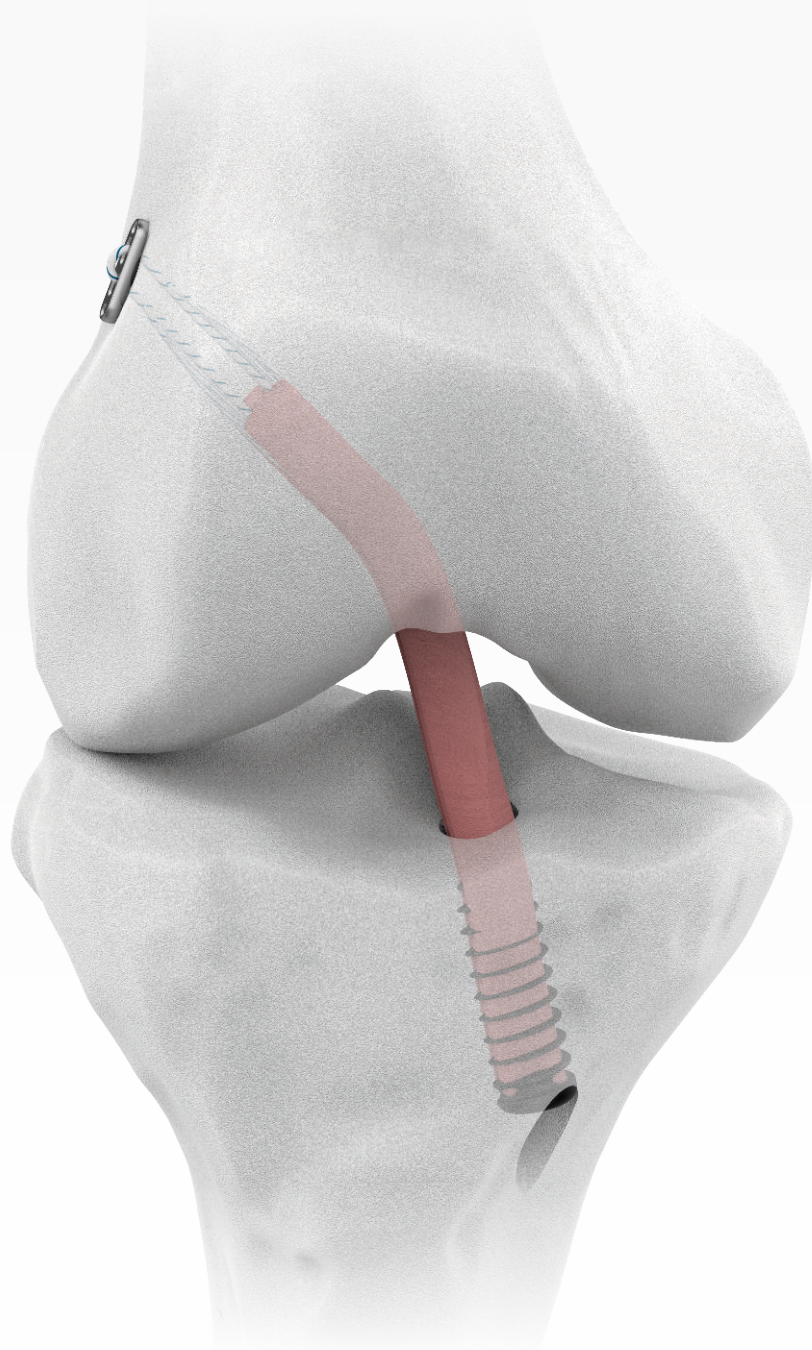


## Surgical Technique

ACL Reconstruction using

**AUXILOCK<sup>®</sup> GFS Ultimate Mini & AUXILOCK<sup>®</sup> Interference Screw**



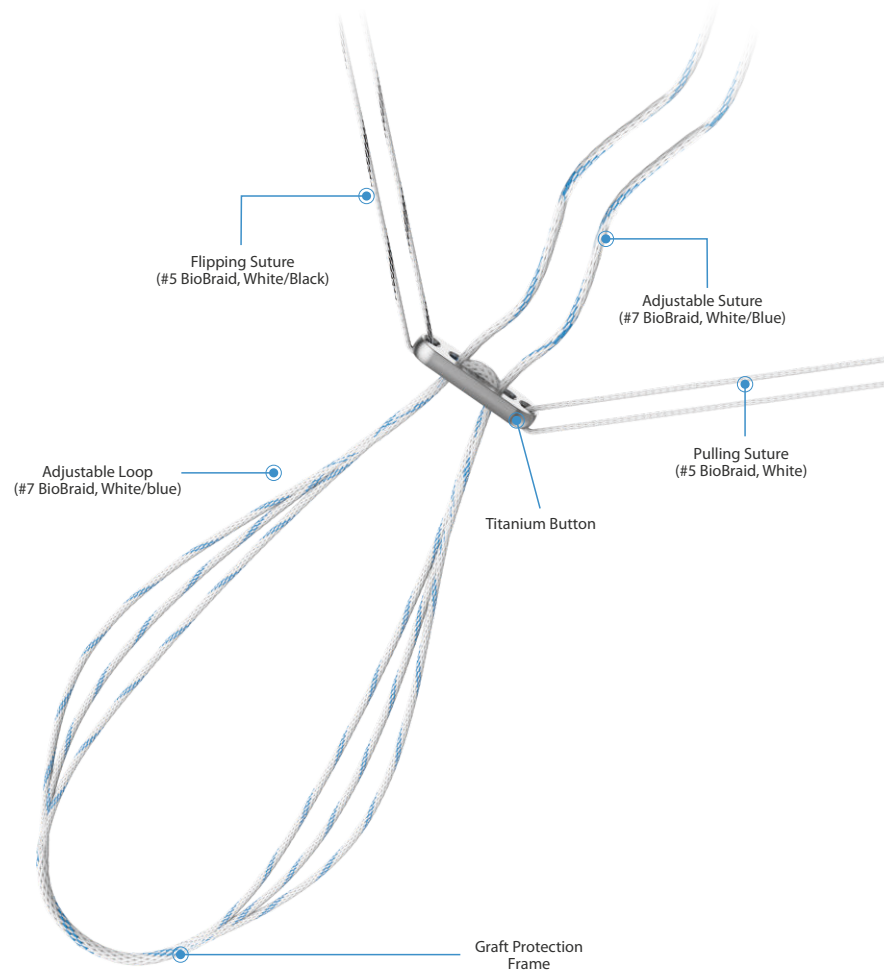
## PRODUCT OVERVIEW

### GFS Ultimate Mini

GFS Ultimate Mini is an adjustable loop with an oblong shaped titanium button used for Cruciate Graft Reconstructions. GFS Ultimate provides a double locking mechanism which eliminates the need for knot tying.

