Distal Radius Plate
Instrument and Implant Set

Surgical Technique
The Distal Radius Plates

Indications

For fixation of fractures and osteotomies, including carpal fusions involving the distal radius.

Features

- Dorsal and volar plates available in right and left designs
- Ramped edges and low profile plate/screw construct minimize tendon and soft tissue irritation
- Precontoured for anatomical fit
- Cut-to-length design to minimize inventory
- Elongated holes in the proximal shaft allow for compression
- Available in stainless steel and titanium alloy

Unique distal articular plate arms:

- Accept 1.8 mm threaded buttress pins that lock into the threaded plate holes, providing a fixed-angle construct to buttress the articular surface
- 2.4 mm self-tapping cortex screws can be used as an alternative to, or in conjunction with, the 1.8 mm buttress pins for increased hold and to lag together dorsal and volar articular fragments
- Provide multiple points of fixation and the ability to buttress small fragments, allowing the articular surface to be more easily reconstructed
**Dorsal Distal Radius Plate**

- Precise anatomical contour minimizes the need to remove Lister’s tubercle
- Two proximal legs allow independent planes of fixation

**Volar Distal Radius Plate**

- 20° AP bend fits the volar surface of the distal radius
- 18° angulation of distal plate arm provides anatomic fit for radial inclination
- 10° angulation of threaded holes allows more distal placement of the plate
Implants (stainless steel and titanium)

1.8 mm Buttress Pin
- For use in the distal plate arms in multifragmented articular fractures, or in poor quality bone where screw purchase may be compromised
- Threaded head locks into plate hole to provide a fixed pin-plate construct and a buttress for the articular surface
- Smooth shaft inserts into bone without displacing fragments

2.4 mm Self-Tapping Cortex Screw
- For use in the distal plate arms to provide fixation for restoration of the articular surface
- Used when bone quality is good, lag screw technique is required, or large fragments of poor quality bone are present
- Small cruciform head provides a low profile when seated into the plate hole

2.7 mm Self-Tapping Cortex Screw
- For use in the proximal plate legs
- Standard self-tapping screws also available in the DePuy Synthes Mini Fragment Instrument and Implant Sets [105.488] and [125.488]

MR Information
The Distal Radius Plate Instrument and Implant Set System has not been evaluated for safety and compatibility in the MR environment. It has not been tested for heating, migration or image artifact in the MR environment. The safety of the Distal Radius Plate Instrument and Implant Set System in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.
Dorsal Surgical Approach

Place the patient in the supine position with the hand and arm on a hand table, preferably radiolucent for fluoroscopic imaging.

Make a straight longitudinal incision over the dorsal radius, between the second and third extensor compartments, extending 7 to 12 cm. Open the extensor retinaculum using a longitudinal incision between the first and second extensor compartments as shown below.
Dorsal Surgical Approach (continued)

Take care to elevate and mobilize the third compartment (extensor pollicis longus tendon) proximally and distally, and translocate it radially for better access to the fracture site.

Elevate the second and fourth dorsal compartments subperiosteally (as shown in cross-sectional view) to preserve the integrity of these compartments.

Note: If the fracture morphology dictates, use of the additionally available mini lengthening apparatus [394.08] will provide gentle indirect reduction of complex fractures and minimize soft tissue dissection.
Dorsal Plate Technique

1. **Shape template**

Temporarily position the bending template [329.599] over the distal radius. Verify plate length and contour, then compare it to the distal radius plate.

*Note:* The bending template can be used for either right- or left-hand plates.

*Note:* If a more proximal plate placement is desired, it may be necessary to remove 1–2 mm of the distal portion of Lister’s tubercle.

2. **Cut plate**

Place the pliers in the right hand. To cut the plate, open the pliers and slide the plate into the cutting slot from the left side as shown. **The underside of the plate must be oriented toward the tip of the pliers.** Cut the plate between the holes by aligning the plate in the center of the cutting slot. **Do not cut through a plate hole.** Squeeze the pliers closed to cut the plate.

*Note:* Most cases will require removing holes from each arm and leg of the plate in order to fit patient anatomy and provide sufficient stability without increasing tissue dissection.
Dorsal Plate Technique (continued)

3 Contour distal plate arms

If required, use the bending irons to contour the plate’s articular arms to fit the distal radius. Thread a bending iron into a distal-arm plate hole. Thread another bending iron into the adjacent hole and gently spread the irons apart to create a convex bend.

**Note:** Contour the plate in small increments to avoid over-bending and the need to re-bend. Excessive back-and-forth bending may weaken or fracture the plate.

4 Contour proximal plate legs

If needed, use the bending pliers to gently contour the proximal legs to better fit the distal shaft of the radius.
5 Apply plate

Place the plate on the distal radius and determine which holes will be used for fixation. The fracture pattern and clinical situation will determine the specific order of fixation (proximal leg or distal arm).

6 Secure distal arms

Determine whether 1.8 mm buttress pins or 2.4 mm self-tapping cortex screws will be used for fixation. A combination of both implants may be used.

6A To secure the plate with 1.8 mm buttress pins, screw a 1.8 mm threaded drill guide into the threaded plate hole until seated.

Note: The threaded drill guide must be used to ensure the proper drilling angle. Otherwise, the buttress pins may not thread into the plate holes.
Dorsal Plate Technique (continued)

6 Secure distal arms (continued)

Using the 1.8 mm drill bit and guide, drill through both cortices. Buttress pins should be used bicortically. Exercise caution to avoid excessive protrusion through the far cortex.

