

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.



Radial Head Plating System

The Acumed Radial Head Plating System provides a method for the treatment of fractures when the radial head is salvageable. This system offers a family of precontoured plates designed for use in the “safe zone” of the radial head.

The Radial Head Plating System may be combined with any of the Acumed anatomic radial head replacement systems and may be found at the bottom of the tray. It may also be brought in as a stand-alone system at the surgeon's request. The Acutrak 2® Mini and Micro Headless Compression Screw instrumentation is also found at the bottom of each radial head replacement system tray, expanding the treatment options for the surgeon.

Indications for Use

The Radial Head Plating System is indicated for fractures, fusions, and osteotomies of the radius.

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System Features

Optimized Screw Angles

Previous generations of radial head plates featured screws that came to a point in the center of the radial head. Acumed's radial head plates now have diverging and converging screw angles to capture bone fragments across the entire radial head. The screws are also strategically angled to prevent entering the articular surface of the radial head or colliding with one another, regardless of screw length selected.



Anatomic Plate Contour

The plate contour is designed to fit the anatomic contours of the radial head and neck with little or no intraoperative plate bending needed. The thickness of the plate varies along its length, providing a low-profile proximal portion to allow for closure of the annular ligament. The thicker neck portion of the plate helps provide support if there is a fracture line at the radial neck. The 2.3 mm locking and nonlocking screws are designed to sit flush with the plate's surface, designed to minimize hardware prominence and soft tissue irritation for the patient.

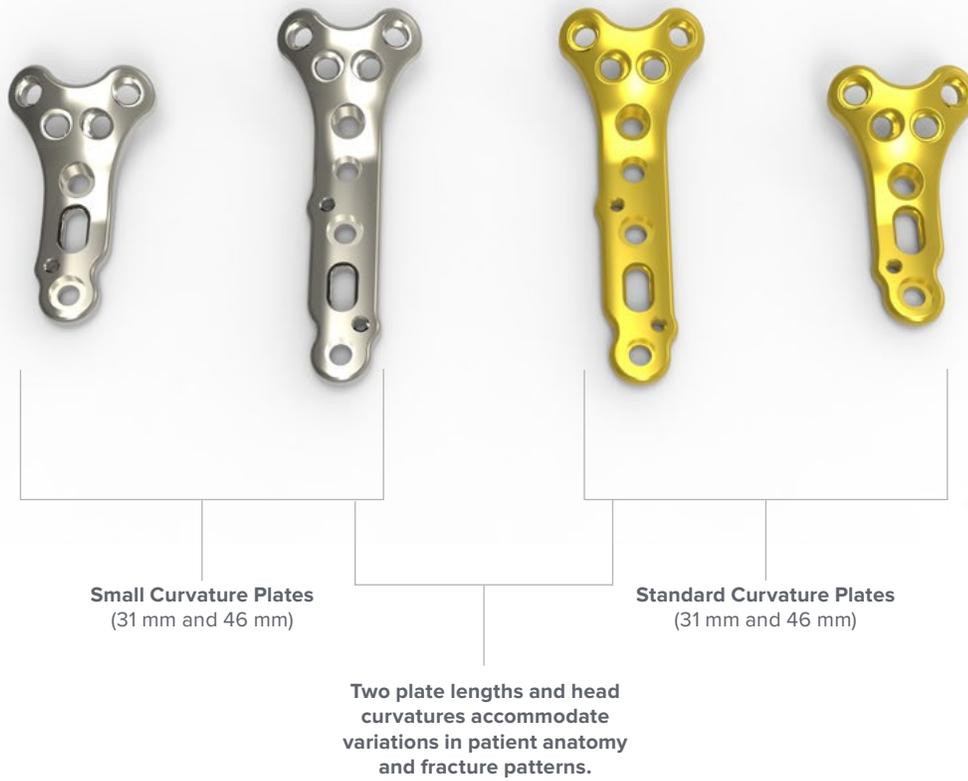
Both the 3-hole and 5-hole plate lengths are offered in two proximal curvatures to accommodate varying radial head anatomies. The standard curvature plates, colored gold, are intended for patients with a 25 mm or larger radial head diameter. The small curvature plates, colored silver, are intended for patients with a radial head diameter of 24 mm or less. By including a variety of lengths and plate curvatures, Acumed's system is designed to treat a wide range of radial head sizes and fracture patterns.

