

# FibuLock® PRO Fibular Nail System

Surgical Technique



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# FibuLock® PRO Fibular Nail

## Introduction

Surgical treatment of ankle fractures aims to restore anatomic length, alignment, and stability of the involved bones and associated ligamentous injuries. The FibuLock PRO fibular nail allows surgeons to achieve these goals using a minimally invasive, biology-respecting approach. Traditional plate and screw fixation is still a safe and reliable option, but the literature favors nailing vs plating for lower complication rates and much less implant irritation, thus leading to a significantly lower incidence of expensive, inconvenient hardware removal surgeries.

The new FibuLock PRO nail system has further improved the FibuLock nail's functionality and ease of implantation, which will catalyze its growing popularity for minimally invasive fibula fracture fixation.



### Talons:

- > Provide proximal fixation and control the length, alignment, and rotation of the fibula fracture
- > May be deactivated for removal
- > PRO talons provide increased excursion and are more robust
- > Up to 12% wider

### Optional TightRope® Buttress Plate:

- > 2- and 3-hole options
- > Provides additional fixation at the level of fracture



FibuLock PRO  
TightRope  
Buttress Plate, 2H

FibuLock PRO  
TightRope  
Buttress Plate, 3H



Single Hole  
washers available  
with TightRope PRO

### Optional End Caps:

- > 0 mm, 3 mm, and 5 mm
- > Lock distal-most 2.7 mm screw in place
- > Prevent bony ingrowth



0 mm

3 mm

5 mm

### 2.7 mm Interlocking Headless Screws



### 3.8 mm Headless Screws

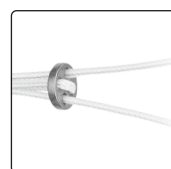


### Syndesmosis Fixation:

- > Accepts the Syndesmosis TightRope XP implant or 3.8 mm syndesmotic screws

### Specifications:

- > 3.0 mm and 3.8 mm diameters
- > 130 mm and 180 mm with proximal talons
- > 316L stainless steel
- > 275 mm cannulated nail (no proximal talons), only offered in 3.0 mm diameter



### 3.8 mm Screws:

- > Provide optional, additional proximal fixation

### Multiplanar Interlocking Headless Screws:

- > 2.7 mm headless screws
- > 2 lateral/medial screws
- > 2 anterior/posterior screws

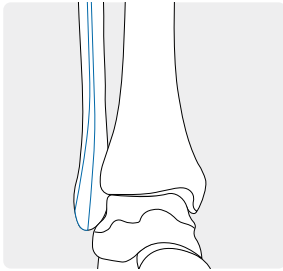
### Compression Slot:

- > Allows up to 2.5 mm of compression



# FibuLock® PRO Fibular Nail

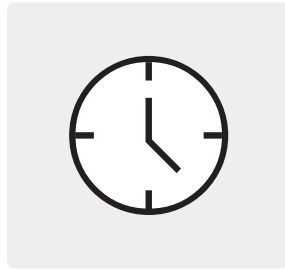
## Preoperative Considerations



### Canal Size

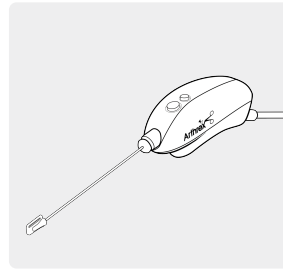
Narrow intramedullary canals may require additional canal preparation. The narrowest of canals may require open reduction internal fixation (ORIF).

Optional 2.5 and 2.8 mm solid conical-tipped reamers are available to assist with opening the fibular canal when it is particularly narrow.



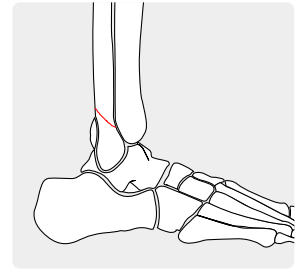
### Surgical Timing

A minimally invasive approach may permit earlier fibular fixation than what would be possible using a plate and screws.<sup>1</sup>



### Nano Arthroscopy

Given the very high incidence of intra-articular pathology associated with ankle fractures and the simplicity of the NanoScope™ device and its setup, many surgeons may need less than 10 minutes to identify, document, and treat intra-articular pathologies and to diagnose ligamentous instability, and subsequently to confirm anatomic reduction and restoration of stability.



### Fracture Level

Evaluate radiographs to ensure there is adequate space for interlocking screws in the distal segment.

### Reference

1. Hodgkins CW, Fleites J. Fibula nailing: a retrospective review of 110 consecutive FibuLock nails. *J Orthop Trauma*. 2022;36(7):366-369. doi:10.1097/BOT.0000000000002329

## Patient Positioning

Position the patient supine on a radiolucent table. Consider a bump under the ipsilateral hip to internally rotate the leg. Elevate the platform under the surgical ankle to facilitate single-limb fluoroscopy.

## Identify Nail Entry Point



Basic AP and lateral radiographic landmarks (isthmus and fibular fossa) of the distal fibula will aid in entry point accuracy and ensure the guidewire is central in the canal.

**Note:** Use fluoroscopy to mark out the anterior and posterior borders of the fibula.

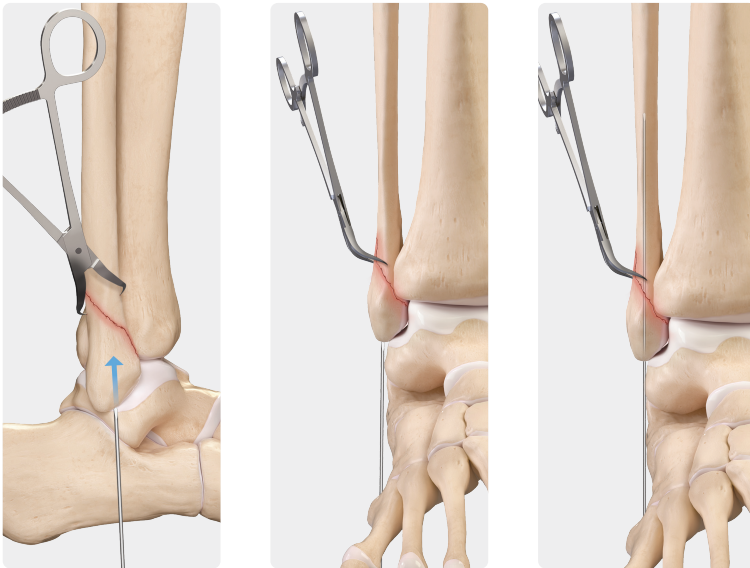
## Fracture Reduction and Incision



1

Make a small skin incision 1 cm distal to the tip of the fibula. When reducing the fracture, place clamp handles proximally to avoid outrigger interference. Many reductions are percutaneous, but some may require a limited, open approach for anatomic reduction. Do not proceed with the case until anatomic reduction and appropriate fibular length are restored.

