

SE™ GRAFT TENSIONING SYSTEM

SURGICAL TECHNIQUE

The ConMed Linvatec SE™ (Stress Equalization) Graft Tensioning System is an innovative device that allows the surgeon to appropriately tension the individual bundles of a hamstring graft in a reproducible manner. The SE Graft Tensioning System provides a unique method for individualizing the tension applied to the semitendinosus and gracilis based on the diameter of each of these graft strands. The result of this strategy in hamstring ACL reconstruction is a uniform load distribution across the entire multi-strand graft.



GRAFT HARVESTING AND PREPARATION

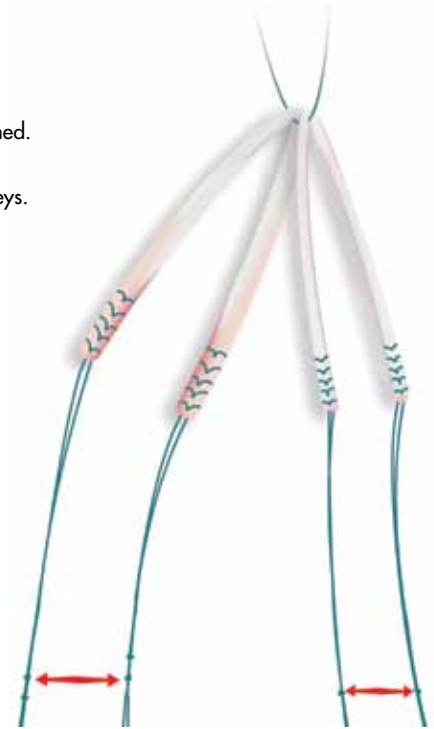
FOR GRACILIS TENDON & SEMITENDINOSUS TENDON

STEP 1 – GRAFT PREPARATION

The semitendinosus and gracilis tendons are harvested. Each end of the individual graft bundles is whipstitched. In virtually all patients the length of the harvested semitendinosus and gracilis should be 200mm.

Note: Be sure to attach a sufficient length of suture to each graft bundle for tying around SE Tensioner pulleys.

Once whipstitching is complete, apply 2 knots to the semitendinosus suture strand and 1 knot to the gracilis suture strand to identify the individual tendons.



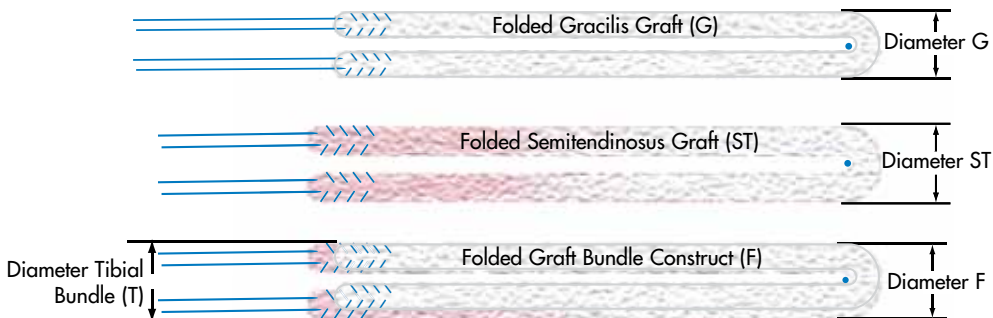
STEP 2 – GRAFT SIZING

Using the ConMed Linvatec Graft Sizing Block (PS 8832), the diameter of the individual grafts is measured in addition to the entire graft construct. A total of four measurements are taken: gracilis bundle, semitendinosus bundle, femoral end bundle diameter, and tibial end bundle diameter.

Required Measurements

G	
ST	
F	
T	

Graft Diameters



Femoral Bundle



Tibial Bundle

FEMORAL AND TIBIAL TUNNEL CREATION

STEP 3 – CREATE TUNNELS

Create the tibial and femoral tunnels in the normal fashion using either transtibial approach or an accessory anteromedial approach.