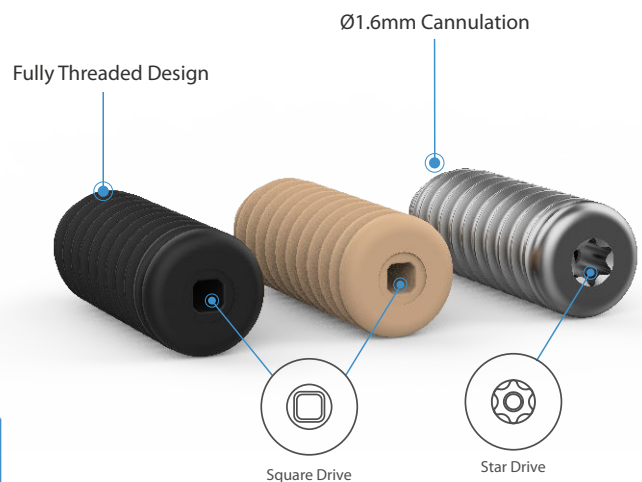
#### GFS Ultimate Mini provides three sutures (UHMWPE):

- Adjustable Suture (#7, White/Blue): It allows the surgeon to maximize the amount of graft inside the femoral tunnel, thereby optimizing the healing process. It also enables calibration of the loop to its optimum size.
- Pulling Suture (#5, White): It is available to pull the graft inside the tunnel.
- Flipping Suture (#5, White/Black): It ensures the flipping of the button.



