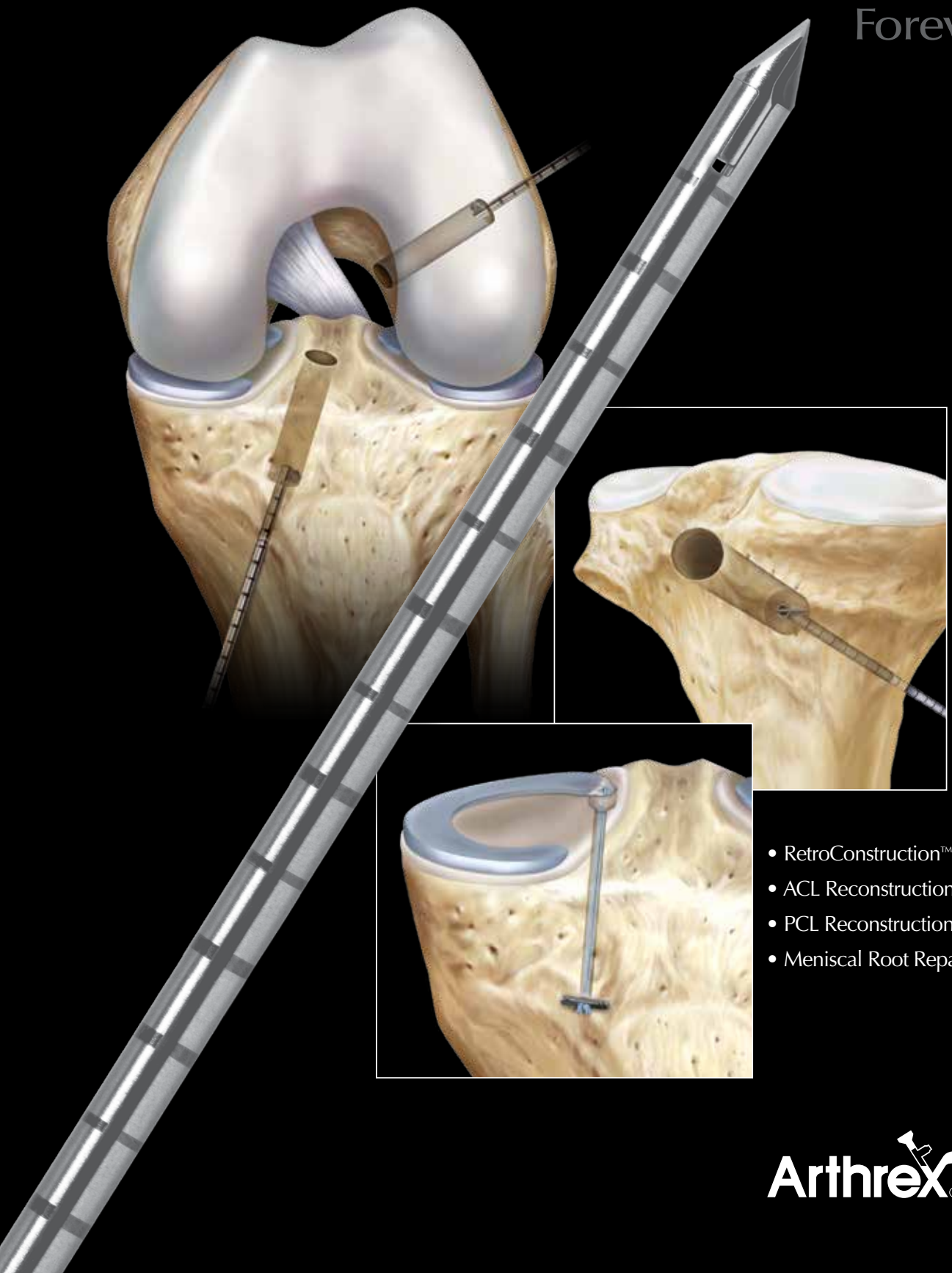
FlipCutter®

A Pin that Changes Arthroscopic Tunnel Drilling Forever . . .



- RetroConstruction™ Drill Guide Set
- ACL Reconstruction
- PCL Reconstruction
- Meniscal Root Repair & Transplantation

