

Triathlon® Knee System

MIS Surgical Protocol

The Right Procedure with the
Right Implant for Your Patient



Triathlon Knee System

MIS Surgical Protocol

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Stryker Orthopaedics wishes to thank the entire Triathlon MIS Surgeon Panel and the dozens of surgeons worldwide who guided the design and development of the Triathlon MIS Instrumentation.

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MIS Instruments



Each of these approaches, along with the instruments described in this surgical technique, can be utilized for a standard procedure even though they are designed for MIS.



The MIS Triathlon Knee System Instrumentation has incorporated experiences from Stryker's 30-year orthopaedic history. The system combines the expertise of orthopaedic and human factors engineers with that of surgeons and OR staff worldwide. The MIS Triathlon Knee System Instrumentation provides OR efficiency and intra-operative flexibility through Orthonomic designs.

Orthonomics: The science of incorporating ergonomic principles into the design of orthopaedic instruments.

Efficiency

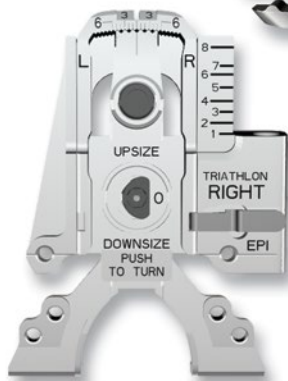
The Triathlon MIS Knee System Instrumentation design team focused on identifying ways to increase the accuracy and simplicity of the surgical procedure, which are two variables that may affect OR efficiency. The features incorporated include:

- ▶ Open design cutting blocks to enhance visualization
- ▶ Bold markings and color-coding for ease of use and clear identification
- ▶ Quick attach and release mechanisms to facilitate easy assembly
- ▶ A logically organized tray layout based on the operational sequence for a streamlined process

Flexibility

The proprietary instrumentation design also delivers intra-operative flexibility. The following features help surgeons adapt to multiple surgical realities and surgical preferences:

- ▶ Modular cutting captures, handles and cases facilitate customized surgical flow
- ▶ A common platform that allows for seamless transition through the indications continuum
- ▶ Navigation ready
- ▶ Minimally Invasive Orthonomic Design of the Triathlon Knee System Instrumentation is designed to become the standard in the industry. Advanced design principles incorporating Orthonomic features include:
 - ▶ Ergonomic soft grip handles for optimized surgeon hand fit and comfort
 - ▶ Procedural enhancing mechanisms
 - ▶ Lightweight trays for ease of handling



Assembly Instructions

The Stryker Triathlon Knee System Instrumentation features mechanisms that provide surgeons and OR Staff a more simplified and efficient surgical experience. Assembly instructions are included in the first section of this surgical technique to assist with instruments that may be pre-assembled on the back table, as well as other instruments that need to be assembled. All of the actuating mechanisms that allow instruments to be adjusted and/or assembled have been color-coded. Those that correspond to femoral preparation are black, those for tibial preparation are bronze and those for patella preparation are gold.



Black



Bronze

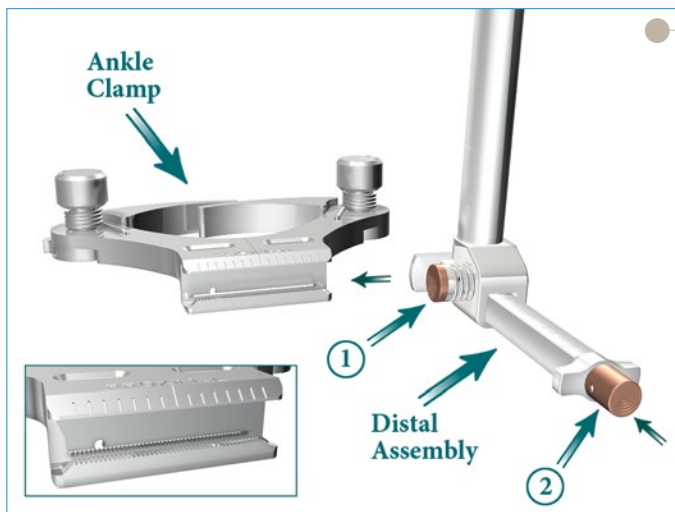


Gold

Note: Any instrument that has been dropped should be returned to Stryker for evaluation prior to further use.

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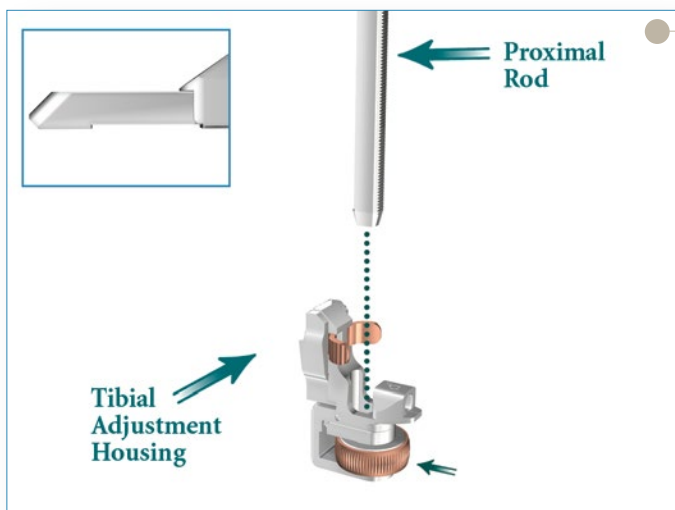
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Assembly 1A

Tibial Alignment Ankle Clamp EM, Tibial Alignment Distal Assembly EM, MIS Proximal Rod EM, Tibial Stylus, MIS Tibial Resection Guide, and Tibial Adjustment Housing Assembly:

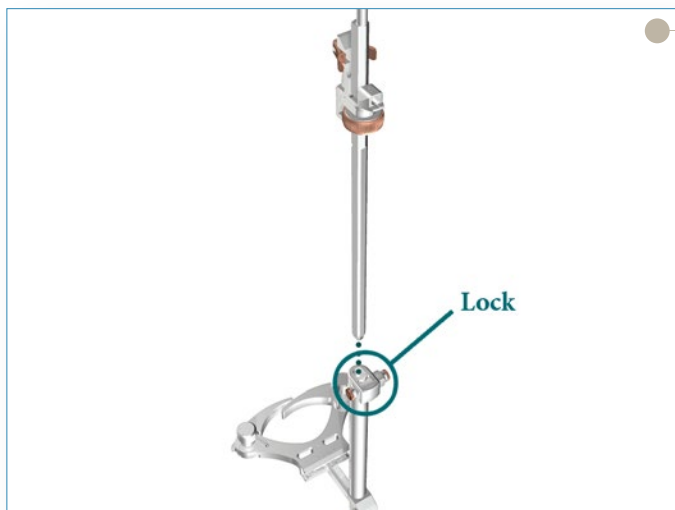
- ▶ Press the bronze button ① and advance the Distal Assembly arm forward approximately halfway.
- ▶ Press the bronze button ② on the Distal Assembly; put the arm into the grooves on the Ankle Clamp. Ensure that the side of the Ankle Clamp reading “proximal” is visible from above.



