



Introduction

The LEGION® Revision Knee System has been designed to offer the orthopaedic surgeon improved options to deal with the complexities associated with revision knee arthroplasty, while providing them in a manner that is relatively simple to execute. The instrumentation has been developed to be an easy-to-use system that will allow the surgeon to obtain accurate and reproducible results while improving the ease with which a surgeon can manage bone mass, restore limb alignment and improve knee function. Failed total knee arthroplasty due to aseptic loosening, osteolysis, instability, malalignment or infection can be reconstructed using the LEGION Revision Knee System.

Key elements in revision knee arthroplasty include the restoration of proper limb alignment, achievement of proper prosthetic component position, restoration of knee biomechanics and balanced medial/lateral and flexion/extension gaps. The achievement of these goals will lead to proper patellofemoral mechanics, functional range of motion and optimized patient satisfaction.

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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.

Preoperative Evaluation

The preoperative evaluation of a failed total knee arthroplasty begins with a complete history and physical examination. Determination of the etiology or failure will also require radiographic evaluation, occasionally the use of technetium bone scans, the use of laboratory studies and/or aspiration to rule out the possibility of indolent infection. It is imperative that the cause of failure be determined preoperatively in order to help maximize the likelihood of postoperative success.

If bone defects secondary to osteolysis exist preoperatively then the surgeon performing the procedure must understand the implications of this bone loss as well as techniques required to manage them.

Exposure

Exposure of the revision total knee can be complicated by previous incisions, stiffness or a fibrotic soft tissue envelope. In general, greater exposure is required for a revision total knee arthroplasty as compared with that of a primary procedure. Proper tissue planes medially and laterally must be elevated and fasciocutaneous flaps must be maintained in order to minimize wound healing complications. In general, a standard medial parapatellar arthrotomy is used when feasible. An extensile exposure proximally such as a quadriceps snip, or distally such as a tibial tubercle osteotomy, may be required to achieve adequate exposure.

Component Removal

After adequate exposure of all components has been achieved, attention is turned to component removal. This is typically achieved through dissection of the interface between the prosthesis and the cement or at the prosthetic/bone interface. Many surgeons prefer to remove the femoral component first in order to improve visualization of the posterior tibial component. A thin, flexible osteotome or a thin oscillating saw may be used to disrupt the prosthetic interface in order to allow removal with minimal bone loss. Alternative techniques include the use of a Midas-Rex burr or a Gigli saw to free this interface. Angled osteotomes may be helpful in freeing the condylar portions of the femoral components. If the interfaces have been adequately freed, minimal force is typically required to remove the femoral component. Excessive force to remove the component may lead to femoral fracture. Removal of the tibial component is then carried out in a similar manner. Occasionally, exposure of the lateral side

may be more difficult, and the use of a small capsular incision about the lateral aspect of the joint may be required to gain access to the posterolateral aspect of the tibial component. If disruption of the interface at the level of the plateau does not allow for easy implant removal, a cortical window may be made in the metadiaphysis of the tibia to allow a bone tamp access to the keel of the prosthesis. As bone cement fails most easily in tension, a controlled, well-placed blow will often dislodge the tibial component. If the patellar button is securely fixed, well-positioned and does not show excessive wear then it may be left and protected for the remainder of the case. If the patellar button must be revised, removal is most easily performed with a sagittal saw at the cement interface. Remaining cement and polyethylene plugs from the component may then be removed with a small, high-speed burr. Great care must be taken during this stage of the procedure in order to ensure adequate patellar bone stock remains for revision component placement so that fracture is prevented. Once components have been removed, the remaining cement can then be removed with curettes, rongeurs or cement osteotomes. The wounds can be irrigated with a water pick to remove loose debris and attention can then be turned to the reconstructive portion of the procedure.

Tibial Preparation

Ream

1. Drill a pilot hole with the 9.5mm intramedullary drill, if necessary.
2. Ream the canal until cortical contact is achieved using progressively larger diameter reamers (*Figure 1*).
3. Choose between the two methods of instrument stabilization:
 - A. Last Reamer: Leave the last reamer in the tibial canal.
 - B. Trial Stem Connection Rod Assembly:
 - Remove the last reamer, making note of the depth and diameter (*Figure 2*).
 - Attach the Trial Stem Connection Rod to the appropriate diameter trial stem and insert the Trial Stem Connection Rod Assembly into the tibial canal.

Tip: Long stems are offered in 120, 160, 220mm Straight; 220 and 280mm Bowed. Markings of depth length are laser marked on the reamers.

Tip: The cutting flutes on the press-fit stems are 1mm larger in diameter than the reamers.



Figure 1



Figure 2

Tibial IM Alignment Guide

Tibial IM Instrument Assembly:

Ensure the horizontal alignment bar knob (*Figure 3b*) is in the locked position. Slide the cutting block onto the vertical alignment bar (*Figure 3c*), position at the 0mm mark and tighten the tibial cutting block thumbscrew (*Figure 3d*).

1. Attach the 1mm Stylus to the slot capture of the Tibial Cutting Block by inserting the stylus foot into the cutting slot.
2. Slide the Tibial IM Assembly onto the Reamer (or Trial Stem Connection Rod Assembly) (*Figure 4*).
3. Adjust the vertical alignment bar towards the anterior tibia and lock in position (*Figure 5c*). Lower the IM assembly so that the 1mm stylus touches the least affected side of the tibial plateau (*Figure 5e*) and tighten the IM collet in position (*Figure 5f*).
4. With the IM guide secured to the reamer shaft (or connection rod) by the tightened collet, the tibial cutting block can be rotated around the anterior tibia for optimum access by loosening the thumbscrew (*Figure 5b*).

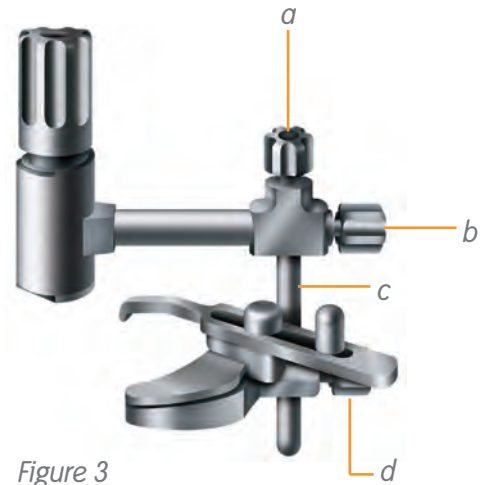


Figure 3



Figure 4

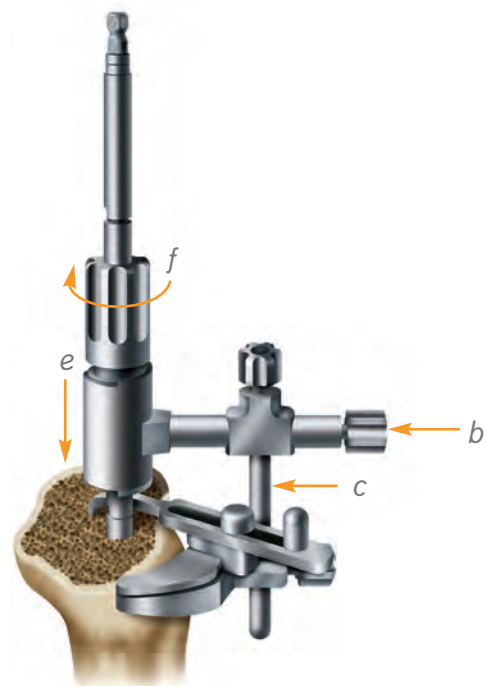


Figure 5

Tibial Preparation

Tibial Resection

Note: Ensure that the IM assembly is in the locked position by inserting a 3.5mm hex screwdriver into the female end of the thumbscrews (Figure 6a, b, d), turning thumbscrews (Figure 6a, b, d), turning clockwise until tight.

1. Pin the tibial cutting block to the tibia by inserting pins first through the central holes in the 0mm position, then the oblique hole (Figure 6).

Tip: Using headless pins through the central holes marked 0mm will allow the block to be shifted to +2, +5 or +7mm should additional resection be needed.

2. Remove the stylus.
3. Using a PROFIX[®] sawblade, resect the proximal tibia (Figure 7).

Tip: The LEGION[®] revision tibial tray has a 0° posterior slope. Rotational alignment is not a factor.

