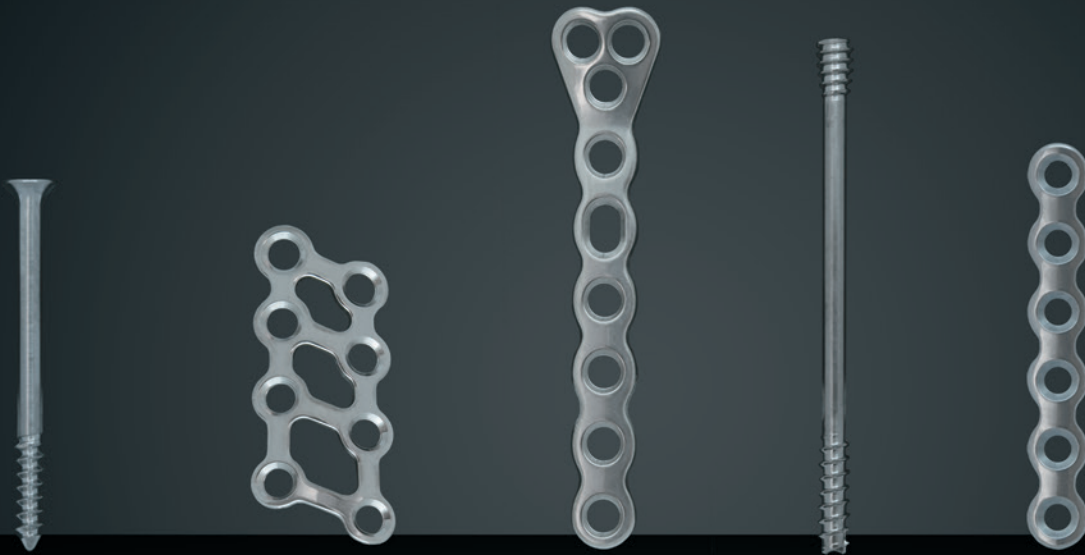


# hps<sup>TM</sup>

hand plating system



## surgical technique guide



*Rethinking Possibilities, Reshaping Lives*



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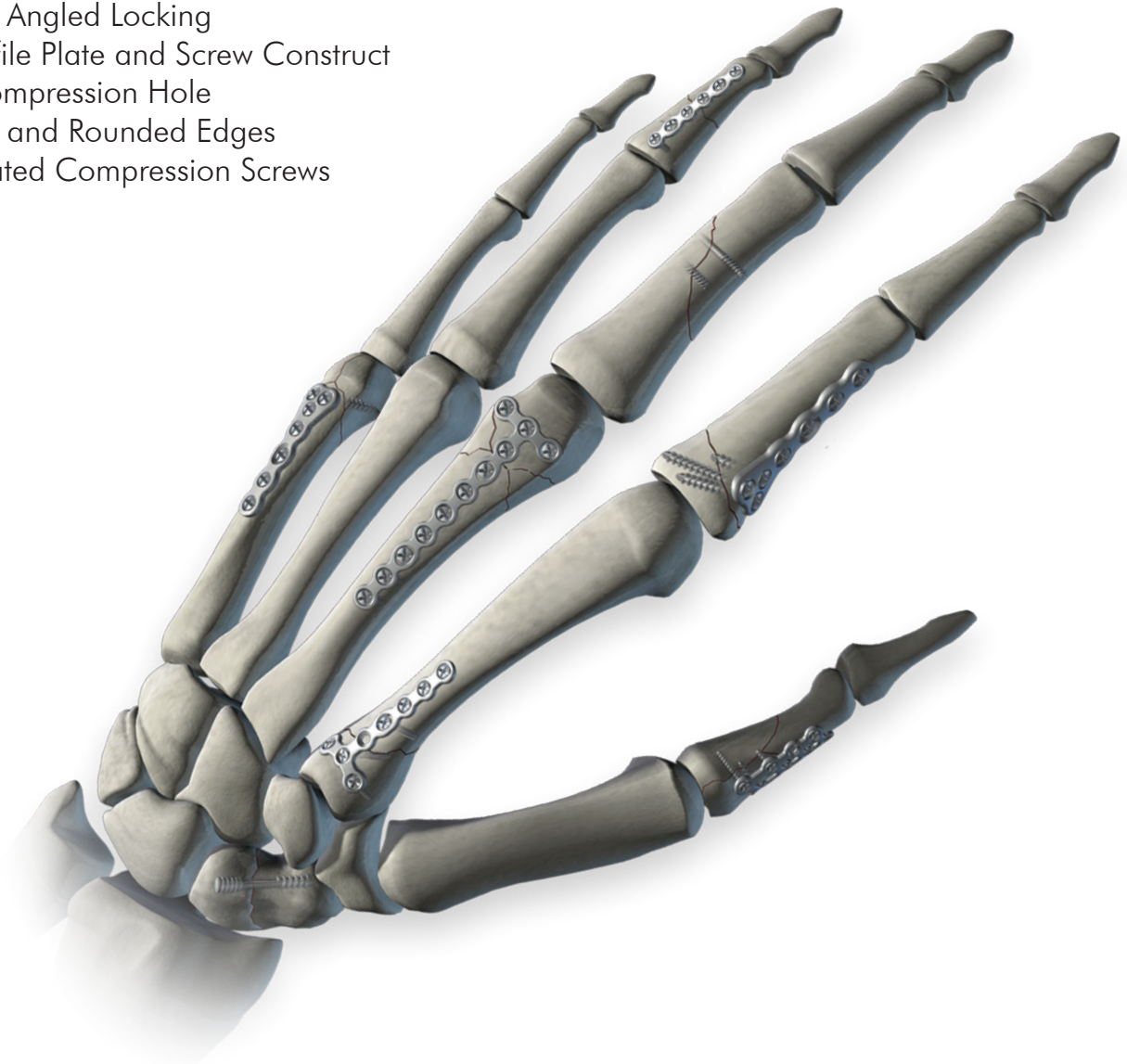
## Surgical Technique

- Plating - General ..... 18
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The OsteoMed Hand Plating System features instrumentation and implants designed specifically for treating hand trauma.

### Features:

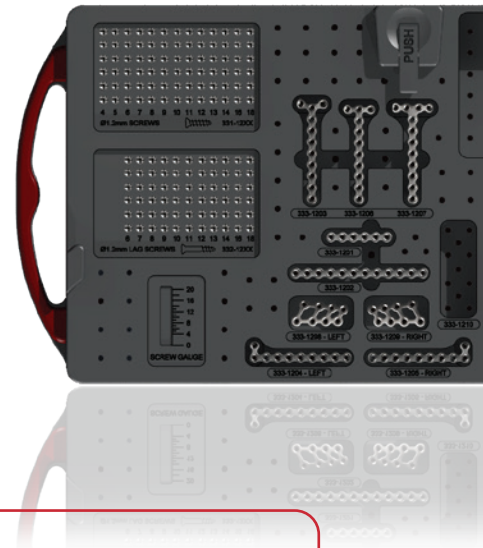
- Variable Angled Locking
- Low Profile Plate and Screw Construct
- Dual Compression Hole
- Polished and Rounded Edges
- Cannulated Compression Screws



Modules	Distal Phalanges	Middle Phalanges	Proximal Phalanges	Metacarpals and Carpals
1.2mm	1.2mm			
1.6mm		1.6mm		
2.0mm			2.0mm	
2.4mm				2.4mm

**Note:** Refer to [Product Insert](#) for specific indications and [Instructions for Use](#).

# 1.2mm Module



## Plates



333-1201 1.2mm 6 Hole Straight Plate



333-1202 1.2mm 12 Hole Straight Plate



333-1203 1.2mm Y Plate



333-1204 1.2mm L Plate, Left



333-1205 1.2mm L Plate, Right



333-1206 1.2mm 3 x 8 T Plate



333-1207 1.2mm 4 x 8 T Plate



333-1208 1.2mm Offset Grid Plate, Left



333-1209 1.2mm Offset Grid Plate, Right

## Screws



331-12XX 1.2mm x 4mm - 18mm Fully Threaded Screw



332-12XX 1.2mm x 6mm-18mm Lag Screw

# 1.2mm Module



## Instruments



320-1061 HPS™ 1.2mm Screw & Plate Module



- 320-1210 1.0mm Drill, Manual
- 320-1410 1.0mm Drill, J-Latch
- 320-1610 1.0mm Drill, Quick Release



