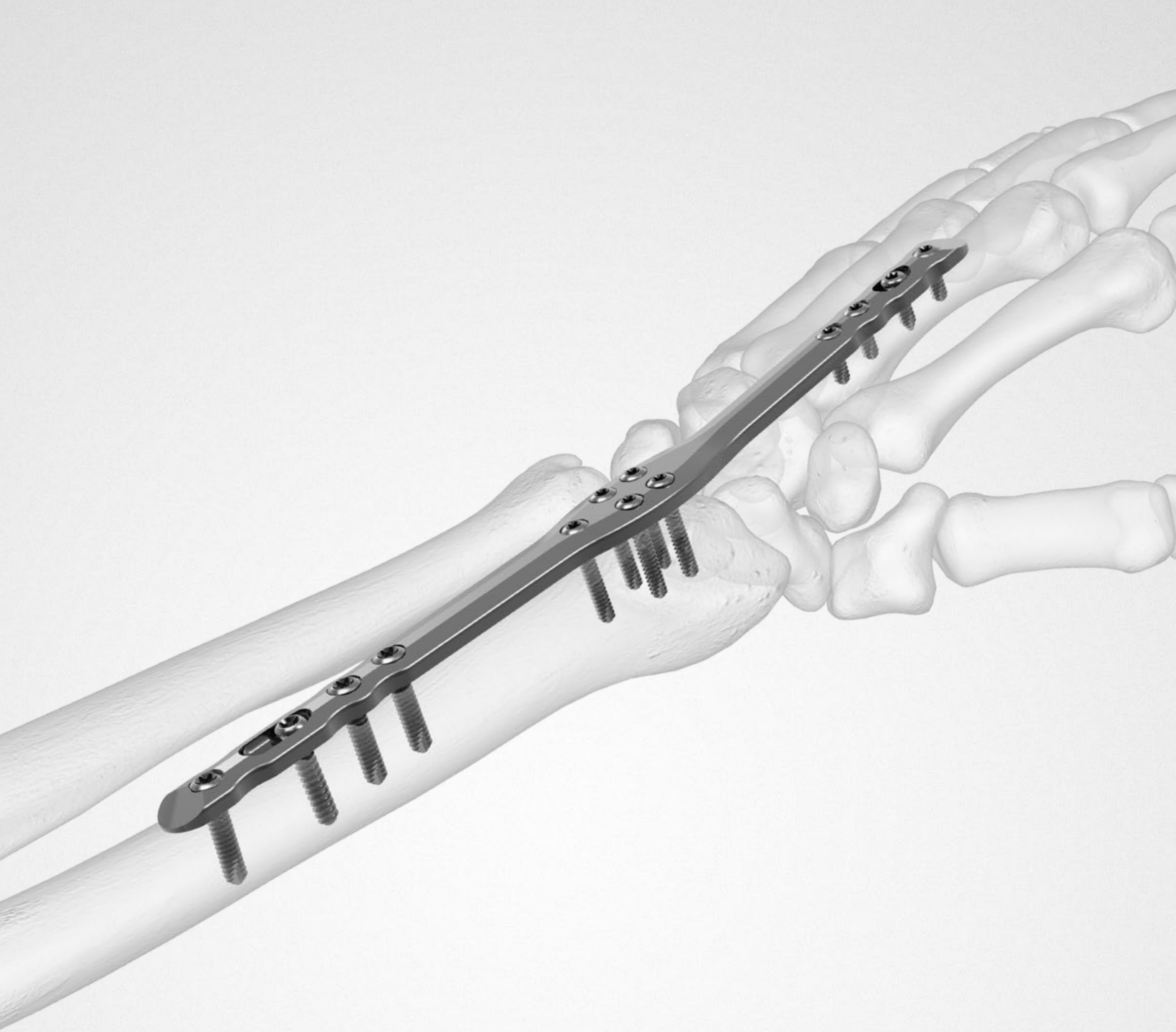
acumed®

Acu-Loc® Wrist Spanning Plate System

Surgical Technique



A COLSON ASSOCIATE

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® Acu-Loc® Wrist Spanning Plate System

The Acu-Loc Wrist Spanning Plate, designed for complex distal radius fractures, holds the wrist in distraction and provides ligamentotaxis to the wrist on a temporary basis while the distal radius heals.

