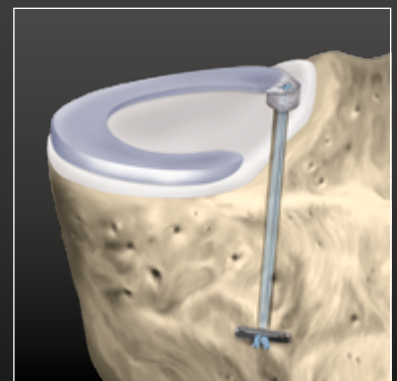
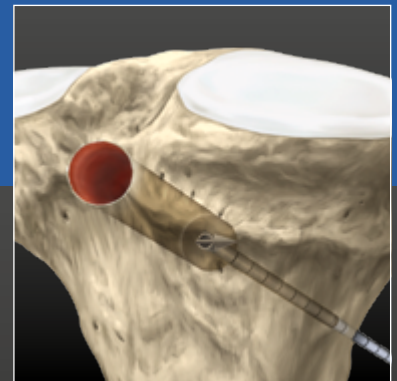
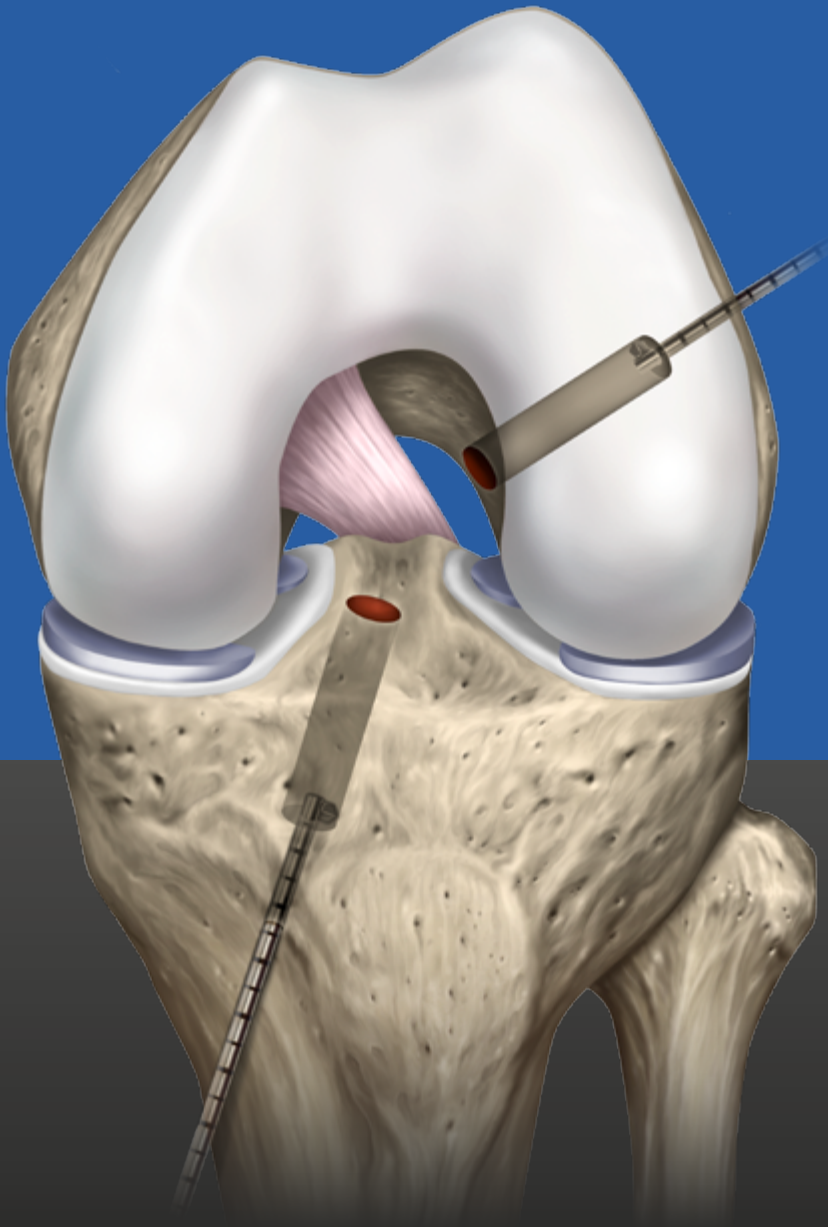