4. Remove the pins and loosen the IM collet. Remove the IM assembly, leaving the reamer in the tibial canal.

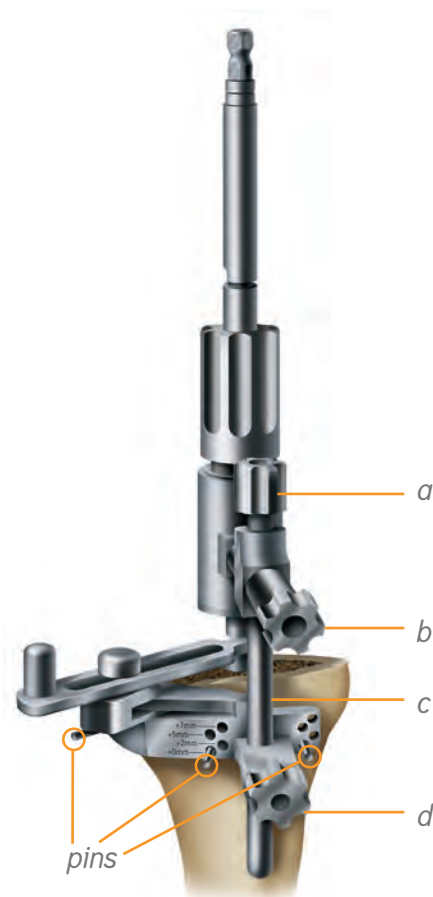


Figure 6



Figure 7

Non Offset Tibial Sizing and Placement

Sizing and Placement

1. Assess the A-P and M-L size of the resected proximal tibia with the Tibial Drill Guides and select the proper size.

Tibial Drill Guide/Neutral Bushing Instrument Assembly:
Insert the Tibial Neutral Bushing into the appropriate sized Tibial Drill Guide. Push in until fully seated.

2. Place the Tibial Drill Guide/Neutral Bushing Assembly over the reamer (or Trial Stem Connection Rod Assembly) and assess the A-P and M-L position and rotation to ensure adequate tibial coverage. (If adequate coverage is not achieved, proceed to Offset Tibial Sizing and Placement, page 11).
3. Using headless pins, pin the Tibial Drill Guide to the proximal tibia (*Figure 8*).

Preparation of the Female Taper Counterbore

4. Remove the Neutral Bushing and reamer (or Trial Stem Connection Rod Assembly).

Tip: If needed, the Revision T-Handle can be used to remove fixed reamers or in case the trial stem becomes well-fixed within the canal, the universal extractor can be attached to the end of the trial stem connection rod to aid in removal.

5. Insert the Tibial Counterbore Guide Bushing into the Tibial Drill Guide (*Figure 9*).



Figure 8



Figure 9

Counterbore Reamer Instrument Assembly:

Depress the button on the Counterbore Depth Stop and slide the depth stop over the reamer with the "IM CANAL" marking towards the cutting end of the reamer. Then attach to the power drill. Position the depth guide to the "TIBIA" marking (Figure 10).

6. Insert the Counterbore Reamer Assembly into the guide bushing and ream until the depth stop makes contact with the guide bushing (Figure 11).

7. Remove pins and drill guide.

Tibial Trial Preparation

Tibial Trial/Trial Stem Instrument Assembly:

Align the laser mark on the J-hook of the trial stem to the laser mark on the posterior side of the distal face of the female tibial trial taper (Figure 12). Push in the trial stem and make a quarter-turn to engage the J-hooks.

8. Insert the Tibial Trial/Trial Stem Assembly into the tibial canal (Figure 13).

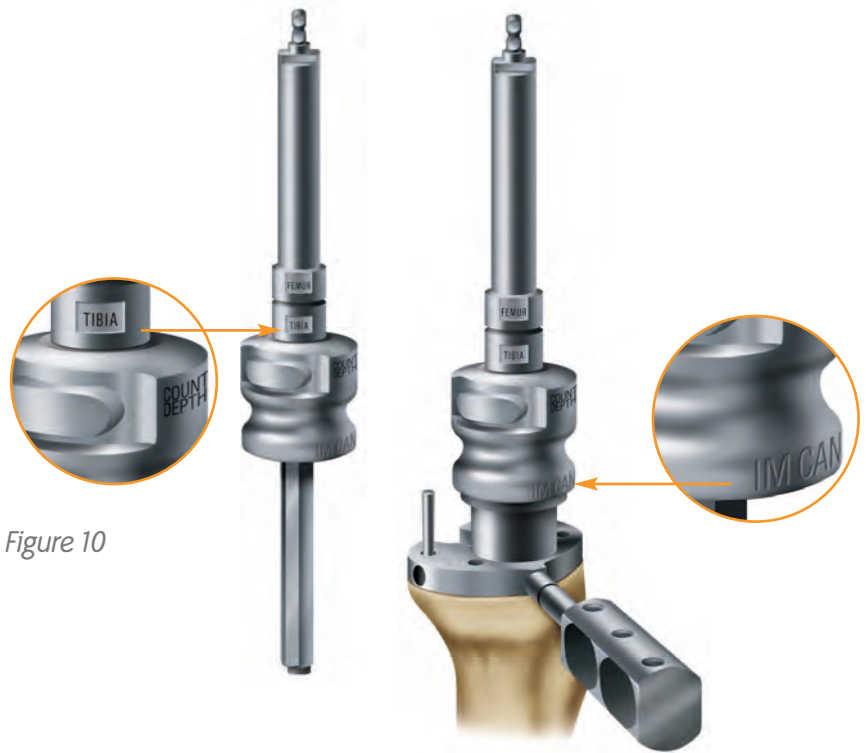


Figure 10

Figure 11



Figure 12



Figure 13

Offset Tibial Sizing and Placement

Sizing and Placement

1. If adequate tibial coverage is not achieved with the Neutral Tibial Bushing Assembly (*Figure 14*), remove the assembly from the tibial plateau.

Tibial Offset Bushing Instrument Assembly:

Insert the 2, 4 or 6mm offset tibial bushing into the appropriate sized tibial drill guide. In this surgical technique a 4mm offset is used.

2. Replace the Tibial Offset Bushing Assembly over the reamer (*Figure 15*).
3. Rotate the tibial offset bushing about the tibia until proper tibial coverage is achieved (*Figure 16*).
4. Using headless pins, pin the tibial drill guide to the proximal tibia (*Figure 17*).
5. Make note of the location of the arrow marking on the offset bushing to the number on the tibial drill guide (*Figure 17a*). This number references the position (location) of the offset coupler trial/implant when connected to the trial stem/implant.



Figure 14



Figure 15



Figure 16

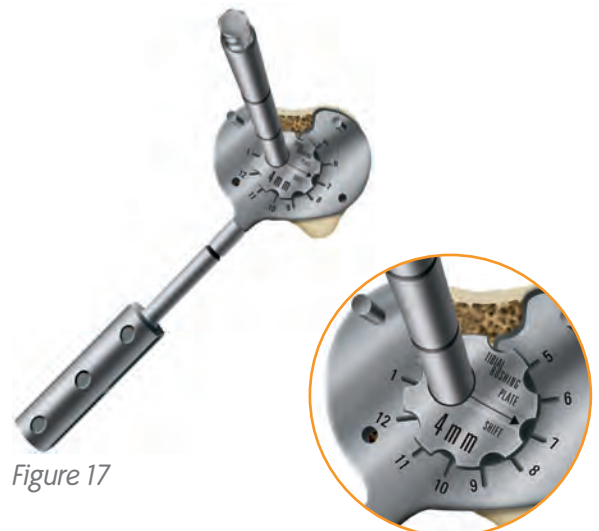


Figure 17

a

Offset Tibial Sizing and Placement

Preparation of the Female Taper Counterbore

6. Leaving the pins in place, remove the offset bushing assembly from the tibial plateau, then remove the reamer (or trial stem connection rod assembly).

Tibial Counterbore Guide Bushing Assembly:
Insert the tibial counterbore guide bushing into the appropriate sized tibial drill guide.



Figure 18

7. Replace the tibial counterbore guide bushing assembly over the pins (Figure 18).

Counterbore Reamer Instrument Assembly:
Depress the button on the Counterbore Depth Stop and slide the depth stop over the reamer with the "IM CANAL" marking towards the cutting end of the reamer. Then attach to the power drill. Position the depth guide to the "TIBIA" marking (Figure 19).

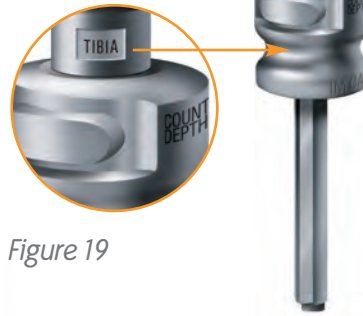


Figure 19

8. Insert the Counterbore Reamer Assembly into the guide bushing and ream until the depth stop makes contact with the guide bushing (Figure 20). Remove the Counterbore Reamer Assembly.
9. Remove the Tibial Counterbore Guide Bushing Assembly and pins from the tibial plateau.



