



KLASSIC® KNEE SYSTEM | FLAGSHIP

SURGICAL TECHNIQUE MANUAL



EFFICIENCY BY DESIGN®

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ACKNOWLEDGEMENTS

The Klassic® Knee System was developed in conjunction with:

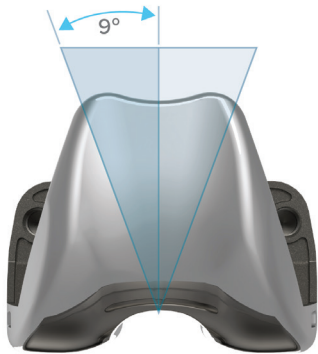
Michael P. Bolognesi, MD *Durham, North Carolina*
John K. Drake, MD *Ocean Springs, Mississippi*
Shawn B. Hocker, MD *Wilmington, North Carolina*
E. Jeff Kennedy, MD *Flowood, Mississippi*
Stanton L. Longenecker, MD *Jacksonville, Florida*
Trevor H. Magee, MD *Salt Lake City, Utah*
Jeremy B. McCandless, MD *El Cajon, California*
Rodney L. Plaster, MD *Tulsa, Oklahoma*
Corey Ponder, MD *Edmond, Oklahoma*
Jordan F. Schaeffer, MD *Colorado Springs, Colorado*

The Klassic® Porous Knee System was developed in conjunction with:

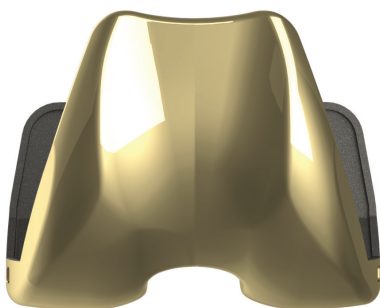
Michael P. Bolognesi, MD *Durham, North Carolina*
Thomas L. Bradbury, Jr., MD *Atlanta, Georgia*
William G. Hamilton, MD *Alexandria, Virginia*
Rodney L. Plaster, MD *Tulsa, Oklahoma*



The Klassic® Knee System



A 9° double Q-angle optimizes patellar tracking on both left and right anatomy



Klassic® Femur with Aulum® Technology

KLASSIC® DESIGN

The Klassic® Knee System is a modern universal design that offers both cemented and cementless options in sizes that accommodate a variety of patient anatomy while requiring only three trays of instruments.

The Klassic® Knee System is designed to replicate the patient's natural anatomy by using measured resection, which references the least affected portion of the femoral condyle, the least-affected portion of the tibial plateau, and the thickest portion of the patella. Replacing bone millimeter for millimeter with the implants restores bony anatomy and kinematics.¹

Bone resection, followed by an equal amount of prosthetic replacement, provides the knee with near-normal varus/valgus and rotational stability throughout the full range of motion. Cruciate-retaining (CR) and ultracongruent PS inserts offer bone-sparing solutions for either PCL-retention or sacrifice.^{2,3}

The patented⁴ Klassic® Femur has a unique trochlear groove that allows optimal patellar tracking along a 9° double Q-angle for both left and right anatomy, while retaining a neutral outside profile of the anterior flange. The thin anterior flange incorporates a deepened trochlear groove that eliminates the need for a bone-sacrificing and time-consuming fifth cut to prepare an anterior notch. Features also include anatomically tapered posterior condyles, a proportional AP/ML ratio, and an optimized bone-covering geometry that minimizes potential lateral overhang.

The Cobalt Chrome Klassic® Femur is available in either cementless or cemented options. The Klassic® Porous Femur features Cobalt 3D™, an ultraporous, three-dimensional sintered porous coating for biological fixation and bony ingrowth.⁵

The femoral pegs are smooth to prevent stress-shielding while increasing stabilization. The Klassic® Femur for use with cement is grit-blasted to improve implant-cement fixation.

The Klassic® Femur with Aulum® Technology features the same patented geometry and articulation as the Klassic® Femur, and offers a revolutionary ballistically bonded Titanium Nitride surface to provide a premium implant without the deliberate addition of common metal sensitizers such as Nickel, Cobalt, and Chromium.²⁶

The Klassic® Tibial Baseplate is offered in either cemented or cementless options, and is modular to allow for stem extensions in both primary and revision cases. The Klassic® Porous Tibial Baseplate features Ti-Coat®, an ultraporous, three-dimensional sintered porous coating and offers a central stemable keel and four peripheral pegs for initial mechanical fixation and rotational stability. The pegs are smooth to decrease stress-shielding and sized to allow for an incremental amount of press-fit.^{6,7}

Stems are available to provide additional stability in primary cases, if needed, or for heavier patients.^{8,9}

The Klassic® Tibial Baseplate for cemented use is grit-blasted to improve implant/cement fixation,¹⁰ and offers a central stemable keel and four peripheral pegs to maximize rotational stability. An All-Poly Tibia is also available.