### Interference Screw

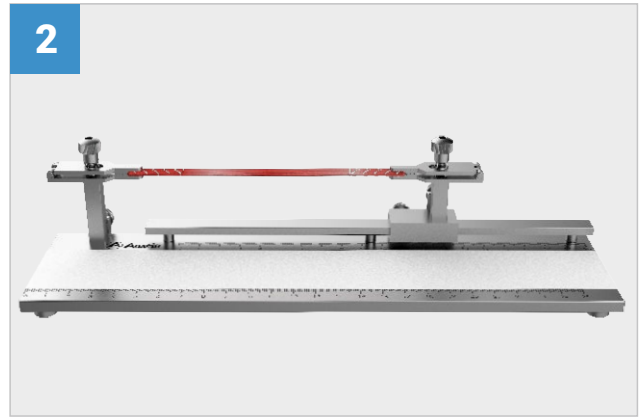
The Interference Screws are available in Titanium, PEEK OPTIMA and PEEK CF. The Interference Screw has a fully threaded design which provides strong mechanical fixation for both bone tendon bone (BTB) and soft tissue grafts. Being a cannulated screw, it is used with a guide wire and a cannulated screw driver. It is available in diameter ranging from 7mm to 12mm. The PEEK OPTIMA and PEEK CF are renowned for their radiolucent properties, less imaging artefact and for being MR safe. Both interference screws offer revision ability of an absorbable screw.



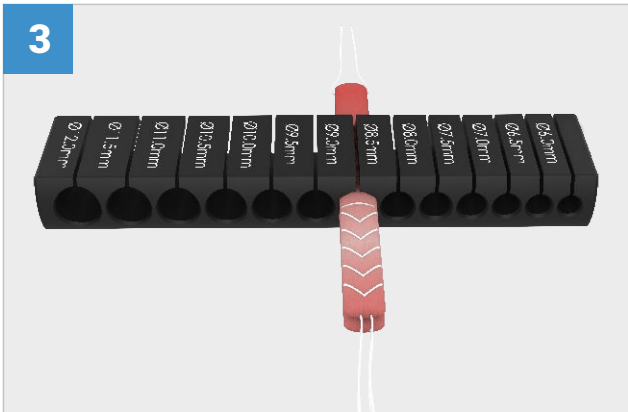
Diameter in mm	Length in mm (Polymer)	Length in mm (Ti)
7, 8, 9	20, 25, 30	20, 25, 30, 35
10, 11, 12	25, 30, 35	25, 30, 35



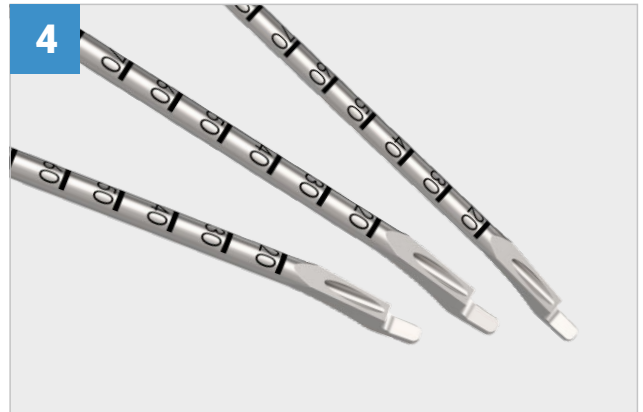
1 Harvest desired tendons using tendon stripper (Open end/Closed end) Put the tendons on the graft station where residual muscle is removed.



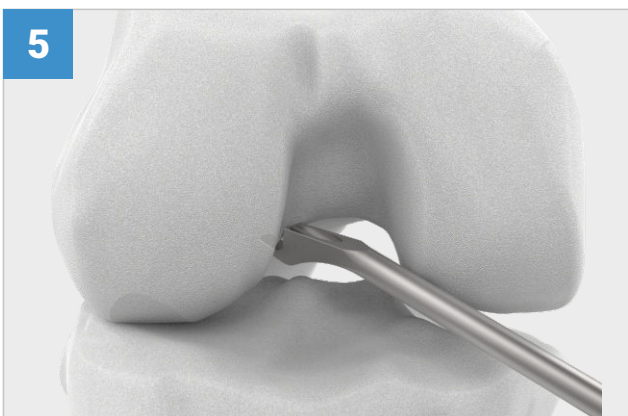
2 Whip-stitch end of the graft using BioBraid sutures or BioBraid infinity loop with needles. Make sure the graft is in good tension by adjusting the clamp. The graft should be covered by a moist sponge.