## Starting Point and Reaming



2

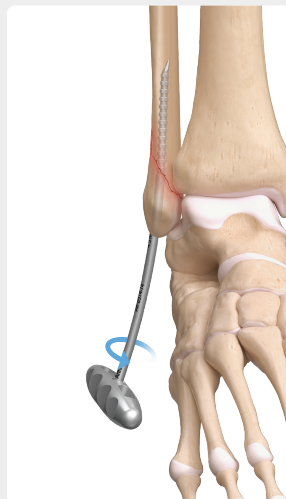
### Entry Point and Initial Guidewire Trajectory:

Establish the entry point using the 1.6 mm guidewire and tissue protector. Advance the guidewire 15 to 20 mm into the distal fibula. Supinating the foot may increase accessibility to the distal fibula.

Take multiple AP and lateral fluoroscopy views to ensure the guidewire is angled toward the center of the canal.

**Note:** Avoid placing the guidewire too lateral, as reaming will violate the lateral cortex of the fibula. Once a good entry point and trajectory have been established, advance the guidewire further into the fibula.

## Optional Steps



### 4.5 mm Cannulated Awl

To assist with obtaining an adequate entry point, a 4.5 mm cannulated awl can be introduced into the distal fibula. Once the initial flexible guidewire is placed, ensure the opening 6.2 mm reamer is introduced.

If a guidewire is preferred when using the 4.5 mm cannulated awl, the flexible spade-tip wire is suitable. Avoid using the curved cannulated awl with the straight 1.6 mm entry wire, as they are not compatible.



### 2.5 mm Solid Reamer 2.8 mm Solid Reamer

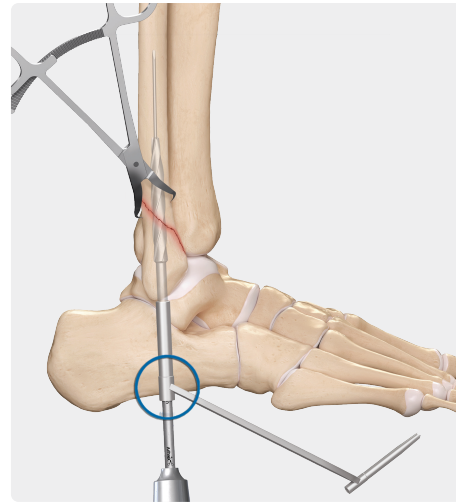
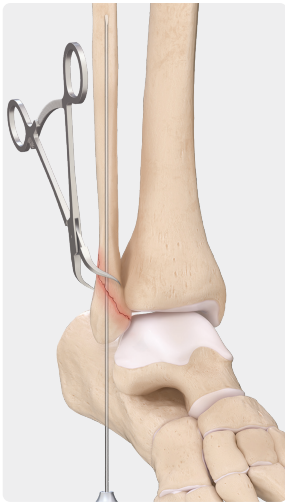
Solid drill bits may be used to establish the entry point and prepare the intramedullary canal. These drill bits may offer improved control for trajectory correction and canal access. Begin with a 2.5 mm reamer, followed by a 2.8 mm reamer; reinsert the guide pin, and proceed with optional 5.0 mm reaming before final preparation using the 6.2 mm opening reamer.



### 5.0 mm Cannulated Reamer

The 5.0 mm cannulated reamer may be used in cases involving dense bone or narrow intramedullary canals. It allows for gradual canal reaming prior to using the 6.2 mm opening reamer. The 6.2 mm reamer must still be used following the 5.0 mm step to complete the entry site preparation.

## Distal Reaming



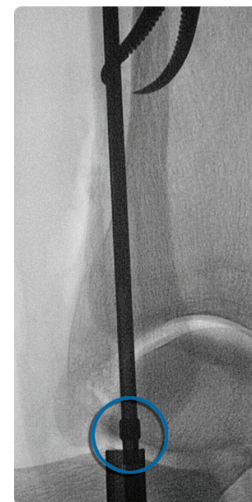
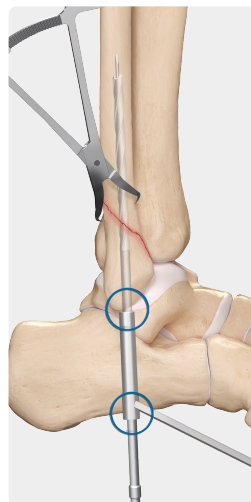
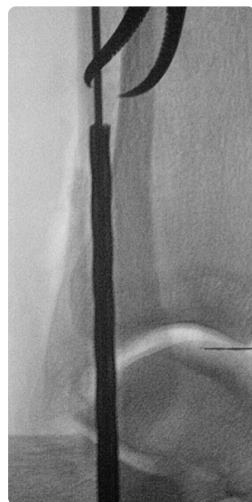
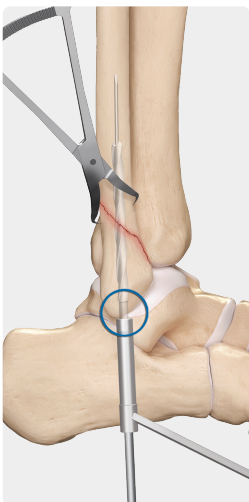
**3**

Drive the 6.2 mm tapered reamer over the guidewire and through the tissue protector until the reamer flutes are fully within the bone.

**Note:** If there is adequate room, burying the flutes at least 3 mm can be advantageous. The reamer shaft features 3 depth indicators that correspond with the back of the tissue protector. The solid black line means flush, the 3 indicates 3 mm countersunk, and the 5 is 5 mm countersunk.

## Proximal Reaming

Nail Size	Corresponding Proximal Reamer
3.0 mm	3.2 mm (available sterile)
3.8 mm	4.0 mm (available sterile)
3.0 mm long nail/3.0 mm XL nail	Long 3.2 mm reamer (in nail kit)



**4**

Drive the 3.2 mm reamer over the guidewire and through the tissue protector, until the depth indicator collar is within the bone. If chatter is not evident, repeat with the 4.0 mm reamer. Reamer placement should be checked in two planes to avoid cortical disruption. Use the corresponding long reamers for 180 mm nails when indicated. Ream on oscillate and recheck the reduction throughout the reaming process. Attach the appropriate nail (diameter and length) to the outrigger.