Figure 20

Preparation of the Offset Coupler Counterbore

Trial Stem Guide Assembly:
Attach the 120mm length trial stem, using the diameter of the last reamer used, to the Trial Stem Connection Rod.



Figure 21

10. Place the Trial Stem Guide Assembly into the tibial canal (Figure 21).
11. Place the Counterbore Reamer Assembly, still positioned at the "TIBIA" marking, over the Trial Stem Guide Assembly and ream until the depth stop contacts the tibial plateau (Figure 22).



Figure 22

Tibial Trial Preparation

Note: Ensure the offset coupler trial is in the locked position. If not, insert a 3.5mm hex screwdriver in the male end of the coupler turning clockwise until tight.

Tibial Trial/Coupler/Stem Instrument Assembly:

Align the laser mark on the male end of the offset coupler J-hook with the line mark on the posterior side of the distal face of the female tibial trial taper. Push in the offset coupler trial and turn coupler a quarter-turn to engage J-hook. Align the male end of the trial stem J-hook to the female end of the offset coupler. Push in the trial stem and make a quarter-turn to engage the J-hook (Figure 23).

1. Insert the 3.5mm hex screwdriver into the proximal end of the tibial trial until the screwdriver is engaged with the hex connection of the coupler trial (Figure 24). Unlock the coupler trial by turning the hex screwdriver counterclockwise.
2. Adjust the coupler to the predetermined position (obtained previously in the Sizing and Placement section, page 11) by aligning the correct clock position on the offset coupler trial to the line marking on the tibial trial (Figure 25). (In this case, a 7 o'clock position was used.)
3. Once positioned, turn the hex screwdriver clockwise to lock the predetermined offset into position.
4. Insert the tibial trial/offset coupler trial/stem trial assembly into the tibial canal (Figure 26).
5. Assess the preliminary A-P and M-L position of the tibial trial tray. Final rotation of the tibial trial tray will be determined from the femoral trial and constrained tibial trial insert.



Figure 23

Figure 24

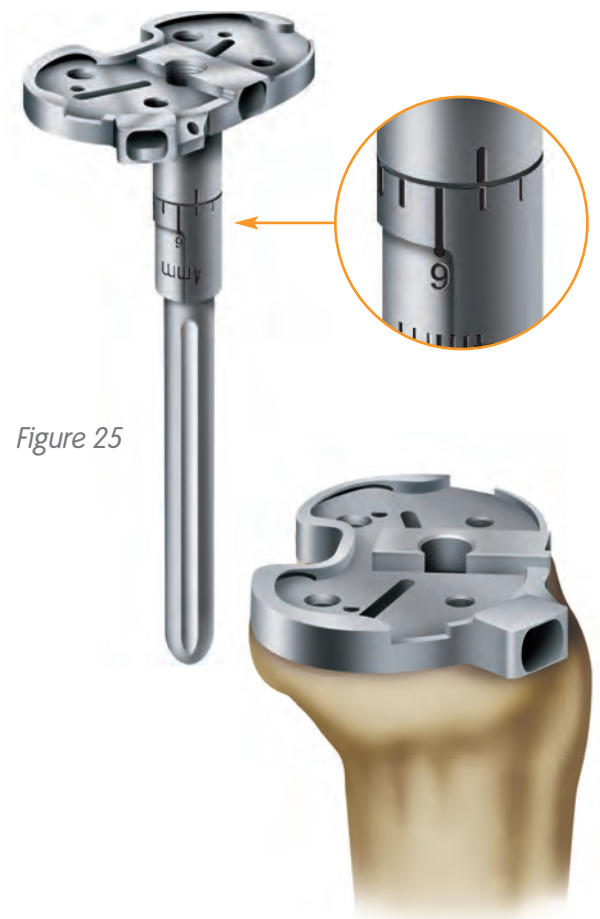


Figure 25

Figure 26

Femoral Preparation

Ream

1. Drill a pilot hole with the 9.5mm intramedullary drill, if necessary.
2. Ream the canal until cortical contact is achieved using progressively larger diameter reamers (Figure 27).
3. Choose between the two methods of instrument stabilization:
 - A. Last Reamer: Leave the last reamer used in the femoral canal.
 - B. Trial Stem Connection Rod Assembly:
 - Remove the last reamer, making note of the depth and diameter (Figure 28).
 - Attach the Trial Stem Connection Rod to the appropriate diameter trial stem and insert the Trial Stem Connection Rod Assembly into the femoral canal.

Tip: Long stems are offered in 120, 160, and 220mm Straight; and 220 and 280mm Bowed. Markings of depth lengths are laser marked on the reamers.

Tip: The cutting flutes on the press-fit stems are 1mm larger in diameter than the reamers.



Figure 27



Figure 28

Assess Femoral A-P Size and Stem Offset Position

1. Slide the Offset Indicator (pointing medially) over the last reamer or trial stem connection rod assembly (Figure 29).
2. Position the A-P sizing plate relative to the anterior cortex of the femur and adjacent to the offset indicator (Figure 30).
3. Assess proper A-P size.

Tip: In addition to the indicator marks for determining the preliminary offset needed, the A-P Sizing Plate has indicator marks located on the sides of the plate to assess distal and posterior wedge resections.

4. Once the A-P size is determined, assess A-P position relative to the reamer position using the Offset Indicator. Rotate Offset Indicator parallel to the epicondylar axis and make note of the Offset Indicator stylus position relative to the offset markings on the medial face of the A-P sizing plate.
5. Remove Offset Indicator and A-P sizing plate.



Figure 29



Figure 30

Femoral Preparation

Option: Epicondylar Axis Target – Anatomic Assessment of Offset Using Epicondyles

1. Place Offset Indicator (pointing medially) on the reamer (*Figure 31*).
2. Position the A-P sizing plate relative to the anterior cortex of the femur and adjacent to the offset indicator.
3. Align the center of the epicondyles along the line markings of the Epicondylar Axis Target (*Figure 32*). It is not necessary to have the center of the epicondyles within the open space of the target axis. Vary the A-P sizing plates and distal augment estimates until epicondyles align with the Epicondylar Axis Target. The goal is to restore the desired joint line positioning.
4. Once a desired position of the A-P sizing plate, relative to the femoral epicondyles, is achieved, the distal and posterior wedge assessments can be made by referencing the wedge resection level marks on the A-P Femoral Sizing Plate.
5. Retain position of the A-P sizing plate and make note of the offset indicator position (*Figure 33*), relative to the indicator marking on the medial face of the A-P sizing plate. This will give a rough estimate of offset needed.

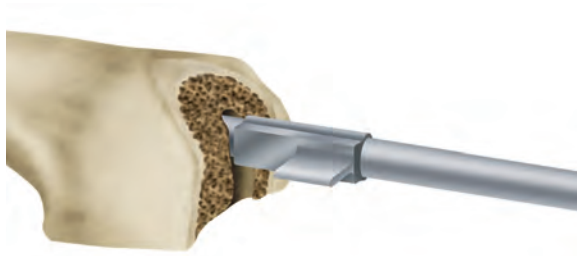


Figure 31



Figure 32



Figure 33

Option: M-L Femoral Sizing with Valgus Guide Sizing Plate

Valgus Guide Instrument Assembly:

Attach the size 3-8 neutral 6° valgus collet to the valgus alignment guide and ensure that the "LATERAL" notation on the collet is correctly positioned for a left or right knee. Slide the distal cutting block on the post of the valgus guide (Figure 34).

1. Attach the Valgus Guide Sizing Plate to the Valgus Guide Assembly by sliding over the distal surface of the valgus guide (Figure 35).
2. Assess the M-L femoral size with the size-correlating steps of the Valgus Guide Sizing Plate in relation to the femur (Figure 35a).

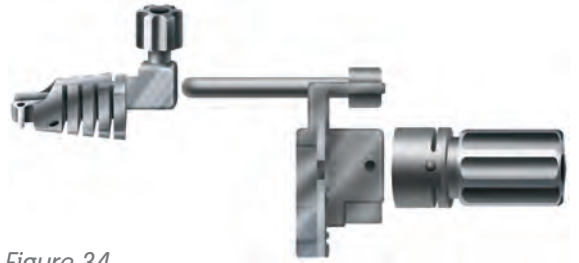


Figure 34

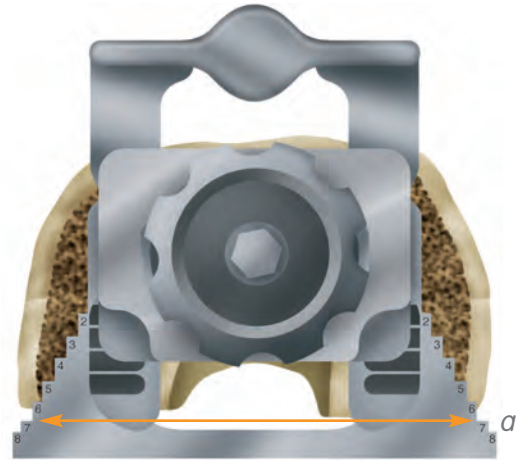


Figure 35

Femoral Preparation

Distal Femoral Resection(s)

Valgus Guide Instrument Assembly:

Attach the size 3-8 neutral 6° valgus collet to the valgus alignment guide and ensure that the “LATERAL” notation on the collet is correctly positioned for a left or right knee. Slide the distal cutting block on the post of the valgus guide (Figure 36).

