Surgical Technique

smith&nephew

LEGION® CONCELOC®

Cementless Total Knee System

LEGION◇ CONCELOC◇ Cementless TKS

Contents

Nota Bene

The technique description herein is made available to the healthcare professional to illustrate the authors' suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the patient.

Introduction

The LEGION® Total Knee System has been designed to offer the orthopaedic surgeon solutions to address intraoperative situations. Implant function is directly related to accurate surgical technique. Each surgeon must evaluate the appropriateness of the following technique based on his or her medical training, experience and patient evaluation.

To achieve successful cementless component arthroplasty, please note the technique tips throughout the surgical technique and those listed below.

- Precise, flat bone cuts are essential to maximize the porous material contact with the resected bone
- Ensure that peg holes are drilled or punched to their full depth and free of debris
- Pay careful attention when placing and removing trial implants or spacer blocks as well as when removing any osteophytes. Any unequal bony surfaces or defects can alter implant stability.
- Be sure to protect all resected bony surfaces until final components are implanted

Acknowledgments

Smith & Nephew Orthopaedics wishes to thank the global surgeon advisors for their dedication to the development and refinement of the LEGION CONCELOC® Cementless TKS implants and instrumentation.

Fred Cushner, MD
Hospital for Special Surgery
New York, NY

Bruno Violante, M.D. Ph.D
Istituto Clinico Sant'Ambrogio - IRCCS Galeazzi
Milan, Italy

Stephen McMahon, MD
Monash University, Malabar Orthopaedic Clinic
Windsor, Australia

Mathias Bostrom, MD, FACS
Hospital for Special Surgery
New York, NY

Jan Victor, MD, PhD
Ghent University Hospital
Ghent, Belgium

Johan Bellemans, MD, PhD
Catholic University Hospitals
Leuven and Pellenberg, Belgium

Jose A. Rodriguez, MD
Hospital for Special Surgery
New York, NY

David Hedden, MD
Concordia Hip and Knee Institute
Winnipeg, Canada

Technique highlights

Distal femoral resection

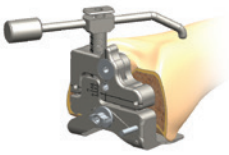
Use the 9.5mm drill to open up the femoral canal and slide the valgus alignment assembly until at least one side contacts the distal femur.

After the assembly is placed in neutral rotation, impact the floating spikes into the distal femur and secure the distal block with pins.

Remove the IM rod, unlock the lever on the valgus alignment guide and remove the valgus alignment assembly using the universal extractor.

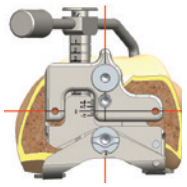
Resect the distal femur.

Position the sizing guide flush against the distal femur, while ensuring that the posterior paddles are contacting the underside of both posterior condyles.



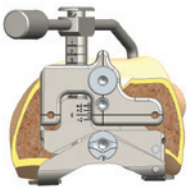
To set rotation

Pin through lateral pivot pinhole, located on the lower lateral corner of the sizing guide. Adjust external rotation of the sizing guide by turning the rotational adjustment knob clockwise (0-6°).



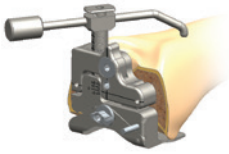
Fixed posterior referencing

Ensure the sizing guide is set in the '0' position. Drill and insert two pins through the locator holes of the sizing guide. Determine the size of the component by the graduations on the stylus. If the femur is in-between two sizes, choose the larger size.

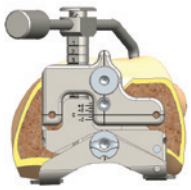


Adjustable anterior referencing

Position the sizing guide stylus so that it contacts the lateral ridge of the anterior cortex and determine the size from the graduations on the shaft of the stylus.



If the indicated size is in-between sizes, turn the upper hex screw to shift the anterior surface up to the next smaller size or down to the next larger size. To lock in position, tighten the locking hex screw. Drill to mark the locator holes for the A/P cutting block.



Place the correctly sized A/P cutting block on the distal femur and make anterior, posterior and chamfer cuts.

Tibial resection

Place the extramedullary tibial guide with the non-spiked (shown) or spiked rod and place on tibia. Align guide over medial third of the tibial tubercle and parallel to the tibia.

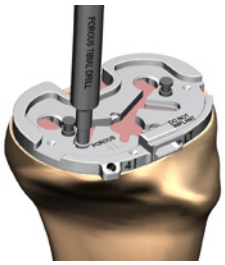
Attach the tibial stylus to the tibial cutting block and lower the cutting block until the stylus touches the low point on the least affected side of the tibia. Once the resection level is determined, insert pins to secure and remove alignment assembly.

Resect the proximal tibia.

Size the tibia.

Final preparation

After trial range of motion and alignment checks, drill for the anterior pegs and ribs



Select the appropriate size fin punch guide and fin punch and punch through the guide and tibia baseplate trial.

Attach the femoral impactor to the femoral implant. Place the femoral implant on the femur and impact it until fully seated.

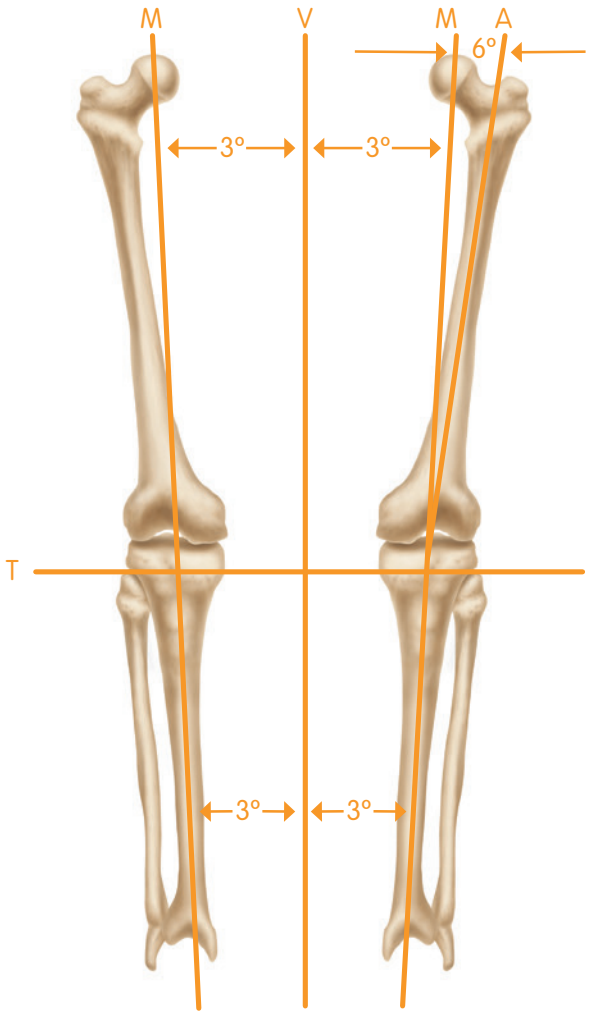
Seat the tibial implant with the tibial impactor.

Insert the articular insert by placing the insert assembly tool into the center notch of the anterior lock detail (handle up) and engage the two tabs of the tool into the two recesses on the anterior periphery of the insert. Squeeze the tool handle until the insert is fully seated within the tibial component.

