Surgical Technique
Lateral

smith&nephew

JOURNEY° II UK

Unicompartmental Knee System

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Table of Contents

Femoral Component Design

Asymmetric: The implant is designed to mimic the femoral condyle's normal, anatomic shape with a gentle anterior bend toward the trochlear notch. The shape of this bend has been designed to allow a forgiving user experience such that the component position may align more easily with the tibia component. This gentle bend also allows the left medial component to be used on the right lateral condyle, and the right medial component to be used on the left lateral condyle.

Anatomic: The implant is available in ten sizes in order to allow intra-operative optimization of implant fit. The shape of the sagittal articulating geometry (J-curve) is designed to be similar to clinically successful predicate designs[1-2+] while the peripheral anterior edge has been designed to allow flexibility in medial-lateral positioning while minimizing the incidence of component overhang.

Bone interface: Three planar resections and two fixation lugs provide a uniform, cement interface. The pegs diverge from the posterior and distal planar resections. The posterior peg can be used as a guide to allow ease of alignment during implantation.

Versatility: Ten sizes of femoral implants are available in two millimeter A/P size increments to allow optimization of fit to patient anatomy. Femoral resection geometry and lug placement has been optimized to allow interchangeability. Implants have been divided in three groupings; core sizes 4-7, and outlier sizes 1-3 and 8-10. Within each grouping any size may be selected and implanted without modification to bone preparation.

The coronal articular geometry is designed to allow varus/valgus component positional flexibility while avoiding edge loading while the instrumentation allows for component M/L positioning to be confirmed prior to drilling the lug holes.

Tibial Baseplate/Insert Component Design

Asymmetric: JOURNEY® II UK features tibia components designed individually for the medial and lateral compartments of the knee.

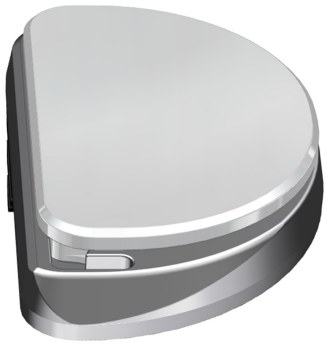
The medial component is designed to mimic medial compartment native bony anatomy. The lateral component is designed wider and shorter than the medial compartment to mimic the lateral native anatomy. The geometries have been blended to allow the surgeon rotational freedom.

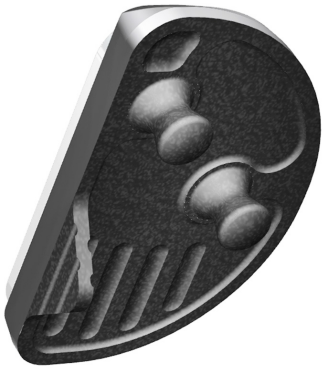
Anatomic: Surgical flexibility was taken into account by tailoring the outer periphery for each compartment individually. This allows rotational freedom while helping to prevent overhang.

Bone interface: All bone facing surfaces have been prepared with grit blast for cement fixation.[3]

Versatility: Eight sizes of lateral tibia baseplate implants are available in two millimeter A/P size increments to allow optimization of fit to patient anatomy. Modular tibia inserts are available from 8 to 14 mm (composite) thickness, offered in one millimeter increments.

The lateral tibia insert features a "round on flat" conformity. Articular implants are unconstrained to allow soft tissue structures to guide kinematic motion of the implant while also allowing surgical flexibility in component position.





Femur/Insert Compatibility

Femur implant size

Lateral Insert Size	1	2	3	4	5	6	7	8	9	10
0-1	●	●	●	●	●	●	●	●	●	●
2-3	●	●	●	●	●	●	●	●	●	●
4-5	●	●	●	●	●	●	●	●	●	●
6-7	●	●	●	●	●	●	●	●	●	●

Tibia/Insert Compatibility

Tibia implant size

Lateral Insert Size	0	1	2	3	4	5	6	7
0-1	●	●						
2-3			●	●				
4-5					●	●		
6-7							●	●

Surgical Approach

The incision can be made with the leg in either flexion or extension. The location of the skin incision can be determined according to surgeon preference; however, a lateral parapatellar capsular incision can be used to achieve the optimum exposure for a lateral compartment UKA. If a lateral skin incision is used, the surgeon is encouraged to further verify the candidacy of the patient preoperatively to avoid the possibility of a parallel incision should a future TKA become necessary.

Optional Incision: Alternatively, a lateral UKA may also be done through a medial parapatellar approach to not preclude further surgery in the future.

For a lateral parapatellar skin incision, begin the incision just lateral to the superior pole of the patella and extend it below the joint line and slightly lateral to the tibial tubercle (Fig. 1). Then dissect the subcutaneous tissue.

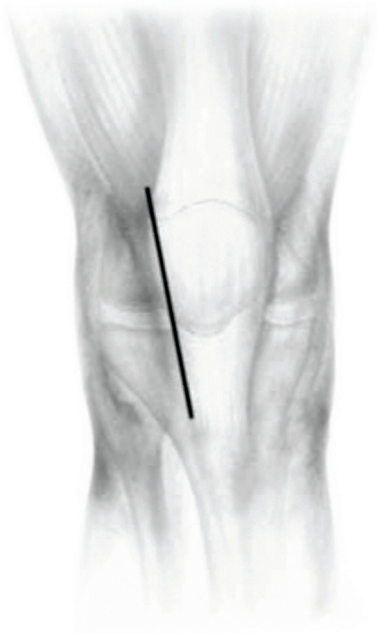


Figure 1

Identify the lateral margin of the patellar tendon inferiorly and mark it. Being careful to avoid the patellar tendon, make a lateral parapatellar arthrotomy beginning at the superolateral border of the patella just distal to the vastus lateralis muscle and extending to a point distal to the tibial plateau (Fig. 2). If necessary, split the distal aspect of the vastus lateralis muscle, and release the patellar tendon slightly off the tibial tubercle to help mobilize the patella.

Excise the fat pad as necessary to facilitate visualization, being careful not to cut the anterior horn of the medial meniscus. Reflect the soft tissue subperiosteally laterally from the tibia along the lateral joint line back toward the collateral ligament, leaving the ligament intact. Be careful to avoid the popliteus tendon. Be aware of the IT Band insertion to Gerdy's tubercle as some release may be necessary to gain access to the lateral compartment.

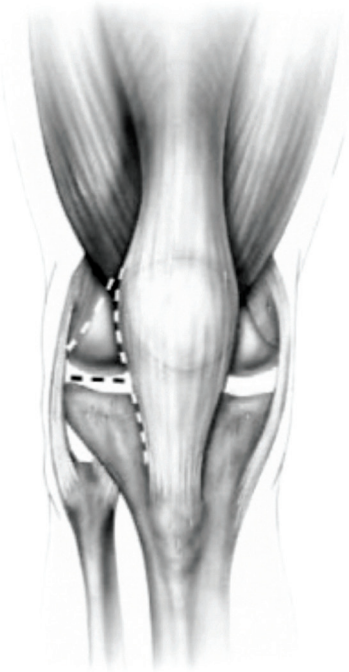


Figure 2

Excise the anterior third of the lateral meniscus to expose the anterior edge of the tibial plateau. The remainder of the meniscus will be removed after bone resection. Slightly release the iliotibial band off Gerdy's tubercle at the lateral margin of the tibia.

Continue the subperiosteal dissection toward the midline, ending at the patellar tendon insertion. This will facilitate positioning of the tibial cutting guide. Debride the joint and inspect it carefully. Remove intercondylar osteophytes to avoid impingement with the tibial spine or cruciate ligament. Also, remove from both the femur and tibia any peripheral osteophytes that interfere with the collateral ligament and lateral capsule. Final debridement will be performed before component implantation.

Careful osteophyte removal is important in achieving full extension.

Note: It may be necessary to extend the incision intraoperatively to achieve appropriate exposure and visualization.

Setting Up the Cutting Guide

The JOURNEY® II UK Knee System is designed for a medial anatomic tibia slope. To ease set up and positioning, the cutting head features a built in 5° posterior slope. Some mismatch may occur between patient and desired slope for the lateral compartment. This may be taken into account by moving the distal portion of the guide closer to the patient anatomy to reduce slope or further away to increase slope.

Tip: In general, a 6° posterior slope should be the goal of the tibial baseplate for lateral UKA's.

The tibia cutting guide assembly consists of a Tibia Resection Guide (cutting head), a Tibia Alignment Guide (proximal/distal adjustment), a Tibia Alignment Adjustment Guide (varus/valgus and slope adjustments), and an Ankle Clamp (distal fixation).

Assembly is performed as shown on the right in Figure 3.

- Assemble Tibia Alignment Guide to the Tibia Alignment Adjustment Guide with teeth facing posterior.
- The ankle clamp is positioned as shown by inserting the male rod with teeth facing distal through the opening in the Tibia Alignment Adjustment Guide while depressing the Slope Adjustment Button.