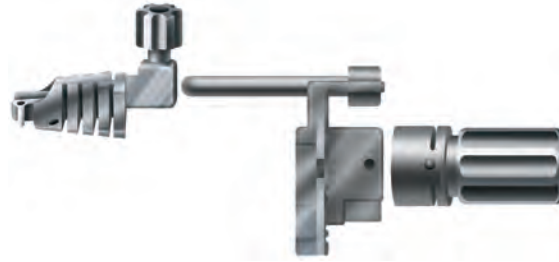


Figure 36

1. Slide the valgus guide assembly over the shaft of the reamer (or Trial Stem Connection Rod Assembly) and flush with the distal femur (Figure 37).

2. Tighten the valgus collet to the reamer (Figure 37a).

Tip: The distal cutting block is designed for a 1.5mm “clean-up” cut, 5, 10 or 15mm wedge cut.

Option: Attach the 1mm stylus to the distal cutting block by inserting the stylus foot into the distal slot and position the stylus tip on the least affected side (Figure 38).

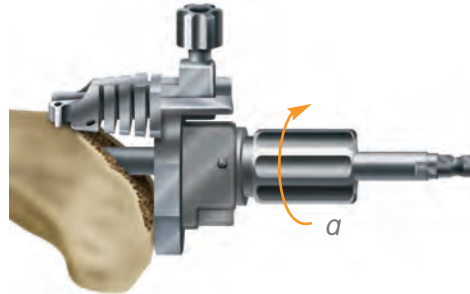


Figure 37

3. Pin the distal cutting block, using at least one oblique pin, and resect the distal femur (Figure 39).

Distal Femoral Wedge Resection(s):

1. If needed, resect the appropriate distal femoral wedges through the distal cutting block (Figure 40).

2. Remove the pins, loosen the valgus guide collet, and remove the guide assembly from the reamer.

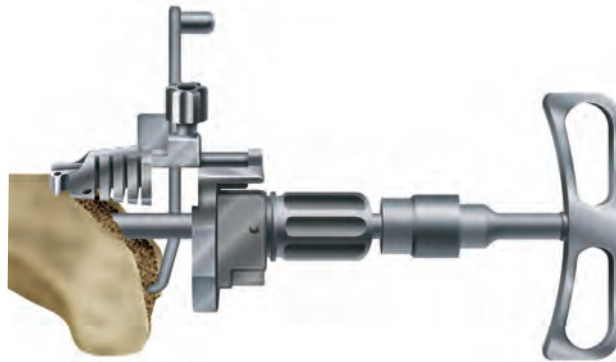


Figure 38



Figure 39



Figure 40

Non Offset Femoral Sizing and Placement

A-P Femoral Resections/Posterior Wedge Resection(s)

1. Attach the appropriate A-P Hemi Distal Shims, matching the size of the distal wedge resections, to the posterior aspect of the A-P Cutting Block (Figure 41).

Neutral Femoral Resection Instrument Assembly:
Attach the neutral 6° valgus collet to the selected A-P femoral cutting block ensuring that the "LATERAL" notation on the collet is correctly positioned for a left or right knee (Figure 42).

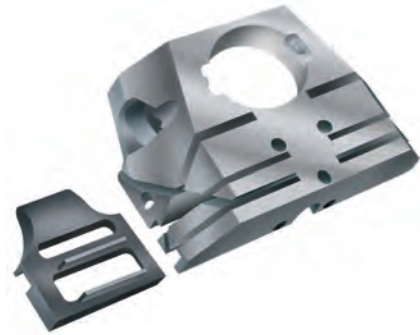


Figure 41

2. Slide the Neutral Femoral Resection Assembly over the shaft of the Reamer (or Trial Stem Connection Rod Assembly) until flush with the distal femur (Figure 43).

Note: Quick-connect handles may be used to assist in setting rotation.

3. Assess the A-P and M-L position ensuring rotation of the A-P cutting block is aligned with the epicondylar axis. (If appropriate position is not achieved, proceed to Offset Femoral Sizing and Placement, page 22.)



Figure 42



Figure 43

Non Offset Femoral Sizing and Placement

Note: Quick-connect handles may be left in the A-P cutting block while resections are made. This page shows the handles removed for visual clarity.

4. Tighten the neutral 6° valgus collet to the reamer shaft (or Trial Stem Connection Rod Assembly). Pin the A-P cutting block to the distal femur through the central hole and secure with oblique pin(s) through the side of the A-P cutting block and distal shims (Figure 44).

Note: To secure distal shims, oblique pins must be used (Figure 44a).

5. Resect the anterior femur above the anterior surface of the A-P cutting block (Figure 45).
6. Resect the posterior condyles under the posterior surface of the A-P cutting block (Figure 46).
7. If wedges are needed to fill bony defects, two more slots are available for 5 or 10mm posterior wedge cuts (Figure 47).
8. Resect the posterior chamfer (Figure 48).

Note: Posterior chamfer cuts are not needed if distal or posterior wedge cuts are made.

9. Resect the anterior chamfer (Figure 49).

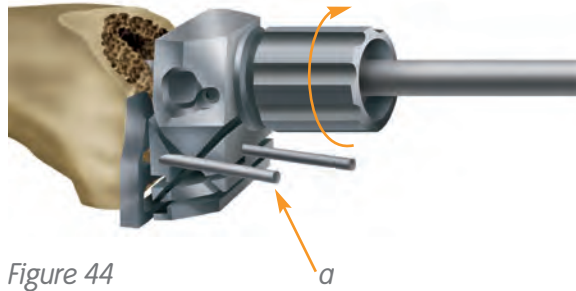


Figure 44



Figure 45

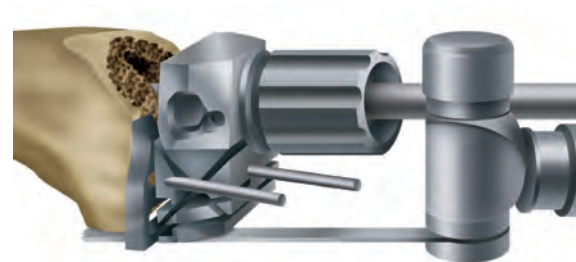


Figure 46

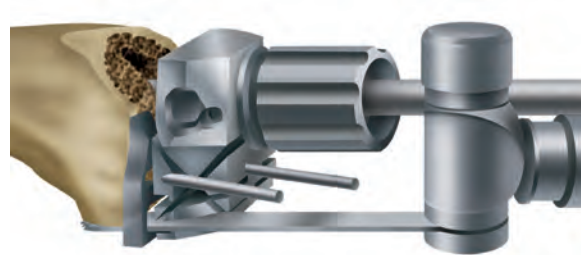


Figure 47

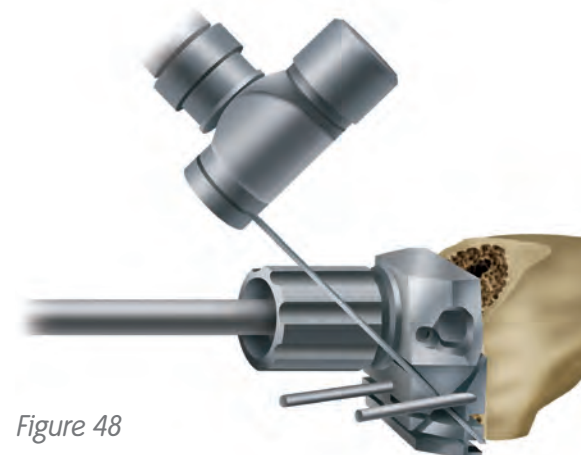


Figure 48

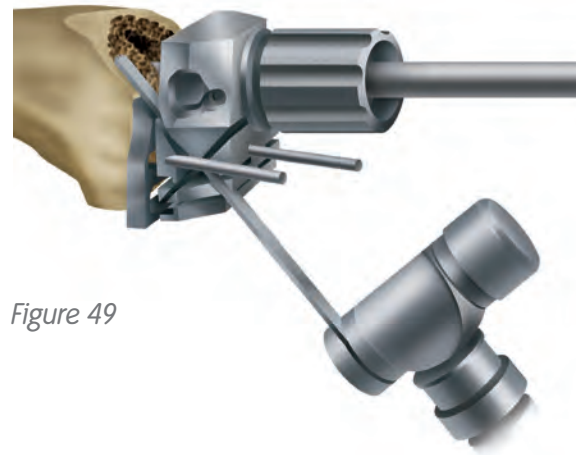


Figure 49

Non Offset Femoral Sizing and Placement

Preparation of the Female Taper Counterbore

1. With the A-P cutting block pinned in place, remove the Neutral 6° Valgus Collet and Reamer (or Trial Stem Connection Rod Assembly).