Assembly 1B

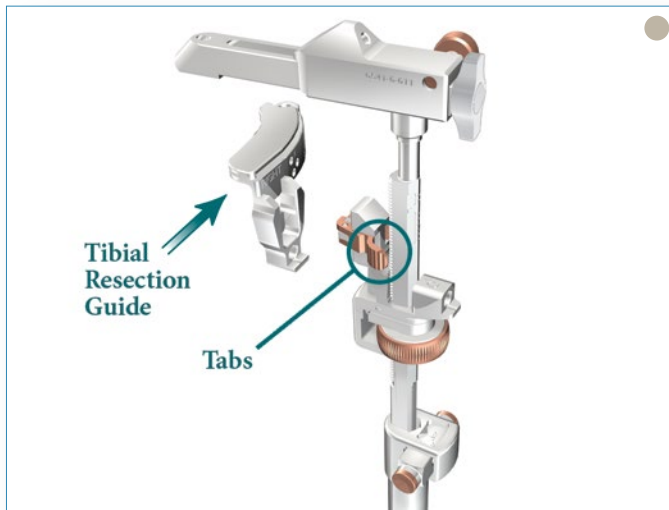
- ▶ Press the bronze wheel on the inferior portion of the Tibial Adjustment Housing with your thumb and insert the Proximal Rod from the superior side.
- ▶ With the bronze wheel depressed, slide the Tibial Adjustment Housing up to approximately 5cm from the arm of the Proximal Rod.
- ▶ Release the bronze wheel to engage the teeth of the Proximal Rod and lock the Adjustment Housing in place.

Note: The Tibial Adjustment Housing is available in 0 degree slope (posterior stabilized) and 3 degree slope (cruciate retaining).



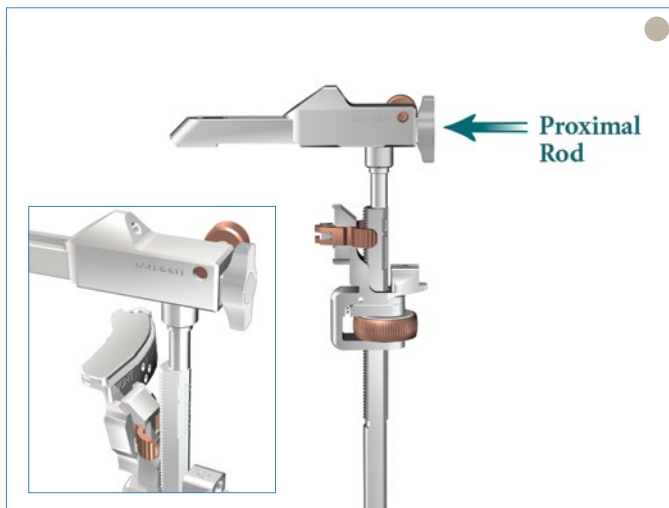
Assembly 1C

- ▶ Ensure that the bronze slide lock on the superior portion of the Distal Assembly is in the unlocked position prior to insertion of the Proximal Rod and Tibial Adjustment Housing assembly.
- ▶ Insert the Proximal Rod and Tibial Adjustment Housing assembly into the hole on the superior portion of the Distal Assembly. Note: Ensure the Proximal Rod arm extends in the same direction as the assembled Ankle Clamp.



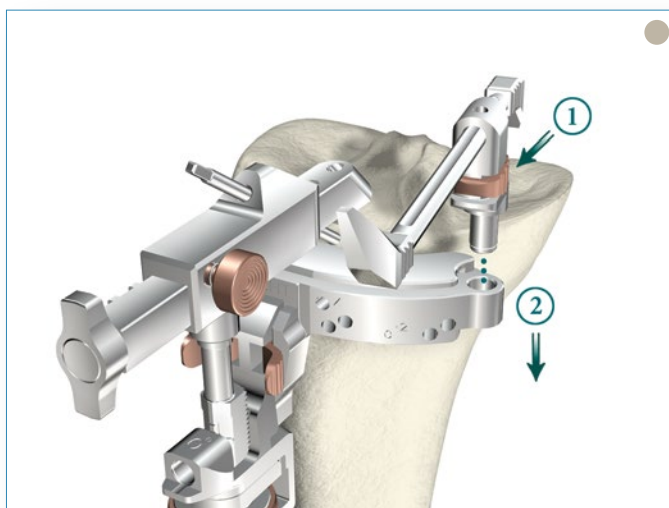
Assembly 1D

- ▶ Squeeze the bronze tabs on the Tibial Adjustment Housing and assemble the MIS Captured, MIS Uncaptured, or Standard Uncaptured Tibial Resection Guide with the resection surface facing up.
- ▶ Release the bronze tabs and ensure that the Tibial Resection Guide is locked in place.



Assembly 1E

- ▶ The MIS Proximal Rod has a retractable tibial plateau referencing arm. Ensure that the arm position is fully extended; to extend or retract the fixation arm, depress the bronze button on the left side of the MIS Proximal Rod and slide the fixation arm.



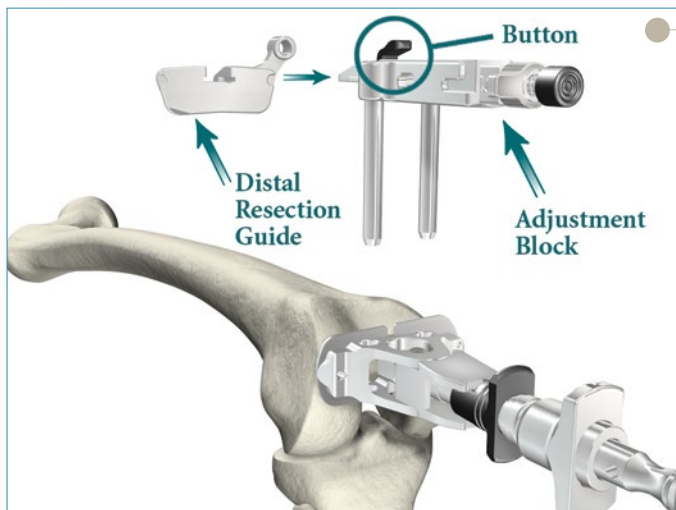
Assembly 1F

- ▶ Squeeze the bronze swing trigger ① on the Tibial Stylus and insert the post into the medial hole ② located on the resection plane of the Tibial Resection Guide.
- ▶ Release the bronze swing trigger ① to lock the Tibial Stylus in place.