## Targeting Guide Assembly and Nail Attachment

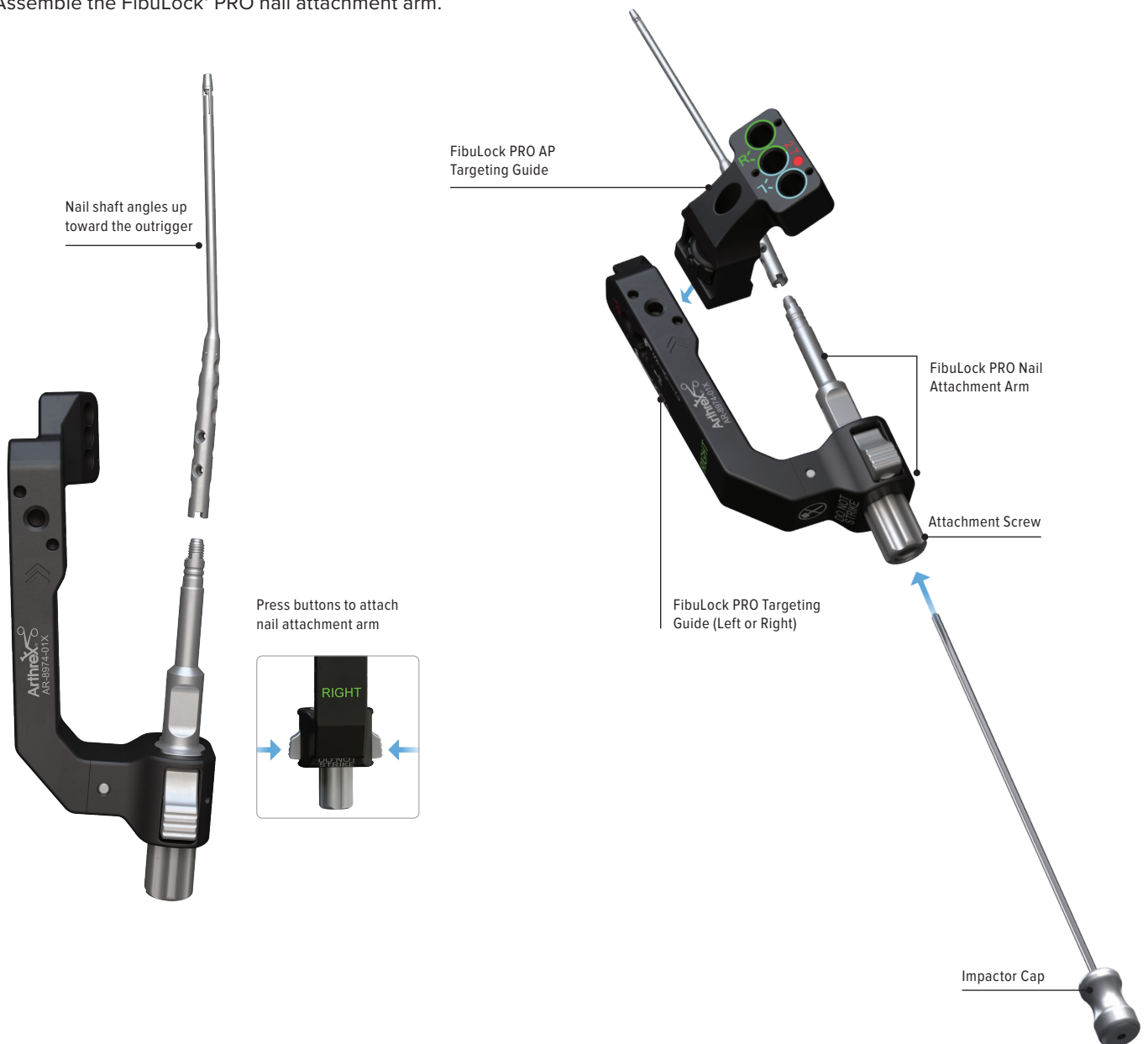


5a



5b

Assemble the FibuLock® PRO nail attachment arm.



## Nail Insertion/Set Syndesmotic Trajectory



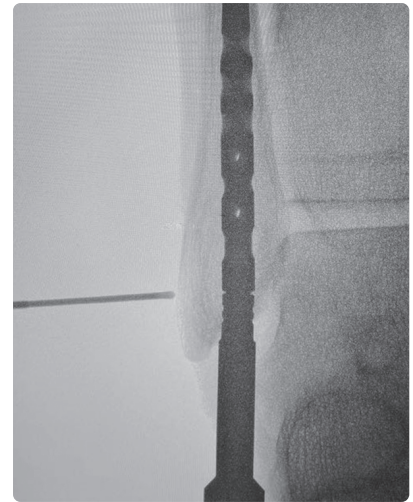
6

Remove the guidewire. Insert the nail with the outrigger directly lateral to the leg. If using a mallet, use gentle strikes against the impactor cap.



7

After inserting the nail and before activating the talons, confirm the position of the nail on fluoroscopy. Place a 1.6 mm K-wire in the outrigger “end hole” to confirm that the distal portion of the nail is flush or countersunk in the fibula.



Assess and confirm syndesmotic trajectory prior to actuating the talons.

## Intraoperative Length, Alignment, and Rotation Adjustments



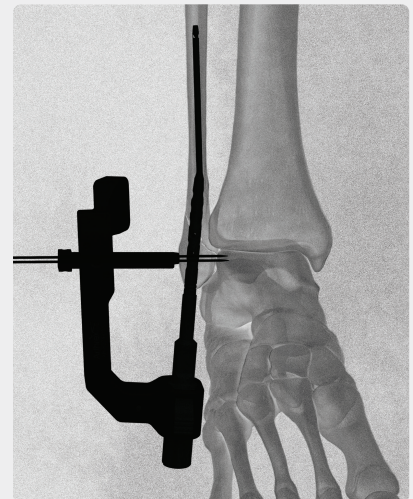
Insert the reversible drill guide sleeve through the targeting arm.



Insert two 2.0 mm K-wires through the reversible drill guide sleeve into the first cortex of the fibula.

Remove any reduction clamps and gently pull traction on the FibuLock PRO targeting guide to address changes in length, alignment, and rotation.