Arthrex®

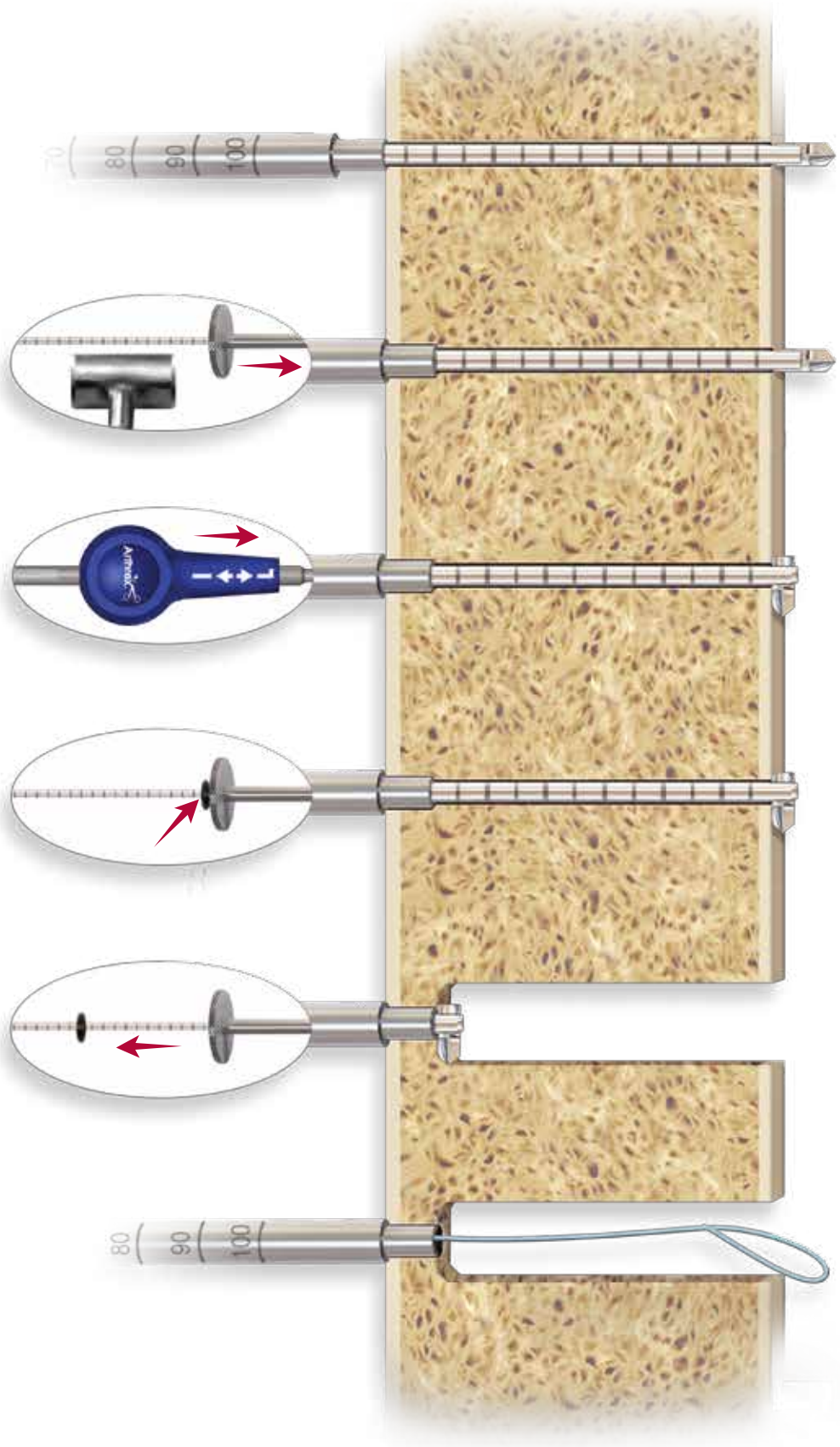
This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations 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.

References:

1. James Lubowitz, MD, et al, *ACL Femoral Footprint Anatomy: Systematic Review of the 21st Century Literature*, Arthroscopy, accepted for publication, 2012.

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;26:666-671.

The innovative FlipCutter® drill 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 5-13 mm diameter using the RetroConstruction™ Drill Guide System.

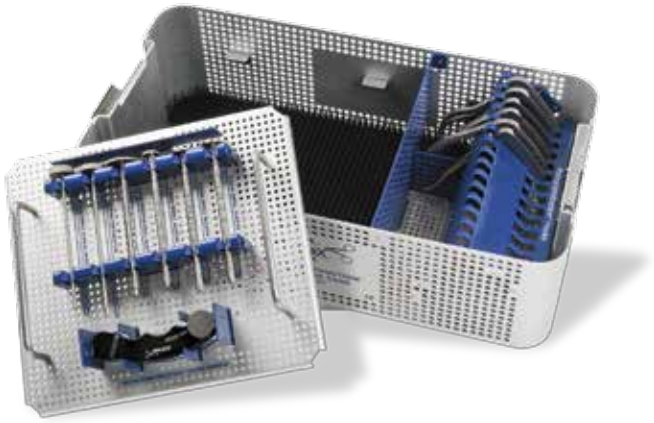


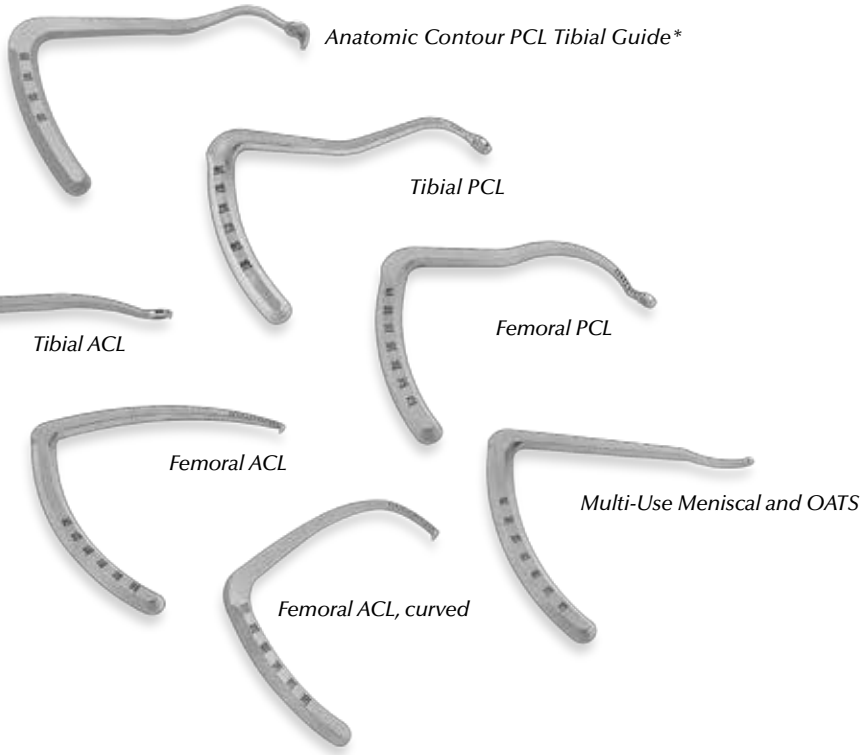
1. *Drill FlipCutter into joint, remove guide*
2. *Tap the 7 mm drill sleeve tip into bone lightly*
3. *Push button and slide blue hub forward to flip blade into cutting position*
4. *Set depth marker to base of the drill sleeve*
5. *Drill until FlipCutter "bottoms out" on drill sleeve (hold forward pressure on sleeve). Socket length may be read off of the pin*

   Straighten blade by pushing button and sliding blue hub back
6. *Remove the FlipCutter and pass a graft passing suture*

RetroConstruction™ Drill Guide Set

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 serves also as a cortex-protecting depth stop for retrograde drilling with the FlipCutter® drill, and as a cannula for insertion of graft passing sutures. RetroConstruction Guides are also available in ACL and PCL Toolbox Sets accompanied by all instruments neccessary for those procedures.