Tip: *It is helpful to select the free position of the proximal-distal macro adjustment by pressing the toggle switch to the left and ensuring the green (free) indication is shown. When switched to red, the uprod is locked and can only be moved by pressing the black push button.*

- The Tibia Resection Guide is then positioned on the Tibia Alignment Adjustment Guide by snapping the receiving feature on the Resection Guide over the alignment stud on the Alignment Guide.

Tip: *Ensuring both that the lock screw is set to the unlocked position and that the cutting head is in the neutral position will allow maximum surgical flexibility in the following steps. This is done by first turning the lock screw counter clockwise until the cutting head may translate freely by turning the micro adjustment feature (black knob). The knob may then be turned to set the initial position of the cutting head. We recommend the initial placement be set '0' as indicated by the scale on the anterior portion of the cutting guide (Figure 4) to allow the guide maximum flexibility to be raised or lowered respectively.*

Figure 3

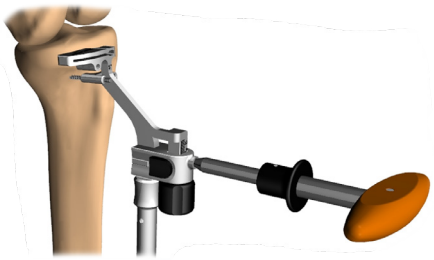


Figure 4

The tibia cutting guide assembly may now be positioned to ensure an accurate tibia resection (Figure 5).

Initial set up of the cutting guide includes a provisional varus/valgus, a provisional slope, and provisional proximal/distal placement. The final settings of these alignment parameters have been separated to allow ease in surgical flow.

The distal portion of the guide should be secured to the ankle by placing the spring arms of the ankle clamp just proximal to the malleoli.

Tip: *The arms of the ankle clamp are mechanically operated such that both may be opened with one hand, allowing the now free hand to help control orientation of the proximal portion of the guide.*

Figure 5

With the ankle clamp in place on the patient, a provisional alignment should be completed including depth, slope and varus/valgus (medial lateral placement) of the guide and the guide adjusted likewise (Figure 6).

Tip: It may be helpful to select the free position of the proximal-distal macro adjustment by pressing the toggle switch to the left and ensuring the green (free) indication is shown.

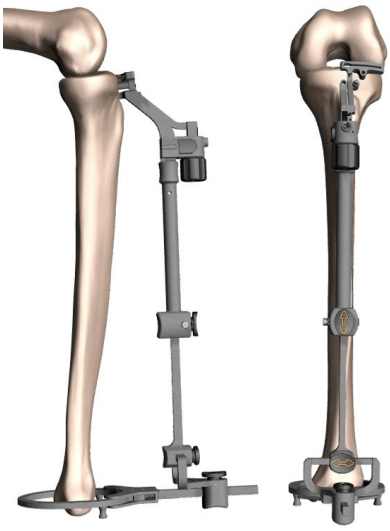


Figure 6

Tip: *The location of the sagittal resection should be considered when setting up the medial-lateral placement of the guide to ensure availability to place an undercut pin through the block. There are targeting marks on the top of the block to illustrate available placement area (Figure 7).*

Once this provisional alignment is established, a headed rimmed pin may now be placed in one of two holes provided to secure the EM guide assembly to the anterior proximal tibia.

After the pin has been fixed in one of the two provisional holes, the guide can still be translated to fine tune depth, slope and varus/valgus alignment.

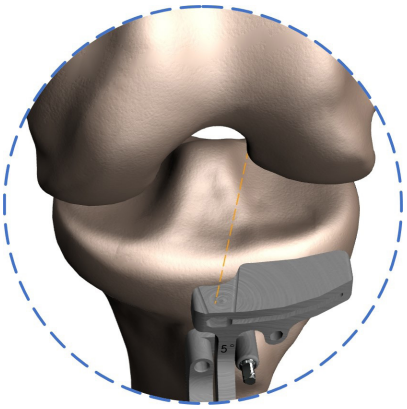


Figure 7

Setting the Depth of the Cutting Guide

After the tibia guide is provisionally fixed, and varus/valgus and slope alignments have been established, a final resection depth may be selected by use of the micro-adjustment feature on the cutting guide (Figure 8).

Once this depth has been selected, cutting head movement may now be restricted by using the lock feature on the cutting guide. This is done by turning the lock screw clockwise to tighten the guide.

Tip: *The provisional pin may be sufficient to provide a rigid construct for resection. If additional fixation is needed, a pin hole has been provided in the cutting head to further secure the guide.*

Preoperative evaluation of deformity may aid in determining resection depth. (See sections below on using reference instruments to aid in establishing final resection depth.)

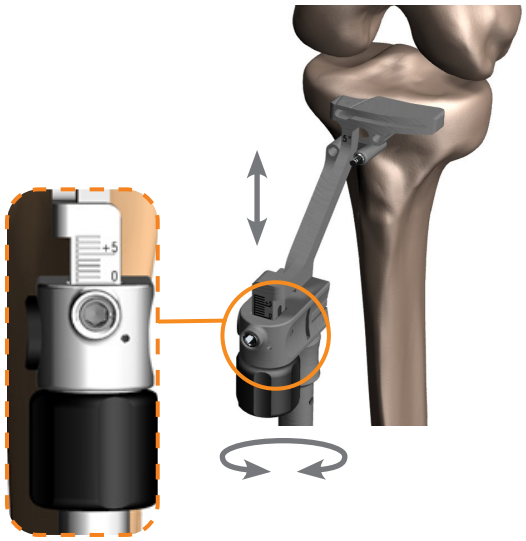


Figure 8

Using the Tibia Stylus

Two double ended styli are offered to aid setting the resection depth. These styli reference 2, 3, 4 or 5 millimeters between the tip and slotted resection surface (Figure 9).

Stylus selection is dependent on wear and deformity. Increased wear should result in a smaller depth selection and less wear should result in a larger depth of resection. Typically 2mm or slightly less as referenced at the maximum point of defect is considered a standard initial resection for lateral compartment.

Tip: *If desired the proximal surface of the block may be used as a non-slotted cutting surface by adjusting the depth distally 4mm from depth referenced from slot.*

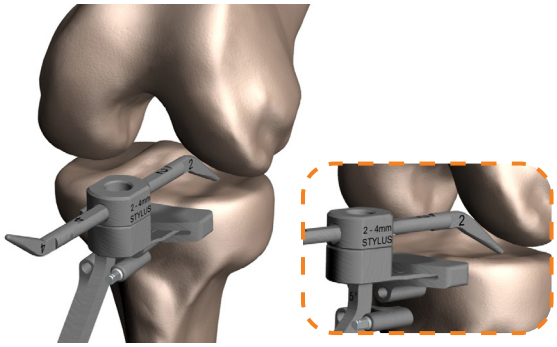


Figure 9

Using the Tibia Spoons

Optional: Reference spoons are offered in 1, 2 and 3 millimeter thicknesses. These spoons may be placed between the worn proximal tibia and femur and used in conjunction with the connector shown in Figure 10 to provide an initial tibia resection depth reference. These spoons are configured to prepare for an 8 mm implant construct when referencing the resection slot.

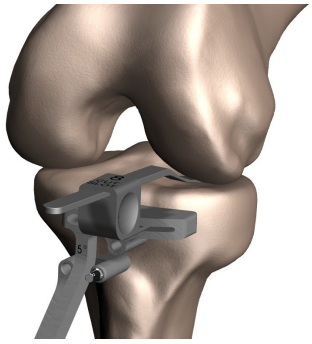


Figure 10

Using the Modular Vertical Capture

References used to set lateral rotation are typically defined as the gap between the lateral tibia eminence wall and medial border of lateral femoral condyle with knee in approximately 90° of flexion posterior and a point along the tibia tuberosity approximately 1/3 the distance from the medial tuberosity border anterior. This will typically result in approximately 10-20° of internal component rotation (Figure 11).

Note: Internal rotation is important to ensure proper component-to-component alignment due to the screw home mechanism of the femur on the tibia.

Optional: The tibia cutting guide features the ability to place both a pin at the intersection of the sagittal and transverse resection (Figure 11) and the option to add a slotted guide to aid in performing the sagittal resection (Figure 12).