# FlipCutter<sup>®</sup> RetroConstruction<sup>™</sup>

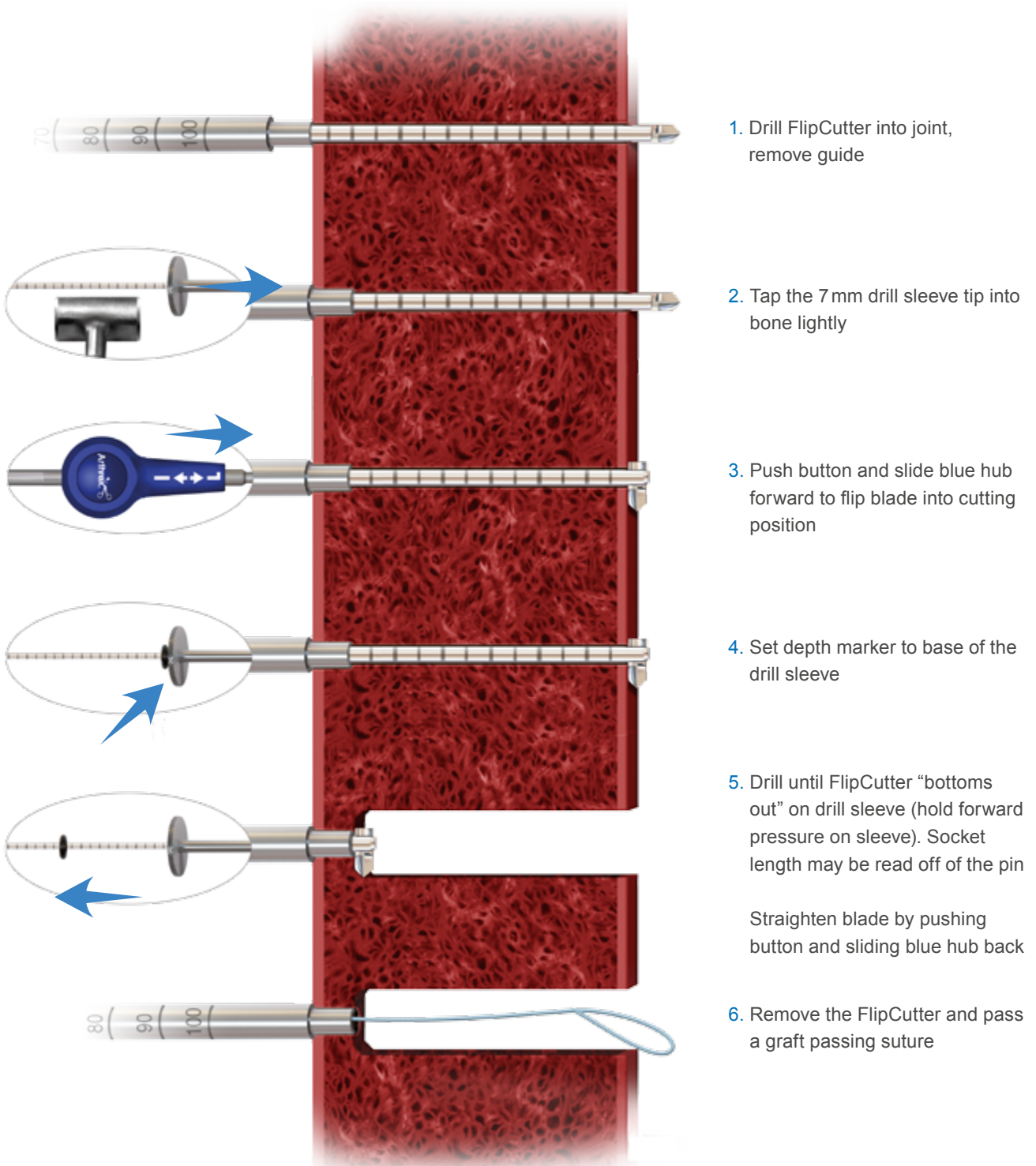
Minimally Invasive Socket Creation



# FlipCutter®

## Functionality

The innovative FlipCutter is an all-in-one guide pin and reamer that allows minimally invasive socket creation from the inside out. The FlipCutter allows unconstrained freedom of socket positioning and is ideal for difficult-to-reach applications such as tibial socket creation for PCL reconstruction, anatomic femoral socket creation for ACL reconstruction, and socket creation for meniscal allograft transplantation or meniscal root avulsion repair. Retrograde sockets may be accurately placed in diameters ranging from 5- 13mm using the RetroConstruction drill guide system.












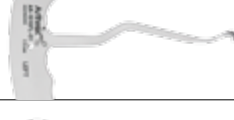

# RetroConstruction™ Drill Guide Set

## System Overview





The RetroConstruction drill guide set gives surgeons several different marking hook options for multiple indications in one small, easy to manage tray. The adjustable C-ring allows multiple drilling angles without sacrificing accuracy. The stepped drill sleeve also serves as a cortex-protecting depth stop for retrograde drilling with the FlipCutter and as a cannula for insertion of graft-passing sutures.



### Aiming Hooks

	Product Description		Product Description
	Anatomic femoral ACL (left and right) AR-1510F-01		Femoral PCL marking hook AR-1510PF
	Femoral ACL marking hook AR-1510F		Anatomic contour PCL tibial guide* (left and right) AR-1510PTL-01 AR-1510PTR-01
	9 mm footprint referencing* (left and right) AR-1510FL AR-1510FR		Tibial PCL marking hook AR-1510PT
	7 mm posterior referencing* (left and right) AR-1510FPL AR-1510FPR		Multi-use marking hook AR-1510M
	Tibial ACL marking hook AR-1510T		Femoral ACL marking hook, AM portal (left and right) AR-1510FL-01 AR-1510FR-01
			Femoral ACL offset marking hook, AM portal SP-1510F-02

### Drill Sleeve

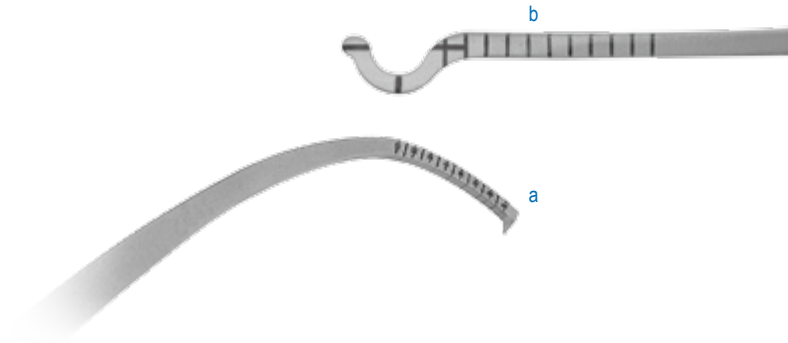
	Product Description		Product Description
	Drill sleeve for standard guide pin, 2.4 mm AR-1778R-24		Drill sleeve for FlipCutter® stepped, 3.5 mm AR-1204FDS
	Drill sleeve for RetroDrill® 3 mm AR-1778R-30		Obturator AR-1204F-OB and 2.4 mm insert for stepped drill sleeve AR-1204F-24I