- 320-1213 1.3mm Drill, Manual
- 320-1413 1.3mm Drill, J-Latch
- 320-1613 1.3mm Drill, Quick Release
- 320-1713 1.3mm Drill, Quick Release, Short



- 320-1001 1.2mm/1.6mm Plate Holding TAK™



- 320-1011 1.2mm/1.6mm Plate Holding Threaded TAK™



- 320-1009 1.2mm/1.6mm Countersink, Manual



- 320-1112 1.2mm Screwdriver Shaft, Manual



- 320-1512 1.2mm Screwdriver Sleeve

# 1.6mm Module



## Plates



333-1601 1.6mm 6 Hole Straight Plate, Locking



333-1602 1.6mm 12 Hole Straight Plate, Locking



333-1603 1.6mm Y Plate, Locking



333-1604 1.6mm L Plate, Left, Locking



333-1605 1.6mm L Plate, Right, Locking



333-1606 1.6mm 3 x 8 T Plate, Locking



333-1651 1.6mm 6 Hole Straight Plate, Locking, TiA\*

\*Cannot be cut with HPS Plate Cutter



333-1607 1.6mm 4 x 8 T Plate, Locking



333-1608 1.6mm Offset Grid Plate, Left, Locking



333-1609 1.6mm Offset Grid Plate, Right, Locking



333-1611 1.6mm Condylar Plate, Left, Locking



333-1612 1.6mm Condylar Plate, Right, Locking

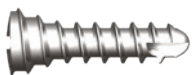


333-1620 1.6mm Subcondylar Plate, Locking



333-1652 1.6mm Subcondylar Plate, Locking, TiA\*

## Screws



330-16xx 1.6mm x 6mm - 24mm Fully Threaded Screw, Angled Locking



308-16xx 1.6mm x 6mm - 24mm Lag Screw

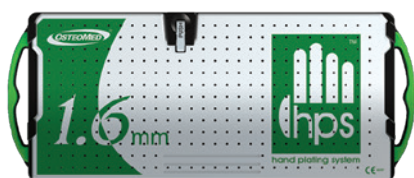


331-16xx 1.6mm x 6mm - 24mm Fully Threaded Screw

# 1.6mm Module



## Instruments



320-1062 HPS™ 1.6mm Screw & Plate Module



- 320-1213 1.3mm Drill, Manual
- 320-1413 1.3mm Drill, J-Latch
- 320-1613 1.3mm Drill, Quick Release
- 320-1713 1.3mm Drill, Quick Release, Short



- 320-1216 1.6mm Drill, Manual
- 320-1416 1.6mm Drill, J-Latch
- 320-1616 1.6mm Drill, Quick Release



320-1001 1.2mm/1.6mm Plate Holding TAK™



320-1011 1.2mm/1.6mm Plate Holding Threaded TAK™



320-1009 1.2mm/1.6mm Countersink, Manual

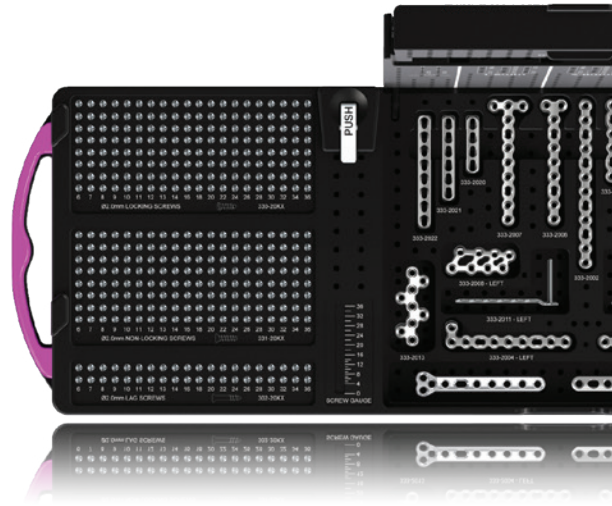


320-1116 1.6mm Screwdriver Shaft, Manual



320-1516 1.6mm Screwdriver Sleeve

# 2.0mm Module



## Plates



333-2001 2.0mm 6 Hole Straight Plate, Locking



333-2002 2.0mm 12 Hole Straight Plate, Locking



333-2003 2.0mm Y Plate, Locking



333-2004 2.0mm L Plate, Left, Locking



333-2005 2.0mm L Plate, Right, Locking



333-2006 2.0mm 2 x 8 T Plate, Locking



333-2007 2.0mm 3 x 8 T Plate, Locking



333-2008 2.0mm Offset Grid Plate, Left, Locking



333-2009 2.0mm Offset Grid Plate, Right, Locking



333-2010 2.0mm Subcondylar Plate, Locking



333-2011 2.0mm Condylar Plate, Left, Locking



333-2012 2.0mm Condylar Plate, Right, Locking



333-2013 2.0mm Z Plate, Locking



333-2020 2.0mm 4 Hole Straight LCDCP\*



333-2021 2.0mm 6 Hole Straight LCDCP\*



333-2022 2.0mm 8 Hole Straight LCDCP\*



333-2051 2.0mm 6 Hole Straight Plate, Locking, TiA\*



333-2052 2.0mm Subcondylar Plate, Locking, TiA\*

\*Cannot be cut with HPS Plate Cutter



# 2.0mm Module



## Screws



330-20xx 2.0mm x 6mm - 36mm Fully Threaded Screw, Angled Locking



302-20xx 2.0mm x 6mm - 36mm Lag Screw



331-20xx 2.0mm x 6mm - 36mm Fully Threaded Screw

## Instruments



320-1063 HPS™ 2.0mm Screw & Plate Module



320-1215 1.5mm Drill, Manual  
320-1415 1.5mm Drill, J-Latch  
320-1615 1.5mm Drill, Quick Release  
320-1715 1.5mm Drill, Quick Release, Short



320-1220 2.0mm Drill, Manual  
320-1420 2.0mm Drill, J-Latch  
320-1620 2.0mm Drill, Quick Release  
320-1720 2.0mm Drill, Quick Release, Short



