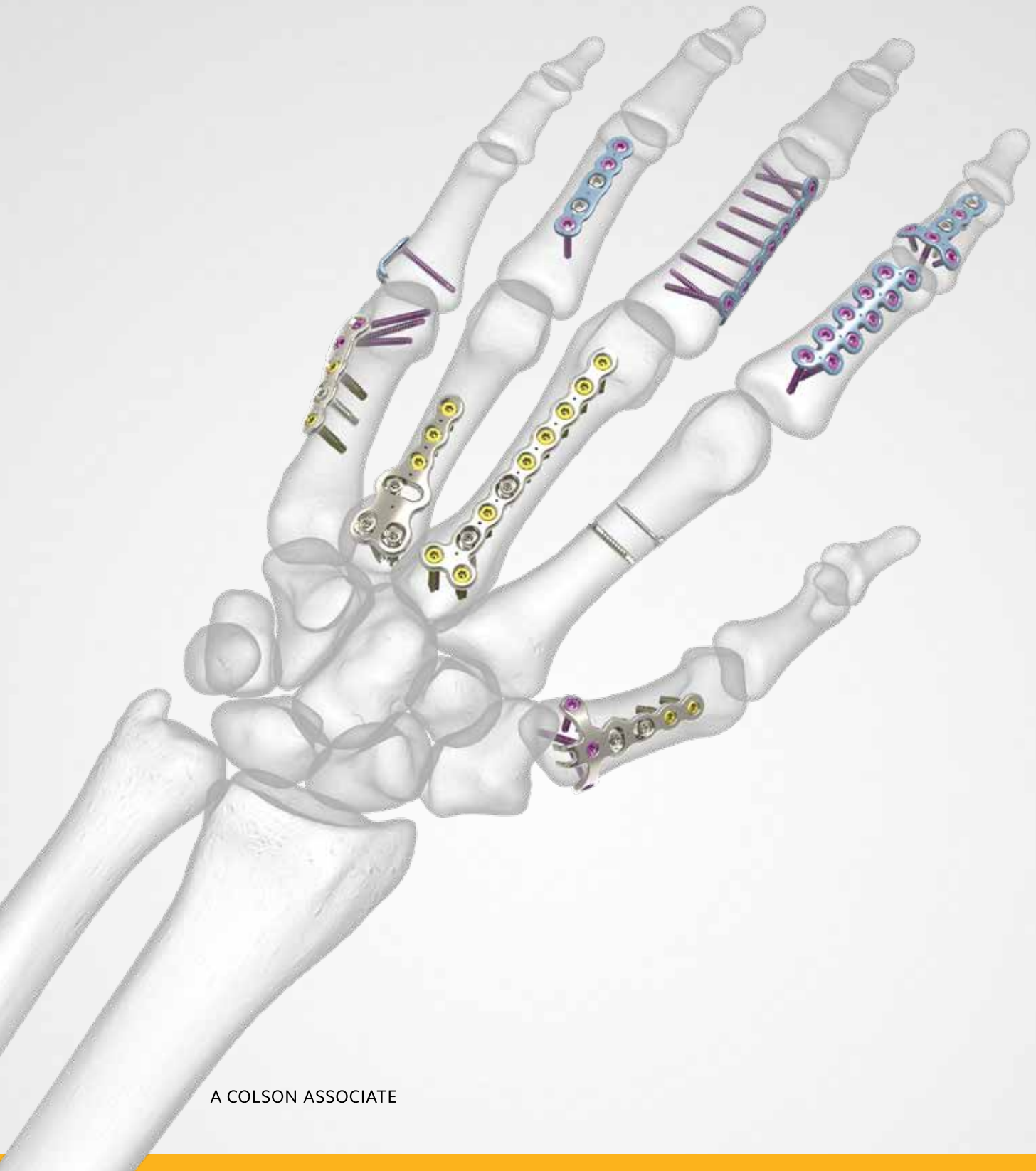


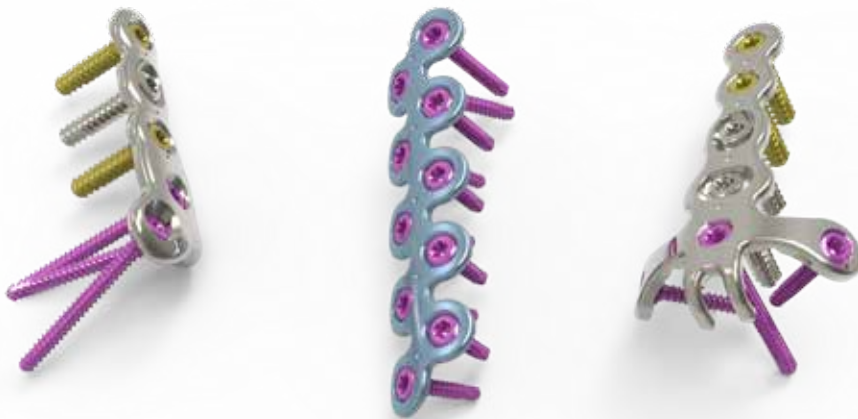
## Surgical Technique



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.



## Acumed Hand Fracture System

The Acumed Hand Fracture System is designed to provide both standard and fracture-specific fixation for metacarpal and phalangeal fractures, as well as fixation for fusions and osteotomies. This comprehensive system contains plates for fractures 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 hexalobe 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

### 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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# System Features

## Plates, Screws, and External Fixation System

1.3 mm T-Plate



1.3 mm Compression Plate



1.3 mm Straight Plate



1.3 mm Rotational Correction Plate



1.3 mm Rolando Fracture Hook Plate



1.3 mm Metacarpal Neck Plate, Left



1.3 mm Metacarpal Neck Plate, Right



0.8 mm Straight Plate



0.8 mm T-Plate



0.8 mm Offset Plate



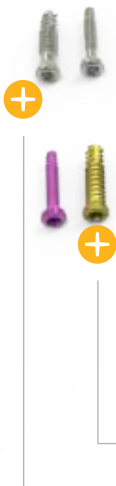
0.8 mm Curved Medial/Lateral Plate



0.8 mm Compression Plate



0.8 mm Avulsion Hook Plate



Locking variable angle Hexalobe MultiScrews

Partially threaded Hexalobe Lag Screws



Small Bone Distractor



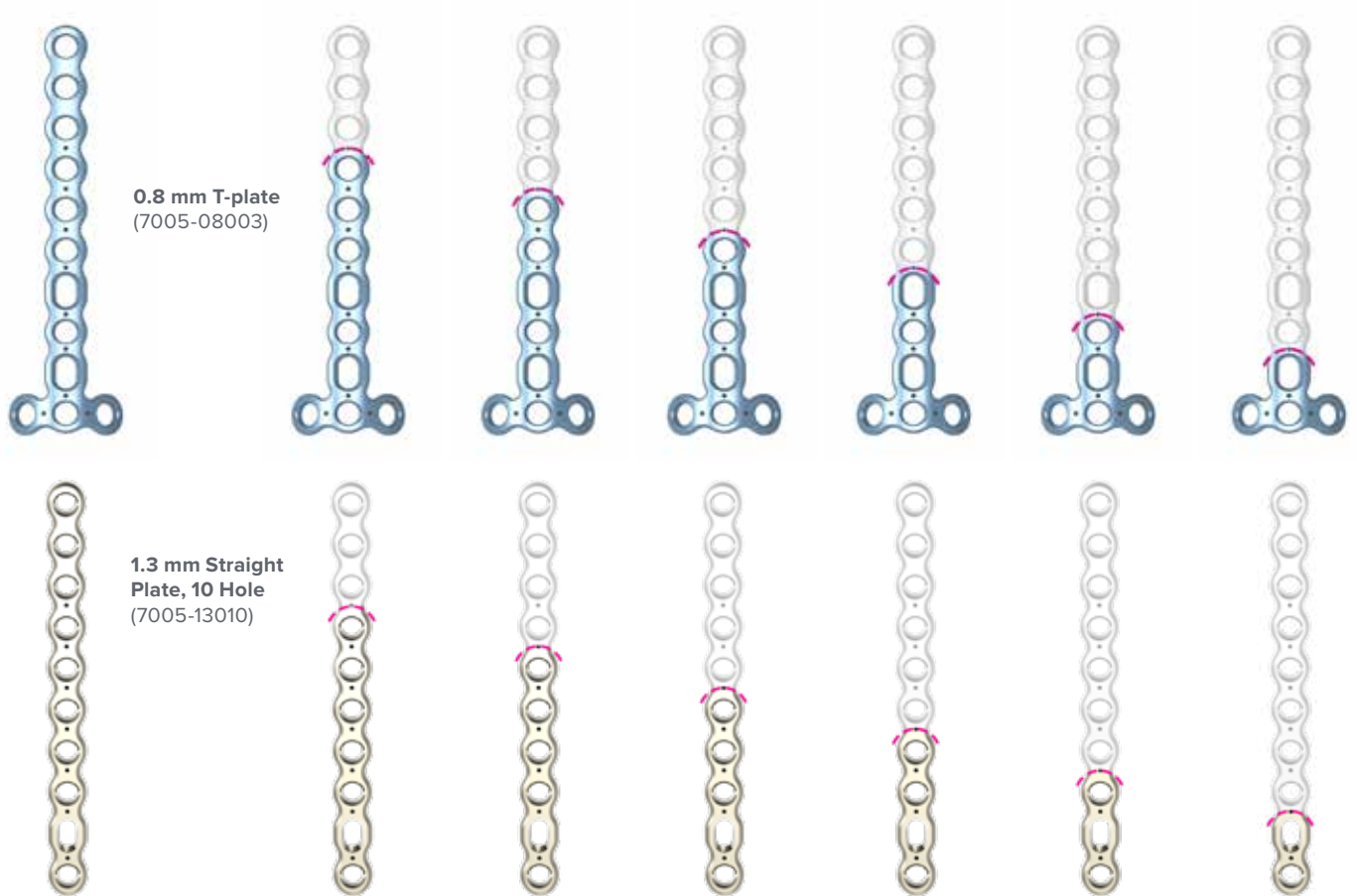
Small Bone Fixator

# System Features [continued]

## Customizable Standard Plates

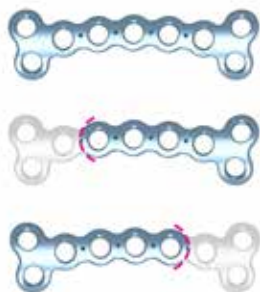
The Acumed Hand Fracture System offers plates in 0.8 mm and 1.3 mm thicknesses. Plates can be cut to length and bent to fit to better treat a wide variety of fracture patterns. A custom plate cutter included in the system is designed to create a smooth, rounded edge on all Acumed Hand Fracture System plates except the Avulsion Hook Plate. These plates feature divots that aid in provisional fixation when used with the system's forceps and clamps.