\*Not included in basic set

# All-Inside ACL Reconstruction

## Femoral ACL Drilling

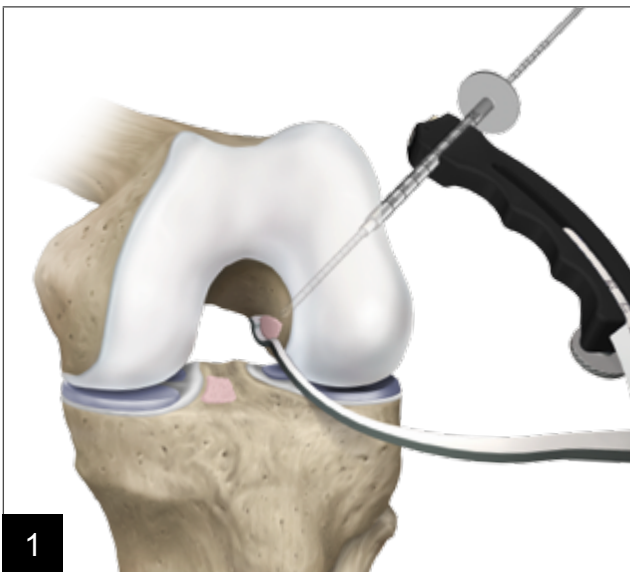
Anatomic femoral socket placement is paramount to successful ACL reconstruction. Using the FlipCutter with the femoral ACL marking hooks allows surgeons the unique opportunity to drill the femoral socket completely independent of the tibial tunnel or medial portal, without the additional morbidity of a two-incision technique.



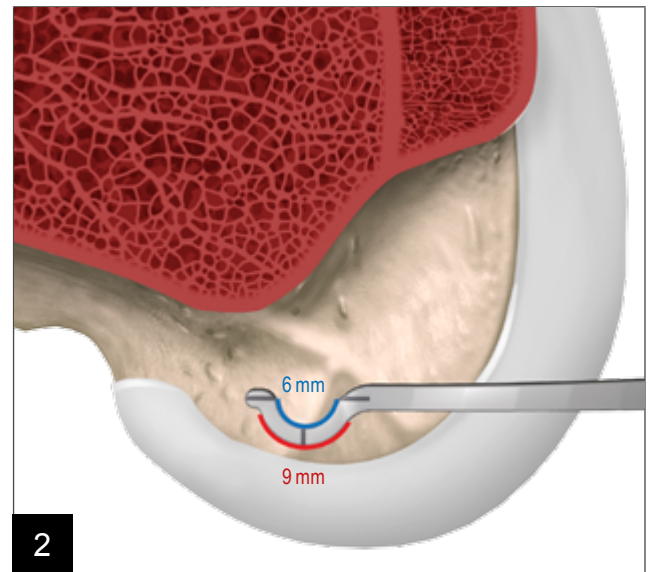
Surgeons have their choice of point-to-point marking hooks (a), or “footprint” marking hooks (b) which allow visualization of the round socket before drilling. The stepped drill sleeve ensures preservation of 7 mm of cortex, ensuring maximum socket depth without risk of cortical “blow-out”.

### ACL Femoral “Footprint” Recreation using Footprint Guides for Femoral Guide Pin Targeting

In cases where the native ACL stump is visible, the footprint guides facilitate recreating native femoral positioning by replicating tunnel shape and size before drilling. The low profile tip of the guide and the ability to place it through the lateral portal allow the best possible visualization of the socket edges in relation to the cartilage border and back wall.



The guide is placed through the lateral portal and over the center of the ACL footprint.



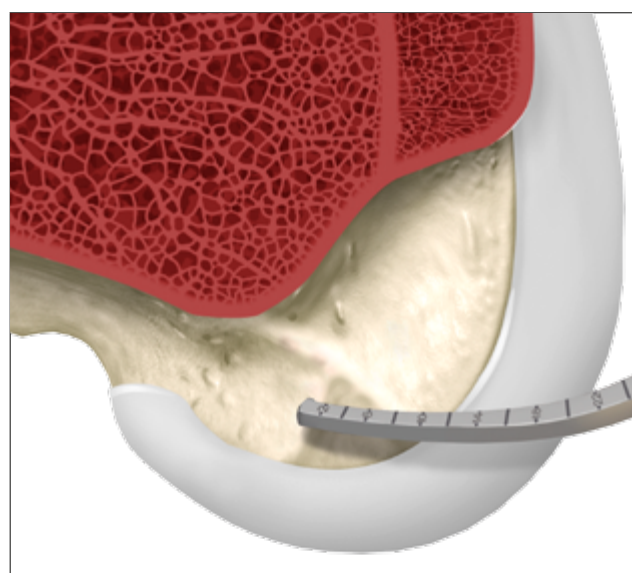
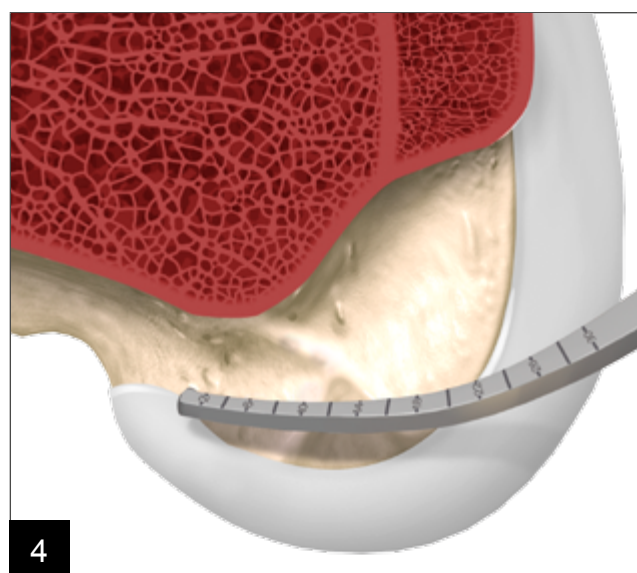
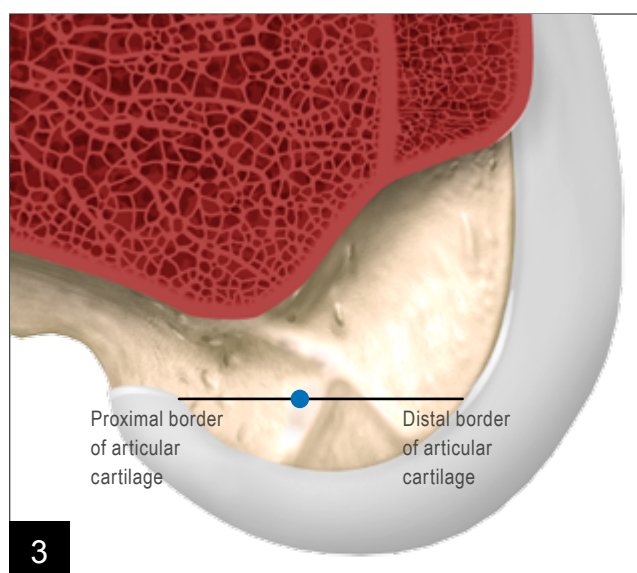
The “bull’s-eye”-style marking hook tip replicates the perimeter of the socket. The outer diameter of the marking hook is 9 mm, the inner diameter is 6 mm. The FlipCutter will exit through the center of the marking hook tip, in line with the “crosshairs”.