*Anatomic Contour PCL Tibial Guide**

Tibial PCL

Tibial ACL

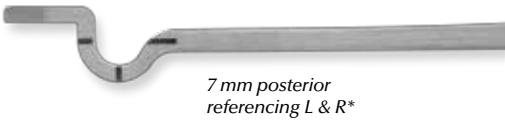
Femoral PCL

Femoral ACL

Multi-Use Meniscal and OATS

Femoral ACL, curved

Optional Hooks for Femoral ACLR



*7 mm posterior referencing L & R**

*9 mm footprint referencing L & R**

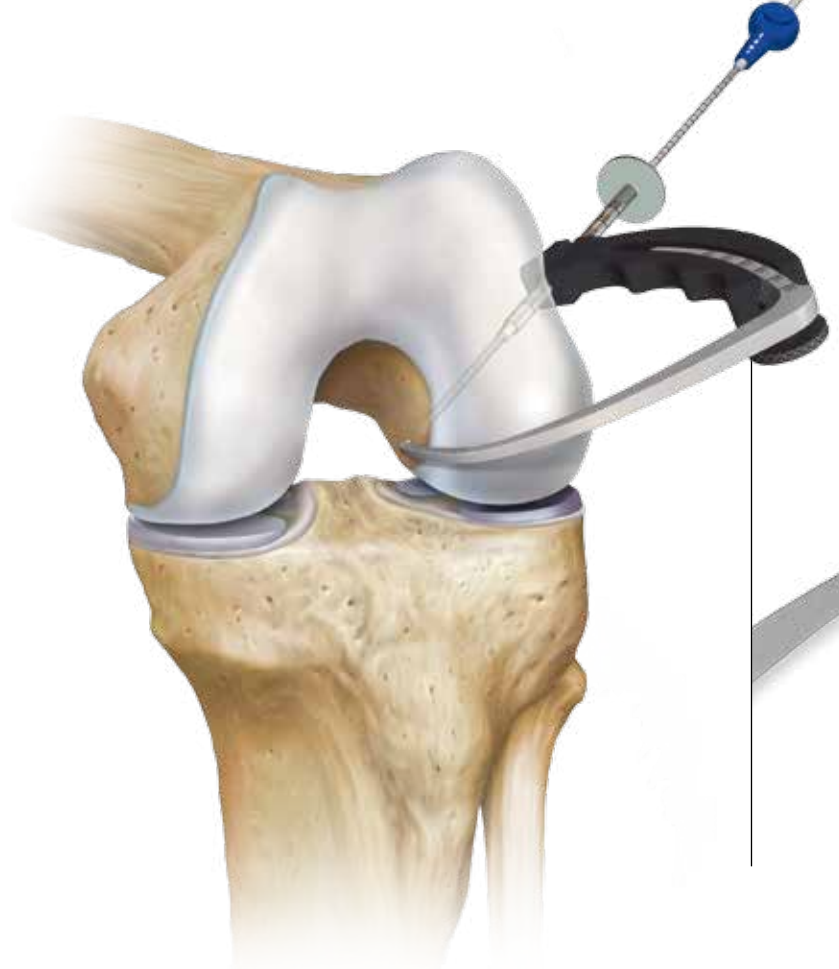
**not included in basic set*

Drill Sleeve for Side-Release Handle, ratcheting, 2.4 mm

Drill Sleeve for Side-Release Handle, ratcheting, 3.0 mm

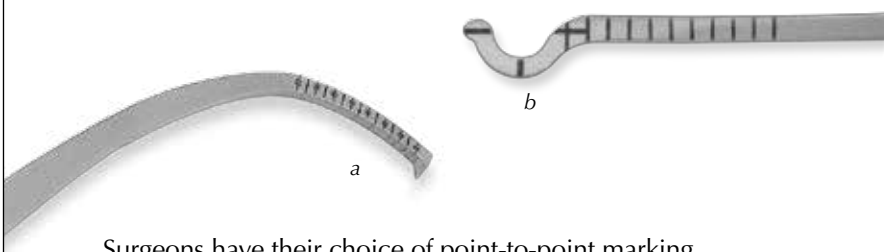
Stepped Drill Sleeve for Side-Release Handle, ratcheting, 3.5 mm

Obturator and 2.4 mm Insert for stepped Drill Sleeve



ACL Reconstruction

Anatomic femoral socket placement is paramount to successful ACL reconstruction. Using the FlipCutter® drill 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 or the need for hyperflexion.