320-1002 2.0mm/2.4mm Plate Holding TAK™



320-1012 2.0mm/2.4mm Threaded Plate Holding TAK™



320-1010 2.0mm/2.4mm Countersink, Manual

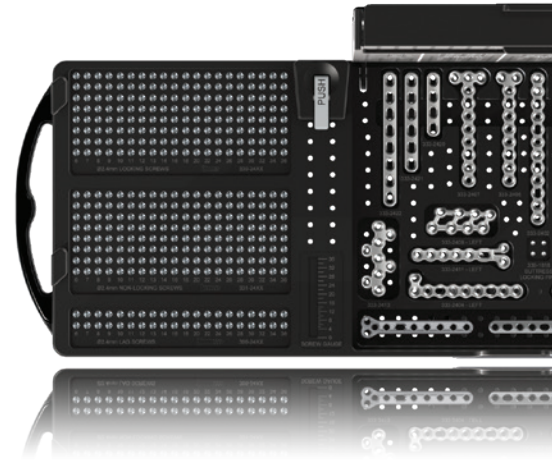


320-1120 2.0mm Screwdriver Shaft, Manual



320-1520 2.0mm Screwdriver Sleeve

# 2.4mm Module



## Plates



333-2401 2.4mm 6 Hole Straight Plate, Locking



333-2402 2.4mm 12 Hole Straight Plate, Locking



333-2403 2.4mm Y Plate, Locking



333-2404 2.4mm L Plate, Left, Locking



333-2405 2.4mm L Plate, Right, Locking



333-2406 2.4mm 2 x 8 T Plate, Locking



333-2407 2.4mm 3 x 8 T Plate, Locking



333-2408 2.4mm Offset Grid Plate, Left, Locking



333-2409 2.4mm Offset Grid Plate, Right, Locking



333-2410 2.4mm Subcondylar Plate, Locking



333-2411 2.4mm Condylar Plate, Left, Locking



333-2412 2.4mm Condylar Plate, Right, Locking



333-2413 2.4mm Z Plate, Locking



333-2420 2.4mm 4 Hole Straight LCDCP\*



333-2421 2.4mm 6 Hole Straight LCDCP\*



333-2422 2.4mm 8 Hole Straight LCDCP\*



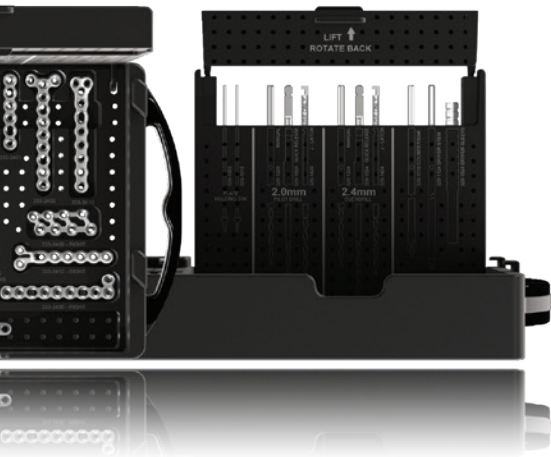
333-2451 2.4mm 6 Hole Straight Plate, TiA\*



333-2452 2.4mm Subcondylar Plate, TiA\*

\*Cannot be cut with HPS Plate Cutter

# 2.4mm Module



## Screws



330-24xx 2.4mm x 6mm - 36mm Fully Threaded Screw, Angled Locking



306-24xx 2.4mm x 6mm - 36mm Lag Screw

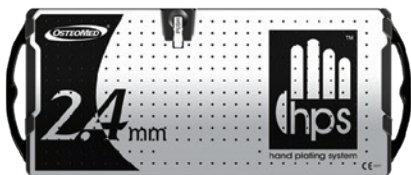


331-24xx 2.4mm x 6mm - 36mm Fully Threaded Screw



330-1818 1.8mm x 18mm Locking Buttress Pin

## Instruments



320-1064 HPS™ 2.4mm Screw & Plate Module



320-1220 2.0mm Drill, Manual  
320-1420 2.0mm Drill, J-Latch  
320-1620 2.0mm Drill, Quick Release  
320-1720 2.0mm Drill, Quick Release, Short



320-1224 2.4mm Drill, Manual  
320-1424 2.4mm Drill, J-Latch  
320-1624 2.4mm Drill, Quick Release



320-1002 2.0mm/2.4mm Plate Holding TAK™



320-1012 2.0mm/2.4mm Threaded Plate Holding TAK™



320-1010 2.0mm/2.4mm Countersink, Manual

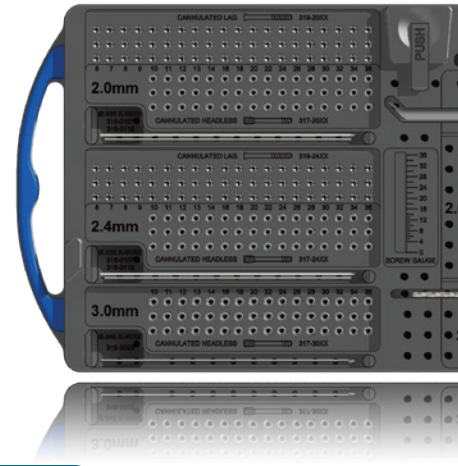


320-1124 2.4mm Screwdriver Shaft, Manual





320-1524 2.4mm Screwdriver Sleeve


# Cannulated Module





## K-Wire

- 

316-0133 .028" x 4" K-Wire
- 

316-0107 .035" x 4" K-Wire
- 

316-0119 .035" x 4" K-Wire, Double Trocar
- 

316-0003 .045" x 4" K-Wire
- 

316-0123 .045" x 4" K-Wire, Double Trocar

## Screws



319-20xx 2.0mm x 6mm - 36mm Cannulated Lag Screw



317-20xx 2.0mm x 10mm - 36mm Cannulated Headless Screw



319-24xx 2.4mm x 6mm - 36mm Cannulated Lag Screw



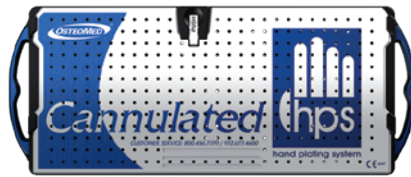
317-24xx 2.4mm x 10mm - 36mm Cannulated Headless Screw



317-30xx 3.0mm x 10mm - 36mm Cannulated Headless Screw



## Instruments



320-1055 HPS™ Cannulated Screw Module



316-0116 1.7mm Cannulated Drill, Long, Manual  
316-0014 1.7mm Cannulated Drill, Long, Quick Release



316-0322 2.4mm Proximal Cortex Drill, Manual  
316-0323 2.4mm Proximal Cortex Drill, Quick Release



316-0005 2.3mm Cannulated Drill, Manual  
316-0015 2.3mm Cannulated Drill, Quick Release



316-0317 2.9mm Proximal Cortex Drill, Manual



316-0035 2.0/2.4/3.0/4.0mm Cannulated Drill Guide



316-0101 2.0/2.4mm Cannulated Screw Countersink



316-0135 HPS Dual Cannulated Depth Gauge



316-0310 2.0/2.4mm Headless Tri-lobe Driver, Cannulated, Tapered, Manual  
316-0308 2.0/2.4mm Headless Tri-lobe Driver, Tapered, Manual



316-0311 3.0/4.0mm Headless Driver, Cannulated, Tapered, Manual  
316-0309 3.0/4.0mm Headless Driver, Solid, Tapered



316-0102 2.0/2.4mm Cannulated Driver, Manual



316-0039 2.0/2.4/3.0/4.0mm Cannulated Screw Remover

# Hand Fusion Module



## 2.0mm Fusion Screws\*



334-20xx 2.0 x 16 - 32mm Fusion Screw

## 2.4mm Fusion Screws\*



334-24xx 2.4 x 20 - 36mm Fusion Screw

## Hand Fusion Plates\*



333-1614 1.6mm Fusion Plate

333-2014 2.0mm Fusion Plate

## K-Wire



316-0107 .035 x 4" K-Wire Single Trocar



316-0119 .035" x 4" K-Wire Double Trocar



316-0003 .045 x 4" K-Wire Single Trocar



316-0123 .045 x 4" K-Wire Double Trocar

Patent Pending\*

# Hand Fusion Module



## Instruments



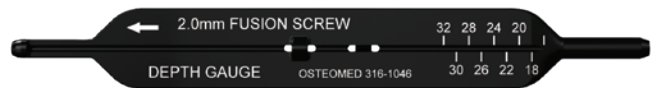
320-1065 HPS™ Hand Fusion Screw & Plate Module



320-1040 Goniometer



- 316-1041 20°/25° Fusion Reamer
- 316-1042 30°/35° Fusion Reamer
- 316-1043 40°/45° Fusion Reamer
- 316-1044 50°/55° Fusion Reamer



316-1046 Depth Gauge



316-1045-03 K-Wire Guide



316-1045 K-Wire Guide



316-1017 1.7mm Drill, Quick Release  
316-0917 1.7mm Drill, Manual



316-1020 2.0mm Drill, Quick Release  
316-0920 2.0mm Drill, Manual



316-1120 2.0mm Fusion Screw Driver Stem



316-1124 2.4mm Fusion Screw Driver Stem

# General Instrumentation Tray



320-1050 HPS™ Instrument Tray



320-1060 HPS™ Two Instrument Tray

## Bone and Soft Tissue Management

Selected to aid in fracture realignment and positioning



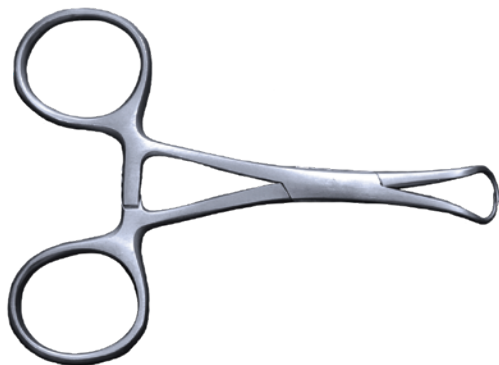
320-1020 6mm Hohmann Retractor  
320-1021 8mm Hohmann Retractor