# All-Inside ACL Reconstruction

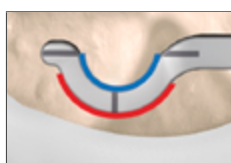
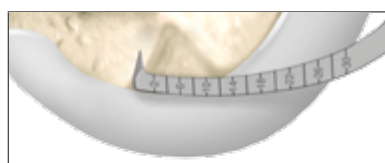
## Anatomic Direct Measurement Technique

### Direct Measurement Technique for Femoral Guide Pin Targeting

In cases where the ACL stump is not visible, the direct measurement technique may be used with the assistance of the graduated marking hook. Anatomic studies have shown that the average center of the ACL footprint, or the bifurcate ridge, is located approximately half (43%) of the distance from the proximal cartilage border to the distal cartilage border (3).<sup>1</sup>



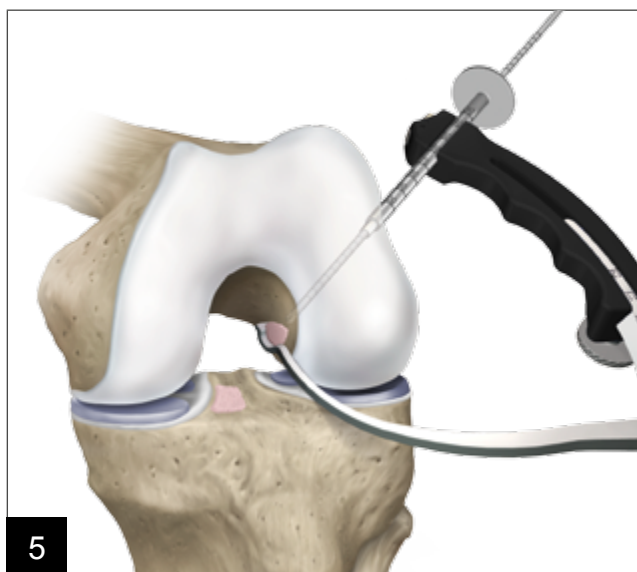
With the knee flexed to 90°, the notch can be measured using the graduated FlipCutter marking hook. The guide should be placed through the lateral portal and held parallel to the long axis of the femur. The tip of the guide is placed at the proximal cartilage border. The measurement is read at the border of the distal cartilage (in this example, 22 mm). The midpoint can be marked with the sharp tip of the marking hook, or the marking hook may be kept in that position to guide the FlipCutter.



The posterior edge of the ACL footprint has been shown to be approximately 3-4 mm anterior to the posterior cartilage border. This distance can be estimated by using the 6 mm tip of the guide, or the 3 mm semicircle of the footprint marking hook.

# All-Inside ACL Reconstruction

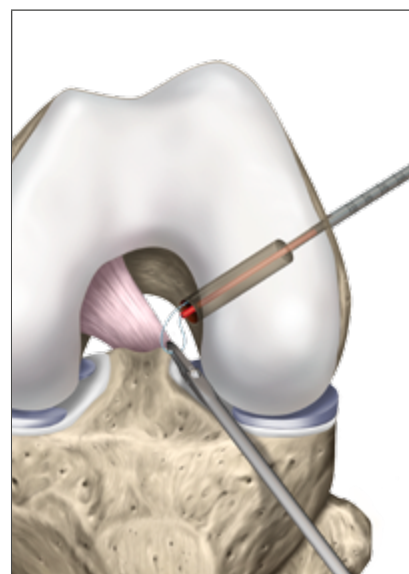
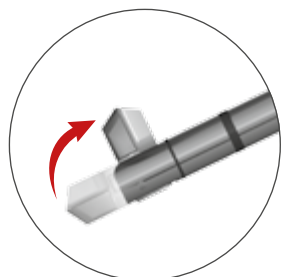
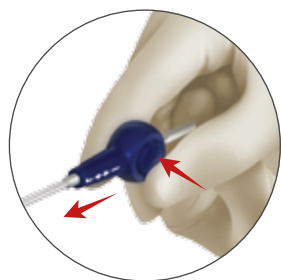
## Femoral ACL Drilling



The FlipCutter II is drilled into the joint. The guide is removed and the stepped drill sleeve is tapped into the cortical bone. Advance the rubber ring on the FlipCutter to the end of the sleeve before malleting, so the 7 mm advancement can be seen visually.

