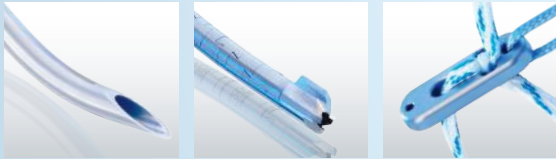




## Curved Anatomic Patellar Tendon ACL Reconstruction

Using GraftMax™ Curved Reaming System,  
GraftMax™ Button BTB and GENESYS™ Matryx®

A complete guide to ACL Repair utilizing GraftMax™ Curved Reaming System and GraftMax™ Button BTB. As the newest addition to CONMED's Knee Preservation System, the GraftMax™ System facilitates secure, precise anatomic ACL reconstruction with maximum graft fill.

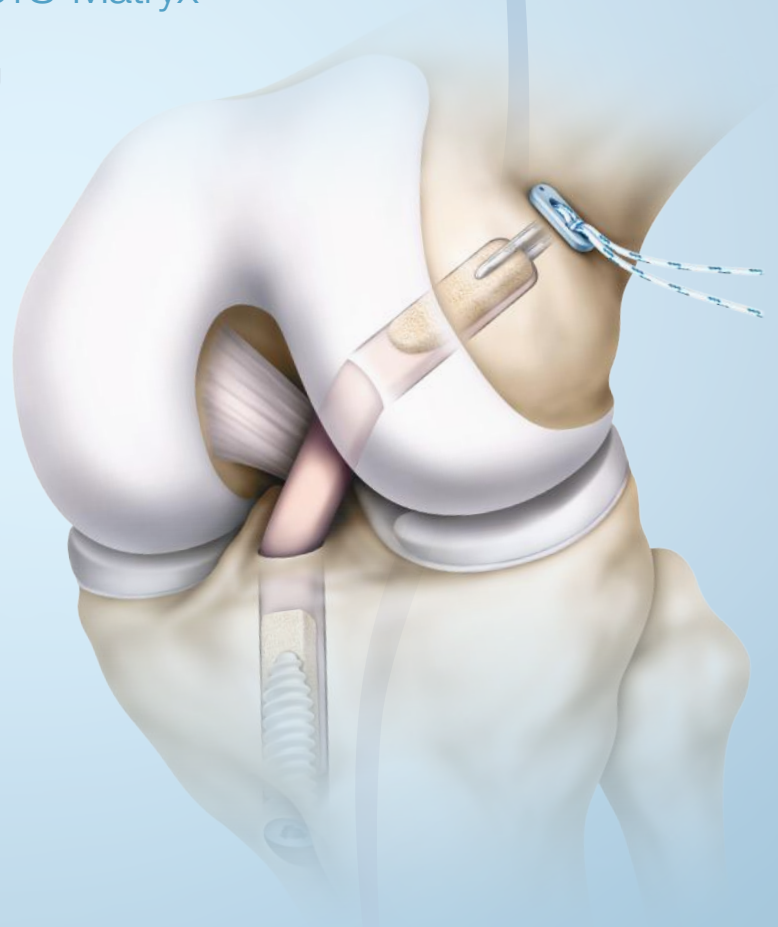


### Technique featured by

Warren R. Dunn, MD, MPH

University of Wisconsin, Sports Medicine – USA

In partnership with



CONMED  
SURGICAL  
TECHNIQUE

# Curved Anatomic Patellar Tendon ACL Reconstruction

Using GraftMax™ Curved Reaming System,  
GraftMax™ Button BTB and GENESYS™ Matryx®



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Introduction by Warren R. Dunn, MD, MPH

*ACL reconstruction is performed to restore the anatomy and function of the native ACL. Anatomic ACL reconstruction is best achieved by approaching drilling the femoral tunnel independent of the tibial tunnel.*

Curved instrumentation facilitates anatomic femoral tunnel placement by reducing the need to hyperflex the knee when drilling the femoral tunnel from a medial portal.

Curved instrumentation using flexible reamers are also less technically demanding and likely enhance tunnel accuracy in order to replicate native ACL anatomy. Flexible reamers are also safer because they help avoid potential damage to the medial femoral condyle articular cartilage.

The GraftMax™ Button fixation system is an excellent option for surgeons performing anatomic ACL reconstruction. The adjustable length loop of the GraftMax™ Button allows flexibility in the depth of insertion of the graft into the femoral tunnel while providing excellent biomechanical fixation. ■

## WARREN R. DUNN, MD, MPH

Chairman of the Division of Sports Medicine,  
Head Team Physician for the University of Wisconsin – USA

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**Warren R. Dunn, MD, MPH** is Chairman of the Division of Sports Medicine, and Head Team Physician for the University of Wisconsin.