320-1022 3mm Periosteal Elevator, Straight Edge  
320-1023 3mm Periosteal Elevator, Curved Edge



320-1024 Sharp Hook



320-1019 Termite Forceps



320-1017 Reduction Forceps



320-1018 Reduction Forceps, K-wire Guide

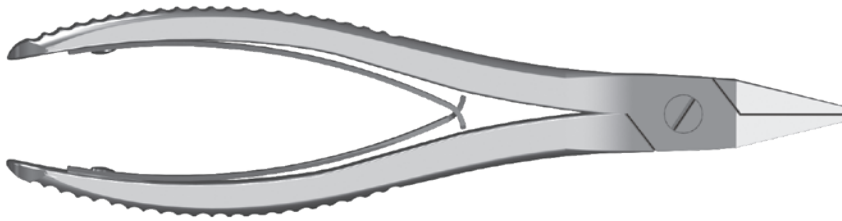


## Plate Altering

Designed to easily alter plates to fit varying patient anatomy.



320-1015 Universal Plate Cutter



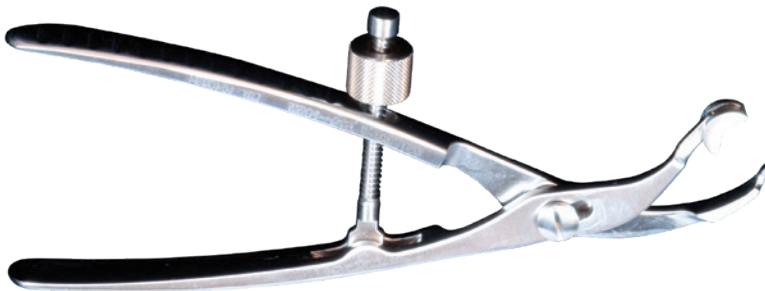
320-1016 Plate Benders

## Plate Holding

intended to facilitate implantation by temporarily securing the plate to the bone



320-1032 On Bone Plate Holder

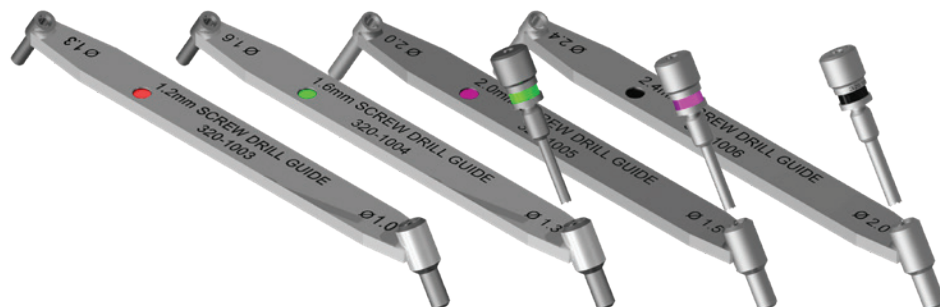


320-1033 Plate Holding Forcep, Swivel Foot

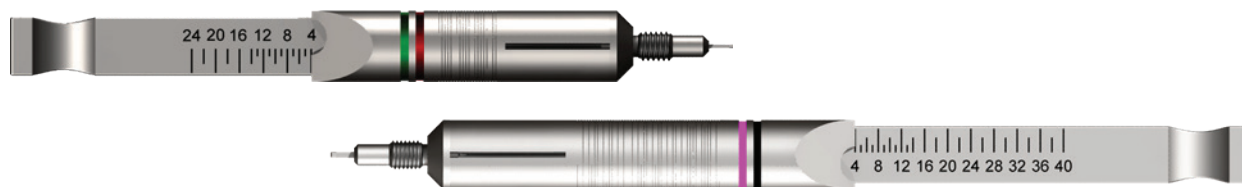
# General Instrumentation Tray

## Screw Insertion

Precise instrumentation for adequate fixation



- 320-1003 1.2mm Fully Threaded Screw Drill Guide
- 320-1004 1.6mm Fully Threaded Screw Drill Guide
- 320-1005 2.0mm Fully Threaded Screw Drill Guide
- 320-1006 2.4mm Fully Threaded Screw Drill Guide



- 320-1013 1.2/1.6mm Screw Depth Gauge
- 320-1014 2.0/2.4mm Screw Depth Gauge



- 316-0048 Ratchet Screwdriver Handle



- 316-0049 Swivel Screwdriver Handle



- 220-0027 Small Grasping Forceps

- **Plate Holding Taks** in plate modules can be inserted into plate holes with a wire pin driver to temporarily fixate plate.
- **Plate Holding Forcep** and **On Bone Plate Holders** are available to help stabilize plate.
- **Screwdriver shafts** are self retaining. Insert Screwdriver straight with force to engage head of screw. To remove driver tip from screw, rock it slightly from side to side and lift.
- Use **Driver Sleeve** to protect soft tissue during screw insertion when necessary and to provide stability while driving in longer screws.
- **Countersinks** are provided for use when placing a headed screw outside a plate. They are recommended in cases of dense bone to create recess for head of screw.
- **Proximal Cortex Drills** are provided for use with Headless Cannulated Screws. They are recommended to create a larger pilot hole for trailing end of screw.
- **Cannulated Depth Gauge** has two sides. "On Plate" side has a flat tip and is designed to hit surface of plate. "On Bone" side is pointed to allow for accurate measurements at any position.
- **Hand Fusion Depth Gauge** is double sided and calibrated for 2.0mm or 2.4mm fusion screw holes.
- **Universal Plate Cutter**
  - Place last needed hole around appropriately sized post.
  - Pull plate slightly so it grasps post.
  - Hold plate securely with one hand and squeeze handles to cut plate.
  - Silicone on cutting tip will hold unused part of plate.
  - Remove any plate pieces from silicone before proceeding.
  - Inspect plate for burrs and remove using file located on top of instrument.
  - If cutting pins or tines, use middle section of Universal Plate Cutter marked with black circle.
  - K-wires .045" (1.2mm) or smaller can be cut using tip of Universal Plate Cutter.

## Plating General

### Preparation

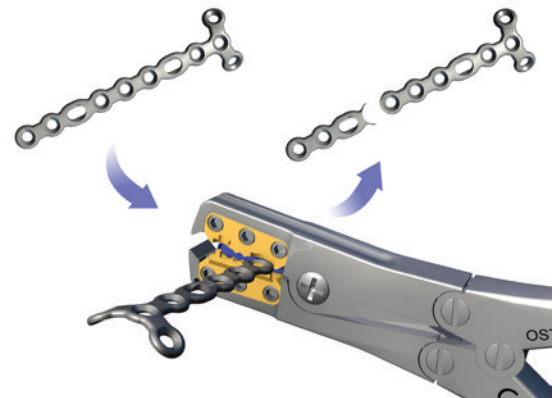
#### 1 **Expose and reduce fracture or osteotomy site**

### Plate Preparation and Positioning

#### 2 **Select plate** Select appropriate plate size and configuration.



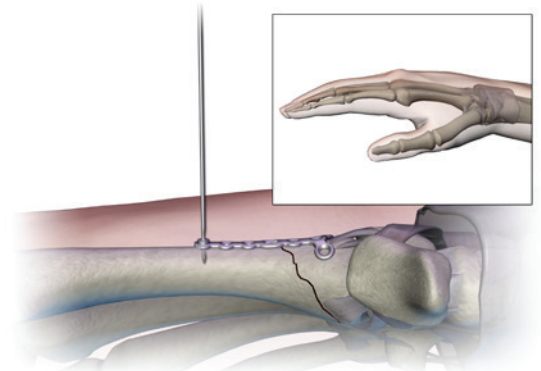
#### 3 **Cut plate** If necessary plates may be cut using universal plate cutter, unless noted with \* on pages 4-8.