*Note: Use light taps with the mallet to advance the sleeve. The cortex can be felt when seated.*

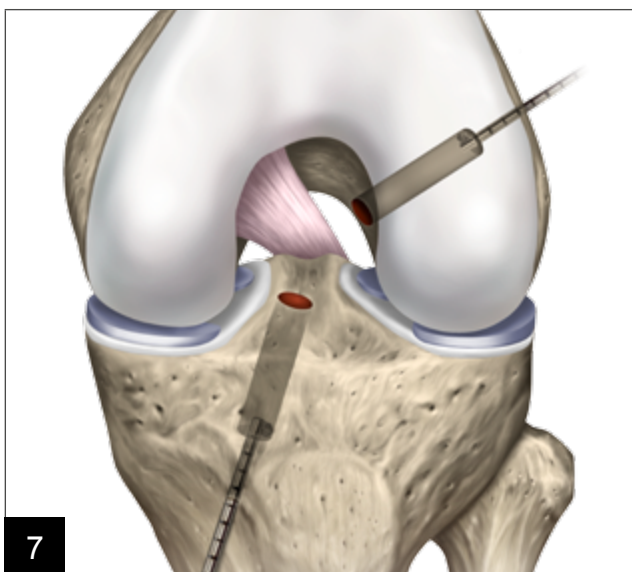
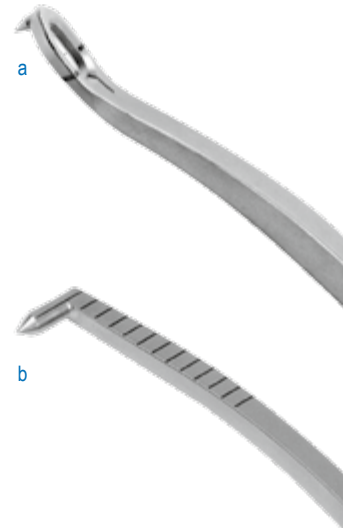
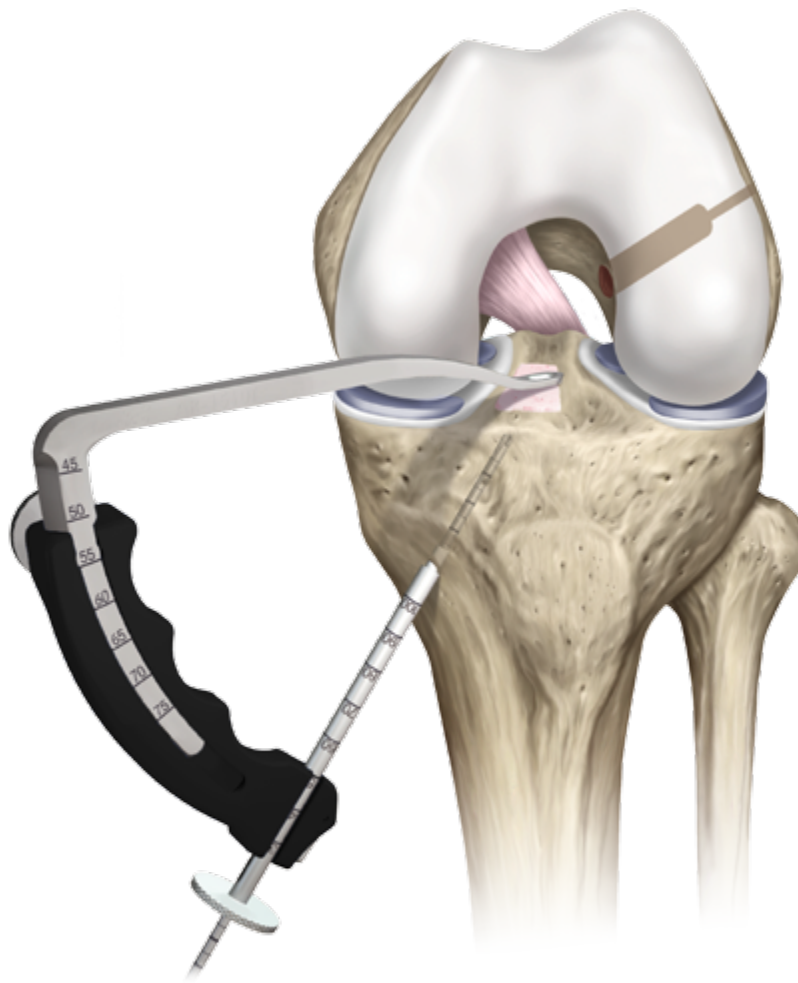
For small FlipCutters and in hard bone, the 3.5 mm predrill pin for FlipCutter (or a standard 2.4 mm guide pin) may be used to enter the joint and is then replaced with a FlipCutter for reaming.



Flip the cutting tip into reaming position by depressing the button and sliding the blue hub forward. While holding the drill sleeve securely onto bone, start reaming (forward) with the FlipCutter tip away from the bone, then slowly pull back on the FlipCutter to begin cutting. A high RPM should be used with a slow pulling motion for best results. Once the drill has reached the desired depth as shown on the rubber ring, or when the blade of the FlipCutter has bottomed out on the drill sleeve, stop drilling and move the FlipCutter tip back into the straight position by pushing the button and pulling the blue hub backwards. The FlipCutter can now be removed from the sleeve and a FiberStick is passed through the sleeve and into the joint for implant and graft passing.

# All-Inside ACL Reconstruction

## Tibial ACL Drilling

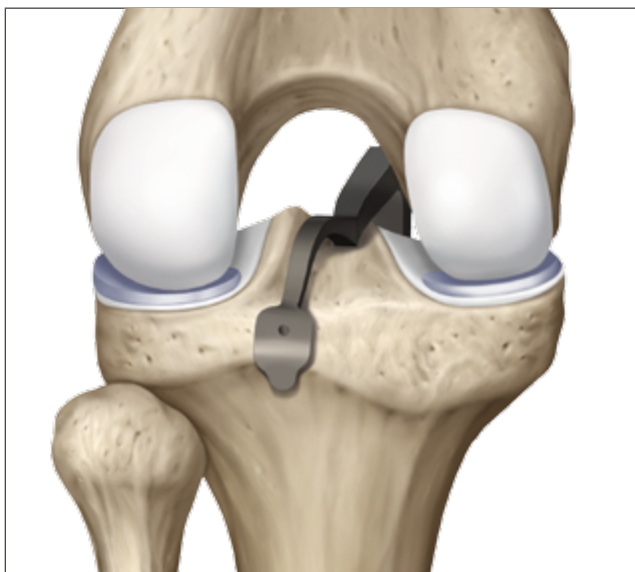


Using the FlipCutter for the tibia facilitates accurate pin placement due to the stiff drill guide and 3.5mm FlipCutter pin and allows preservation of the tibial cortex for All-Inside ACL reconstruction techniques.<sup>2</sup>