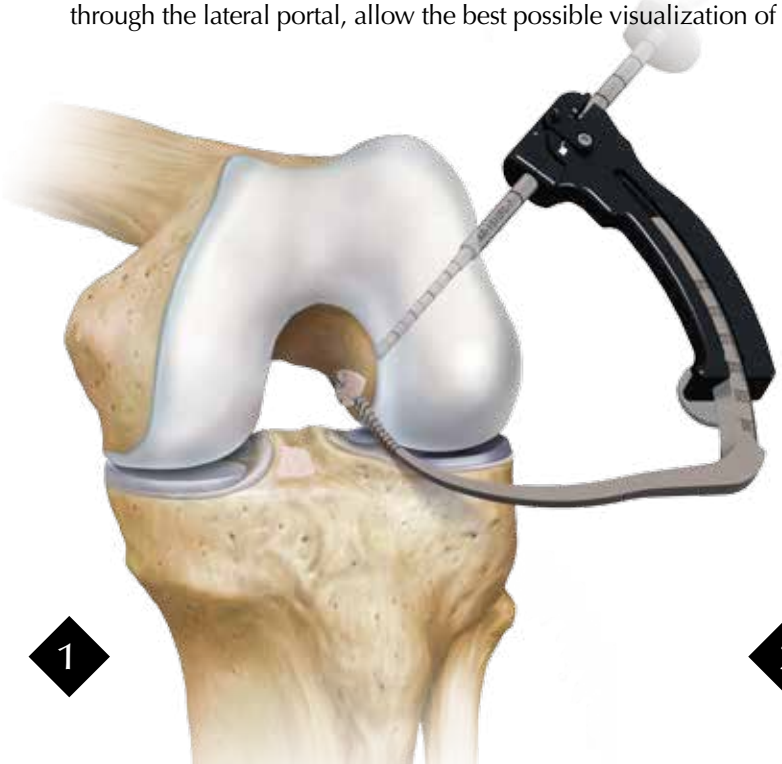


Surgeons have their choice of point-to-point marking hooks (a), or "footprint" marking hooks (b) which allow visualization of the round socket before drilling.

The stepped drill sleeve ensures preservation of 7 mm of cortex, ensuring maximum socket depth without risk of cortical "blow-out".

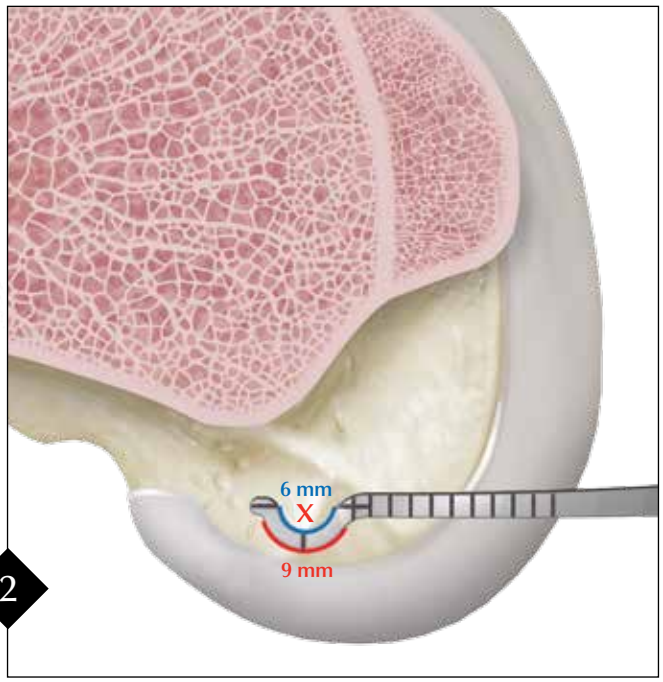
ACL femoral "footprint" re-creation using footprint guides for femoral guide pin targeting

The unique, multi-plane curvature and spiked guide tip allow the guide to fit against the notch securely, while facilitating an appropriate pin entry point on the lateral femur, without levering or twisting. The footprint guides facilitate recreation of 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.



1

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

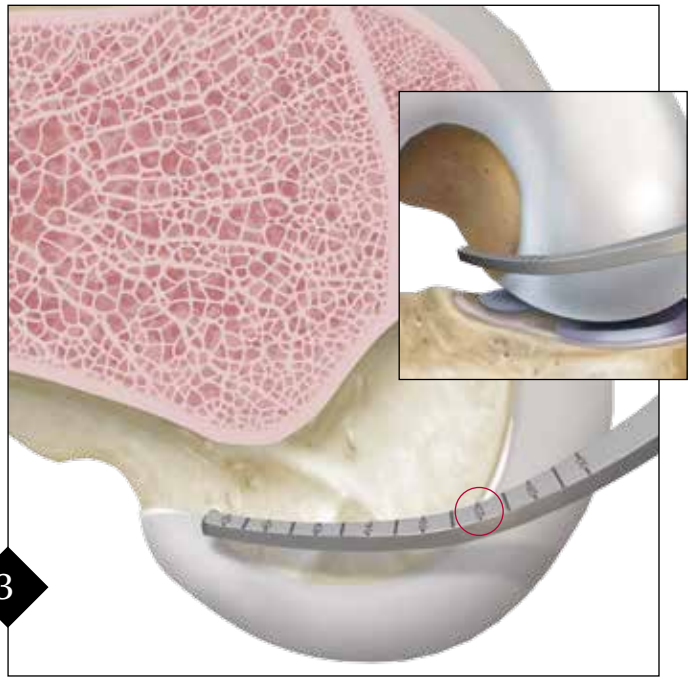


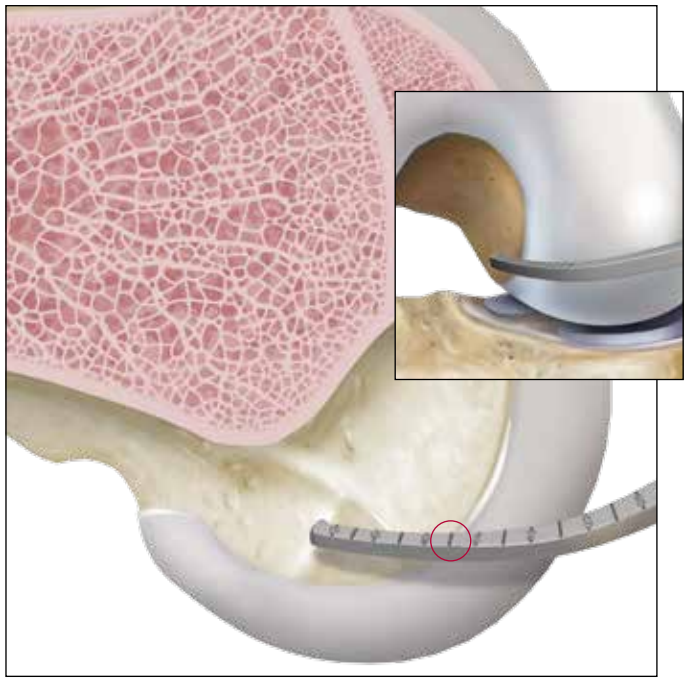
2

The "bullseye" 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".