Since the normal posterior tilt of the tibia is not a constant angle (it ranges from 4-12°), the tibial cut should be adjusted in order to reproduce each patient's normal posterior slope. If the posterior slope is fixed or if the tibia is cut perpendicular to the tibial shaft axis, the normal kinematics of the knee may not be simulated. The Klassic® Knee System includes adjustability for the tibial cut to be made parallel to the joint line on the anterior-posterior plane in order to reproduce each patient's natural posterior slope and to avoid cam impingement or laxity throughout the range of motion. Cutting the tibia parallel to the patient's natural posterior slope has also been shown to improve compressive strength of supporting bone by up to 40% versus a cut perpendicular to the tibial shaft axis.¹¹

If the tibial cut closely matches the anatomic posterior slope, anterior subsidence may be avoided. The tibial baseplate is designed to optimally cover the tibial plateau using universal geometry. The M/L edges of the tibial baseplate and inserts have matching conforming geometry to provide consistent polyethylene thickness all the way to the peripheral edges.¹²⁻¹⁴

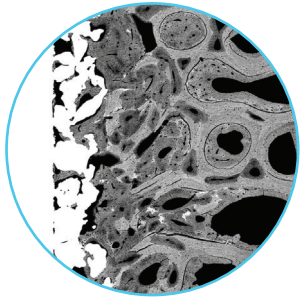
Both a deep-dished Ultra-PS® and a standard CR/Congruent Insert are available. The Ultra-PS® Insert provides a high anterior jump height and increased conformity to provide stability through a range of flexion without a cam and post design. Insert sizes are matched one-to-one with tibial/femur sizes to maximize congruency and enhance mid-flexion stability while maintaining the flexibility to be compatible two sizes up or down. The posterior lip of both the CR/Congruent and the Ultra-PS® Inserts is relieved to minimize impingement and maximize flexion.

The Klassic® Tibial Insert locking mechanism incorporates a tibial set-screw, along with an anterior snap and M/L constraints to minimize backside wear.¹⁵ The insert features an anti-backout mechanism to ensure retention of the screw.

The geometrically-forgiving Klassic® Sombrero and Klassic® Domed Patellae optimize patellofemoral contact area during tracking. Pegs are uniformly placed to provide intraoperative flexibility.

EFFICIENCY BY DESIGN®

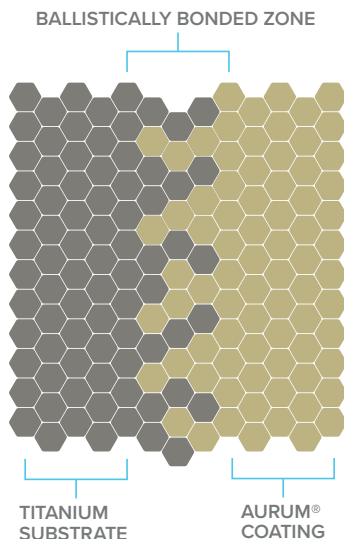
The Klassic® Knee System is designed to significantly reduce the amount of inventory needed to perform a knee replacement without modifying the preferred surgical technique. The result is a



Magnification of bony ingrowth on Ti-Coat®



E-Link® Polyethylene



Aurum®'s proprietary ion beam enhanced deposition (IBED) ballistically bonds TiN to the Ti substrate

streamlined system that offers surgeons both ease and flexibility of use while reducing costs for the hospital or surgery center. Our goal is to make state-of-the-art, efficient products that provide reliable, reproducible results in any surgical setting.

Designed from the ground up for efficiency, the Klassic® Knee System instruments are carefully designed for precise, intuitive surgical flow, and are manufactured from titanium, stainless steel, and high performance plastics for long-lasting performance and a solid feel.

FIXATION

The Klassic® Knee offers both cemented and cementless options.

The Klassic® Knee System for use with cement offers a grit-blasted surface with undersurface pockets to optimize cement mantle adherence.^{16,17}

The Klassic® Porous Knee System features three-dimensional porous coatings for Velcro-like biological fixation, with a mean porosity of 60% for demonstrated bony ingrowth.⁵ The Klassic® Porous Femur offers Cobalt 3D™, an ultra-porous coating made from hand-applied crushed CoCr fragments. The Klassic® Porous Tibia offers Ti-Coat®, an ultra-porous commercially pure titanium coating comprised of hand-applied asymmetrical grains. The keel is grit-blasted for bone on-growth.

MATERIALS

E-Link® Poly is a Vitamin E stabilized highly cross-linked ultra high molecular weight polyethylene (UHMWPE). Vitamin E is blended into the GUR-1020 UHMWPE in powder form, compression molded, and cross-linked by Gamma radiation to 10MRads. E-Link® utilizes Vitamin E to quench free radicals generated during the cross-linking process, yielding oxidative stability.¹⁸

TJO's standard polyethylene is compression-molded GUR 1050 non-irradiated UHMWPE. Similar polyethylenes have been shown to resist oxidation throughout long use.¹⁹

All of TJO's polyethylene products are ethylene oxide (EtO) sterilized to minimize oxidative potential.

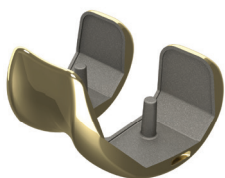
Aurum® uses a proprietary ion beam enhanced deposition (IBED) process to ballistically bond a five-micron thick titanium nitride coating to the titanium substrate using a low energy nitrogen ion beam. The IBED process creates a well-structured, ceramicized surface layer that is interdigitated with the substrate while preserving the material and geometric properties of the implant. The result is a hardened surface that offers equivalent hardness and wear characteristics to Cobalt Chrome femurs without the deliberate addition of common metal sensitizers such as Nickel, Cobalt, and Chromium.²⁶

KLASSIC® KNEE SYSTEM PRODUCT OFFERINGS

**Klassik® Femur,
Nonporous**
Sizes: 1-7



**Klassik® Femur | Aurum®,
Nonporous**
Sizes: 1-7



**Klassik® Femur,
Porous**
Sizes: 1-7



Klassik® Femur | PS-Post™
Sizes: 1-7



**Klassik® Tibial Insert,
CR/Congruent**
Sizes: 1-6
Thicknesses: 10, 11*, 12, 14, 16**,
18**mm
*Available in Std. Poly or E-Link® Poly
(*E-Link® only, **Std. Poly only)*