### A Variety of Plate Configurations



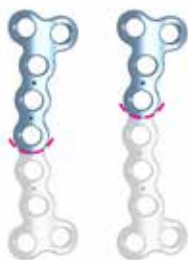
### Multiple Choices, Multiple Options

#### Diaphyseal Fractures



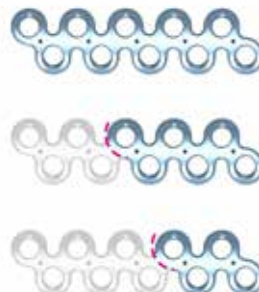
**0.8 mm Curved Medial/Lateral Plate**  
(7005-08007)

#### Distal Phalangeal Fractures



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

#### Comminuted Fractures



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

**Note:** Not all plate configurations and options are shown.

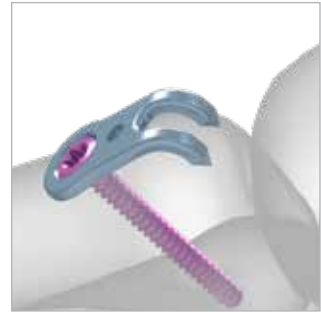
## System Features [continued]

### Specialty Plates

#### Avulsion Fracture

Periarticular fracture where the fragment contains a soft tissue insertion (typically a ligament or tendon).

**The 0.8 mm Avulsion Hook Plate** is designed to provide more stability than a K-wire when a fragment is too small for a single screw.



#### Rolando Fracture

A three-part, intra-articular comminuted fracture of the base of the first metacarpal.

**The 1.3 mm Rolando Fracture Hook Plate** is designed for a Y- or T-shaped fracture pattern at the base of the first metacarpal. The prongs should contact the dorsal surface of the abductor pollicis longus (APL) tendon and support comminution of the base of the first metacarpal. These prongs are not intended to compress the APL tendon.



#### Metacarpal Neck Fracture

Transverse fracture of the neck of the metacarpal.

**The 1.3 mm Metacarpal Neck Plate** is designed to provide fixation for metacarpal neck fractures and has three distally pointing converging screws to provide metacarpal head fixation.



#### Rotational Malunion Osteotomy

Osteotomy to treat rotational malunion of the phalanx or metacarpal. The osteotomy typically is performed on the metacarpal, even if correcting a phalangeal malunion.<sup>1</sup>

**The 1.3 mm Rotational Correction Plate** is designed to be used with an osteotomy for correcting rotational malunions. The system includes a Rotational Osteotomy Cutting Guide (80-1828) designed to facilitate placement and orientation of the cut for rotational osteotomies of the metacarpals.

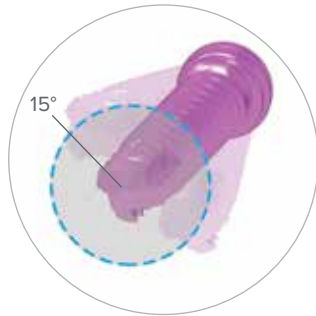


1. Bindra RR, Burke FD. Metacarpal osteotomy for correction of acquired phalangeal rotational deformity. *J Hand Surg Am.* 2009;34(10):1895-1899.

## System Features [continued]

### 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 engineered 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.

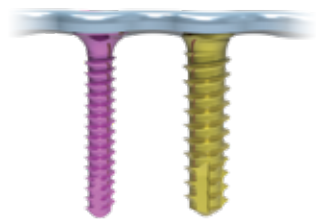
The Hexalobe MultiScrew design allows for variable angle screw insertion up to 15 degrees in any direction for a total of 30 degrees.



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



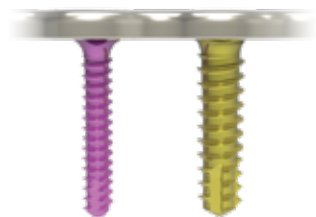
**2.3 mm Hexalobe MultiScrew, 5–20 mm lengths**  
(3004-230XX)



#### Any Size Hexalobe MultiScrew in Any Hole

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

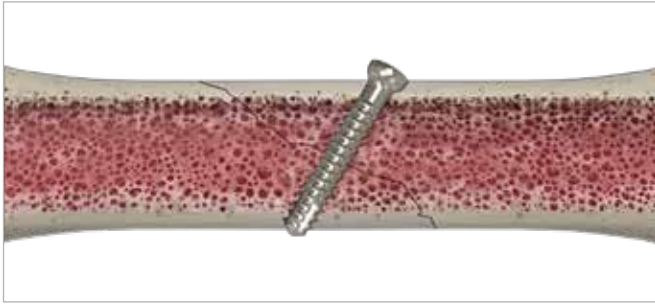
The SaveLock Compression Sleeve (see page 8) is designed to aid with plate reduction and allows the 1.5 mm and 2.3 mm Hexalobe MultiScrews to function as both locking and nonlocking screws.



## System Features [continued]

### Hexalobe Lag Screw Technology

Designed to be used as an adjunct to plate fixation or for fractures that 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 nonlocking screws 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 use no 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 with. The only bony engagement with the Hexalobe Lag Screw occurs in the near and far cortices.

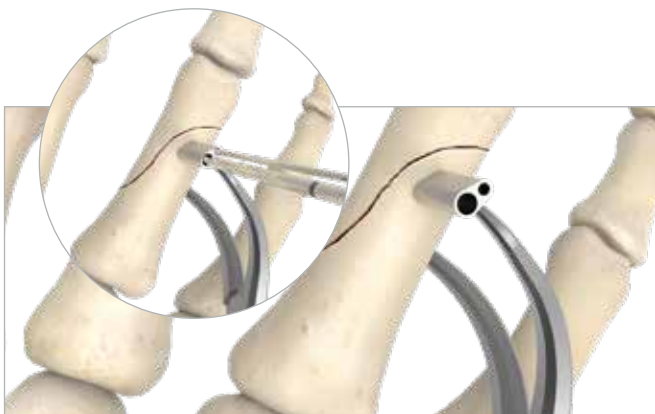
The MultiScrew Countersink (80-1807) can be used to manually create a countersink in the near cortex to recess the lag screw head.



**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 that aids in provisional fixation and drilling. One barrel can be used to insert a K-wire across the fracture while the other barrel guides the drill.





# System Features [continued]

## Instrumentation

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

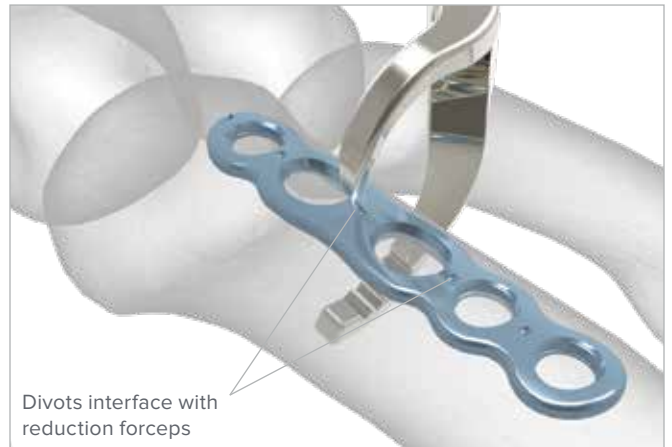
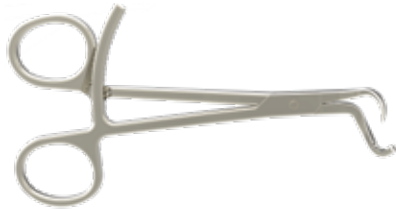
### Rotational Osteotomy Cutting Guide (80-1828)

Designed to facilitate 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 between screw holes on the plate to hold the plate securely to the bone.



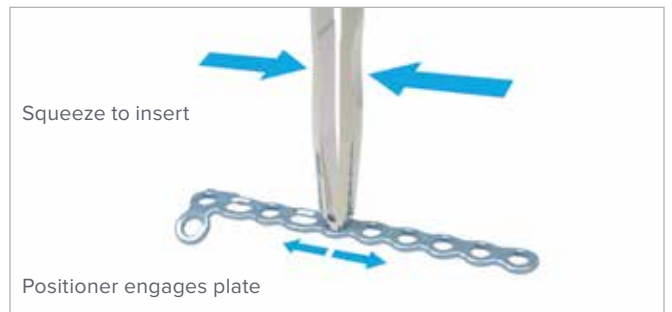
### 1.1 mm/2.0 mm Percutaneous Bone Clamp (80-0684)

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 remove plates from plate caddy, transfer them to the fracture site, and aid in provisional plate placement.



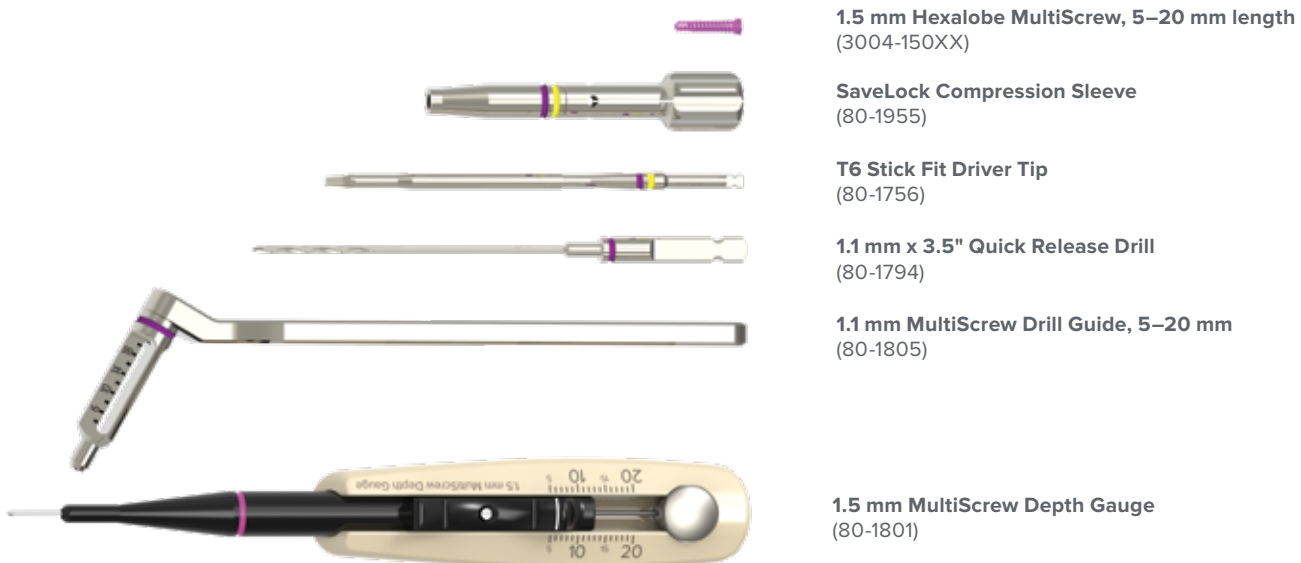
## System Features [continued]