Preoperative planning

Determine the angle between the anatomical and the mechanical axes. This measurement will be used intraoperatively to select the appropriate femoral valgus angle so that correct limb alignment is restored. (Beware of misleading angles in knees with a flexion contracture or rotated lower extremities).

Note: Many surgeons prefer to simply select a standard angle for the distal femoral cut (i.e., 5°, 6° or 7°) based on the patient and surgical experience.



M = Mechanical Axis

A = Anatomical Axis

T = Transverse Axis

V = Vertical Axis

Instrument assembly

IM femoral assembly

1 Attach the selected valgus angle bushing (5°, 6° or 7°) to the valgus alignment guide. Check the bushing position to make sure that 'left' is facing anteriorly when operating on a left knee and 'right' is facing anteriorly when operating on a right knee.

2 Attach a modular T-handle to the IM rod and insert through the alignment assembly (Figure 1).

3 Assemble the distal femoral cutting block onto the valgus alignment guide. Positioning the block at the 'primary' resection level will ensure the cut will equal the distal thickness of the femoral prosthesis. Lock by pressing the lever in a horizontal position toward the medial side.

Figure 1

Valgus Bushing
5° 7144-0014
6° 7144-0016
7° 7144-0018

Alignment Guide
7144-1144

T-handle
7111-0080

IM Rod
Long 7151-2040
Short 7151-2035

Distal Cutting Block
7144-1147

Instrument assembly

Extramedullary tibial alignment guide

Insert the ankle clamp into the distal end of the alignment tube and thread the locking pin into the ankle clamp (Figure 2).

After the ankle clamp is moved into the proper position, lock into place with the gold knob.

Choose the correct left or right tibial cutting block. Select the spiked or non-spiked fixation rod.

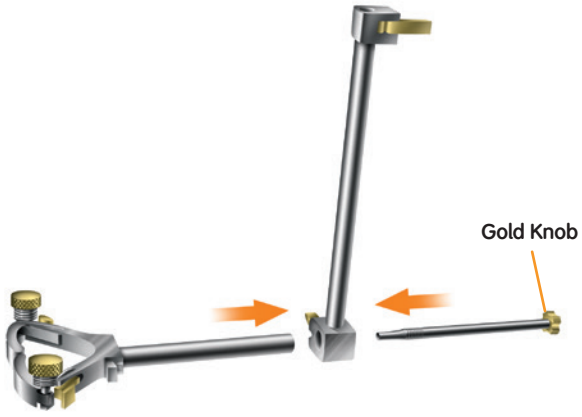


Figure 2

Non-spiked fixation rod

Place the appropriate left or right tibial cutting block on top of the disc on the non-spiked fixation rod (Figure 3). Tighten the central knob to lock the block into position.

Introduce the rod into the extramedullary assembly and adjust and lock the cam in the assembly.

Spiked fixation rod

Place the spiked fixation rod through the hole in the tibial cutting guide; adjust the block and tighten the central knob to lock the block into position.

Introduce the spiked fixation rod into the proximal end of the alignment assembly and adjust and lock the cam on the assembly (Figure 4).

Figure 3

Figure 4

Ankle Clamp
7144-0444

Alignment Tube
7144-0448

Tibial Cutting Block
Left 7144-1136
Right 7144-1137

Non-spiked Fixation Rod
7144-0446

Spiked Fixation Rod
7144-0198

Intramedullary alignment

1 Open the femoral canal with the 9.5mm Intramedullary Drill. The drill has a 12mm step to open the entry point further. If desired, use the drill to open the tibial canal at this step (Figure 5).

Tip: If desired, the distal femoral cutting block may be set to resect an additional +2, +5 or +7mm of bone.

2 Slide the intramedullary rod of the assembly into the femoral canal until the alignment guide contacts the distal femur (Figure 6).

Tip: There may be times when only one side of the guide will touch bone.

3 Orient rotation of the assembly neutral to the posterior condyles (Figure 7) and impact one or both of the floating spikes into the distal femur.

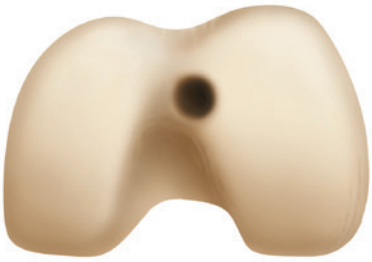


Figure 5

Figure 6

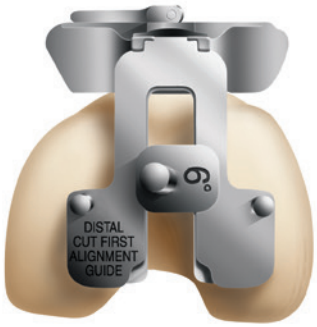


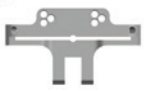
Figure 7

Valgus Bushing
5° 7144-0014
6° 7144-0016
7° 7144-0018

Alignment Guide
7144-1144

T-handle
7111-0080

IM Rod
Long 7151-2040
Short 7151-2035



Distal Cutting Block
7144-1147

Intramedullary drill, 9.5 mm
7401-2111

Distal resection

1 Using non-headed SPEED PIN°, pin the distal femoral cutting block to the anterior femur using the holes marked '0'. Once adequate distal femoral resection is noted, an additional headed or non-headed SPEED PIN should be placed obliquely to provide additional stability (Figure 8).

2 Unlock the lever on the valgus alignment guide, remove the intramedullary rod and the valgus alignment assembly using the universal extractor (Figure 9). Only the distal femoral cutting block should remain on the femur.

3 Resect the distal femur (Figure 10) then remove the distal femoral cutting block.

Tip: If the distal femoral resection is not adequate, remove the oblique headed SPEED PIN, and reposition the block through the pin holes marked +2 or +4mm for the desired level of resection and re-insert the oblique pin.

Before proceeding, evaluate the bone quality of the resected femur. If bone quality is poor a LEGION° cemented femoral component should be implanted.

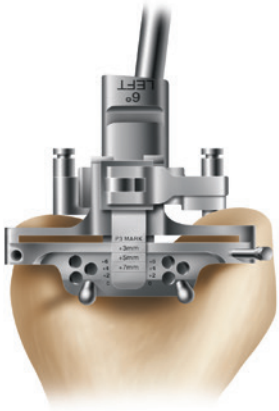


Figure 8

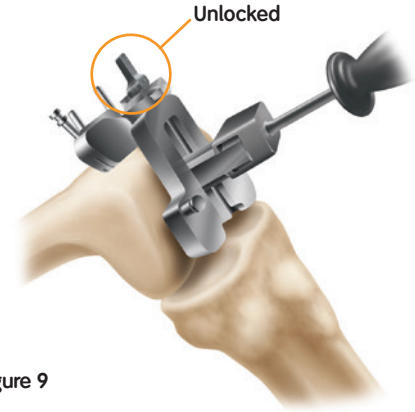


Figure 9

Figure 10

Valgus Bushing
5° 7144-0014
6° 7144-0016
7° 7144-0018

Alignment Guide
7144-1144

Universal Extractor
7144-0366

IM Rod
Long 7151-2040
Short 7151-2035

Distal Cutting Block
7144-1147

SPEED PIN
7401-3480

Sizing guide procedure

The sizing guide allows for external rotation to be set from 0-6° based on surgeon preference and patient anatomy. Rotational alignment may be checked by aligning the A/P axis with the pointer on the sizing guide or by ensuring that the laser marked lines on the face of the guide are parallel with the epicondylar axis. The rotational adjustment knob on the lower portion of the guide is turned to dial in rotation (Figure 11).