The Acu-Loc Wrist Spanning Plate is indicated for fixation of fractures, osteotomies, and nonunions of the radius.

	Definition
Warning	Indicates critical information about a potential serious outcome to the patient or the user.
Caution	Indicates instructions that must be followed in order to ensure the proper use of the device.
Note	Indicates information requiring special attention.

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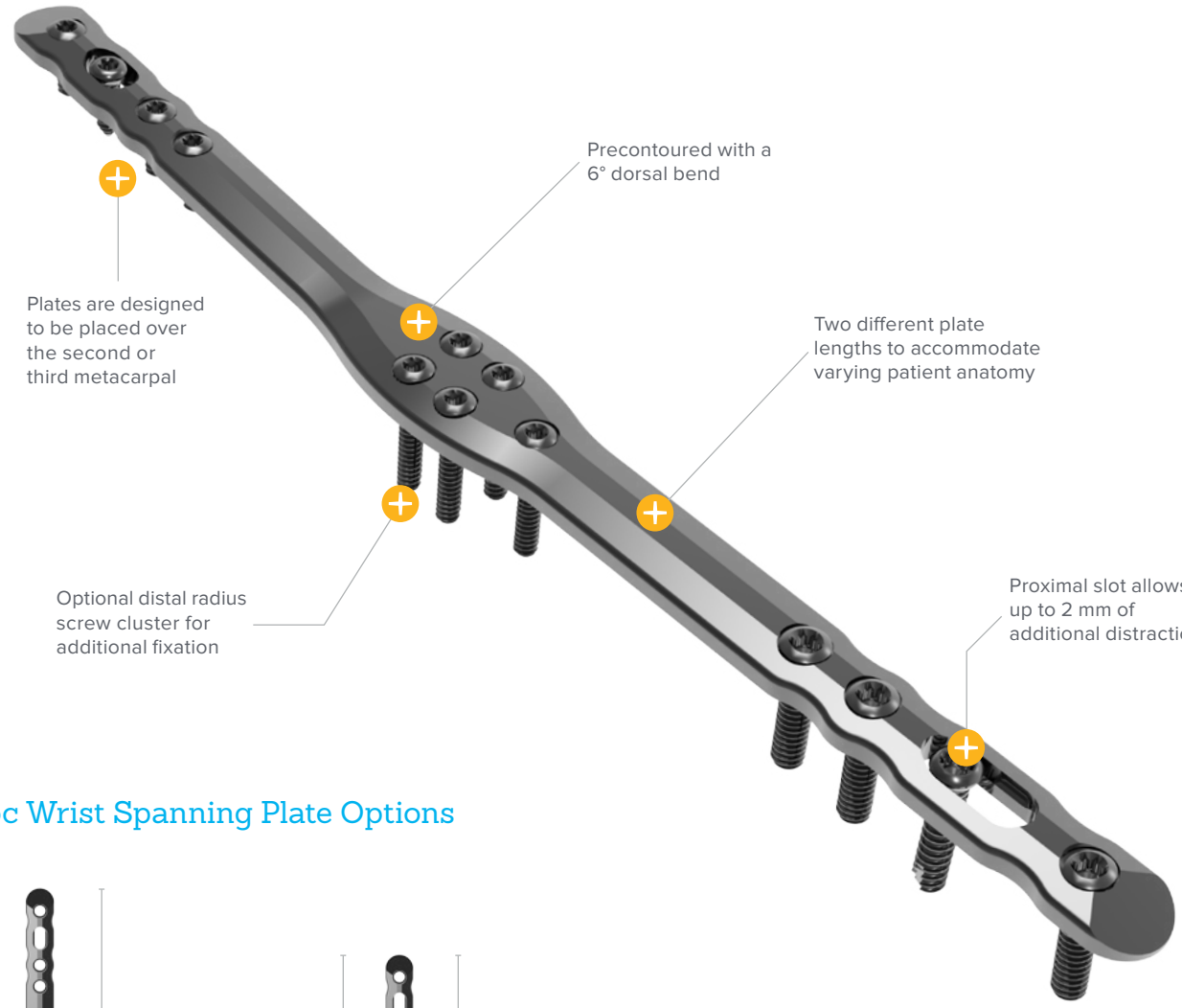
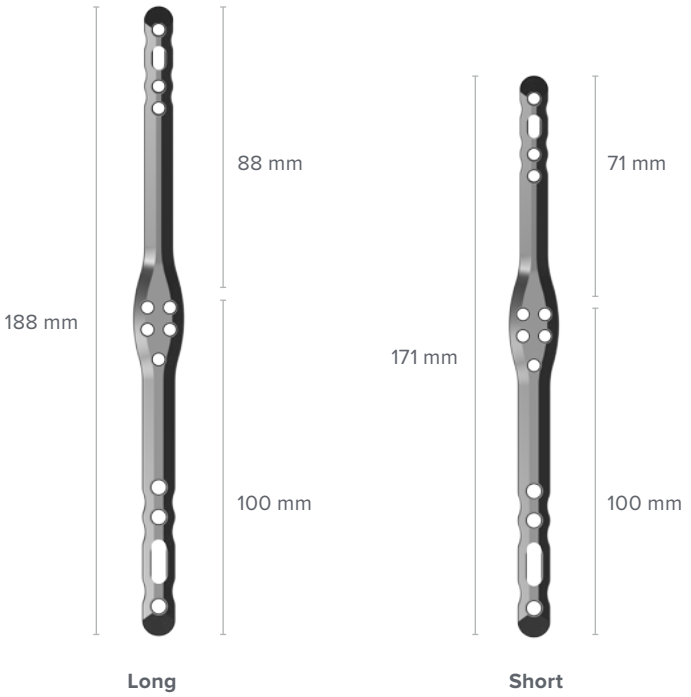
System Features