He is board certified in orthopedics, fellowship trained in sports medicine and shoulder surgery, and holds a Certificate of Added Qualification (CAQ) in sports medicine.

He specializes in sports medicine surgical procedures of the shoulder and knee including anterior cruciate ligament (ACL) reconstruction.

**Dr. Dunn has published many indexed scientific papers regarding both primary and revision ACL reconstruction.**



# Curved Anatomic Patellar Tendon ACL Reconstruction

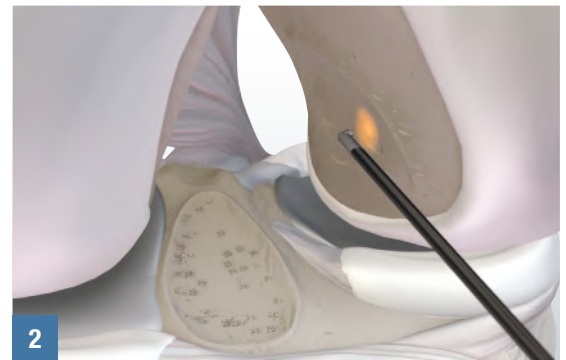
## Using GraftMax™ Curved Reaming System, GraftMax™ Button BTB and GENESYS™ Matryx®

Authored by Warren R. Dunn, MD, MPH

### FEMORAL TUNNEL POSITIONING AND DRILLING



The GraftMax™ Curved Guide and Reamers are designed to be used through the anteromedial (AM) portal without the need for hyperflexing the knee.

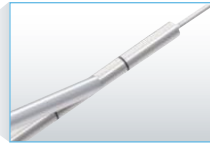
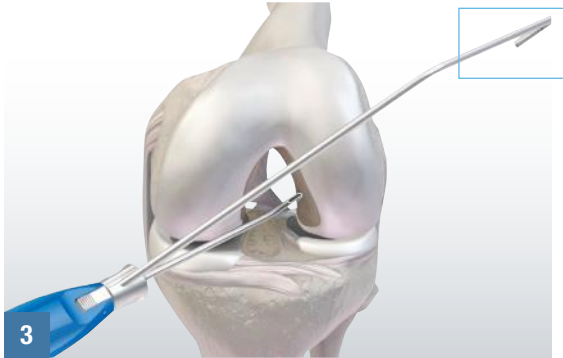


Debride unwanted remnant ACL tissue. Identify the femoral ACL footprint and select the desired location of the femoral tunnel.

The center of the desired tunnel location can be marked using an awl, a radiofrequency wand or a shaver.



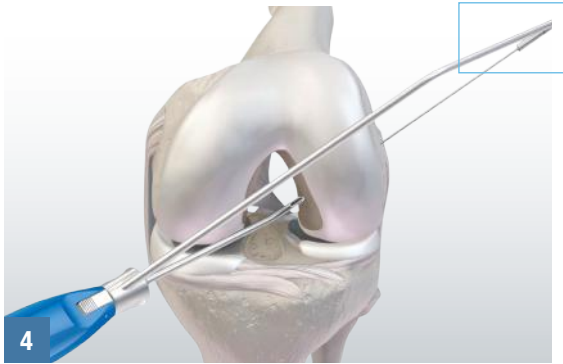
## FEMORAL TUNNEL POSITIONING AND DRILLING



**GRAFTMAX™**  
CURVED GUIDE

Insert the GraftMax™ Curved Guide into the AM portal with the knee flexed at 90°.

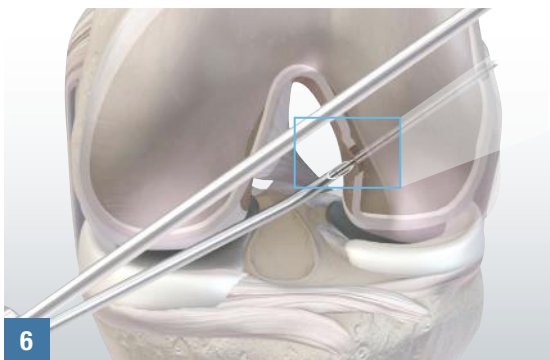
Attach the GraftMax™ Indicator onto the Curved Guide.



Insert the GraftMax™ Indicator Pin into the Indicator and down through the skin to bone. Assess the projected GraftMax™ Flex XACTPIN™ Guide Pin exit and femoral aperture to cortex (AC) length.