Tip: *The undercut pin is made available to protect undercutting of the plateau and spine, and the sagittal guide is made available to help both targeting the pin and ensuring a perpendicular sagittal and transverse resection. Stress concentrations caused by undercutting the tibial plateau and spine may increase risk of post-operative fracture.*

Tip: *There are targeting marks on the top of the block to illustrate available placement area for the undercut protection pin.*

Tip: *Due to the thickness and location of the patellar tendon, a common surgical error is excessive external rotation of the tibial baseplate when done via lateral parapatellar arthrotomy.*

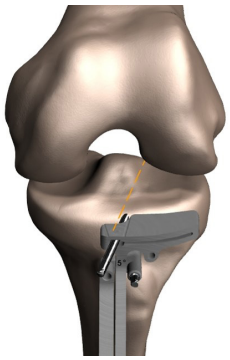


Figure 11

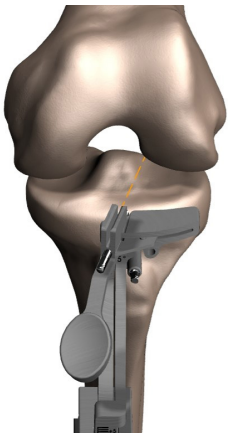


Figure 12

Tibia Resection

The proximal tibia native anatomical boney structures of the operative compartment should be resected such that a planar surface is created with adequate space, and in orientation of proper surgical alignment for implantation of a tibia implant on this prepared surface.

Tip: *Take a conservative yet adequate resection. If minimal resection for 8mm construct is not achieved, overcorrection and disease progression to uninvolved compartment could result.*

Use a reciprocating blade to make the sagittal resection. Be cautious not to raise your hand and resect distally through the posterior cortex.

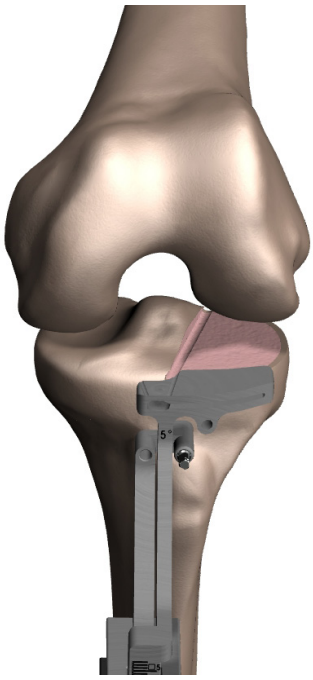


Figure 13

Tip: *Leave reciprocating saw blade (or angel wing) in place to protect medial side while making transverse cut.*

Use a narrow oscillating blade to make the transverse resection. This resection can be made through the saw capture (Figure 13) or on top of the cutting block for more visibility.

Once both the sagittal and transverse resections are complete, the Tibia Resection Guide may be disengaged and removed to assess joint balance while leaving the remainder of the tibia cutting guide assembly in place. Remove the Tibia Resection Guide by depressing the black button on the medial aspect of the guide. This allows access to the joint space to check joint tension while maintaining a reference to the Tibia Resection Alignment (Figure 14).

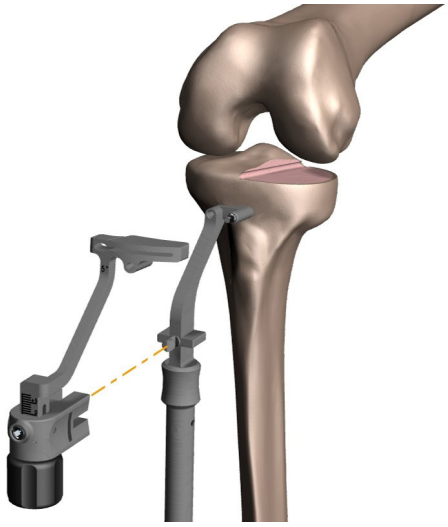


Figure 14

Tip: *Disengaging only the Tibia Resection Guide may aid in alignment should modification to the resection, such as additional depth, be needed.*

Tip: *Ensuring the Tibia Resection Guide locking feature is locked prior to removal will aid in alignment should additional resection depth be needed.*

Joint Balance

The JOURNEY® II UK is designed with a 2 mm anterior shift of the femoral component to account for imbalance between intact posterior bone/cartilage and worn distal bone/cartilage.

This system has a 2 mm shift built into the instrumentation and all spacers are labeled to the shown thickness (e.g. an 8 spacer is 8 mm thick).

This system will tolerate an approximate 2 mm imbalance between flexion and extension before resection of the femur without the necessity for additional manipulation. The minimum space needed after tibia resection is 8 mm in extension and 6 mm in flexion.

Assessing Joint Balance

Adequate gap space for implantation of system tibia implant(s) between resected proximal anatomy and native distal and posterior femoral anatomy should be assessed. Complete this step prior to making the distal femoral resection.

Gap spacers are provided in a range of 6 to 14 mm thicknesses to aid in assessment of appropriateness of the tibia resection and any potential ligament imbalance caused by deformity.

Joint laxity is assessed by selecting the appropriate spacer thickness that allows resistance but two finger free movement between the resected tibia and native femoral anatomy. This may be confirmed by tightness of the next available millimeter thickness gap spacer.

Prior to completing femoral resections, a minimum of 6 mm of joint space is needed in flexion and 8 mm of joint space is needed in extension for successful implantation. If joint laxity is less than 8 mm in extension, and 6 mm in flexion, additional resection will be necessary (Figures 15 and 16).

Care should be taken to avoid a tight flexion space in the lateral compartment as the native joint exhibits lateral laxity in flexion. Overcorrection may lead to disease progression to uninvolved compartment.

Note: It is recommended to balance with the 8mm block in extension and flexion.

Tip: *For best results, the JOURNEY II UK system has been designed for 1-2 mm of post-operative laxity in extension and 2-3 mm of post-operative laxity in flexion. Instruments will guide you to a balanced flexion/extension space if followed.*

Tip: *Distal resection may be adjusted +/- 2 mm in 1 mm increments to aid correction of imbalance.*

Tip: *6 and 7 mm gap sticks have been colored red to indicate additional resection may be necessary in extension (Figure 17).*

The native tibia surface may be assessed and/or prepared alternatively by computer-assisted navigation and/or patient-specific instrumentation.

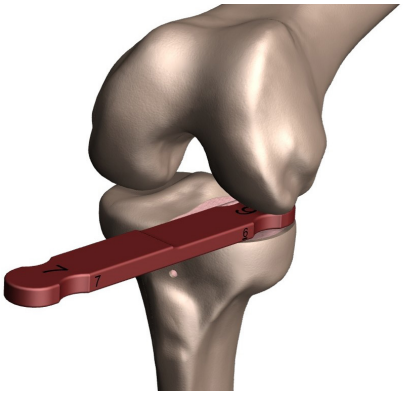


Figure 15

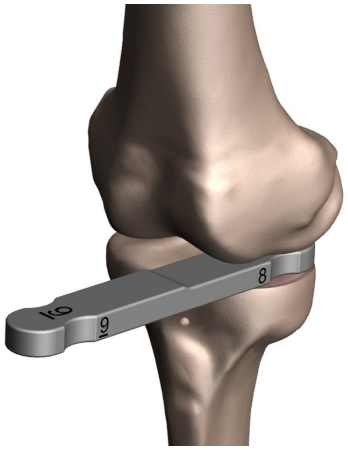


Figure 16

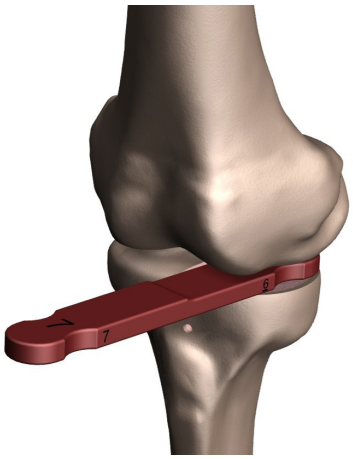


Figure 17

Correcting Joint Imbalance

Optimal balance can be achieved when a minimum 6 mm in flexion and 8 mm of extension laxity is achieved prior to resection of the femur.

Note: Given the native lateral flexion laxity, optimal balance is achieved with 8mm laxity in both flexion and extension

If corrective action is necessary to restore balance, the following are the most common methods for correcting this imbalance, with correction typically occurring within a 2 mm window for the following conditions:

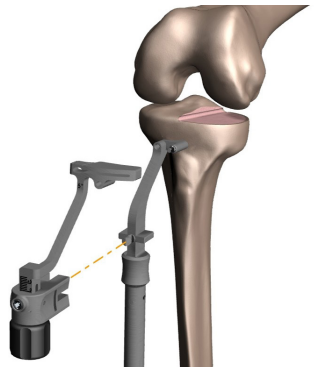


Figure 18

Both flexion and extension are tight

- Resect additional proximal tibia (Figure 18)

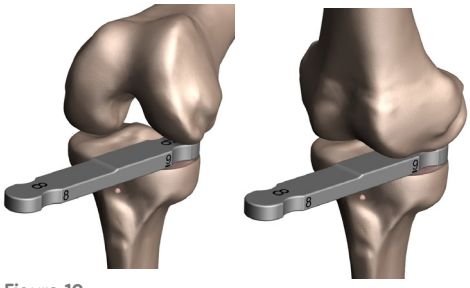


Figure 19

Both flexion and extension are loose

- Increase thickness of gap spacer(s) used to assess balance (Figure 19)

Tight in extension, flexion ok
-or-
Loose in Flexion, extension ok

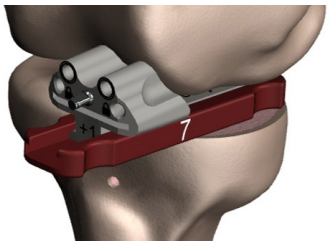


Figure 20

- Resect additional distal femur using +1 or +2 distal cutting blocks (Figure 20)

Tip: *Use caution to avoid raising the joint line*

Tight in flexion, extension ok

- Use rasp to remove additional posterior femur
- Recut tibia with additional slope (Figure 21)

Tip: *When making the posterior femoral resection, a built-in +2 mm resection is made to shift the component anterior and decompress the flexion space. This will account for intact posterior cartilage on the femur.*

Note: Excessive posterior slope on the lateral tibia should be avoided.