The guide can be used for fixed posterior referencing or can be adjusted anteriorly or posteriorly for fine tuning. When in-between sizes, the surgeon can choose to adjust sizing up to 4mm anteriorly, thereby taking up to an additional 4mm off the posterior condyles, or up to 2mm posteriorly, taking up to an additional 2mm off of the anterior cortex.

If the anterior surface of the guide is in-between two sizes when it is at the zero position, the upper hex screw can be rotated to shift the anterior face of the sizing guide up to the next smaller size or down to the next larger size on the stylus. As a result, the locator holes for the A/P cutting block are shifted either anteriorly or posteriorly to align with the next implant size (Figure 12).

Tip: The gap between the top of the sizing guide and the stylus graduation line indicates how much bone will be removed from either the anterior cortex or posterior condyles by choosing the next larger size (Figure 13).

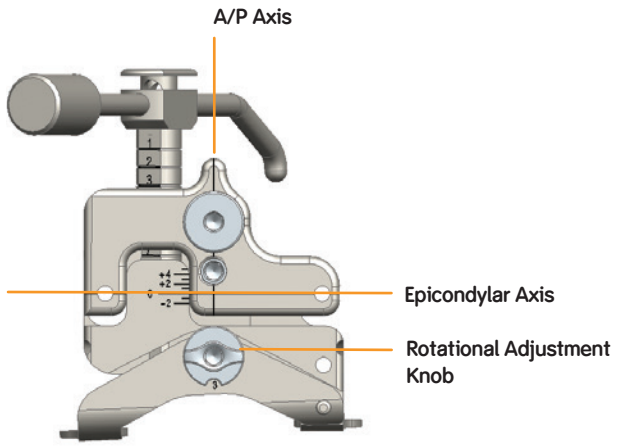


Figure 11

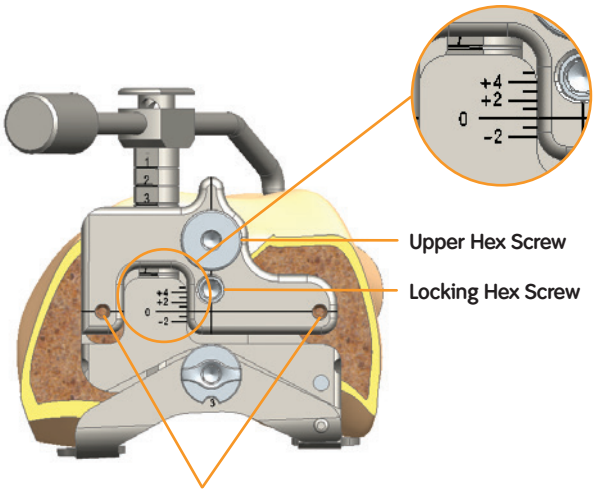


Figure 12

Figure 13

Sizing Guide
Left 7144-0007
Right 7144-0008

Sizing Stylus
7144-1140

Hex Screwdriver
11-5035

Sizing guide procedure: rotation

1 Flex the knee, approximately 90° so the posterior condyles are accessible.

2 Choose appropriate sizing guide, '**Left**' for a left knee and '**Right**' for a right knee.

3 Position the femoral sizing guide flush against the distal femur, while ensuring the posterior paddles are contacting the underside of both posterior condyles. Once correct position of sizing guide is established, place a pin through lateral pivot pinhole located in the posterior/ lateral corner on the face of the sizing guide (Figure 14).

4 Adjust the external rotation of the sizing guide to be aligned anatomically with the epicondylar and/or A/P axis. This can be achieved by turning the rotational adjustment knob (0-6°) using a hex screwdriver (Figure 15).

5 Once rotation is set, sizing can be established either by fixed posterior referencing or adjustable referencing.

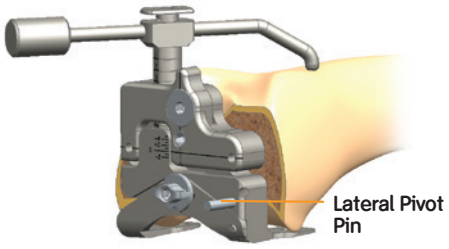


Figure 14

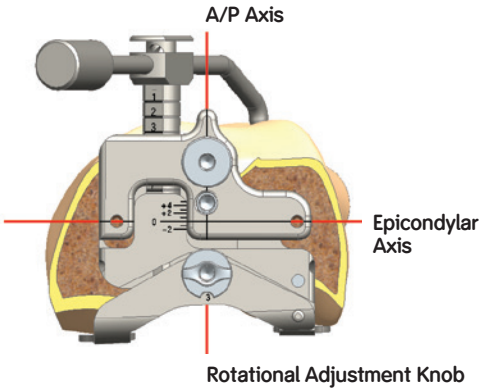


Figure 15

Sizing Guide
Left 7144-0007
Right 7144-0008

Sizing Stylus
7144-1140

Hex Screwdriver
11-5035

Sizing guide procedure: fixed posterior referencing

1 Ensure that the anterior surface of the sizing guide is set in the '0' position.

2 Drill and insert two pins through the locator holes of the sizing guide to secure the guide.

3 Position the sizing guide stylus so that it contacts the lateral ridge of the anterior femoral cortex (highest point on the anterior cortex of the femur) (Figure 16).

4 Determine the size of the component from the graduations on the shaft of the stylus.

5 If the femur is between sizes, chose the larger size.

6 Remove the pins and the sizing guide.

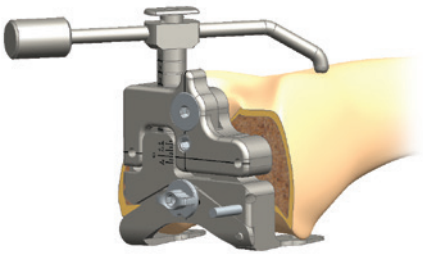


Figure 16

Sizing Guide
Left 7144-0007
Right 7144-0008

Sizing Stylus
7144-1140

Hex Screwdriver
11-5035

Sizing guide procedure: adjustable anterior referencing

1 Ensure that the anterior surface of the sizing guide is set in the '0' position.

2 Drill and insert two pins through the oblique holes of the sizing guide to secure the guide.

3 Position the sizing guide stylus so that it contacts the lateral ridge of the anterior femoral cortex (highest point on the anterior cortex of the femur) (Figure 17).

4 Determine the size of the component from the graduations on the shaft of the stylus.

5 If the indicated size is in-between sizes, you can turn the upper hex screw to shift the anterior surface up to an additional 4mm to the next smaller size or down an additional 2mm to the next larger size (Figures 18a and b). Once the appropriate size is selected, turn the locking hex screw to lock the anterior surface and locator holes into position (Figure 17).