System Features [continued]

Innovative Instrumentation

A radiolucent targeting guide is included in the Radial Head Plating System to assist with threading the locking drill guide into the proximal locking holes. Screw length is determined with either the laser marking on the drill bit or with the depth probe, allowing depth measurement to be read directly off of the drill guide.

K-wire holes are included in the plate for provisional fixation distally, and specially designed Plate Tacks may be used for provisional fixation proximally. The benefit of the short length of the Plate Tack is that it is designed to not interfere with the drilling and placement of the proximal screws. The distal tip of the Plate Tack is threaded, allowing it to maintain its provisional fixation until it is removed later in the procedure.



Instrument Overview



Small Plate Tack
(80-0248)



1.5 mm Hex Driver Tip
(HPC-0015)



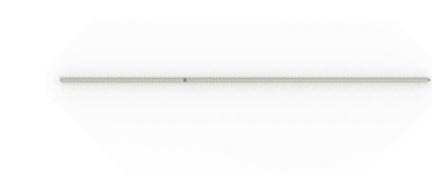
2.3 mm Bone Tap
(80-0362)



.035" Depth Probe
(80-0357)



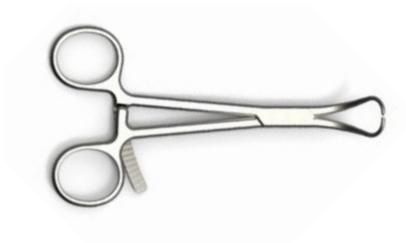
2.0 mm Quick Release Drill
(80-0318)



.054" x 6" Guide Wire
(WS-1406ST)



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



**Small Pointed Reduction
Forceps**
(OW-1200)



**Locking Radial Head
Targeting Guide**
(80-0246)

Instrument Overview [continued]



**5-44 Targeting Guide
Locking Bolt**
(80-0247)



2.3 mm Screw Sleeve
(MS-SS23)



Cruciform Driver Handle
(MS-2210)



2.0 mm Locking Drill Guide
4-32 mm
(80-0249)



**2.0 mm Nonlocking Drill Guide
Assembly 4-32 mm**
(80-0394)



Small Plate Bender
(80-0363)