Once the correct position and angulation are achieved, advance the Flex XACTPIN™ through the Curved Guide so that the pin enters the bone at the desired location of the femoral tunnel. Then advance the pin through the femoral cortex.

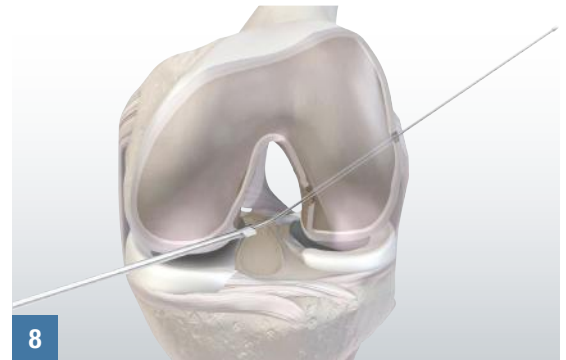


The Flex XACTPIN™ can be pulled back to confirm AC length by hooking the head and reading the markings at the femoral aperture. Flex XACTPIN™ can then be advanced out through the skin laterally using the pin driver. ■

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## FEMORAL TUNNEL POSITIONING AND DRILLING

Curved Anatomic Patellar Tendon **ACL Reconstruction** Using GraftMax™ Curved Reaming System, GraftMax™ Button BTB and GENESYS™ Matryx®



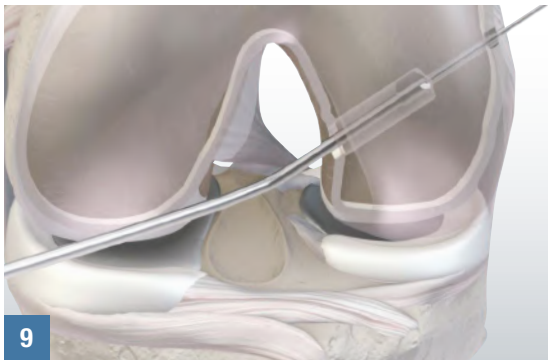
Remove the Indicator and Curved Guide leaving the Flex XACTPIN™ in place.

Insert the GraftMax™ Flex Sentinel® Reamer over the Flex XACTPIN™ through the AM portal with the cutting flute facing away from the femoral condyle and advance the reamer to the femoral ACL footprint.

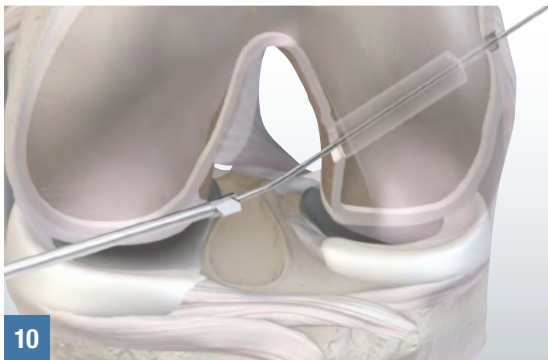
Do not run the power during insertion through the soft tissues as damage to the medial femoral condyle may occur.

GRAFTMAX™  
FLEX SENTINEL® REAMER

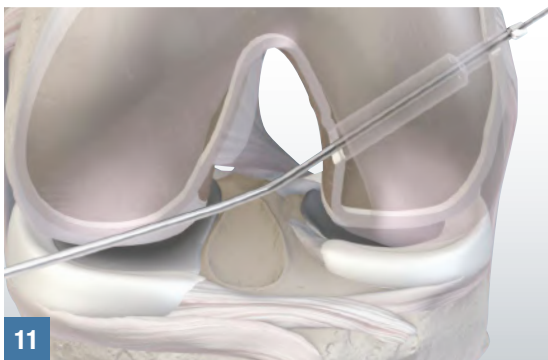
## FEMORAL TUNNEL POSITIONING AND DRILLING



Advance the Flex Sentinel® under power to drill the femoral socket to the desired depth leaving a minimum 5mm bone bridge.



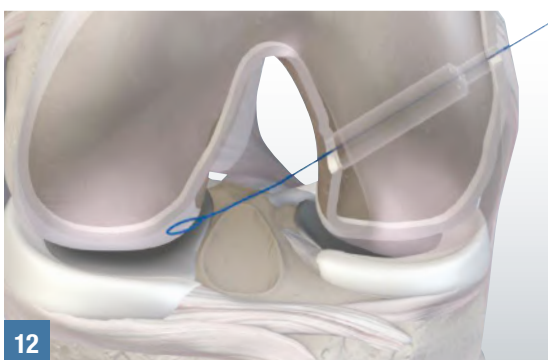
Manually remove the Flex Sentinel® from the joint making sure to keep the cutting flute oriented away from the condylar surface.