6 Drill the locator holes to set the position for the cutting block.

7 Remove the pins and sizing guide.

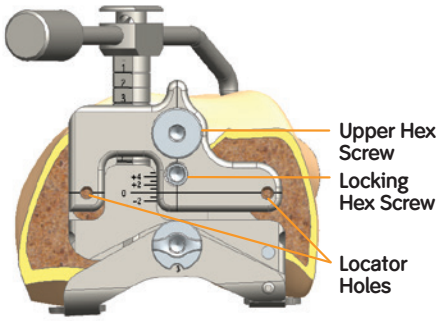
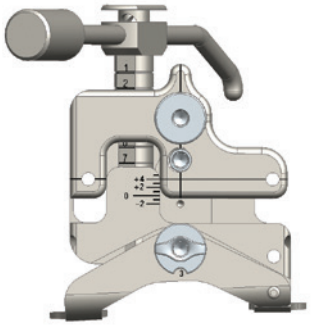
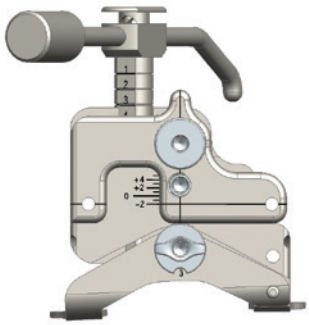


Figure 17



Anterior Reference Shift of 4mm

Figure 18a



Posterior Reference Shift of 2mm

Figure 18b

Sizing Guide
Left 7144-0007
Right 7144-0008

Sizing Stylus
7144-1140

Hex Screwdriver
11-5035

A/P resection

1 Position the fixed spikes on the A/P cutting block into the predrilled holes.

Tip: It is not necessary that the block be centered M/L on the distal femur.

2 Ensure that the cutting block is flush with the resected distal femur. Several holes in the A/P block allow fixation of the block. Place one pin centrally through one of the middle holes just medial or lateral to the quick-connect attachment. For additional stability, a headed pin may be placed through the holes on the medial or lateral side of the block (Figure 19).

3 Complete the anterior, posterior and chamfer cuts (Figures 20-23). The block is designed to allow for angling of the sawblade during the cuts.

Tip: To maintain block stability, the anterior chamfer cut should be completed last.

Before proceeding, ensure flat femoral cuts have been achieved. It is critical to ensure adequate contact between the porous implant and the bone. If flat cuts can not be achieved a LEGION® cemented femoral component should be implanted.

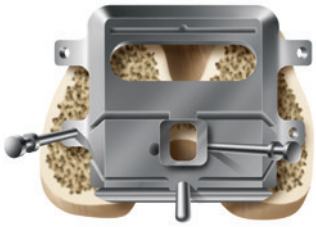


Figure 19

Figure 20

Figure 21

Figure 22

Figure 23

A/P Cutting Block
sz 5 7144-1153

Downsizing the femoral component

1 Attach the downsizing drill guide to the cut femur, placing the spikes on the back of the plate into the same location holes used for the A/P cutting block (Figure 24).

2 Drill new location holes through the downsizing drill guide (shifted 2mm anterior).

3 Place the smaller A/P cutting block into the new location holes. Redo the posterior, anterior and chamfer cuts.

Tip: It is useful to mark the original pin track holes with a marking pen in order to properly identify the new holes.

Figure 24

Downsizing Drill Guide
7144-0860

Extramedullary (EM) tibial resection

EM tibial preparation

When using the extramedullary tibial alignment, the surgeon may use a non-spiked or spiked fixation rod.

Non-spiked fixation

1 Place the arms of the extramedullary alignment clamp around the ankle, and adjust the distal M/L slide directly over the middle of the tibiotalar joint, which is also approximated by the second ray of the foot proximal to the malleoli (Figure 25).

The cutting block on the proximal end of the assembly should be proximal to the tibial tubercle (Figure 26).

2 Assess rotation of the alignment guide and slope of the cutting plane. The goal is to align the extramedullary alignment assembly rotationally so that it aligns over the medial third of the tibial tubercle and over the second toe (Figure 27).

3 Rotational alignment is critical due to the 3° posterior sloped cut. The slope can be adjusted according to the patient's anatomy (Figure 28).

Note: 3-5° of slope is built into the articular insert (depending on which insert is chosen) and 3° of slope is built into the tibial cutting block.

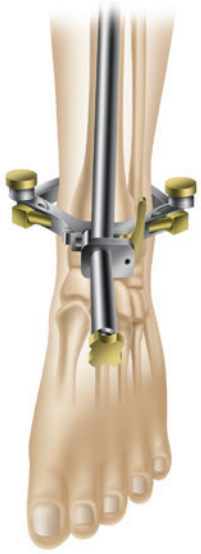


Figure 25

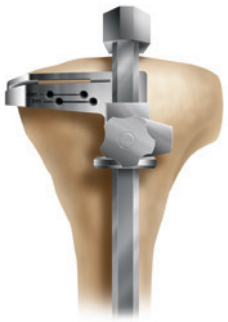


Figure 26

Figure 27

Figure 28

Ankle Clamp
7144-0444

Alignment Tube
7144-0448

Tibial Cutting Block
Left 7144-1136
Right 7144-1137

Non-spiked Fixation Rod
7144-0446

Spiked fixation

1 Place the arms of the extramedullary alignment clamp around the ankle, and adjust the distal M/L slide directly over the middle of the tibiotalar joint, which is also approximated by the second ray of the foot proximal to the malleoli (Figure 29).

The cutting block on the proximal end of the assembly should be proximal to the tibial tubercle (Figure 30).

2 Impact the longer spike of the spiked fixation rod into the proximal tibia (Figure 31).

3 Assess rotation of the alignment guide and slope of the cutting plane. The goal is to align the extramedullary alignment assembly rotationally so that it aligns over the medial third of the tibial tubercle and over the second toe (Figure 32).

4 Rotational alignment is critical due to the 3° posterior sloped cut. The slope can be adjusted according to the patient's anatomy (Figure 33). Impact the second spike to secure the assembly (Figure 34).

Note: 3-5° of slope is built into the articular insert (depending on which insert is chosen) and 3° of slope is built into the tibial cutting block.

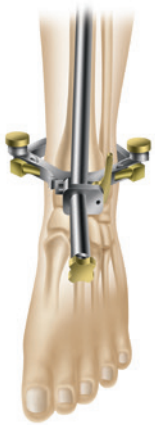


Figure 29

Figure 30

Figure 31

Figure 32

Figure 33

Figure 34

Ankle Clamp
7144-0444

Alignment Tube
7144-0448

Tibial Cutting Block
Left 7144-1136
Right 7144-1137

Spiked Fixation Rod
7144-0198

Tibial resection

1 Attach the tibial stylus to the tibial cutting block by inserting the stylus foot into the cutting slot.

2 Lower the cutting block until the stylus touches the low point on the least affected side of the tibia (Figure 35). The stylus can be adjusted for a 1-13mm tibial resection by twisting the knob on top of the stylus. If the affected side of the tibia is to be used as a reference, the stylus may be adjusted for a 1-9mm resection level.

3 Pin the tibial cutting block to the tibia by inserting pins first through the central holes; then the oblique hole.

Tip: Pinning through the central holes marked 0mm with smooth pins will allow the block to be moved +2mm should additional resection be required (Figure 36).

Tip: A 9mm resection is recommended since 9mm of metal and plastic is the thinnest available component.