Surgical Technique Overview

Radial Head
Plating System

**Articular Reduction
and Plate Selection**



Plate Placement



**Provisional Plate
Fixation**



**Nonlocking Distal
Screw Fixation**



**Insert Locking
Screw**



**Final Screw
Placement**

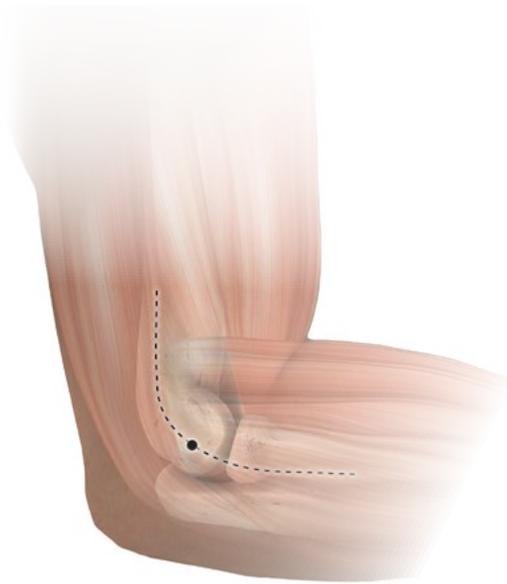


Post-op Protocol



Radial Head Plating System Surgical Technique

Figure 1

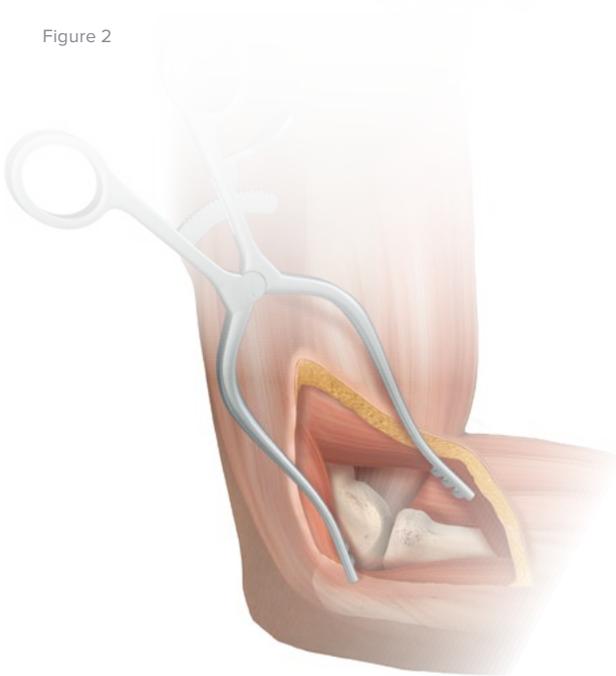


1 Exposure and Dissection

The most common approach is made with the forearm in neutral rotation, followed by exposing the radial head through the Kaplan interval in a line from the lateral epicondyle toward Lister's tubercle. Split the tendon for 3 to 4 cm distal to the epicondyle, with the distal extent limited by the posterior interosseous nerve.

Proximally release the extensor carpi radialis longus (ECRL) origin with the anterior capsule to permit direct access to the front of the radial head.

Figure 2



2 Articular Reduction and Plate Selection

Articular reduction is obtained with the Small Pointed Reduction Forceps (OW-1200) and provisionally held with .045" x 6" K-wires (WS-1106ST) placed to avoid interference with plate and screw placement in subsequent steps.

There are four plates in the system to choose from: 3-hole and 5-hole lengths, each with two different curvatures. The standard curvature plates are colored gold. The plates with the small curvature are for patients with a smaller radial head and are colored silver. Select the plate with the best fit for the patient and that best addresses the fracture pattern.



Small Pointed Reduction Forceps
(OW-1200)



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



Locking Radial Head Plate 3-Hole, Standard Curvature (31 mm)
(70-0097)



Locking Radial Head Plate 3-Hole, Small Curvature (31 mm)
(70-0099)



Locking Radial Head Plate 5-Hole, Standard Curvature (46 mm)
(70-0098)



Locking Radial Head Plate 5-Hole, Small Curvature (46 mm)
(70-0100)

Radial Head Plating System Surgical Technique

[continued]

3 Plate Placement

Attach the Targeting Guide (80-0246) to the plate with the Locking Bolt (80-0247). Place the plate in the “safe zone” of the radial head. With the forearm in neutral rotation, the safe zone includes a 90° angle centered laterally, plus 20° anterior to this. For simplification, place the plate directly lateral with the forearm in 10° supination. The plate is designed to sit approximately half way onto the radial head’s annular surface. This may avoid screw penetration of the head that would occur with more proximal placement. Small Plate Benders (80-0363) are included in the system if an adjustment to the plate’s contour is needed.

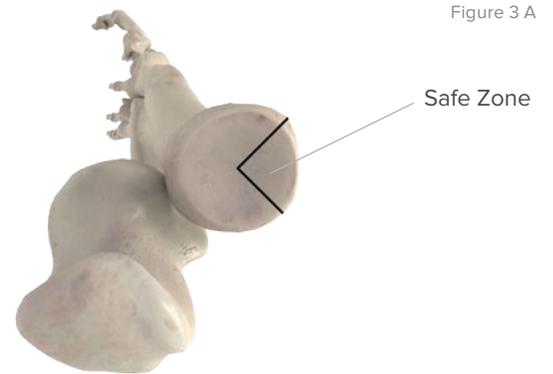


Figure 3 A



Figure 3 B



Figure 3 C

4 Provisional Plate Fixation

After placing the plate on the radius, it is provisionally held with the Small Plate Tack (80-0248) by inserting it through one of the proximal holes, or by placing a .054" x 6" K-wire (WS-1406ST) through the K-wire hole in the plate. The 5–44 Targeting Guide Locking Bolt (80-0247) is also cannulated to accept a .054" x 6" K-wire for provisional fixation.