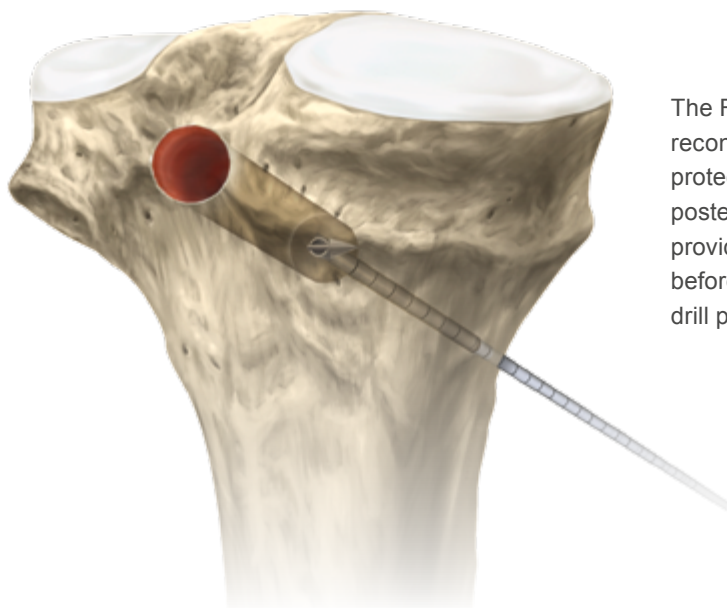
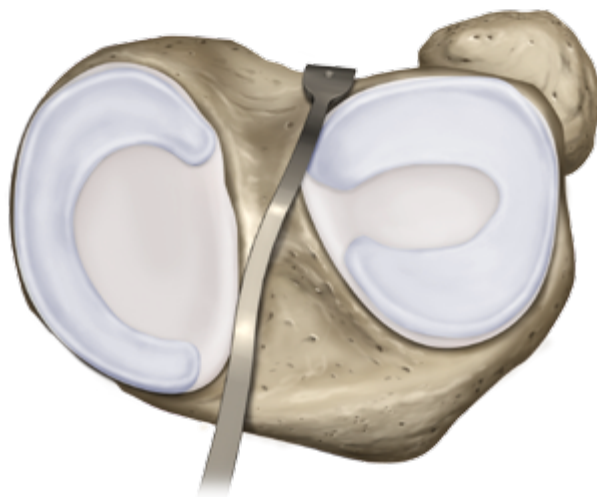
The tibial marking hook (a) resembles an 8mm wide and 10mm long tunnel aperture to allow visualization of the tunnel before drilling. A “point-to-point” marking hook (b) is also available.

# PCL Reconstruction

## Anatomic Contour PCL Tibial Guide



These transtibial PCL guides developed in conjunction with the Mayo Clinic greatly simplify tibial pin positioning by referencing anatomic constants. The “over-the-back” hook grasps the distal edge of the posterior facet, guiding the pin into the proper position in the sagittal plane. The wide convex tip helps position the guide properly in the coronal plane, between the mamillary bodies. The unique left- and right-specific curves facilitate positioning around the ACL for isolated PCL reconstructions – which can often lead to medialized placement of the tunnel with straight guides. These curves also guide the surgeon with proper positioning of the guide in the coronal plane adjacent to the anteromedial tibial crest for proper pin positioning.

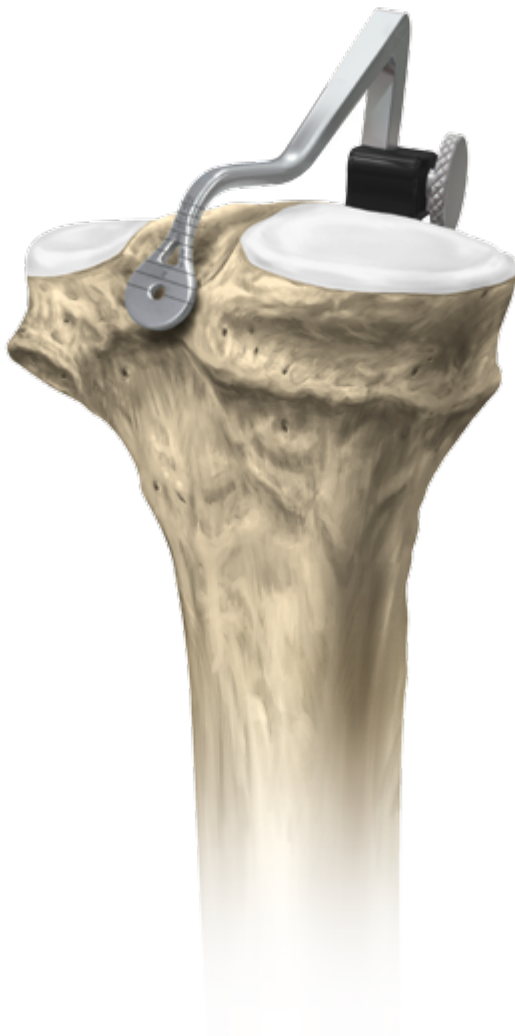


The FlipCutter has unique advantages for PCL reconstruction. Retrograde drilling of tibial tunnels/sockets protects popliteal vessels due to drilling away from the posterior structures. The unique tibial PCL marking hooks provide a broad footprint to help visualize tunnel placement before drilling and may protect the popliteal area during drill pin advancement.