Verify under fluoroscopy that the appropriate length has been achieved.



While holding reduction, use the wire driver to further insert the two 2.0 mm K-wires into the talus/distal tibia. This will provisionally maintain fibular length. Proceed to step 9.

**Note:** Do **not** remove the K-wires until the talons have been actuated and a screw has been placed distally.

## Talon Activation and Distal Screw Insertion



8

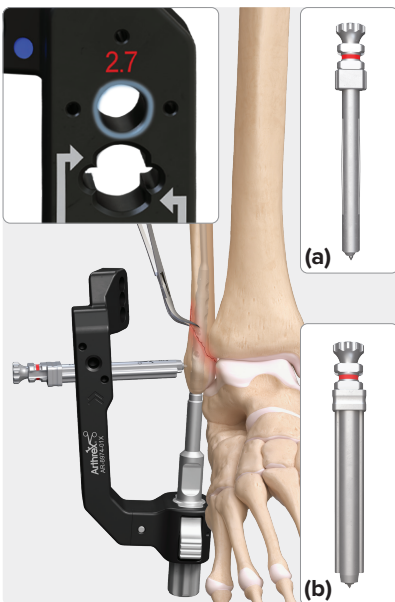
**Activate the Talons:** Confirm the outrigger is positioned lateral and that syndesmotic trajectory is set prior to activation. Remove the impactor cap. Insert the actuation driver. Hold the outrigger while activating to prevent rotation. To deploy the talons, turn the actuation driver until it "clicks." Do not rotate the nail after talon activation. K-wires can be placed through the outrigger to control rotation provisionally.

- > 3.0 mm nail talons expand up to 6 mm
- > 3.8 mm nail talons expand up to 6.8 mm

| **Note:** This step is omitted for 275 mm long nails.

| **Note:** In cases where compression is desired, see compression technique on page 15. Compression must be done prior to inserting any distal screws.

## Insert Lateral-to-Medial 2.7 mm Distal Headless Screws



9a

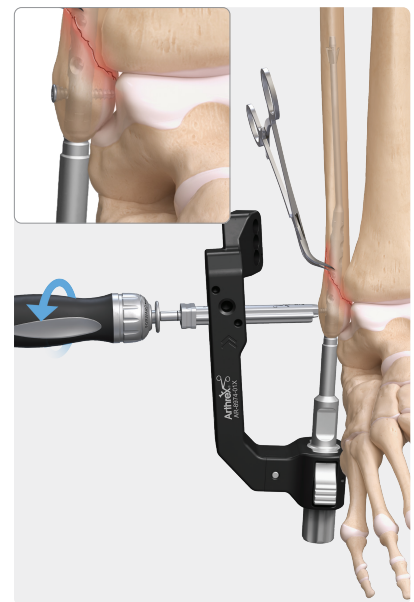
Insert the triple-trocar sleeve into the holes labeled 2.7 mm.

The reversible drill guide sleeve **(b)** is used in the clover hole. The standard triple-trocar sleeve **(a)** can be used in the standard circular outrigger holes.



9b

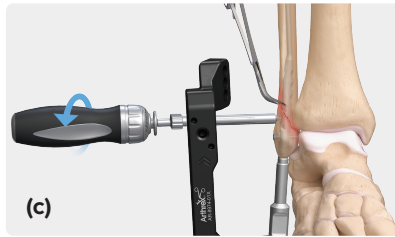
Remove the outer trocar. Drill for the 2.7 mm screw using the 2.0 mm calibrated drill bit. Measurements can be taken off the drill bit or by using the hook-tip depth gauge.



9c

Using a T10 driver, insert the appropriate 2.7 mm headless screw through the drill guide sleeve.

## Insert Lateral-to-Medial 2.7 mm Distal Headless Screws (Cont.)



10

Repeat step 9 in the other lateral-to-medial hole.

## Insert Anterior-to-Posterior 2.7 mm Distal Headless Screws



11a

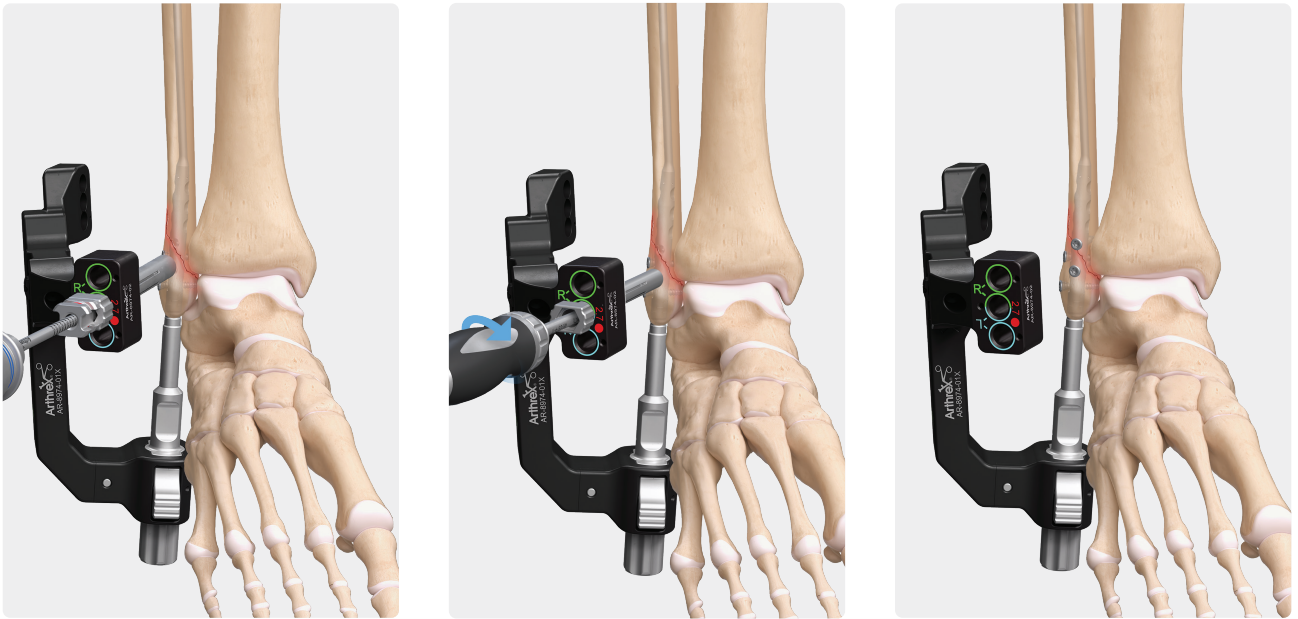
Attach the AP targeting arm.