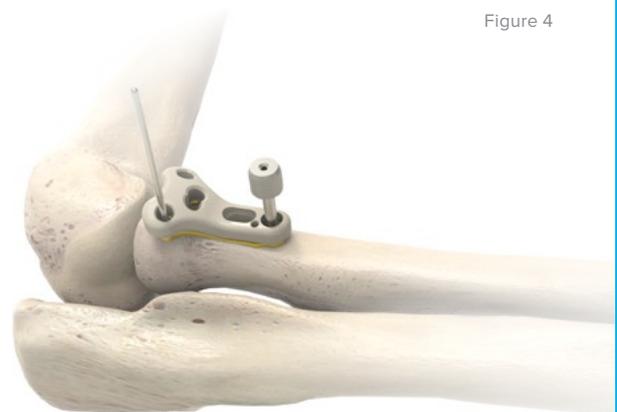


Figure 4



Locking Radial Head Plate Targeting Guide (80-0246)



Small Plate Bender (80-0363)



5–44 Targeting Guide Locking Bolt (80-0247)



Small Plate Tack (80-0248)

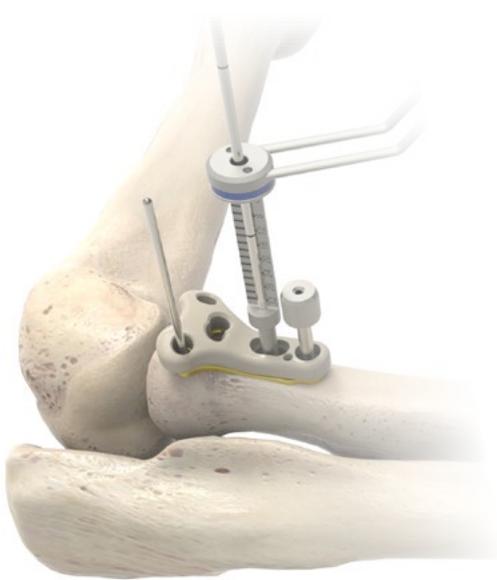


.054" x 6" Guide Wire (WS-1406ST)
Also used as a K-wire

Radial Head Plating System Surgical Technique

[continued]

Figure 5



5 Nonlocking Distal Screw Fixation

Attach the plate to the shaft with a screw through the slotted hole that allows for a slight adjustment of the plate position prior to final tightening of the screw at this step. Using the 2.0 mm Nonlocking Drill Guide Assembly 4–32 mm (80-0394) and the 2.0 mm Quick Release Drill (80-0318), drill bicortically through the slotted hole. Read the drill depth from the laser line on the drill or by inserting the .035" Depth Probe (80-0357) and hooking the far cortex. Insert a nonlocking screw (CO-N23XX) with the 1.5 mm Hex Driver (HPC-0015). A Bone Tap (80-0362) is available for use in patients with dense bone.

Figure 6



6 Insert Locking Screws

Insert the 2.0 mm Locking Drill Guide 4–32 mm (80-0249) into one of the proximal holes in the plate. Threading the drill guide into the plate will ensure the hole is drilled in the proper trajectory so the locking screw (CO-T23XX) fully seats and locks into the plate. Drill with the 2.0 mm Quick Release Drill (80-0318). Drill depth can be read from the laser line on the drill or determined with the .035" Depth Probe (80-0357).

Repeat this process for inserting all proximal screws through the targeting guide, removing the Plate Tack as necessary.



2.0 mm Nonlocking Drill Guide Assembly 4–32 mm (80-0394)



2.0 mm Quick Release Drill (80-0318)



.035" Depth Probe (80-0357)



2.3 mm Nonlocking Screw (CO-N23XX)



1.5 mm Hex Driver Tip (HPC-0015)



2.3 mm Bone Tap (80-0362)



2.0 mm Locking Drill Guide 4–32 mm (80-0249)



2.3 mm Locking Cortical Screw (CO-T23XX)

Radial Head Plating System Surgical Technique

[continued]

7 Final Screw Placement

After inserting all proximal screws, remove the targeting guide. Then thread the 2.0 mm Locking Drill Guide 4–32 mm (80-0249) into the distal locking hole or holes to drill, measure depth, and insert the locking screw or screws (CO-T23XX).

Remove the K-wires that were used for provisional reduction of the fracture. Follow standard techniques for internal fixation procedures to close the wound/repair soft tissue, ensure proper hardware positioning and inspection of the joint.

8 Postoperative Protocol

Postoperative treatment typically is achieved by the overall management of the elbow and limb, more so than specifically the radial head. Early motion usually occurs within one to two days of surgery.