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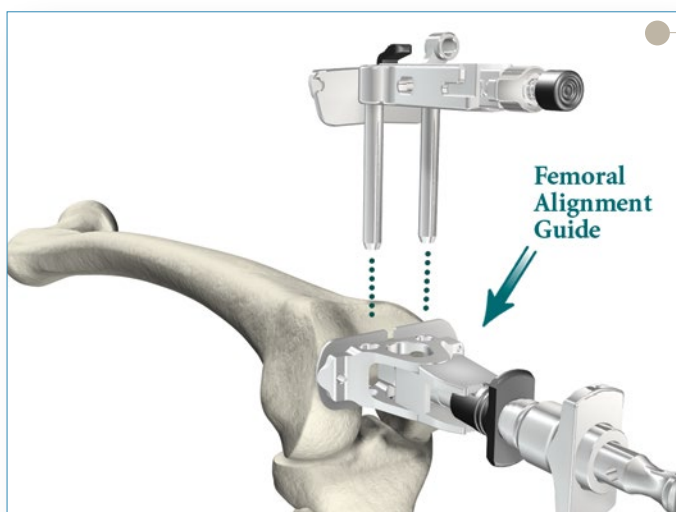
Assembly Instructions



Assembly 2A

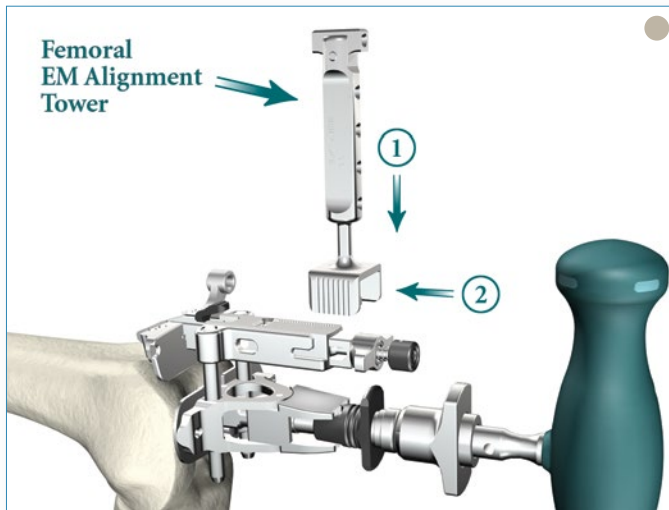
MIS Distal Resection Guide, MIS Adjustment Block and MIS Femoral Alignment Guide Assembly:

- ▶ Select the appropriate Left or Right Distal Resection Guide and assemble it onto the MIS Adjustment Block.



Assembly 2B

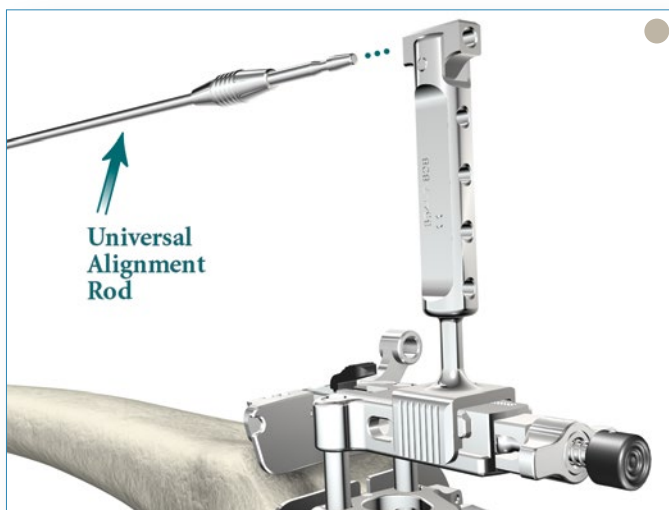
- ▶ Insert the two posts of the Adjustment Block into the holes on the Femoral Alignment Guide (for use on the left or right side).



Assembly 3A

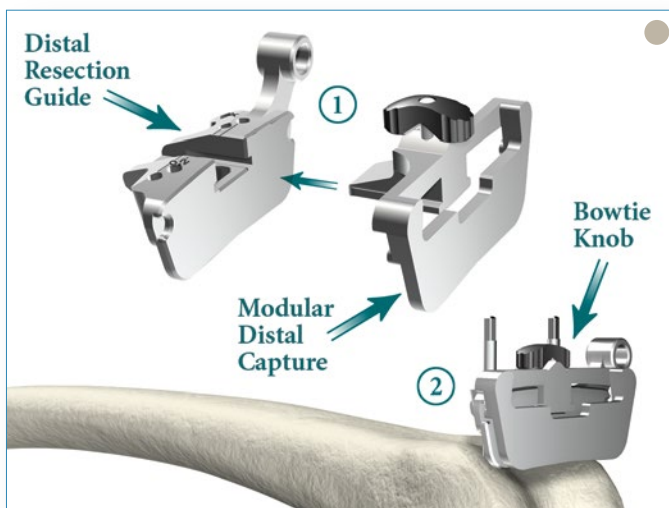
Femoral EM Alignment Tower, MIS Femoral Adjustment Block, and Universal Alignment Rod Assembly:

- ▶ Slide the EM Alignment Tower onto the MIS Femoral Adjustment Block.
- ▶ First bring the EM Alignment Tower down over the rear of the Femoral Adjustment block ①, then slide it forward to secure it ②.



Assembly 3B

- ▶ Insert the Universal Alignment Rod through the hole on the Femoral EM Alignment Tower.

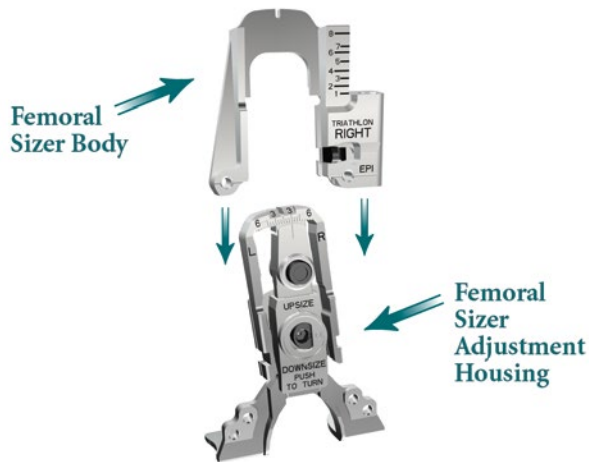


Assembly 3C

- ▶ Assembly of the optional Modular Distal Capture ①.
- ▶ Once in place, rotate the "bow-tie" knob to lock the capture into place ②.

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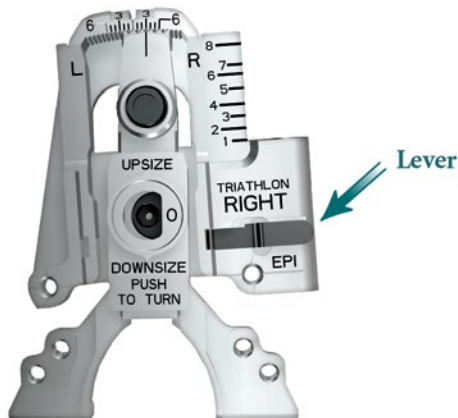
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Assembly 4A

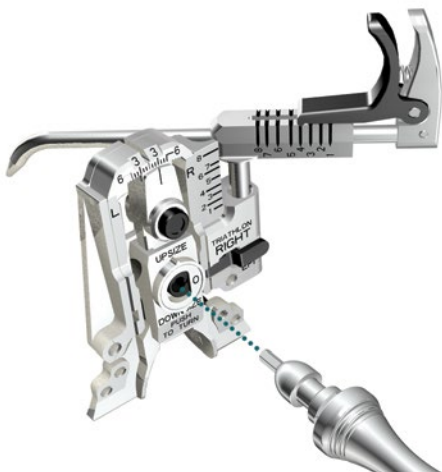
MIS Femoral A/P Sizer and MIS Femoral Stylus Assembly:

- ▶ Assemble the Left/Right modular body onto the MIS Femoral A/P Sizer Adjustment Housing by first unlocking the assembly latch, sliding the Left or Right body onto the Adjustment Housing, then turning the latch to the lock position.