Use the GraftMax™ Flex Channel Reamer to ream the femoral channel. Advance the reamer through the lateral cortex.

**TIP:**

The Flex Channel Reamer can be pulled back to confirm AC length by hooking the head and reading the markings at the femoral aperture.



Remove the Flex Channel Reamer leaving the Flex XACTPIN™ in place.

Place the two free ends of a #2 passing suture through the eyelet of the Flex XACTPIN.™ Pull the guide pin through the femur laterally, positioning the suture to be used for graft passage after tibial tunnel creation. ■

**GRAFTMAX™ FLEX  
XACTPIN®** GUIDE PIN



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## TIBIAL TUNNEL POSITIONING AND DRILLING

Curved Anatomic Patellar Tendon **ACL Reconstruction** Using GraftMax™ Curved Reaming System, GraftMax™ Button BTB and GENESYS™ Matryx®



Set the angle of the Bullseye® Tibial Footprint Guide.

Place the tip of the guide into the center of the tibial ACL footprint and advance the pin sleeve flush to the anterior tibial cortex.



Advance the tibial guide pin under power until it meets the point of the guide arm.

Depress the guide lever to remove the pin sleeve.

Remove the Bullseye® Tibial Footprint Guide from the joint.



Place a curette over the point of the guide pin to protect against inadvertent advancement when drilling.

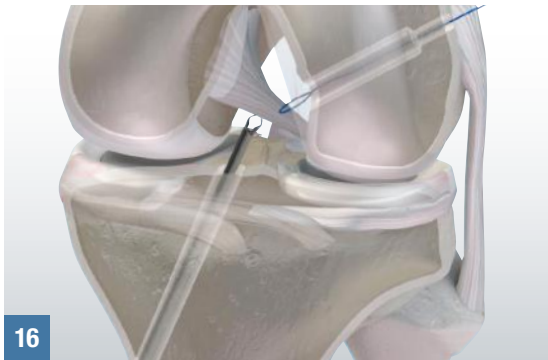
Use the appropriate size reamer for the tibial tunnel.

**BULLSEYE® TIBIAL**  
FOOTPRINT GUIDE

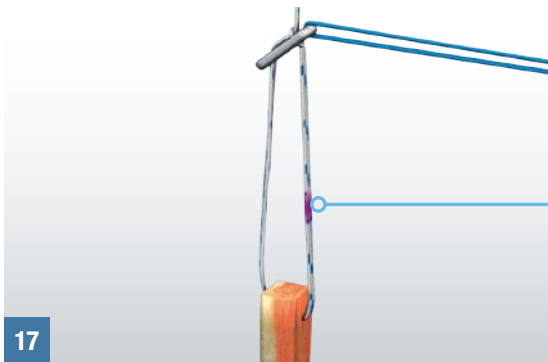




## GRAFT POSITIONING AND FIXATION



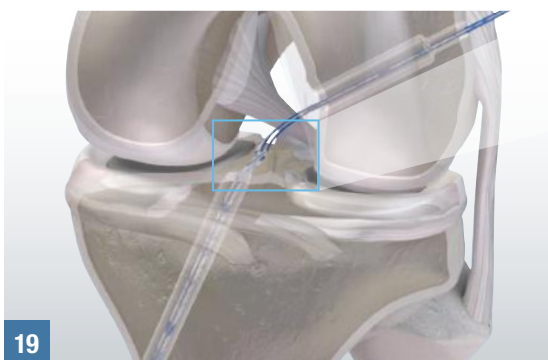
Retrieve the looped end of the passing suture through the tibial tunnel.



**Mark the button's striped loop** at the AC length, measuring from the end of the button.



Load the free ends of the blue and white striped sutures of the GraftMax™ Button into the passing suture loop. Pull the suture loop up through the knee so that all four suture ends from the GraftMax™ Button exit skin superolateral to knee. It is recommended to keep graft construct outside the tibial tunnel.



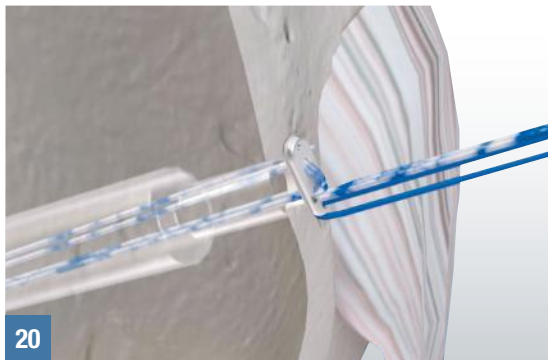
Keeping the graft outside the tibial tunnel, apply tension to the blue lead suture to advance the button into the knee joint.