9 Optional: Implant Removal Instructions

To extract a Locking Radial Head Plate, use the 1.5 mm Hex Driver Tip (HPC-0015) 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.

Figure 7

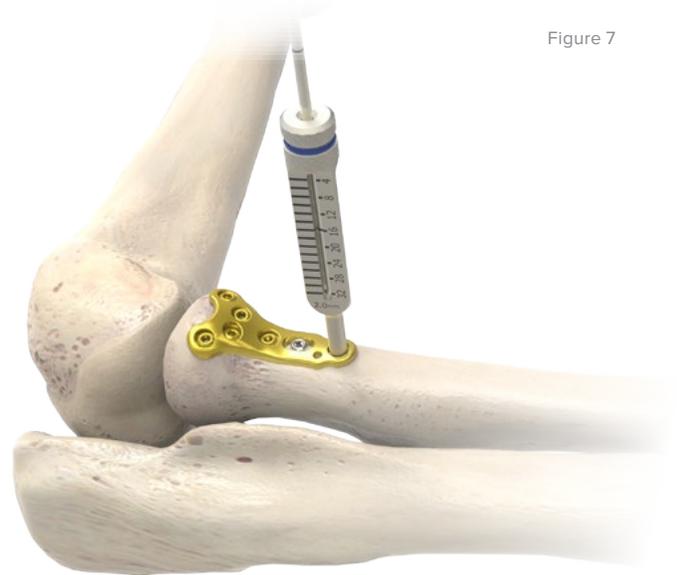


Figure 8



2.0 mm Locking
Drill Guide
4–32 mm
(80-0249)



2.3 mm Locking
Cortical Screw
(CO-T23XX)



Cruciform Driver
Handle
(MS-2210)



1.5 mm Hex
Driver Tip
(HPC-0015)