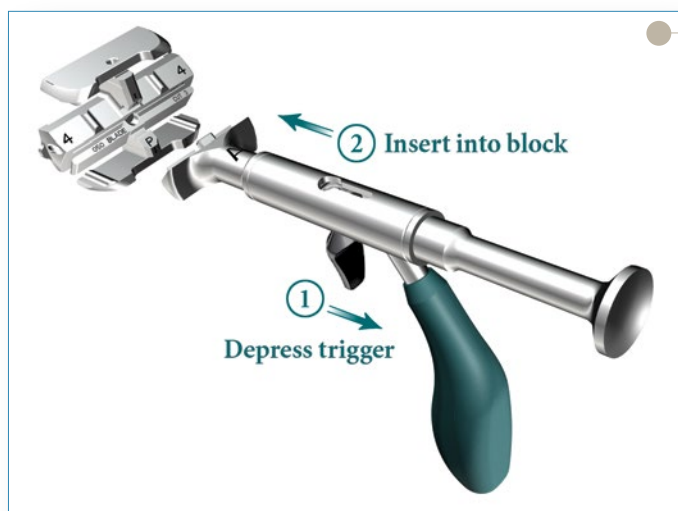
Assembly 4B

- ▶ Final Assembly.



Assembly 4C

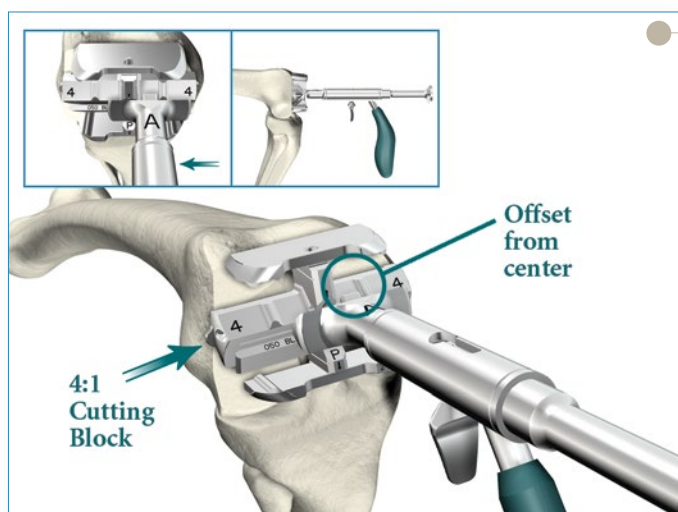
- ▶ Slide the MIS Femoral Stylus into the medial hole of the MIS Femoral A/P Sizer.
- ▶ For A/P translation, insert the male hex of the MIS Femoral Flexion Impactor into the black hex interface of the A/P Sizer Adjustment Housing. Press and rotate to adjust A/P translation up or down by up to 1.5mm.



Assembly 5A

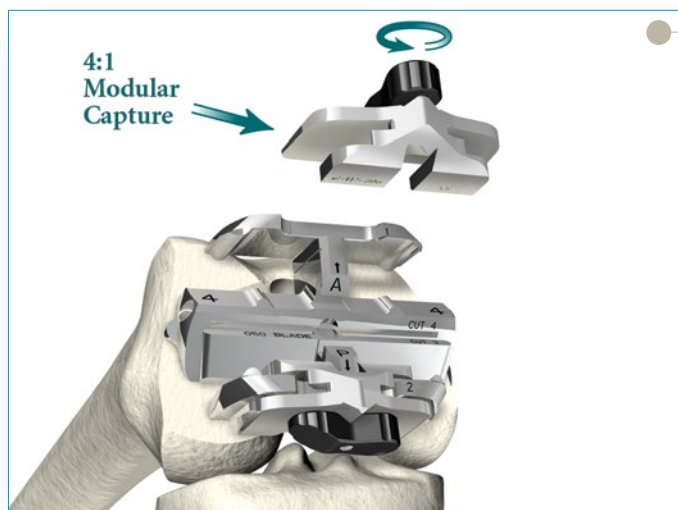
MIS 4:1 Cutting Block, MIS 4:1 Impactor/Extractor and MIS 4:1 Modular Capture Assembly:

- ▶ Position the 4:1 Impactor/Extractor perpendicular to the flat face of the desired size 4:1 Cutting Block.
- ▶ While depressing the trigger ① on the MIS 4:1 Impactor/Extractor, position the Impactor/Extractor about 5mm to the left or right of the 4:1 block's central spine.
- ▶ Insert the upturned tabs of the MIS 4:1 Impactor/Extractor into the anterior chamfer slot of the 4:1 block ②.



Assembly 5B

- ▶ Release the trigger and slide the MIS 4:1 Impactor/Extractor handle to the center.
- ▶ An audible click indicates that the Impactor/Extractor has successfully locked to the 4:1 Cutting Block.
- ▶ To disengage the MIS 4:1 Impactor Extractor from the MIS 4:1 Cutting Block, pull and hold the trigger and slide the handle medially within the anterior chamfer slot and extract the handle from the guide. Release the Impactor/Extractor handle.

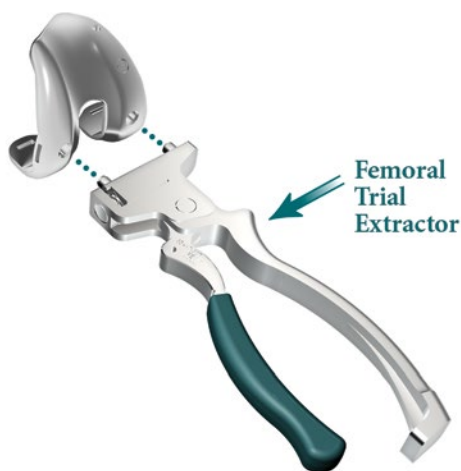


Assembly 5C

- ▶ To attach the MIS 4:1 Modular Capture, rotate the black "bow-tie" knob.
- ▶ Attach the MIS 4:1 Modular Capture to the anterior or posterior resection surfaces by positioning it over the juncture of the 4:1 block and resection so that the capture surface is parallel to the resection surface.
- ▶ Once fully seated, rotate the "bow-tie" knob to lock the capture into place.