Remove the drill guide and use the depth gauge [319.006] to measure and select the appropriate length buttress pin.

Note: Be sure to consider the width of any gap between the bone and plate when determining pin length. Tightening the screws will close this gap and result in pin tip protrusion beyond the far cortex, potentially causing soft tissue irritation.

Using the cruciform screwdriver, push the buttress pin through the hole and turn until the threaded portion of the pin head locks into the plate.
Secure distal arms (continued)

6B: To secure the plate with 2.4 mm self-tapping cortex screws, insert the 1.8 mm end of the 2.4 mm/1.8 mm drill guide into the plate hole. Using the 1.8 mm drill bit and guide, drill through both cortices.

Measure for screw length using the depth gauge [319.006].

Note: Correct measurement for proximal and distal screw lengths require different depth gauges.

Select and insert the appropriate 2.4 mm self-tapping cortex screw using the cruciform screwdriver.

Note: As with the buttress pins, be sure to consider the width of any gap between the bone and plate when determining screw length. Tightening the screws will close this gap and result in screw tip protrusion beyond the far cortex, potentially causing soft tissue irritation.

Note: Caution should be used in determining the placement and angulation of the screws so that they do not interfere with each other or disrupt the articular surface.

Note: 2.4 mm drill bits are available for use when AO lag screw technique is desired.
Dorsal Plate Technique (continued)

7 Secure proximal legs

Place the 2.7 mm universal drill guide in the plate hole.

Neutral Position: Fully press the spring-loaded sleeve down into the plate hole.

Load or Butress Position: Place the drill guide at either end of the plate hole without applying downward pressure on the spring-loaded tip.

Drill through both cortices with a 2.0 mm drill bit. Use the depth gauge [319.06] to measure for screw length.

Insert the appropriate length 2.7 mm self-tapping cortex screw using the small hexagonal screwdriver.

Note: 2.7 mm drill bits are available for use when AO lag screw technique is desired.
8 Dorsal Closure

Leave compartments 2 and 3 (the extensor pollicis longus, extensor carpi radialis brevis and extensor carpi radialis longus tendons) above the extensor retinaculum at the time of wound closure, to protect soft tissues (see below).
**Volar Surgical Approach**

Place the patient in the supine position with the hand and arm on a hand table, preferably radiolucent for fluoroscopic imaging.

Make a longitudinal incision along the radial border of the distal forearm. The fracture can then be accessed between the flexor carpi radialis and the radial artery. The fracture is then exposed through a radial incision of the pronator quadratus muscle. Its fibers are detached from the surface of the bone and retracted to the ulnar side. It is imperative not to open the volar wrist capsule, in order to avoid devascularization of the fracture fragments and destabilization of the volar wrist ligaments. When direct visualization is required, it is accomplished by a dorsal arthrotomy or arthroscopy.
Volar Plate Technique

Follow dorsal surgical technique outlined in steps 1–7. Use appropriate method for surgical closure of the incision.
Distal Radius Plate Instrument and Implant Sets:
Stainless Steel [105.505]
Titanium [145.505]

Instruments

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<tr>
<th>Item Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>310.19</td>
<td>2.0 mm, 100 mm Drill Bits, quick coupling, 2 ea.</td>
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<td>310.26</td>
<td>2.7 mm, 100 mm Drill Bits, quick coupling, 2 ea.</td>
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<tr>
<td>310.510</td>
<td>1.8 mm, 100 mm Drill Bits, quick coupling, 2 ea.</td>
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<td>310.530</td>
<td>2.4 mm, 100 mm Drill Bits, quick coupling, 2 ea.</td>
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<td>311.01</td>
<td>Handle with mini quick coupling</td>
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<td>312.181</td>
<td>2.4 mm/1.8 mm Drill Guide, for Distal Radius Plates</td>
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<td>312.92</td>
<td>1.8 mm Threaded Drill Guide, for Buttress Pins, 4 ea.</td>
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<td>314.02</td>
<td>Small Hexagonal Screwdriver with Holding Sleeve</td>
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<td>314.67.97</td>
<td>Cruciform Screwdriver Shaft with Holding Sleeve</td>
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<td>319.006</td>
<td>Depth Gauge, for 2.0 mm and 2.4 mm screws</td>
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<tr>
<td>319.06</td>
<td>Depth Gauge (for use with 2.7 mm Cortex Screws)</td>
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<td>323.26</td>
<td>2.7 mm Universal Drill Guide</td>
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<td>329.09</td>
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<td>329.598</td>
<td>Bending Template for Volar Distal Radius Plate</td>
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<td>329.599</td>
<td>Bending Template for Distal Radius Plate, 2 ea.</td>
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<tr>
<td>391.962</td>
<td>Bending/Cutting Pliers</td>
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<td>391.963</td>
<td>Universal Bending Pliers, 2 ea.</td>
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Implants

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<td>492.12</td>
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<td>292.16</td>
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<td>Kirschner Wires, 1.60 mm, pkg. of 10</td>
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Also Available

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<th>Item Code</th>
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<tr>
<td>304.563</td>
<td>Titanium Distal Radius Implant Module with lid</td>
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<tr>
<td>305.801</td>
<td>Distal Radius Implant Module with lid</td>
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<tr>
<td>394.08</td>
<td>Mini Lengthening Apparatus</td>
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Note: For additional information, please refer to package insert.

For detailed cleaning and sterilization instructions, please refer to www.synthes.com/cleaning-sterilization or sterilization instructions, if provided.
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