Carefully take slack out of the striped loop sutures taking care to not shorten the loop. ■

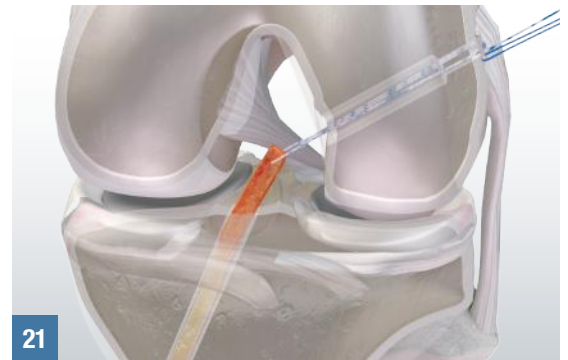
**CONMED  
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## GRAFT POSITIONING AND FIXATION

Curved Anatomic Patellar Tendon **ACL Reconstruction** Using GraftMax™ Curved Reaming System, GraftMax™ Button BTB and GENESYS™ Matryx®



The button should now be external to the cortex and deployment can be confirmed by pulling back on the graft.



Pull the bone patellar tendon bone (BTB) graft into the joint by pulling the striped adjustable loop reducing the loop length until the tissue is in the desired position.

**TIP:**

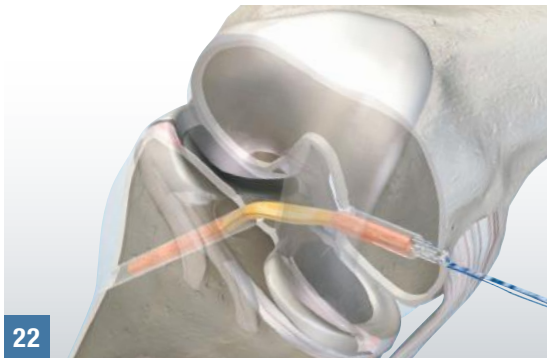
Guide the tibial bone block into the tibial tunnel to ensure that it does not get caught on the tibia.



GENESYS™ MATRYX®  
INTERFERENCE SCREW

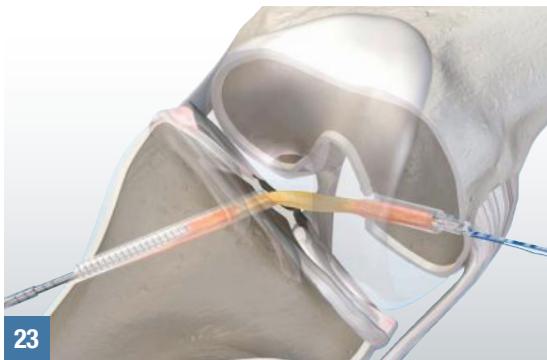
## GRAFT POSITIONING AND FIXATION

In partnership with  
**MTF** Musculoskeletal  
Transplant  
Foundation



Cycle the knee with tension on the graft and set knee at desired knee flexion angle, usually 0-15°.

If desired, the button can be retensioned by pulling the sutures from the anterolateral thigh.



With the knee in the desired position, keep tension on the graft and apply posterior drawer force to the knee and insert the BioScrew® Hyperflex® Guidewire.

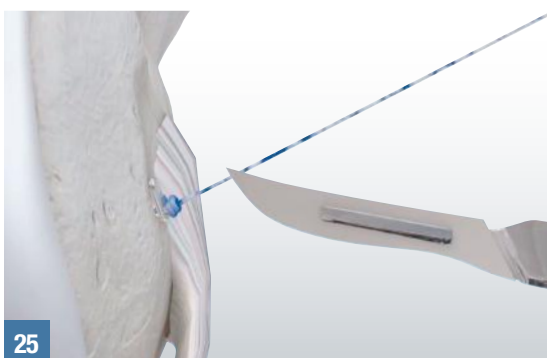
Tap the tibial tunnel and BTB graft.

Then, load the appropriately sized GENESYS™ Matryx® Interference Screw and driver onto the guidewire and advance it in the tunnel until it is flush.



### OPTIONAL STEP:

An arthroscopic knot pusher can be used to tie a knot in the striped sutures over the top of the button. This can be done percutaneously from the anterolateral thigh.



Remove the blue passing suture by pulling one suture limb unthreading it from the button.