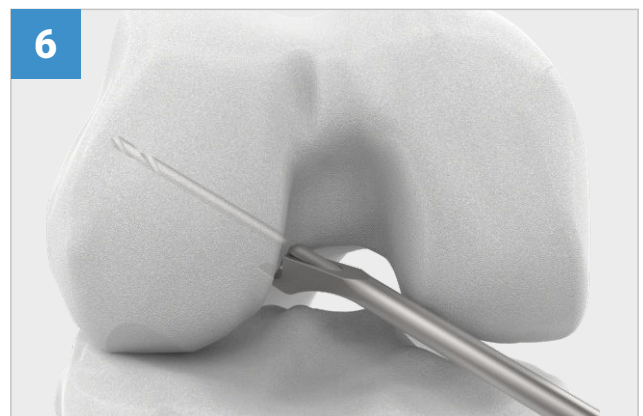
3 Fold up the graft and measure the diameter using the Graft sizer The graft should moderately pass through the hole, not too tightly not too loosely.



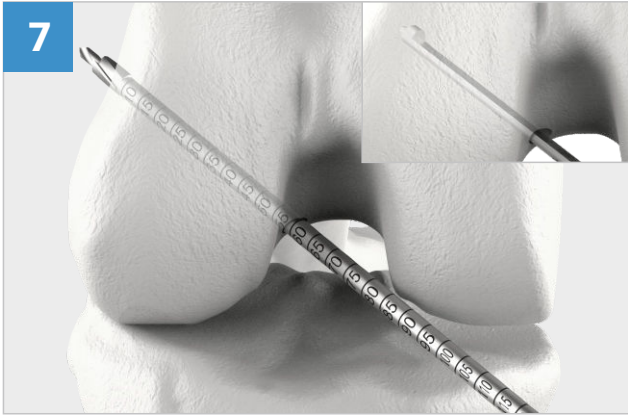
4 Select the appropriate size of the Femoral Offset Guide (5/6/7mm). Always ensure that enough posterior cortex (at least 2mm) remains.  
 Femoral Offset Guide size = Radius of the tunnel + 2mm posterior cortex.  
 (E.g. If Femoral tunnel diameter is 8 mm, Femoral Offset Guide =  $4 + 2 = 6\text{mm}$ ).



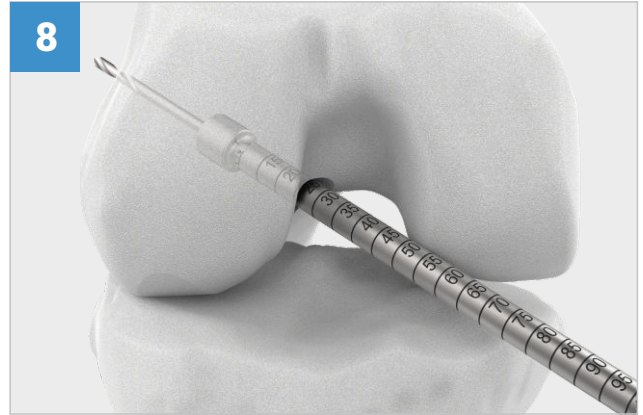
5 Insert Transportal Femoral Offset Guide through anteromedial portal. Place the hook of the Femoral Offset Guide at the over-the-top position, in direct contact with the bony cortex. For ideal position of the footprint of ACL, use 10–11 o'clock in the right knee or 1–2 o'clock in the left knee as the reference.



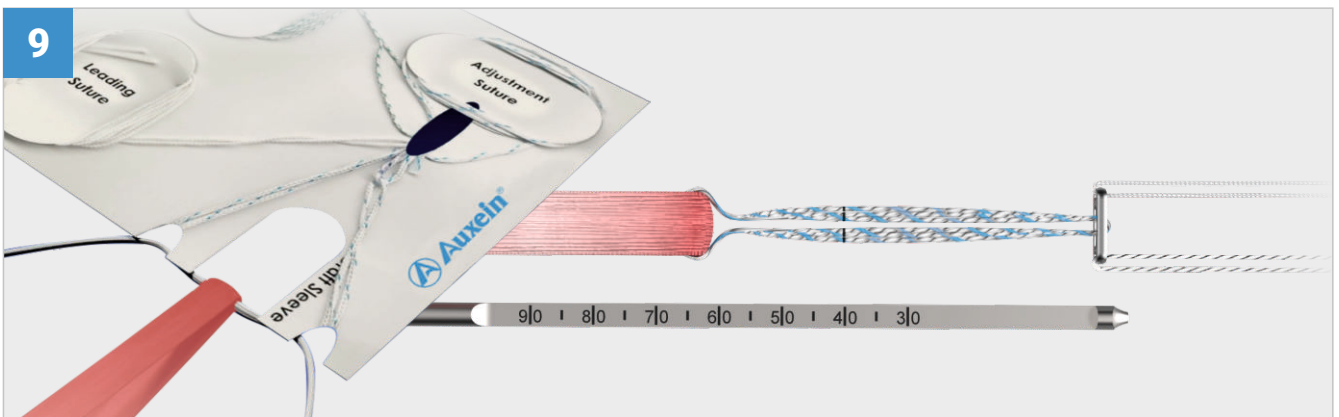
6 Use the Pin, Drill Tip, Ø2.4mm to drill through the femur and penetrate the skin.