Wrist Spanning Plates

Designed to address complex distal radius fractures, these temporary fixators hold the wrist in distraction and provide ligamentotaxis while the distal radius heals.



Acu-Loc Wrist Spanning Plate Options



Instrument Overview

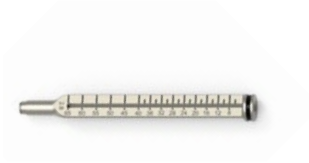
Medium Ratcheting Driver Handle
(80-0663)

Depth Gauge 6–65 mm
(80-0623)

2.0 mm / 2.8 mm Thin Drill Guide
(PL-2118)

T15 Stick Fit Hexalobe Driver
(80-0760)

2.0 mm Quick Release Drill
(80-0318)



2.8 mm Hexalobe Locking Drill Guide 6–65 mm
(80-0668)

2.8 mm Quick Release Drill
(80-0387)

T8 Stick Fit Hexalobe Driver*
(80-0759)

Reduction Forceps With Serrated Jaw*
(PL-CL04)

2.0 mm Hexalobe Locking Drill Guide 4–32 mm*
(80-0621)

***Note:** Not in Acu-Loc 2® Wrist Plating System

Surgical Technique Overview

Acu-Loc Wrist Spanning Plate Surgical Technique

Patient Positioning

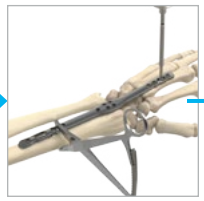
Plate Positioning

Plate Insertion

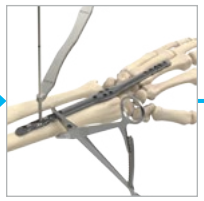
Plate Placement & Fracture Reduction

Plate Fixation

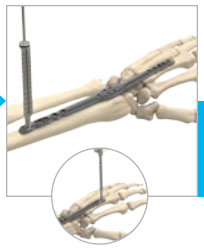
Metacarpal Fixation



Radial Shaft Fixation



Additional Screw Insertion



Acu-Loc Wrist Spanning Plate Surgical Technique

David S. Ruch, M.D.

