

A&U MED<sup>®</sup>



Locking Radial  
Head Plates

# Locking Radial Head Plates

*Since 1988, Acumed has been designing solutions to the demanding situations facing orthopaedic surgeons, hospitals and their patients. Our strategy has been to know the indication, design a solution to fit, and deliver quality products and instrumentation.*



Acumed's Locking Radial Head Plate System provides an innovative and improved method for the treatment of fractures where the radial head is salvageable. This versatile system offers a comprehensive family of pre-contoured plates designed for use in the "safe zone" of the radial head.

In line with our goal to bring to the market products that evolve and improve patient outcomes, Acumed designed this plating system to provide the surgeon with innovative features and a straightforward, time-saving surgical technique.

The Locking Radial Head Plate System is part of Acumed's comprehensive Radial Head Solutions tray. The plate family, screws and all necessary instrumentation fit inside the same tray as our Anatomic Radial Head prosthesis and Acutrak 2® Mini and Micro Headless Compression Screws.



Designed in conjunction with Shawn O'Driscoll, Ph.D., M.D. at the Mayo Clinic, Acumed's Locking Radial Head Plate System provides surgeons with a next-generation system for treating radial head fractures. While designing the Locking Radial Head Plate System, Acumed had the following key design features in mind:

- Optimized screw trajectory to provide stable fixation
- Anatomic plate contour with a variety of lengths and curvatures
- Minimized hardware prominence
- Innovative, user-friendly instrumentation designed to save OR time
- Comprehensive radial head fracture solutions tray

Acumed developed the Locking Radial Head Plate System with careful consideration of these desired design features. A comprehensive system of implants and instrumentation provides surgeons with an advancement in patient care.

At times, it may be difficult to assess pre-operatively whether a radial head fracture can be fixed or if the radial head needs to be excised and replaced with a prosthesis. Acumed provides a comprehensive Radial Head Solutions tray for every radial head surgery. Acumed's Locking Radial Head Plate System is provided in conjunction with the Anatomic Radial Head prosthesis and Acutrak 2 Mini and Micro Headless Compression Screws. The plate system is modular and also has the ability to be brought in as a stand-alone tray at the surgeon's discretion.

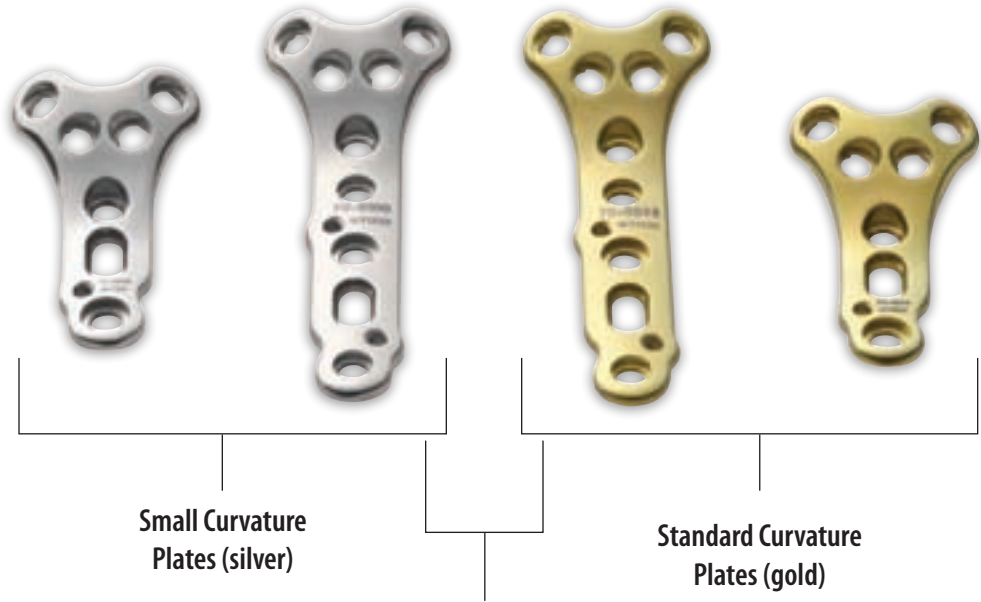
**Optimized Screw Trajectory** allows the proximal screws to obtain maximum coverage in the radial head. The converging and diverging screw angles allow maximum stability and support and provide the ability to capture the fracture fragments. Locking and non-locking 2.3mm screws sit flush with the plate's surface.



**Anatomic Plate Contour** provides a variety of length and curvature options to best fit the radial head. The proximal portion of the plate varies to accommodate different patient sizes. Plate curvatures are color-coded for quick distinguishing in the OR: standard curvature plates are gold; small curvature plates are silver.