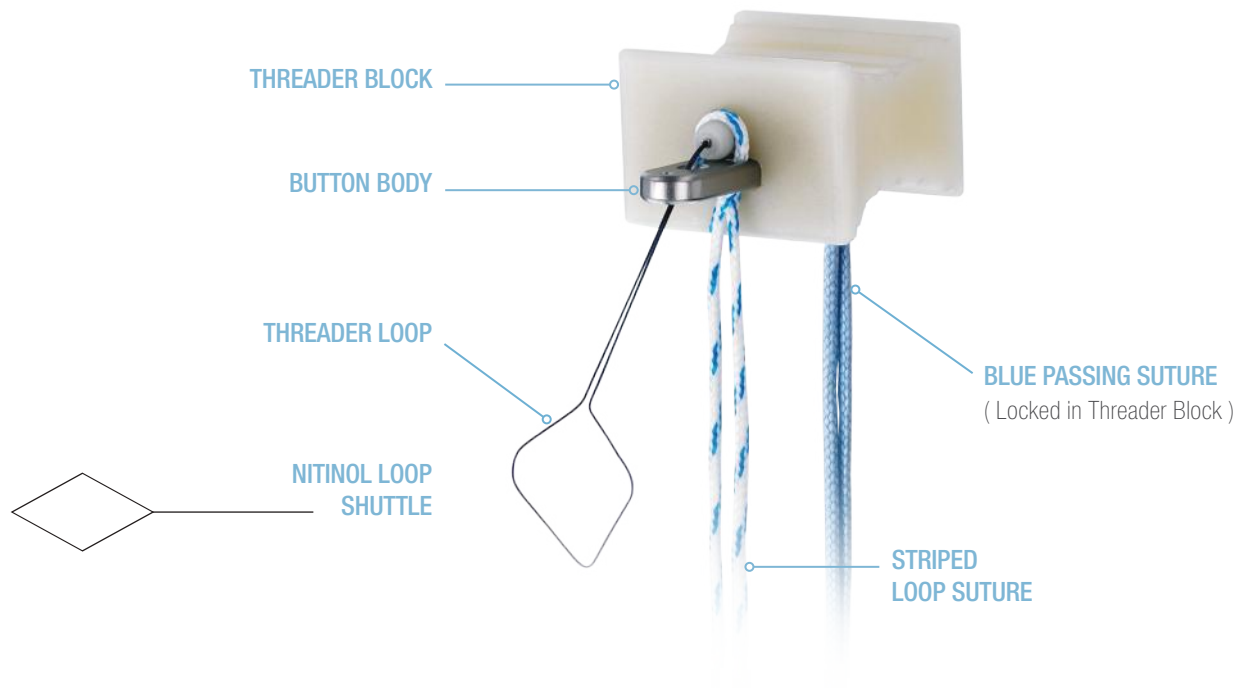
Trim the two strands of the striped adjustable loop tails flush to the skin with a sharp blade.

Follow the normal procedures to close the incisions. ■

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TECHNIQUE**

## ANATOMY OF THE GRAFTMAX™ BUTTON BTB

### QUICK REFERENCE

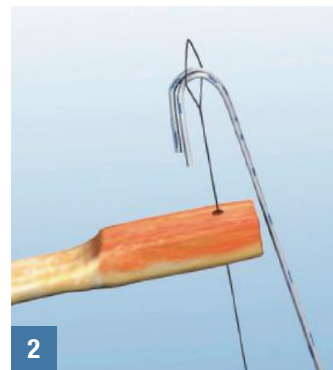


## LOADING AND ADJUSTING GRAFTMAX™ BUTTON BTB

### Prepping the BTB Graft



Drill a 2mm hole in the femoral BTB bone block to load the adjustable loop onto the bone block.



Remove the GraftMax™ Button and nitinol loop shuttle from the packaging. Pass the nitinol loop shuttle through the 2mm diameter hole.



Pull the nitinol loop shuttle to pass the striped suture tails through the 2mm bone block hole.

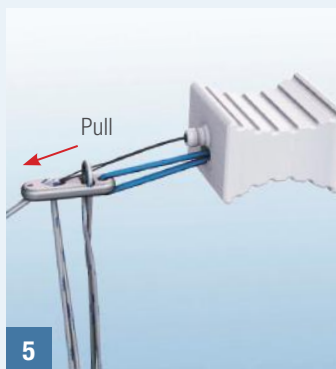
Place the tails of the striped loop suture into the nitinol loop shuttle.