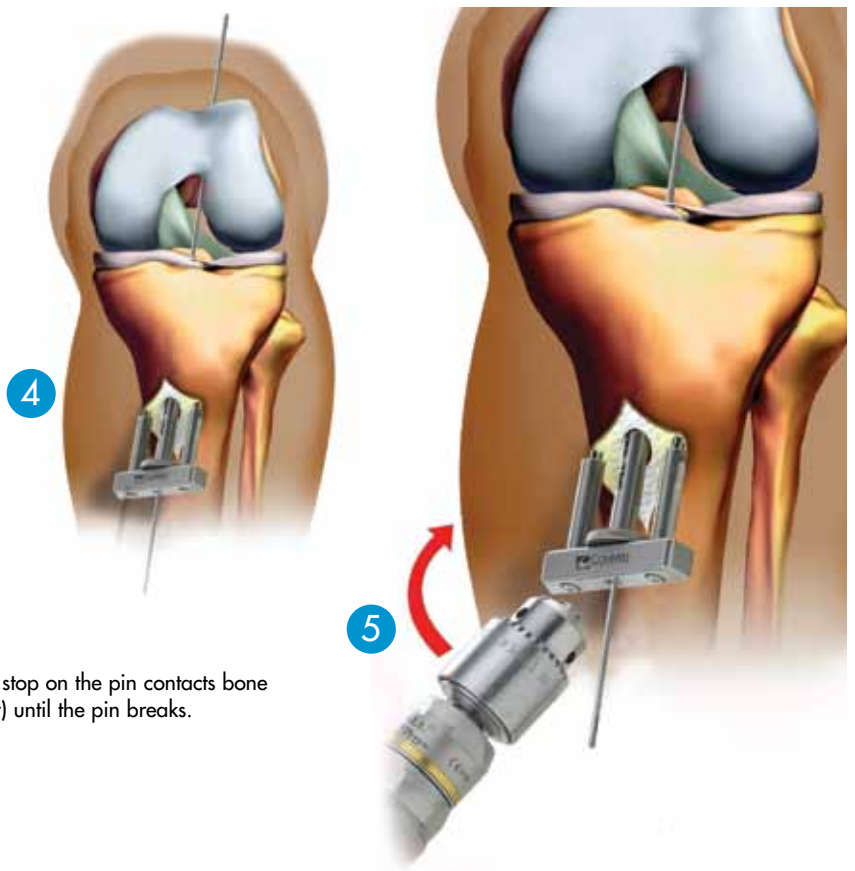


BREAKAWAY PIN PLACEMENT

STEP 4 – INSERT DRILL GUIDE

Using the largest size Drill Guide that the tunnel will accommodate, the cannulated Drill Guide is placed in the tibial tunnel. Be sure to spread the soft tissue and fascia around the outer pin guides of the Drill Guide.

Note: Manually hold the Drill Guide assembly in position through step 5.



STEP 5 – INSERT GUIDE PINS

One Breakaway Pin is drilled through each pin guide until the hard stop on the pin contacts bone and then broken off at the nearest notch by bending (without power) until the pin breaks.

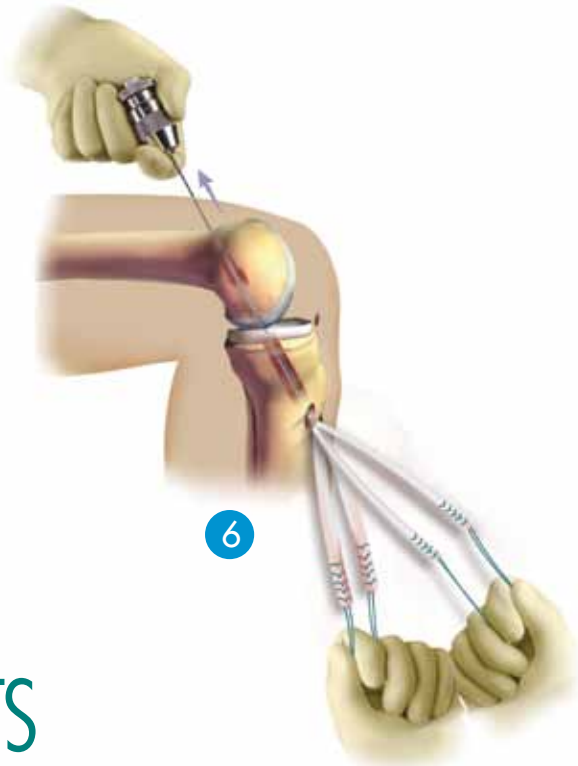
SE™ GRAFT TENSIONER SYSTEM

GRAFT PASSING

STEP 6 – PULL GRAFT

The hamstring graft construct is drawn into the knee and fixed in the femur by a method of choice.