Point-to-Point Femoral ACL Guide Option

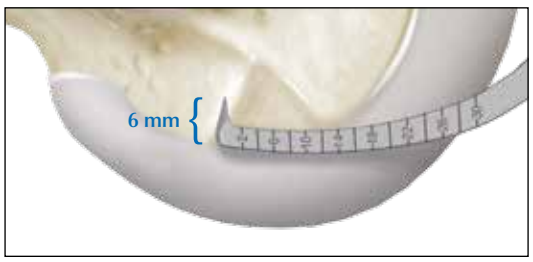
This pointed aiming guide allows surgeons to aim the FlipCutter® II drill directly at a sharp tipped marking hook. The specialized curvature allows placement through the lateral portal and the built-in ruler facilitates quick and effective measurement of the lateral notch and ACL footprint.

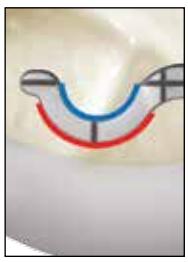




3

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 desired position can be measured and marked with the sharp tip of the marking hook and the footprint guide used to drill, or the marking hook may be kept in that position to guide the FlipCutter.



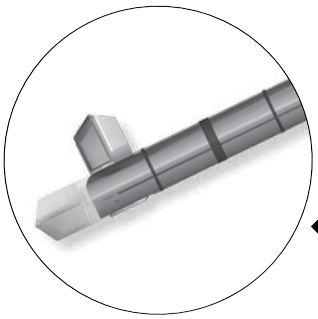


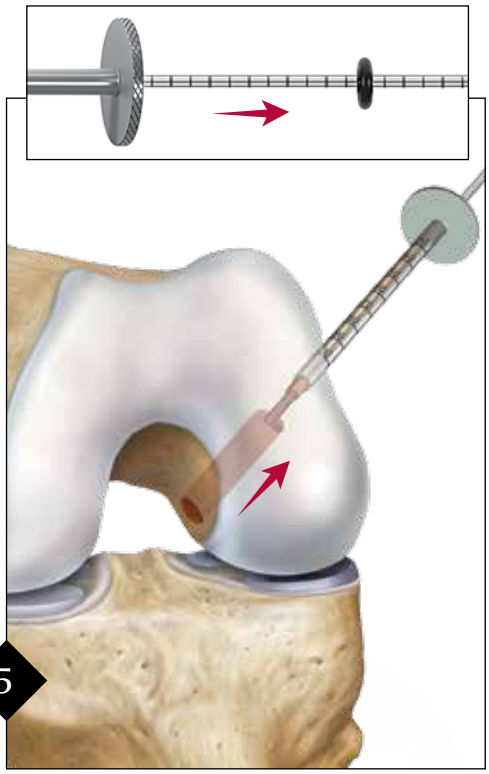
The distance of the posterior ACL socket from the cartilage border can be estimated by using the 6 mm tip of the point-to-point guide or the 3 mm semi-circle of the Footprint Femoral ACL Guide.

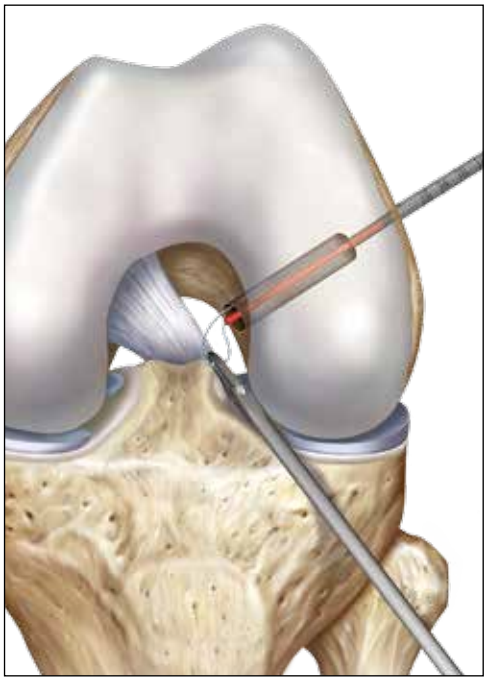
The side-release handle facilitates one-handed guide removal

Once the FlipCutter® II drill 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.***

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.

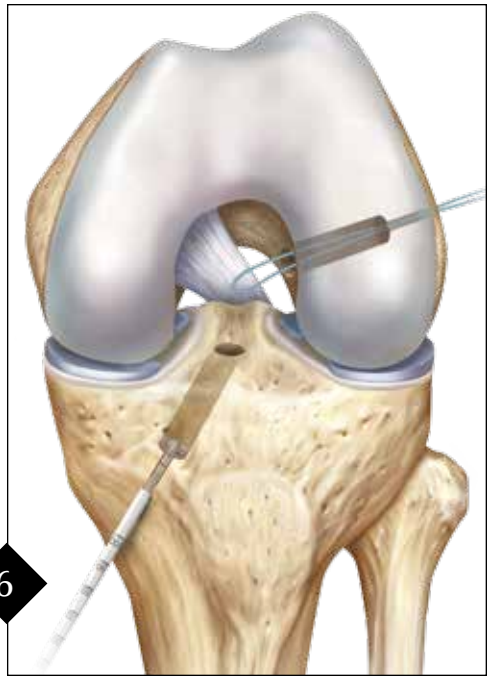






Flip the cutting tip into reaming position by depressing the button and sliding the blue hub forward. While holding the drill sleeve securely onto bone, start reaming (forward) with the FlipCutter tip away from the bone, then slowly pull back on the FlipCutter to begin cutting. ***A high RPM should be 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.