Figure 1

1 Patient Positioning

Position the patient in the supine position on the operating room table with a radiolucent hand table attachment.

Apply a tourniquet above the elbow then prep the extremity and drape in the standard fashion. Use fluoroscopy to provisionally reduce the distal radial fracture. Traction can be used to restore the radius to proper length, and ligamentotaxis can be used to aid in the reduction. Traction can be applied manually or with the help of a traction tower.

Note: Please see information on the Acumed ARC Wrist Traction Tower (HNW00-00).

Figure 2

2 Plate Positioning

Acumed's solution provides two Acu-Loc Wrist Spanning Plate lengths (171 mm and 188 mm) to cover variations in patient size. Once the length of the distal radius has been restored, position the preferred plate on the skin over the distal forearm and the second or third metacarpal. Use fluoroscopy to confirm ideal plate placement. Using a marking pen, mark where the three incisions on the skin will be located. Make the first incision above the metacarpal, the second incision over the fractured distal radius, and the third incision at the location of the proximal holes over the radial shaft.

Note: To determine which plate to use, measure distally from the dorsal rim of the distal radius to the MCP Joint. The length of the radius portion of both Acu-Loc Wrist Spanning Plates is 100 mm. If a measurement of 88 mm distally from the rim of the distal radius is too long, select the short plate that only extends 71 mm past the distal radius rim. If you are unable to determine exact length, select the short plate. Acu-Loc Wrist Spanning Plate X-ray Templates (90-0045) are also available and may be used preoperatively to aid in implant selection.

Acu-Loc Wrist Spanning Plate, Long (188 mm)
(7006-1190N-S)

Acu-Loc Wrist Spanning Plate, Short (171 mm)
(7006-1170N-S)

Acu-Loc Wrist Spanning Plate Surgical Technique [continued]

3 Three Incisions

Make the first incision over the portion of the metacarpal. If the plate is being placed to the second metacarpal, continue the dissection until the Extensor Carpi Radialis Longus (ECRL) is identified. Take care to preserve the small branches of the radial sensory nerve.

Create a second incision over Lister's tubercle and release the Extensor Pollicis Longus (EPL) and the proximal portion of the second dorsal compartment. Place the Acu-Loc Wrist Spanning Plate under the EPL. If the plate is to be placed to the third metacarpal, use subperiosteal elevation of the fourth compartment to allow the plate to be placed along the dorsal aspect of the intermediate column of the distal radius.

Make a third proximal incision 45 degrees (dorsoradial) from the midline of the radius. This will facilitate access for plate placement and clamp placement when distracting the fracture. Verify the location of the radial sensory nerve that is located between the ECRL and the Brachioradialis (BR) tendons.

Note: The Brachioradialis may need to be released from its insertion on the radial styloid to facilitate reduction and visualization of the fracture. Reduce the fracture using manual techniques. Provisional stability can be achieved with K-wires and evaluated under fluoroscopy.

Figure 3

Figure 4

4 Plate Insertion

Starting at the metacarpal incision, insert the Acu-Loc Wrist Spanning Plate (7006-11X0N-S) retrograde along the dorsal surface of the metacarpal, the carpus, and the radius. It is helpful to bluntly pass a key elevator along the path of the plate to create a working space. Access the plate through each of the three incisions to ensure that it remains deep to the extensor tendons along its course. If it is difficult to pass the plate at the middle incision, ensure that the fourth extensor compartment is elevated enough to allow plate passage. Confirm that the EPL remains superficial to the plate.