#### 4 **Contour plate** Plates are precontoured to anatomically fit bone. If further contouring is necessary, plate benders may be used.

NOTE: Bending plate multiple times may weaken plate and could result in implant failure.

- 5** **Position plate**  
Position plate over fracture or osteotomy. Use plate holding TAKs™ for temporary fixation during procedure.



## Screw Preparation and Insertion

- 6** **Determine desired screw type**  
Angled locking, non-locking, lag, or cannulated lag.

Steps 7-10 are for angled locking, non-locking and lag Screws. Directions for using cannulated lag screws and compression holes on pages 21-22.

- 7** **Drill**  
Select appropriate color coded drill guide and insert into plate hole nearest fracture or osteotomy site. Determine desired angle of screw placement. Ensure that screws do not converge.

Drill a pilot hole using the appropriate pilot drill size.

Note: Use irrigation when drilling. Fluoroscopy is recommended during drilling. In cases of soft bone drilling with smaller drill (from module 1 size down) is recommended.

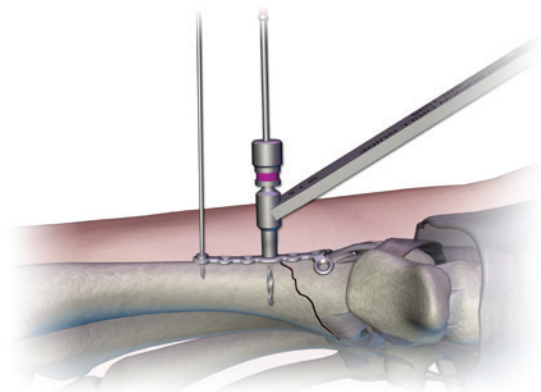
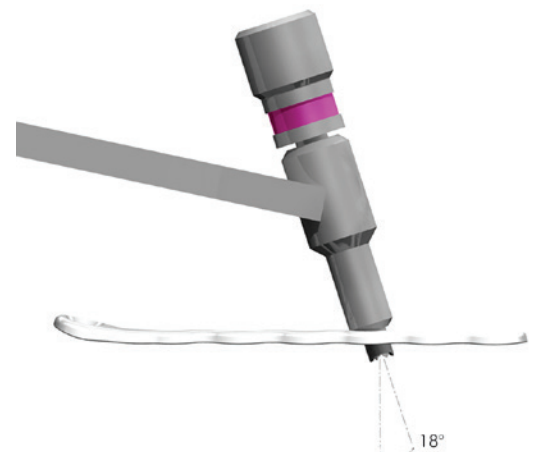


plate size	angled locking ranges
1.6mm	± 22°
2.0mm	± 18°
2.4mm	± 17°

While screw heads are designed to sit flush with plate, screw head prominence will vary at severe angles. Screw head prominence can cause soft tissue irritation. Angled-locking screws will lock at any angle that drill guide will allow when fully inserted into plate hole. Please refer to chart for locking angle ranges.



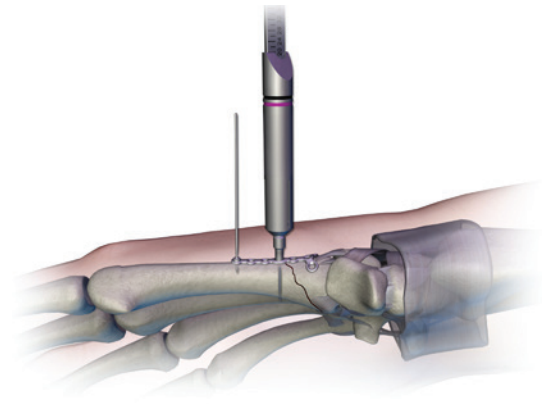
# Plating

## General

8

### Measure

Insert depth gauge until it passes through distal cortex. Retract stem until lip catches against bone to determine measurement.



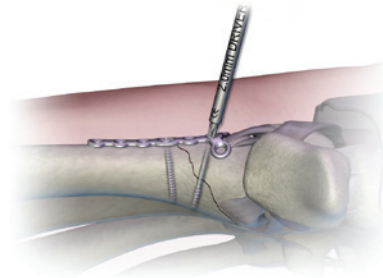
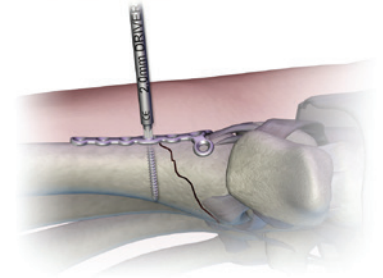
## Screw Insertion

9

### Select & insert

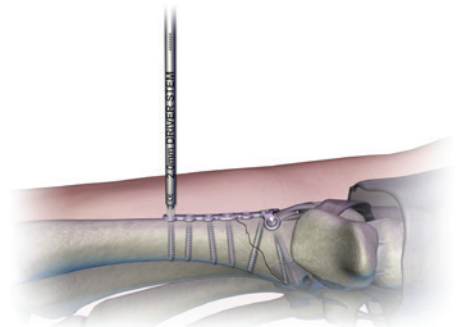
Select desired screw diameter and length. Verify screw length with gauge on block. Insert screw into plate hole at desired angle to fixate plate onto bone. Fluoroscopy is recommended during screw insertion to ensure correct length and angulation.

NOTE: When inserting angled locking screws at maximum angles stop inserting screw when head has engaged plate hole. Continuing to drive screw may cause screw to go through plate. Locking screws and plate holes can be used up to 3 times.



10

**Repeat steps 6-9** for angled locking, non-locking and solid core lag screws until all necessary holes are filled.



## Close


11

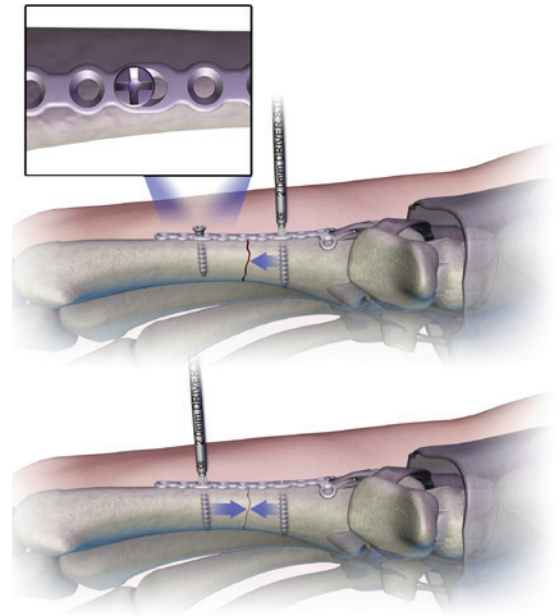
**Close treatment site using standard closure techniques**

### Using Dual Compression Holes

1.6mm, 2.0mm and 2.4mm plates contain dual-compression holes, allowing for compression regardless of plate orientation.

### Anchor Screw

- 1 Select hole**  
Begin with compression holes closest to fracture line.  

- 2 Position drill guide**  
Place drill guide eccentrically farthest from fracture.
- 3 Drill**
- 4 Measure**
- 5 Partially insert screw**  
Do not engage the plate with the screw head.



### Compression Screw

- 6 Prepare Compression**  
Follow steps 1-4 for compression hole opposite fracture.
- 7 Fully insert screw**  
Fully insert screw until head sits in center of compression hole.

### Final Compression

- 8 Return to first screw and tighten**
- 9 Insert remaining screws** following the general plating technique.  
NOTE: 1 mm of compression is available with each compression hole. If only 1 mm is needed, fully insert a screw on one side of the fracture and follow compression instructions for second screw (Steps 6-7).