Tibial ACL Drilling



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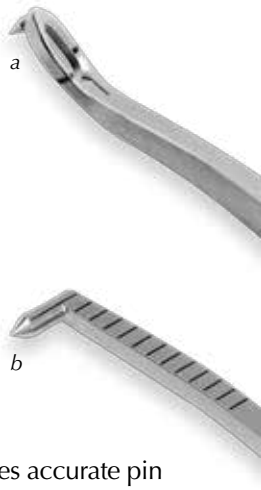
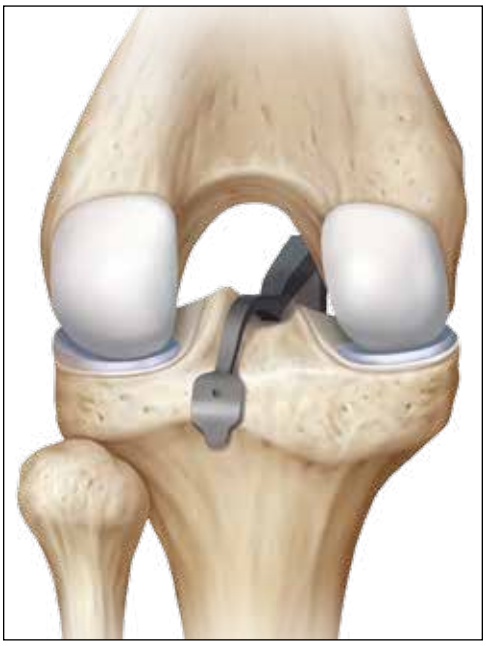


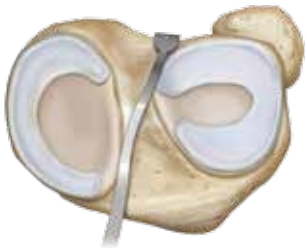
Using the FlipCutter® II drill for the tibia facilitates accurate pin placement, due to the stiff drill guide and 3.5 mm FlipCutter pin[2], and allows preservation of the tibial cortex for all-inside ACL reconstruction techniques.

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

PCL Reconstruction

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.





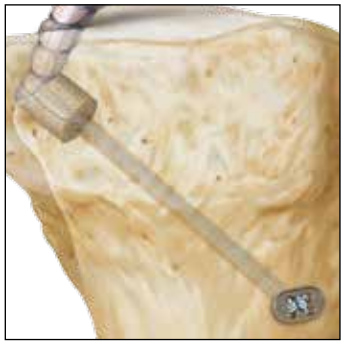
Anatomic Contour PCL Tibial Guide

These transitibial PCL guides developed in conjunction with the Mayo Clinic greatly simplify tibal 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.

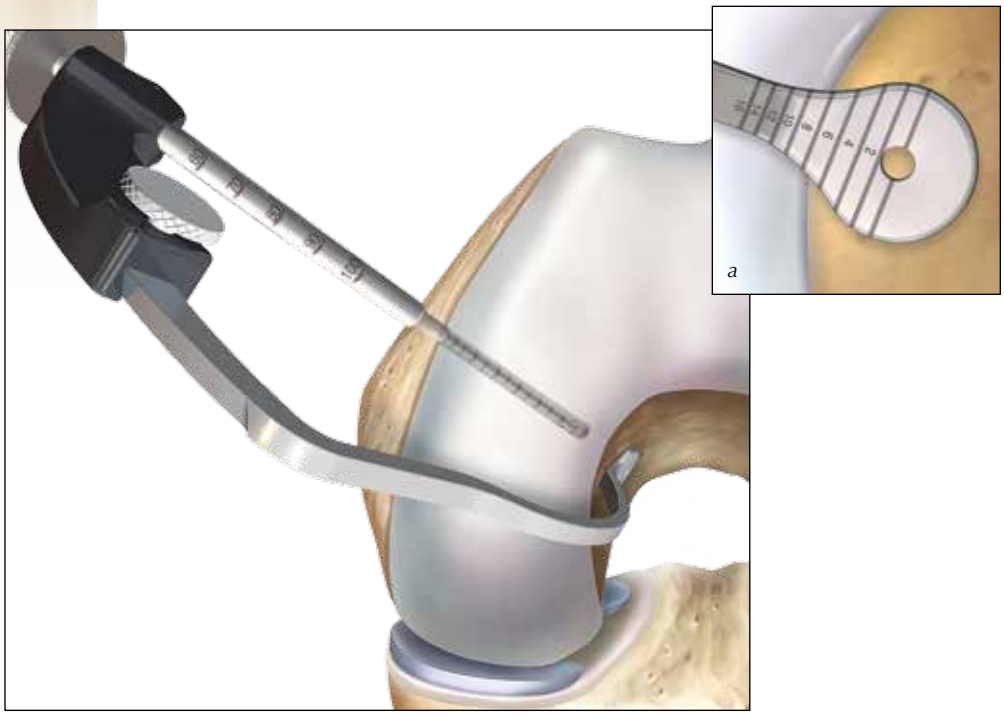
The Arthroscopic Inlay Technique for PCL

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® drill and the PCL TightRope® fixation system, an inlay construct may be achieved in a more minimally invasive way.