## Optional Steps: Countersink Drill



To help prevent skiving off the anterior portion of the fibula, the countersink drill may be introduced prior to drilling for the distal 2.7 mm screw. Advance the countersink drill to bone and ream the near cortex. Follow with the 2.0 mm drill bit.

## Insert Anterior-to-Posterior 2.7 mm Distal Headless Screws (Cont.)



**11b**

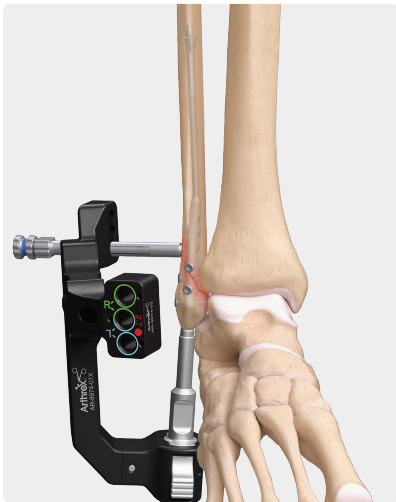
Drill, measure, and insert the 2.7 mm anterior-to-posterior screws. Repeat if desired for the secondary anterior-to-posterior screw hole.

## Syndesmotic Fixation and Additional Proximal Fixation Options

For syndesmotic fixation, TightRope XP or various screw options are available:

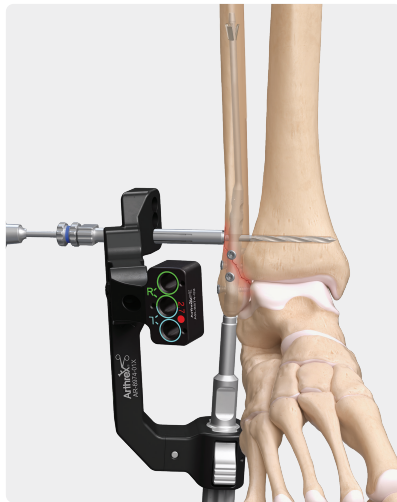
TightRope Implant	3.5 mm Screw	3.8 mm Headless Screw
3.7 mm TightRope drill guide (blue)	2.5 mm Syndesmotic drill guide	
	Drill guide sleeve	
3.7 mm Drill bit	Long 2.5 mm drill bit from FibuLock® set	
TightRope XP implant	3.5 mm Syndesmotic screw	3.8 mm Screw

## TightRope® XP Syndesmotic Fixation



**12a**

Insert the drill guide sleeve and the 3.7 mm TightRope drill guide (blue line only) into the jig at the desired level of syndesmotic fixation.



**12b**

Using the 3.7 mm drill, drill all four cortices.



**13**

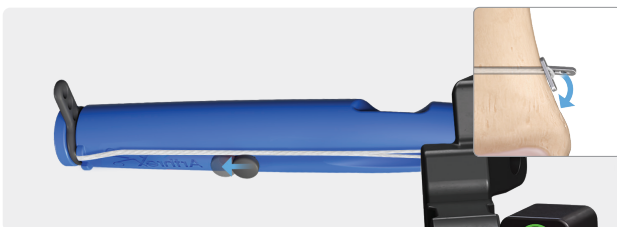
Advance the Syndesmosis TightRope XP implant through the bone tunnel in the fibula and tibia. Check under fluoroscopy to ensure the medial button exits the medial tibial cortex.

**Note:** If desired, the aiming arm can be detached from the base of the insertion arm to facilitate easier insertion and tensioning of the TightRope implant, and to prevent it from obstructing the working area.



**14**

Remove the red safety tab. Deploy the medial button on the Syndesmosis TightRope XP handle by engaging the black button away from the jig.



**15**

Once the position of the medial button has been confirmed, remove the TightRope sutures and lateral button from the blue handle.

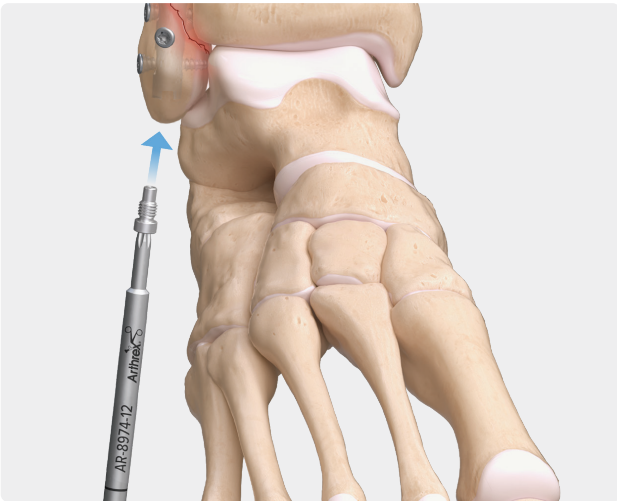
The medial button can be pulled through the jig, or the black portion of the jig can be removed before final tensioning.