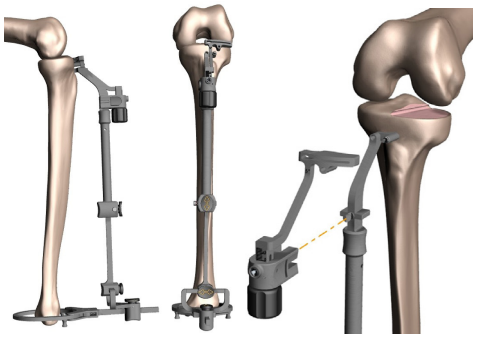


Figure 21

Loose in extension, flexion ok

- Resect less distal femur using -1 or -2 distal cutting blocks (Figure 22)

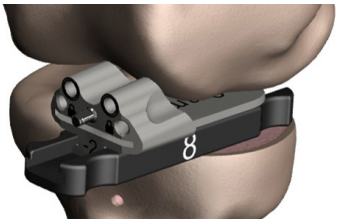


Figure 22

Assessing Tibia Resection Alignment

Alignment of resected bone to long axes of the tibia can be confirmed by using the Drop Rod Adapter with an appropriate thickness Spacer Rail (matching thickness from previous step - as pictured). Confirm that rod is parallel to long axis of the tibia in coronal plane, by having rod intersect medial 3rd of tibia tubercle. Assess that slope is appropriate in sagittal plane (Figure 23).

The steps within this section may be omitted if using computer assisted navigation in lieu of using provisional trials at later step in procedure (after preparation of femoral bone is completed).

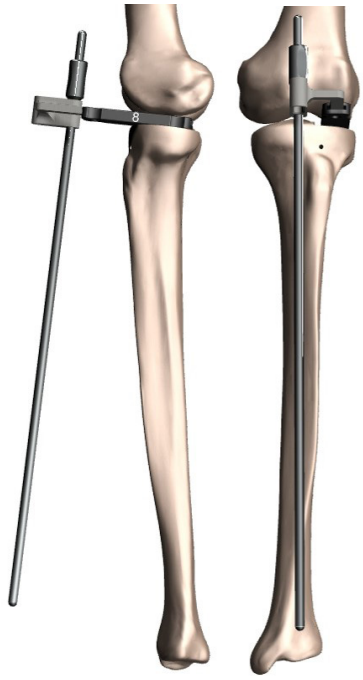


Figure 23

Modifying Tibia Resection

If modification of the tibia resection is required, re-attach the Tibia Resection Guide to the tibia alignment guide (Figure 24).

If additional resection depth is necessary, unlock the Tibia Resection Guide to adjust resection depth. New depth can be referenced by the scale on the cutting guide, and/or confirmed with the tibia styli.

Once desired recut depth is identified, lock the Tibia Resection Guide and complete both transverse and sagittal resections.

After resections are complete, repeat Joint balance and alignment confirmation steps.

Tip: *Resection guide may be adjusted with sub millimeter accuracy to aid in joint balance precision.*

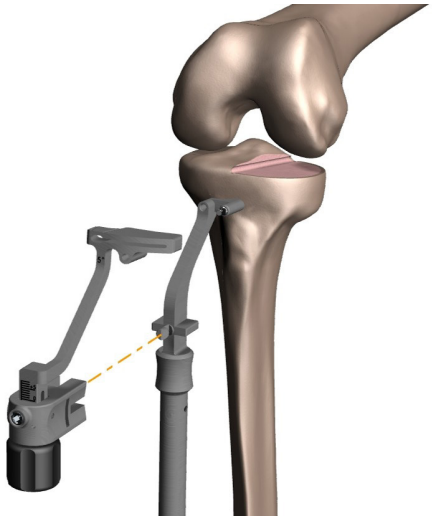


Figure 24

Distal Femur Resection

The distal femoral native anatomical boney structures of the operative compartment should be resected such that a planar surface is created with adequate space and in orientation of proper surgical alignment for implantation of distal portion of femoral implant. Distal implant thickness is 6.5 mm and typical distal resection is accomplished with the block marked “0” (or 6.5 mm) (Figure 25).

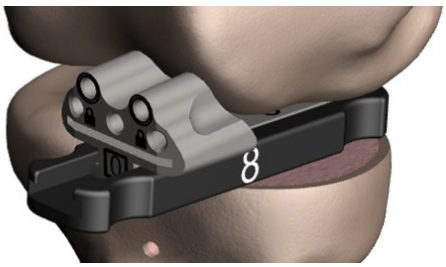


Figure 25

The standard method for resecting the distal femur is to place the distal cutting block with the leg in extension between the resected proximal tibia and native distal femur along with a short spacer rail indicating current joint laxity (minimum 8 mm with “0” Cutting block). One rimmed pin is then placed in the central pin hole and the distal resection is made in extension with the spacer rail in place, taking care to avoid excessive posterior saw excursion that may damage soft tissues along the posterior aspect of the knee (Figure 26).

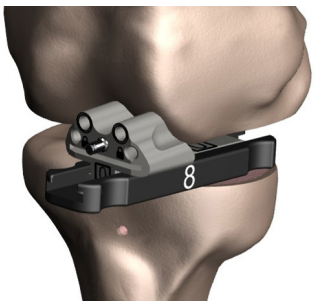


Figure 26

Complete distal femoral resection using 1.27 mm or 1.35 mm thick narrow saw blade. Remove the distal femur cutting block. Then check the extension joint space using the resected gap sticks. (See page 17)

Tip: *+/- 1 mm or +/- 2 mm distal blocks may be selected to aid correction of imbalance in conjunction with the identified short rail (Figure 27 and 28).*

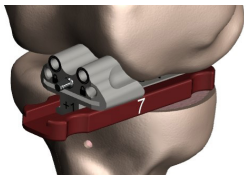


Figure 27

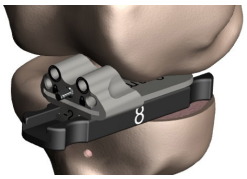


Figure 28

Note: The distal resection may also be completed in flexion (Figure 29). Making the distal resection in flexion will allow for visualization of the saw to avoid posterior neurovascular structures. If resecting in flexion, a minimum of two pins will be needed to ensure alignment is maintained. Pinning the top two parallel pins will provide the greatest stability, however one pin on the top row, and one pin on the opposite side of the bottom row may also be used. To resect in flexion, remove the short spacer rail. The removal hook may be used to aid removal of spacer.

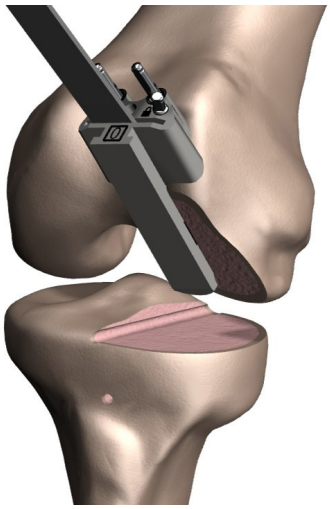


Figure 29

Tip: *Provision has been made to allow for up to two millimeters of additional resection to be completed if needed after initial resection has been completed and assessed (Figure 34). In order to accommodate this the top two holes (indicated by rings) must be pinned with non-rimmed pins to allow proper alignment of the re-cutting blocks (Figure 30).*

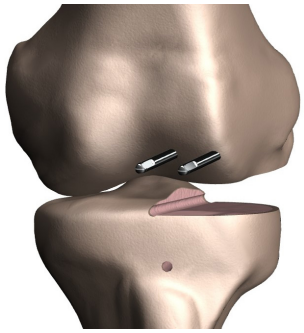


Figure 30

This is completed by leaving the two non-rimmed pins in place after the initial distal resection has been completed. If after assessing the post-resected joint balance additional distal resection is needed, either the 1 mm or 2 mm distal re-cutting block may be used by aligning the re-cutting block over the two rimmed pins through the holes indicated with the desired amount of additional resection (Figure 31).