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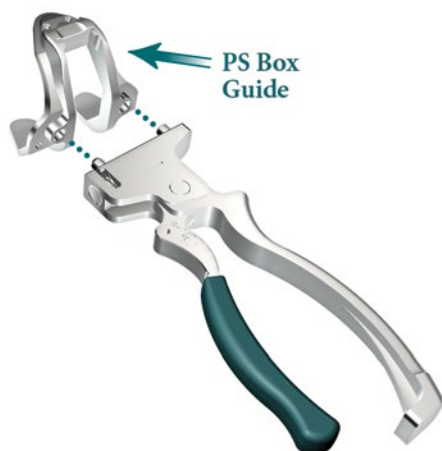
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Assembly 6A

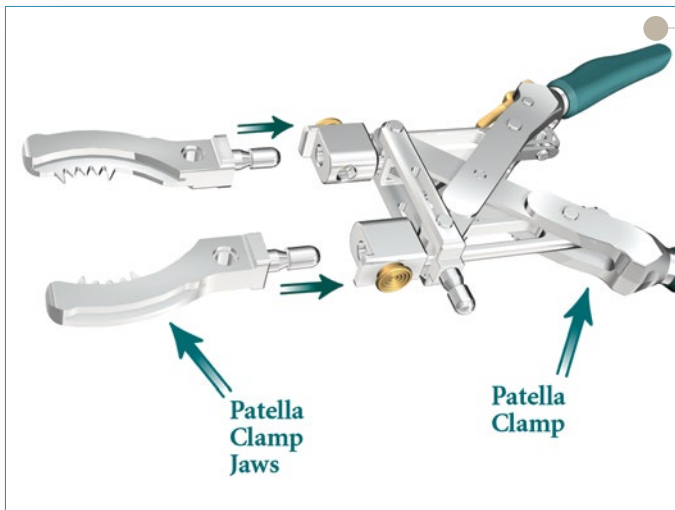
MIS Femoral Trial Extractor and Femoral Trial or PS Box Guide Assembly:

- ▶ Insert the posts of the MIS Femoral Trial Extractor into the lugholes of the femoral trial and squeeze the handle of the MIS Femoral Trial Extractor to hold the femoral trial. Releasing the handle will release the trial.
- ▶ The Femoral Trial Extractor can be used to hold, impact, and extract the MIS PS Box Cutting Guide.



Assembly 6B

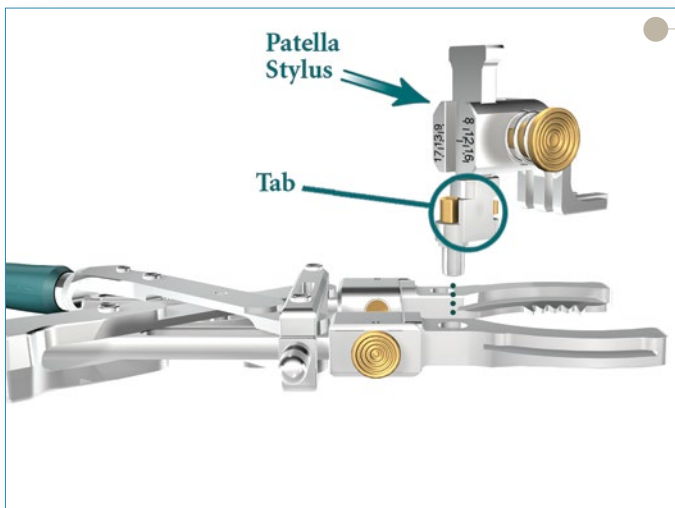
- ▶ Assembly with PS Box Guide (same as above).



Assembly 7A

Patella Clamp, Patella Stylus and Patella Clamp Jaws Assembly (this may also be used to assemble the Patella Clamp Base, Patella Drill Template and Patella Cement Cap to the Patella Clamp):

- ▶ Snap the Patella Clamp Jaws into the holes on the Patella Clamp.



Assembly 7B

- ▶ Squeeze the gold tab on the Patella Stylus and insert the post into the hole on either jaw. Use the holes on the top surface of the jaws if using the bone removing method or on the bottom surface if using the bone remaining method.
- ▶ The top surface has circular holes, which allow the stylus to rotate, and the bottom surface has hex shaped holes fixing the stylus in the center of the patella.
- ▶ Release the gold tab to lock the Patella Stylus in place.



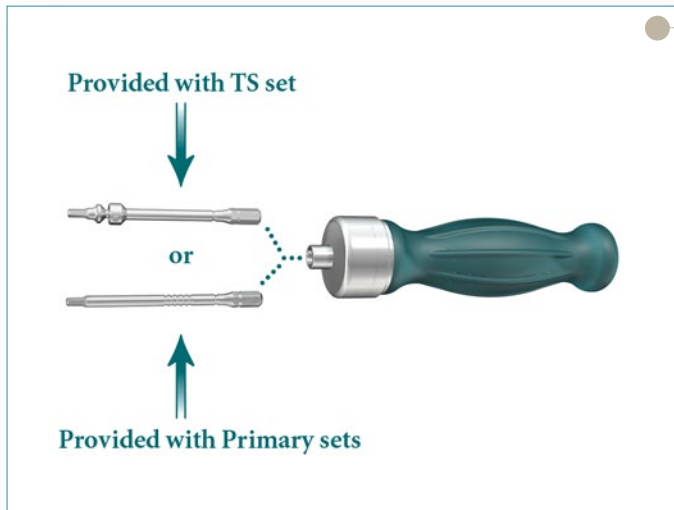
Assembly 8

MIS Femoral Flexion Impactor:

- ▶ Connect the MIS Femoral Flexion Impactor to the Impaction Handle.
- ▶ The MIS Femoral Flexion Impactor is placed in the intertrochlear groove of the femoral implant and used to begin impaction of the implant onto the distal femur.

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Assembly 9A

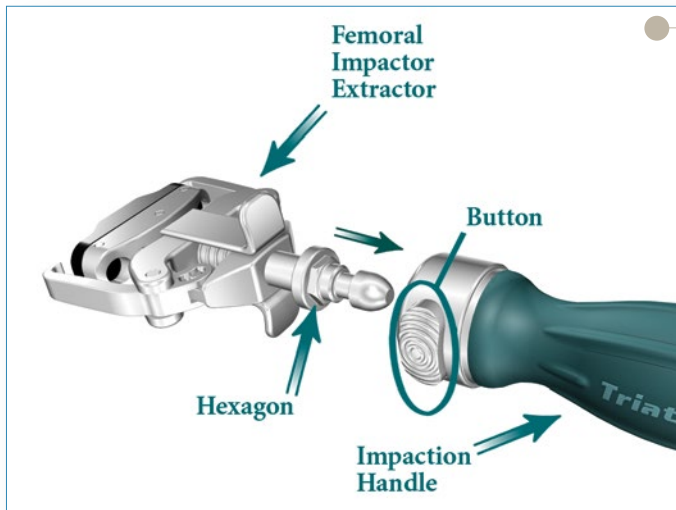
1/8" Hex Drive, Slip Torque Handle and Modular Femoral Distal Fixation Pegs Assembly:

- ▶ Snap the 1/8" Hex Drive into the Slip Torque Handle.