Femoral PCL

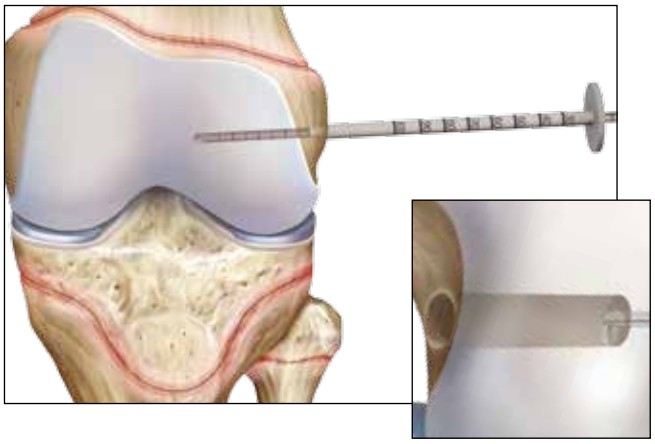


The Femoral PCL Marking Hook (a) allows for a variable angle drilling to reduce the "killer corner" angle of the femoral socket. The 8 mm "footprint" marking hook also allows visualization of the socket before drilling.

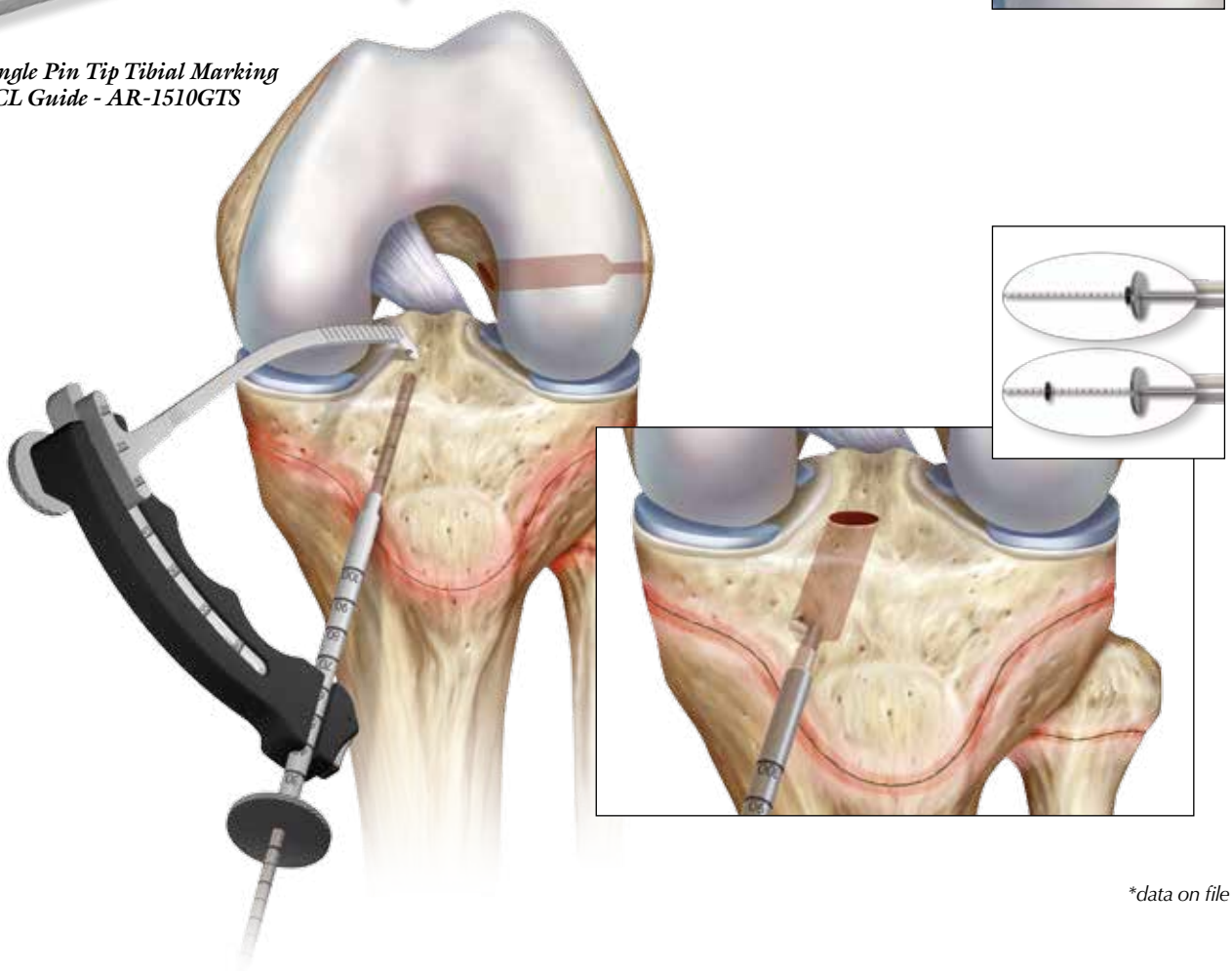
Small Angle Guides for All-Epiphyseal ACL Socket Drilling

The Small Angle Guides facilitate acute angles needed for drilling all epiphyseal sockets and tunnels with FlipCutter. Several studies have shown the benefit of FlipCutter for this unique indication.*