## Additional Proximal Fixation 3.8 mm Screw



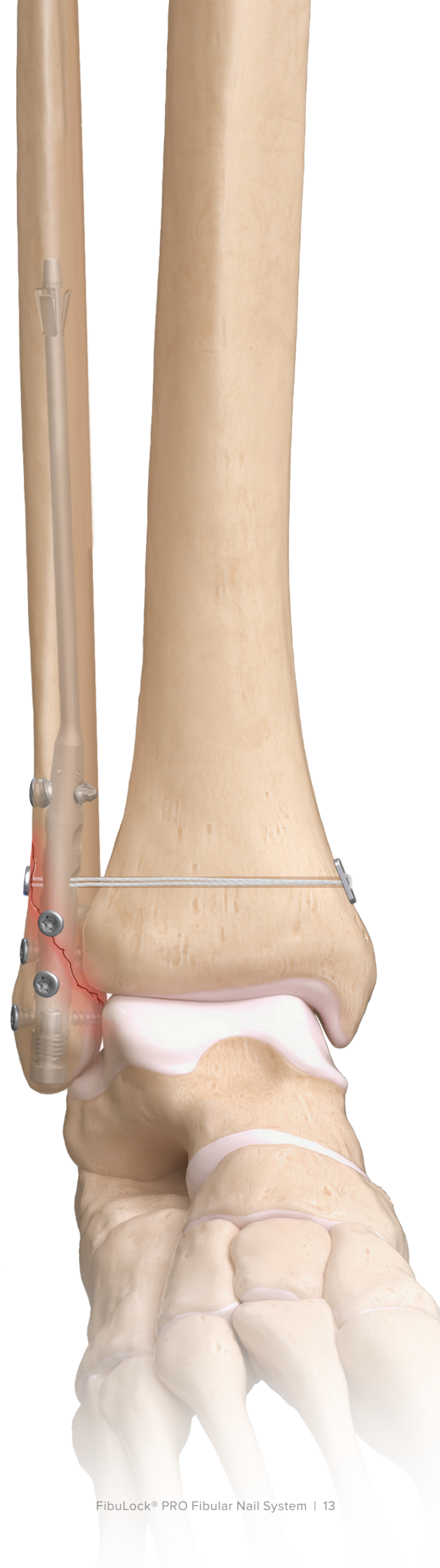
16

Insert the drill guide sleeve and 2.5 mm drill guide. Using the 2.5 mm drill bit, drill for a 3.8 mm screw.



17

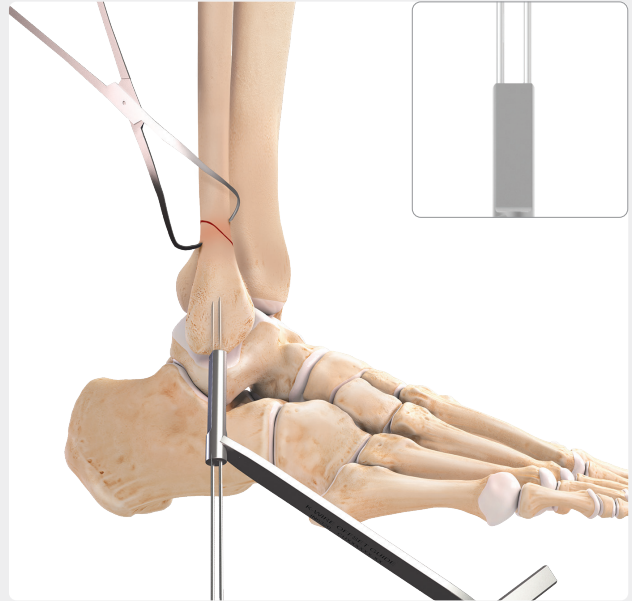
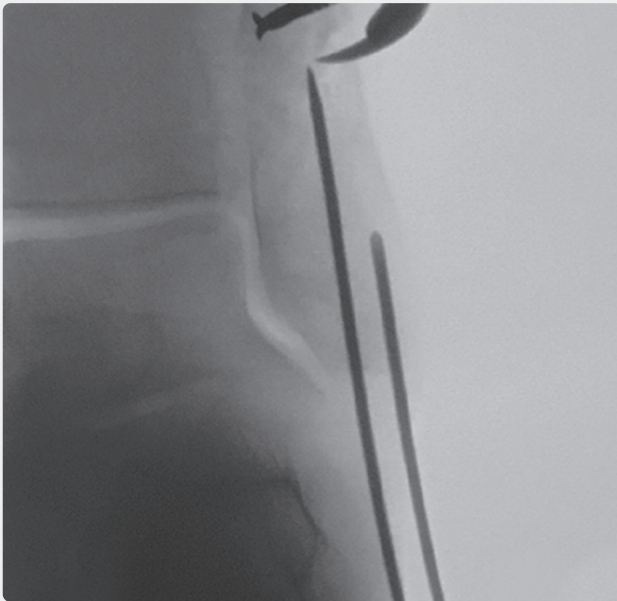
**Insert the End Cap:** Insert a 1.35 mm K-wire into the nail end. Select the appropriate-length end cap (0 mm, 3 mm, or 5 mm) and insert over the K-wire into the nail using the cannulated T15 driver.



18

Final fixation.

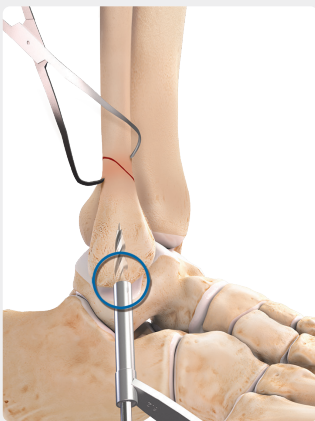
## Optional Steps: Entry Point



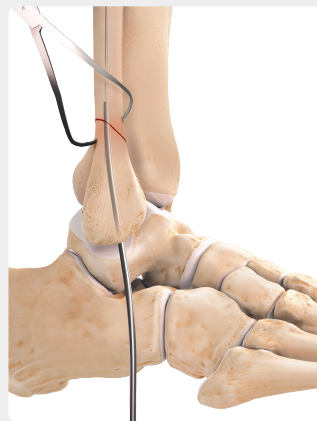
If the guidewire is malpositioned, the guidewire offset guide can be used to drill a new guidewire 2.5 mm or 5 mm from the initial guidewire.

## Optional Steps: Fracture-Finger Technique

If there is difficulty getting the guidewire past the fracture or the guidewire keeps getting caught on the medial cortex, the fracture-finger technique can be used to insert the guidewire proximally in the fibular canal.



Widen the hole in the cortex by driving the 6.2 mm tapered reamer to half the length of the fluted section. Remove the K-wire and reamer.

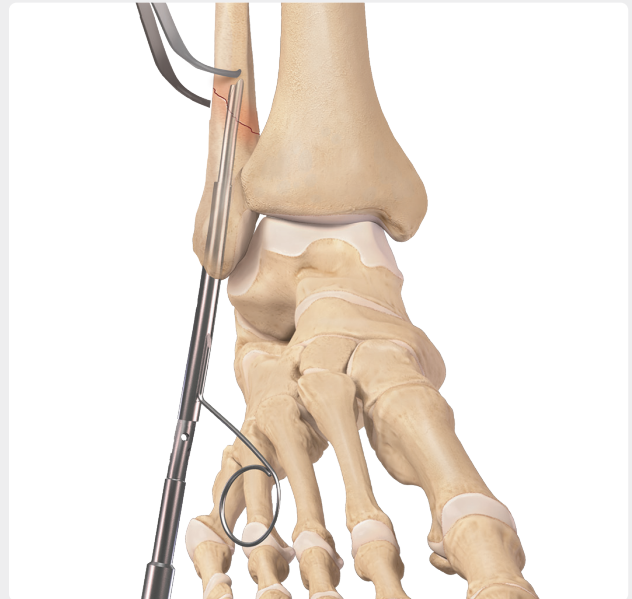


Insert the fracture finger past the fracture if possible. Direct the tip of the finger toward the center of the canal. Insert the spade-tip guidewire on oscillate (gold tip first) through the hole in the finger handle and into the canal.