**Innovative Instrumentation** includes a radiolucent targeting guide and locking drill guide/depth gage, allowing quick drilling and screw insertion with a straightforward surgical technique. User-friendly, innovative instrumentation and a compact tray insert aids to further simplify the technique for the surgeon and OR staff.



3-hole and 5-hole lengths provide a comprehensive range of plate sizes

# Surgical Technique



## Step 1: Exposure & Dissection

Exposure for radial head ORIF is through the Kaplan interval in a line from the lateral epicondyle toward Lister's tubercle, with the forearm in neutral rotation. The tendon is split for 3 to 4cm distal to the epicondyle, with the distal extent limited by the posterior interosseous nerve. Proximally, the ECRL origin is released with the anterior capsule to permit direct access to the front of the radial head.



## Step 2: Articular Reduction & Plate Selection

Articular reduction is obtained with small pointed reduction forceps (OW-1200) and provisionally held with .045" K-wires (WS-1106ST) that are placed to avoid interference with later plate and screw placement.

There are 4 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.



## Step 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. A simplification is to 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 lessens the risk of 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.



## Step 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" K-wire (WS-1406ST) through the K-wire hole in the plate. The targeting guide locking bolt is also cannulated to accept a .054" K-wire for provisional fixation.



# Locking Radial Head Plates

## Step 5: Non-Locking Distal Screw Fixation

The plate is rigidly fixed to the shaft with a screw through the slotted hole, which allows for a slight adjustment in position of the plate. Using the Non-Locking Depth Gage (80-0394) and 2.0mm drill (80-0318), drill bicortically through the slotted hole. Drill depth is read off of the laser line on the drill or by inserting the Depth Measuring Probe (80-0357) and hooking the far cortex. Insert a non-locking screw (CO-N23xx) with the 1.5mm hex driver (HPC-0015). A bone tap (80-0362) is available for use in patients with dense bone.



## Step 6: Insert Locking Screws

Insert the Locking Drill Guide/Depth Gage (80-0249) into one of the proximal holes and thread it into the plate. Threading the drill guide into the plate will ensure that the hole is drilled in the proper trajectory so that the locking screw (CO-T23xx) fully seats and locks into the plate. Drill with the 2.0mm drill. Drill depth can be read off of the laser line on the drill or with the probe.

Repeat this process for inserting all proximal screws through the targeting guide.



## Step 7: Final Screw Placement

After inserting all proximal screws, remove the targeting guide. The Locking Drill Guide/Depth Gage may then be threaded into the distal locking hole(s) to drill, measure depth and then insert the locking screw(s).

The K-wires are removed after adding any additional screws through the articular surface fragments that have not been fixed with screws through the plate. The PRUJ is tested for smooth motion and the remainder of the articular and annular surfaces are inspected to ensure that no hardware penetration has occurred. Intraoperative fluoroscopic examination with an image intensifier is used to confirm proper hardware positioning without evidence of articular impingement against the ulna or capitellum. The annular ligament is carefully repaired and the ECR/ECRL origins are reattached. Bone grafting is necessary to fill voids under the head. It can be performed early in the procedure or after hardware placement, depending on whether bone grafting is being performed for structural support on the medial cortex or to simply fill a gap that does not create a loss of structural support.



## Post-op Protocol

Postoperatively, the management is determined by the overall management of the elbow and limb, more so than specifically the radial head. For isolated fractures of the radial head and neck, without ligament injury, early motion is commenced in flexion and extension as well as pronation and supination. This usually occurs within one to two days of surgery. Start within 36 hours of surgery.

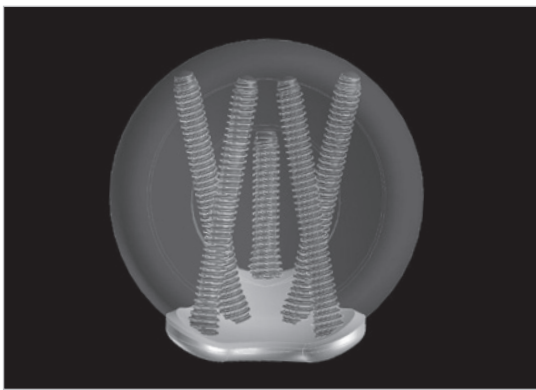


# System Features



## Optimized Screw Trajectory

The Locking Radial Head Plate's screw trajectory was carefully designed to optimize screw placement in the radial head and provide maximum purchase of fracture fragments. Unlike first-generation locking radial head plates where the screws come to a point in the center of the radial head, Acumed's plates have diverging and converging screw angles to more effectively capture bone fragments across the entire radial head. The screws are also strategically angled so that they do not break through the articular surface of the radial head or collide with one another, regardless of screw length selected.