Small Angle Footprint Femoral ACL Guide - AR-1510FRS



Small Angle Pin Tip Tibial Marking Hook ACL Guide - AR-1510GTS



*data on file

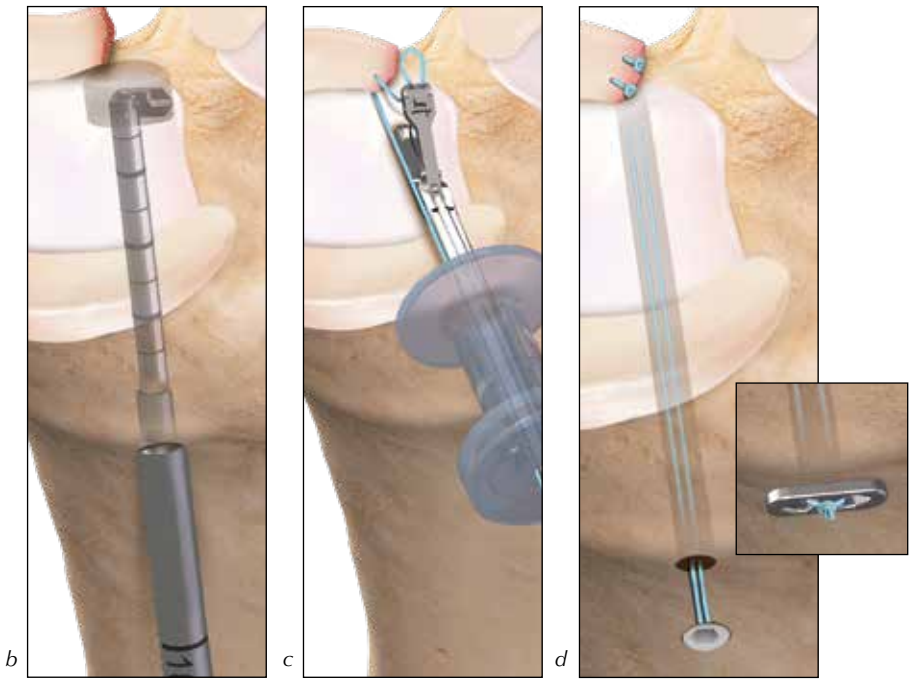
Meniscal Root Repair or Transplantation

a

Adjust the offset by depressing the button on the locking guide and aligning the laser marks with the desired offset.

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

The new adjustable Meniscal Root Marking Hook has several features that facilitate effective tunnel and socket placement. The low profile tip fits easily into the tight compartments of the knee. The offset hook with a small spike, keeps its position secure during drilling. The guide allows for several different offsets from the posterior cortex, plus the drill sleeve rotates, enabling freedom in pin-entry point and tunnel trajectory.



b c d

The adjustable Meniscal Root Marking Hook is placed "over the back"of the tibia (a). A 6 mm FlipCutter is used to create a socket 5 mm-10 mm in depth (b). The Knee Scorpion™ suture passer can be used to pass a size 0 FiberLink™ suture to create a cinch stitch. A second cinch stitch can be added using a size 0 TigerLink™ suture (c) . Secure the sutures to the anterior tibia with a 4.75 mm BioComposite™ SwiveLock® anchor. An alternate fixation method is a 2-hole metal button (*inset*) (d).

For the full technique guide please refer to LT1-00016-EN Meniscal Root Repair

Ordering Information

FlipCutters, single use and sterile	
FlipCutter IIs, 5 mm – 13 mm	AR-1204AF-50 – 130
Short FlipCutter IIs, 5 mm – 12 mm	AR-1204AS-50 – 120

RetroConstruction Drill Guide Set (AR-1510S) includes:	
Side-Release RetroConstruction Handle	AR-1510HR
Drill Sleeve for RetroConstruction Drill Guide, 3.5 mm	AR-1510D
Drill Sleeve for Side-Release Handle, ratcheting, 2.4 mm	AR-1510FD-24
Drill Sleeve for Side-Release Handle, ratcheting, 3.0 mm	AR-1510FD-30
Stepped Drill Sleeve for Side-Release Handle, ratcheting	AR-1510FS-7
Obturator, 3.5 mm	AR-1204F-OB
Insert, 2.4 mm	AR-1204F-24i
Tibial ACL Marking Hook for RetroConstruction Drill Guide	AR-1510T
Femoral ACL Marking Hook for RetroConstruction Drill Guide	AR-1510F
Femoral ACL Curved Marking Hook for RetroConstruction Drill Guide	AR-1510F-01
Tibial PCL Marking Hook for RetroConstruction Drill Guide	AR-1510PT
Femoral PCL Marking Hook for RetroConstruction Drill Guide	AR-1510PF
Multi-Use Marking Hook for RetroConstruction Drill Guide	AR-1510M
RetroConstruction Drill Guide System Case	AR-1510C

Optional	
Pin Tip Tibial ACL Drill Guide	AR-1510GT
RetroConstruction Marking Hook for Tibial ACLR, 52.5˚ (for RetroDrill)	AR-1510R
Footprint Femoral ACL Guide, left	AR-1510FL
Footprint Femoral ACL Guide, right	AR-1510FR
Footprint Femoral ACL Guide w/7 mm offset, left	AR-1510FPL
Footprint Femoral ACL Guide w/7 mm offset, right	AR-1510FPR
Pin Tip Tibial Marking Hook ACL Guide, small angle	AR-1510GTS
Footprint Femoral ACL Guide, small angle, right	AR-1510FRS
Footprint Femoral ACL Guide, small angle, left	AR-1510FLS
Anatomic Contour PCL Guide, left	AR-1510PTL
Anatomic Contour PCL Guide, right	AR-1510PTR
Drill Tip Guide Pin, 3.5 mm (predrill for FlipCutter)	AR-1250F

ACL ToolBox	*AR-1900S*
Complete contents in this set can be found on page 1 of LB1-0115-EN	

PCL ToolBox	*AR-1269S*
Complete contents in this set can be found on page 25 of LB1-0115-EN	

Graft Passing Accessories	
FiberStick, #2 FiberWire, 5″, one end stiffened	AR-7209
FiberSnare, #2 FiberWire, 26″, stiffened w/closed loop	AR-7209SN
TightRope RT Implant System, w/8 mm FlipCutter II	AR-1588RT-07
TightRope RT Implant System, w/9 mm FlipCutter II	AR-1588RT-18
TightRope RT Implant System, w/10 mm FlipCutter II	AR-1588RT-11
TightRope RT Implant System, w/11 mm FlipCutter II	AR-1588RT-13
ACL TightRope RT Implant Delivery System, w/ACL TightRope Drill Pin	AR-1588RTS
ACL TightRope BTB Implant Delivery System, w/10 mm FlipCutter II	AR-1588BTB-02

Meniscal Root Repair	
Meniscal Root Marking Hook	AR-1610MR
Locking Guide for Meniscal Root Marking Hook	AR-1610LG
Knee Scorpion	AR-12990
Meniscal Root Repair Kit	AR-4550

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