Remove the fracture finger, leaving the guidewire in place, and ream the distal and proximal portion with the 6.2 mm/3.2 mm reamers.

## Optional Steps: Nail Insertion Guide

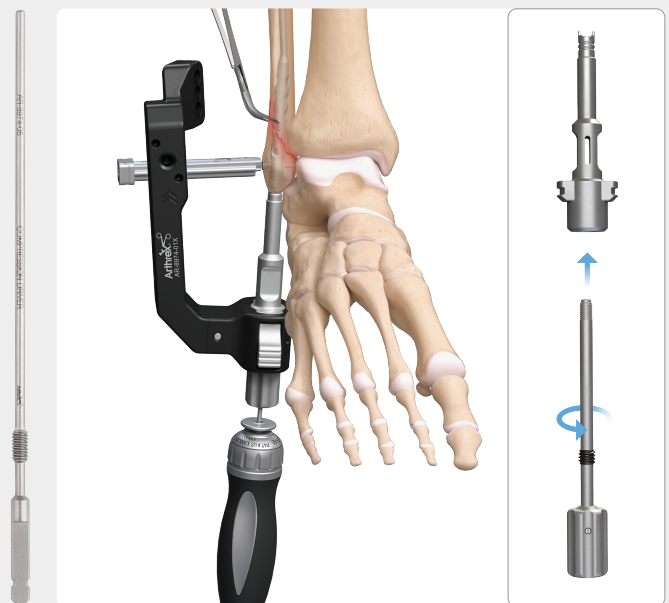


Retain the guidewire. Place the insertion guide over the guidewire and into the distal fragment. Remove the inner cannula (with the round, white handle) and guidewire, retaining the V-channel in the canal.

## Optional Steps: Compression Technique



When compression is desired, it must be achieved prior to inserting any distal screws. Ensure the reversible drill guide sleeve is lined up with the arrows indicating COMP. Insert the drill guide sleeve and 2.0 mm drill guide into the most distal 2.7 mm hole in the outrigger. Drill, measure, and insert the corresponding 2.7 mm headless screw.



Attach the AO connect compression driver onto the screwdriver handle. Ensure the ratcheting feature is set to "off." Thread the compression driver into the back of the outrigger attachment screw and turn clockwise to compress the fracture. Keep the compression driver in place to maintain compression until another distal screw is implanted. Ensure the end cap is used to maintain appropriate compression following this technique. Maximum achievable compression is 2.5 mm.

# Nail and Screw Sizes



2.7 mm Headless screw



3.8 mm Headless screw



3.0 mm, 130 mm



3.0 mm, 180 mm



3.8 mm, 130 mm



3.8 mm, 180 mm



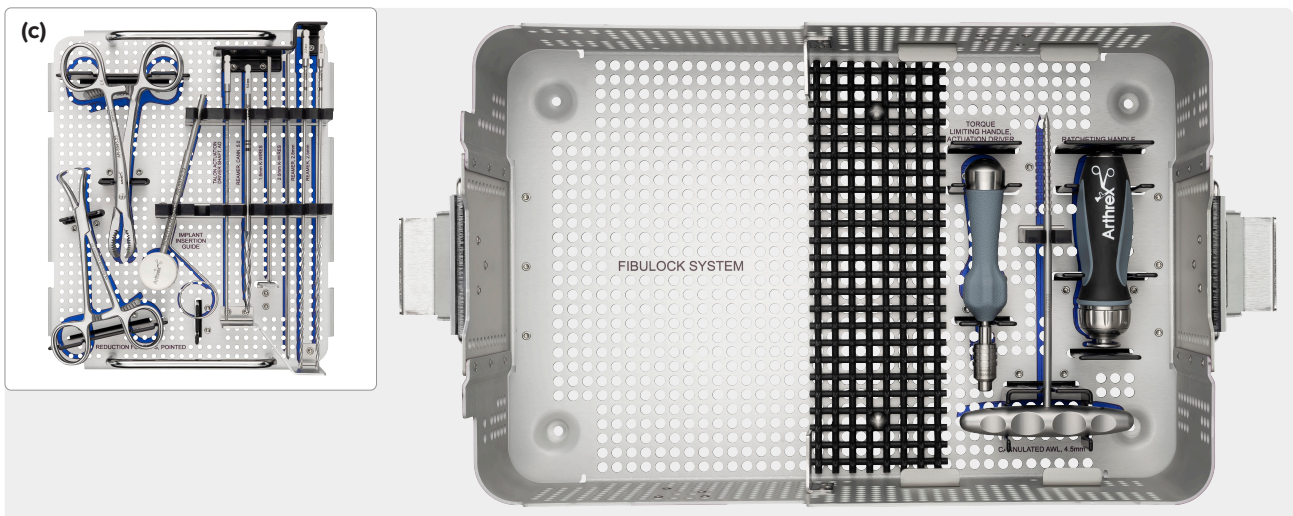
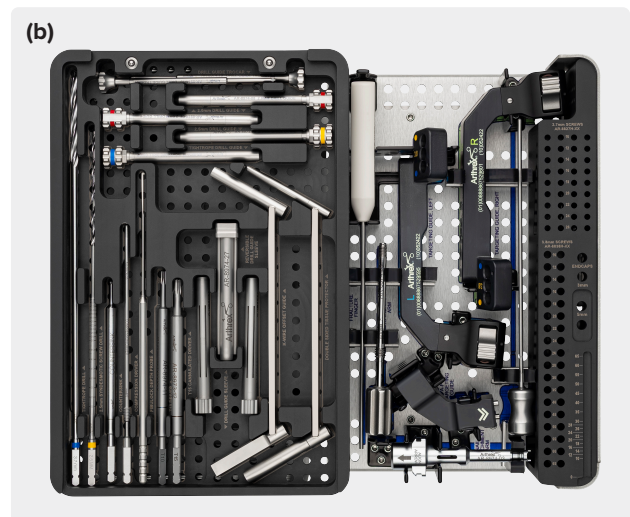
3.0 mm, 275 mm

## FibuLock® PRO Tray System



The FibuLock PRO system was designed to best fit the needs of your facility and surgical practice. The drop-in caddy system was designed to fit into our existing Arthrex ankle fracture trays. Alternatively, the caddy also seats in a FibuLock standalone tray consisting of all the instrumentation and clamps needed for the procedure.