Tip: If needed, the Revision T-Handle can be used to remove fixed reamers or in case the trial stem becomes well-fixed within the canal, the universal extractor can be attached to the end of the trial stem connection rod to aid in removal.

2. Insert the femoral counterbore guide bushing into the A-P femoral cutting block, ensuring that the “LATERAL” notation on the bushing is correctly positioned for a left or right knee (Figure 50).

Counterbore Reamer Instrument Assembly:

Depress the button on the Counterbore Depth Stop and slide the depth stop over the reamer with the “IM CANAL” marking towards the cutting end of the reamer. Then attach to the power drill. Position the depth guide to the “FEMUR” marking (Figure 51).

3. Insert the counterbore reamer assembly into the guide bushing and ream until the depth stop contacts with the guide bushing (Figure 52).
4. Remove the pins and A-P cutting block from the distal femur.

Femoral Trial Preparation

Femoral Trial/Trial Stem Instrument Assembly:

Align the laser mark on the J-hook of the trial stem to the laser mark on the side of the femoral trial taper. Push in the trial stem and make a quarter-turn to engage the J-hooks.

5. Using a 3.5mm hex screwdriver, screw on the appropriate distal, posterior or L-wedge trial(s) to the femoral trial (Figure 53).

Tip: The posterior wedge trials screw in from a 10° angle.

6. Insert the Femoral Trial/Trial Stem assembly into the femoral canal. Proceed to page 27, Femoral Housing Box Resection.

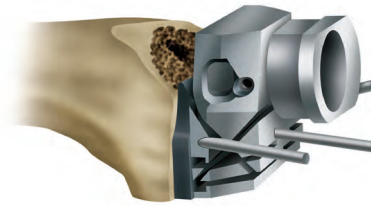


Figure 50

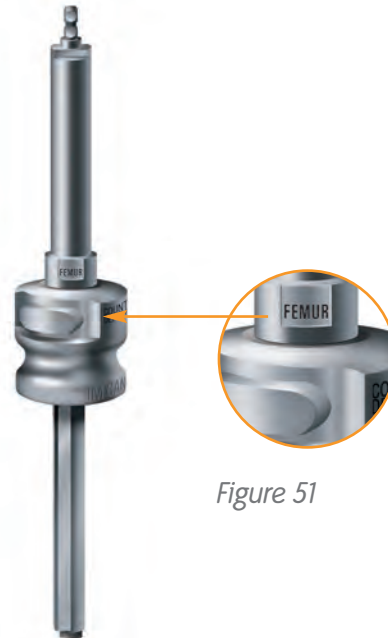


Figure 51

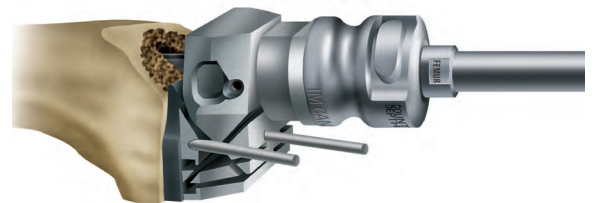


Figure 52



Figure 53

Offset Femoral Sizing and Placement

A-P Femoral Resections/Posterior Wedge Resection(s)

1. If appropriate femoral position is not achieved with the Neutral 6° Valgus Collet, remove the Neutral 6° Valgus Collet and A-P cutting block from the distal femur.
2. Ensure that the A-P Hemi Distal Shims, matching the size of the distal wedge resections, are attached to the posterior aspect of the A-P cutting block.

Offset Femoral Collet Instrument Assembly:

Insert the 2, 4 or 6mm offset femoral collet to the appropriate sized A-P cutting block, ensuring that the "LATERAL" notation on the collet is correctly positioned for a left or right knee (Figure 54). In this surgical technique a 4mm offset is used.

3. Slide the offset femoral collet assembly over the reamer (Figure 55).
4. Rotate the arm of the offset collet until the A-P cutting block is positioned appropriately. The clock position of the arm references the positioning of the femoral collet relative to the canal (Figures 56-58). (In this surgical technique a 7 o'clock position is referenced.)
5. Assess the A-P and M-L position ensuring the rotation of the A-P cutting block is aligned with the epicondylar axis.

Note: Quick-connect handles may be used to assist in setting rotation.



Figure 54



Figure 55



Figure 56

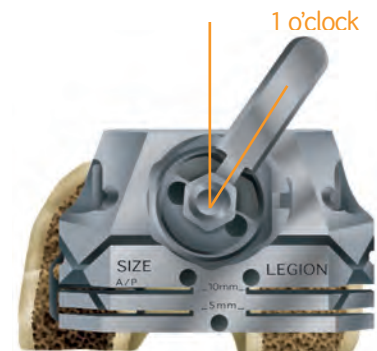
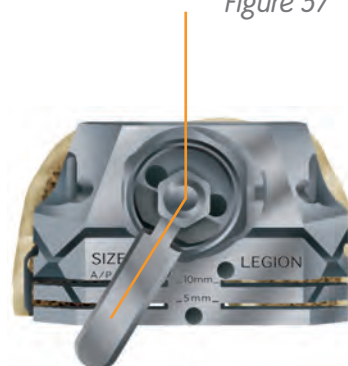


Figure 57



7 o'clock

Figure 58

Note: Quick-connect handles may be left in the A-P cutting block while resections are made. This page shows the handles removed for visual clarity.

6. Tighten the offset valgus collet to the reamer shaft (or Trial Stem Connection Rod Assembly). Pin the A-P cutting block to the distal femur through the central hole and secure with oblique pin(s) through the sides of the A-P cutting block and distal shims (Figure 59).

Note: To secure distal shims in place, oblique pins should be used (Figure 59a).

7. Resect the anterior femur above the anterior surface of the A-P cutting block (Figure 60).
8. Resect the posterior condyles under the posterior surface of the A-P cutting block (Figure 61).
9. If wedges are needed to fill bony defects, two more slots are available for 5 or 10mm posterior wedge cuts (Figure 62).
10. Resect the posterior chamfer (Figure 63).

Note: Posterior chamfer cuts are not needed if distal or posterior wedge cuts are made.

11. Resect the anterior chamfer (Figure 64).

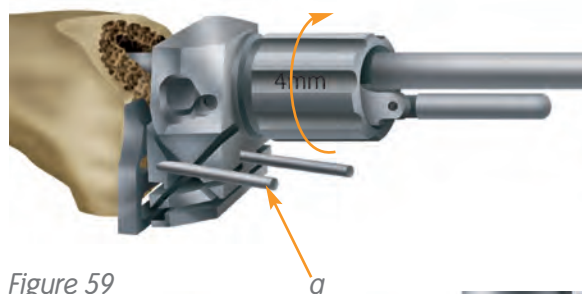


Figure 59

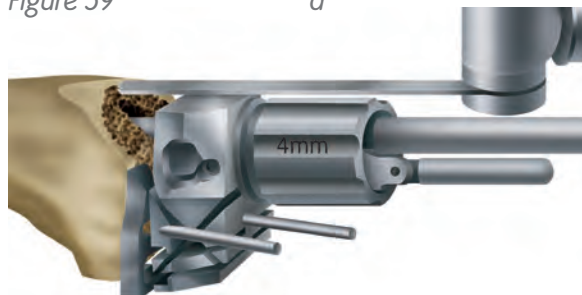


Figure 60

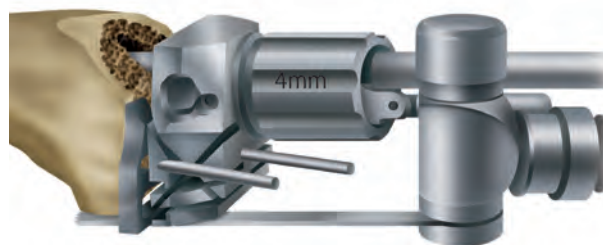


Figure 61

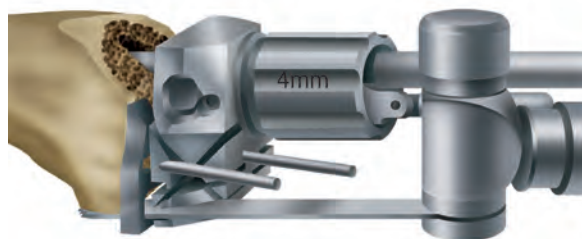


Figure 62



Figure 63



Figure 64

Offset Femoral Sizing and Placement

Preparation of the Female Taper Counterbore

12. Remove the offset bushing and reamer, leaving the pinned A-P block on the distal femur.

Note: If using a 4mm offset (16mm or larger diameter reamer) or 6mm offset, the oblique pins and A-P cutting block will need to be removed so that the reamer can be extracted from the femoral canal.