# Plating

## Cannulated Screw

### Using Cannulated Lag Screws in a plate

If using a cannulated lag screw through a plate, it must be inserted first before any other screw. Only one cannulated lag screw can be used per plate.

- 1 Insert K-wire**

Insert .035" K-wire through center of desired hole, perpendicular to fracture or place plate over K-wire already in place. 1.2mm drill guide for 1.0mm pilot drill can be used as K-wire guide.

NOTE: Do not bend K-wire when inserting into bone.

- 2 Measure**

Slide plate side of cannulated depth gauge over K-wire until tip bottoms out on plate; end of K-wire indicates screw length required. Subtract for any anticipated interfragmentary compression resulting from screw insertion.

- 3 Drill**

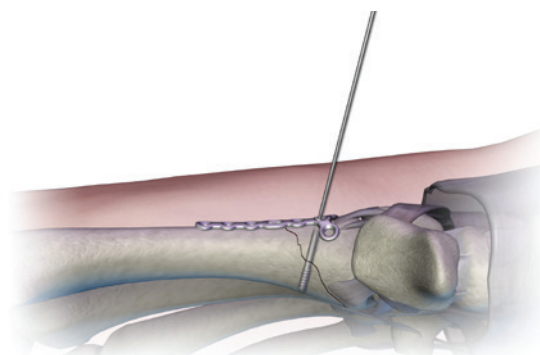
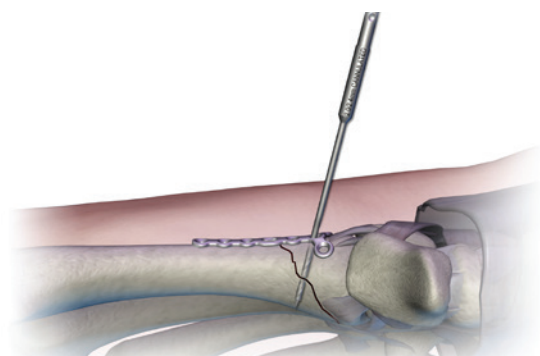
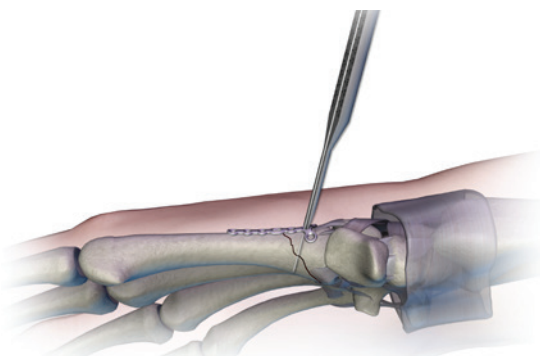
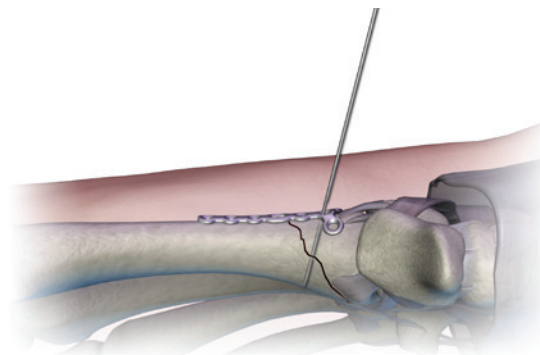
HPS cannulated screws are self drilling and self tapping, but drilling is recommended in cases of dense bone. If drilling is desired or necessary, select 1.7mm cannulated drill and use 2.0/2.4mm drill guide located in the cannulated block to drill pilot hole.

- 4 Insert screw**

Select diameter and length of screw needed. Verify screw length with gauge on block. Insert cannulated screw over K-wire through plate hole to fixate plate onto bone and compress the fracture.

- 5 Remove** and discard K-wire.

- 6 Fill remaining screw holes** with solid core screws.



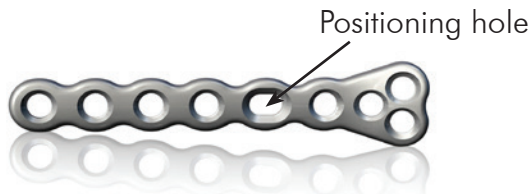


## The Subcondylar Plate

The subcondylar plate is designed with a 12° bend in order to sit below the condyles. The 12° bend allows screws to be placed at broader angles in order to fixate the fracture.

**1 Place plate**  
Position the plate proximal to the condyle.

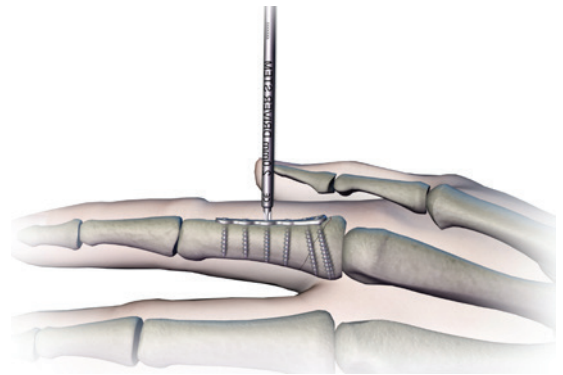
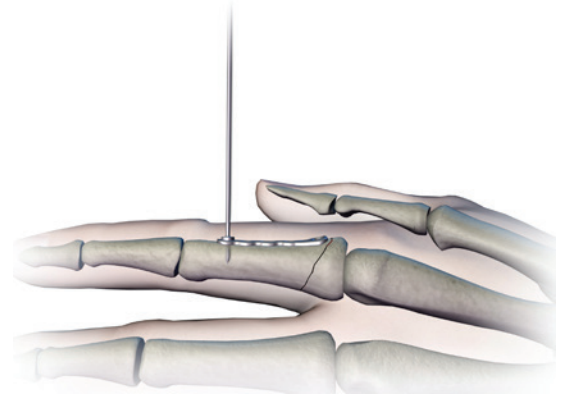
**2 Insert positioning screw**  
Subcondylar plate has a positioning hole to aid in precise placement. Drill accentrically, furthest from plate bend. Measure and insert screw. Do not fully seat head of screw.



**3 Insert screws into bent part of plate**  
Follow steps 6-9 from general plating technique.

**4 Tighten screw in positioning hole**

**5 Fill remaining screw holes. Following general plating instructions**



**Alternative Condylar Blade Plates** are available in 1.6mm, 2.0mm and 2.4mm for indications in which lateral condylar support and pins/tines are necessary. Instructions for implantation of condylar plates are as follows:

Drill and measure depth, starting with pin/tine holes first. The 1.6mm and 2.0mm plates have tines that insert into condyle of bone next to screw. The 2.4mm plates have an angled-locking pin. Cut pin/tine to desired length using middle section of plate cutter marked by a dark circle.

# Screw Fixation

## Lag Screws

### Compression with Lag Screws

Lag screws are provided for applications where compression across the fracture line by a screw is advantageous. Overdrills are also provided to create a gliding hole in the proximal fragment to achieve a lag effect with a fully threaded screw. To achieve compression, the screw must be placed perpendicular to the fracture line, and threads must pass into the distal fragment.

**1**

#### **Drill**

Create pilot hole using the appropriate color coded drill guide and the appropriate pilot drill.

**2**

#### **Countersink**

Countersink to create a recess for screw head.

NOTE: If using a lag screw through a plate, countersink is not needed.