Assembly 9B

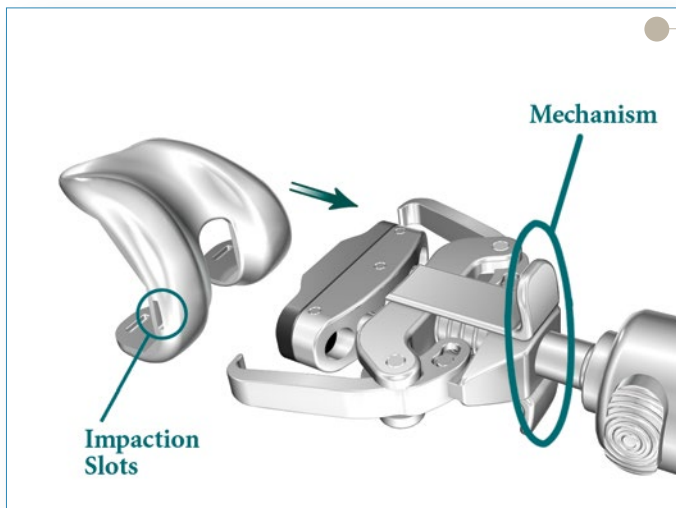
- ▶ Insert the tip of the 1/8" Hex Drive into the Modular Femoral Distal Fixation Peg and turn the Slip Torque Handle to tighten.



Assembly 10A

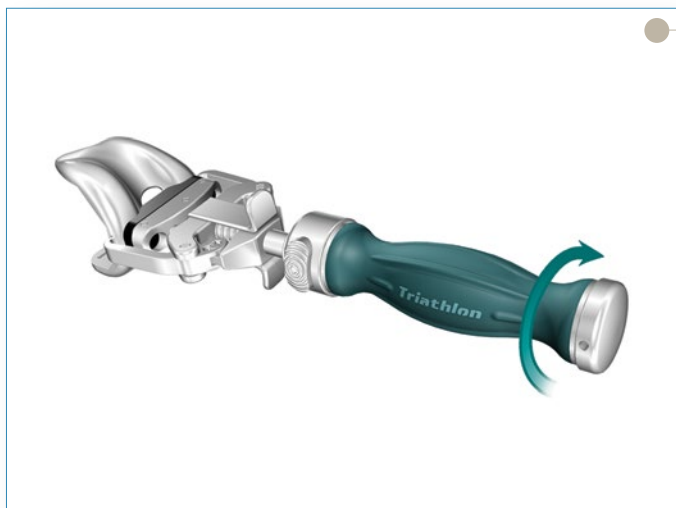
Femoral Impactor Extractor, Impaction Handle and Femoral Trial or Femoral Component Assembly:

- ▶ Snap the Femoral Impactor Extractor into the Impaction Handle.
- ▶ Ensure the hexagon on the Femoral Impactor Extractor is fully seated in the Impaction Handle. When fully seated, there will be an audible snap.



Assembly 10B

- ▶ Turn the Impaction Handle counterclockwise until there is enough space (approximately 10mm) between the black impaction surface and the ends of the jaws to insert the Femoral Trial or Femoral Component.
- ▶ Pull back on the mechanism to open the jaws. Engage the jaws into the impaction slots on the Femoral Trial or Femoral Component.

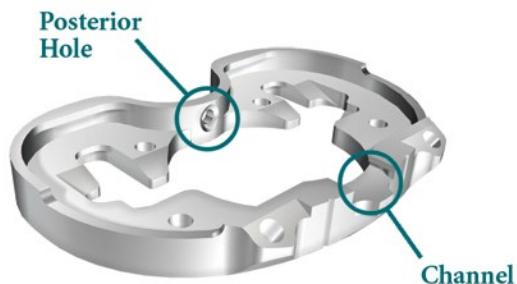


Assembly 10C

- ▶ Turn the Impaction Handle clockwise to tighten, ensuring the impaction surface locks against the distal condyles of the Femoral Trial or Femoral Component.

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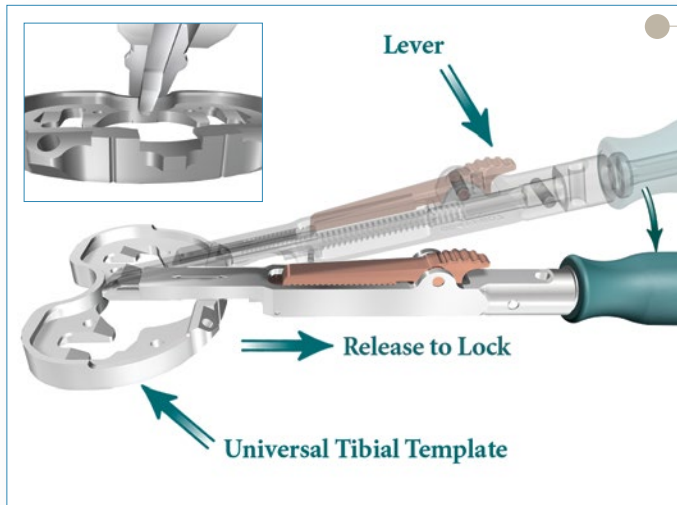
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Assembly 11A

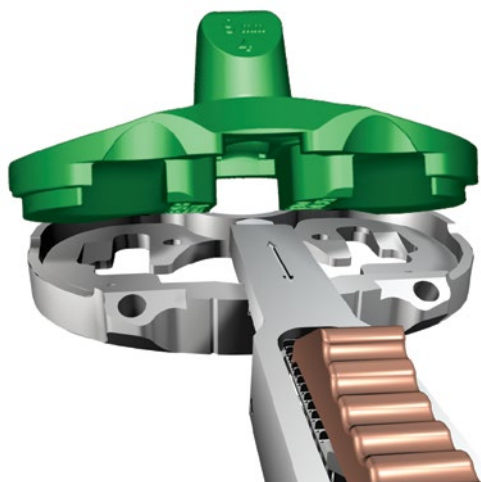
Tibial Template, Alignment Handle and PS or CR Tibial Insert Trial Assembly:

- ▶ Posterior hole and Channel of Universal Tibial Template.



Assembly 11B

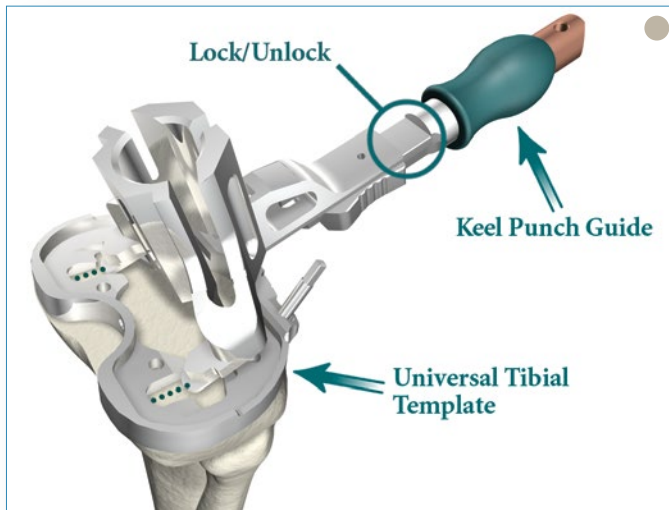
- ▶ Press the back of the bronze lever on the Alignment Handle to disengage the pawl. With the handle at a slight angle to the top surface of the template, insert the spring-loaded tip of the Alignment Handle into the central posterior hole of the Universal Tibial Template.
- ▶ Compress the spring-loaded tip by pushing it forward and lower the Alignment Handle into the channel on the anterior portion of the Universal Tibial Template. Release the spring tension and allow the Alignment Handle to engage the Universal Tibial Template channel tabs.