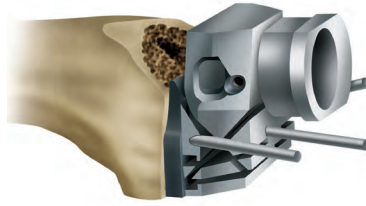


Figure 65

13. Insert the femoral counterbore guide bushing into the A-P cutting block, ensuring that the "LATERAL" notation on the collet is correctly positioned for a left or right knee (Figure 65).

Counterbore Reamer Instrument Assembly:

Depress the button on the Counterbore Depth Stop and slide the depth stop over the reamer with the "IM CANAL" marking towards the cutting end of the reamer. Then attach to the power drill. Position the depth guide to the "FEMUR" marking (Figure 66).

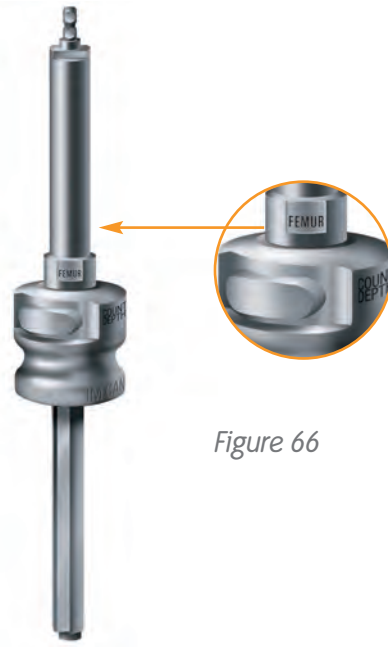


Figure 66

14. Insert the Counterbore Reamer Assembly into the guide bushing and ream until the depth stop makes contact with the guide bushing (Figure 67).
15. Remove the pins, Femoral Counterbore Guide Bushing and A-P Cutting Block from the distal femur.

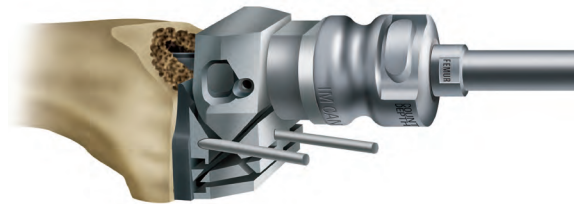


Figure 67

Preparation of the Offset Coupler Taper Counterbore

Trial Stem Guide Assembly:

Attach the 120mm length trial stem, using the diameter of the last reamer used, to the Trial Stem Connection Rod.

16. Place the Trial Stem Guide Assembly into the femoral canal (*Figure 68*).
17. Insert the Counterbore Reamer Assembly, still positioned at the "FEMUR" mark, over the trial stem guide and ream until the depth stop contacts the distal femur (*Figure 69*).
18. Remove the counterbore reamer assembly and trial stem guide assembly.



Figure 68

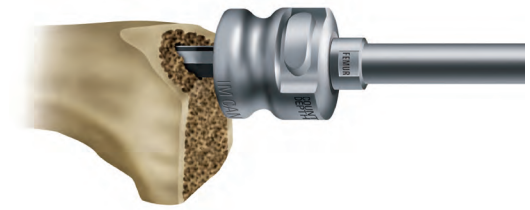


Figure 69

Offset Femoral Sizing and Placement

Femoral Trial Preparation

Note: Ensure the offset coupler is in the locked position by inserting a 3.5mm hex screwdriver in the male end of the coupler, turning clockwise until tight.

Femoral Trial/Coupler Trial/Stem Trial Assembly:

Align the laser mark on the male end of the offset coupler J-hook with the laser mark on the taper of the femoral trial. Push in the offset coupler trial and turn the coupler a quarter-turn to engage J-hook. Align the male end of the trial stem J-hook to the female end of the offset coupler. Push in the trial stem and make a quarter-turn to engage the J-hook (Figure 70).

1. Insert the 3.5mm hex screwdriver into the distal end of the femoral trial until the screwdriver is engaged with the hex connection of the coupler trial (Figure 71). Unlock the coupler trial by turning the hex screwdriver counterclockwise.
2. Adjust the coupler to the predetermined position (obtained previously in the Offset Sizing and Placement section, page 22), by aligning the correct clock position on the offset coupler trial to the line marking on the femoral trial (Figure 72). (In this surgical technique, a 7 o'clock position was used.)
3. Once positioned, turn the hex screwdriver clockwise to lock the predetermined offset into position.
4. Using a 3.5mm hex screwdriver, screw on the appropriate distal, posterior or L-wedge trial(s) to the femoral trial (Figure 73).

Tip: The posterior wedge trials screw in from a 10° angle.

5. Insert the Femoral Trial/Offset Coupler Trial/Stem Trial/Augment Trial assembly into the femoral canal (Figure 74).



Figure 70



Figure 71



Figure 72



Figure 73



Figure 74

Femoral Sizing and Placement

Femoral Housing Box Resection

1. Pin the femoral trial through the anterior flange (Figure 75).
2. Choose the Housing Resection Collet matching the femoral trial size (either 1-2 or 3-8). Attach the collet to the femoral trial by pulling forward on the tabs of the collet (Figure 76) and sliding the housing collet (anterior to posterior) into the slots on the distal face of the femoral trial. The housing collet should move freely in the anterior/posterior positions.
3. Attach the housing reamer dome and the P-S reamer sleeve to the patellar reamer shaft. Ream through the housing resection collet in both the anterior and posterior positions until the depth stop contacts the collet (Figure 77).
4. Impact the housing box chisel through the housing resection collet to square the corners of the housing. The housing box chisel should be used anteriorly and posteriorly to ensure that the full length of the box is prepared (Figure 78).



Figure 75

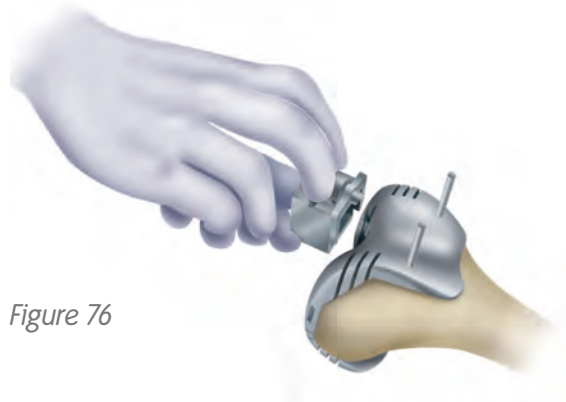


Figure 76

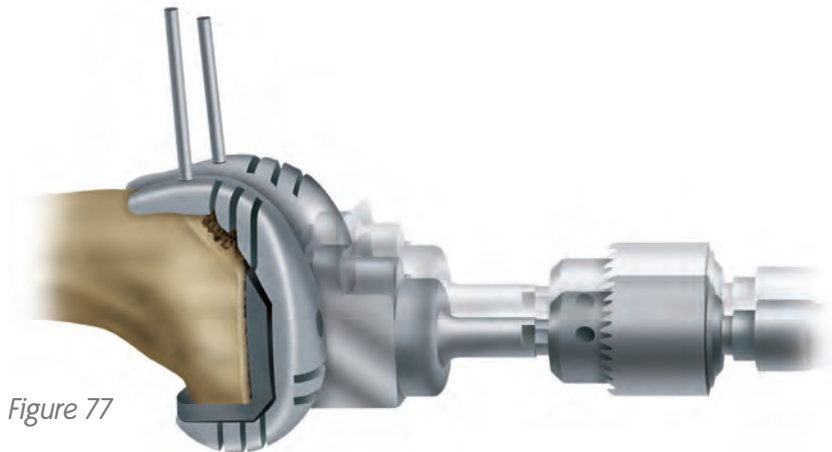


Figure 77

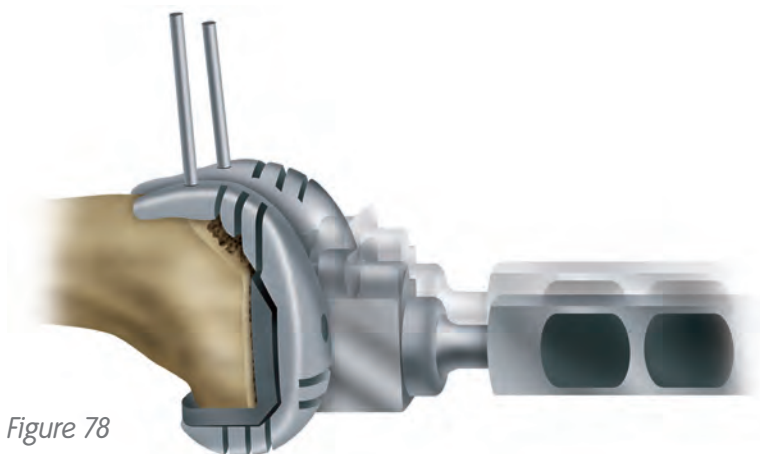


Figure 78

Femoral Sizing and Placement

Femoral Trial Cam Module Assembly

1. Select the appropriate sized Femoral Trial Cam Module (matching the femoral trial size selected).
2. Insert the arms of the femoral cam module into the anterior aspect of the femoral trial box and rotate downward until seated (*Figures 79 & 80*).