**3**

#### **Measure**

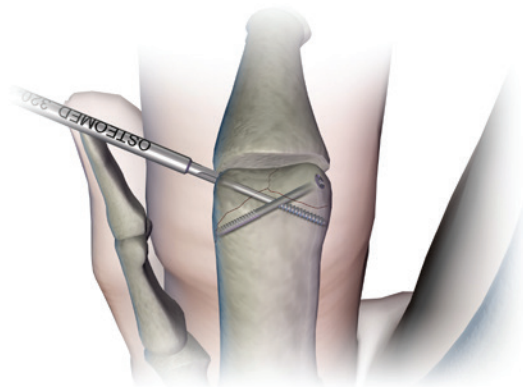
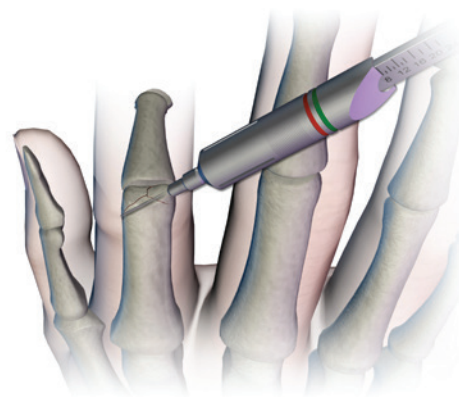
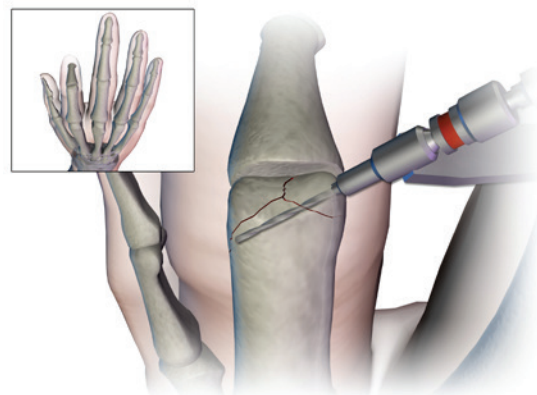
**4**

#### **Insert screw**

Select appropriate screw diameter and length. Verify length with gauge on block. Insert screw into hole perpendicular to fracture/osteotomy. Repeat steps 2 – 5 for additional screw placement.

**5**

#### **Close the treatment site using standard closure techniques**



# Screw Fixation

## Cannulated Screws

### Cannulated Compression Screws - Headed and Headless

HPS has 2.0mm and 2.4mm headed cannulated and 2.0mm, 2.4mm and 3.0mm headless cannulated compression screws. Headless screws provide between 1-2mm of compression. Tapered tri-lobe driver stems allow headless screws to be inserted below the surface of the bone.

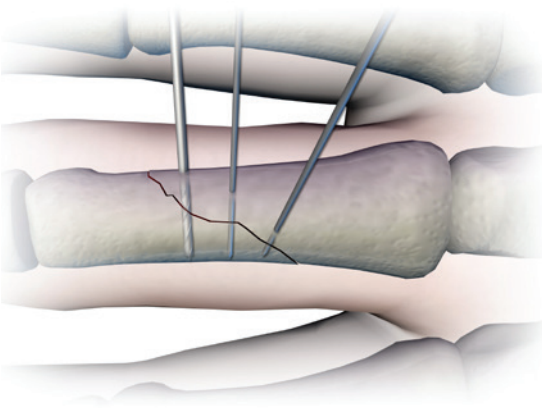
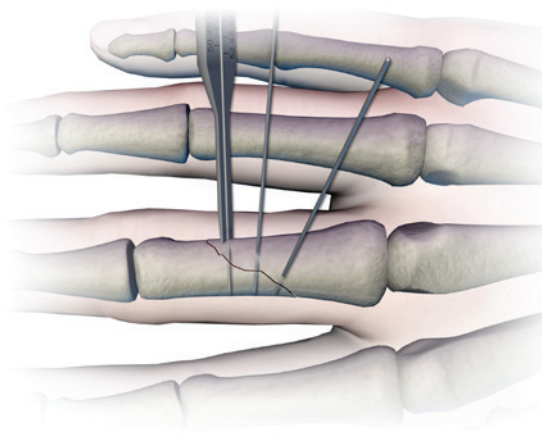
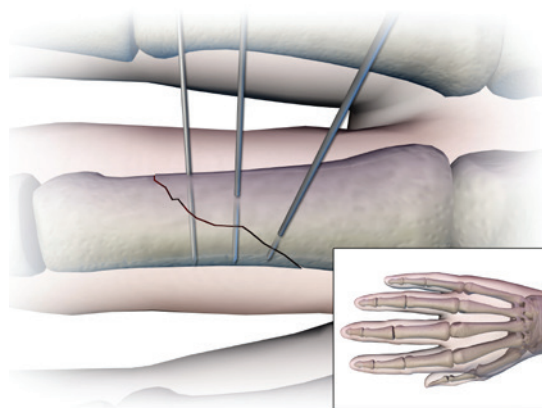
### Screw Preparation

**1 Insert K-wire**  
Insert the K-wire to the appropriate depth under fluoroscopy. Do not bend the K-wire when placing it in the bone.

**2 Measure**  
Slide on bone side of cannulated depth gauge over K-wire until tip bottoms out on bone; end of K-wire will indicate screw length required. Subtract appropriately for any anticipated interfragmentary compression resulting from screw insertion.

**3 Drill (optional)**  
HPS cannulated screws are self drilling and self tapping, but drilling is recommended in cases of dense bone. If drilling is desired or necessary, select the appropriate cannulated drill and use the cannulated drill guide located in the cannulated block to drill a pilot hole.

NOTE: Use irrigation when pilot drilling.



# Screw Fixation

## Cannulated

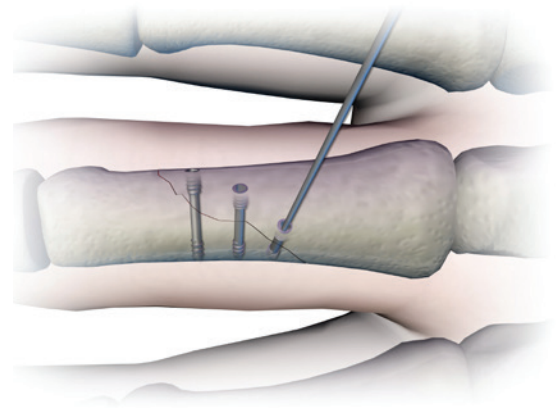
- 4 Countersink or Proximal Cortex Drill**  
Countersinking is recommended when using a cannulated lag screw to create the required recess in the bone.  
  
Proximal cortex drill is recommended when using headless screws to create a pilot hole for trailing end of screw.

### Insert Screw

- 5 Insert screw**  
Select screw diameter and length. Verify screw length with gauge on block. Place screw over K-wire and use the screwdriver to drive cannulated screw into bone until desired compression is achieved. Headless screws will provide 1-2mm of compression.
- 6 Remove and discard K-wire**
- 7 Repeat steps 1-6 for additional screw placement**

### Closure

- 8 Close the treatment site using standard closure techniques**



## Hand Fusion

Hand fusion allows for stable fixation of a joint at a natural resting angle between 20-55°. It combines the locking plate stability from HPS with the compression provided by the headless screws.

### Joint Preparation

#### 1 Expose joint

Make incision on dorsal surface of proximal bone of PIP joint.



#### 2 Remove damaged joint surfaces

Using goniometer for reference, position joint at desired angle (between 20-55 degrees) and create osteotomy cuts. Distal bone should be cut perpendicular to dorsal surface; proximal bone cut will determine angle of fusion. Cup and cone configuration can also be used.



#### 3 Create guide channel in distal canal

From center of joint, drive  $\text{Ø}.045'' \times 4''$  K-wire into distal bone axially to create a guide channel.

NOTE: In soft bone where drilling for fusion screw will not be needed,  $\text{Ø}.035'' \times 4''$  K-wire can be used to create a smaller channel. Do not bend k-wire when inserting into bone.



# Hand Fusion

## 4 Remove K-wire from distal bone



## 5 Place K-wire to determine plate placement

From center of joint, drive  $\text{Ø}.045'' \times 4''$  K-wire into proximal bone through dorsal cortex at desired angle.



## 6 Confirm fusion angle

Retrograde K-wire into channel of distal bone, re-attaching joint. Use goniometer to confirm angle.