**Klassik® PS-Post™
Tibial Insert**
Sizes: 1-6
Thicknesses: 10, 11, 12,
14, 16mm
Available in E-Link® Poly



**Klassik® Tibial Insert,
Ultra-PS®**
Sizes: 1-6
Thicknesses: 10, 11*, 12, 14, 16,
18**mm
*Available in Std. Poly or E-Link®
Poly (*E-Link® only, **Std. Poly only)*

**Klassik® PS-Max®
Tibial Insert**
Sizes: 1-6
Thicknesses: 10, 12, 14,
16, 18mm
Available in Std. Poly

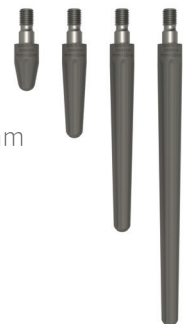


Klassik® Tibial Baseplate
Sizes: 1-6



**Klassik® Tibial Baseplate,
Porous**
Sizes: 1-6

**Klassik® Tibial Stem
Extensions**
Sizes: 25, 50, 100, 150mm



**Klassik® All-Poly Tibia,
CR/Congruent**
Sizes: 1-6
Thicknesses: 10, 12, 14, 16mm
Available in Std. Poly



**Klassik® All-Poly Tibia,
Ultra-PS®**
Sizes: 1-6
Thicknesses: 10, 12, 14, 16mm
Available in Std. Poly



Klassik® Domed Patella
Size, Thickness:
1, 8mm
2, 9mm
3, 10mm
4, 11mm
Available in Std. Poly or E-Link® Poly



Klassik® Sombrero Patella
Sizes: 1-4, Thickness: 7mm
Size: 5, Thickness: 10mm
*Available in Std. Poly or
E-Link® Poly*

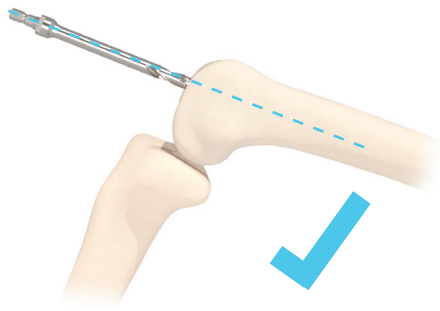


Fig. 1: Drill the entry point directly up the I/M canal

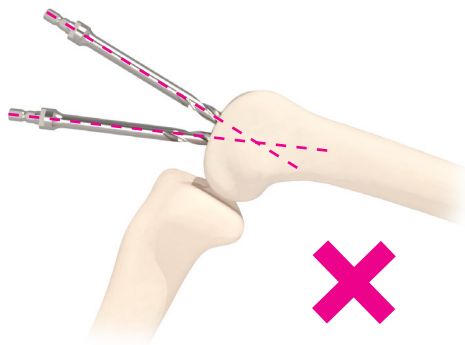


Fig. 2: Avoid incorrect positioning that will place the femur in undesired flexion or extension



Fig. 3: Insert the I/M Rod into the canal



Fig. 4: Adjust the degrees of valgus on the Distal Femoral Cut Guide

WARNINGS AND PRECAUTIONS

Please refer to the Total Joint Orthopedics Klassic® Knee System Instructions For Use at tjinc.com/ifu for warnings, precautions, adverse effects, and other essential product information.

PREOPERATIVE PLANNING

Obtain a long standing, anteroposterior, and lateral radiograph of the knee, as well as a merchant or sunrise view of the patella. The entire femur should be visualized to rule out any structural abnormality, as the distal femoral cut will be referenced from an Intramedullary Rod in the medullary canal.

Templating for size is most accurate on the lateral radiograph since many patients present with a flexion contracture that distorts magnification on the anteroposterior radiograph.

The degree of constraint in the tibial insert may be planned, such as the use of the Ultra-PS® Insert or Ultra-PS® All-Poly Tibia for more constraint in patients with posterior cruciate ligament (PCL) deficiency.

1. RESECTING THE DISTAL FEMUR

Locate the medullary canal by drilling into the distal femoral shaft, approximately 2mm above the true roof of the intercondylar notch, using the 3-in-1 Drill.

Align the drill with the lateral and frontal planes to correctly position the femoral component relative to flexion/extension (Fig. 1).

Toggle the drill upon exit to vent the canal and center the Intramedullary Rod (I/M Rod) at the entry point.

Incorrect posterior placement of the entry hole may lead to flexion of the femoral component, while incorrect placement anteriorly may lead to extension of the femoral component (Fig. 2).

Insert the tapered I/M Rod into the isthmus (Fig 3). Remove the I/M Rod from the I/M canal. Assemble the Distal Femoral Cut Guide by attaching the Universal Cut Block and setting the desired valgus rotation for the given side. The Distal Femoral Cut Guide offers both left and right configurations and the option for 4, 5, or 6° of valgus distal femoral resection (Fig. 4).

Note: Ensure that the adjustable screws are dialed so that they are flush with the posterior side of the guide.



Fig. 5: Place the I/M Rod and Distal Femoral Cut Guide Assembly on the femur



Fig. 6: Attach the Alignment Tower and Rod to the jig



Fig. 7: Cut the distal femoral condyles



Fig. 8: Use the Pin Puller to remove the pins

Insert the I/M Rod into the Distal Femoral Cut Guide at the chosen valgus alignment and place the assembly on the distal femur, inserting the I/M Rod into the canal (Fig. 5).