Figure 79



Figure 80

Trialing

Trial Range of Motion and Tibial Rotational Assessment

1. With the tibial trial/trial stem in the tibia and the femoral trial/trial stem in the femur, insert the constrained articular insert trial into the tibial trial tray.
2. Perform a trial range of motion (*Figure 81*). The tibial trial should be rotationally symmetric with the femoral trial in full extension with the extensor mechanism reduced.
3. Mark the rotation on the tibia utilizing the two anterior marks on the tibial trial tray (*Figure 82*). Remove the articular insert trial.
4. Using a short-headed spike through the tibial trial, pin the trial tray into the proximal tibia to lock the rotational orientation of the tibial trial.

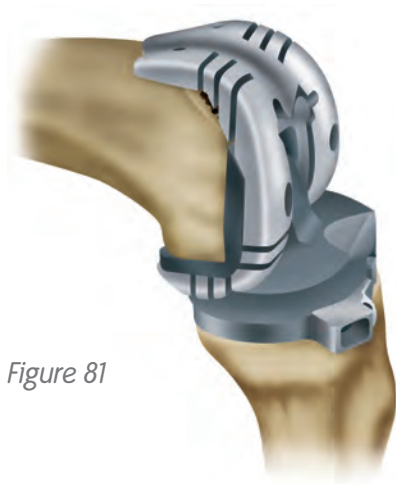


Figure 81

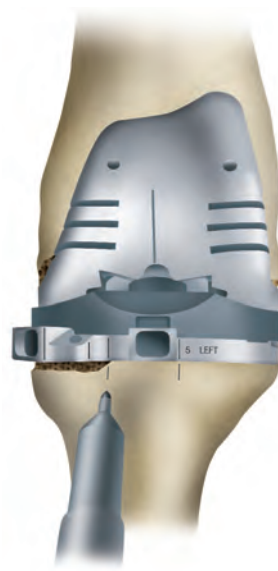


Figure 82

Trialing

Tibial Wedge Resection(s)

1. Select the appropriate wedge resection guide (Figure 83a, b, c) and orient to the correct M-L direction.
2. Insert the locking quick-connect handle through the wedge resection guide by depressing the ball tip of the handle and inserting the handle through the guide into the anterior quick-connect pocket of the tibial trial tray (Figure 84a). Lock the wedge resection guide by tightening the knob on the quick-connect handle (Figure 84b). Then tighten the thumbscrew on the wedge resection guide (Figure 84c).
3. Using headless pins, pin the wedge resection block to the anterior tibia in the most distal holes.

Note: Insert an additional pin at the level of tibial wedge resection (5, 10 or 15mm). This will be used as a guide for the sagittal clean-up cut for hemi-stepped wedges (Figure 85).

7° Full Tibial Wedge

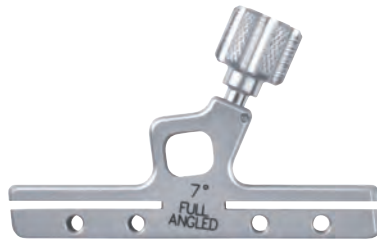


Figure 83a

Hemi-Stepped Tibial Wedge



Figure 83b

Hemi-Angled Tibial Wedge



Figure 83c

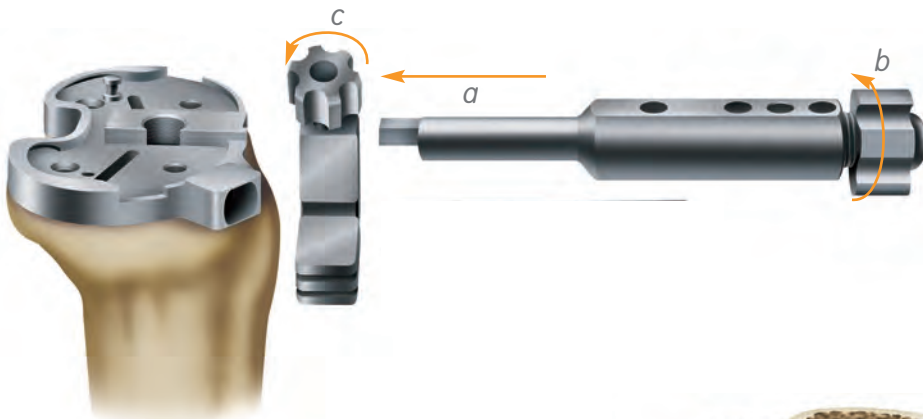


Figure 84



Figure 85

4. Resect for tibial wedges (*Figure 86*).
5. Loosen the quick-connect knob to release the handle and attached the resection guide from the tibial tray.
6. Remove the tibial trial assembly from the canal.

*Note: For hemi-stepped wedges, make a sagittal clean-up cut by using the pin located at the resection level as a guide (*Figure 87*).*



Figure 86



Figure 87

Trialing

Tibial Wedge Assembly and Fin Punch

1. Using a 3.5mm hex screwdriver, screw on the appropriate tibial wedge(s) into the distal aspect of the tibial trial tray (*Figure 88*) and replace the tray assembly onto the proximal tibia.
2. Replace any pins needed for stability and using the appropriate sized fin punch, insert the punch into the proximal tibial trial tray and impact until fully seated (*Figures 89 & 90*).

Figure 88



Figure 89



Figure 90

Resurfacing Patellar Preparation

The surgeon can choose from a free hand cutting technique with towel clips or if desired he or she can choose one of the following instrumented techniques.

Resection Guide Technique

1. Measure the overall thickness of the patella with the patellar calipers (Figure 91).
2. Subtract from this number the thickness of the GENESIS[®] II round resurfacing patellar component – 9mm.

Tip: The thickness of the GENESIS II oval resurfacing patella varies by diameter.

3. The guide is set at the amount of bone that needs to remain after cutting the patella – i.e. the difference between the original patellar thickness and 9mm. The guide is set at this level by turning the knurled knob (Figure 92).



Figure 91

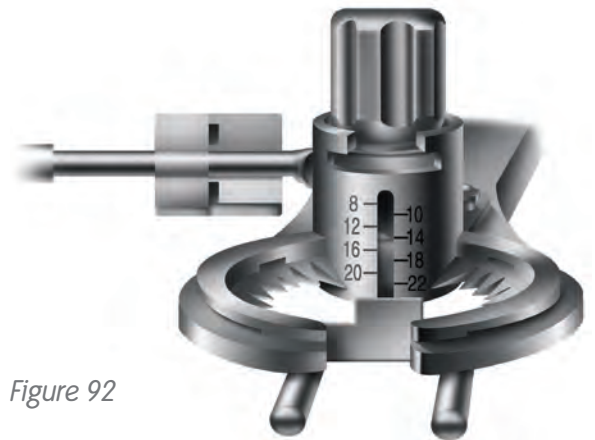


Figure 92

Resurfacing Patellar Preparation

4. Cut the patella through the full dedicated saw guides (Figure 93).
5. Drill for the three pegs (Figure 94), insert the resurfacing patellar trial and remeasure. The overall thickness should be equivalent to the original thickness (Figure 95).

Reaming Technique

The reaming technique described for the biconvex patella on page 35 can be used with the resurfacing patellar implant as well. The only differences in technique are to use the red resurfacing depth gauge, resurfacing reamers and the resurfacing drill guides.