- › **AR-8974FS:** FibuLock PRO Full System (a)
- › **AR-8974S:** FibuLock PRO System (b)
- › **AR-8974TS:** FibuLock PRO Tray System (compatible with FibuLock Fibular Nail) (c)





Guidewires,  
2.0 mm × 200 mm

TightRope®  
Drill, 3.7 mm

FibuLock PRO  
Drill, calibrated,  
2.5 mm

FibuLock PRO  
Drill, calibrated,  
2.0 mm

FibuLock PRO  
Drill Guide  
Trocar

FibuLock PRO  
Drill Guide,  
2.0 mm

FibuLock PRO  
Drill Guide,  
2.5 mm

FibuLock PRO  
Drill Guide,  
3.7 mm

FibuLock  
PRO Nail  
Attachment  
Arm (2 pcs.)

FibuLock PRO  
Drill Guide  
Sleeve

FibuLock PRO  
Targeting Guide



FibuLock® PRO  
AP Targeting Guide



Fracture  
Finger

FibuLock PRO  
Fracture  
Reduction  
Sleeve



FibuLock PRO  
Compression  
Driver Shaft



FibuLock PRO  
Countersink



FibuLock PRO  
Hook-Tip  
Depth Gauge



FibuLock PRO  
Impact Cap



FibuLock PRO  
T15 End  
Cap Driver,  
cannulated



FibuLock  
PRO Implant  
Insertion Guide



FibuLock PRO  
T10 Driver,  
self-retaining



Tissue  
Protector



K-Wire  
Offset Guide

## Ordering Information

### FibuLock® PRO Instruments

Targeting guide, left	AR-8974-01L
Targeting guide, right	AR-8974-01R
AP targeting guide	AR-8974-02
Nail attachment arm	AR-8974-03
Impact cap	AR-8974-04
Compression driver shaft, AO	AR-8974-05
Tissue protector, 1.6 mm K-wire/6.2 mm reamer	AR-8974-06
Drill guide sleeve	AR-8974-07
Drill guide, 2.0 mm	AR-8974-08
Drill guide, 2.5 mm	AR-8974-09
Drill guide, 3.7 mm, TightRope® implant	AR-8974-10
T10 driver, self-retaining	AR-8974-11
T15 end cap driver, cannulated	AR-8974-12
Fracture finger (guidewire inserter)	AR-8974-13
Implant insertion guide	AR-8974-14
K-wire offset guide, 1.6 mm	AR-8974-15
Drill guide trocar	AR-8974-19
Countersink	AR-8974-21
Hook-tip depth gauge	AR-8974-22
Drill, calibrated, 2.5 mm	AR-8974-25
Fracture reduction sleeve	AR-8974-27
Drill, 3.7 mm, TightRope implant	AR-8974-37

### Implants

FibuLock PRO nail, 3.0 × 130 mm, left	AR-8974L-30-130
FibuLock PRO nail, 3.0 × 180 mm, left	AR-8974L-30-180
FibuLock PRO nail, 3.8 × 130 mm, left	AR-8974R-30-130
FibuLock PRO nail, 3.8 × 180 mm, left	AR-8974R-30-180
FibuLock PRO nail, 3.0 × 130 mm, right	AR-8974L-38-130
FibuLock PRO nail, 3.0 × 180 mm, right	AR-8974L-38-180
FibuLock PRO nail, 3.8 × 130 mm, right	AR-8974R-38-130
FibuLock PRO nail, 3.8 × 180 mm, right	AR-8974R-38-180
FibuLock PRO nail kit, 3.0 × 275 mm, left	AR-8974L-30-275
FibuLock PRO nail kit, 3.0 × 275 mm, right	AR-8974R-30-275

### Headless FibuLock Screws, SS

2.7 mm × 10-26 mm (2 mm increments)	AR-8827H-10– AR-8827H-26
2.7 mm × 28-32 mm (2 mm increments), sterile	AR-8827-28-32*
3.8 mm × 10-30 mm (2 mm increments), 35-65 mm (5 mm increments)	AR-8838H-10– AR-8838H-65

**Buttress Plates**

FibuLock PRO compatible TightRope XP buttress plate, 2H, SS*	AR-8974-2P
FibuLock PRO compatible TightRope XP buttress plate, 3H, SS*	AR-8974-3P

**End Caps**

FibuLock PRO end cap, 3 mm	AR-8974EC-3
FibuLock PRO end cap, 5 mm	AR-8974EC-5

**Optional Disposables**

FibuLock PRO guidewire, 1.6 mm × 12 in, sterile, 2-pack	AR-8974-16S
FibuLock PRO flexible guidewire, spade tip, 22 in	AR-8974-29S
FibuLock PRO reamer, cannulated, 3.2 mm, sterile	AR-8974-32LS
Reamer, cannulated, 3.2 mm × 275 mm, sterile (comes in kit)	AR-8974-32XLS
Reamer, cannulated, 4.0 mm × 180 mm, sterile	AR-8974-40LS
Reamer, cannulated, 4.0 mm × 130 mm, sterile	AR-8974-40S
Syndesmosis TightRope XP implant system, SS	AR-8925SS
FibuLock PRO guidewire, 2.0 mm × 200 mm, 2-pack	AR-8974-27K
FibuLock Pro nail size template	AR-8973-99S

**FibuLock® PRO Removal System (AR-8974RK)**

Removal screw
Strike plate
Deactivator

**FibuLock PRO Implant System (AR-8974DS)**

Actuation driver
Proximal reamer, cannulated, 3.2 mm
Distal reamer, cannulated, 6.2 mm
Drill, 2.0 mm, calibrated
Guidewire, spade tip, 1.1 mm × 22 in
Guidewire, coated, 1.6 mm × 12 in, qty. 2
End cap

**System and Tray Ordering**

FibuLock PRO full system and tray	AR-8974FS
FibuLock PRO instrument system	AR-8974S
FibuLock PRO tray system	AR-8974TS
FibuLock PRO caddy w/ lid	AR-8974FC
FibuLock PRO caddy lid	AR-8974FCL
FibuLock PRO tray w/ lid	AR-8974T
FibuLock PRO tray lid	AR-8974TL

\*Available sterile (add S to end of product code)

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This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience, and should conduct a thorough review of pertinent medical literature and the product's directions for use. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level or outcomes.

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