

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.



Acumed® Acu-Loc® 2 Wrist Spanning Plating System

The Acu-Loc 2 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 2 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.

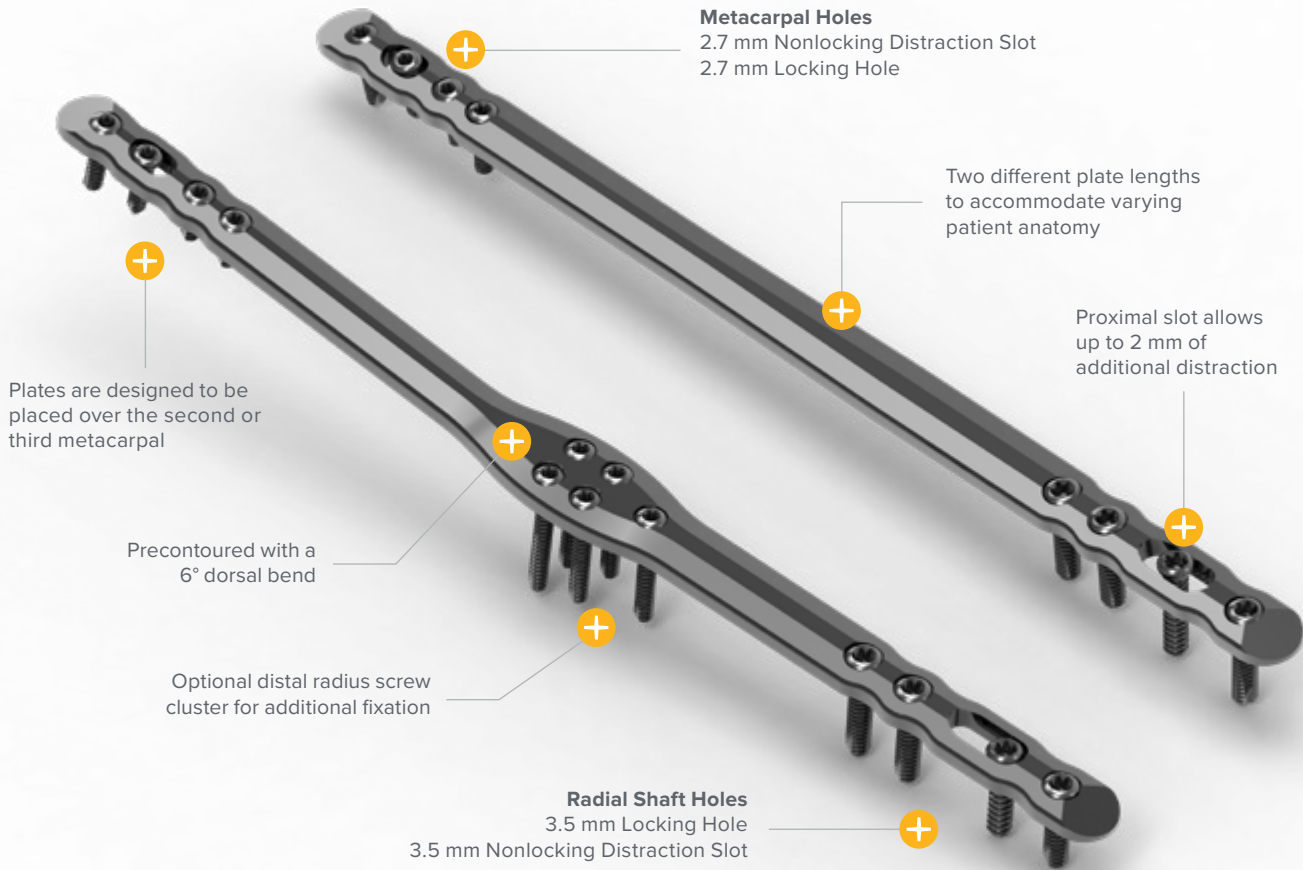
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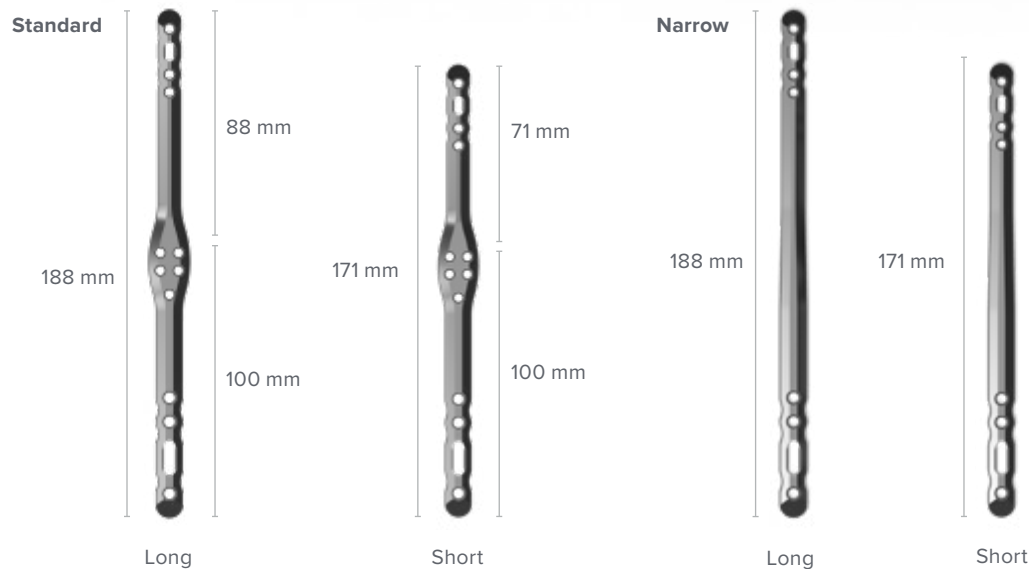
System Features