Note: The semitendinosus and gracilis grafts are identified by marking or knotting each of the semitendinosus and gracilis suture strands as described in step 1.



PREPARING TO TENSION GRAFTS

STEP 7 – PLACE SUTURE SEPARATOR

The Suture Separator is placed with spacers oriented towards the SE™ Graft Tensioner onto the pins. Spread each of the limbs of the graft, one into each space of the suture separator. This will aid in the concentric placement of a BioScrew® XtraLok® or other interference screw that will be used for tibial fixation.

Note: The semitendinosus strands should be on one side and the gracilis strands on the other.

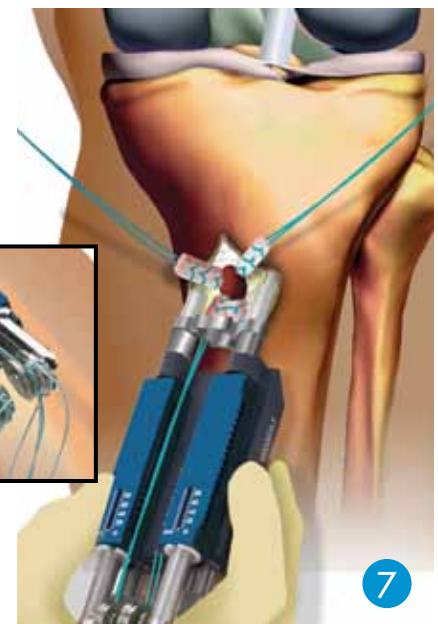
STEP 8 – MOUNT TENSIONER AND TIE SUTURES

Note: Before mounting the Tensioner be sure that the slides are in the starting position (not advanced).

The pin guides are then placed over the Breakaway Pins and the suture limb from the semitendinosus graft is individually guided through the two retaining grooves on one side of the Suture Separator and tied securely around the pulley on that side.

Similarly, the suture limbs from the gracilis are individually guided through the two grooves on the other side and tied tightly around the pulley on that side. Ensure the knots are tight enough to slip into the split in the wheels.

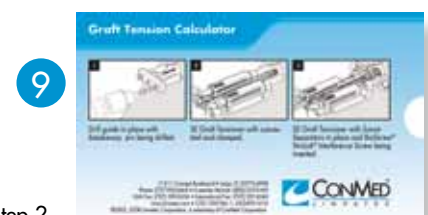
Note: Be sure to take slack out of the suture/graft construct by advancing and securing the SE Graft Tensioner in place. (Inset)



STEP 9 – CALCULATE GRAFT TENSIONS

Refer to the Graft Tension Calculator provided to determine the final tension for the semitendinosus and gracilis grafts. Graft Tension Calculator instructions are as follows:

- Determine the overall graft tension desired (i.e., 10, 15, 20 lbs./45, 70, 90 Newtons).
- Using the Graft Tension Calculator, locate the individual graft bundle diameters previously determined in step 2.
- Sliding the Calculator card, determine the position where the sum of the individual graft bundle forces equals the desired overall tension.
- The individual tension for each graft bundle (semitendinosus and gracilis) as determined by the Graft Tension Calculator, is then applied.