The height of the Universal Cut Block may be adjusted by loosening the attachment knob one-quarter turn. Re-tighten the knob once the block is at the desired height.

Dial the medial or lateral adjustable screw down to the deficient condyle to compensate for lost cartilage. Adjust the Distal Femoral Cut Guide for rotational alignment, and place the Universal Cut Block in contact with the anterior cortex of the distal femur before tightening the attachment knob. For additional stability, attach the Universal Handles to the Universal Cut Block or drill through the lateral hole on the Distal Femoral Cut Guide and fill with a Long Quick Pin into the condyle.

Note: A quick pin placed in the hole in the Distal Femoral Cut Guide should not interfere with the anterior posterior pin placed in the Universal Cut Block at a [0] position.

Stabilize the Distal Femoral Cut Guide by drilling the 3.2mm Drill point into the Universal Cut Block through the [0] holes and tapping two short Quick Pins into the Universal Cut Block until they are flush with the saw guide to eliminate saw impingement. If desired, double check the alignment with the Alignment Tower and Alignment Rod before making the bone cuts (Fig. 6).

Remove the I/M Rod, then remove the Distal Femoral Cut Guide by unthreading the screw attached to the Universal Cut Block. Cut the distal femoral condyles through the saw guide of the Universal Cut Block using a 1" wide 1mm (.050") thick saw blade (Fig. 7).

Surgical Pearl: Saw blade temperatures may exceed 200°C, while thermal necrosis occurs at 55°C.¹¹ Irrigating the saw blade with saline when making cuts will help ensure the freshly cut bone remains viable, especially when using a cementless implant.¹²

Surgical Pearl: Multiple saw blade passes ensure a more accurate cut with less skiving.

Remove the pins using the Pin Puller (Fig. 8).

Note: The Klassic® Knee System will accommodate up to a 1.27mm (.050") thick saw blade. The actual cut slot is 1.40mm (.054").

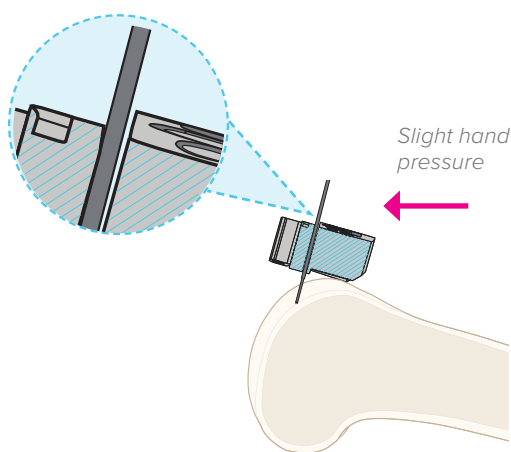


Fig. 9: Use the saw capture as a guide to ensure accurate cuts



Fig. 10: Size the femur using the A/P Sizer

Surgical Pearl: Saw captures are an integral part of accurate cutting technique. The tolerance of the saw capture (using the appropriate 0.050" blade), with a slight hand pressure toward the cut surface, will ensure accurate/flat cuts (Fig. 9). Too much pressure will bind the blade and potentially tilt the block, creating inaccurate cuts.

Surgical Pearl: Check the distal femoral cut for flatness by placing the flat side of a Femoral Cut Block on the cut surface of the distal femur. Double checking the distal femoral cut surface is essential if using a porous coated femur, as this cut sets the stage for the remainder of the femoral cuts.

2. SIZING THE FEMUR

Set the desired external rotation on the A/P Sizer by aligning the arrows to either 0° or 3° of external rotation (Left or Right). The dial for the non-operative side should be set to 0°. With the knee in maximal flexion, center the A/P Sizer on the distal femoral cut (Fig. 10). Position the A/P Sizer by referencing the posterior femoral condyles on the skids, and tap the captured set pins with a mallet to stabilize it. Use the A/P sizer as a caliper to determine the correct anterior/posterior femoral size. Remove the A/P Sizer using the small end of the Knee Slap Hammer.

Surgical Pearl: Excessive wear on either posterior portion of the medial or lateral condyle may require slight compensation of the position of the skids. Rotational alignment is important and multiple landmarks, including Whiteside's Line, the epicondylar axis, and the posterior condyles, should be utilized to orient rotation of the femoral component on the femur.

If between sizes, choose the larger size. Once cuts are made, the femur may be re-cut for a smaller implant by making the anterior and anterior chamfer cuts with the smaller sized cut block. The posterior resection and chamfer remain the same for all sizes. Once the anterior cut has been made for a given size, you cannot size up as you have already removed additional anterior bone.

