



Transtibial All-Inside ACL RetroConstruction™

Surgical Technique



# All-Inside ACL RetroConstruction



**R**eplicating traditional transtibial ACL reconstruction techniques, the RetroConstruction System eliminates tibial tunnels by creating “retrodrilled” sockets. This all-inside technique reduces incisions and violation of distal cortices which can reduce patient morbidity and improve rehabilitation. The Dual RetroCutter™ facilitates tibial and femoral socket creation and the RetroScrew® assures solid fixation at the joint line.

## Graft Preparation

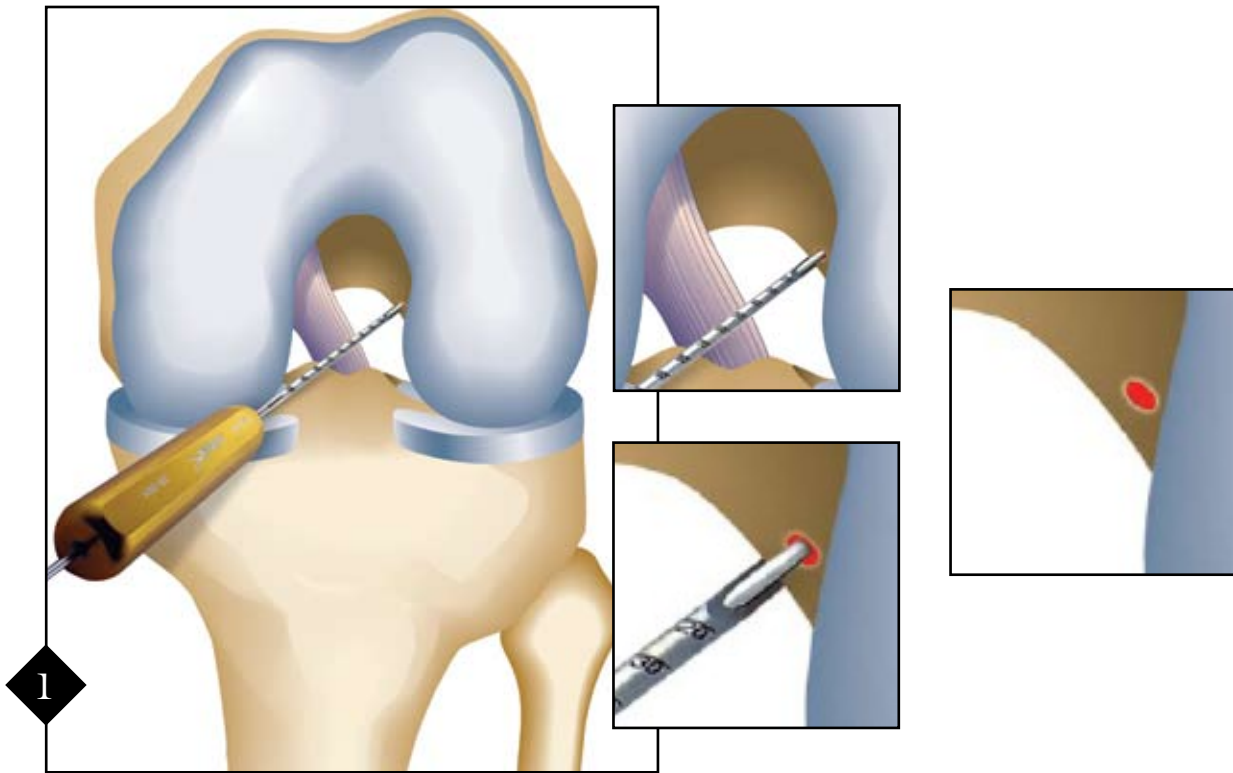
Soft tissue grafts should be prepared to a length approximately 10 mm shorter than the combined lengths of both sockets and the intraarticular space. This provides room for tensioning of the graft during fixation.

For example:

Femoral Socket	25 mm
Tibial Socket	25 mm
<u>Intraarticular Length</u>	<u>30 mm</u>
Total	80 mm
	<u>- 10 mm</u>
Total Graft Length	70 mm

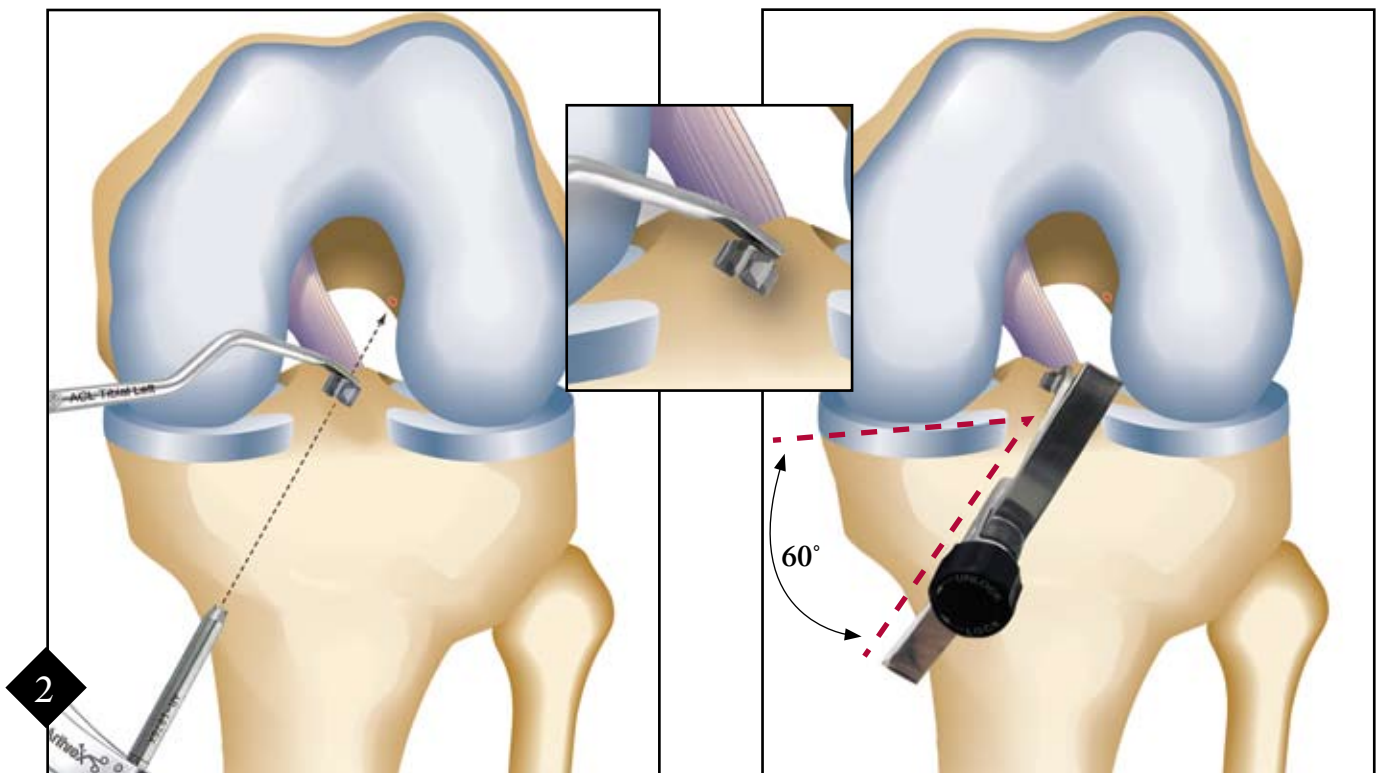
*Note:* Graft preparation with #2 FiberLoop™ facilitates last minute adjustments in graft length after drilling sockets. Please refer to the SpeedWhip™ Technique with #2 FiberLoop (LT0135).