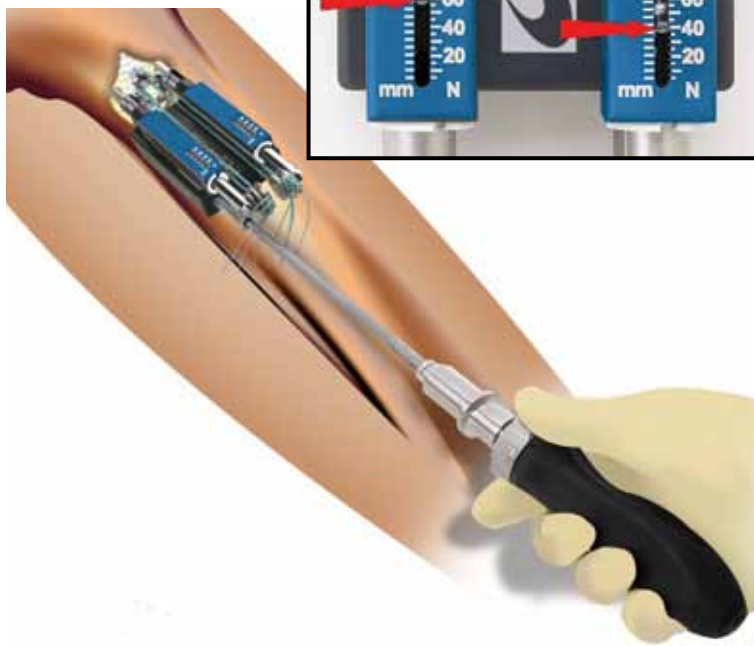


TENSION AND CONDITION GRAFTS

STEP 10 – APPLY CONDITIONING TENSION

With the knee placed in the desired degree of flexion, the semitendinosus and the gracilis grafts are individually tensioned using a ConMed Linvatec hex driver (8608, D8626, or D8627) first to a conditioning force, which is higher than the final tension.

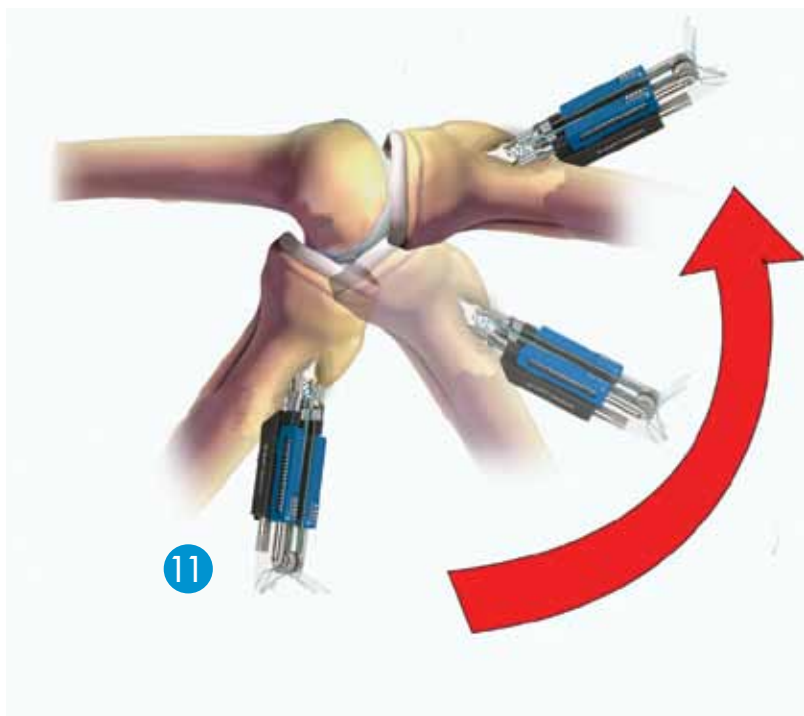
10



STEP 11 – CYCLE THE KNEE

With a conditioning force placed on each graft bundle, the knee is cycled from full extension to deep flexion until the applied tension reaches a stable mean value. The length scale (mm) may be used to observe the excursion of each graft bundle during cycling as a measure of graft laxity.

11



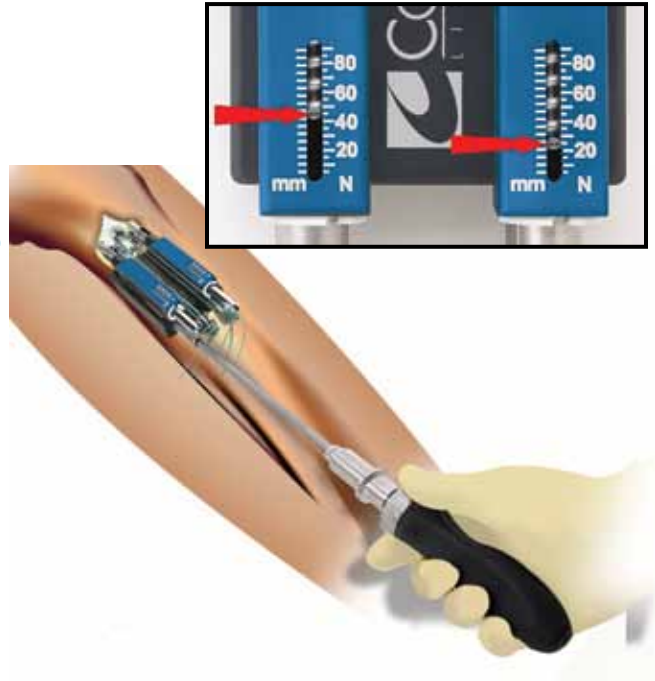
SECURING THE GRAFTS AND CLOSING

STEP 12 – APPLY FINAL TENSION TO GRAFT

With the knee placed in the proper degree of flexion (approximately 15°) set the Graft Tensioner to the final force value as determined by the Tension Calculator.