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 2 Wrist Spanning Plate System



Caution: 2.7 mm Locking and Nonlocking Hexalobe Screws (30-03XX-S) 8 mm to 22 mm are intended to be used in the distal and central screw cluster holes. 2.7 mm Locking (COL-2XXX) and Nonlocking (CO-27XX) Cortical Screws have larger heads and are not intended to be used in these holes.

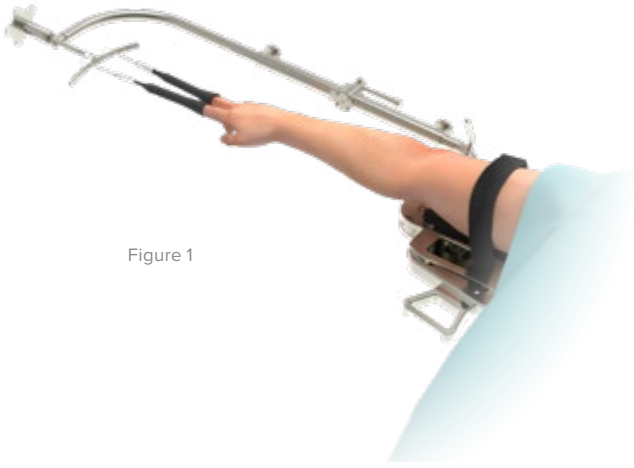


Figure 1

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).

2 Plate Selection

Acumed's solution provides two plate options: The Wrist Spanning Plate (7006-11XON-S) and the Narrow Wrist Spanning Plate (7006-33XON-S). The decision to utilize each is at the discretion of the surgeon based on fracture characteristics.

The Wrist Spanning Plate is pre-contoured with a 6 degree dorsal bend which may allow for better fit to the third metacarpal, improve hand positioning, and provide a stiffer construct. Additionally, the central screw cluster allows for supplemental fixation of the distal radius. When plating to the third metacarpal, one may elect to make three incisions to transpose the extensor pollicis longus (EPL) and ensure it is not entrapped by the plate.