Tip: To do an extramedullary alignment check, place the extramedullary alignment rod through the tibial cutting block.

Figure 35

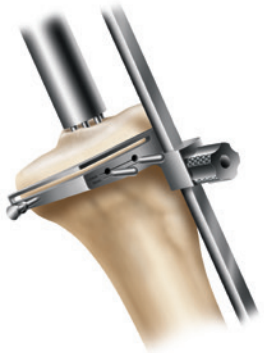


Figure 36

Tibial Stylus
7144-1143

Extramedullary Alignment Rod
114861

Tibial Cutting Block
Left 7144-1136
Right 7144-1137

4 To remove the assembly:

a For the assembly with spiked rod, release the cam at the top of the alignment tube and use the slap hammer to remove the spiked fixation rod (Figure 37) after loosening the thumbscrew.

b The assembly with the non-spiked rod may be left in place or removed by loosening the thumbscrew and lowering the non-spiked rod to disengage from the tibial cutting block.

5 Cut the tibia by first directing the blade in the posterior direction and then laterally (Figure 38)

Note: Ensure the tibia resection has created a flat/smooth surface as this is important for cementless fixation

Figure 37

Figure 38

Tibial Cutting Block
Left 7144-1136
Right 7144-1137

Universal Extractor (Slap Hammer)
7144-0366

Check alignment and balance

Be sure to remove all osteophytes, especially posteriorly, before checking alignment and balance

1 Assemble the Quick Connect Handle to the Flexion/Extension block. Attach desired thickness of Flexion/Extension Spacer onto the Flexion/Extension block.

2 Insert the Flexion/Extension block into the extension gap. Evaluate alignment, balance, and extension space (Figure 39)

3 Adjust the thickness of the spacer as needed to determine the extension space.

4 Remove the block and reassemble desired thickness of spacer for flexion gap evaluation.

5 With the knee flexed to 90°, place the Flexion/Extension Block into the joint space.

6 Apply a varus/valgus force and assess the medial and lateral compartment laxity levels of the flexion space. Then adjust the thickness of the spacer as needed to determine the flexion space.

7 When the flexion space is determined, compare the thickness selected relative to the extension space previously determined.

Note: Remember any difference between the Extension and Flexion Gap Assessments as this will affect how the femoral implant is positioned in the steps ahead (e.g. 10mm Ext - 11mm Flex = -1mm Flex Imbalance).

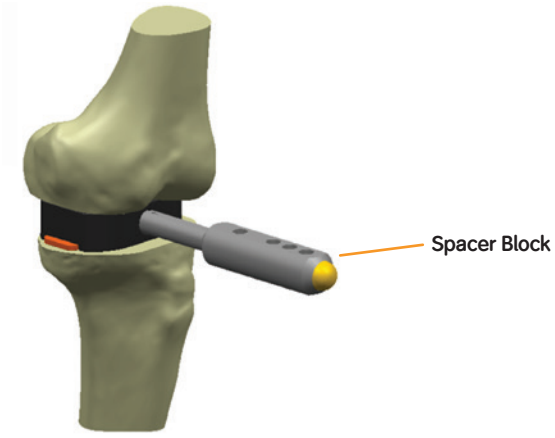


Figure 39

Flexion/Extension Spacers

9mm	7401-8608
11mm	7401-8611
13mm	7401-8613
15mm	7401-8615
18mm	7401-8618
21mm	7401-8621

Quick Connect Handle
7144-0044

Flexion/Extension Block Standard Size 1-8
7401-8603

Component trialing

1 Flex the knee to 90° and insert the femoral trial using the femoral trial impactor (Figure 40).

2 Use the appropriate baseplate and insert trial (begin with a 9mm trial) to determine stability and alignment.

3 Perform a trial range of motion. The alignment marks on the front of the femoral and tibial trials should line up (Figure 41). Medial/lateral placement of the femoral trial can be adjusted to optimize patellar tracking. Complete trial assessment and determine the correct insert thickness.

4 Prepare the femoral lug holes through the femoral trial with the femoral lug punch (Figure 42) or the femoral lug drill (Figure 43).

5 Attach the end of the universal extractor to the femoral trial and remove the femoral trial (Figure 44).

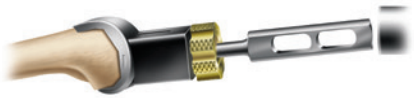


Figure 40

Figure 41

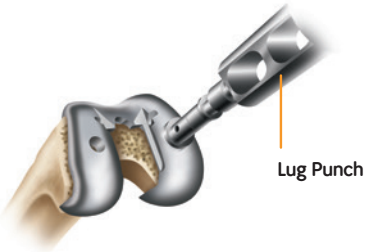


Figure 42

Figure 43

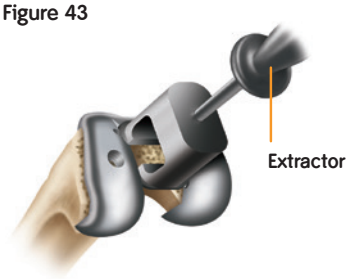


Figure 44

LEGION® Fem Lug Drill
7401-6421

Universal Insert Spacer Sz 3-4
7401-6262 11mm
7401-6263 12mm
7403-3634 13mm
7403-3635 15mm

Femoral Trial Impactor
7144-0009

Femoral Lug Punch
7144-0183

Universal Extractor
7144-0366

LEGION Ream thru Trial Sz 5
7143-3355 Right
7143-3345 Left

LEGION CRHF Insert Trial w/ JRNY Lock Sz 3-4
7143-4605 9mm
7143-4606 10mm

LEGION DD Insert Trial w/ JRNY Lock Sz 3-4
7143-4623 9mm
7143-4624 10mm

CONCELOC◇ tibia preparation

Porous tibia sizing and rotation

Before proceeding, evaluate the bone quality of the resected tibia. If bone quality is poor the porous tibia baseplate should be cemented to the proximal tibia.

1 Attach a quick-connect handle to the porous tibia baseplate trial that provides optimal tibial coverage. As needed, additional sizes should be templated using the porous trials. Check the flatness of the cut surface with the trials. A rocking motion indicates the cut is not flat. A flat cut is necessary to ensure proper contact between the porous implant and prepared tibia surface.

2 Once the appropriate size and tibial rotation is determined, pin the medial side of the selected porous trial with a short headed pin (Figure 45).

3 Place a trial insert into the porous tibial trial tray and perform a trial range of motion to allow the baseplate to center on the femoral trial. (As a secondary check, the surgeon may pass the alignment rod through the quick-connect handle to assess alignment) (Figure 46). Pin the lateral side of the trial.

Tip: After putting the knee through a trial range of motion, the surgeon should Note: the proper rotation of the trial tibial component on the proximal tibia and mark the tibia for future reference.

Tip: The center-line marks on the femoral and tibial trial components should line up in extension.

Figure 45

Figure 46

Porous Tibia Baseplate Trial Sz 4
71434639 Left
71434648 Right

VNR EM Alignment Rod
71440302

Quick Connect Handle
74016213

Universal pin driver
7151-3331

Porous tibia drill and punch

Before proceeding, ensure a flat tibia cut has been achieved. It is critical to ensure adequate contact between the porous implant and the bone. If a flat cut can not be achieved the porous tibia baseplate should be cemented to the proximal tibia.