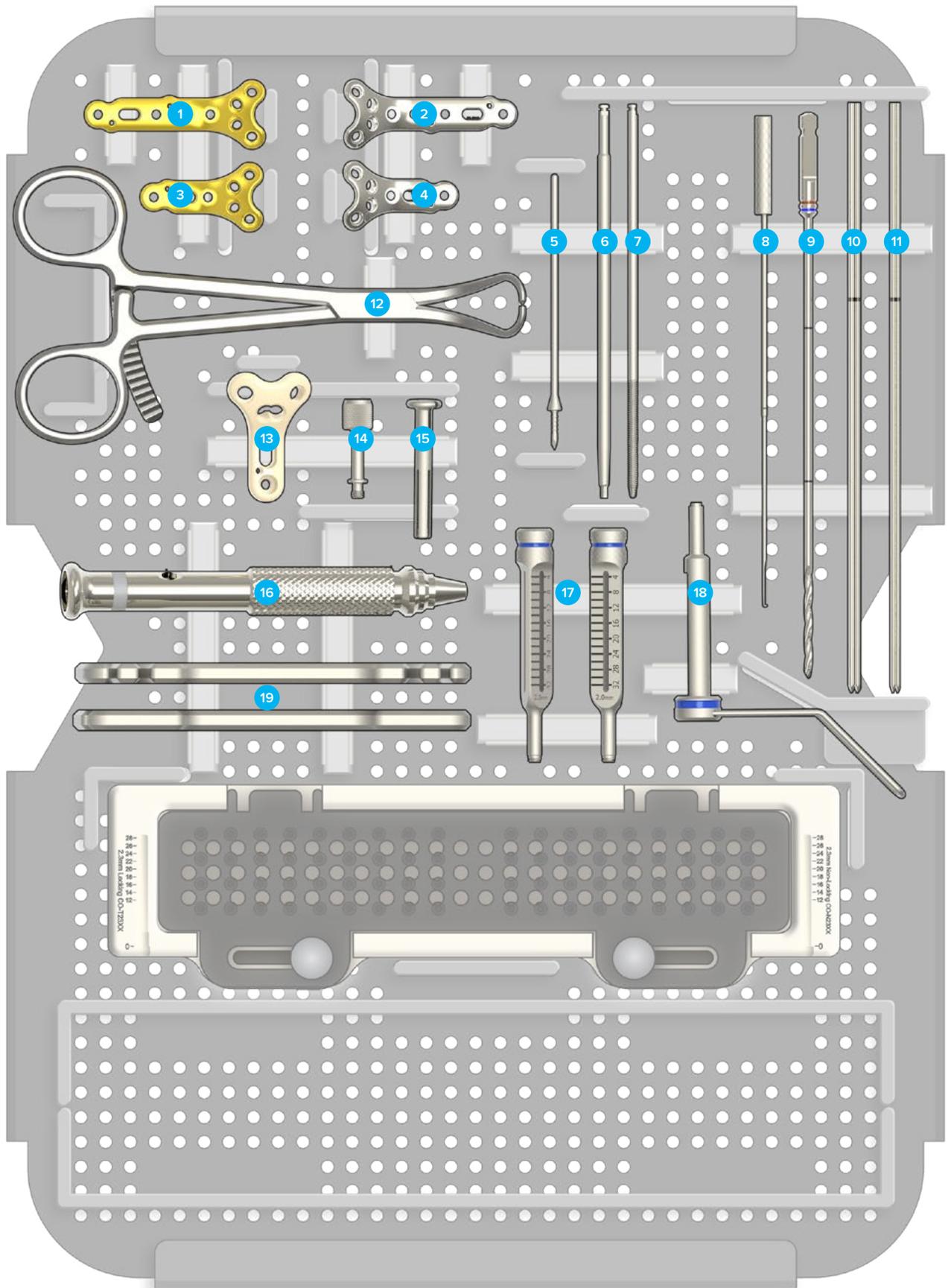
Ordering Information

Tray Components

Implants

1	Locking Radial Head Plate: 5-Hole, Standard Curvature (46 mm)	70-0098	3	Locking Radial Head Plate: 3-Hole, Standard Curvature (31 mm)	70-0097
2	Locking Radial Head Plate: 5-Hole, Small Curvature (46 mm)	70-0100	4	Locking Radial Head Plate: 3-Hole, Small Curvature (31 mm)	70-0099
Instrumentation					
5	Small Plate Tack	80-0248	13	Locking Radial Head Plate Targeting Guide	80-0246
6	1.5 mm Hex Driver Tip	HPC-0015	14	5–44 Targeting Guide Locking Bolt	80-0247
7	2.3 mm Bone Tap	80-0362	15	2.3 mm Screw Sleeve	MS-SS23
8	.035" Depth Probe	80-0357	16	Cruciform Driver Handle	MS-2210
9	2.0 mm Quick Release Drill	80-0318	17	2.0 mm Locking Drill Guide 4–32 mm	80-0249
10	.054" x 6" Guide Wire*	WS-1406ST	18	2.0 mm Nonlocking Drill Guide Assembly 4–32 mm	80-0394
11	.045" x 6" ST Guide Wire*	WS-1106ST	19	Small Plate Bender	80-0363
12	Small Pointed Reduction Forceps	OW-1200			

*Also used as a K-wire



Ordering Information [continued]

2.3 mm Locking Cortical Screws

2.3 mm x 12 mm Locking Cortical Screw	CO-T2312	2.3 mm x 22 mm Locking Cortical Screw	CO-T2322
2.3 mm x 14 mm Locking Cortical Screw	CO-T2314	2.3 mm x 24 mm Locking Cortical Screw	CO-T2324
2.3 mm x 16 mm Locking Cortical Screw	CO-T2316	2.3 mm x 26 mm Locking Cortical Screw	CO-T2326
2.3 mm x 18 mm Locking Cortical Screw	CO-T2318	2.3 mm x 28 mm Locking Cortical Screw	CO-T2328
2.3 mm x 20 mm Locking Cortical Screw	CO-T2320		

2.3 mm Nonlocking Screws

2.3 mm x 12 mm Nonlocking Screw	CO-N2312	2.3 mm x 22 mm Nonlocking Screw	CO-N2322
2.3 mm x 14 mm Nonlocking Screw	CO-N2314	2.3 mm x 24 mm Nonlocking Screw	CO-N2324
2.3 mm x 16 mm Nonlocking Screw	CO-N2316	2.3 mm x 26 mm Nonlocking Screw	CO-N2326
2.3 mm x 18 mm Nonlocking Screw	CO-N2318	2.3 mm x 28 mm Nonlocking Screw	CO-N2328
2.3 mm x 20 mm Nonlocking Screw	CO-N2320		



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