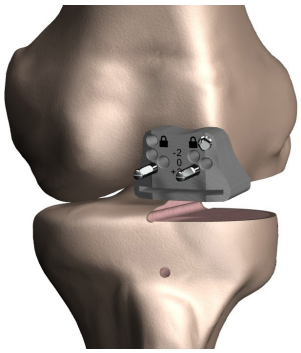


Figure 31

Tip: *The furthest outer pins (indicated by padlock symbol) have been angled to provide additional fixation if needed. The holes on this row are convergent such that no more than one pin may be used on this row to prevent creating stress concentrations (Figure 32 and 33).*

Tip: *It is recommended that no more than 3 (three) pins be used to fix distal cutting block to avoid creating postoperative stress concentrations created by voids.*

A three-pin configuration would include two pins in the top row of holes and one in the bottom. It is possible to fix the block using only ONE pin(as described in Figures 26-28). It is recommended the distal cutting block should be secured with the fewest number of pins needed to adequately fix the block for the preferred resection technique.

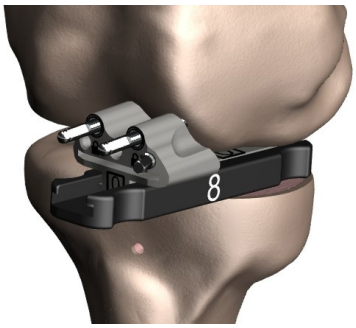


Figure 32

Figure 33

Resected Gap Assessment

The combination of resected proximal tibia and resected distal femur may now be assessed to ensure adequate bone removal for tibia and distal femoral implants.

Joint laxity is assessed by selecting the appropriate resected spacer thickness that allows resistance but two finger free movement between the resected tibia and native femoral anatomy. This may be confirmed by tightness of the next available millimeter thickness gap spacer.

The thickness of resected gap stick indicates the composite thickness of the tibia implant construct and distal femoral implant thicknesses (Figure 34).

Note: Limb Alignment should also be assessed with the resected gap stick to avoid over correction.

Figure 34

Completing Femur Resections

Preparation of remaining planar femoral resections is completed at this step to prepare native bone to receive provisional femoral trials. Initial sizing and component rotation are also completed at this step.

Femoral implants are available in ten sizes, separated by 2 mm A/P increments, and two hands (LM/RL, and RM/LL). Likewise A/P cutting blocks are provided for each size and hand whereby the outer profile of the A/P block represents the shape of the corresponding femoral implant (Figure 35).

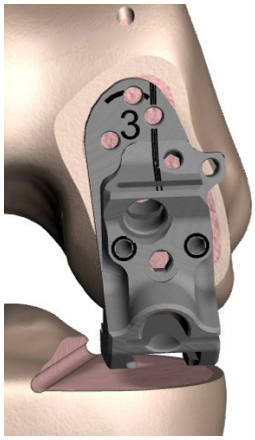


Figure 35

The standard method for selecting and aligning the A/P cutting block is to mate the appropriate resected gap spacer with an approximate size femoral cutting block, then to place the construct between the resected proximal tibia and native posterior femur, and placing the distal surface of the cutting block flush with the distal femoral resection. The cutting block should then be moved into an approximate M/L position and a preliminary size should be assessed (Figure 36).

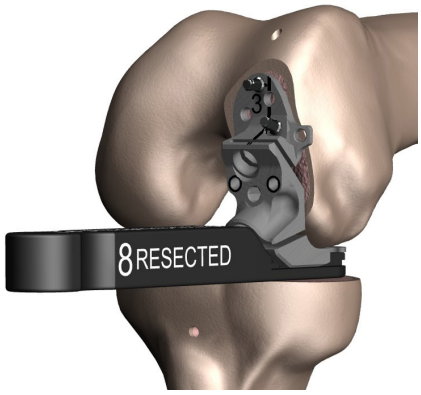


Figure 36

Optional: Rotation and placement may alternately be set, or fine tuned by using the A/P block holder (T-Handle) (Figure 37). This may be used in lieu of the gap spacer to set component position/ rotation, or to fine tune after anterior pin has been affixed and gap spacer removed.

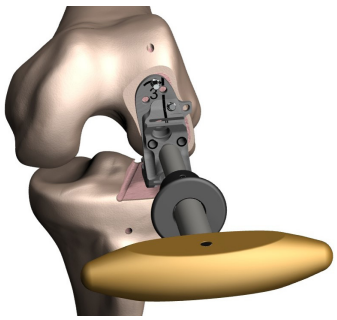


Figure 37

Component size is suggested to be selected such that 2-3 mm of exposed resected bone is visible anterior of the tip of the component as shown in (Figure 38).

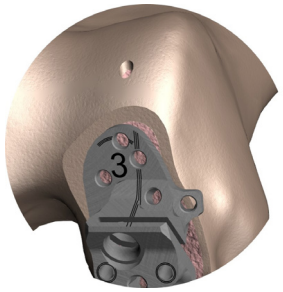


Figure 38

Once appropriate component size and rotation have been determined, the cutting block should then be pinned in place using a rimmed pin through one of the two holes in the anterior of the block, and a rimmed or non-rimmed pin in one of the oblique fixation holes. Once properly fixed, the gap spacer may be removed (Figure 39).

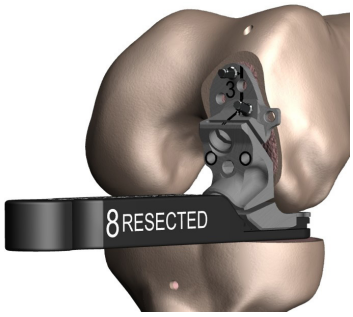


Figure 39

Optional: The alignment holes for the Drill Thru Femoral trials may be drilled using either an 3.2 mm (1/8") drill bit or by partially threading a speed pin into the resected bone. Care should be taken to avoid over drilling the depth of these holes, appropriate depth of preparation needed to align trial spikes is approximately 5 mm (Figure 40).

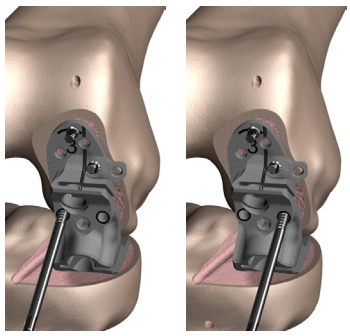


Figure 40

Complete the posterior and chamfer resections. It is suggested to complete the posterior resection first as this will be the component reference for positional alignment, then to resect the bone to prepare for the chamfer (Figure 41).

Please see information on the following page for additional tips on completing sizing and femoral resections and the optional drilling step.

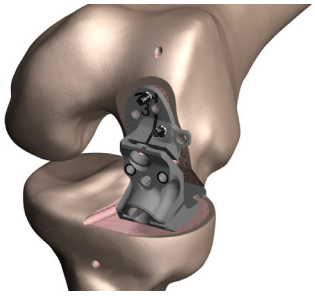


Figure 41

Femoral resection and lug positions are combined in three groupings such that final component sizing may be deferred to later steps. Sizes 1-3, 4-7, and 8-10 all share resection and lug geometry. To aid in identifying proper size, and availability to change size within groups, the next size down is indicated by an etch on the anterior of the block if another smaller size is available within its grouping. (Figure 42)

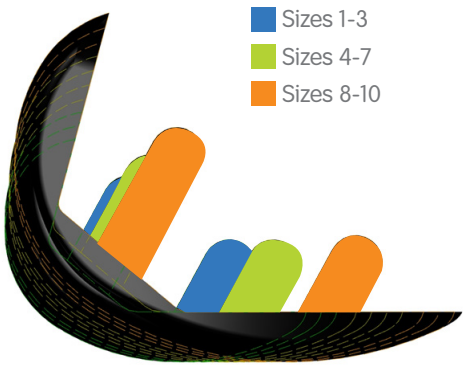


Figure 42

Tip: *Cutting blocks feature a reference line noting the center of component articulation. This can be used as a reference in M/L and rotational block placement.*

Tip: *Check for and remove posterior condylar osteophytes if necessary after completing resections. (The keel punch may be used alternately as an osteotome to aid removal.)*

Optional: Standard method for preparing bone to receive femoral lugs is preformed with drill thru trials. This preparation may also be optionally completed by traditional method using AP cutting blocks if satisfied with final component position. To do so, use the posterior femoral drill for posterior hole then standard drill for anterior hole (Figures 43, 44). If drilling at this step, drilling prior to completing resections is recommended. These drilled holes will be the primary alignment method for placing the final implant.