Note: Adjust tensions with a manual screwdriver, not a powered instrument.

12



STEP 13 – SECURE TIBIAL SIDE

The Graft Tensioner should be used as a guide to align the screw axially with the tibial tunnel as it progresses centrally between the graft strands until the screw is fully seated.

Note: Prior to cutting the sutures and removing the tensioner, palpate the graft to ensure a tight graft bundle.

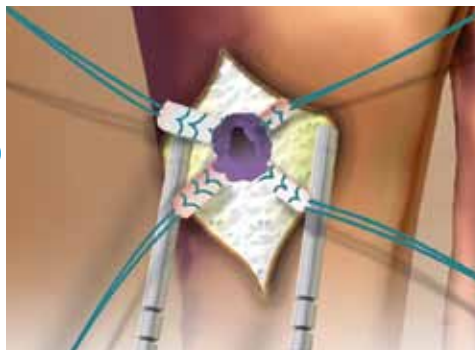
13



STEP 14 – REMOVE TENSIONER

While holding the Graft Tensioner in place, sutures are cut. The Graft Tensioner and guide pins are then removed from the tibia. Close the surgical site as typical.

14



SE™ GRAFT TENSIONER



The ConMed Linvatec SE™ (Stress Equalization) Graft Tensioning System is an innovative device that allows the surgeon to appropriately tension the individual bundles of a hamstring graft in a reproducible manner. The SE Graft Tensioning System provides a first-of-its-kind method for individualizing the tension applied to the semitendinosus and the gracilis based on the diameter of each of these graft strands. The result of this strategy in hamstring ACL reconstruction is a very uniform load distribution across the entire multi-strand graft.

Product Benefits

- Equalized stress between the Semi-T and Gracilis graft bundles
- In-vivo graft conditioning
- Posterior tibial loading
- Centralized screw placement
- Single surgeon control
- Reproducible technique and results

ORDERING INFORMATION

Cat. No	PRODUCT DESCRIPTION
■ C9050*	SE™ Graft Tensioner
■ C9051*	SE Graft Tensioner Drill Guide, 6mm
■ C9052*	SE Graft Tensioner Drill Guide, 8mm
■ C9053*	SE Graft Tensioner Suture Separator
■ C9054	SE Graft Tensioner Breakaway Pins with Graft Tension Calculator (Box contains 5 sets. Set contains 2 pins and 1 calculator)
■ C9055	SE Graft Tensioner System Sterilization Tray
■ PS8832	Graft Sizing Block, Grafix
■ C8716*	BioScrew® Universal Driver (Modular)
■ D8640*	Ratcheting Handle (Modular System)
■ D8626	Modular Drive System, Grafix, Hex, Straight, 3.5 mm
■ D8627	Modular Drive System, Grafix, Hex, Thin Shaft, 3.5 mm
■ 8608	Driver, Hex (3.5 mm) Cannulated, Paramax

* Indicates items to be sterilized in the C9055 Sterilization Tray. All of the above items are packaged Non-Sterile, with the exception of C9054, the SE Graft Tensioner Breakaway Pins with Graft Tension Calculator.

For ordering information on ConMed Linvatec products call 1-800-237-0169, or contact your local ConMed Linvatec sales representative. For more information about ConMed Linvatec products, visit our web site at www.linvatec.com.

CONMED CORPORATION PRODUCT AREAS:

ARTHROSCOPY • ELECTROSURGERY • ENDOSCOPY • ENDOSURGERY • GASTROENTEROLOGY • INTEGRATED SYSTEMS • PATIENT CARE • POWERED INSTRUMENTS • PULMONOLOGY



11311 Concept Boulevard
 Largo, FL 33773-4908
 (727) 392-6464
 Customer Service: 1-800-237-0169
 FAX: (727) 399-5256
 International FAX: +1 (727) 397-4540
 email: customer_service@linvatec.com
www.linvatec.com