### Screw Instrumentation

- ▶ Color-coded screw caddies and screw installation instruments facilitate 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

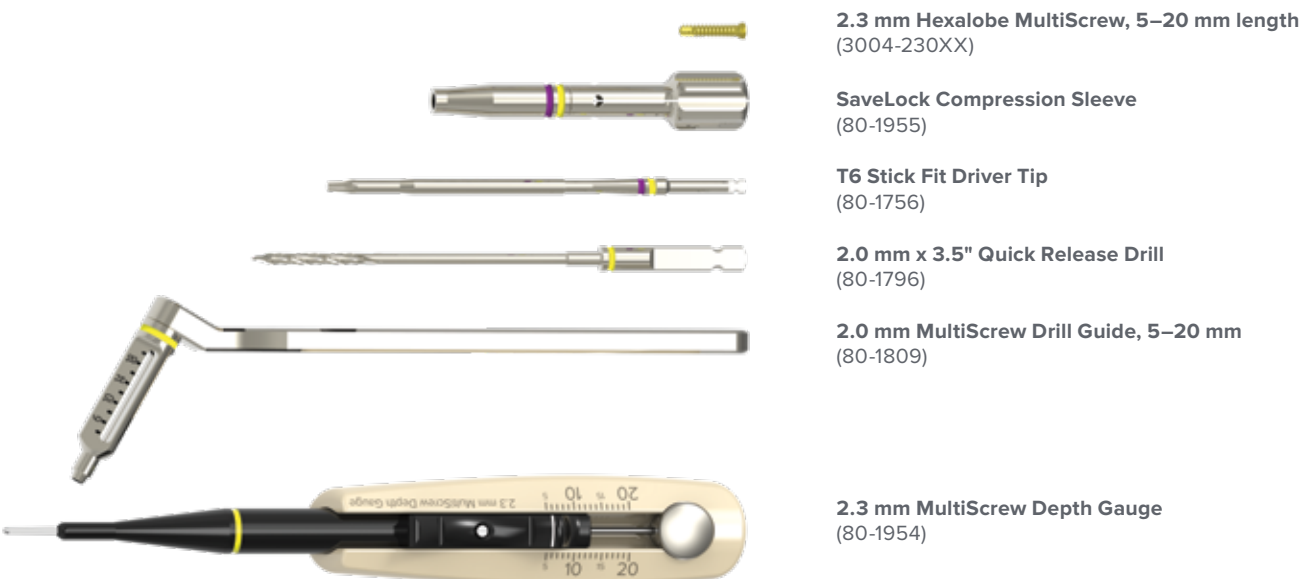
#### 1.5 mm Screw Instruments

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



#### 2.3 mm Screw Instruments

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



## System Features [continued]

### Small Bone External Fixation System

Acumed's Small Bone External Fixation System is designed for temporary stabilization of the metacarpals, metatarsals, and phalanges. The Small Bone Fixator aids in reduction and compression to help correct fragment alignment for various fractures and osteotomies. The Small Bone Distractor is used in conjunction with guide pins to maintain distraction forces during fracture healing and is designed to aid with temporary stabilization. For more information about this system, please see the Small Bone External Fixation Surgical Technique (HNW10-08).

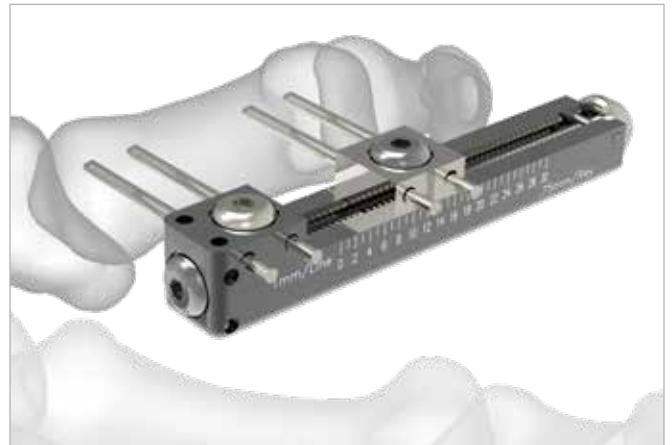
#### **Straightforward Application**

Application of the Small Bone Fixator is achieved by clamping the blue housing assemblies on two or more sets of parallel K-wires and then connecting the assemblies via carbon fiber or threaded stainless steel rods. The modular design enables pins to be located in multiplanar arrangements, allowing the frame to be built around the fractures.



#### **Accurate Lengthening**

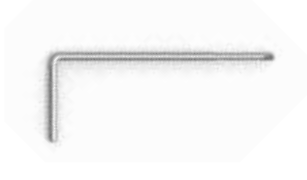
For corrective or fracture care, this lightweight, low-profile fixator can be adjusted to the amount of distraction/compression the surgeon requires.



# Instrument Overview



**0.8/1.3 mm Plate Positioner**  
(80-1958)



**Hex Wrench**  
(AT-7004)



**Small Bone Distractor**  
(BD1-400)



**Outrigger Assembly**  
(SM-5200)



**Small Bone Fixator Knob**  
(SM-5015)



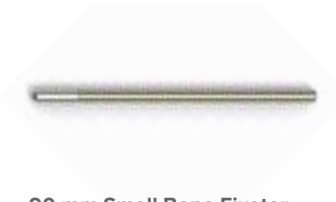
**Small Bone Housing Assembly**  
(SM-5100)



**2.4 mm Bone Distractor Hex**  
(BD1-410)



**Pin Guide Assembly**  
(SM-5080)



**90 mm Small Bone Fixator Shaft (Threaded Rod)**  
(SMT-5090)



**90 mm Small Bone Fixator Shaft (Carbon Fiber Rod)**  
(SMC-5090)



**60 mm Small Bone Fixator Shaft (Carbon Fiber Rod)**  
(SMC-5060)



**60 mm Small Bone Fixator Shaft (Threaded Rod)**  
(SMT-5060)



**1.5 mm x 4" Threaded Single Trocar Guide Wire**  
(WS-1504STT)



**SaveLock Compression Sleeve**  
(80-1955)



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



**1.1 mm x 3.5" Quick Release Drill**  
(80-1794)



**1.1 mm x 3.5" Mini-AO Drill**  
(80-1795)



**1.1 mm x 3.5" J-Latch Drill**  
(80-1804)



**T6 Stick Fit Driver Tip**  
(80-1756)



**1.5 mm MultiScrew Depth Gauge**  
(80-1801)



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



**2.0 mm x 3.5" Quick Release Drill**  
(80-1796)



**2.0 mm x 3.5" Mini-AO Drill**  
(80-1797)

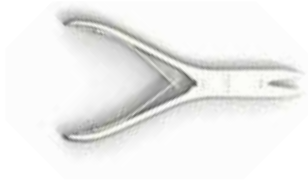


**2.0 mm x 3.5" J-Latch Drill**  
(80-1816)

## Instrument Overview [continued]



**2.3 mm MultiScrew Depth Gauge**  
(80-1954)



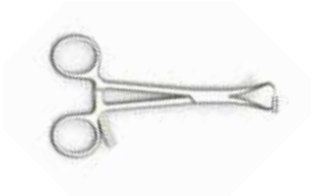
**0.8/1.3 mm Plate Bending Pliers**  
(80-1757)



**0.8/1.3 mm Plate Cutter**  
(80-0683)



**Bone Reduction Forceps, 5.25"**  
(80-1810)



**1.1/2.0 Percutaneous Bone Clamp**  
(80-0684)



**Single Pointed Reduction Forceps, 5.25"**  
(80-1811)



**7.25" Periosteal Elevator**  
(MS-46211)



**8 mm Hohmann Retractor**  
(PL-CL05)



**Sharp Hook**  
(PL-CL06)



**Rotational Osteotomy Cutting Guide**  
(80-1828)



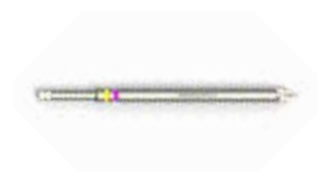
**0.040" (1.02 mm) Plate Tack**  
(80-1759)



**Heiss Retractor, 8 mm Wide, 6 mm Deep**  
(80-1812)



**Cruciform Driver Handle**  
(MS-2210)



**MultiScrew Countersink**  
(80-1807)



**.035" x 5.75" Single Trocar Guide Wire**  
(WS-0906ST)



**.035" x 5.75" Threaded Single Trocar Guide Wire**  
(WT-0906STT)



**.045" x 6" Single Trocar Guide Wire**  
(WS-1106ST)



**.045" x 5.75" Threaded Single Trocar Guide Wire**  
(35-0011)



**.062" x 6" Single Trocar Guide Wire**  
(WS-1607ST)

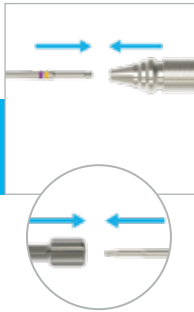


**.062" x 5.75" Threaded Single Trocar Guide Wire**  
(WT-1606STT)

# Surgical Technique and Instructions Overview

SaveLock  
Compression  
Sleeve

Assembly



Remove Hexalobe  
MultiScrew  
from Caddy

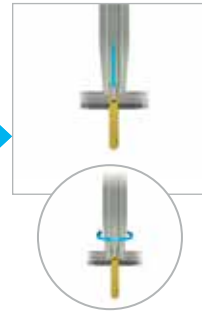


Plate Cutting

Plates May Be  
Cut to Length



Place Plate With  
Marking Side Up



Plate Bending

Plates May Be Bent  
With Pliers



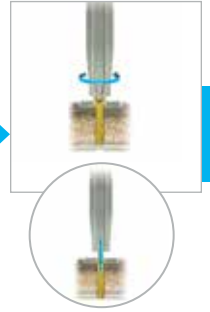
Bend Plates  
Between Screw  
Holes



**Hexalobe MultiScrew Insertion**



**Lock Hexalobe MultiScrew into Plate**



**Squeeze Handle of Cutter**



**Plate Cutter Leaves a Rounded Edge**



**Do Not Bend Across Screw Holes**



**Do Not Bend Repeatedly (Can Weaken Plate)**



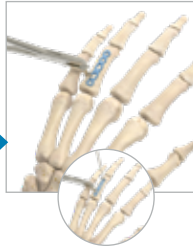
# Surgical Technique and Instructions Overview [continued]

## Standard Plate

Exposure and Fracture Reduction



Plate Selection and Placement



Drilling Screw Holes



Exposure



Plate Selection

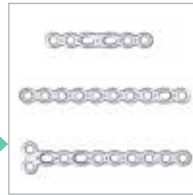
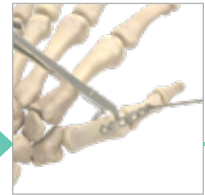