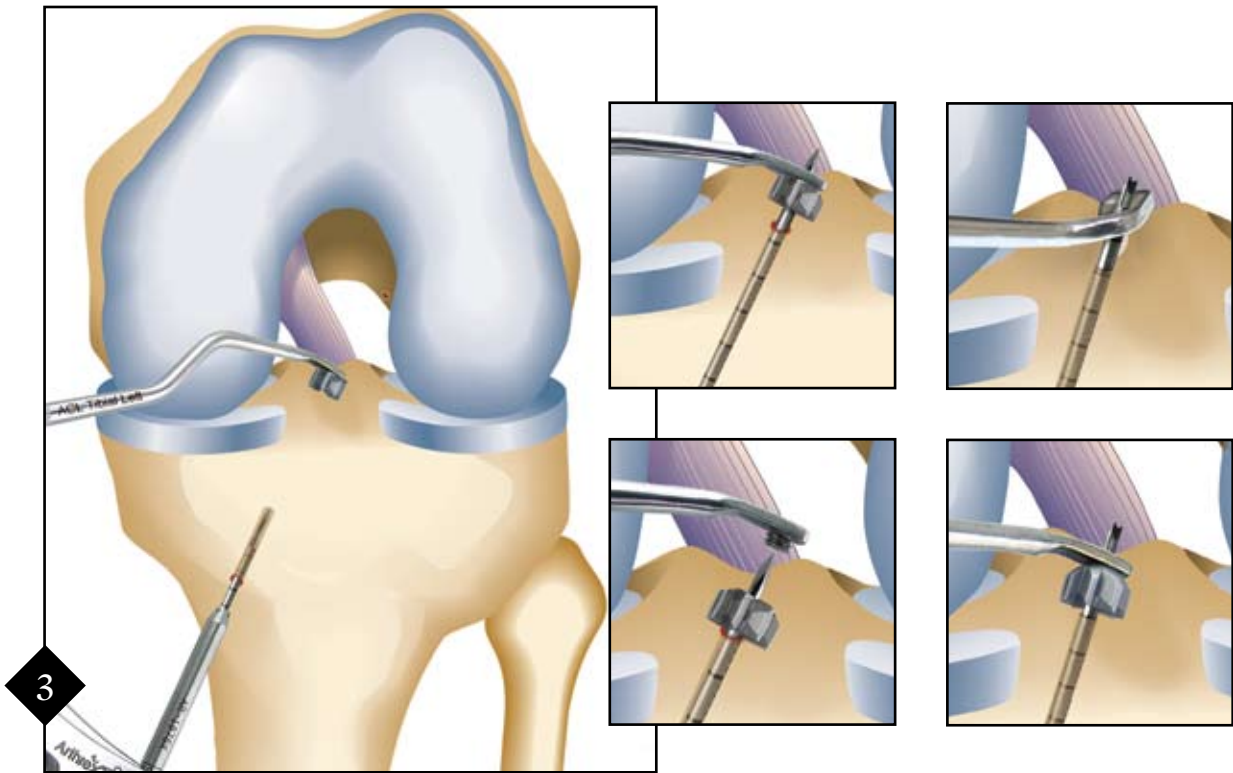
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All associated knee pathology is treated and an arthroscopic notchplasty performed in routine fashion. The appropriate size offset Transtibial Femoral ACL Drill Guide is introduced through the anteromedial portal and placed in the over the top position that most closely replicates the anatomical origin of the ACL. A Beath Pin is inserted into the offset guide and malleted or drilled approximately 5 mm into the femur to create a reference position for femoral drilling.



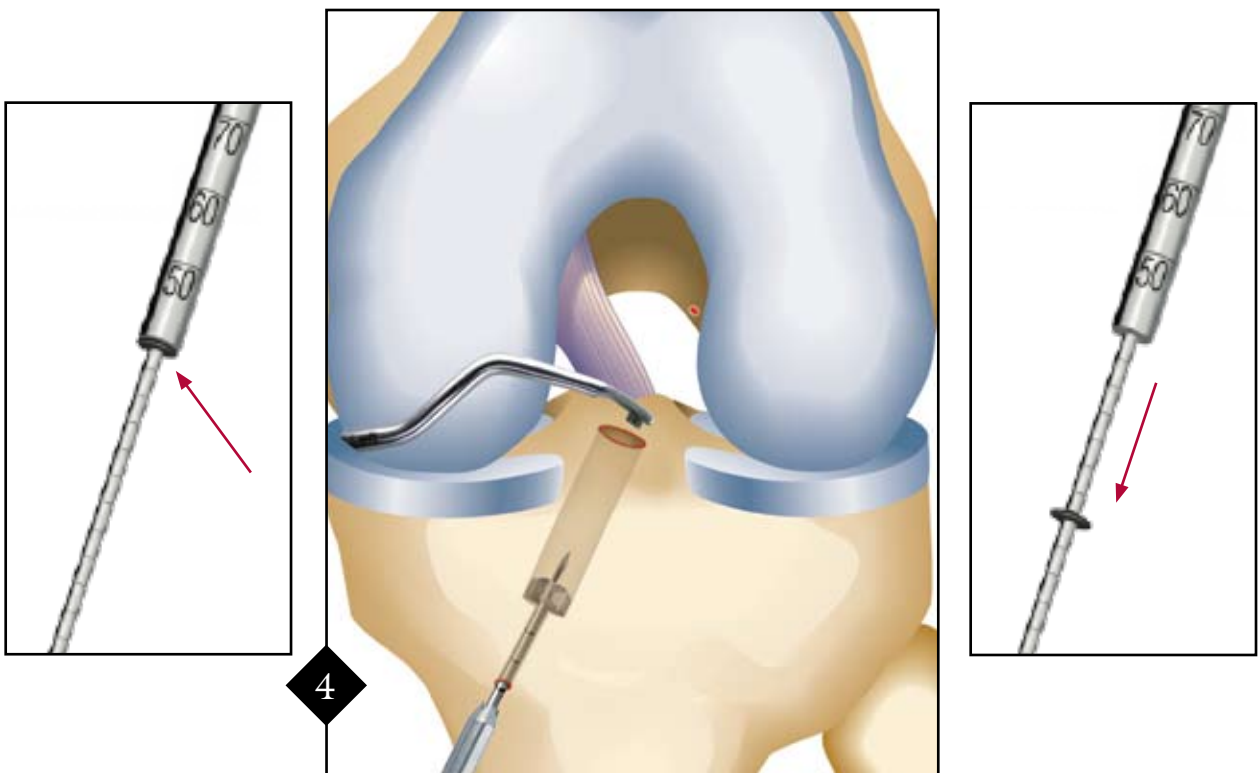
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The 45°, 50° or 55° Tibial ACL Guide is placed onto the Adapteur™ Drill Guide C-Ring and the C-Ring is set to match the guide angle. The 52.5° Constant Tibial Guide for RetroDrill may also be used. A Dual RetroCutter of appropriate diameter is attached to a Tibial ACL Guide for RetroConstruction. The Dual RetroCutter is placed over the tibial ACL footprint with the top of the cutter aiming at the reference position previously made at the anatomic ACL origin. *Note:* when properly positioned, the Adapteur Drill Guide C-Ring should make an approximate 60° angle with the tibial plateau.