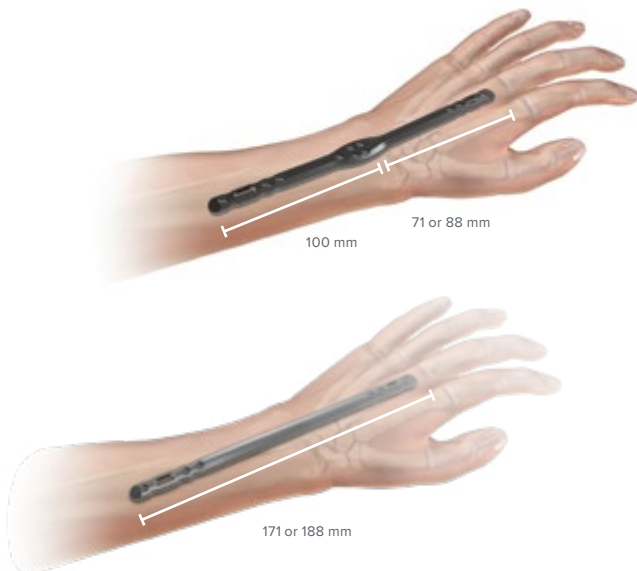
The Narrow Wrist Spanning Plate is not pre-contoured with a dorsal bend and does not have a central screw cluster, which may allow a better fit to the second metacarpal and may facilitate insertion. When plating to the second metacarpal, some surgeons prefer two incisions given the lower risk of EPL entrapment. Both the Wrist Spanning Plate and Narrow Wrist Spanning Plate are offered in two lengths (171 mm and 188 mm) to cover variations in patient size.

Note: On the Wrist Spanning Plate, the portion of the plate proximal to the cluster is the same in both plate lengths (100 mm). Therefore, to determine which plate length to use, measure distally from the dorsal rim of the distal radius to the metacarpophalangeal (MCP) joint.

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. (Figure 2)

If using the Narrow Wrist Spanning Plate, choose the length that provides the best fit from the metacarpal to the radial shaft. If you are unable to determine exact length, select the short plate.

Figure 2



Acu-Loc 2 Wrist Spanning Plate System Surgical Technique [continued]

Acu-Loc 2 Wrist Spanning Plate X-ray Templates (90-0045 or 90-0060) are also available and may be used preoperatively to aid in implant selection.

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 the ideal plate placement.

3 Incisions

Using a marking pen, mark where the incisions on the skin will be located. Mark one incision over the metacarpal, one (if desired) over the fractured distal radius, and one at the location of the proximal holes over the radial shaft.

Make the first incision over the metacarpal. The extensor tendons can be retracted to visualize the dorsal surface 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. If one has trouble passing the plate or desires access to the distal radius fracture, a central incision over the distal radius in line with the second dorsal compartment can be made. The proximal portion of the second dorsal compartment can be incised to aid and visualize plate passage through the second compartment.

If the plate is to be placed to the third metacarpal, one may elect to make a central incision ulnar to Lister's tubercle to transpose the EPL to ensure the tendon is not deep to the plate or at risk of damage with the plate in place. This incision can be utilized to refine reduction or fixation, and/or place bone graft. 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 the final 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. Fixation can be supplemented with K-wires and/or plates and screws from the Acu-Loc 2 Wrist Plating System.



Figure 3

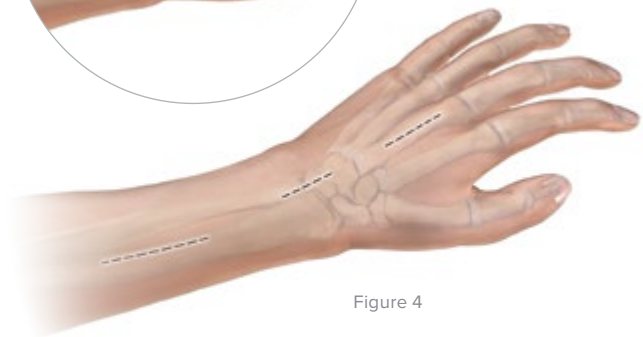


Figure 4

Acu-Loc 2 Wrist Spanning Plate System Surgical Technique [continued]

4 Plate Insertion

Starting at the metacarpal incision, insert the Acu-Loc 2 Wrist Spanning Plate (7006-11X0N-S) or Acu-Loc 2 Narrow Wrist Spanning Plate (7006-33X0N-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 incisions to ensure that it remains deep to the extensor tendons.