Plate Placement



## Metacarpophalangeal Joint Fusion

Exposure and Fracture Reduction



Plate Placement



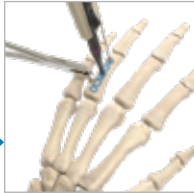
Proximal Screw Insertion



## 1.3 mm Metacarpal Neck Plate



Determining Screw Length



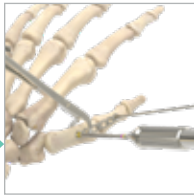
Screw Insertion



Closure and Postoperative Protocol



Proximal Screw Insertion



Lag Screw Insertion



Distal Screw Insertion



Closure and Postoperative Protocol



Distal Cluster Screw Preparation



Screw Insertion



Closure and Postoperative Protocol



# Surgical Technique and Instructions Overview [continued]

1.3 mm Rotational Correction Plate

Exposure



Osteotomy Cut

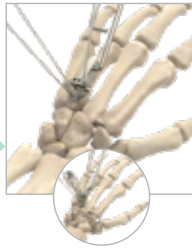
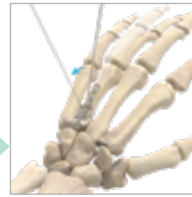
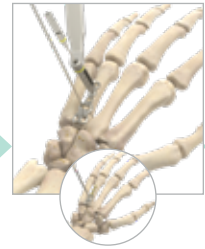


Plate Placement and Rotational Correction



Distal Screw Insertion



1.3 mm Rolando Fracture Hook Plate

Exposure



Fracture Reduction and Plate Placement



Drilling Distal Screw Hole



Determining Screw Length



0.8 mm Avulsion Hook Plate

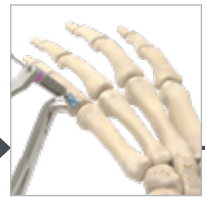
Exposure and Fracture Reduction



Plate Placement



Drilling and Determining Screw Length



1.5 mm and 2.3 mm Hexalobe Lag Screw

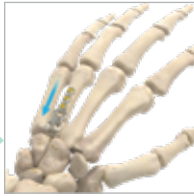
Exposure and Fracture Reduction



Screw Placement



**Osteotomy  
Compression**



**Proximal Screw  
Insertion**



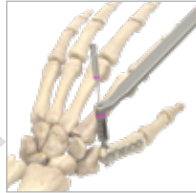
**Closure and  
Postoperative  
Protocol**



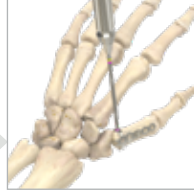
**Screw Insertion**



**Drilling Proximal  
Holes**



**Proximal Screw  
Insertion**



**Final Screw  
Insertion**



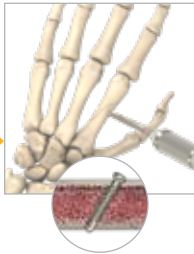
**Screw Insertion**



**Closure and  
Postoperative  
Protocol**



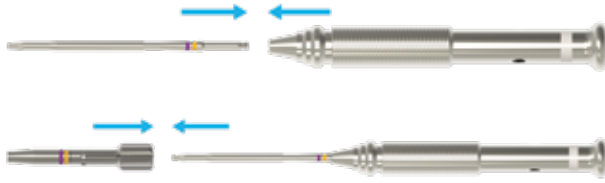
**Screw Insertion**



**Closure and  
Postoperative  
Protocol**



# SaveLock Compression Sleeve Instructions

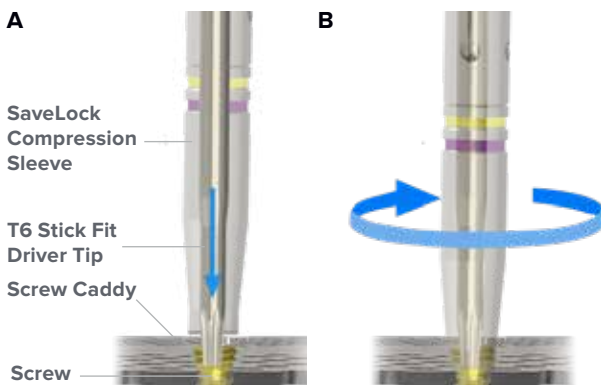


The SaveLock Compression Sleeve is used with the T6 Stick Fit Driver Tip and serves two functions: to keep the 2.3 mm Hexalobe MultiScrew on the driver tip and to compress the plate to the bone when inserting the screw. The sleeve is threaded over the screw head only and prevents these threads from engaging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

**Note:** The 1.5 mm Hexalobe MultiScrew may also be used with the SaveLock Compression Sleeve and uses the same instrumentation as described below.

## 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.



## 2 Remove 2.3 mm Hexalobe MultiScrew from Caddy

**A:** With the SaveLock Compression Sleeve (80-1955) installed, insert the T6 Stick Fit Driver Tip (80-1756) into the head of the 2.3 mm Hexalobe MultiScrew (3004-230XX).

**B:** Thread the SaveLock Compression Sleeve around the 2.3 mm Hexalobe MultiScrew head and then remove the screw from the caddy.

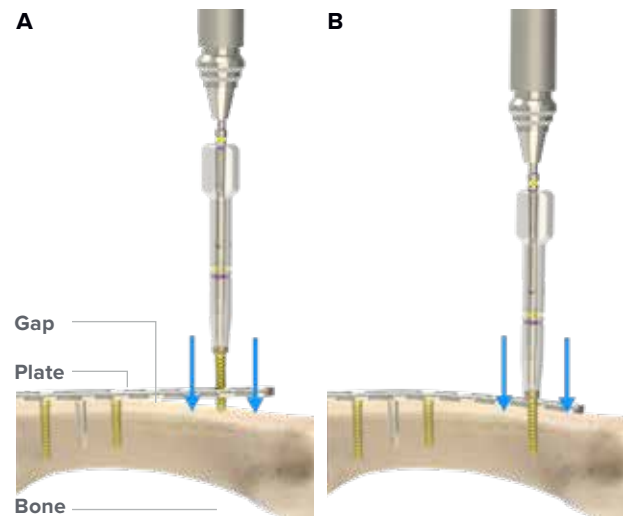
**Note:** The SaveLock Compression Sleeve must be positioned vertically during this step.

## SaveLock Compression Sleeve Instructions [continued]

### 3 2.3 mm Hexalobe MultiScrew Insertion

**A:** With the SaveLock Compression Sleeve (80-1955) engaged, insert the 2.3 mm Hexalobe MultiScrew (3004-230XX) into the bone until the bottom surface of the SaveLock Compression Sleeve contacts the plate.

**B:** Continue insertion of the 2.3 mm Hexalobe MultiScrew with the SaveLock Compression Sleeve engaged until the plate is compressed to the bone.

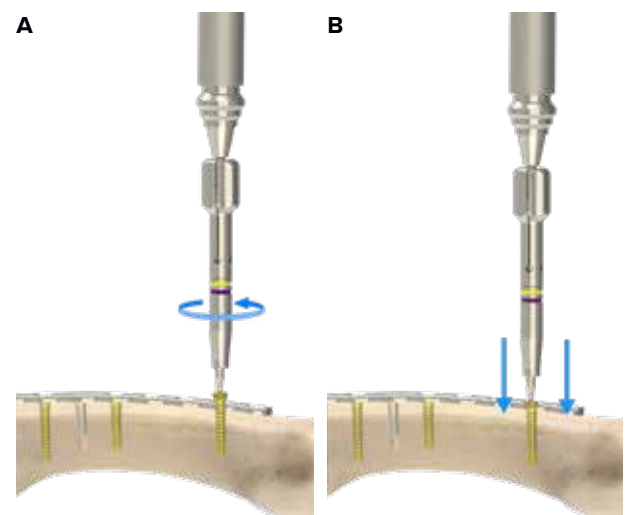


### 4 Lock 2.3 mm Hexalobe MultiScrew into Plate

**A:** Holding the T6 Stick Fit Driver Tip (80-1756) in place, unthread the SaveLock Compression Sleeve (80-1955) from the 2.3 mm Hexalobe MultiScrew (3004-230XX) head.

**B:** Continue inserting the 2.3 mm 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.



## Plate Cutting Instructions



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



**2** 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.



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



Before



After

**4** The plate cutter leaves a rounded edge.

## Plate Bending Instructions

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



- 2** Bend plates between adjacent screw holes.



- 3** Do not bend plates across screw holes.



- 4** **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.



# Standard Plate Surgical Technique

Figure 1



## 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.

Figure 2



## 2 Plate Selection and Placement

After reduction and stabilization, select the appropriate plate size and shape. Bend and/or cut the plate as necessary. (Refer to page 21 for Plate Bending Instructions.)

The plate is positioned dorsally (or medially or laterally) for the 0.8 mm Curved Medial/Lateral Plate (7005-08007) 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).

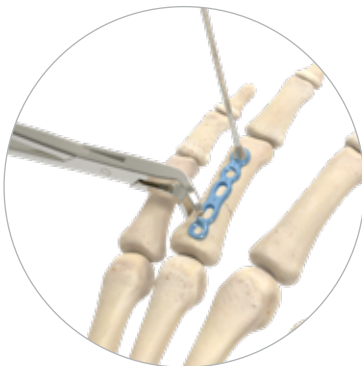


Figure 3



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



0.040" (1.02 mm) Plate Tack (80-1759)



Single Pointed Reduction Forceps, 5.25" (80-1811)



Bone Reduction Forceps, 5.25" (80-1810)



## Standard Plate Surgical Technique [continued]

### 3 Drilling Screw Holes

Drill with the 1.1 mm x 3.5" Quick Release Drill (80-1794) or 2.0 mm x 3.5" Quick Release 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 authorized Acumed distributor for further information.