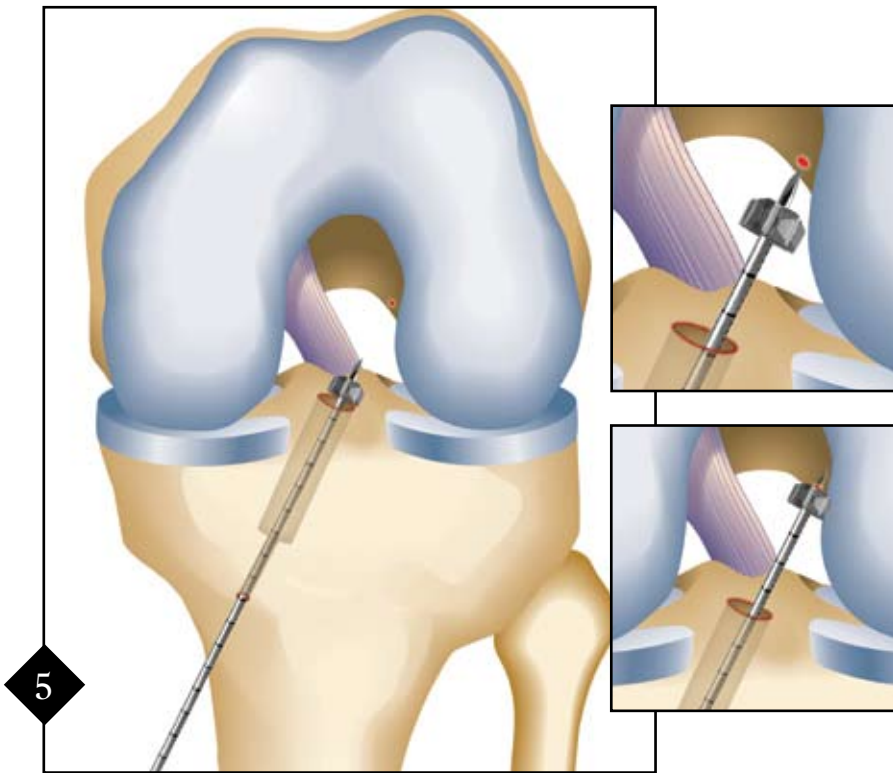
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The drill sleeve is advanced to bone through a small stab incision and the RetroDrill Guide Pin is advanced through the tibia. Slow forward drilling engages the cutter and simultaneously disengages the cutter from the threaded insertion post. *Alternatively:* The pin may be drilled in standard fashion and the cutter placed onto the drill pin tip via the anterior medial portal with the RetroDrill guide, with the cutter attached, placed on a Jacob's Chuck Handle.