Figure 5

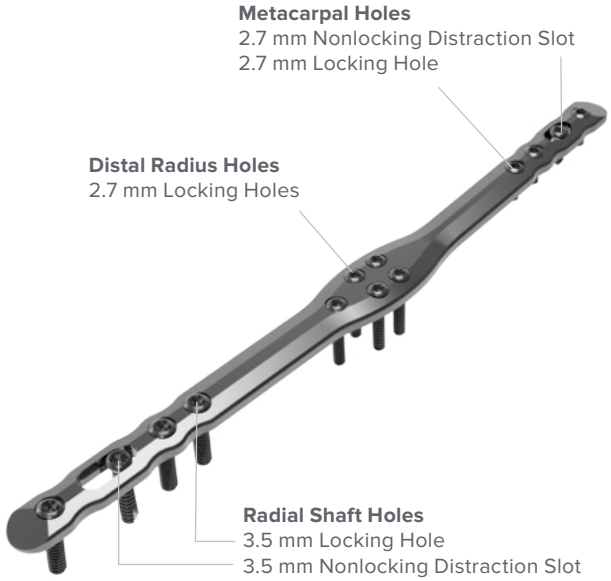
Acu-Loc Wrist Spanning Plate Surgical Technique [continued]

Figure 6

5 Plate Placement and Fracture Reduction

Achieve preliminary reduction by applying longitudinal traction to utilize the effect of ligamentotaxis to reverse deforming forces at the distal radius. To achieve adequate reduction, an additional supination force may be required. Place the plate as distally as possible without encroaching on the metacarpophalangeal joint. The middle cluster holes should be just above the distal end of the radius. Use a small serrated bone-holding clamp through the proximal incision to provisionally secure the plate to the radius. Confirm reduction on orthogonal views using fluoroscopy.

Acu-Loc Wrist Spanning Plate Screw Clusters



Acu-Loc Wrist Spanning Plate Surgical Technique [continued]

6 Plate Fixation

Metacarpal Fixation

Secure the plate first to the metacarpal to aid in the reduction of the fracture. Use a 2.7 mm Nonlocking Hexalobe Screw (30-03XX-S) in the distal 2.7 mm slot to allow small adjustments in the proximal/distal alignment of the plate as needed. With provisional reduction confirmed, using the 2.0 mm/2.8 mm Thin Drill Guide (PL-2118), drill with the 2.0 mm Quick Release Drill (80-0318), measure depth using the Depth Gauge 6–65 mm (80-0623), and insert a 2.7 mm nonlocking hexalobe screw bicortically through the slotted hole. Tighten the screw enough to secure the plate without restricting its ability to be adjusted. Make minor adjustments under fluoroscopy and confirm reduction on orthogonal views. Use the T8 Stick Fit Hexalobe Driver (80-0759) to tighten the screw fully.