An Cannulated Headed Reamer, Ø4.7mm (7-014-06) is used over Drill Tip pin to make the femur passing tunnel.

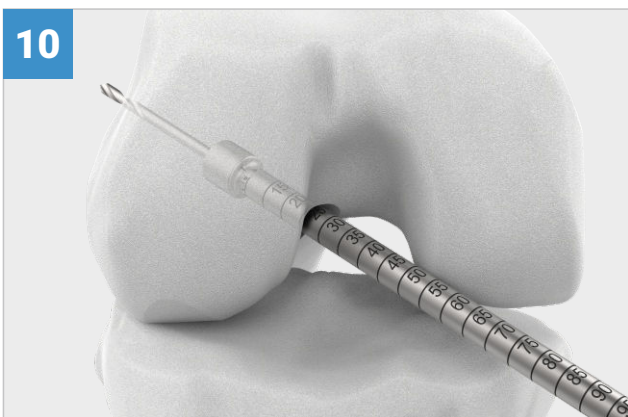


Measure the total length of passing tunnel using the Depth Gauge for Knee ACL/PCL Instrument.



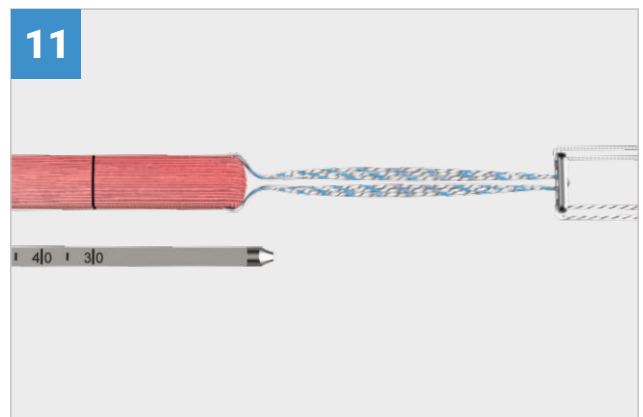
Pass graft through the loop of GFS Ultimate.

Mark the loop of GFS Ultimate according to the total femoral tunnel length. This mark signals when the button is ready to be flipped.



Select the appropriate sized Femoral Cannulated Reamer over the Drill Tip pin that corresponds to the graft size needed to create the femoral tunnel. Then remove Femoral Cannulated Reamer, Drill Tip pin is left in place.

Note: Any breach of the cortical bone of femur creating a hole larger than that created by an appropriately sized headed reamer may compromise the fixation. If the distal cortex of the femur is breached, use of GFS Ultimate Large Device (Button Dimensions: L 16.5mm XW 3.9mm XH 1.5mm) may be required.



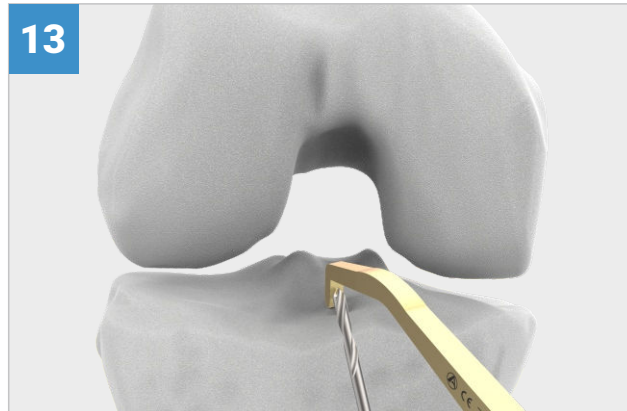
Mark a line on the graft (From distal of the loop of GFS Ultimate) according to the socket depth. When this mark is flush with the tunnel aperture, the graft has completely filled the socket.

Tip: Mark the graft 5.0mm shorter than the socket depth. When this mark reaches the tunnel aperture, you can stop tensioning. The 5.0mm is left for tension post tibial fixation. Insert your tibial screw and then tension the graft the rest of the 5.0mm to get the perfect tension on the graft.