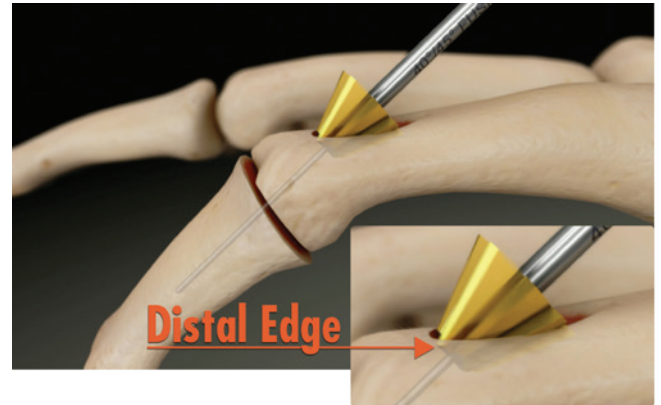
NOTE: Measuring the angle of the K-wire in the proximal bone relative to the dorsal surface will also determine fusion angle.



## Plate Placement

### 7 Create a recess in proximal bone for placement of plate

Select appropriate reamer based on angle of fusion desired. Place reamer over K-wire and ream using power, until top distal edge contacts surface of bone.



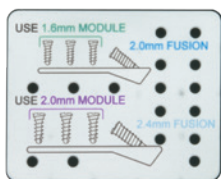
### 8 Place Fusion Plate

Remove k-wire for direct access to the proximal holes. Select appropriate size fusion plate for fixation of joint. Cut and bend plate as needed using appropriate instrumentation from HPS instrument tray. Place plate in divet created by reamer with transfix hole distal on bone.



### 9 Fixate plate to proximal bone

Follow Screw Preparation and Insertion steps in HPS Surgical Technique (page 19-20) to insert one locking, non-locking or lag screw from appropriate HPS module into shaft of plate.



- 1.6 plates use screws from **green 1.6 HPS module**
- 2.0 plates use screws from **purple 2.0 HPS module**

NOTE: Do not place screw in hole in barrel of plate prior to placing Fusion Screw.

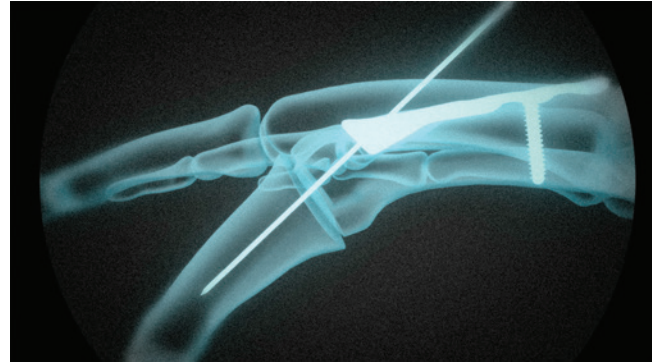


# Hand Fusion

## 10 Position bones for fusion

Insert  $\text{\O}0.035$  K-wire through transfix hole and position bones for fusion. Check positioning under fluoroscopy if desired.

NOTE: Fusion screw WILL NOT fit over  $\text{\O}0.045$  K-wire previously used.



## 11 Measure

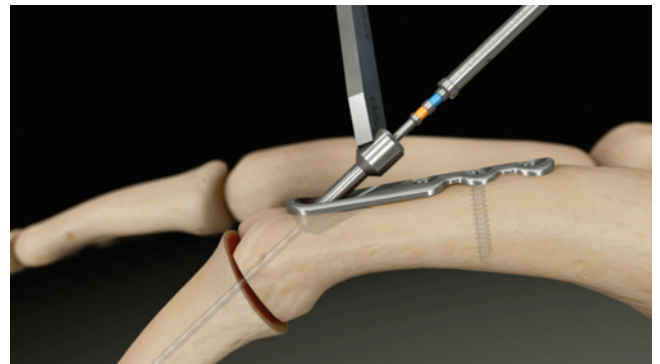
Slide cannulated depth gauge over K-wire until tip reaches plate; end of K-wire will indicate screw length required.



## 12 Drill (optional)

If drilling is desired, slide drill guide over K-wire into transfix hole. Drill hole using appropriate drill size. Fusion screws are self-drilling and self-tapping but drilling is recommended in dense bone.

NOTE: Use irrigation when drilling. Fluoroscopy is recommended during drilling. Failure to use drill guide may inhibit ability to lock screw in plate.



## 13 Select Fusion Screw

Select appropriate Fusion screw diameter and length from Hand Fusion module, 2.0mm screw for 1.6 plate and 2.4mm screw for 2.0 plate. Verify screw length with gauge on block.





## Insert Fusion Screw

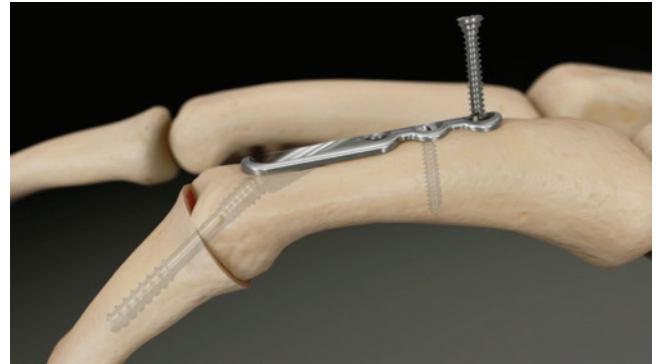
### 14 Insert Fusion Screw

Reduce joint; insert screw over K-wire into transfix hole to compress joint and lock it into plate.

NOTE: Firmly hold distal bone when inserting screw to prevent malrotation prior to compression and locking of screw into plate.

Optional Screws:

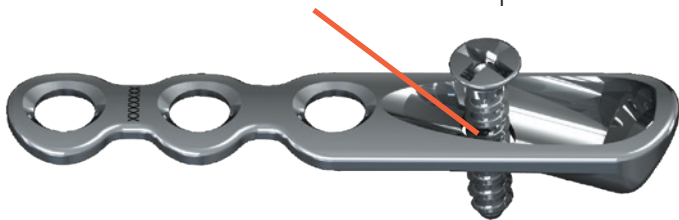
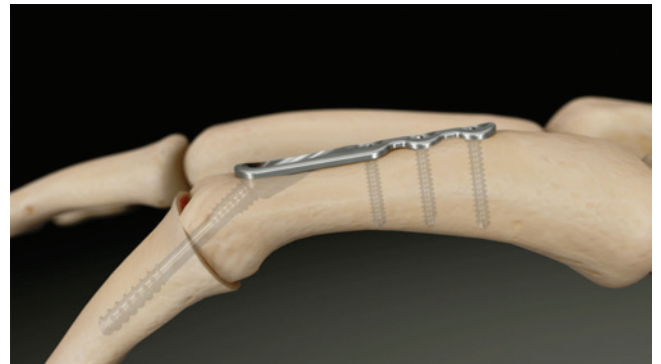
If solid core screw is desired, use standard screws in **2.0 HPS module** for transfix hole in 1.6 fusion plate, and standard screws in **2.4 HPS module** for transfix hole in 2.0 fusion plate. Follow Screw Preparation and Insertion steps in HPS Surgical Technique Guide. (page 19-20)



### 15 Fill remaining screw holes

Repeat step 9 to place additional screws until all necessary holes are filled.

NOTE: If necessary, use only NON-LOCKING screws in hole in barrel of plate.



## Close

### 16 Place parallel K-wire or screw across joint if needed for anti-rotation. Close.

#### **MCP and DIP Joints**

The OsteoMed Hand Fusion System is approved for use in bone fusion and arthrodesis of phalanges and metacarpals. Fusion angles range between 20 and 55, and may be too extreme for the DIP joint. If choosing to fuse the DIP or MCP joint, follow the surgical technique for the PIP Joint.

WARNING: In patients with a large intramedullary canal, the diameter length of the Fusion screw provided may not provide adequate compression of the MCP joint.



For product information, including indications, contraindications, warnings, precautions, potential adverse effects and patient counseling information, see the package insert or contact your local representative; visit [www.osteomed.com](http://www.osteomed.com) for additional product information.

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