Fig. 11: Place the Femoral Cut Block on the distal femur

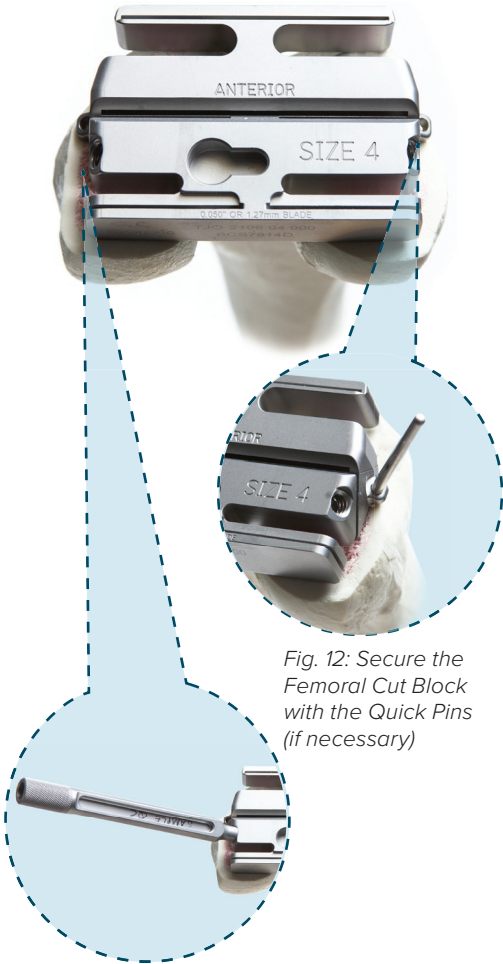


Fig. 12: Secure the Femoral Cut Block with the Quick Pins (if necessary)

Fig. 13: Use the Universal Handles for additional stability



Fig. 14: Make the remaining cuts

KLASSIC® FEMUR & KLASSIC® FEMUR | AURUM® SIZING

Size	A/P (mm)	M/L (mm)
1	54	59
2	57.5	63
3	61	67
4	64.5	71
5	68	75
6	71.5	79
7	75	83

There is a 3.5mm difference between sizes at the anterior cortex.

Femoral pegs are uniform in distance between sizes. Selecting an alternate femur after drilling the peg holes does not require drilling additional holes.

3. MAKING THE FEMORAL CUTS

Place the appropriately sized Femoral Cut Block into the reference holes (Fig. 11), and, if necessary, secure the block through the oblique holes using the short quick pins (Fig. 12). The Universal Handles may be attached for additional stability (Fig. 13).

Surgical Pearl: Ensure the Femoral Cut Block is completely seated against the distal femoral cut. If necessary, use several sharp taps with a mallet in the center of the cut block. Tapping the periphery of the block may cause cantilevering, resulting in bone damage.

Place the Angel Wing through the anterior slot of the Femoral Cut Block to visualize the exit path of the saw blade during the anterior cut. If the cut appears that it will notch, choose one size larger Femoral Cut Block. Remove the Angel Wing and use a .75" wide saw blade to make the anterior, posterior, posterior chamfer, and anterior chamfer cuts (Fig. 14). Check the flatness of the cuts with the bottom of the Femoral Cut Block.

If between sizes, choose the larger size. Once cuts are made, the femur may be re-cut for a smaller implant by making the anterior and anterior chamfer cuts with the smaller sized Cut Block. The posterior resection and chamfer remain the same for all sizes. Once the anterior cut has been made for a given size, you cannot size up as you have already removed additional anterior bone.

Note: The Femoral Cut Block is 3mm wider in the M/L plane than the final implant.



Fig. 15: Use the Slap Hammer to remove the Cut Block



Fig. 16: Assemble the Tibial Alignment Guide



Fig. 17: Use the long pins to set the depth of the cut

Remove the pins with the Pin Puller, and then remove the Femoral Cut Block using the small end of the Knee Slap Hammer (Fig. 15).

Note: As the cuts are posteriorly referenced, the thickness of the posterior cuts and posterior chamfer do not change between sizes.

Surgical Pearl: The system will accommodate a 1" wide saw blade, however, a narrower blade may help reduce chatter.

4. PREPARING THE TIBIA

Maximally flex the knee and excise the anterior cruciate ligament, along with any remaining meniscus. Place the Large Knee Retractor behind the tibia just lateral to the PCL to sublunate the posterior margin of the tibia anterior to the femur. Place a Small Knee Retractor medially. Place two small knee retractors laterally with one antero-laterally to retract the patellar tendon and fat pad.

To assemble the Tibial Alignment Guide, insert the Upper Tower in the Lower Tower facing backward. Rotate the upper tower 180°.

Adjust to desired tibial height and lock. Depress the button on the front of the tower to attach the Universal Cut Block, elevated pin holes (frog eyes) up (Fig. 16).

Rotational alignment may be stabilized by inserting a short quick pin through the central vertical slot in the universal cut block, which maintains rotational stability while allowing slope and varus/valgus adjustments to be made prior to final pinning through the [0] holes.

After adjusting the tibial alignment guide to the approximate tibial length, place the ankle cradle in neutral position and place against the length of the tibia. Attach the spring clamp. Set the rotational alignment by using the tibial tubercle as a guide. The posterior edges of the true proximal tibial plateau (excluding osteophytes) should be aligned parallel to the Universal Cut Block.

Place a long quick pin through each of the elevated pin holes on the Universal Cut Block and rest them on the proximal tibia, ensuring the long pins come into contact with the posterior tibial plateau (Fig. 17).



Fig. 18: Use the Tibial Stylus as an alternative

Aligning the long pins with the posterior tibial plateau will reference the slope if adjusted parallel to the proximal tibia and provide an 8mm depth of cut. Alternatively, the Tibial Stylus may be used to check the depth of resection (Fig. 18). The Tibial Alignment Guide offers 6° of tibial slope when aligned parallel to the tibia. The large superior knob at the base of the Tibial Alignment Guide allows the slope to be adjusted based on surgeon preference.

Avoid excessive posterior slope, especially if sacrificing the PCL.

Check varus/valgus alignment by aligning the Tibial Alignment Guide with the tibial tubercle and using the center of the ankle as a reference (Fig. 19). Adjust the guide as needed using the large knob at the base. Stabilize the Universal Cut Block by drilling through the [0] holes and filling with two short quick pins (Fig. 20).