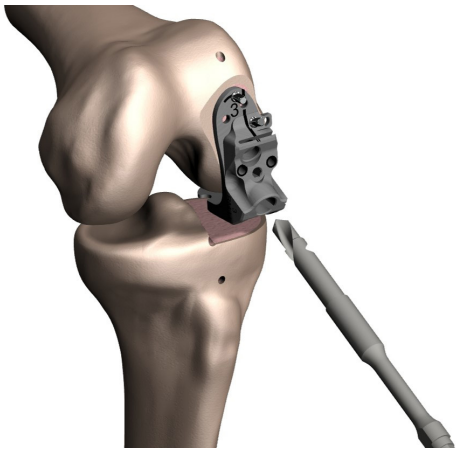


Figure 43

Tip: *If using the drill thru trials, do not complete drilling step at this time.*

Tip: *Dedicated posterior drill is not offered in primary set as preferred method to complete drilling is through drill thru trials. If needed, optional CI#74036108 Posterior Femoral Peg Drill should be ordered.*

Note: The posterior hole may be alternately drilled with standard drill. When drilling posterior hole through A/P block with standard drill, posterior lug will be drilled to second drill stop, anterior lug will be drilled to first stop. Care should be taken when drilling posterior lug with standard drill as drill may contact bone prior engagement in sleeve. A misaligned drill may bind, or move block during drilling.

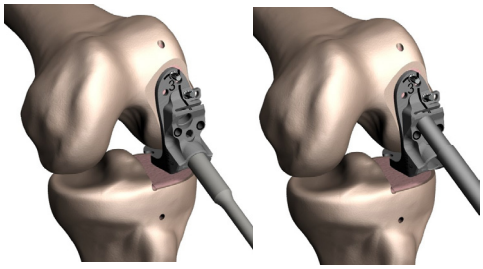


Figure 44

Tibia Sizing and Preparation

At this step the resected tibia bone is assessed for tibia baseplate component size and position. Preparation is then made to resected bone to receive size and hand specific fixation features of the final tibia implant.

Eight sizes of tibia implants are available with a shape targeted specifically for the lateral compartment, shorter and wider than the medial compartment. Each size is separated by 2 mm A/P increment, and offered in two hands (RL, and LL). Lateral sizes range from 0-7.

Note: Each numerical size shares the same A/P length (e.g. Size 1 medial and lateral are both 40mm A/P) (Figure 45).

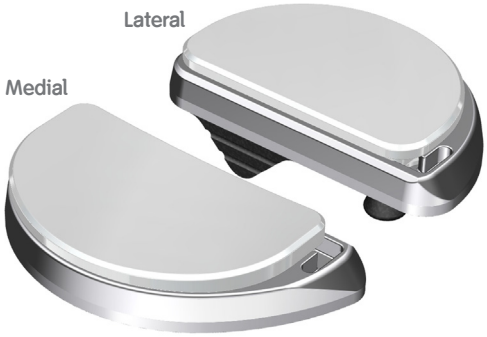


Figure 45

Lateral components are wider than medial components to provide optimal fit for the lateral compartment. However, either baseplate may be used in the contralateral compartment at the physician's discretion. When doing so, typical hand convention for unicompartmental knees (LM/RL, and RM/LL) should be followed (e.g. a Left Medial baseplate could secondarily be indicated in the Right Lateral compartment, and a Right Lateral baseplate could be secondarily indicated for the Left Medial compartment).

A tibia sizing hook is provided and may be used for an unobstructed A/P assessment of tibia baseplate component sizing. The hook should be placed on the resected tibia surface along the wall created by the sagittal resection. The hook will reference the posterior cortex of the tibia, once engaged pull forward to read maximum tibia size with no overhang via reference marks on the sizing guide (Figure 46).

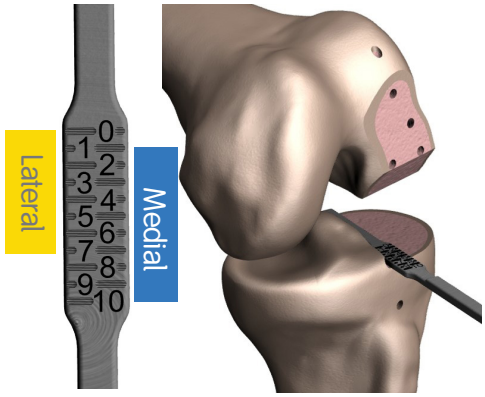


Figure 46

A secondary check of implant size may be performed by using the double ended symmetric lateral sizing guides. The appropriate size will be the largest available size with no overhang, especially laterally on the tibia (Figure 47).

Note: The lateral symmetric sizer is not side specific (device may be flipped over for left or right hand).

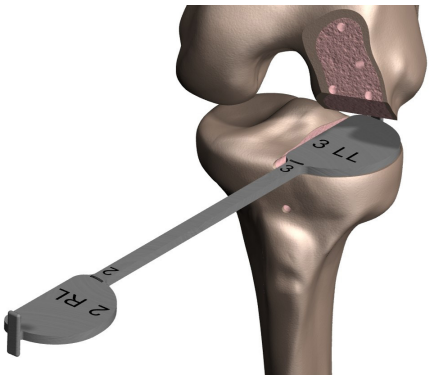


Figure 47

Once provisional sizing is complete, a tibia baseplate trial of like size and side may be positioned and provisional keel impacted in place using the tibia trial impactor.

Tip: *Some users find it advantageous to affix the keel with the trial in a slightly anterior position (2-3 mm) then use the tibia trial impactor to drive the trial posterior into optimal position. The furrow created may allow increased cement fixation around the keel. The trial has been designed with a taper on the provisional keel to aid this movement.*

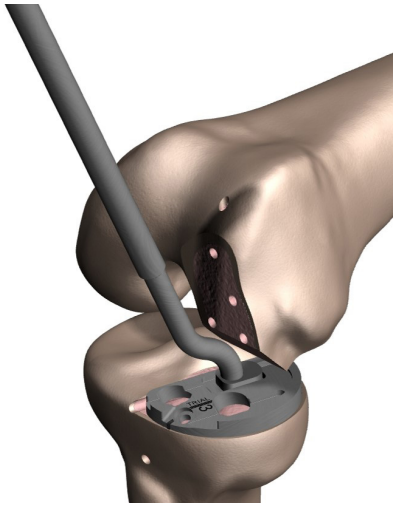


Figure 48

Once properly positioned, the trial may be affixed in place by using a rimmed pin through the provisional pin hole in the anterior- lateral aspect of the trial (Figure 49).

Preparation of the resected proximal surface may now be made to receive the tibia lugs by drilling two holes through the tibia trial using the tibia drill. This drilling is done at a 20° posterior angle and is made in such a way as to provide sufficient room for bone cement to be placed to increase fixation between tibia baseplate and bone (Figure 49 and 50).

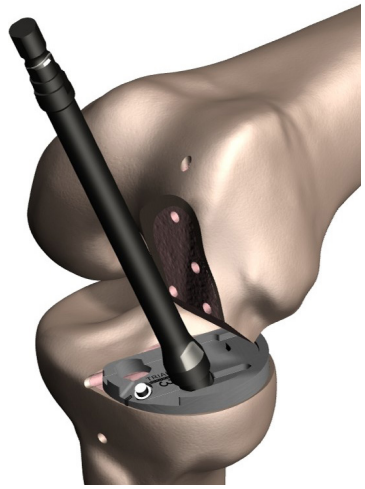


Figure 49

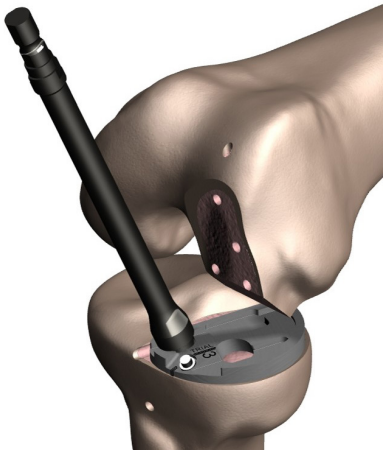


Figure 50

Range of Motion Trialing

Joint tension and component alignment are assessed and finalized at this step.

Select the appropriate size drill thru femoral trial identified during the femoral sizing step. Attach the femoral trial to the femoral holder and introduce to the resected femur. The drill thru trial has been designed with moveable spikes to aid provisional fixation of the trial. Proper femoral component placement can be done at this stage to ensure optimal tracking of the femoral compoenent on the tibial baseplate via the laser etchings on the trials.

Tip: *The holes previously drilled in the resected bone to align the drill thru trial may be used to aid in placement of the drill thru trial.*

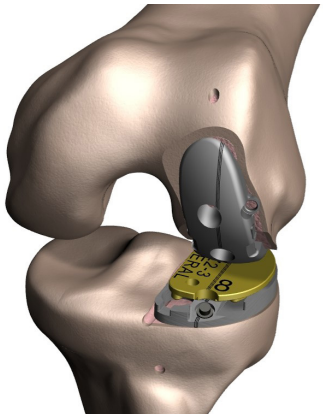


Figure 51

Tip: *Check the femoral M/L position in both flexion and extension and place the component in the optimal position to avoid edge loading on the tibia.*

An appropriate thickness insert trial may then be inserted between the provisional tibia and femoral trials and range of motion joint tension may be assessed (Figure 51).