If it is difficult to pass the plate when plating to the third metacarpal, ensure that the fourth extensor compartment is elevated enough to allow plate passage. Confirm that the EPL remains superficial to the plate. If it is difficult to pass the plate when plating to the second metacarpal, a central incision over the distal radius in line with the second dorsal compartment can be made. The proximal portion of the second dorsal compartment can be incised to aid in plate placement.

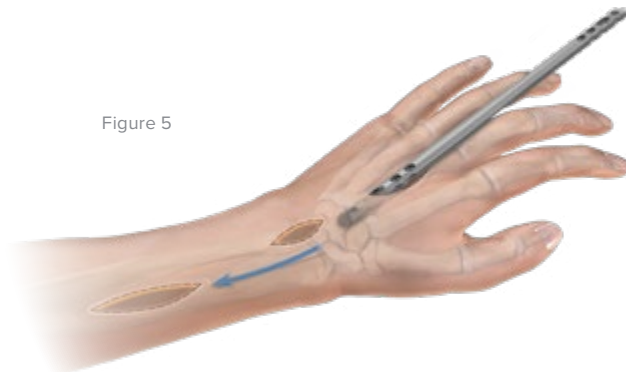


Figure 5

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 MCP joint and the joint capsule. If using the Acu-Loc 2 Wrist Spanning Plate (7006-11X0N-S), the middle cluster holes should be just dorsal to 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 with the hand in neutral rotation. Confirm reduction and plate placement on orthogonal views using fluoroscopy.



Figure 6

Acu-Loc 2 Wrist Spanning Plate System 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) or 2.7 mm Nonlocking Hexalobe CoCr Screw (3061-270XX) 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.

Caution: 2.7 mm and 3.5 mm Locking and Nonlocking Hexalobe CoCr Screws (3060-270XX, 3062-350XX); (3061-270XX, 3063-350XX) are not compatible with screw removal system.

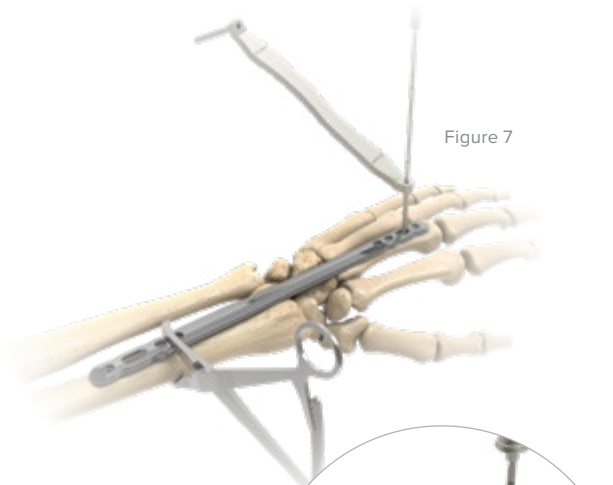


Figure 7

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) or 3.5 mm Nonlocking Hexalobe CoCr Screw (3063-350XX) 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, 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.