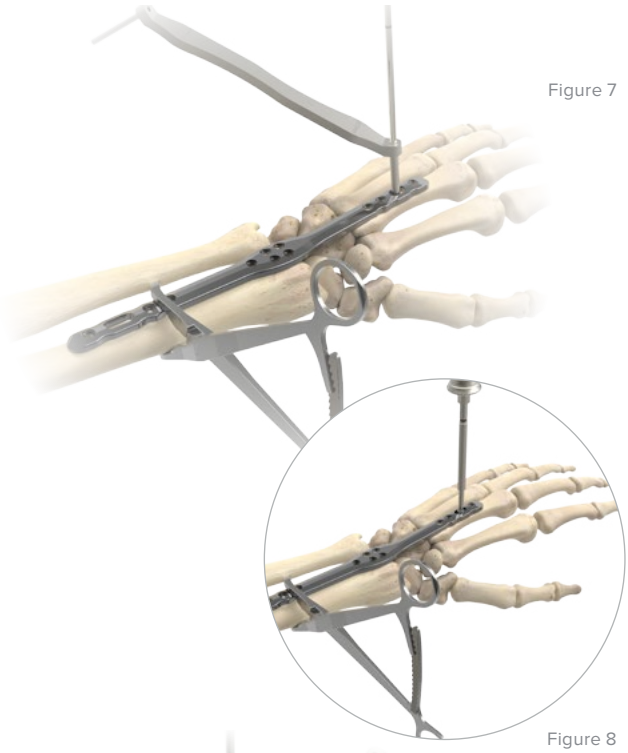


Figure 7

Figure 8

Radial Shaft Fixation

Loosen the clamp and adjust the amount of traction, then perform a final fracture reduction if necessary. After final fracture reduction is confirmed under fluoroscopy, place a 3.5 mm Nonlocking Hexalobe Screw (30-02XX) proximally in the slot to maintain the reduction. Using the 2.0 mm/2.8 mm Thin Drill Guide and 2.8 mm Quick Release Drill (80-0387), drill bicortically into the slotted distraction hole proximal.

Measure for depth using the depth gauge and place a 3.5 mm nonlocking hexalobe screw into the distraction slot.

Note: For distraction, you may choose to place the drill guide and 2.8 mm drill next to the distal edge of the distraction slot and use the distraction feature to translate the plate distally. This allows up to 2 mm of additional distraction.

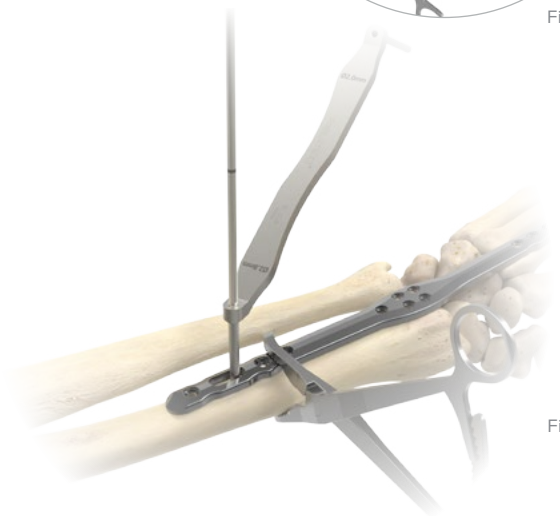


Figure 9

2.7 mm Nonlocking Hexalobe Screw
(30-03XX-S)

2.0 mm/2.8 mm Thin Drill Guide
(PL-2118)

2.0 mm Quick Release Drill
(80-0318)

Depth Gauge 6–65 mm
(80-0623)

T8 Stick Fit Hexalobe Driver
(80-0759)

3.5 mm Nonlocking Hexalobe Screw
(30-02XX)

2.8 mm Quick Release Drill
(80-0387)

Acu-Loc Wrist Spanning Plate Surgical Technique [continued]