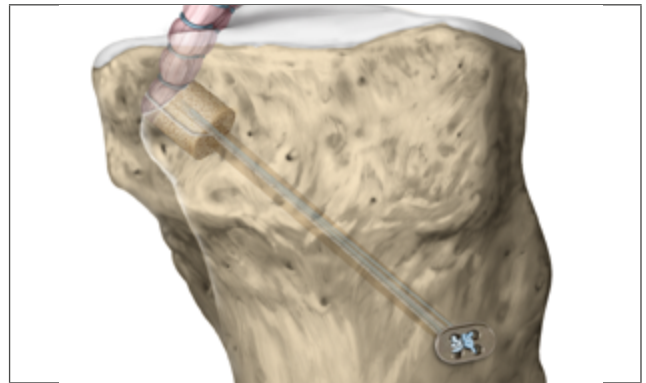


# The Arthroscopic Inlay Technique for PCL

## PCL Drilling

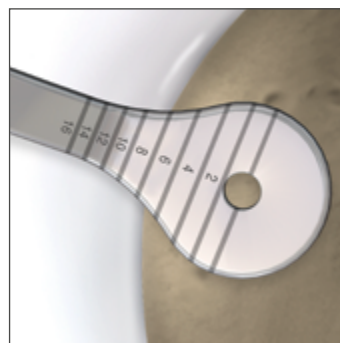
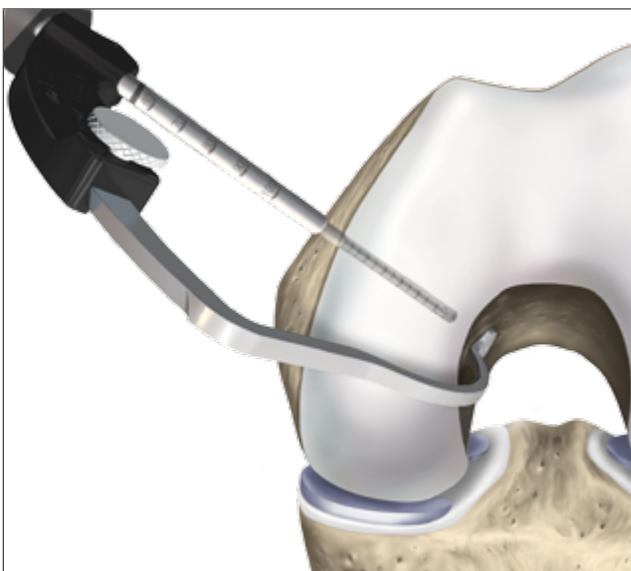


PCL inlay reconstruction techniques have been shown to reduce the “killer turn” associated with transtibial constructs and may lead to less graft abrasion and better approximation of native biomechanics. The arthroscopic inlay PCL provides the benefits of both open inlay and arthroscopic transtibial techniques by combining the biomechanics of the open tibial inlay and the ease of visualization and decreased morbidity of an arthroscopic approach.



The PCL reconstruction guide may be used for the inlay procedure and allows placement of the socket within the posterior facet for anatomic inlay positioning. By using the FlipCutter and the PCL TightRope, an inlay construct may be achieved in a safer, more minimally invasive way.