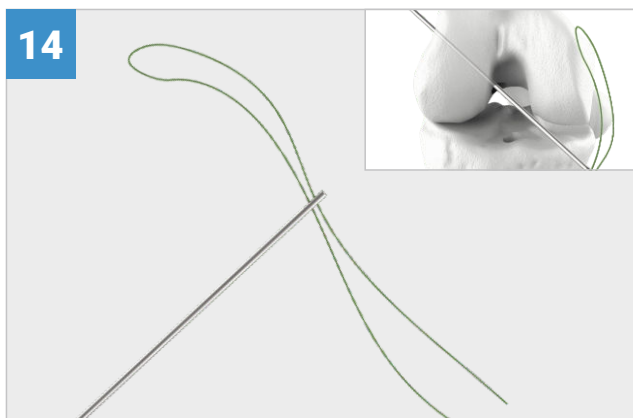
Assemble the ACL tibial drill guide (Drill Guide Handle ACL Tip/ ACLTip O, ACLTip C Aimer and ACL Elbow Aimer).

Fix the angle on Drill Guide Handle (To achieve a longer tibial tunnel, increase the angle of Drill Guide Handle). Place the tip of drill guide in the centre of ACL footprint.



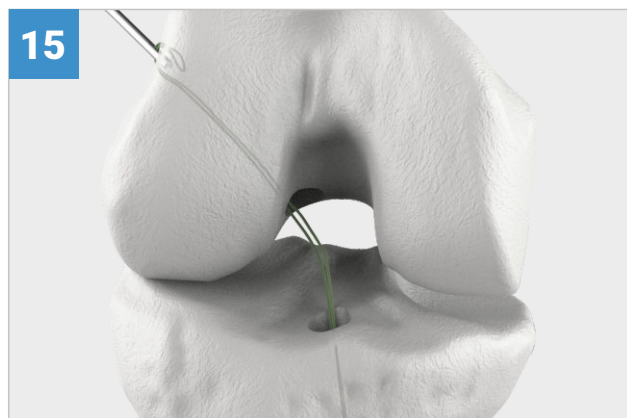
Push the drill guide bullet to the bone surface and fix the position. Use the Ø2.4mm Passing pin to drill through the tibia. (Monitor the passing pin so not to damage the femoral cartilage). Disassemble the tibial drill guide. Leave only the Passing pin in place.

Drill the tibial tunnel using the corresponding Tibial Cannulated Reamer that matches the graft diameter.

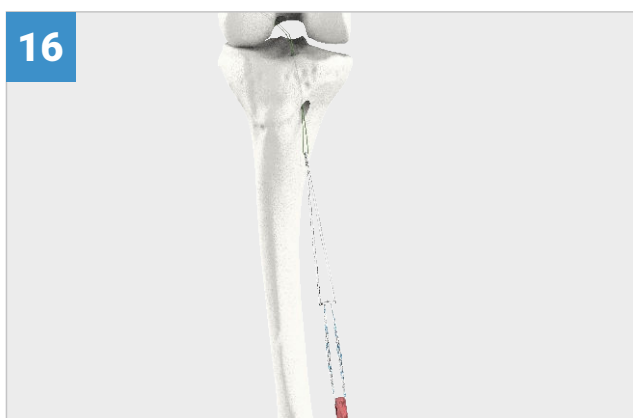


Load a #2 or #5 polyester suture as the passing suture through the eyelet of the Ø2.4mm Drill Tip pin.

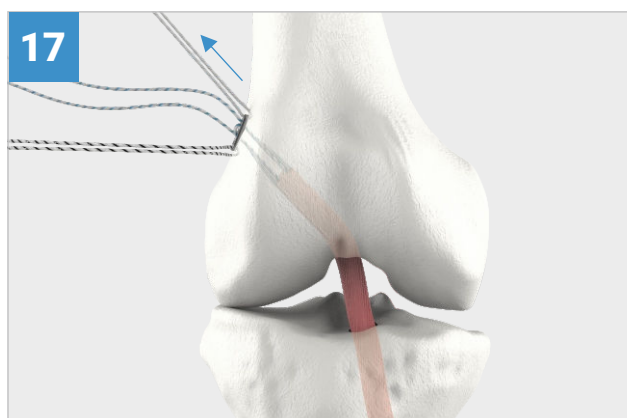
Pull the pin through the femoral tunnel. Pass one end of the suture out of the knee joint via femoral tunnel and leave another end of the suture in the knee joint.