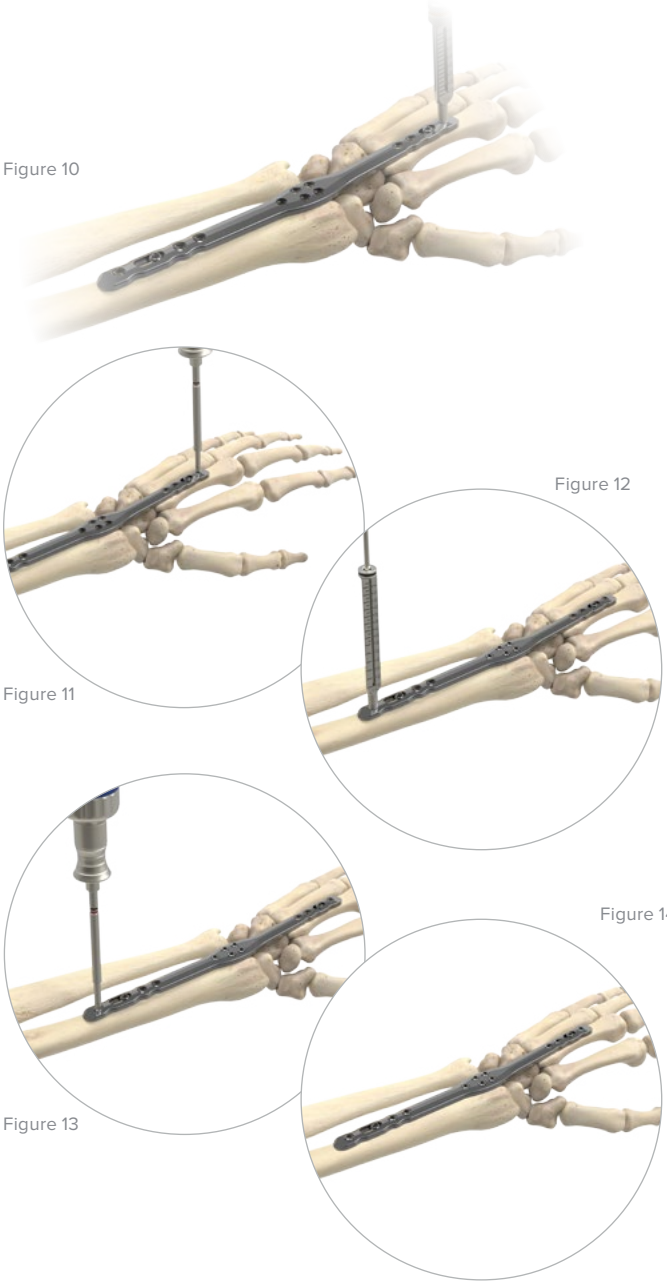


Figure 10

Figure 11

Figure 12

Figure 13

Figure 14

Additional Screw Insertion

The 2.7 mm locking and nonlocking hexalobe screws are to be used in the remaining round threaded holes located in the distal radius screw hole cluster, as well as in the metacarpal screw holes. The 2.0 mm drill and 2.0 mm Hexalobe Locking Drill Guide 4–32 mm (80-0621) are used for hole preparation before inserting the 2.7 mm locking and nonlocking hexalobe screws. Drill depth can be read directly off the laser line on the drill or with the depth gauge. Use the T8 Stick Fit Hexalobe Driver to insert the 2.7 mm hexalobe screws.

A 3.5 mm locking or nonlocking hexalobe screw can be used in each of the remaining proximal holes of the Acu-Loc Wrist Spanning Plate. Use the 2.8 mm drill and 2.8 mm Hexalobe Locking Drill Guide for hole preparation before inserting the 3.5 mm screws. Read drill depth directly off the laser line on the drill or with the depth gauge. Use the T15 Stick Fit Hexalobe Driver (80-0760) to insert the 3.5 mm screws.

Note: Only unicortical screws are recommended for use in the distal radius cluster.

Caution: When using the T8 Driver, care should be taken to not “overtighten” the screw or apply more torque than necessary to seat the locking screw into the plate. Screws should be tightened by hand and not under power.

7 Final Screw Position and Incision Closure

Use fluoroscopy to check the final reduction of the fracture and the position of the screws.

2.7 mm Locking Hexalobe Screws (30-03XX-S)

2.7 mm Nonlocking Hexalobe Screw (30-03XX-S)

2.0 mm Quick Release Drill (80-0318)

2.0 mm Hexalobe Locking Drill Guide 4–32 mm (80-0621)

T8 Stick Fit Hexalobe Driver (80-0759)

3.5 mm Locking Hexalobe Screw (30-023X)

3.5 mm Nonlocking Hexalobe Screw (30-02XX)

2.8 mm Quick Release Drill (80-0387)

2.8 mm Hexalobe Locking Drill Guide 6–65 mm (80-0668)

T15 Stick Fit Hexalobe Driver (80-0760)

Acu-Loc Wrist Spanning Plate Surgical Technique [continued]

8 Postoperative Protocol

The following protocol is provided by Acumed. However, postoperative management should always be done at the discretion of the surgeon. Place the patient into a removable wrist splint, then initiate immediate edema control and digital range of motion exercises. While the Acu-Loc Wrist Spanning Plate is in place, maintain the patient on a five-pound lifting restriction.

9 Implant Removal

Once the distal radius has healed, the plate should be removed. Once all of the screws are removed, remove the plate through the proximal or distal incision. Fluoroscopy is recommended to evaluate the distal radius and the previous hardware sites.