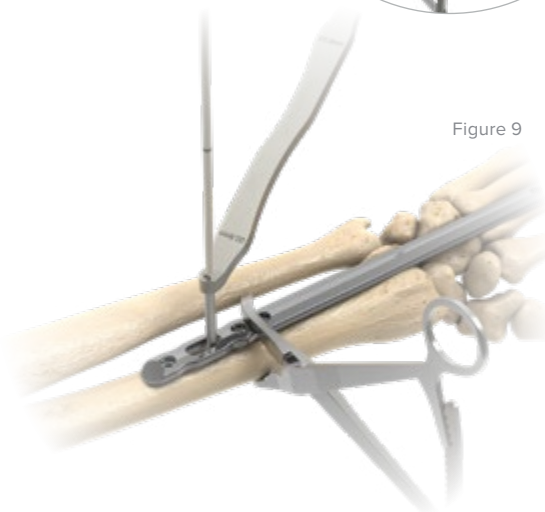


Figure 9

Additional Screw Insertion

The 2.7 mm locking and nonlocking hexalobe screws can optionally be used in the round threaded holes located in the distal radius screw hole cluster of the Wrist Spanning Plate (7006-1170-N-S or 7006-1190-N-S), as well as in the metacarpal screw holes of both plate styles. 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.

Acu-Loc 2 Wrist Spanning Plate System Surgical Technique [continued]

A 3.5 mm locking or nonlocking hexalobe screw can be used in each of the remaining proximal holes of the plates.

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.

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 2 Wrist Spanning Plate or Narrow 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.

Caution: 2.7 mm and 3.5 mm Locking and Nonlocking Hexalobe CoCr Screws (3060-270XX, 3062-350XX) (3061-270XX, 3063-350XX) are not compatible with screw removal system.

Figure 10

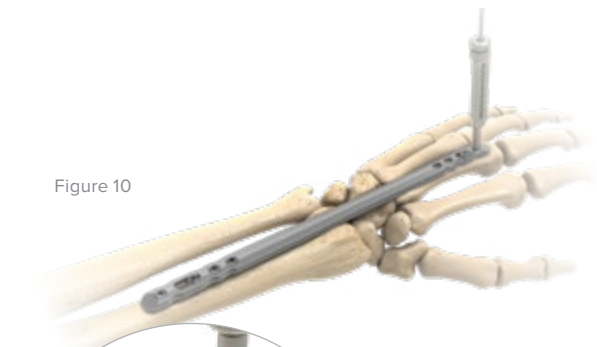


Figure 11

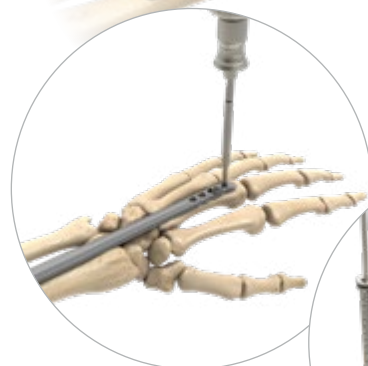


Figure 12

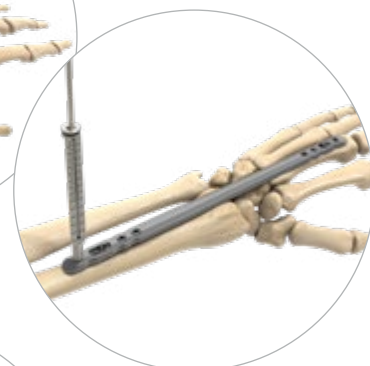
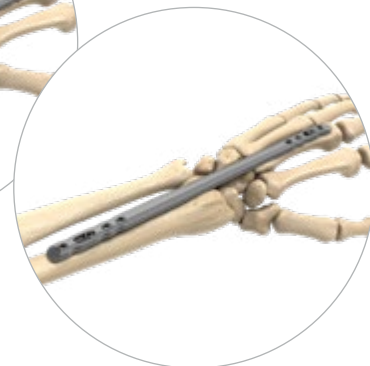


Figure 13



Figure 14



Ordering Information

Components

Acumed Acu-Loc 2 Wrist Spanning Plates

Acu-Loc 2 Wrist Spanning Plate, Short (171 mm)	7006-1170N-S
Acu-Loc 2 Wrist Spanning Plate, Long (188 mm)	7006-1190N-S
Acu-Loc 2 Narrow Wrist Spanning Plate, Short*	7006-3370N-S
Acu-Loc 2 Narrow Wrist Spanning Plate, Long*	7006-3390N-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

*Not available in all markets

Note: The Acumed Acu-Loc 2 Wrist Spanning Plates, Narrow Wrist Spanning Plates, 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.