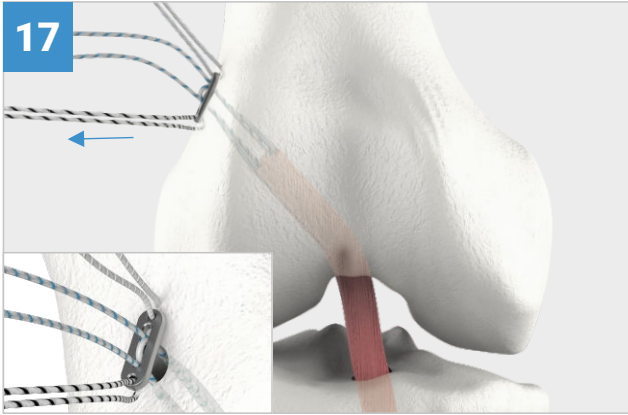
A suture retriever/hook is used to retrieve and pull out the other end of the suture through the tibial tunnel.



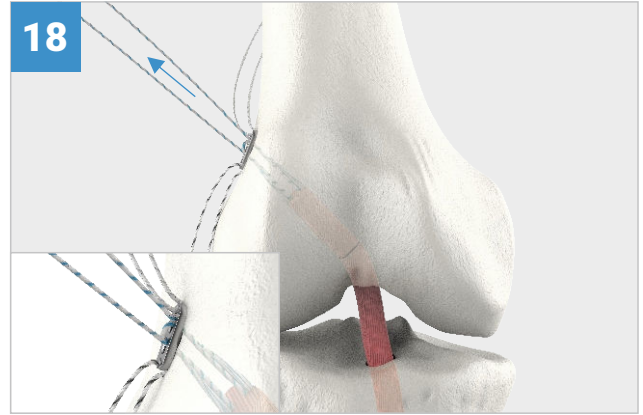
Load all the sutures (Pulling, Flipping and Adjustable) of GFS Ultimate loop on the passing suture. Pull the passing sutures to pull all the sutures of GFS Ultimate on lateral side. Then remove the passing suture.



Pull the pulling suture (White) of GFS Ultimate first to advance the ACL graft into femoral tunnel until the marking line on the loop reaches the internal femoral aperture.



17 Pull the flipping suture (White/Black) to flip the button on lateral cortex. Then pull back the graft to lock the button to the femoral cortex.



18 Then pull the flipping suture (White/Black) to flip the button on lateral cortex. Then pull back the graft to lock the button to the femoral cortex.



19 Advance Nitinol Guide Wire Ø1.2mm x Length 400mm (7-014-43) into tibial tunnel. Insert interference screw with the cannulated screwdriver (7-014-04, 7-014-05) (match screwdriver with the interference screw) over the guide wire. Insert the screw up to the tibial plateau, but ensure that the screw tip remains completely inside the bone.

Re-tension the adjustable suture of GFS ultimate to get perfect tension on the graft.

Cut off the excess graft outside the tibial tunnel.

Remove both pulling and flipping suture on femur side by just pulling it. Cut off the adjustment suture with the help of scissors or suture cutter.

## ORDERING INFORMATION

### GFS Ultimate Mini

Code	Product Description
6-006-01	AUXILOCK® GFS Ultimate Mini Button, Button L: 12mm, W: 3.9mm (Adjustable Loop)
6-006-02	AUXILOCK® GFS Ultimate Large Button, Button L: 16.5mm, W: 3.9mm (Adjustable Loop)