Surgical Pearl: Slight varus placement of the tibial alignment guide may be preferred, as the natural alignment of the proximal tibia is between 0-6° varus.

Note: The tibial alignment guide was designed to remain in place for the proximal tibial cut; it does not need to be removed prior to making the cut. The Tibial Alignment Guide may be removed after the Universal Cut Block is secured.



Fig. 19: Adjust the varus/valgus alignment



Fig. 20: Stabilize the Universal Cut Block with the short pins



Fig. 21: Check varus/valgus alignment with the Alignment Rod



Fig. 22: Cut the proximal tibia



Fig. 23: Measure the tibial resection

If desired, use the Alignment Tower and the Alignment Rod to verify the alignment. The tip of the Alignment Rod should fall 2cm lateral of the center of the ankle for a 2° varus cut, or to the center of the ankle for a perpendicular cut (Fig. 21).

Most patients require a minimum of 8mm of resection to allow for the use of at least a 10mm Tibial Insert in a PCL sacrificing procedure. For a PCL preserving procedure, most patients require a 10mm cut. Move the Universal Cut Block down in 2mm increments to eliminate bone defects and match the thicknesses of the available Klassic® Knee System Tibial Inserts and All-Poly Tibias.

Using a 1" wide 1mm (.050") thick saw blade, cut the proximal tibia through the slot of the Universal Cut Block (Fig. 22).

Surgical Pearl: Saw blade temperatures may exceed 200°C, while thermal necrosis occurs at 55°C.²⁰ Irrigating the saw blade with saline when making cuts will help ensure the freshly cut bone remains viable, especially when using a cementless implant.²¹

When cutting the proximal tibia for a porous Tibial Baseplate, ensure that the tibial plateau cut is completely flat. This may be checked using the bottom surface of a Femoral Cut Block.

Note: The Klassic® Knee System accommodates up to a 1.27mm (.050") thick saw blade. The actual cut slot is 1.40mm (.054").

Measure the resected tibia in an area of relatively normal cartilage using the Patella Caliper (Fig. 23). Add 1mm to this measurement for bone loss from the saw blade to predict the thickness of the Tibial Baseplate/Insert thickness in a PCL sparing procedure; select one size thicker insert than the measured resection if the PCL is sacrificed.

Surgical Pearl: Intraoperative use of bone slurry at the bone/implant interface provides up to three times the amount of bone ingrowth compared to specimens implanted without the use of bone slurry.²⁰⁻²² If using the Klassic® Porous Knee System, retain the resected tibia on the back table to create a bone slurry before implanting the final tibial implant.

It is crucial to remove all posterior osteophytes in order to properly seat the Tibial Baseplate and to accurately set the Tibial Baseplate rotation.



Fig. 24: Use the Tibial Baseplate Sizer to measure the tibia

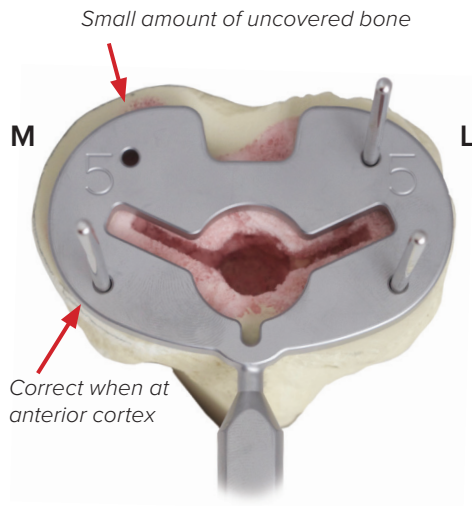


Fig. 25: Stabilize the Tibial Baseplate Sizer



Fig. 26: Check varus/valgus alignment with the Alignment Rod

5. SIZING THE TIBIA

Check the tibial cut for flatness by placing the Tibial Baseplate Sizer on the cut surface of the proximal tibia. Once the flatness and alignment are confirmed, remove the short quick pins from the proximal tibia.

Surgical Pearl: The short quick pins may be left in place for tibial sizing as a reference for setting tibial rotation, but must be removed prior to tibial broaching.

Surgical Pearl: The tibial cut should be perfectly flat, especially if using the porous tibia. Placing the Tibial Sizer on the cut surface, touch each corner. If there is a rocking motion, consider recutting the tibia to even out the surface.

Position the Tibial Baseplate Sizer on the cut surface of the proximal tibia at the medial anterior cortex and select the Tibial Baseplate Sizer that does not overhang and allows some lateralization (Fig. 24). Adjust the rotation by positioning the handle of the Tibial Baseplate Sizer at the medial 1/3-to-center of the tubercle and stabilize the Tibial Baseplate Sizer with the short quick pins through the peripheral holes (Fig. 25).

If necessary, the Tibial Baseplate Sizer may be placed in slight external rotation. Internal rotation should be avoided.

Note: All four holes on the Tibial Sizer must be drilled, as these holes correspond to the anti-rotational pegs on the final implant.

The Alignment Rod may be dropped through the handle of the Tibial Baseplate Sizer to ensure varus/valgus alignment of the cut (Fig. 26).