Assembly 11C

- ▶ The Tibial Insert Trial can be assembled with the Tibial Alignment Handle in place. Insert the posterior catches into the tray's posterior undercuts at a slight angle. Lower the trial until it seats firmly.

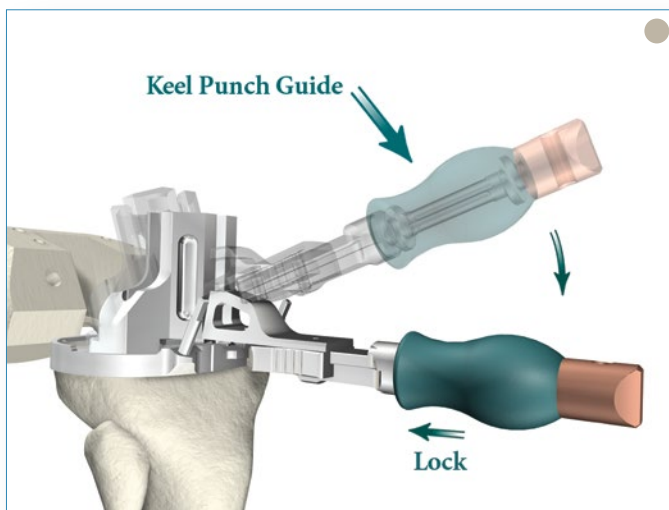
Note: The insert trial does not lock into place.



Assembly 12A

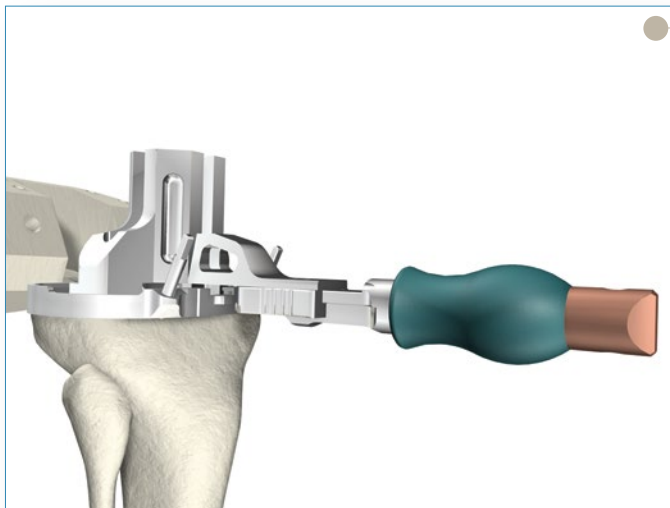
Universal Tibial Template and Keel Punch Guide Assembly:

- ▶ Ensure that the handle of the Keel Punch Guide is unlocked – pull back on the handle to unlock.
- ▶ Assemble the Keel Punch Guide to the Universal Tibial Template by inserting the Keel Punch Guide, at a slight angle to the Universal Tibial Template, into the two locating slots towards the posterior portion of the Universal Tibial Template.



Assembly 12B

- ▶ Rotate the Keel Punch Guide down to sit flat on the Universal Tibial Template and push forward on the handle of the Keel Punch Guide to lock it to the Universal Tibial Template. Ensure that the Keel Punch Guide is seated flat on the Universal Tibial Template prior to locking.

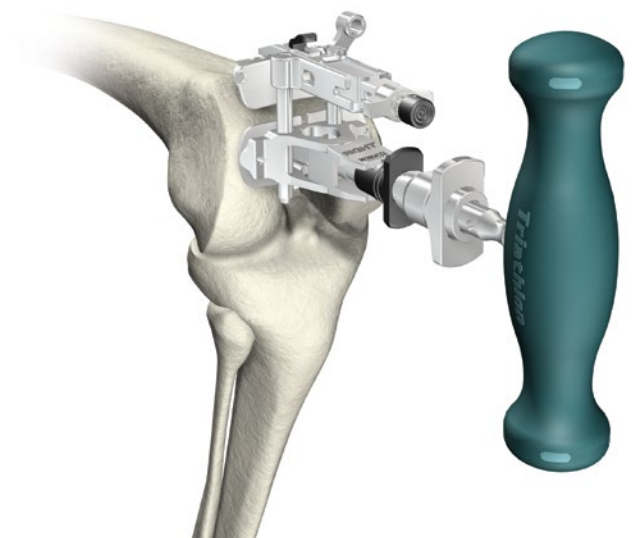
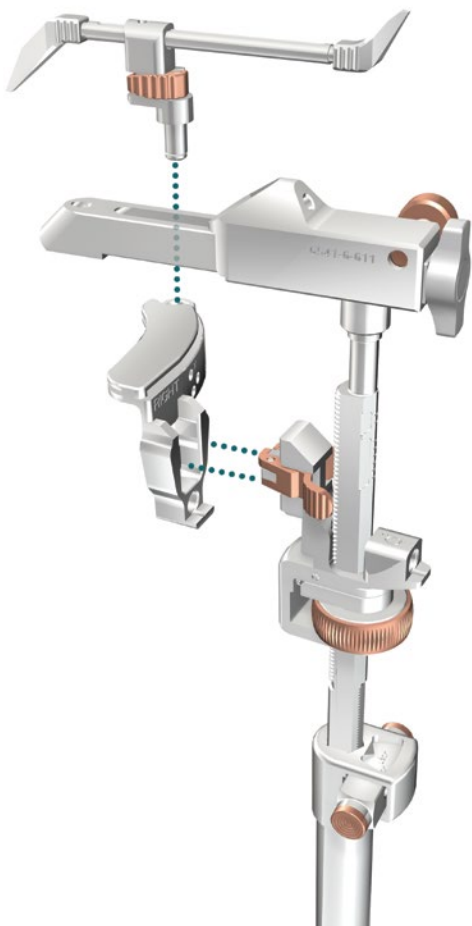
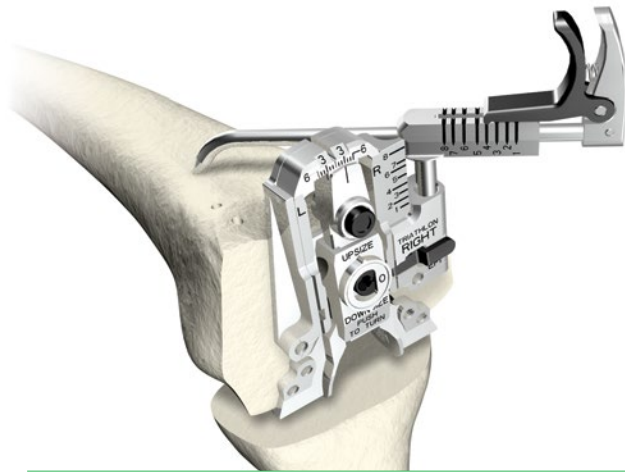


Assembly 12C

- ▶ Final Assembly

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Surgical Procedure

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Figure 1

Exposure

- ▶ A standard anterior midline incision is utilized. Any previous incision can be used or incorporated to decrease risk of skin slough.
- ▶ The capsule is entered through a modified mid-vastus approach, which makes a 6-12cm skin incision medial to the patella from just above the tibial tubercle to just above the patella.
- ▶ Use a soft tissue approach that allows adequate patella visualization and sufficient knee flexion.