### PEEK OPTIMA Interference Screw

Code	Product Description
6-014-01	AUXILOCK® 7mm x 20mm PEEK OPTIMA Interference Screw
6-014-02	AUXILOCK® 7mm x 25mm PEEK OPTIMA Interference Screw
6-014-03	AUXILOCK® 7mm x 30mm PEEK OPTIMA Interference Screw
6-014-04	AUXILOCK® 8mm x 20mm PEEK OPTIMA Interference Screw
6-014-05	AUXILOCK® 8mm x 25mm PEEK OPTIMA Interference Screw
6-014-06	AUXILOCK® 8mm x 30mm PEEK OPTIMA Interference Screw
6-014-07	AUXILOCK® 8mm x 35mm PEEK OPTIMA Interference Screw
6-014-08	AUXILOCK® 9mm x 20mm PEEK OPTIMA Interference Screw
6-014-09	AUXILOCK® 9mm x 25mm PEEK OPTIMA Interference Screw
6-014-10	AUXILOCK® 9mm x 30mm PEEK OPTIMA Interference Screw
6-014-11	AUXILOCK® 9mm x 35mm PEEK OPTIMA Interference Screw
6-014-12	AUXILOCK® 10mm x 25mm PEEK OPTIMA Interference Screw
6-014-13	AUXILOCK® 10mm x 30mm PEEK OPTIMA Interference Screw
6-014-14	AUXILOCK® 10mm x 35mm PEEK OPTIMA Interference Screw
6-014-15	AUXILOCK® 11mm x 25mm PEEK OPTIMA Interference Screw
6-014-16	AUXILOCK® 11mm x 30mm PEEK OPTIMA Interference Screw
6-014-17	AUXILOCK® 11mm x 35mm PEEK OPTIMA Interference Screw
6-014-18	AUXILOCK® 12mm x 25mm PEEK OPTIMA Interference Screw
6-014-19	AUXILOCK® 12mm x 30mm PEEK OPTIMA Interference Screw
6-014-20	AUXILOCK® 12mm x 35mm PEEK OPTIMA Interference Screw

### PEEK CF Interference Screw

Code	Product Description
6-009-01	AUXILOCK® 7mm x 20mm PEEK CF Interference Screw
6-009-02	AUXILOCK® 7mm x 25mm PEEK CF Interference Screw
6-009-03	AUXILOCK® 7mm x 30mm PEEK CF Interference Screw
6-009-04	AUXILOCK® 8mm x 20mm PEEK CF Interference Screw
6-009-05	AUXILOCK® 8mm x 25mm PEEK CF Interference Screw
6-009-06	AUXILOCK® 8mm x 30mm PEEK CF Interference Screw
6-009-07	AUXILOCK® 8mm x 35mm PEEK CF Interference Screw
6-009-08	AUXILOCK® 9mm x 20mm PEEK CF Interference Screw
6-009-09	AUXILOCK® 9mm x 25mm PEEK CF Interference Screw
6-009-10	AUXILOCK® 9mm x 30mm PEEK CF Interference Screw
6-009-11	AUXILOCK® 9mm x 35mm PEEK CF Interference Screw
6-009-12	AUXILOCK® 10mm x 25mm PEEK CF Interference Screw
6-009-13	AUXILOCK® 10mm x 30mm PEEK CF Interference Screw
6-009-14	AUXILOCK® 10mm x 35mm PEEK CF Interference Screw
6-009-15	AUXILOCK® 11mm x 25mm PEEK CF Interference Screw
6-009-16	AUXILOCK® 11mm x 30mm PEEK CF Interference Screw
6-009-17	AUXILOCK® 11mm x 35mm PEEK CF Interference Screw
6-009-18	AUXILOCK® 12mm x 25mm PEEK CF Interference Screw
6-009-19	AUXILOCK® 12mm x 30mm PEEK CF Interference Screw
6-009-20	AUXILOCK® 12mm x 35mm PEEK CF Interference Screw

### Titanium Interference Screw

Code	Product Description
6-010-01	AUXILOCK® 7mm x 20mm Titanium Interference Screw
6-010-02	AUXILOCK® 7mm x 25mm Titanium Interference Screw
6-010-03	AUXILOCK® 7mm x 30mm Titanium Interference Screw
6-010-04	AUXILOCK® 7mm x 35mm Titanium Interference Screw
6-010-05	AUXILOCK® 8mm x 20mm Titanium Interference Screw
6-010-06	AUXILOCK® 8mm x 25mm Titanium Interference Screw
6-010-07	AUXILOCK® 8mm x 30mm Titanium Interference Screw
6-010-08	AUXILOCK® 8mm x 35mm Titanium Interference Screw
6-010-09	AUXILOCK® 9mm x 20mm Titanium Interference Screw
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6-010-14	AUXILOCK® 10mm x 30mm Titanium Interference Screw
6-010-15	AUXILOCK® 10mm x 35mm Titanium Interference Screw
6-010-16	AUXILOCK® 11mm x 25mm Titanium Interference Screw
6-010-17	AUXILOCK® 11mm x 30mm Titanium Interference Screw
6-010-18	AUXILOCK® 11mm x 35mm Titanium Interference Screw
6-010-19	AUXILOCK® 12mm x 25mm Titanium Interference Screw
6-010-20	AUXILOCK® 12mm x 30mm Titanium Interference Screw
6-010-21	AUXILOCK® 12mm x 35mm Titanium Interference Screw

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