Tip: *Insert trials are color coded by size and are indicated also on the final implant packaging for convenience (Table 1).*

JOURNEY® II UK Trial Inserts

Lateral	Color
0-1	Black
2-3	Yellow
4-5	Orange
6-7	Green

Table 1

A tension spacer reading 2 mm on one end, and 3 mm on the opposite end has been provided to assess the joint laxity at this step.

Tip: *For best results the JOURNEY II UK knee system has been designed for 1-2 mm of post-operative laxity in extension and 2-3 mm of post-operative laxity in flexion (Figure 52).*

Conventionally this may be assessed as a 2 mm spacer in extension, and a 2 or 3 mm spacer in flexion as measured by the tension gauge.

Markings have been provided on all trial components indicating the center of articulation. These may be used to aid final M/L placement of the drill thru femoral trial.

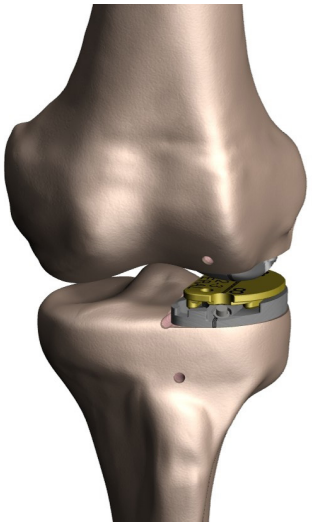


Figure 52

Once the final position of the drill thru trial has been established the femoral drill can then be used to prepare for the implant lugs by drilling to the first drill stop through the two holes provided in the femoral trial (Figures 53 and 54).

Tip: *An additional pin hole has been provided in the drill thru trial. Should additional fixation be needed, a rimmed pin may be secured in this hole.*

Tip: *Ensure that the posterior flange of the trial is flush against the resected posterior femoral condyle when placing this trial femoral component before drilling the holes for the pegs on the femur.*

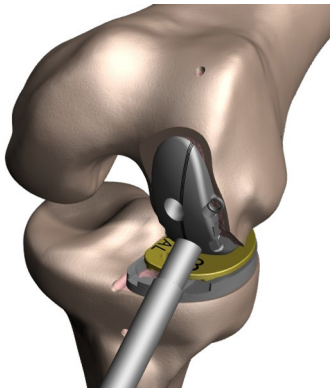


Figure 53

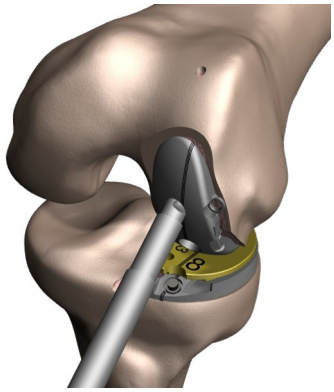


Figure 54

Optional: Trials with lugs may also be used if lug holes were prepared during chamfer resection, such that adequate preparation may be confirmed at this step (Figure 55).

Once range of motion trialing is complete, the tibia insert trial can be removed using the removal hook. After removing any additional fixation pins the femoral trial may be removed and the tibia trial may be lifted by using a narrow tapered osteotome).

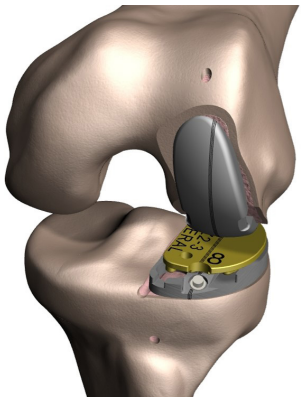


Figure 55

After removing trials bone surfaces should be thoroughly cleaned in preparation for final implantation. Use of irrigation to remove loose particles and debris is recommended to create an ideal cement surface. Ensure that the resected bone is thoroughly clean and dry (Figure 56).

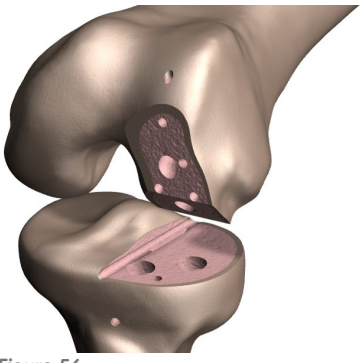


Figure 56

Cemented Component Implantation

Cement should be applied to both the bone and tibia implant to achieve optimal fixation. An osteotome can be used to assist in compressing the cement into the plateau (Figure 57).

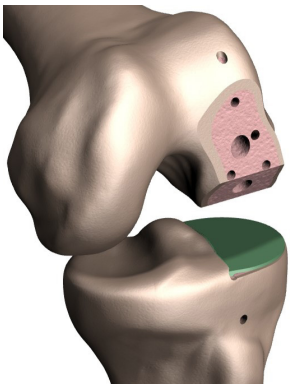


Figure 57

Place the tibia baseplate component onto the prepared tibia bone. Impact tibia component into place using the tibia impactor. Start with the posterior aspect of the tibia tray working anterior. This method will allow cement to extrude anteriorly and avoid being trapped in the posterior capsule. Remove excess cement from the periphery of the tibia component (Figure 58).

Tip: *Use only moderate force when impacting the tibial baseplate to avoid tibial bone stress injury.*

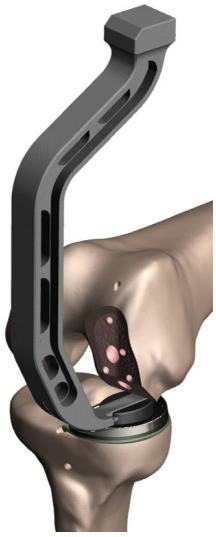


Figure 58

Note: Please note that the inside rim of the tibia tray must be free of cement and debris to ensure an adequate lock may be made between insert and tibia tray (Figure 59).

Tip: *A narrow drill (typically 2 mm dia.) may be used to drill several holes into prepared planar surfaces prior to cementation to increase cement to bone interdigitation.*

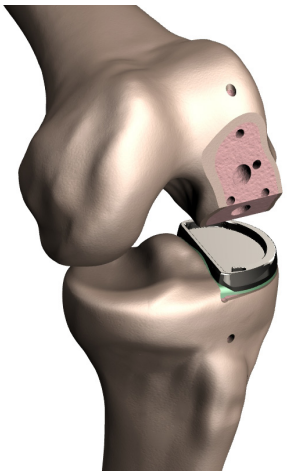


Figure 59

Cement should be applied to both the bone and femoral implant to achieve optimal fixation (Figure 60). Apply cement to the backside of the femoral component. Seat the femoral implant by aligning the femoral lugs to the pre-drilled peg holes in the femur. Place the femoral component onto the prepared bone using the femoral holder. Use the femoral free impactor as necessary and remove excess cement from the periphery of the component (Figure 61).

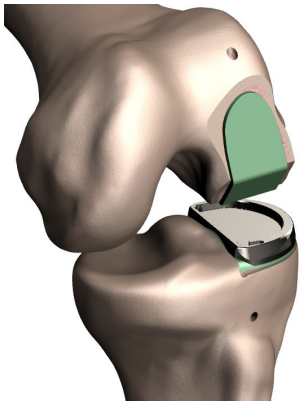


Figure 60

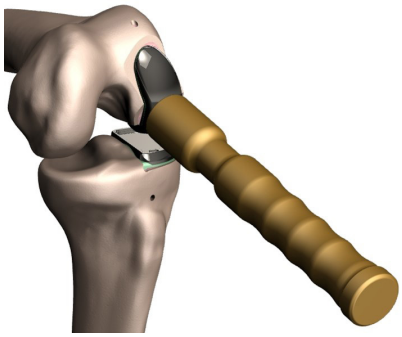


Figure 61

Care should be taken to avoid excess cement on the posterior aspect of the femur and femoral component. Excess cement that extrudes posteriorly can be difficult to remove (Figure 62).

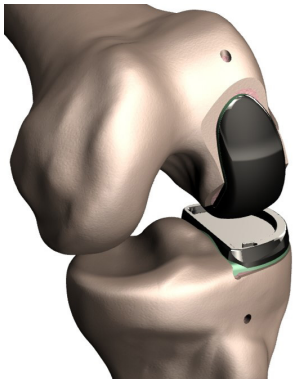


Figure 62

Tip: *The insert trial may be used to aid in cement compression as cement sets (Figure 63).*

Note: Care should be taken not to disturb cemented implants until the cement has completed its working period and is sufficiently cured.

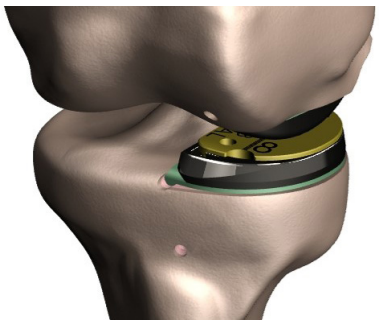


Figure 63

Implant Insert Locking

The insert implant may now be inserted and locked into place by ensuring first the pocket is free of debris. Visual inspection of the posterior locking area of the tibia baseplate should be completed to ensure the insert implant will not be prevented from fully engaging in the locking area.