## Anatomic Plate Contour

Plate contour is optimized to best fit the anatomic contours of the radial head and neck with little or no bending. The thickness of the plate varies along its length, providing a low profile proximal portion to allow for closure of the annular ligament. The neck portion of the plate is thicker for strength. This additional strength is especially needed if there is a fracture line at the radial neck and maximum support is necessary. The 2.3mm locking and non-locking screws are designed to sit flush with the plate's surface, minimizing hardware prominence and soft tissue irritation for the patient.

Both the 3-hole and 5-hole plate lengths are offered in multiple proximal curvatures to accommodate varying radial head anatomies. The standard curvature plates, colored gold, are designed for patients with a 25mm or larger radial head diameter. The small curvature plates, colored silver, are designed for patients with a 20-24mm radial head diameter. By including multiple lengths and plate curvatures, Acumed's system can treat a wide variety of radial head sizes and fracture patterns.



## Innovative Instrumentation

Instrumentation in the Locking Radial Head Plate System was designed to be user-friendly and save OR time. A radiolucent targeting guide is included in the system to assist with threading the locking drill guide/depth gage into the proximal locking holes. Screw length is determined with either the marking on the drill bit or with the depth probe, providing a quick and efficient means of depth measurement directly off of the drill guide.

K-wire holes are included in the plate for provisional fixation distally, and a specially designed Plate Tack may be used for provisional fixation in the proximal portion of the plate. The benefit of the Plate Tack is that its short length will 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.



A Radial Head Solutions tray provides the surgeon with a comprehensive solution for radial head fractures, with the Anatomic Radial Head prosthesis, Acutrak 2<sup>®</sup> Mini and Micro Screws and the Locking Radial Head Plate System in one tray..

# Ordering Information

## Locking Radial Head Plates

|   |         |
|---|---------|
| Locking RH Plate- 3-Hole, Standard Curvature (31mm) | 70-0097 |
| Locking RH Plate- 5-Hole, Standard Curvature (46mm) | 70-0098 |
| Locking RH Plate- 3-Hole, Small Curvature (31mm)    | 70-0099 |
| Locking RH Plate- 5-Hole, Small Curvature (46mm)    | 70-0100 |

## 2.3mm Threaded Locking Screws

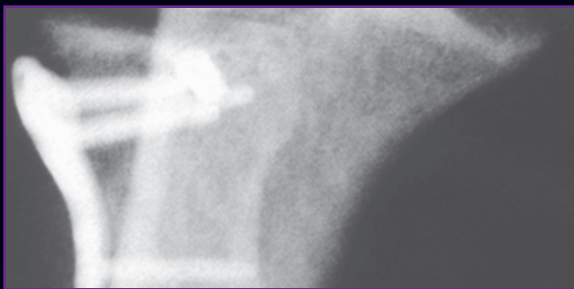
|                                     |          |
|-------------------------------------|----------|
| 2.3mm x 12mm Threaded Locking Screw | CO-T2312 |
| 2.3mm x 14mm Threaded Locking Screw | CO-T2314 |
| 2.3mm x 16mm Threaded Locking Screw | CO-T2316 |
| 2.3mm x 18mm Threaded Locking Screw | CO-T2318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

## 2.3mm Non-Locking Screws

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

## Locking Radial Head Plate Instrumentation

|   |           |
|---|-----------|
| Locking Radial Head Plate Targeting Guide | 80-0246   |
| Targeting Guide Locking Bolt              | 80-0247   |
| Small Plate Tack                          | 80-0248   |
| Locking Drill Guide/Depth Gage            | 80-0249   |
| 2.0mm Quick Release Drill                 | 80-0318   |
| 2.3mm Screw Tap                           | 80-0362   |
| Small Plate Bender                        | 80-0363   |
| Depth Measuring Probe                     | 80-0357   |
| Non-Locking Depth Gage Assembly           | 80-0394   |
| 1.5mm Hex Driver Tip                      | HPC-0015  |
| Small Screw Sleeve                        | MS-SS23   |
| Driver Handle                             | MS-2210   |
| Small Pointed Reduction Forceps           | OW-1200   |
| .045" x 6" Guide Wire                     | WS-1106ST |
| .054" x 6" Guide Wire                     | WS-1406ST |
| Locking Radial Head Plate X-Ray Template  | 90-0016   |
| Locking Radial Head Plate Tray Assembly   | 80-0364   |



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