### Prepping the GraftMax™ Button BTB with Graft

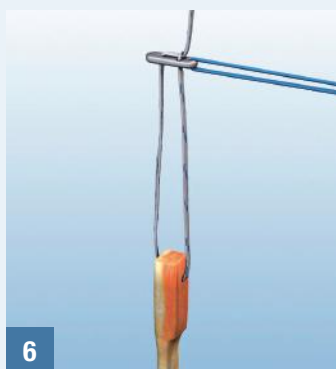


Load the tails of the striped loop suture into the threader loop.

Unlock the blue passing suture from the threader block to release the button.



Pull the button off of the threader block, pulling the sutures through the button and loading the graft onto the adjustable loop.



Size the button-graft assembly to determine the appropriate tunnel diameter. ■

## ADJUSTING THE GRAFTMAX™ BUTTON BTB

### Adjusting the GraftMax™ Button BTB Loop



It is suggested that the loop length be kept at a length that will allow for the button body to be positioned on the lateral femoral cortex while keeping the graft outside of the knee.

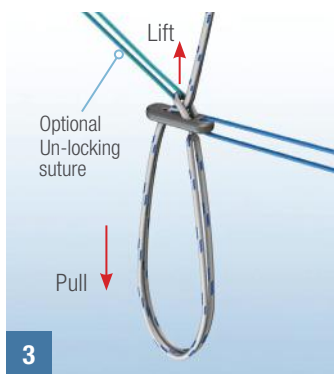
**NOTE:**

This will make the button easier to pass and allow for visual and tactile confirmation of deployment of the button on the lateral femoral cortex.



Pulling the striped loop suture tails will make the loop smaller.

Care should be taken not to pull the striped suture loop tails unless intending to re-size the loop.



In order to make the loop larger, lift up the locking loop on top of the button body and pull the striped loop suture limb below the button body.

**OPTIONAL STEP:**

An additional suture may be positioned under the locking loop on top of the button to provide a means for unlocking and enlarging the loop in-situ if desired. ■

## ORDERING INFORMATION

To order any of our GraftMax™ Button products including instrumentation and accessories, GENESYS™ Matryx® Interference Screws and instrumentation, PINN-ACL® Cruciate Guide System and other accessories please call CONMED Customer Service at: (US) **800-237-0619** or, (Global) **727-392-6464**.

### GRAFTMAX™ BUTTONS

GraftMax™ Button BTB .....	KS-BTB
GraftMax™ Button Cradle .....	KS-BCA

### GRAFTMAX™ BUTTON ACCESSORIES

GraftMax™ Flex Channel Reamer .....	KS8550
GraftMax Flex XACTPIN™ Guide Pin ....	KS-FGP24
XO Button Holder .....	PS8834

### GRAFTMAX™ CURVED REAMING SYSTEM

GraftMax™ Curved Guide .....	KS-CDG
GraftMax™ Indicator .....	KS-IND
GraftMax™ Indicator Pin .....	KS-ACP

### GRAFTMAX™ FLEX SENTINEL® REAMERS

5.5mm x 9 in .....	KS8555	9.0mm x 9 in .....	KS8590
6.0mm x 9 in .....	KS8560	9.5mm x 9 in .....	KS8595
6.5mm x 9 in .....	KS8565	10mm x 9 in .....	KS8510
7.0mm x 9 in .....	KS8570	10.5mm x 9 in .....	KS85105
7.5mm x 9 in .....	KS8575	11mm x 9 in .....	KS8511
8.0mm x 9 in .....	KS8580	12mm x 9 in .....	KS8512
8.5mm x 9 in .....	KS8585	13mm x 9 in .....	KS8513

### TIBIAL GUIDE SYSTEM

PINN-ACL® Cruciate Guide includes ACL Guide Arm and Pin-Sleeve .....	8731
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### BULLSEYE® TIBIAL FOOTPRINT GUIDE

5.0mm .....	DB5TAM	7.0mm .....	DB7TAM
6.0mm .....	DB6TAM	8.0mm .....	DB8TAM

### ACL ACCESSORIES

Suture Handle .....	HDL-CLT
Graft Sizing Ring, Large .....	GFT-LG
Graft Sizing Ring, Small .....	GFT-SM
EL Depth Probe .....	21.1001
Bullseye® Femoral Footprint Ruler .....	RL1000