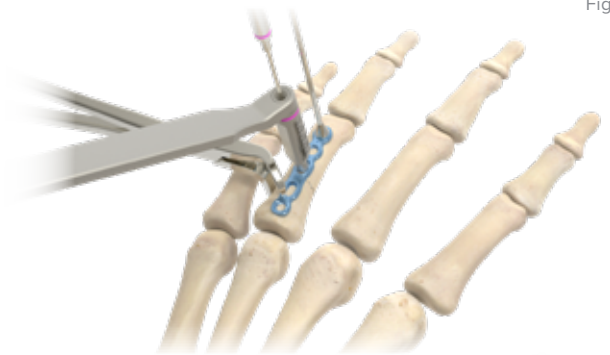


Figure 4

#### 1.1 mm and 2.0 mm Drill Connections

<b>Standard AO</b>	1.1 mm x 3.5" Quick Release Drill (80-1794)
	2.0 mm x 3.5" Quick Release Drill (80-1796)

#### 1.1 mm and 2.0 mm Drill Connections (Optional Instruments Available Upon Request)

<b>Mini-AO</b>	1.1 mm x 3.5" Mini-AO Drill (80-1795)
	2.0 mm x 3.5" Mini-AO Drill (80-1797)
<b>J-Latch</b>	1.1 mm x 3.5" J-Latch Drill (80-1804)
	2.0 mm x 3.5" J-Latch Drill (80-1816)

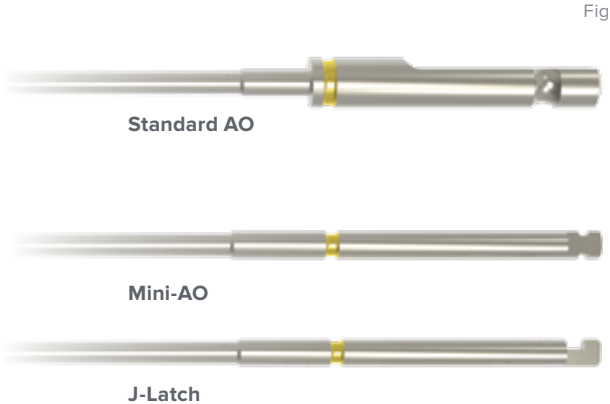


Figure 5

### 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.

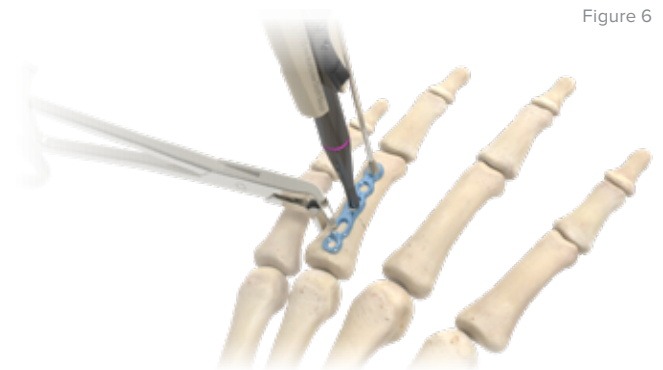
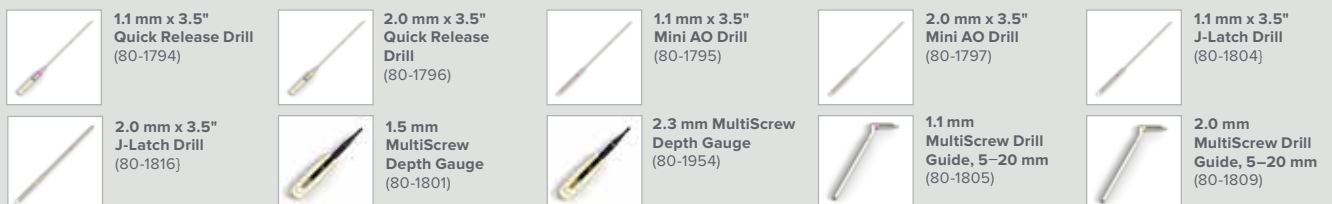
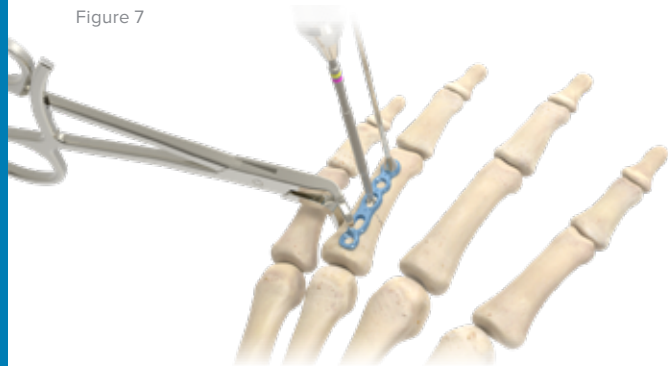


Figure 6



## Standard Plate Surgical Technique [continued]

Figure 7



### 5 Screw Insertion

Using 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 mm Hexalobe MultiScrews (3004-150XX) or 2.3 mm Hexalobe MultiScrews (3004-230XX) through the remaining threaded holes. If desired, the SaveLock Compression Sleeve (80-1955) may be used to aid in compressing the plate to the bone.

**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 nonlocking screws in an oblong slot, so they should be inserted only until they are “three-finger tight.”

Figure 8



### 6 Closure and Postoperative Protocol

Postoperative care is at the discretion of the surgeon. The following protocol is provided as an example.

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.

### 7 Optional: Implant Removal Instructions

To extract a plate, use the T6 Stick Fit Driver Tip (80-1756) and Cruciform Driver Handle (MS-2210) to remove all the screws in the plate. Referencing the Screw Removal Brochure (SPF10-00) may aid in implant extraction if difficulty is experienced.



T6 Stick Fit Driver Tip (80-1756)



1.5 mm Hexalobe Lag Screw (3012-150XX)



2.3 mm Hexalobe Lag Screw (3012-230XX)



1.5 mm Hexalobe MultiScrew (3004-150XX)



2.3 mm Hexalobe MultiScrew (3004-230XX)



SaveLock Compression Sleeve (80-1955)



Cruciform Driver Handle (MS-2210)

# Metacarpophalangeal Joint Fusion Surgical Technique

## 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.



Figure 9

## 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. See Modular Hand System part numbers and descriptions below.

Part Number	Part Description
<b>MTP-F014</b>	14 mm Concave MTP Reamer
<b>MTP-F016</b>	16 mm Concave MTP Reamer
<b>MTP-M014</b>	14 mm Convex MTP Reamer
<b>MTP-M016</b>	16 mm Convex MTP Reamer

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.

# Metacarpophalangeal Joint Fusion Surgical Technique [continued]

Figure 10



**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)

## 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 fewer 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. (Refer to page 21 for Plate Bending Instructions.) 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.

Figure 11



## 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, 5.25" (80-1811), 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.



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



**0.040" (1.02 mm) Plate Tack**  
(80-1759)



**Single Pointed Reduction Forceps, 5.25"**  
(80-1811)

# Metacarpophalangeal Joint Fusion Surgical Technique [continued]

## 5 Proximal Screw Insertion

Beginning in the most proximal hole, drill with the 2.0 mm x 3.5" Quick Release Drill (80-1796) and 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809).

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

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 nonlocking screws in an oblong slot, so they should be inserted only until they are “three-finger tight.”



Figure 12

## 6 Lag Screw Insertion

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

Drill with the 2.0 mm x 3.5" Quick Release Drill (80-1796) and the 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809), 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).

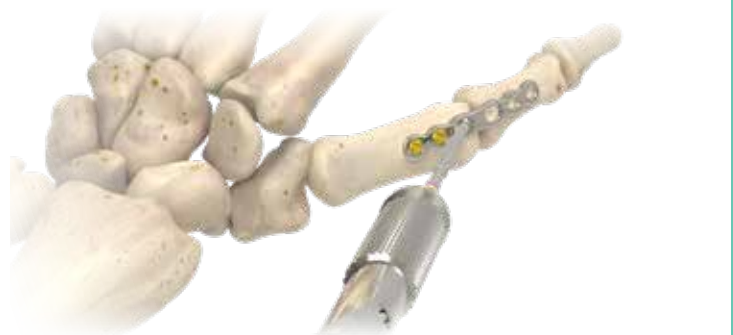
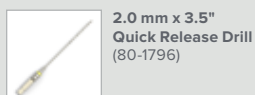


Figure 13



2.0 mm x 3.5"  
Quick Release 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  
(80-1955)



T6 Stick Fit Driver  
Tip  
(80-1756)



2.3 mm Hexalobe  
MultiScrew  
(3004-230XX)



Cruciform Driver  
Handle  
(MS-2210)



2.3 mm Hexalobe  
Lag Screw  
(3012-230XX)

# Metacarpophalangeal Joint Fusion Surgical Technique [continued]

Figure 14



## 7 Distal Screw Insertion

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

Insert the remaining 1.5 mm Hexalobe MultiScrews (3004-150XX) into 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.

**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.

Figure 15



## 8 Closure and Postoperative Protocol

Postoperative care is at the discretion of the surgeon. The following protocol is provided as an example.

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.

## 9 Optional: Implant Removal Instructions

To extract a plate, use the T6 Stick Fit Driver Tip (80-1756) and Cruciform Drive Handle (MS-2210) to remove all the screws in the plate. Referencing the Screw Removal Brochure (SPF10-00) may aid in implant extraction if difficulty is experienced.



1.5 mm Hexalobe MultiScrew (3004-150XX)



T6 Stick Fit Driver Tip (80-1756)



Cruciform Driver Handle (MS-2210)

# 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.



Figure 16

## 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.



Figure 17

## 3 Proximal Screw Insertion

Drill with the 2.0 mm x 3.5" Quick Release 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).



Figure 18



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



.040" (1.02 mm) Plate Tack (80-1759)



Single Pointed Reduction Forceps, 5.25" (80-1811)



Bone Reduction Forceps, 5.25" (80-1810)



2.0 mm x 3.5" Quick Release Drill (80-1796)



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



2.3 mm MultiScrew Depth Gauge (80-1954)



T6 Stick Fit Driver Tip (80-1756)



2.3 mm Hexalobe Lag Screw (3012-230XX)

# 1.3 mm Metacarpal Neck Plate Surgical Technique [continued]

Figure 19



## 4 Distal Cluster Screw Preparation

Drill the distal holes with the 1.1 mm x 3.5" Quick Release Drill (80-1794) and 1.1 mm MultiScrew Drill Guide, 5–20 mm (80-1805). Measure screw length using the 1.5 mm MultiScrew Depth Gauge (80-1801).

Figure 20



## 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 (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 nonlocking screws in an oblong slot, so they should be inserted only until they are “three-finger tight.”



1.1 mm x 3.5" Quick Release Drill (80-1794)



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



1.5 mm MultiScrew Depth Gauge (80-1801)



SaveLock Compression Sleeve (80-1955)



T6 Stick Fit Driver Tip (80-1756)



1.5 mm Hexalobe MultiScrew (3004-150XX)



2.3 mm Hexalobe MultiScrew (3004-230XX)



Cruciform Driver Handle (MS-2210)



## 1.3 mm Metacarpal Neck Plate Surgical Technique [continued]

### 6 Closure and Postoperative Protocol

Postoperative care is at the discretion of the surgeon. The following protocol is provided as an example.

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.



Figure 21

### 7 Optional: Implant Removal Instructions

To extract a Metacarpal Neck Plate, use the T6 Stick Fit Driver Tip (80-1756) and Cruciform Drive Handle (MS-2210) to remove all the screws in the plate. Referencing the Screw Removal Brochure (SPF10-00) may aid in implant extraction if difficulty is experienced.



**T6 Stick Fit Driver  
Tip**  
(80-1756)



**Cruciform Driver  
Handle**  
(MS-2210)

# 1.3 mm Rotational Correction Plate Surgical Technique

Figure 22



## 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.

Figure 23



## 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) x 6" ST K-wires (WS-1106ST) for the proximal side and one .062" (1.58 mm) x 6" K-wire (WS-1607ST) for the distal side to secure the cutting guide to the bone. Bend or cut the two proximal K-wires to minimize interference with the saw blade. Perform the cut under thorough irrigation. Remove the two proximal K-wires, then slide the guide off the distal .062" K-wire.