## Femoral PCL

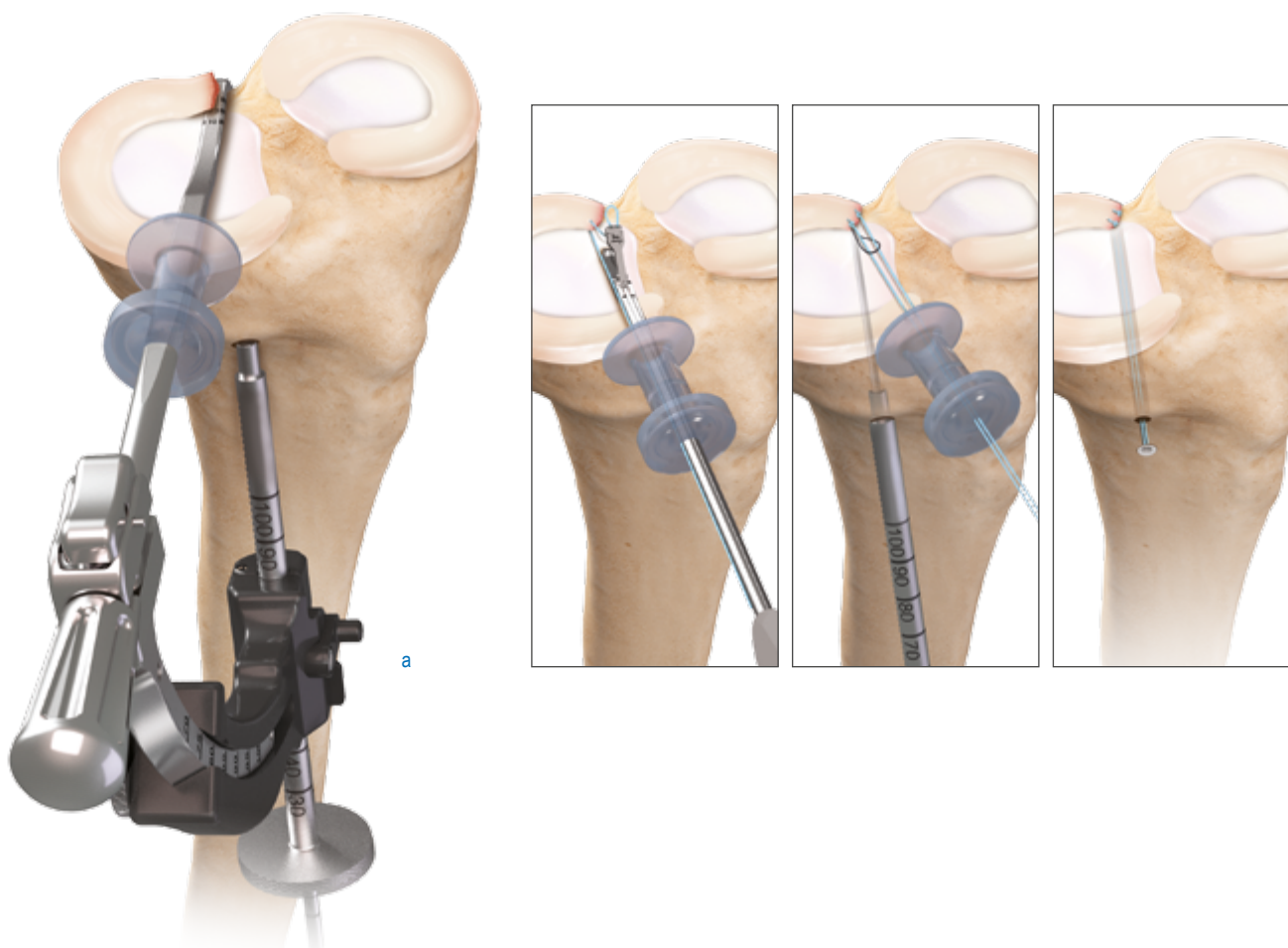


The femoral PCL marking hook allows for variable angle drilling to reduce the “killer corner” angle of the femoral socket. The 8 mm “footprint” marking hook also allows visualization of the socket before drilling.

# Meniscal Root Repair or Transplantation

## Tibial Drilling

Indications that are too difficult to reach with standard drilling approaches can easily be treated using the low profile FlipCutter, without creating unnecessary full bone tunnels. Meniscal root repair and transplantation are ideal for FlipCutter usage.



The multi-use marking hook tip is placed at the attachment of the posterior horn (a). A 6 mm or 7 mm FlipCutter is used to create a socket 10 mm in depth (b). A straight Micro SutureLasso is placed through the tibia and pierces the meniscus. The nitinol wire can be used to pass #2 FiberWire (c). Repeat the steps for a mattress stitch and finalize fixation by tying sutures over a suture button (d).

## References

1. Piefer JW, et al.

Anterior Cruciate Ligament Femoral Footprint Anatomy: Systematic Review of the 21<sup>st</sup> Century Literature, *Arthroscopy*, 2012; 28(6): 872-881

2. Lubowitz J, Konicek J

A 3.5 mm Diameter Anterior Cruciate Ligament Tibial Retrograde Socket Drilling Pin is More Accurate than a 2.4 mm Diameter Pin. *Arthroscopy* 2011(5); 26:666-671.

# Ordering Information

Product Description	Item Number
<b>FlipCutters®, Single Use and Sterile</b>	
FlipCutter® II, 6- 13 mm Diameter: 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 13 mm	AR-1204AF-60 to AR-1204AF-130
Short FlipCutter® II, 5- 13 mm Diameter: 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 13 mm	AR-1204AS-50 to AR-1204AS-130
<b>RetroConstruction™ Drill Guide Set (AR-1510S) Includes</b>	
RetroConstruction™ drill guide handle, side release Ratcheting drill sleeve for FlipCutter®, stepped, 3.5 mm Ratcheting drill sleeve, 2.4 mm Ratcheting drill sleeve, 3.0 mm	AR-1510HR AR-1510FS-7 AR-1510FD-24 AR-1510FD-30
RetroConstruction™ drill guide handle Drill sleeve for RetroConstruction™ drill guide, 3.5 mm Drill sleeve for RetroConstruction™ drill guide, 2.4 mm Drill sleeve for RetroConstruction™ drill guide, stepped, 7 mm long tip	AR-1510H AR-1510D AR-1778R-24 AR-1204FDS
Obturator, 3.5 mm Insert for stepped drill sleeve, 2.4 mm Drill sleeve for RetroConstruction™ drill guide, 3 mm	AR-1204F-OB AR-1204F-24I AR-1778R-30
Tibial ACL marking hook for RetroConstruction™ drill guide Femoral ACL marking hook for RetroConstruction™ drill guide Femoral ACL marking hook for RetroConstruction™ drill guide, curved	AR-1510T AR-1510F AR-1510F-01
Femoral ACL RetroConstruction™ guide, AM portal, left Femoral ACL RetroConstruction™ guide, AM portal, right	AR-1510FL-01 AR-1510FR-01
Tibial PCL marking hook for RetroConstruction™ drill guide Femoral PCL marking hook for RetroConstruction™ drill guide	AR-1510PT AR-1510PF
Multi-use marking hook for RetroConstruction™ drill guide RetroConstruction™ drill guide system case Meniscal root marking hook Locking guide for meniscal root marking hook	AR-1510M AR-1510C AR-1610MR AR-1610LG
<b>Optional</b>	
CoolCut™ CaliBlator Pin tip tibial ACL drill guide RetroConstruction™ marking hook for tibial ACLR, 52.5° (for RetroDrill®)	AR-9802C AR-1510GT AR-1510R
Footprint femoral ACL guide, left Footprint femoral ACL guide, right Footprint femoral ACL guide with 7 mm offset, left Footprint femoral ACL guide with 7 mm offset, right	AR-1510FL AR-1510FR AR-1510FPL AR-1510FPR
Anatomic contour PCL guide, tibial, left Anatomic contour PCL guide, tibial, right Curved tibial PCL hook, left Curved tibial PCL hook, right	AR-1510PTL AR-1510PTR AR-1510PTL-01 AR-1510PTR-01
Drill tip guide pin, 3.5 mm (predrill for FlipCutter®) Anatomic ACL reconstruction, contoured curette Femoral ACL hook for outside-in technique	AR-1250F SP-8660-TL SP-1510F-02
<b>FlipCutters®, Single Use and Sterile</b>	
FiberStick™, #2 FiberWire®, 13 cm, one end stiffened FiberSnare®, #2 FiberWire®, 66 cm, stiffened with closed loop	AR-7209 AR-7209SN

View U.S. Patent information at  
[www.arthrex.com/corporate/virtual-patent-marking](http://www.arthrex.com/corporate/virtual-patent-marking)