Tibia drill and punch may also be completed after full component trialing to ensure proper tibia rotation.

1 Use the porous tibia drill to prepare for the two anterior pegs and bridges of the porous tibia keel. Start with the drill anteriorly on either the medial or lateral peg (Figure 47) and move the drill posterior removing bone to accommodate the bridges. There is a positive stop shoulder that has been designed into the trial. Ensure drill is contacting shoulder to ensure proper depth in order to seat the implant. Repeat procedure for the adjacent side bridge.

2 Impact the porous tibia punch into the anterolateral keel peg hole until a positive stop is achieved (Figure 48).

Note: the porous tibia drill can be used in lieu of the punch to prepare peg hole if desired.

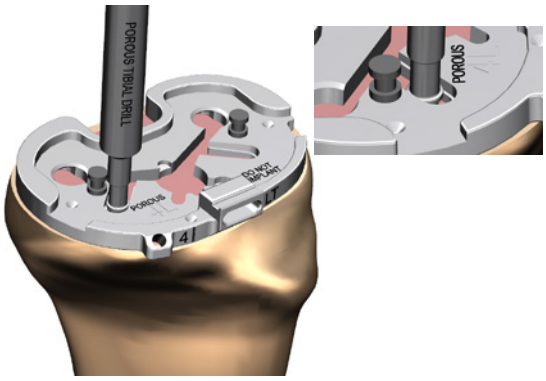


Figure 47

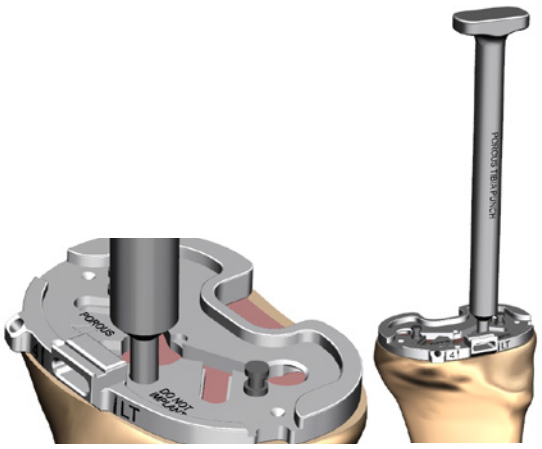


Figure 48

Porous Tibia Baseplate Trial Sz 4
71434639 Left
71434648 Right

Porous Tibia Punch
71434719

Porous Tibia Drill
71434721

Porous tibia drill and punch

3 Attach a quick connect handle to the porous tibia fin punch guide that corresponds with the size of the porous tibia baseplate trial. Engage the two posterior feet of the guide into the posterior aspect of the trial (Figure 49).

Note: A short headed pin can be used in the anterior hole of the baseplate trial if additional fixation is needed.

4 Lower the guide onto the trial until it makes contact and locks into place (Figure 50). In some cases a slight pull-back on the quick connect handle may be needed to fully lock and seat the guide into place.

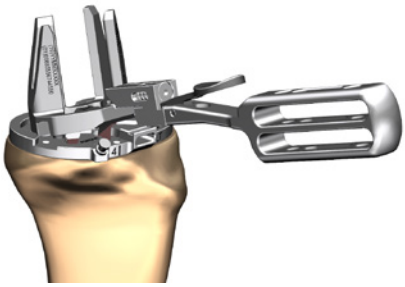


Figure 49

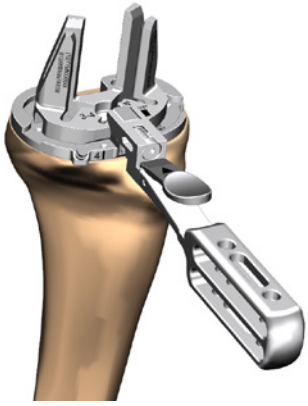


Figure 50

Porous Tibia Baseplate Trial Sz 4
71434639 Left
71434648 Right

Quick Connect Handle
74016213

Porous Tibia Fin Punch Guide Sz 3-4
71434712

Porous tibia drill and punch *cont.*

5 Connect the modular impact handle to the porous tibia fin punch that corresponds with the size of the baseplate trial and fin punch guide.

6 Align the fin punch to guide and slightly impact to ensure it is aligned properly within the guide (Figure 51). Continue to impact the fin punch through the guide until a positive stop is achieved.

Tip: Place tip of punch in the hole anteriorly to the guide and roll posterior into position. Punch should fall easily into guide slots.

Note: Take care during fin punch impaction in order to maintain integrity of the tibia canal, especially in sclerotic bone. Impact very slowly if needed to ensure proper bone displacement. Ensure that the tibia trial and guide stay pinned and stable during impaction so as not to modify the path of the punch.

7 Remove fin punch by gently tapping upwards on the handle strike plate. Ensure the fin punch is removed straight up and out as to not disrupt the prepared bone within the tibia.

8 Remove the fin punch guide by pulling back on the quick connect handle and lifting out of the trial baseplate (Figure 52).

9 Remove the short bone spikes with the removal tool and remove the baseplate trial.

10 Ensure proximal tibia surface has been fully prepared to accept porous tibia implant (Figure 53).

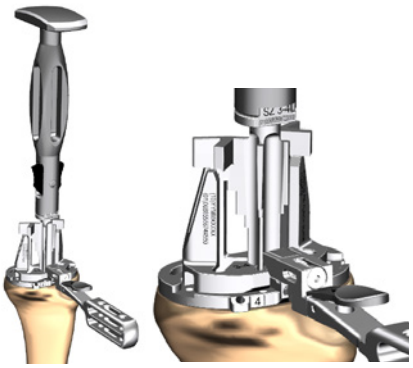


Figure 51

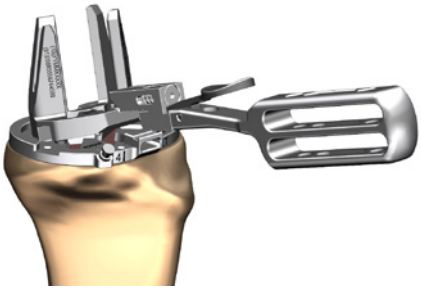


Figure 52

Figure 53

Porous Tibia Fin Punch Sz 3-4
7143-4655

Modular Impact Handle
7401-6242

Removal Tool
7401-2825

Porous Tibia Baseplate Trial Sz 4
7143-4639 Left
7143-4648 Right

Quick Connect Handle
7401-6213

Porous Tibia Fin Punch Guide Sz 3-4
7143-4712

CONCELOC◇ Patella preparation

Patella resection

1 Trim tissue surrounding the patella using electrocautery (bovie) (Figure 54).

2 Use a rongeur to remove osteophytes and reduce the patella to its true size (Figure 55). It is recommended to leave the superior rim of bone intact. The bovie should also be used to release soft tissue attachments to the estimated level of resection.

3 Measure the overall thickness of the patella with the Patellar Caliper (Figure 56).

4 After determining the depth of the cut, dial in the stylus on the patella resection guide to have the corresponding resection level. Clamp the patella between the jaws of the guide. (Figure 57).

Note: Take care when determining the depth of the cut in an effort to minimize the risk of fracture. It is recommended to leave at least 12mm of residual patella. See Tables 1 and 2 for porous patella implant thicknesses.