KLASSIC® TIBIAL BASEPLATE SIZING

Size	A/P (mm)	M/L (mm)
1	41	64
2	43	67
3	45	71
4	47	75
5	49	79
6	51	82



Fig. 27: Broach the tibia

6. BROACHING THE TIBIA

Tibial preparation is executed through the Tibial Baseplate Sizer. Thread the Starter Broach tip, or if using a Stem Extension, the 25 or 50mm Stem Extension Broach, onto the Broach Tower that corresponds to the Tibial Sizer. Insert the Tibial Broach Assembly into the Tibial Sizer and impact using a mallet (Fig. 27). Remove the Tibial Broach Assembly with the Knee Slap Hammer.

Using the Tibial Broach without a Starter Tip or Broach Extension may cause damage to the tibia.

If using a Tibial Stem Extension longer than 50mm, insert the Reamer Tower into the Tibial Baseplate Sizer (Fig. 28). Ream to the 100mm line for the 100mm Stem Extension or to the hard-stop for the 150mm Stem Extension. Tibial Reamers prepare a line-to-line envelope for the Tibial Stem Extension implant.

Surgical Pearl: If the Tibial Broach will not seat completely in hard bone, use a 3.2mm drill bit to drill several holes through the slots of the Tibial Baseplate Sizer.

If using the All-Poly Tibia, broach first with the standard Tibial Broach Assembly, and then re-broach using the appropriately-sized All-Poly Tibial Broach Assembly, which is larger to accommodate the slightly wider (1mm) keel.

Broaching the tibia with the All-Poly Tibial Broach without pre-broaching could cause damage to the tibia.



Fig. 28: Ream the tibia



Fig. 29: Use the Patella Calipers to determine maximum thickness



Fig. 30: Drill the apex of the medial facet



Fig. 31: Resect the patella using the Patella Osteotomy Guide

7. PREPARING THE PATELLA

Prepare the patella by placing the leg in full extension, and evert the patella, stabilizing it with two inverted towel clips. Incise soft tissue around the patella, avoiding the quadriceps tendon and the patellar ligament, and remove any large osteophytes. Before making any bone cuts, determine the maximum thickness of the patella using the Patella Calipers (Fig. 29).

Avoid overthickening the patella to prevent overstuffing the patellofemoral femoral joint.

Using the 3.2mm drill, drill the highest point (patella apex) of the medial facet perpendicular to the articular surface. This acts as a guide for proper medialization of the patella (Fig. 30).¹¹

Clamp the Patella Osteotomy Guide onto the patella so that the arms of the guide orient the saw capture medial to lateral. Spin the nut on the handle bolt until it reaches the desired tightness. With a saw, cut the patella at the osteochondral junction medial to lateral (Fig. 31).



Fig. 32: Size the patella using the Patella Sizer/ Drill Guide



Fig. 33: Ream the patella



Fig. 34: Drill the patella holes

Using the Patella Sizer/Drill Guide, select the maximum size that will not overhang (Fig. 32). Medial placement of the patella allows for better tracking.²³ Place the 1/8" hole of the Patella Sizer/Drill Guide over the 1/8" drill hole as a reference for proper medialization. Remove the Patella Sizer/Drill Guide. Select the appropriately sized Patella Planar (31mm for patella sizes 1 or 2, 37mm for sizes 3 or 4) and plane the patella (Fig. 33). The thickness of each patella is listed on the Patella Sizer/ Drill Guide.

Ensure power handpiece is set to [Ream] before planing.

Place the Sizer/Patella Drill Guide on the planed surface of the patella and drill the holes with the 3-in-1 Drill (Fig. 34).

Surgical Pearl: Six keys to component placement to optimize patellar tracking:

1. Lateralize the tibial component
2. Lateralize the femoral component
3. Ensure the femoral component is not internally rotated
4. Ensure the tibial component is not internally rotated by referencing the lateral third of the tibial tubercle with the center of the tibial component
5. Ensure the components are not placed in valgus
6. Medialize placement of the patella and ensure uniform thickness

KLASSIC® DOMED PATELLA SIZING		
Size	Diameter (mm)	Thickness (mm)
1	28	8
2	31	9
3	34	10
4	37	11

KLASSIC® SOMBRERO PATELLA SIZING		
Size	Diameter (mm)	Thickness (mm)
1	28	7
2	31	7
3	34	7
4	37	7
5	40	10

Patella pegs are spaced uniformly regardless of size. Choosing an alternate size does not require drilling new holes.

8. TRIALING

Prior to trial reduction, remove any posterior osteophytes on the femur using a 3/4" curved osteotome while lifting the femur with a bone hook. Osteophyte removal is recommended for maximum knee flexion.

Apply the Tibial Baseplate Trial and Tibial Insert Trials first, based on the measured tibial thickness (Fig. 35), regardless of whether the patient will receive a Tibial Baseplate/Insert combination or an All-Poly Tibia. The Alignment Tower may be used as a handle to help guide and place the Trials.

Note: The All-Poly Tibia sizing corresponds with the thickness of the Insert Trial used. If using a 10mm Insert Trial, select the 10mm All-Poly Tibia final implant.

Insert the appropriate Femoral Trial and Patella Trial (Fig. 36 and 37).

Surgical Pearl: Keeping the Femoral Trial lateral, verify there is no overhang posterolaterally at the popliteus or anteromedial flange. If overhang is present, adjust the position or consider downsizing.

Any fine-tuning or soft tissue releases should be done at this time.

Check stability in full extension, 60° of flexion, and 90° of flexion.

When satisfied with range of motion and patellar tracking, drill for the lug holes in the Femoral Trial using the 3-in-1 Drill (Fig. 38).