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

### Recommended Saw Blade Parameters

<b>Width</b>	No greater than 7 mm
<b>Length</b>	Approximately 30 mm
<b>Thickness</b>	No greater than 0.5 mm

**Note:** Saw blade not included in the Acumed Hand Fracture System.



Figure 24



Rotational Osteotomy Cutting Guide (80-1828)



.045" (1.14 mm) x 6" ST Guide Wire (WS-1106ST)  
Also used as a K-wire



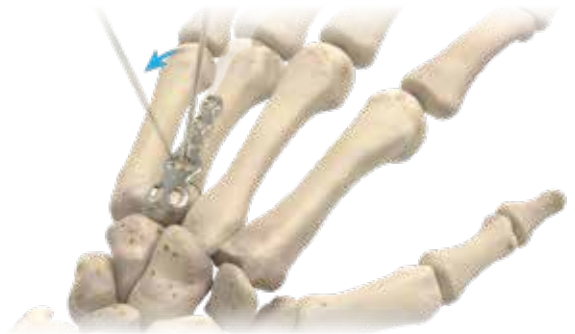
.062" (1.58 mm) x 6" Guide Wire (WS-1607ST)  
Also used as a K-wire

# 1.3 mm Rotational Correction Plate Surgical Technique [continued]

## 3 Plate Placement and Rotational Correction

Position the 1.3 mm Rotational Correction Plate (7005-13005) by sliding it over the guide wire. Perform rotational correction using the .062" (1.58 mm) x 6" Guide Wire (WS-1607ST) as a joystick.

Figure 25



## 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 26) with the 2.0 mm x 3.5" Quick Release Drill (80-1796).

Figure 26



Remove the .062" (1.58 mm) x 6" Guide Wire and open up the hole left with the 2.0 mm x 3.5" Quick Release Drill and 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809). Measure for and insert either a 2.3 mm Hexalobe Lag Screw (3012-230XX) or 2.3 mm Hexalobe MultiScrew into this slot (Figure 27).

**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 nonlocking screws in an oblong slot, so they should be inserted only until they are “three-finger tight.”



Figure 27



1.3 mm Rotational Correction Plate (7005-13005)



.062" (1.58 mm) x 6" Guide Wire (WS-1607ST)



2.3 mm Hexalobe MultiScrew (3004-230XX)



2.0 mm x 3.5" Quick Release Drill (80-1796)



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



2.3 mm Hexalobe Lag Screw (3012-230XX)



Cruciform Driver Handle (MS-2210)

# 1.3 mm Rotational Correction Plate Surgical Technique [continued]

Figure 28



## 5 Osteotomy Compression

Manually compress the osteotomy site.

Figure 29



## 6 Proximal Screw Insertion

Drill with the 2.0 mm x 3.5" Quick Release Drill (80-1796) and 2.0 mm MultiScrew Drill Guide, 5–20 mm (80-1809). Measure and insert either two 2.3 mm Hexalobe Lag Screws (3012-230XX) or 2.3 mm Hexalobe MultiScrews (3004-230XX) into the holes, using a T6 Stick Fit Driver Tip (80-1756) and 2.3 mm MultiScrew Depth Gauge (80-1954).

Figure 30



## 7 Closure and Postoperative Protocol

Postoperative care is at the discretion of the surgeon. The following protocol is provided as an example.

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.

## 8 Optional: Implant Removal Instructions

To extract a Rotational Correction Plate, use the T6 Stick Fit Driver Tip (80-1756) and Cruciform Drive Handle (MS-2210) to remove all the screws in the plate. Referencing the Screw Removal Brochure (SPF10-00) may aid in implant extraction if difficulty is experienced.



2.0 mm x 3.5" Quick Release Drill (80-1796)



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



2.3 mm Hexalobe Lag Screw (3012-230XX)



2.3 mm Hexalobe MultiScrew (3004-230XX)



T6 Stick Fit Driver Tip (80-1756)



2.3 mm MultiScrew Depth Gauge (80-1954)



Cruciform Driver Handle (MS-2210)

# 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.

Figure 31



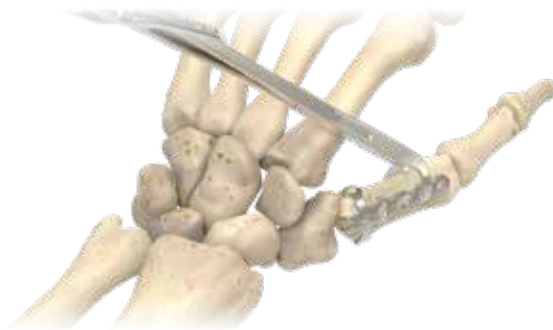
## 2 Fracture Reduction and Plate Placement

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 guide wires.

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

Figure 32



## 3 Drilling Distal Screw Hole

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

**Note:** The prongs on the proximal end of the 1.3 mm Rolando Fracture Hook Plate should contact the dorsal surface of the abductor pollicis longus (APL) tendon and support comminution of the base of the first metacarpal. These prongs are not intended to compress the APL tendon down to the bone and a gap may be visible between the plate prongs and the bone on X-ray.

Figure 33



1.3 mm Rolando Fracture Hook Plate (7005-13004)



.040" (1.02 mm) Plate Tack (80-1759)



Single Pointed Reduction Forceps, 5.25" (80-1811)



Bone Reduction Forceps, 5.25" (80-1810)



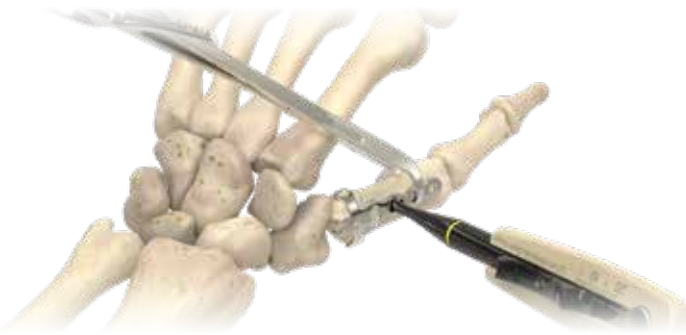
2.0 x 3.5" Quick Release Drill (80-1796)



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

# 1.3 mm Rolando Fracture Hook Plate Surgical Technique [continued]

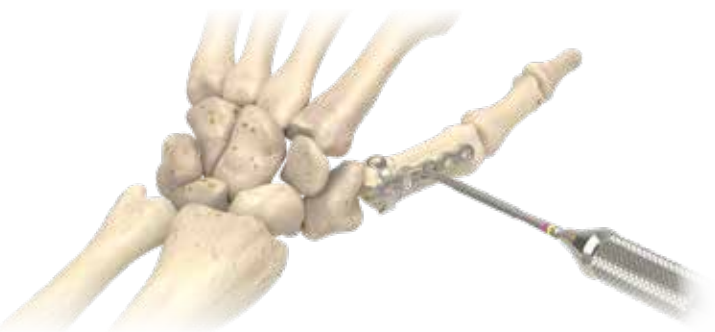
Figure 34



## 4 Determining Screw Length

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

Figure 35



## 5 Screw Insertion

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).

Figure 36



## 6 Drilling Proximal Holes

Drill the proximal holes with the 1.1 mm x 3.5" Quick Release Drill (80-1794) and 1.1 mm MultiScrew Drill Guide, 5–20 mm (80-1805) and measure the screw length.



2.3 mm  
MultiScrew Depth  
Gauge  
(80-1954)



T6 Stick Fit Driver  
Tip  
(80-1756)



2.3 mm Hexalobe  
Lag Screw  
(3012-230XX)



1.1 mm x 3.5"  
Quick Release Drill  
(80-1794)



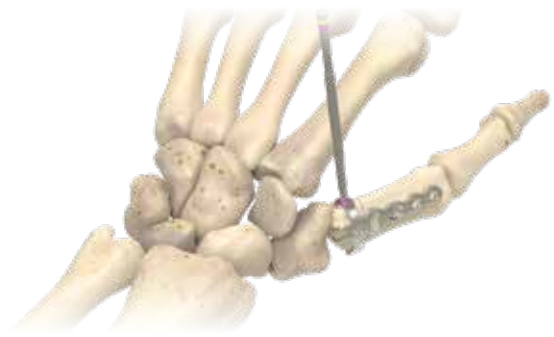
1.1 mm MultiScrew  
Drill Guide,  
5–20 mm  
(80-1805)

## 1.3 mm Rolando Fracture Hook Plate Surgical Technique [continued]

### 7 Proximal Screw Insertion

Using the T6 Stick Fit Driver Tip (80-1756), 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.

Figure 37



### 8 Final Screw Insertion

Finish drilling, measuring, and installing the remaining distal shaft holes with 2.3 mm Hexalobe MultiScrews (3004-230XX), and install a 2.3 mm Hexalobe Lag Screw (3012-230XX) in the proximal slot.

Figure 38



### 9 Closure and Postoperative Protocol

Postoperative care is at the discretion of the surgeon. The following protocol is provided as an example.

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.

### 10 Optional: Implant Removal Instructions

To extract a Rolando Fracture Hook Plate, use the T6 Stick Fit Driver Tip (80-1756) and Cruciform Drive Handle (MS-2210) to remove all the screws in the plate. Referencing the Screw Removal Brochure (SPF10-00) may aid in implant extraction if difficulty is experienced.



T6 Stick Fit Driver  
Tip  
(80-1756)



1.5 mm Hexalobe  
MultiScrew  
(3004-150XX)



2.3 mm Hexalobe  
MultiScrew  
(3004-230XX)



2.3 mm Hexalobe  
Lag Screw  
(3012-230XX)



Cruciform Driver  
Handle  
(MS-2210)

# 0.8 mm Avulsion Hook Plate Surgical Technique

Figure 39



## 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.

Figure 40



## 2 Plate Placement

After reduction and stabilization, the 0.8 mm Avulsion Hook Plate (7005-08001) is positioned dorsally, medially, or laterally using the Single Pointed Reduction Forceps, 5.25" (80-1811). Determine if a 1.5 mm or 2.3 mm Hexalobe MultiScrew (3004-150XX or 3004-230XX) is desired.

Figure 41



## 3 Drilling and Determining Screw Length

Drill with the 1.1 mm x 3.5" Quick Release Drill (80-1794) or 2.0 mm x 3.5" Quick Release 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).



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



**Single Pointed Reduction Forceps, 5.25"**  
(80-1811)



**1.5 mm Hexalobe MultiScrew**  
(3004-150XX)



**2.3 mm Hexalobe MultiScrew**  
(3004-230XX)



**1.1 mm x 3.5" Quick Release Drill**  
(80-1794)



**2.0 mm x 3.5" Quick Release Drill**  
(80-1796)



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



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



**1.5 mm MultiScrew Depth Gauge**  
(80-1801)



**2.3 mm MultiScrew Depth Gauge**  
(80-1954)



## 0.8 mm Avulsion Hook Plate Surgical Technique [continued]

### 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).



Figure 42

### 5 Closure and Postoperative Protocol

Postoperative care is at the discretion of the surgeon. The following protocol is provided as an example.