### GENESYS™ MATRYX® INTERFERENCE SCREWS

5.0mm x 15mm .....	235015M5	7.0mm x 30mm .....	237030M5
5.0mm x 20mm .....	235020M5	8.0mm x 20mm .....	238020M5
5.0mm x 25mm .....	235025M5	8.0mm x 25mm .....	238025M5
5.0mm x 30mm .....	235030M5	8.0mm x 30mm .....	238030M5
5.5mm x 15mm .....	235515M5	8.0mm x 35mm .....	238035M5
5.5mm x 20mm .....	235520M5	9.0mm x 20mm .....	239020M5
5.5mm x 25mm .....	235525M5	9.0mm x 25mm .....	239025M5
5.5mm x 30mm .....	235530M5	9.0mm x 30mm .....	239030M5
6.0mm x 15mm .....	236015M5	9.0mm x 35mm .....	239035M5
6.0mm x 20mm .....	236020M5	10.0mm x 20mm .....	231020M5
6.0mm x 25mm .....	236025M5	10.0mm x 25mm .....	231025M5
6.0mm x 30mm .....	236030M5	10.0mm x 30mm .....	231030M5
6.5mm x 15mm .....	236515M5	10.0mm x 35mm .....	231035M5
6.5mm x 20mm .....	236520M5	11.0mm x 20mm .....	231120M5
6.5mm x 25mm .....	236525M5	11.0mm x 25mm .....	231125M5
6.5mm x 30mm .....	236530M5	11.0mm x 30mm .....	231130M5
7.0mm x 20mm .....	237020M5	11.0mm x 35mm .....	231135M5
7.0mm x 25mm .....	237025M5		

### GENESYS™ MATRYX® INSTRUMENTATION

Universal Driver, Modular Ratcheting Handle .....	D8640
Short Fixed Tri-Lobe Driver for 5.0mm Interference Screws .....	D8652
Short Modular Tri-Lobe Driver for 5.0mm Interference Screws .....	D8650
Extended Length Modular Tri-Lobe Driver for 5.0mm Interference Screws .....	D8660
Short Fixed Tri-Lobe Driver for 5.5-6.5mm Interference Screws .....	D8653
Short Modular Tri-Lobe Driver for 5.5-6.5mm Interference Screws .....	D8651
Extended Length Modular Tri-Lobe Driver for 5.5-6.5mm Interference Screws .....	D8661
Short Fixed Tri-Lobe Driver for 7.0-11.0mm Interference Screws .....	DFS70
Short Modular Tri-Lobe Driver for 7.0-11.0mm Interference Screws .....	DMS70
Extended Length Modular Tri-Lobe Driver for 7.0-11.0mm Interference Screws .....	C8716
7.0-8.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Fixed .....	TFS70
7.0-8.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Short Modular .....	TMS70
7.0-8.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Extended Length Modular .....	D8607
9.0-10.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Fixed .....	TFS90
9.0-10.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Short Modular .....	TMS90
9.0-10.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Extended Length Modular .....	D8609
11.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Fixed .....	TFS11
11.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Short Modular .....	TMS11
11.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Extended Length Modular .....	D8611

To order Allograft Tissue please call MTF Customer Service at: (US) **800-433-6576** or, (Global) **732-661-0202**.

### ALLOGRAFT TENDON w/Bone Blocks      FREEZE-DRIED      FROZEN

Bone-Tendon-Bone Hemi w/Quadriceps, 10-12mm Width .....	400005	.....	430005
Bone-Tendon-Bone Hemi w/10mm Shaped Bone-Block .....	400007	.....	430007
Bone-Tendon-Bone Hemi w/Quadriceps, ≥ 13mm Width .....	400010	.....	430010
Bone-Tendon-Bone Hemi w/o Quadriceps .....	400015	.....	430015
Bone-Tendon-Bone Whole w/5cm Quadriceps .....	-	.....	430034
Bone-Tendon-Bone Whole w/8cm Quadriceps .....	-	.....	430036

### ALLOGRAFT TENDON w/Bone Blocks      FREEZE-DRIED      FROZEN

Achilles Tendon w/Calcaneus, ≥ 19.5cm Length ....	400203	.....	430200
Achilles Tendon w/10mm Shaped Bone-Block, ≥ 19.5cm Length .....	-	.....	430207
Achilles Tendon w/Calcaneus, 16-19.5cm Length ...	400278	.....	430250
Achilles Tendon w/o Calcaneus, 16-19.5cm Length ..	400279	.....	430521
Quadriceps Tendon w/Bone Block, ≥ 16cm Length ...	-	.....	430700
Quadriceps Tendon w/o Bone Block .....	-	.....	430705
Quadriceps Tendon w/10mm Shaped Bone-Block, ≥ 16cm Length .....	-	.....	430707



# Knee Preservation System™

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Utica, New York 13502

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Toll Free 800-237-0169

CONMED.com  
customer\_service@conmed.com

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