Figure 54

Figure 55

Figure 56

Figure 57

Table 1

CONCELOC Oval Patella	
Diameter	Thickness
29mm	9mm
32mm	9.5mm
35mm	9.5mm
38mm	10.5mm
41mm	10.5mm

Table 2

CONCELOC Round Patella	
Diameter	Thickness
26-35mm	9mm
38mm	10mm
41mm	10mm

Patella Resection Guide
7193-5819

Patella Caliper
7143-4672

Patella resection *cont.*

4 Resect the patella through the slots of the patella resection guide (Figure 58).

Before proceeding, evaluate the bone quality of the resected patella. If bone quality is poor the porous patella should be cemented.

Patella peg preparation

5 Choose the appropriate size porous oval/ round patella drill guide and attach it to the patella clamp. Make sure the guide sits flush on the resected patella and there are no spaces visible. Use the porous patella peg drill 5.7mm to drill the three fixation holes (Figure 59).

Note: If necessary the porous patella peg drill 6mm may be used which will create slightly less press fit.

6 Place the CONCELOC◇ round or oval patella trial onto the prepared patella. Make sure there are no spaces between the prepared bone and trial to ensure press-fit (Figure 60).

Figure 58

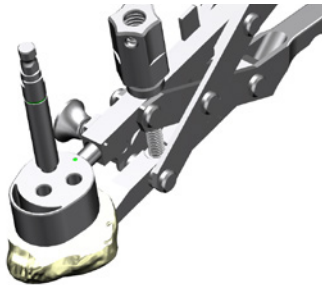


Figure 59

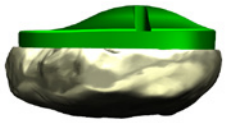


Figure 60

Porous Oval Patella Trial 32mm
7143-4683

Porous Round Patella Trial 32mm
7143-4832

Patella Resection Guide
7193-5819

Patella Clamp
7500-5701

Porous Oval/ Round Patella Drill Guide 32mm
7143-4732

Porous Patella Peg Drill 5.7mm
7143-4671

Porous Patella Peg Drill 6mm
7143-4723

Component implantation

CONCELOC° Tibia implantation

Ensure that the tibial bone surface is flat and free of bone debris and fragments. This will help to achieve an optimal press-fit.

1 Connect the locking tibia impactor to the tibia implant.

Note: Pegs on the porous tibia implant are sharp. Be cautious when handling.

2 Align the porous tibia implant with the prepared tibia. Take care to ensure implant keel is appropriately aligned within the prepared slots (Figure 61).

3 Slowly impact the porous tibia implant roughly ¾ of the way down to the proximal tibia surface. While impacting, ensure that the inferior surface of the implant and proximal tibia are parallel (Figure 62). Also be sure to continually perform visual checks to ensure proper alignment is maintained throughout impaction.

4 Attach the modular handle to the modular universal tibia impactor. Continue impaction until the tibia implant is fully seated (Figure 63).

5 After impaction, ensure that the tibia implant is completely contacting the surface of the resected tibia and no gaps are present between the implant and bone (Figure 64). Fixation, support and stability may be compromised if gaps are present between the implant and bone.

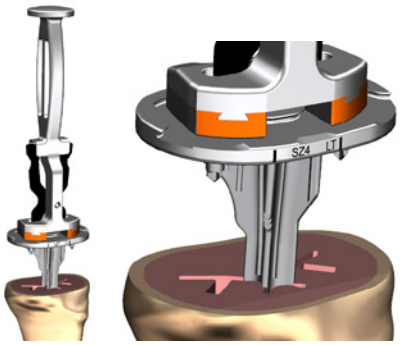


Figure 61

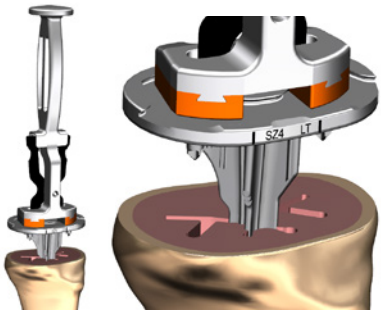


Figure 62

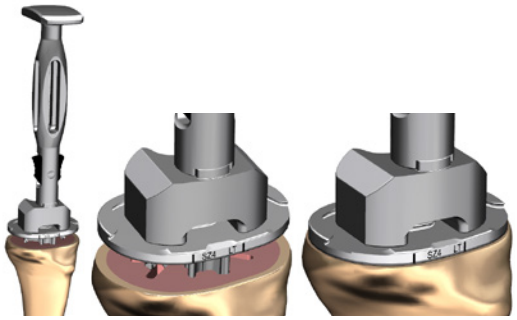


Figure 63

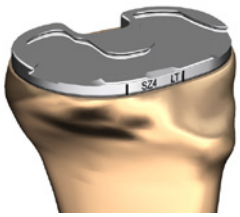


Figure 64

Modular Impact Handle
7401-6242

Locking Tibia Impactor
7401-6268

Modular Universal Tibial Impactor
7401-6249

Porous Femoral implantation

Ensure that flat, clean cuts are made to all of the femoral resection cuts and they are free from bone debris. This will help to achieve an optimal press-fit.

1 Attach the outer-grip locking femoral impactor to the appropriate size and side porous femoral implant. Place the femoral implant on the femur and impact it until fully seated (Figure 65) The finishing femoral impactor may also be used to seat the implant if needed (Figure 66).

Note: While impacting be sure to maintain an extended femoral component position as frictional resistance from the porous coating can create unanticipated implant flexion.

Figure 65

Figure 66

Modular Impact Handle
7401-6242

Modular Legion Femoral Impactor
7401-6250

Outer Grip Locking Femoral Impactor
7401-8902

CONCELOC° Patella implantation

Ensure that the prepared patella surface is flat and free of bone debris and fragments. This will help to achieve an optimal press-fit.

1 Align the pegs of the porous patella implant to the fixation peg holes previously prepared. When using an oval patella implant, ensure that the lateral facet of the oval patella implant is over the lateral facet of the native patella. Lightly press the patellar pegs into the native patella.

2 Attach the patella cement clamp to the patella clamp. Center cement clamp over the patella implant and apply pressure to the clamp until patella implant is fully seated onto the resected surface of the native patella (Figure 67). Maintain consistent pressure across the entire implant and continually perform visual checks to ensure the inferior surface of the implant and bony surface are parallel.

3 After press-fit is achieved, ensure that the patella implant is completely contacting the surface and no gaps are present between the implant and bone (Figure 68). Fixation, support and stability may be compromised if gaps are present between the implant and bone.

Figure 67

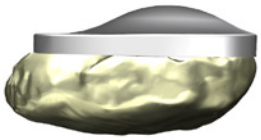


Figure 68

Patella Cement Clamp
7143-4663

Patella Clamp
7500-5701

Tibia insert implantation

1 Clear any debris from the locking mechanism.

2 Manually slide the insert into the tibial baseplate engaging the locking mechanism until the insert periphery is within 1-2mm of the Tibial Component periphery.

Note: The articular insert can be difficult to insert because of the high medial posterior lip. The best technique is to flex the knee to 110°, push in the insert as far as possible and bring the leg out into full extension. Externally rotating the tibial in flexion can also help with getting in the insert.