The insert implant should then be placed into position by engaging the posterior locking tab with the receiving area in the baseplate, and positioning the medial wall of the insert implant in contact with and parallel to the medial wall of the tibia baseplate (Figure 64). Care should be taken to ensure soft tissue is sufficiently clear of the area beneath the insert implant as this has shown to be a common failure mechanism preventing adequate locking of the insert implant into the baseplate implant.

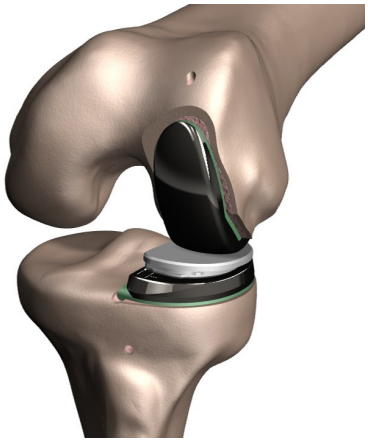


Figure 64

The insert implant locking tool should then be used to secure the insert implant into the baseplate implant. This tool has been designed to prevent disturbing the baseplate cement mantle during implantation by allowing the user to apply a downward counterforce on the handle.

Proper operation involves engaging the hook of the tool into the receiving slot of the baseplate implant (Figure 65).

Tip: *The insert implant locking tool is often placed at approximately 45° angle to best engage the insert trial into the baseplate*

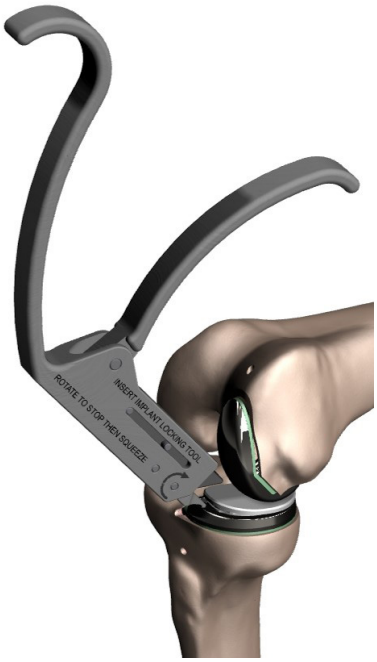


Figure 65

The tool should then be rotated to engage the hook until touching the stop on the posterior wall of the baseplate mating feature (Figure 66).

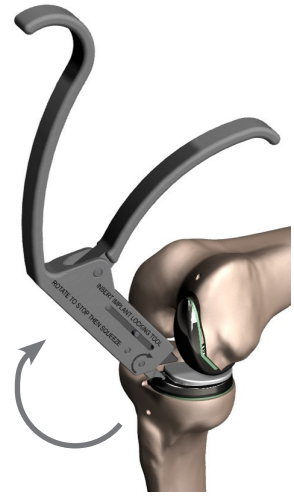


Figure 66

This should be done gently, and care should be exercised to ensure the tool does not lever the anterior of the baseplate proximally.

Once engaged, **an anterior downward force should be applied to the handle,** and the trigger squeezed to engage the locking mechanism of the insert liner (Figure 67 and 68).

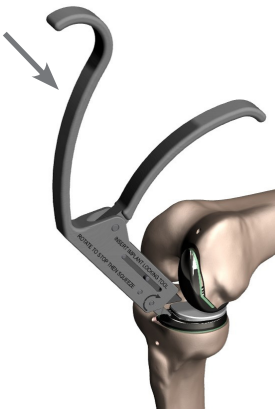


Figure 67

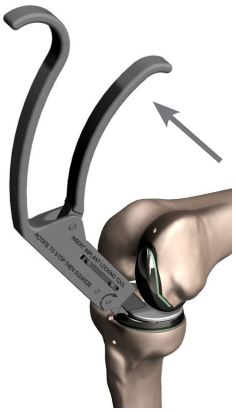


Figure 68

Proper insertion should be verified by ensuring a consistent gap of no more than 0.5 mm is present between the metal baseplate and insert implant along the entire periphery (Figure 69).

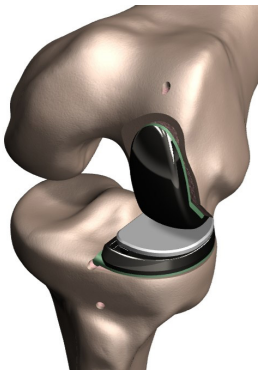


Figure 69

Implant Insert Locking

Irrigate the knee for the final time and close. Follow your usual post-operative wound care protocol.

JOURNEY® II UK features modular configuration of trays, allowing for surgeon customization. The instrument tray layouts can be found in a separate guide for reference and ordering purposes.

Refer to JOURNEY II UK Interactive Tray Layout Guide for further information.

System Compatibility

Femoral	Insert	Tibial Baseplate
JOURNEY® II UK OXINIUM® Femoral Component	JOURNEY II UK Medial Insert (XLPE) JOURNEY II UK Lateral Insert (XLPE)	JOURNEY II UK Medial Tibial Baseplate JOURNEY II UK Lateral Tibial Baseplate

JOURNEY UNI and JOURNEY II UNI Compatibility Chart

JOURNEY II UK OXINIUM Femoral Component	JOURNEY II UK Medial Insert (XLPE)		JOURNEY II UK Lateral Insert (XLPE)	
Inserts	**Femoral**	**Tibial Baseplate**	**Femoral**	**Tibial Baseplate**
JOURNEY II UK Medial Insert (XLPE) JOURNEY II UK Lateral Insert (XLPE)	JOURNEY II UK OXINIUM® Femoral Component	JOURNEY II UK Medial Tibial Baseplate	JOURNEY II UK OXINIUM® Femoral Component	JOURNEY II UK Lateral Tibial Baseplate

Femur - Tibia Compatibility

	Femoral Implant Size									
Medial Insert Size	1	2	3	4	5	6	7	8	9	10
1-2	●	●	●	●	●	●	●	●	●	●
3-4	●	●	●	●	●	●	●	●	●	●
5-6	●	●	●	●	●	●	●	●	●	●
7-8	●	●	●	●	●	●	●	●	●	●
9-10	●	●	●	●	●	●	●	●	●	●

Tibia Insert Compatibility

Medial	Tibia Baseplate Size									
Insert Size	1	2	3	4	5	6	7	8	9	10
1-2	●	●								
3-4			●	●						
5-6					●	●				
7-8							●	●		
9-10									●	●

	Femoral Implant Size									
Lateral Insert Size	1	2	3	4	5	6	7	8	9	10
0-1	●	●	●	●	●	●	●	●	●	●
2-3	●	●	●	●	●	●	●	●	●	●
4-5	●	●	●	●	●	●	●	●	●	●
6-7	●	●	●	●	●	●	●	●	●	●

Lateral	Tibia Baseplate Size							
Insert Size	0	1	2	3	4	5	6	7
0-1	●	●						
2-3			●	●				
4-5					●	●		
6-7							●	●

Compatibility Table

JOURNEY® II UK	Compatible Component	Size
JOURNEY II UK OXINIUM® Femoral	JOURNEY II UK Medial Insert (XLPE)	1-10, 8-14 mm
	JOURNEY II UK Lateral Insert (XLPE)	0-7, 8-14 mm
JOURNEY II UK Medial Insert (XLPE)	JOURNEY II UK Femoral (OXINIUM)	1-10, LM/RL RM/LL
	JOURNEY II UK Medial Tibial Baseplate	1-10 LT/RT
JOURNEY II UK Lateral Insert (XLPE)	JOURNEY II UK Femoral (OXINIUM)	1-10, LM/RL RM/LL
	JOURNEY II UK Lateral Tibial Baseplate	0-7 LT/RT
JOURNEY II UK Medial Tibial Baseplate	JOURNEY II UK Medial Insert	1-10, 8-14 mm
JOURNEY II UK Lateral Tibial Baseplate	JOURNEY II UK Lateral Insert	0-7, 8-14 mm

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† We thank the patients and staff of all the hospitals in England, Wales and Northern Ireland who have contributed data to the National Joint Registry. We are grateful to the Healthcare Quality Improvement Partnership (HQIP), the NJR Steering Committee and staff at the NJR Centre for facilitating this work. The views expressed represent those of the authors and do not necessarily reflect those of the National Joint Registry Steering Committee or the Health Quality Improvement Partnership (HQIP) who do not vouch for how the information is presented.

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37244 V1 71282202 REV0 06/23

References

1. Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR). Hip, Knee & Shoulder Arthroplasty: 2022 Annual Report. Adelaide: AOA, 2022. 2. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man. 19th Annual Report. 2022. Hertfordshire, UK. 3. Pittman GT, Peters CL, Hines JL, Bachus KN. Mechanical bond strength of the cement–tibial component interface in total knee arthroplasty. J Arthroplasty. 2006;21(6):883-888.