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.



Figure 43

### 6 Optional: Implant Removal Instructions

To extract an Avulsion Hook Plate, use the T6 Stick Fit Driver Tip (80-1756) and Cruciform Drive Handle (MS-2210) to remove all the screws in the plate. Referencing the Screw Removal Brochure (SPF10-00) may aid in implant extraction if difficulty is experienced.



SaveLock  
Compression  
Sleeve  
(80-1955)



T6 Stick Fit  
Driver Tip  
(80-1756)



1.5 mm Hexalobe  
MultiScrew  
(3004-150XX)



2.3 mm Hexalobe  
MultiScrew  
(3004-230XX)



Cruciform Driver  
Handle  
(MS-2210)

# 1.5 mm and 2.3 mm Hexalobe Lag Screw Surgical Technique

Figure 44

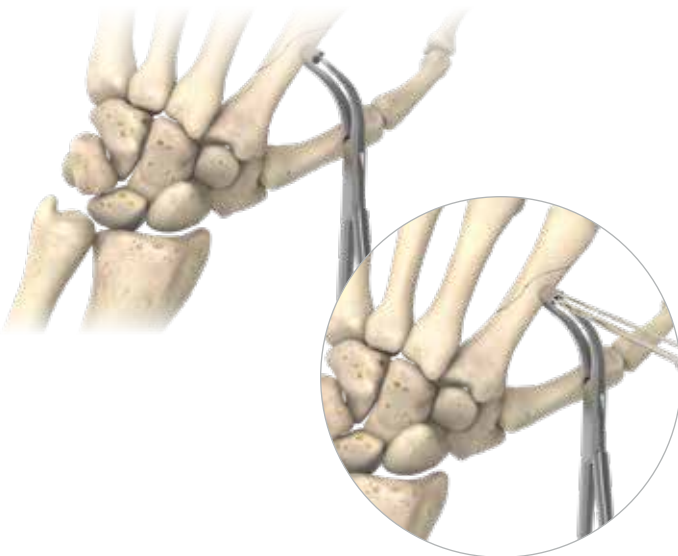


## 1 Exposure and Fracture Reduction

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.

Figure 45



## 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" Quick Release Drill (80-1794 or 80-1796).

**Note:** One barrel can be used to insert a K-wire across the fracture, while the other barrel guides the drill.

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

Figure 47

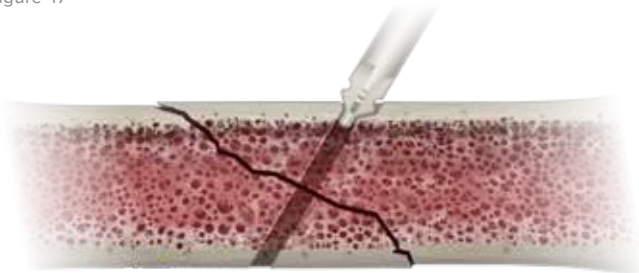


Figure 46



1.1 mm/2.0 mm  
Percutaneous  
Bone Clamp  
(80-0684)



1.1 mm x 3.5"  
Quick Release Drill  
(80-1794)



2.0 mm x 3.5"  
Quick Release Drill  
(80-1796)



OPTIONAL:  
MultiScrew  
Countersink  
(80-1807)

## 1.5 mm and 2.3 mm Hexalobe Lag Screw Surgical Technique [continued]

### 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.

Figure 48



### 4 Closure and Postoperative Protocol

Postoperative care is at the discretion of the surgeon. The following protocol is provided as an example.

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.

Figure 49



### 5 Optional: Implant Removal Instructions

To extract a Hexalobe Lag screw, use the T6 Stick Fit Driver Tip (80-1756) and Cruciform Drive Handle (MS-2210). Referencing the Screw Removal Brochure (SPF10-00) may aid in implant extraction if difficulty is experienced.



T6 Stick Fit  
Driver Tip  
(80-1756)



1.5 mm Hexalobe  
Lag Screw  
(3012-150XX)



2.3 mm Hexalobe  
Lag Screw  
(3012-230XX)



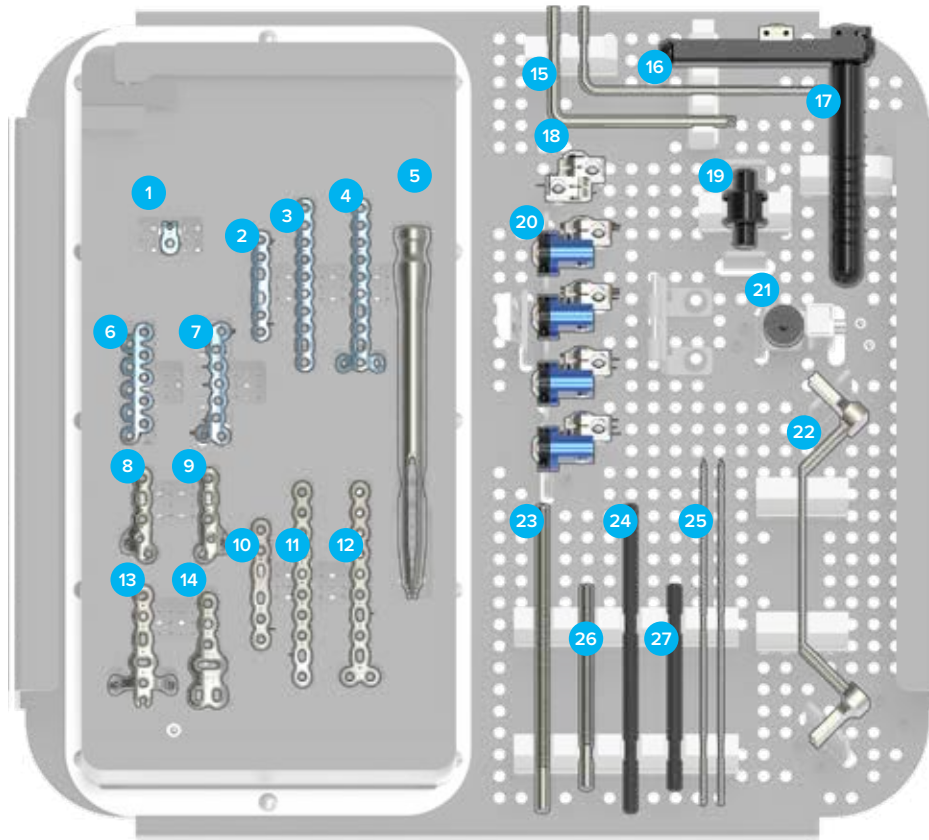
OPTIONAL:  
Cruciform Driver  
Handle  
(MS-2210)

# Ordering Information

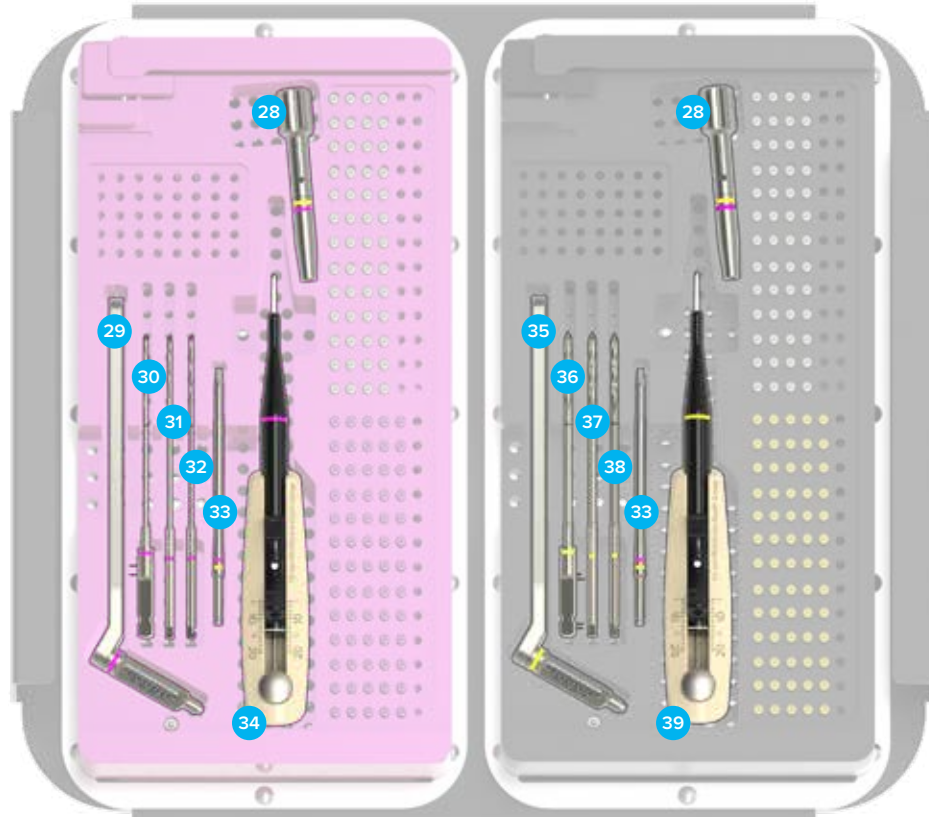
Tray Components						
<b>Hand Plates</b>		<b>Small Bone External Fixation System</b>				
1	0.8 mm Avulsion Hook Plate	7005-08001	15	3/32" Hex Key	HK-0024	
2	0.8 mm Compression Plate, 6-hole	7005-08006	16	Hex Wrench	AT-7004	
3	0.8 mm Straight Plate, 10-hole	7005-08010	17	Small Bone Distractor	BD1-400	
4	0.8 mm T-Plate	7005-08003	18	Outrigger Assembly	SM-5200	
5	0.8/1.3 mm Plate Positioner	80-1958	19	Small Bone Fixator Knob	SM-5015	
6	0.8 mm Offset Plate	7005-08004	20	Small Bone Housing Assembly	SM-5100	
7	0.8 mm Curved Medial/Lateral Plate	7005-08007	21	2.4 mm Bone Distractor Hex	BD1-410	
8	1.3 mm Metacarpal Neck Plate, Right	7005-1303R	22	Pin Guide Assembly	SM-5080	
9	1.3 mm Metacarpal Neck Plate, Left	7005-1303L	23	90 mm Small Bone Fixator Shaft (Threaded Rod)	SMT-5090	
10	1.3 mm Compression Plate, 6-hole	7005-13006	24	90 mm Small Bone Fixator Shaft (Carbon Fiber Rod)	SMC-5090	
11	1.3 mm Straight Plate, 10-hole	7005-13010	25	1.5 mm x 4" Threaded Single Trocar Guide Wire*	WS-1504STT	
12	1.3 mm T-Plate	7005-13002	26	60 mm Small Bone Fixator Shaft (Threaded Rod)	SMT-5060	
13	1.3 mm Rolando Fracture Hook Plate	7005-13004	27	60 mm Small Bone Fixator Shaft (Carbon Fiber Rod)	SMC-5060	
14	1.3 mm Rotational Correction Plate	7005-13005				
<b>1.5 mm Hexalobe MultiScrew Instrumentation</b>		<b>2.3 mm Hexalobe MultiScrew Instrumentation</b>				
28	SaveLock Compression Sleeve	80-1955	→	same in both trays	80-1955	
29	1.1 mm MultiScrew Drill Guide, 5–20 mm	80-1805		35	2.0 mm MultiScrew Drill Guide, 5–20 mm	80-1809
30	1.1 mm x 3.5" Quick Release Drill	80-1794		36	2.0 mm x 3.5" Quick Release Drill	80-1796
31	1.1 mm x 3.5" Mini-AO Drill	80-1795		37	2.0 mm x 3.5" Mini-AO Drill	80-1797
32	1.1 mm x 3.5" J-Latch Drill	80-1804		38	2.0 mm x 3.5" J-Latch Drill	80-1816
33	T6 Stick Fit Driver Tip	80-1756	→	same in both trays	80-1756	
34	1.5 mm MultiScrew Depth Gauge	80-1801		39	2.3 mm MultiScrew Depth Gauge	80-1954