Fig. 35: Place the Tibial Insert Trial



Fig. 36: Place the Femur Trial



Fig. 37: Place the Patella Trial



Fig. 38: Drill the lug holes in the Femur Trial



Fig. 39: Tighten the Tibial Stem Extension on the Tibial Baseplate

Note: The femoral lug holes are spaced uniformly and do not require drilling additional holes should the surgeon choose an alternate femur size. In addition, the posterior and posterior chamfer cuts are uniform for all sizes and do not require recutting when changing sizes.

Surgical Pearl: Lateral placement of the Femoral Trial (while avoiding overhang of the cut surface) may facilitate better patellar tracking.



Fig. 40: Implant the Tibial Baseplate

9. IMPLANTING THE FINAL COMPONENTS

Remove all trial components using the Alignment Tower as a handle for the Tibial Baseplate/Insert Trials, and the large end of the Knee Slap Hammer for the Femoral Trial. Copiously wash the wound.

Carefully open the components on the back table, using caution when opening the Tibial Baseplate Assembly. The Tibial Insert Set Screw is included in the packaging for the Tibial Baseplate Assembly and is required to fully engage the locking mechanism on the Tibial Insert.

The Tibial Baseplate Assembly includes a preassembled threaded 10mm poly dome on the distal end of the Baseplate for use without Tibial Stem Extensions.

If using a Tibial Stem Extension, remove the poly dome. Assemble the Tibial Stem Extension to the Tibial Baseplate, and affix finger tight. Using the Tibial Stem Wrench, positioned as shown, securely tighten the Tibial Stem Extension to the Tibial Baseplate (Fig. 39).

Apply a 3-4mm layer of bone cement to the underside of all of the Klassic® Knee Tibial Baseplate or All-Poly Tibia, Femur, and Patella implant components, taking care not to coat the femoral pegs.

Using the Tibial Impactor (Fig. 40), or All-Poly Tibia Impactor (Fig. 41), impact the Baseplate Assembly or All-Poly Tibia onto the tibial surface, pressurizing the cement into the bone.

Surgical Pearl: Proper cement technique is essential to achieve long-term survivorship.²⁴ Use a scalpel to cut the excess cement around the implant before removing it with a curette. This technique will help retain the cement mantle under the Baseplate or All-Poly Tibia on sclerotic bone.



Figure 41: Implant the All-Poly Tibia

If using the porous Baseplate, use the 3.2mm Drill to create a small hole in the reserved tibial wafer. Place the nipple of the Patella Planar in the pilot hole and carefully ream the underside of the resected tibia to create a bone slurry. Use an osteotome



Fig. 42: Engage the snap lock on the Tibial Insert



Fig. 43: Insert the Tibial Insert Set Screw to engage the locking mechanism between the Tibial insert and the Tibial Baseplate Assembly

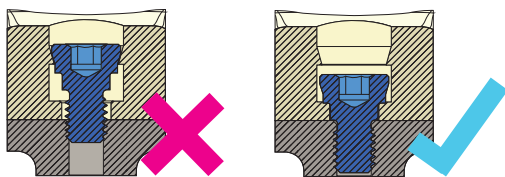


Fig. 44: Proper insertion of the Tibial Insert Set Screw

to remove the slurry from the Planar blades and spread it on the prepared tibial surface to fill the trabecular bone, scraping off any extraneous material.²⁵ Place the implant onto the slurry-coated proximal tibia and impact using the Tibial Impactor, ensuring that it is fully seated. Contact between the implant surface and the proximal tibia must be maintained all the way around the Baseplate.

Surgical Pearl: Porous coated implants offer an interference fit as part of the initial mechanical fixation. It's essential that the Tibial Baseplate and the cut surface of the tibia are coplanar in order to best seat the tibia and to avoid interrupting the interference.

Position the Tibial Insert of the chosen thickness by pushing the Insert posteriorly by hand and using the Tibial Assembly Clamp on the anterior aspect of the tibial component to engage the locking mechanism (Fig. 42).

Insert the Tibial Insert Set Screw into the hole in the Tibial Insert and tighten it with a 3.5mm Screwdriver (Fig. 43).

The anti-backout feature of the Tibial Insert will provide some resistance while tightening the Screw; completely bottom out the Screw with the Baseplate (Fig. 44) to ensure that it is tightened appropriately.

Surgical Pearl: If after final seating of the Tibial Insert a different size is selected for ligament balance or motion concerns, simply remove the Set Screw and place a .50" osteotome in the anterior aspect of the polyethylene (after the bone cement has cured) and lift upward on the polyethylene to release the baseplate locking mechanism without damaging the Baseplate itself.

Note: Additional Tibial Insert Set Screws are packaged separately in the event the enclosed Screw is misplaced.



Fig. 45: Implant the Femur

Implant the femur using the Femoral Impactor (Fig. 45). If impacting the porous femur, the Femur Inserter/Extractor may be helpful to increase precision placement (Fig. 46). When impacting a porous femur, ensure that proper alignment in extension is maintained and the femur is fully seated. The porous femur does not require cement.

If cementing the Klassic® Knee, remove excess cement. Check that components are fully seated, and check the range of motion and ligament stability again. Implant the patella by lining up the pegs on the patella with the previously drilled holes and applying the Patella Clamp (Fig. 47). Measure the final thickness and ensure proper patellar tracking.



Fig. 46: Use the Femur Inserter/Extractor to insert the Femur



Fig. 47: Implant the Patella

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Total Joint Orthopedics, Inc.
1567 East Stratford Ave.
Salt Lake City, Utah 84106
888.890.0102 tjoinc.com

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