Figure 93



Figure 95

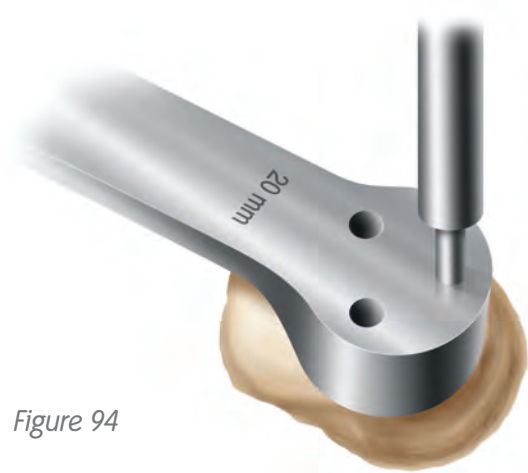


Figure 94

Biconvex Patellar Preparation

Biconvex Patella

Instrument Assembly:

Determine the appropriate diameter patellar implant and select the correctly sized patellar reamer collet and slide it into place on the patellar reamer guide (Figure 96).

1. Attach the patellar reamer guide to the patella. Tighten the patellar reamer guide on the patella (Figure 97).
2. Use the patellar calipers to measure the thickness of the patella (Figure 98).



Figure 96

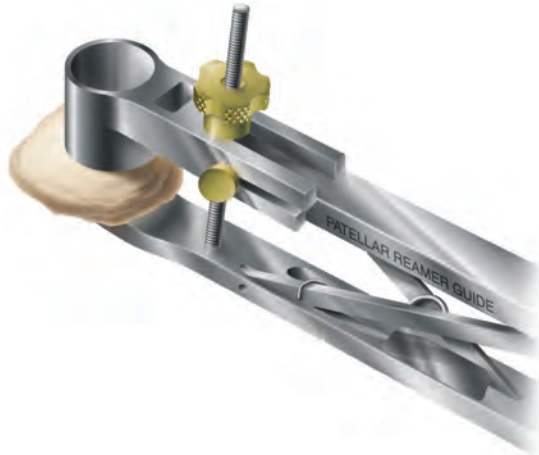


Figure 97

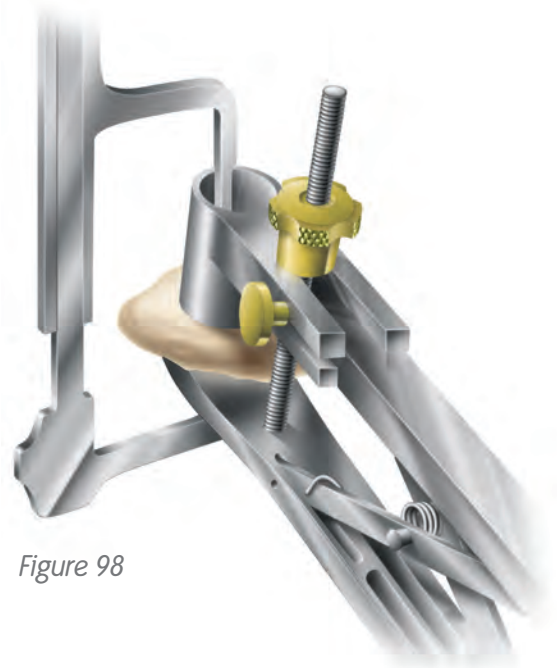


Figure 98

Biconvex Patellar Preparation

Instrument Assembly:

- a. Attach the blue patellar depth gauge to the reamer guide (Figure 99).
- b. Attach the matching sized patellar reamer dome and patellar depth stop to the patellar reamer shaft (Figures 100 & 101). Lower the assembly through the patellar reamer guide until the reamer dome contacts the patella.

3. Swing the patellar depth gauge around so that the “claw” surrounds the patellar reamer shaft.

4. Lower the patellar depth stop by pushing the gold button until it contacts the patellar depth gauge. The patellar depth stop will automatically lock in place (Figure 102).

5. Remove the depth gauge.

6. Ream the patella until the depth stop engages the patellar reamer guide.

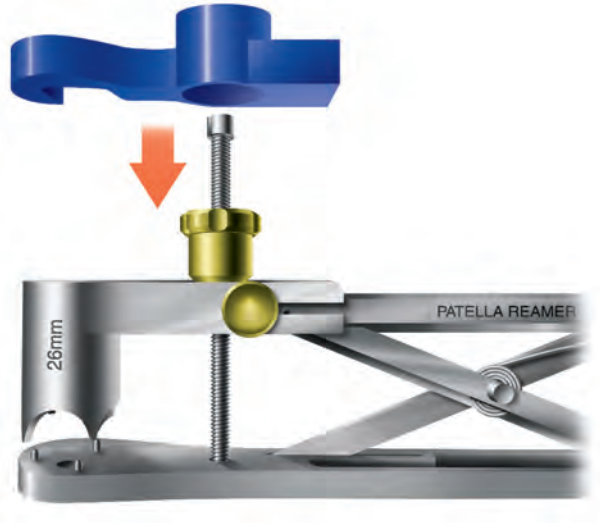


Figure 99



Figure 100

Figure 101

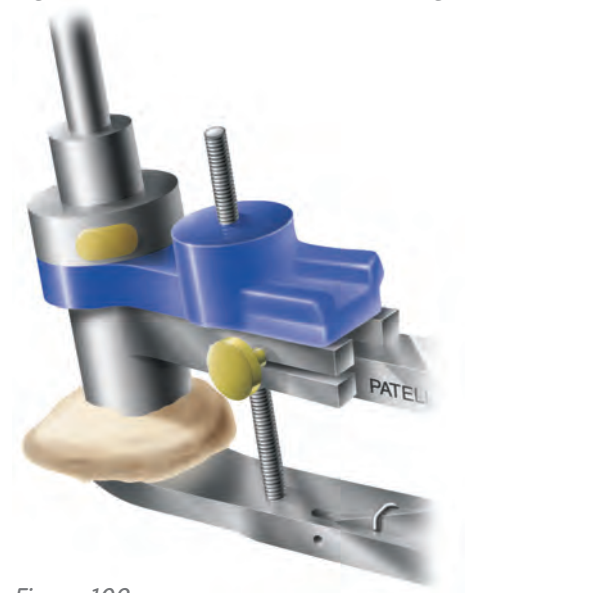


Figure 102

Implant Assembly

1. Select the appropriate sized femoral/tibial component(s) and the matching sized femoral/tibial wedges.
2. Using the tibial and femoral trials as a guide, assemble the femoral and/or tibial wedges with the 3.5mm hex screwdriver. Secure the wedges with the torque wrench by turning until a click is felt.

Tip: Screws are packaged sterile with the implant wedge.

3. If a coupler is needed, select the appropriate sized coupler for the tibial or femoral component. To protect the coupler upon impaction, place the plastic LEGION® stem/coupler impactor over the female end of the offset coupler implant. Insert the male end of the coupler into the femoral and/or tibial implant taper. Impact the coupler at least three times to ensure the taper lock is properly engaged.
4. Select the appropriate length and diameter stem that was used for the tibial and femoral trials.
- 5a. Cemented: To protect the stem tip upon impaction, place the appropriate sized plastic LEGION stem impactor over the tip of the cemented stem. Insert the male end of the stem into the offset coupler or femoral and/or tibial taper. Using a stable surface, impact the stem at least three times to ensure the taper lock has been properly engaged
- 5b. Press fit Stems: Insert the male end of the stem into the offset coupler or femoral and/or tibial taper.

Tip: For the press-fit slotted stems, ensure that the rotational mark on the stem lines up with the rotational mark on the post of the femoral and/or tibial implant.

To protect the tip upon impaction, wrap or cover the tip of the press-fit stem. Using a stable surface, impact the stem at least three times to ensure the taper lock has been properly engaged.

6. Attach the stem set screw, included in the stem packaging, by securing with a 2.5mm hex screwdriver on both sides of the femoral and/or tibial post.

Implantation

1. Sublux the tibia anteriorly using a Hohmann or similar retractor. Place cement on the proximal tibia and seat the tibial implant with the tibial impactor. Remove excess cement.
2. Flex the knee to 90°. Place cement onto the distal surface of the femur and insert the femoral implant into position. Remove any excess cement.
3. Place the correct size tibial insert trial into the tibial baseplate and extend the leg to pressurize the cement.
4. Assemble the patellar cement clamp to the patellar reamer guide.
5. Apply bone cement to the patella.
6. Place the patellar implant onto the patella and clamp into the bone. Remove excess cement.
7. Remove the trial insert.
8. After all excess cement is removed and the joint is clean, slide the tibial articular insert into the tibial baseplate posteriorly, engaging the locking mechanism.
9. Attach the articular inserter/extractor to the tibial tray. Lift the inserter superiorly until the anterior lip of the articular insert is fully seated.

Notes

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