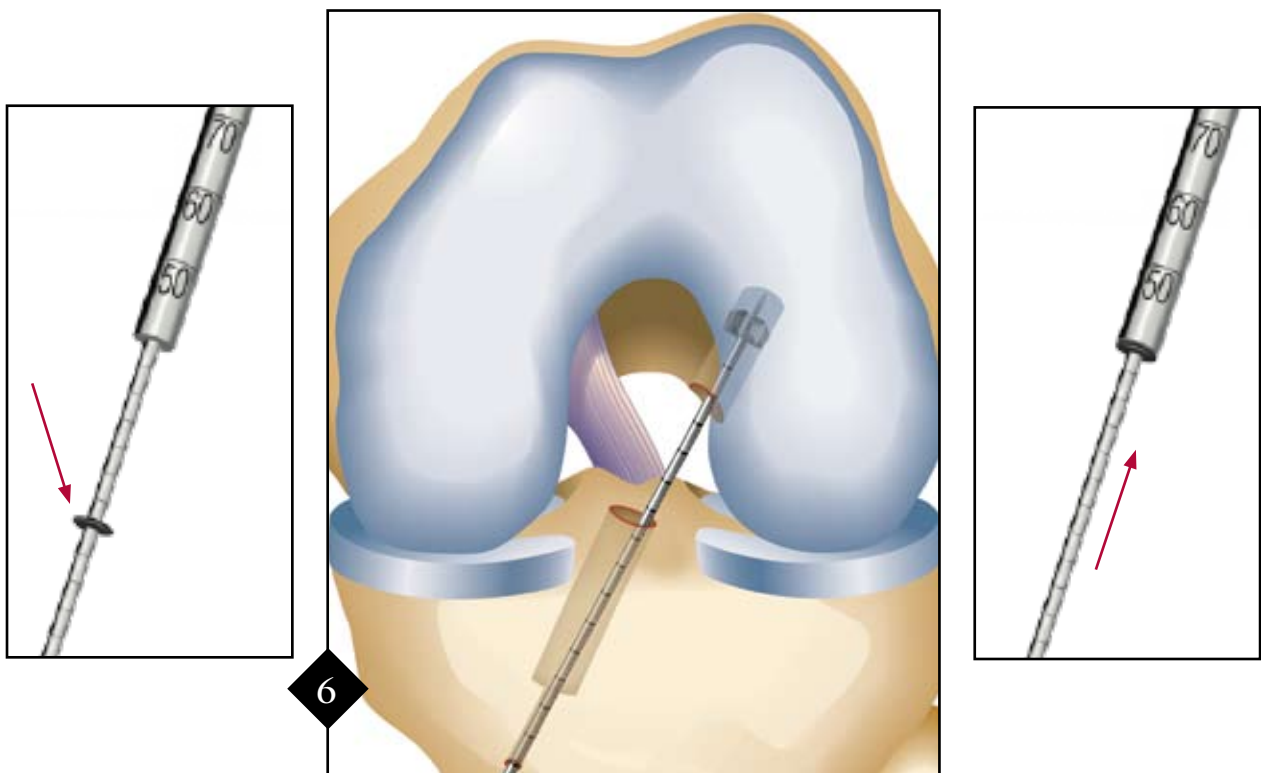


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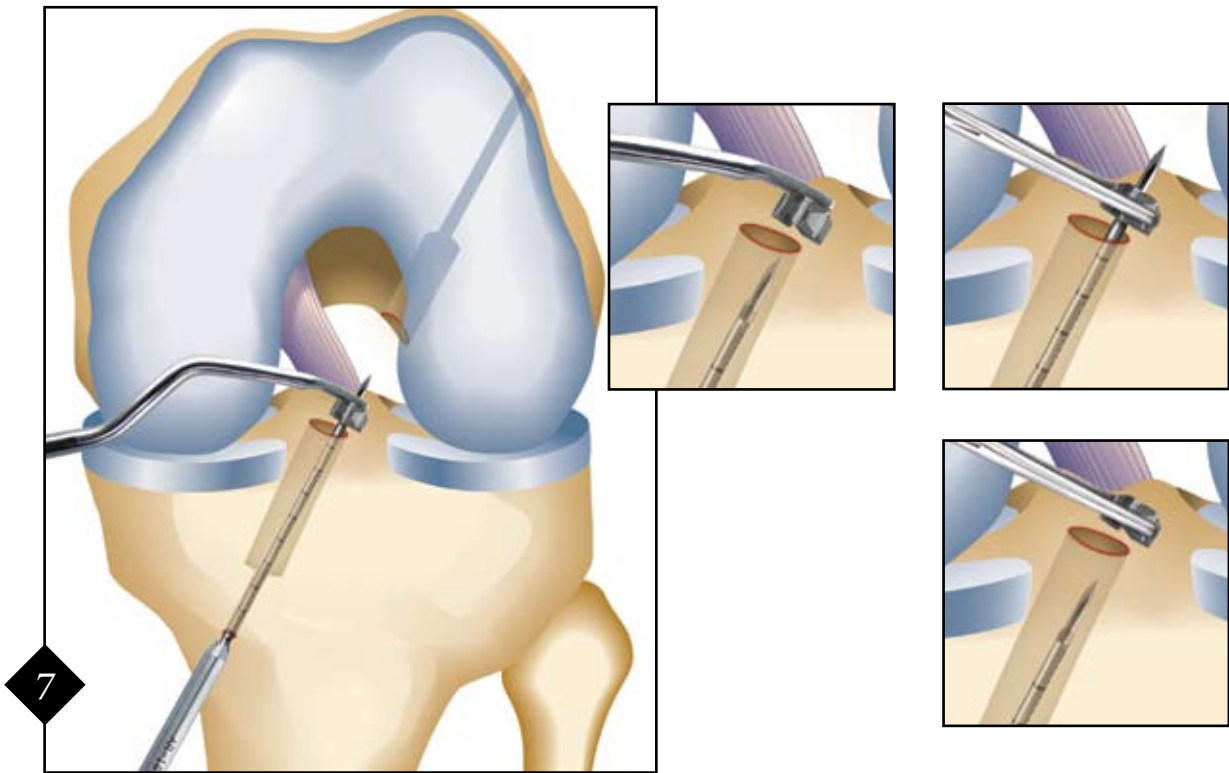
The drill depth grommet is advanced to the end of the guide pin sleeve for socket depth assessment during drilling. Forward drilling and slight retrograde force facilitates retrograde drilling of the tibial socket to the appropriate depth of 30 to 40 mm. *The tibial cortex should not be violated.* The 5 mm pin calibrations and grommet provide precise visual depth control. Antegrade tapping of the powered drill pushes the cutter out the tibial socket.



The drill guide is removed and the drill sleeve is left in place over the RetroDrill Guide Pin. As the pin and cutter are advanced forward by pushing or tapping, care should be taken to avoid the PCL. The RetroDrill pin tip is inserted into the reference position created on the femur. *Note:* Extension of the knee facilitates pin engagement in the femoral pilot hole.