\*Also used as a K-wire

### Plates and External Fixation Platter



### Screw Caddy Platter



## Ordering Information [continued]

### Tray Components

#### Plate Instrumentation

40	0.8/1.3 mm Plate Bending Pliers	80-1757
41	0.8/1.3 mm Plate Cutter	80-0683
42	Bone Reduction Forceps, 5.25", Fine Adjustment	80-1810
43	1.1/2.0 mm Percutaneous Bone Clamp	80-0684
44	Single Pointed Reduction Forceps, 5.25"	80-1811
45	7.25" Periosteal Elevator	MS-46211
46	8 mm Hohmann Retractor	PL-CL05
47	Sharp Hook	PL-CL06
48	Rotational Osteotomy Cutting Guide	80-1828
49	0.040" (1.02 mm) Plate Tack	80-1759
50	Heiss Retractor, 8 mm W, 6 mm D	80-1812
51	Cruciform Driver Handle	MS-2210
52	MultiScrew Countersink	80-1807

#### Threaded Titanium K-wires

53	.035" x 5.75" STT Guide Wire*	WT-0906STT
54	.045" x 5.75" STT Guide Wire*	35-0011
55	.062" x 5.75" STT Guide Wire*	WT-1606STT

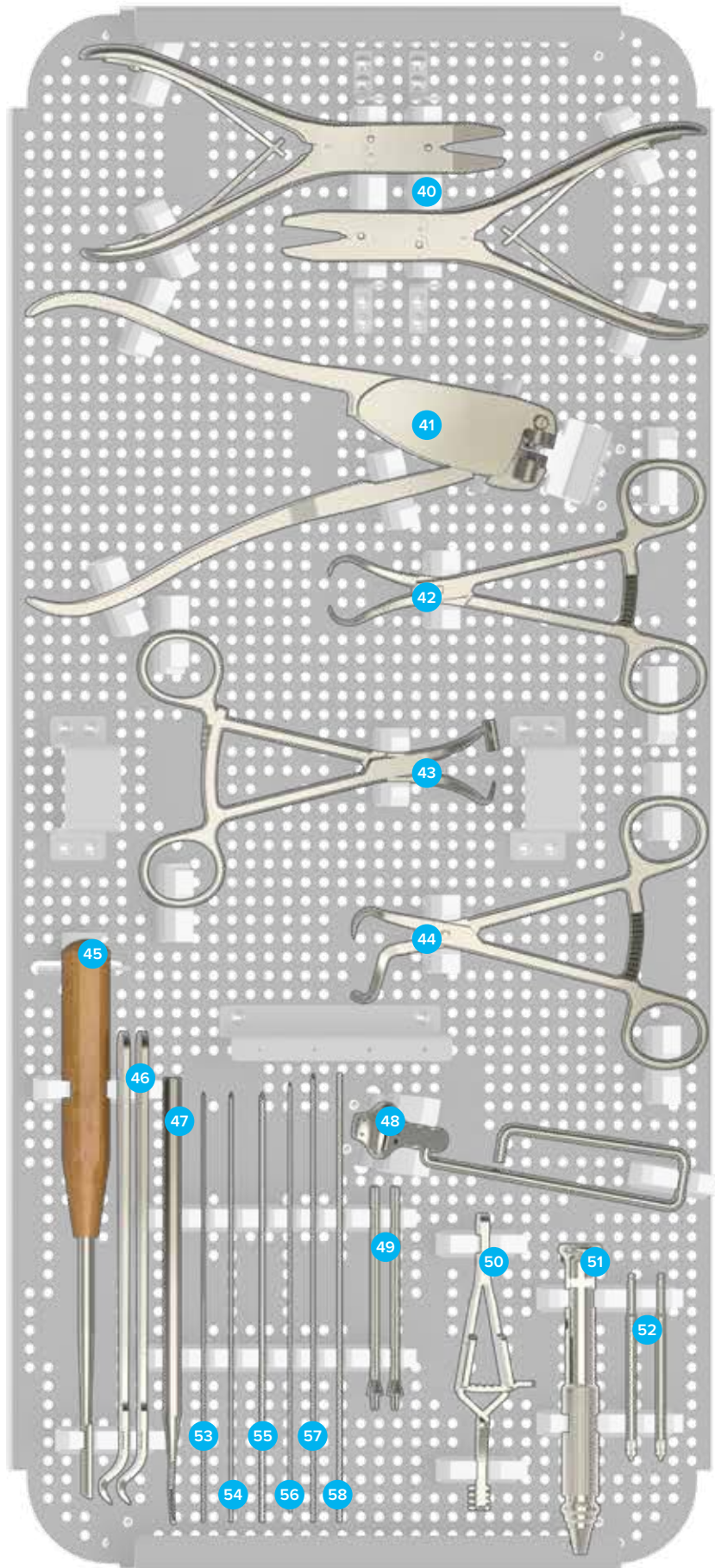
#### Unthreaded Stainless Steel K-wires

56	.035" x 5.75" ST Guide Wire*	WS-0906ST
57	.045" x 6" ST Guide Wire*	WS-1106ST
58	.062" x 6" ST Guide Wire*	WS-1607ST

**Note:** Small Bone External Fixator part numbers can be found in HNW10-08.

To learn more about the full line of Acumed innovative surgical solutions, please contact your local Acumed authorized distributor, call 888.627.9957, or visit [www.acumed.net](http://www.acumed.net).

\*Also used as a K-wire



## Ordering Information [continued]

Screws			
<b>1.5 mm Hexalobe MultiScrews</b>		<b>2.3 mm Hexalobe MultiScrews</b>	
1.5 mm x 5 mm Hexalobe MultiScrew	3004-15005	2.3 mm x 5 mm Hexalobe MultiScrew	3004-23005
1.5 mm x 6 mm Hexalobe MultiScrew	3004-15006	2.3 mm x 6 mm Hexalobe MultiScrew	3004-23006
1.5 mm x 7 mm Hexalobe MultiScrew	3004-15007	2.3 mm x 7 mm Hexalobe MultiScrew	3004-23007
1.5 mm x 8 mm Hexalobe MultiScrew	3004-15008	2.3 mm x 8 mm Hexalobe MultiScrew	3004-23008
1.5 mm x 9 mm Hexalobe MultiScrew	3004-15009	2.3 mm x 9 mm Hexalobe MultiScrew	3004-23009
1.5 mm x 10 mm Hexalobe MultiScrew	3004-15010	2.3 mm x 10 mm Hexalobe MultiScrew	3004-23010
1.5 mm x 11 mm Hexalobe MultiScrew	3004-15011	2.3 mm x 11 mm Hexalobe MultiScrew	3004-23011
1.5 mm x 12 mm Hexalobe MultiScrew	3004-15012	2.3 mm x 12 mm Hexalobe MultiScrew	3004-23012
1.5 mm x 13 mm Hexalobe MultiScrew	3004-15013	2.3 mm x 13 mm Hexalobe MultiScrew	3004-23013
1.5 mm x 14 mm Hexalobe MultiScrew	3004-15014	2.3 mm x 14 mm Hexalobe MultiScrew	3004-23014
1.5 mm x 16 mm Hexalobe MultiScrew	3004-15016	2.3 mm x 16 mm Hexalobe MultiScrew	3004-23016
1.5 mm x 18 mm Hexalobe MultiScrew	3004-15018	2.3 mm x 18 mm Hexalobe MultiScrew	3004-23018
1.5 mm x 20 mm Hexalobe MultiScrew	3004-15020	2.3 mm x 20 mm Hexalobe MultiScrew	3004-23020
<b>1.5 mm Hexalobe Lag Screws</b>		<b>2.3 mm Hexalobe Lag Screws</b>	
1.5 mm x 5 mm Hexalobe Lag Screw	3012-15005	2.3 mm x 5 mm Hexalobe Lag Screw	3012-23005
1.5 mm x 6 mm Hexalobe Lag Screw	3012-15006	2.3 mm x 6 mm Hexalobe Lag Screw	3012-23006
1.5 mm x 7 mm Hexalobe Lag Screw	3012-15007	2.3 mm x 7 mm Hexalobe Lag Screw	3012-23007
1.5 mm x 8 mm Hexalobe Lag Screw	3012-15008	2.3 mm x 8 mm Hexalobe Lag Screw	3012-23008
1.5 mm x 9 mm Hexalobe Lag Screw	3012-15009	2.3 mm x 9 mm Hexalobe Lag Screw	3012-23009
1.5 mm x 10 mm Hexalobe Lag Screw	3012-15010	2.3 mm x 10 mm Hexalobe Lag Screw	3012-23010
1.5 mm x 11 mm Hexalobe Lag Screw	3012-15011	2.3 mm x 11 mm Hexalobe Lag Screw	3012-23011
1.5 mm x 12 mm Hexalobe Lag Screw	3012-15012	2.3 mm x 12 mm Hexalobe Lag Screw	3012-23012
1.5 mm x 13 mm Hexalobe Lag Screw	3012-15013	2.3 mm x 13 mm Hexalobe Lag Screw	3012-23013
1.5 mm x 14 mm Hexalobe Lag Screw	3012-15014	2.3 mm x 14 mm Hexalobe Lag Screw	3012-23014
1.5 mm x 16 mm Hexalobe Lag Screw	3012-15016	2.3 mm x 16 mm Hexalobe Lag Screw	3012-23016
1.5 mm x 18 mm Hexalobe Lag Screw	3012-15018	2.3 mm x 18 mm Hexalobe Lag Screw	3012-23018
1.5 mm x 20 mm Hexalobe Lag Screw	3012-15020	2.3 mm x 20 mm Hexalobe Lag Screw	3012-23020











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