Ordering Information

Components

Acumed Acu-Loc Wrist Spanning Plates

Acu-Loc Wrist Spanning Plate, Short (171 mm)	7006-1170N-S
Acu-Loc Wrist Spanning Plate, Long (188 mm)	7006-1190N-S

Instruments

Medium Ratcheting Driver Handle	80-0663
Depth Gauge 6–65 mm	80-0623
2.0 mm / 2.8 mm Thin Drill Guide	PL-2118

Note: The Acumed Acu-Loc Wrist Spanning Plate and 2.7 mm screws come sterile-packed. 2.7 mm instrumentation may be placed in the Acu-Loc® 2 utility bin. The Acumed Acu-Loc 2 Wrist Plating System includes the 3.5 mm screws and instrumentation not included in the sterile procedure packs.

To learn more about the full line of Acumed innovative surgical solutions, please contact your local authorized Acumed distributor, call 888.627.9957, or visit acumed.net.

2.7 mm Screws

Instruments

T8 Stick Fit Hexalobe Driver	80-0759
2.0 mm Quick Release Drill	80-0318
2.0 mm Hexalobe Locking Drill Guide 4–32 mm	80-0621

2.7 mm Locking Hexalobe Screws

2.7 mm x 8 mm Locking Hexalobe Screw	30-0324-S
2.7 mm x 10 mm Locking Hexalobe Screw	30-0325-S
2.7 mm x 12 mm Locking Hexalobe Screw	30-0326-S
2.7 mm x 14 mm Locking Hexalobe Screw	30-0327-S
2.7 mm x 16 mm Locking Hexalobe Screw	30-0328-S
2.7 mm x 18 mm Locking Hexalobe Screw	30-0329-S
2.7 mm x 20 mm Locking Hexalobe Screw	30-0330-S
2.7 mm x 22 mm Locking Hexalobe Screw	30-0331-S

2.7 mm Nonlocking Hexalobe Screws

2.7 mm x 8 mm Nonlocking Hexalobe Screw	30-0343-S
2.7 mm x 10 mm Nonlocking Hexalobe Screw	30-0344-S
2.7 mm x 12 mm Nonlocking Hexalobe Screw	30-0345-S
2.7 mm x 14 mm Nonlocking Hexalobe Screw	30-0346-S
2.7 mm x 16 mm Nonlocking Hexalobe Screw	30-0347-S
2.7 mm x 18 mm Nonlocking Hexalobe Screw	30-0348-S
2.7 mm x 20 mm Nonlocking Hexalobe Screw	30-0349-S
2.7 mm x 22 mm Nonlocking Hexalobe Screw	30-0350-S

Ordering Information [continued]

3.5 mm Screws	
Instruments	
T15 Stick Fit Hexalobe Driver	80-0760
2.8 mm Quick Release Drill	80-0387
2.8 mm Hexalobe Locking Drill Guide 6–65 mm	80-0668
3.5 mm Locking Hexalobe Screws	
3.5 mm x 8 mm Locking Hexalobe Screw	30-0232
3.5 mm x 10 mm Locking Hexalobe Screw	30-0233
3.5 mm x 12 mm Locking Hexalobe Screw	30-0234
3.5 mm x 14 mm Locking Hexalobe Screw	30-0235
3.5 mm x 16 mm Locking Hexalobe Screw	30-0236
3.5 mm x 18 mm Locking Hexalobe Screw	30-0237
3.5 mm Nonlocking Hexalobe Screws	
3.5 mm x 8 mm Nonlocking Hexalobe Screw	30-0255
3.5 mm x 10 mm Nonlocking Hexalobe Screw	30-0256
3.5 mm x 12 mm Nonlocking Hexalobe Screw	30-0257
3.5 mm x 14 mm Nonlocking Hexalobe Screw	30-0258
3.5 mm x 16 mm Nonlocking Hexalobe Screw	30-0259
3.5 mm x 18 mm Nonlocking Hexalobe Screw	30-0260

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