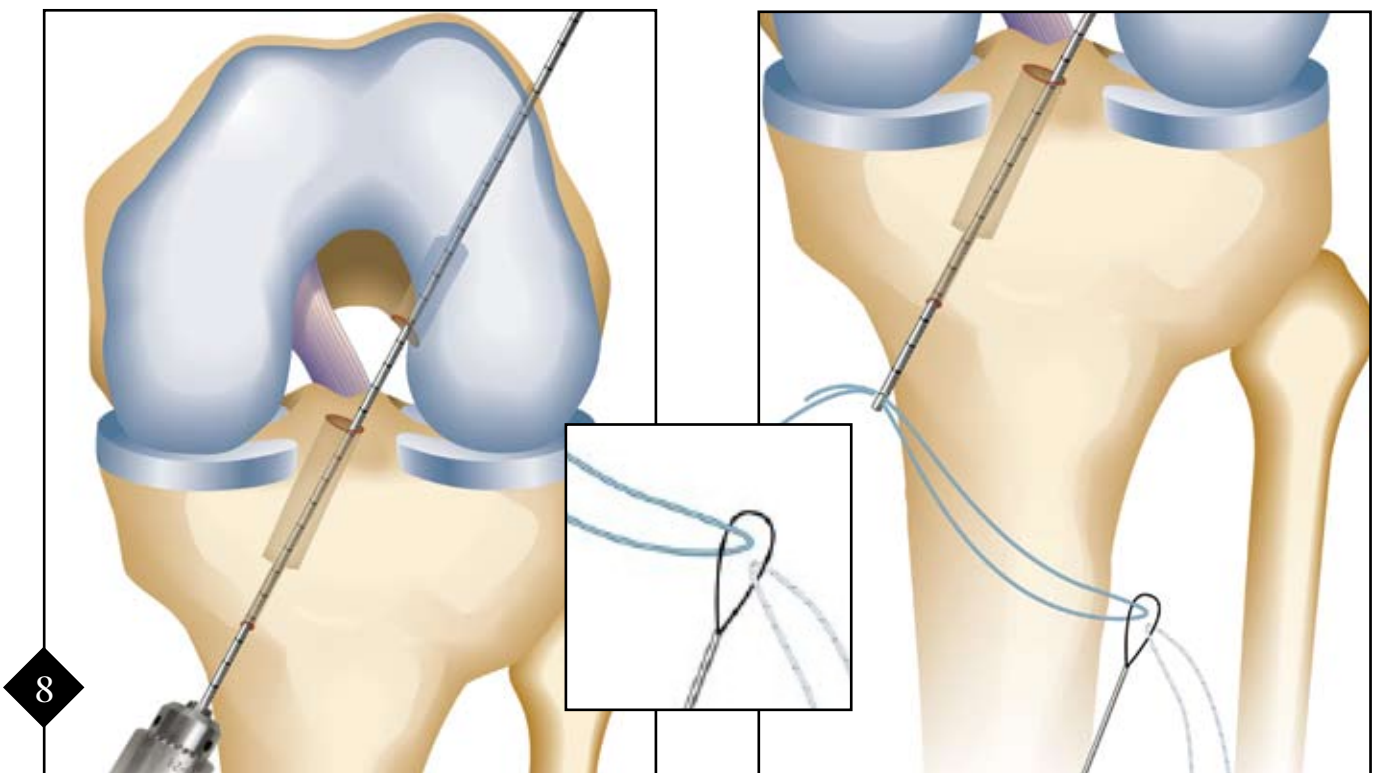


The grommet is set at the appropriate depth distal to the drill sleeve and the femoral socket is drilled on a forward setting until the grommet reaches the drill sleeve.



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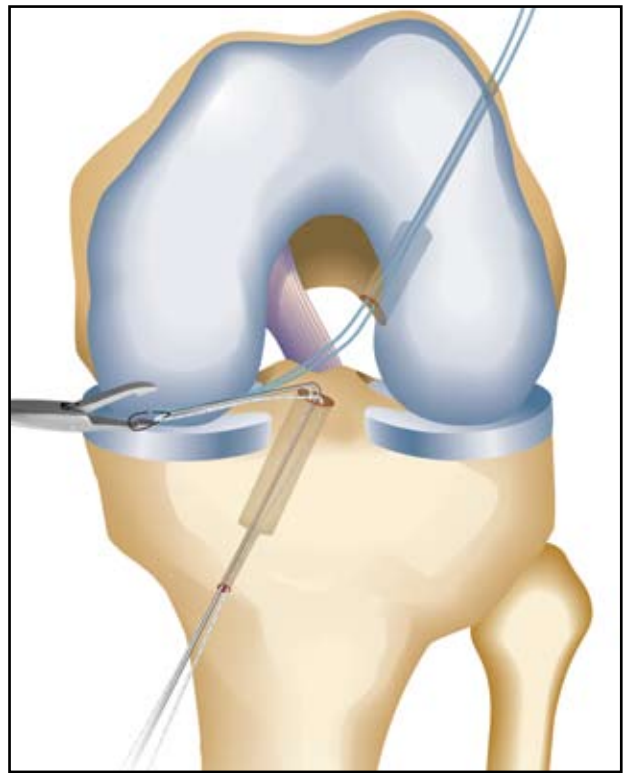
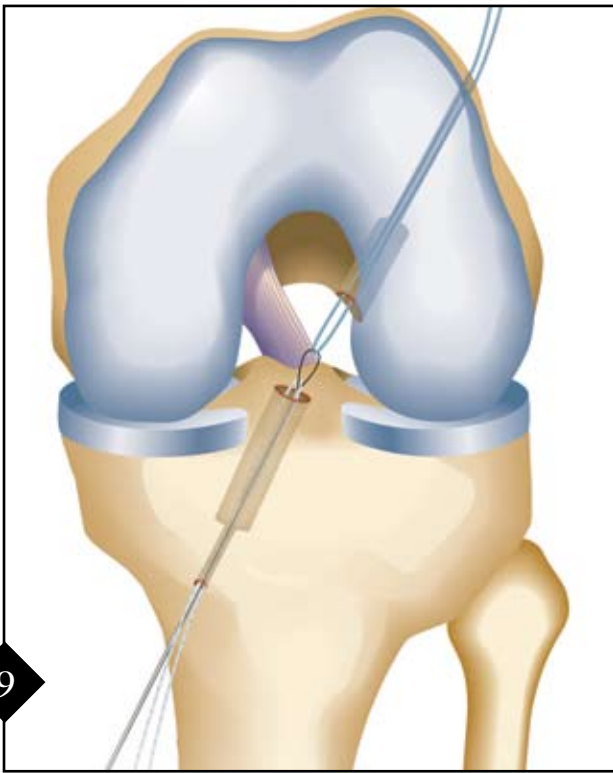
The Dual RetroCutter is then retracted past the PCL to the tibial plateau. At this point the Dual RetroCutter can be removed using a grasper or the guide. Once the cutter is secured into the grasper or guide, the drill is reversed and the cutter is removed from the pin and out of the portal.