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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]

2.7 mm Screws

2.7 mm Locking Hexalobe CoCr Screws*

2.7 mm x 8 mm Locking Hexalobe CoCr Screw	3060-27008
2.7 mm x 10 mm Locking Hexalobe CoCr Screw	3060-27010
2.7 mm x 12 mm Locking Hexalobe CoCr Screw	3060-27012
2.7 mm x 14 mm Locking Hexalobe CoCr Screw	3060-27014
2.7 mm x 16 mm Locking Hexalobe CoCr Screw	3060-27016
2.7 mm x 18 mm Locking Hexalobe CoCr Screw	3060-27018
2.7 mm x 20 mm Locking Hexalobe CoCr Screw	3060-27020
2.7 mm x 22 mm Locking Hexalobe CoCr Screw	3060-27022

2.7 mm Nonlocking Hexalobe CoCr Screws*

2.7 mm x 8 mm Nonlocking Hexalobe CoCr Screw	3061-27008
2.7 mm x 10 mm Nonlocking Hexalobe CoCr Screw	3061-27010
2.7 mm x 12 mm Nonlocking Hexalobe CoCr Screw	3061-27012
2.7 mm x 14 mm Nonlocking Hexalobe CoCr Screw	3061-27014
2.7 mm x 16 mm Nonlocking Hexalobe CoCr Screw	3061-27016
2.7 mm x 18 mm Nonlocking Hexalobe CoCr Screw	3061-27018
2.7 mm x 20 mm Nonlocking Hexalobe CoCr Screw	3061-27020
2.7 mm x 22 mm Nonlocking Hexalobe CoCr Screw	3061-27022

*Optional screws

Caution: 2.7 mm Locking and Nonlocking Hexalobe CoCr Screws (3060-270XX, 3061-270XX) are not compatible with screw removal system.

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

3.5 mm Screws

3.5 mm Locking Hexalobe CoCr Screws*

3.5 mm x 8 mm Locking Hexalobe CoCr Screw	3062-35008
3.5 mm x 10 mm Locking Hexalobe CoCr Screw	3062-35010
3.5 mm x 12 mm Locking Hexalobe CoCr Screw	3062-35012
3.5 mm x 14 mm Locking Hexalobe CoCr Screw	3062-35014
3.5 mm x 16 mm Locking Hexalobe CoCr Screw	3062-35016
3.5 mm x 18 mm Locking Hexalobe CoCr Screw	3062-35018

3.5 mm Nonlocking Hexalobe CoCr Screws*

3.5 mm x 8 mm Nonlocking Hexalobe CoCr Screw	3063-35008
3.5 mm x 10 mm Nonlocking Hexalobe CoCr Screw	3063-35010
3.5 mm x 12 mm Nonlocking Hexalobe CoCr Screw	3063-35012
3.5 mm x 14 mm Nonlocking Hexalobe CoCr Screw	3063-35014
3.5 mm x 16 mm Nonlocking Hexalobe CoCr Screw	3063-35016
3.5 mm x 18 mm Nonlocking Hexalobe CoCr Screw	3063-35018

*Optional Screws

Caution: 3.5 mm Hexalobe locking & nonlocking CoCr screws (3062-350XX, 3063-350XX); are not compatible with screw removal system.

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www.acumed.net

Acumed Oregon Campus
5885 NE Cornelius Pass Road
Hillsboro, OR 97124
+1.888.627.9957

Acumed Texas Campus
3885 Arapaho Road
Addison, TX 75001
+1.800.456.7779

Acumed Iberica Campus
C. Proción, 1
Edificio Oficor
28023 Madrid, Spain
+34.913.51.63.57

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