3 Insert the tip of the Articular Insert Assembly Tool into the center notch of the anterior lock detail (handle up) and engage the two tabs of the Tool into the two recesses on the anterior periphery of the insert (Figure 69).

Note: Make sure the tool is level with the plane of the baseplate.

4 Squeeze the tool handle until the insert is fully seated within the Tibial Component. The insert should not move under any pressure in flexion or extension.

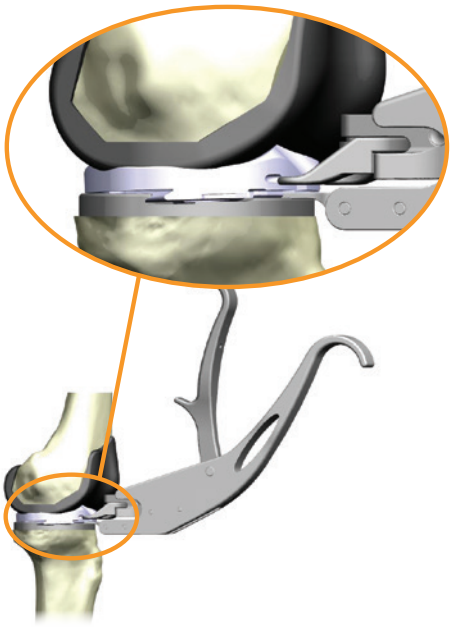


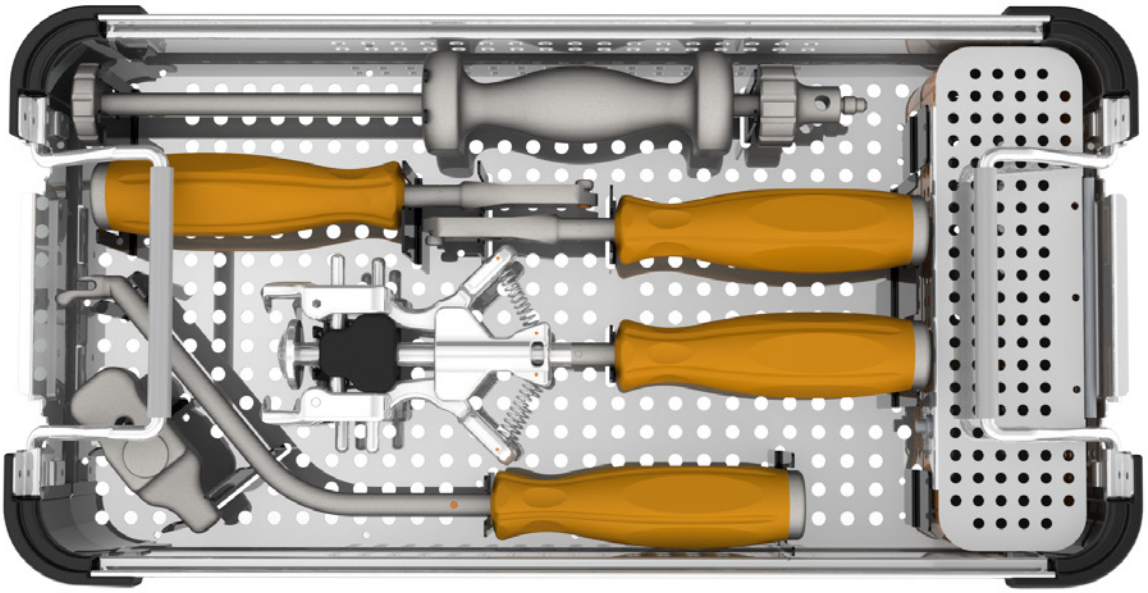
Figure 69

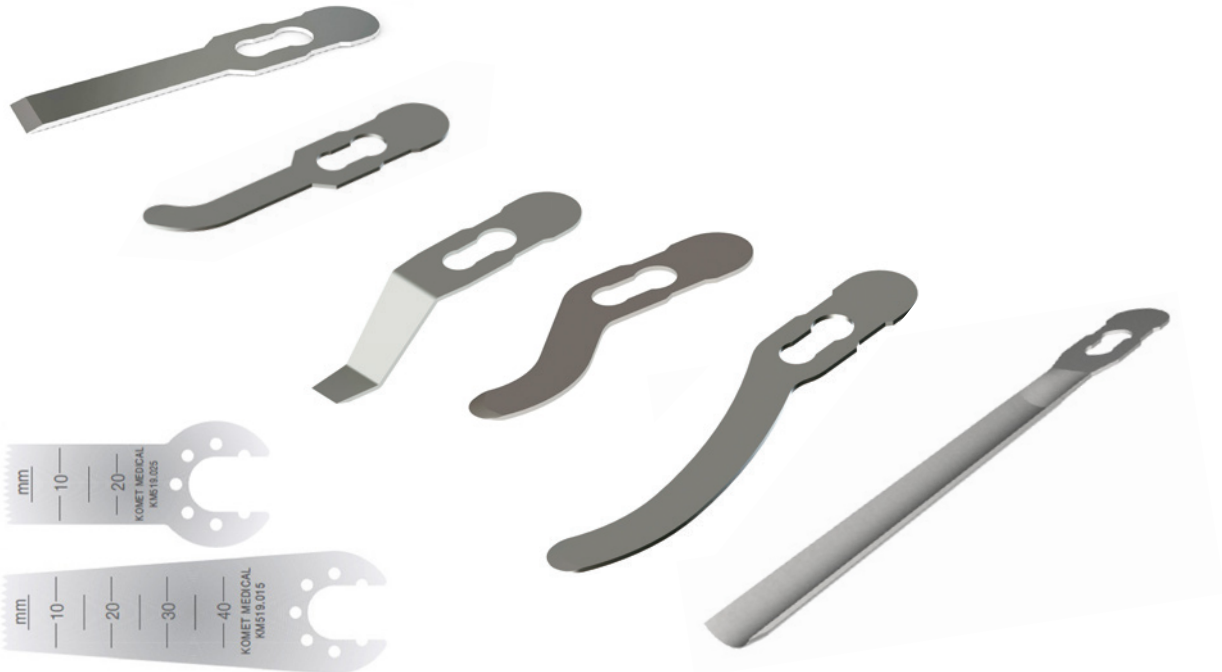
Articular insert assembly tool
7401-8911

Component removal

Please refer to RENOVATION Universal Knee Implant Extraction Instrument System Surgical Technique 04044 (2025)

RENOVATION Knee Extraction Set 75210243





Appendix A

Implant size interchangeability

	Femoral Size							
Insert Size	1	2	3	4	5	6	7	8
1-2 Deep Dished	●	●	●					
1-2 CR High Flex	●	●	●	●				
3-4 Deep Dished		●	●	●	●			
3-4 CR High Flex		●	●	●	●	●		
5-6 Deep Dished				●	●	●	●	
5-6 CR High Flex				●	●	●	●	●
7-8 Deep Dished						●	●	●
7-8 CR High Flex						●	●	●

Smith & Nephew, Inc.
1450 Brooks Road
Memphis, TN 38116
USA

Telephone: 1-901-396-2121
Information: 1-800-821-5700
Orders/inquiries: 1-800-238-7538

www.smith-nephew.com

27778 V2 7128-2168 REVA 10/21