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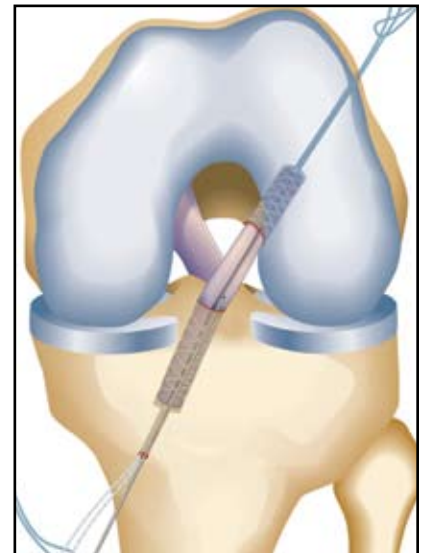
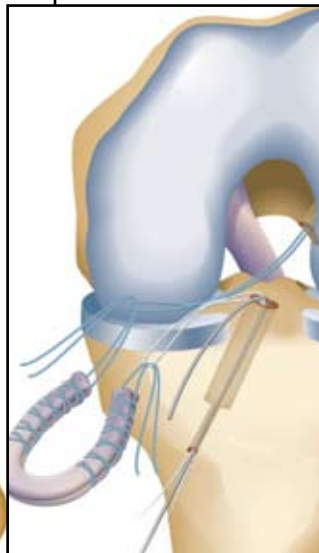
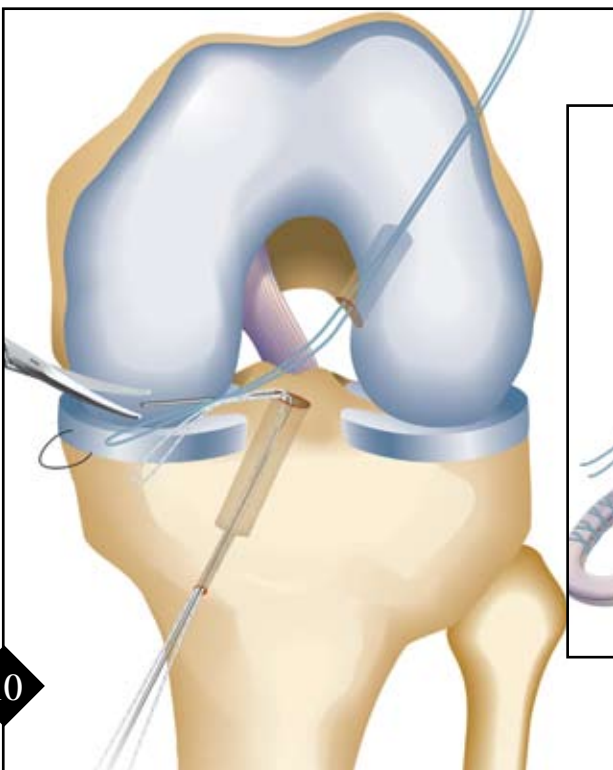
The RetroDrill Guide Pin is attached to the drill and driven through the femoral socket and out of the femur. A #2 FiberWire® and a #2 TigerWire® are passed through the loop of a Nitinol wire and the tails of the #2 FiberWire are placed into the distal end of the RetroDrill Guide Pin.

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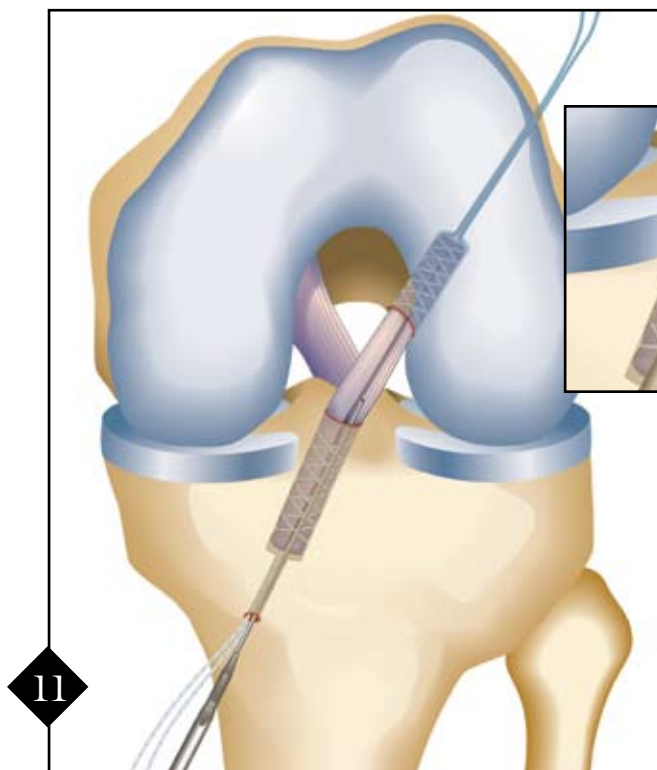
The RetroDrill Guide Pin is pulled proximally out of the thigh until the pin is completely removed and the #2 FiberWire tails have been delivered out of the thigh. The looped portion of the Nitinol wire is visualized in the joint and pulled out of the medial portal with an arthroscopic grasper.

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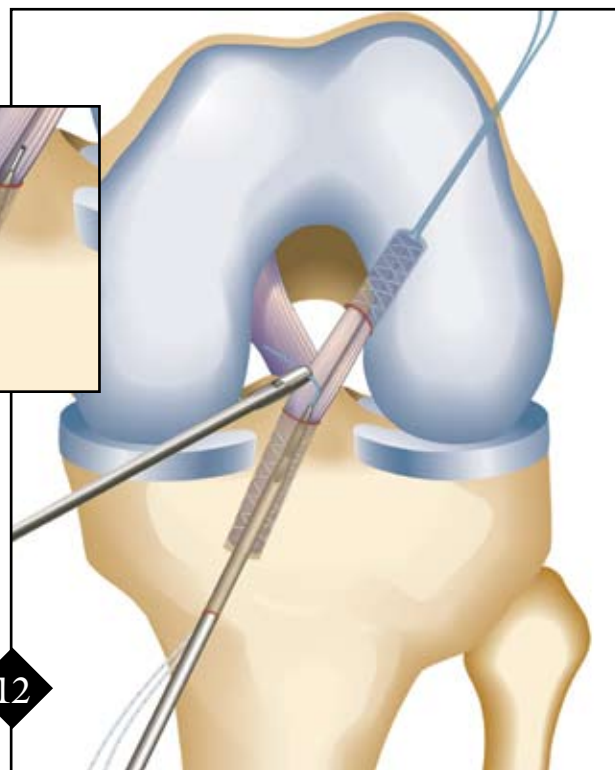
The Nitinol loop is cut. Care is taken to hold the Nitinol wire anteriorly as the graft is positioned into the tibial socket. The femoral end of the graft is passed using the FiberWire loop and the tibial end is passed using the TigerWire loop. Graft sutures should be passed first for both ends, then the femoral side of the graft is passed, followed by the tibial side.





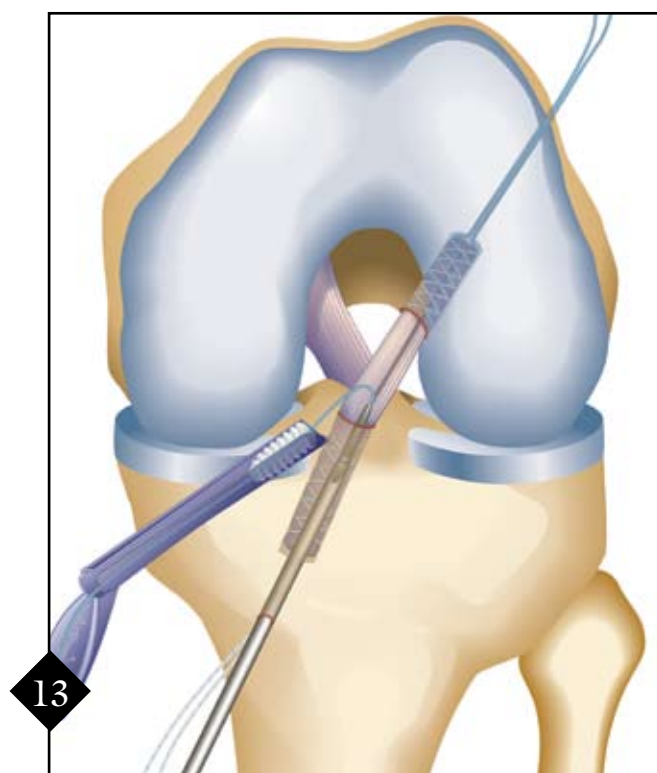
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The Nitinol wire is pulled distally until the proximal end is in the joint and positioned anterior to the graft. If the Nitinol wire is not anterior to the graft then a grasper or probe may be used for repositioning. The RetroScrew Driver is then advanced over the distal end of the wire and into the tibia until the tip of the driver is visualized in the joint. Insert the driver with constant pressure and a gentle twisting motion. Do not mallet the driver into the knee.



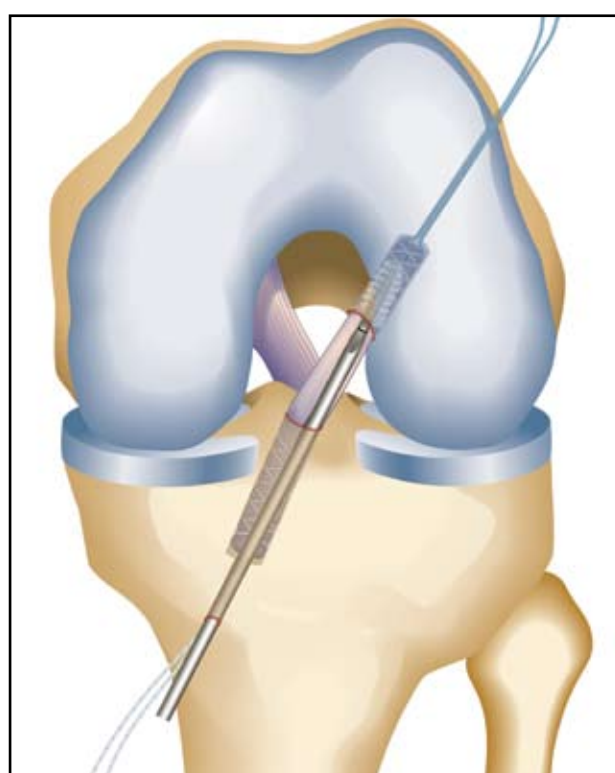
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The Nitinol wire is removed from the RetroScrew driver and a #2 FiberStick™ is inserted through the cannulated handle until the FiberStick is visible in the joint. Retrieve the FiberStick out the medial portal. Thread the FiberStick through the Femoral RetroScrew and tie a large knot behind the RetroScrew.

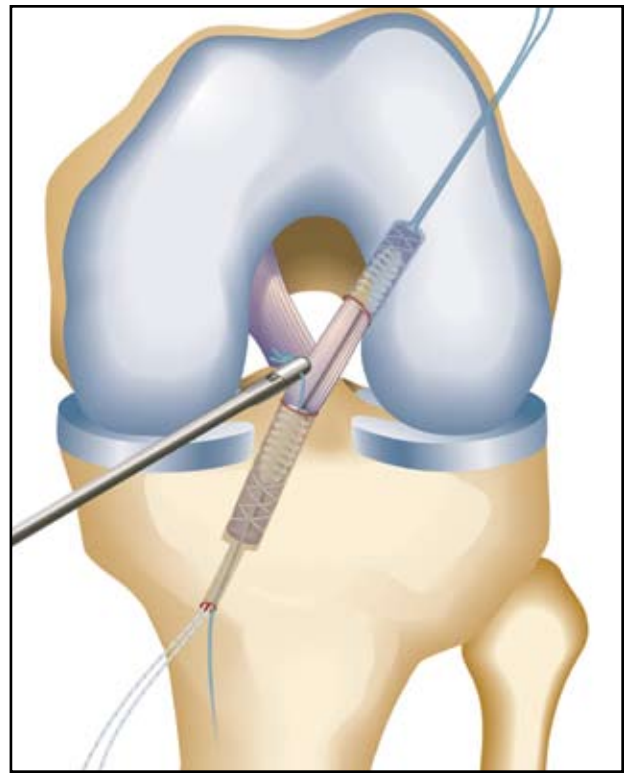
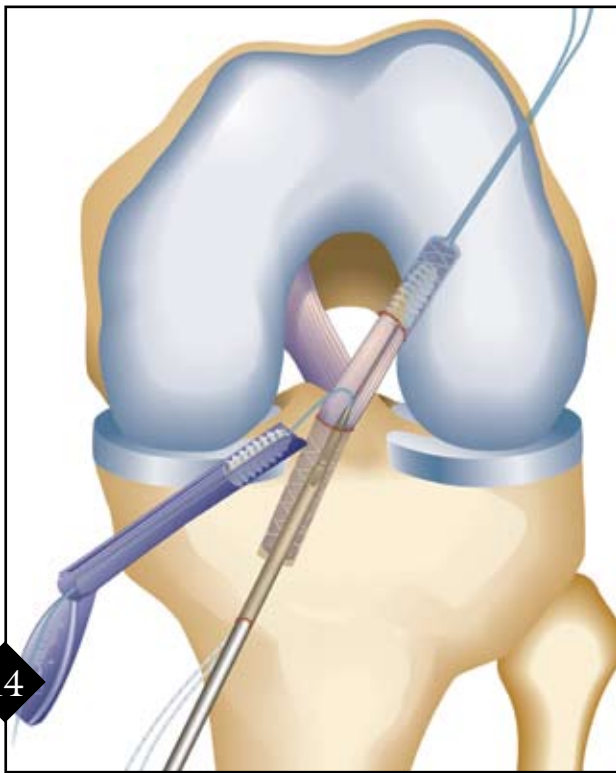


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A Shoehorn™ Cannula facilitates RetroScrew insertion into the joint. Once in the joint, the RetroScrew is placed onto the driver by pulling distally on the FiberStick exiting the driver handle. *Note:* The screwdriver tip should be near level with the tibial plateau until the RetroScrew is in a vertical position. Once the screw is vertical, the driver can be advanced forward into the screw cannulation. Remove the suture with a grasper prior to inserting the screw.

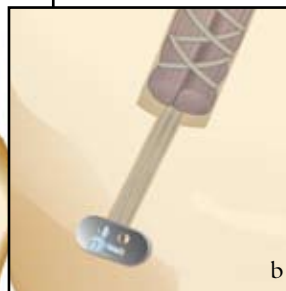
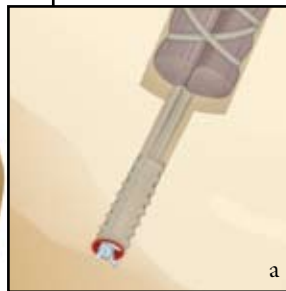
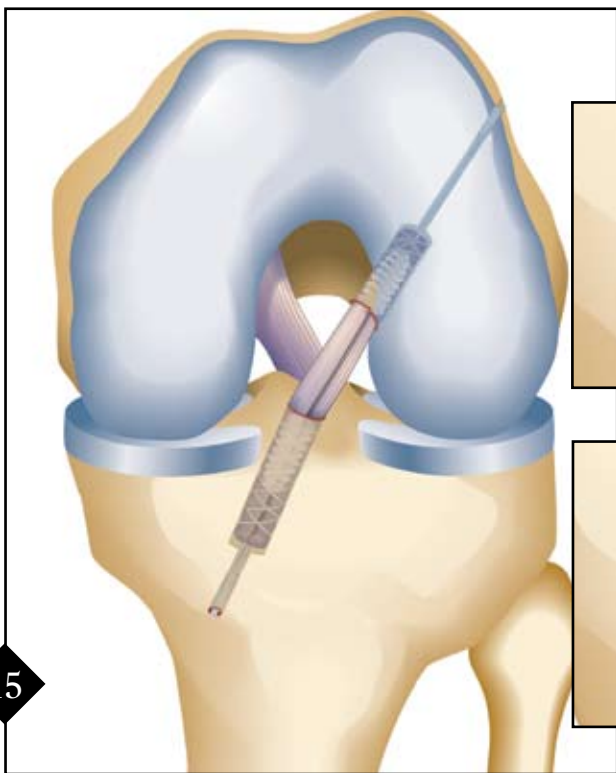


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The RetroScrew Driver remains in the joint and a tibial RetroScrew is loaded in the same manner using a #2 FiberStick. Once seated on the driver, the FiberStick is tensioned distally and locked onto the driver handle. The graft is tensioned and the driver is then turned counterclockwise until the tibial RetroScrew is fully inserted, flush with the tibial plateau. The FiberStick can then be removed by pulling the knot out of the joint.

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Backup fixation of the graft sutures may be performed, if desired, with a 4.75 mm x 15 mm Bio-Tenodesis Screw (a). The screw is inserted with one suture strand through the cannulated screw, while the other strand remains between the tunnel wall and the screw. After insertion of the screw, suture strands are tied over the screw head. *Alternatively:* Titanium Suture Buttons may be used for backup fixation of graft sutures (b).

## Ordering Information

Transtibial Drill Pin, 3 mm	AR-1250RT
Dual RetroCutter, 6 mm	AR-1204RD-06S
Dual RetroCutter, 7 mm	AR-1204RD-07S
Dual RetroCutter, 8 mm	AR-1204RD-08S
Dual RetroCutter, 8.5 mm	AR-1204RD-085S
Dual RetroCutter, 9 mm	AR-1204RD-09S
Dual RetroCutter, 9.5 mm	AR-1204RD-095S
Dual RetroCutter, 10 mm	AR-1204RD-10S
Dual RetroCutter, 11 mm	AR-1204RD-11S
Dual RetroCutter, 12 mm	AR-1204RD-12S
Suture Button, 3.5 mm	AR-8920
Suture Button, 7.5 mm	AR-8922

### Accessory Instruments:

Tibial ACL Guide for RetroConstruction, 45°	AR-1866R-45
Tibial ACL Guide for RetroConstruction, 50°	AR-1866R-50
Tibial ACL Guide for RetroConstruction, 55°	AR-1866R-55
RetroScrew Driver, thin	AR-1586T
Constant Tibial Guide for RetroDrill, 52.5°	AR-1775R
Drill Sleeve for Constant Tibial Guide for RetroDrill	AR-1776R
Adaptateur Drill Guide C-Ring, long	AR-1875L
Adaptateur Drill Guide C-Ring	AR-1875
Transtibial Femoral ACL Drill Guide (TTG), 4 mm, for 6 and 7 mm drill holes, purple	AR-1806
Transtibial Femoral ACL Drill Guide (TTG), 5 mm, for 7 and 8 mm drill holes, red	AR-1803
Transtibial Femoral ACL Drill Guide (TTG), 6 mm, for 8 and 9 mm drill holes, green	AR-1804
Transtibial Femoral ACL Drill Guide (TTG), 7 mm, for 10 and 11 mm drill holes, gold	AR-1801
Transtibial Femoral ACL Drill Guide (TTG), 8 mm, for 12 and 13 mm drill holes, blue	AR-1805

### Disposables:

Guide Pin w/Suture Eye, 2.4 mm, qty. 6	AR-1297L
Suture Passing Wire	AR-1255-18
#2 FiberWire, 38 inches, 2 strands (1 blue, 1 white/black), qty. 12	AR-7201
FiberStick, #2 FiberWire, 50 inches (blue) one end stiffened, 12 inches, qty. 5	AR-7209
#2 FiberLoop w/Straight Needle	AR-7234
Shoehorn Cannula, 6 mm I.D. x 9 cm	AR-6565
Bio-Tenodesis Screw, 4.75 mm x 15 mm	AR-1547B

### RetroScrews:

RetroScrew, 7 mm x 20 mm	AR-1586RB-07
RetroScrew, 8 mm x 20 mm	AR-1586RB-08
RetroScrew, 9 mm x 20 mm	AR-1586RB-09
RetroScrew, 10 mm x 20 mm	AR-1586RB-10
Femoral RetroScrew, 7 mm x 20 mm	AR-1586FRB-07
Femoral RetroScrew, 8 mm x 20 mm	AR-1586FRB-08
Femoral RetroScrew, 9 mm x 20 mm	AR-1586FRB-09
Femoral RetroScrew, 10 mm x 20 mm	AR-1586FRB-10
Titanium Femoral RetroScrew, 7 mm x 20 mm	AR-1586FR-07
Titanium Femoral RetroScrew, 8 mm x 20 mm	AR-1586FR-08
Titanium Femoral RetroScrew, 9 mm x 20 mm	AR-1586FR-09
Titanium Femoral RetroScrew, 10 mm x 20 mm	AR-1586FR-10
Titanium Tibial RetroScrew, 8 mm x 20 mm	AR-1586R-08
Titanium Tibial RetroScrew, 9 mm x 20 mm	AR-1586R-09
Titanium Tibial RetroScrew, 10 mm x 20 mm	AR-1586R-10



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