This surgical technique describes cutting the tibia first, followed by the femur and then patella. The sequence may be varied based upon surgeon preference.

In some patients it may be difficult to cut the femur first and get proper rotation due to the tibia being in the way of the placement of the femoral sizer. In these cases it may be beneficial to cut the distal femur, then tibia, and then go back to size and finish the femoral cuts.

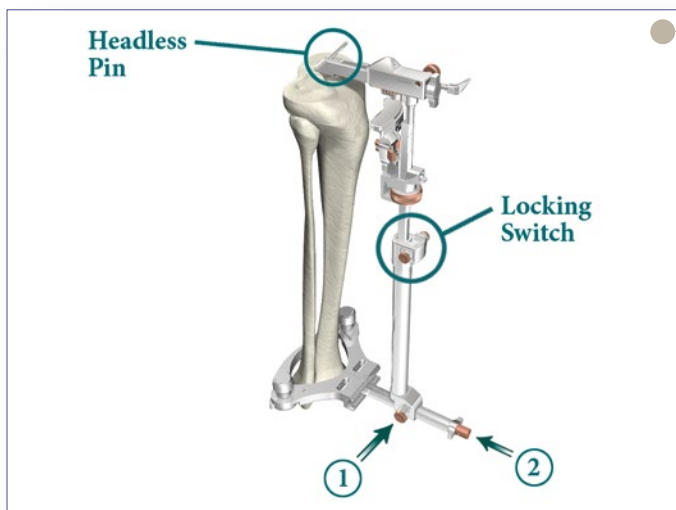


Figure 2

Tibial Preparation

- ▶ The tibia is prepared using the Triathlon extramedullary alignment system. Retractors may be placed medially, laterally, and posteriorly to expose the tibial plateau for preparation. It is important to remove all osteophytes, menisci and remaining soft tissues. Menisci can be removed before or after the bone cut. If the PCL has been retained, an optional retractor is available to cradle the PCL for increased exposure. The knee is flexed anywhere from 45 degrees to more than 90 degrees of flexion depending on surgeon preference. The tibia may be subluxed or dislocated as required.

- ▶ The tibial plateau referencing arm of the proximal rod is placed on the proximal tibia just anterior to the ACL insertion. A rongeur may remove any osteophytes that prevent satisfactory positioning.

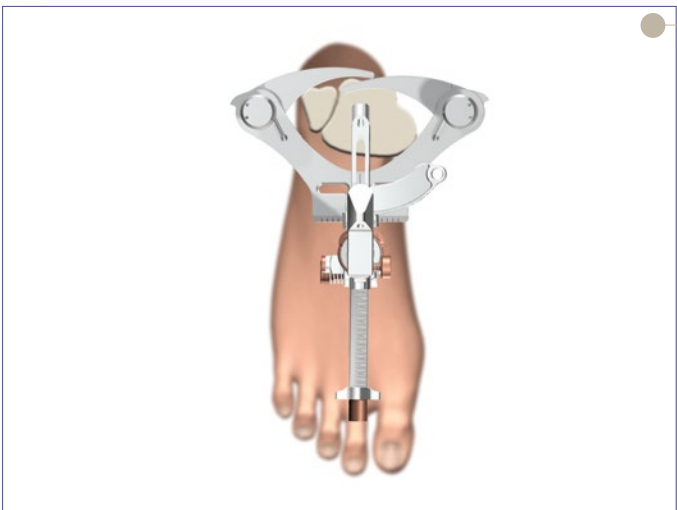


Figure 3

Rotational Alignment

- ▶ The assembly must be in the proper rotational alignment. The most common landmark referenced is the tibial tubercle. The assembly should be aligned with the medial third of the tibial tubercle.
- ▶ Once the rotational alignment is determined, a headless pin is placed through the posterior fixation hole in the proximal assembly to lock it in place. Either the anterior or posterior fixation holes may be used to set the flexion extension and rotational alignment.

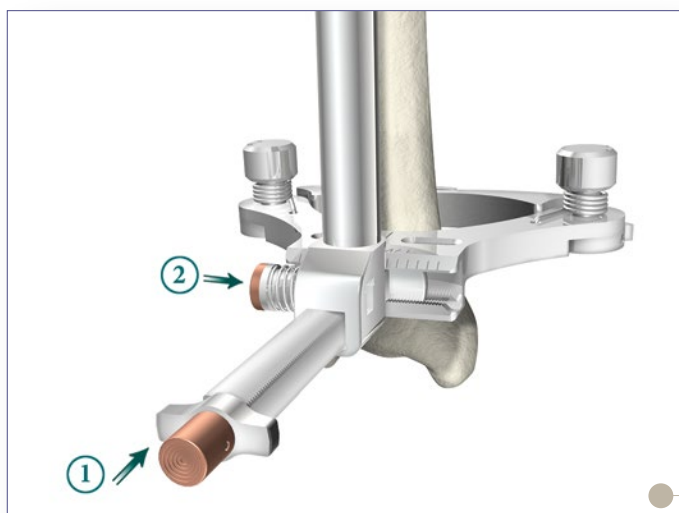


Figure 4

Varus-Valgus Alignment

- ▶ Once the proximal portion of the assembly is fixed, varus-valgus alignment can be attained by adjusting the distal assembly to the proper medial/lateral position. The position should be in the center of the talus, not the center of the ankle. The center of the talus usually resides 5 to 10mm medial to the mid-point between the medial and lateral malleoli.
- ▶ Medial/lateral offset can be adjusted by pushing the bronze button on the anterior portion of the distal assembly ①. Once alignment is achieved, the bronze button is released and the assembly is fixed in place.
- ▶ The proper tibial resection should be 0 degrees in the coronal plane of the tibia.

Flexion-Extension Alignment

- ▶ Once rotational alignment is determined, the ankle clamp is placed just proximal to the ankle at the level of the maleolus. The distal assembly locking switch, located approximately halfway up the rod, is then locked. Adjustments to the flexion extension alignment can be made by depressing the button located on the inferior left hand side of the distal assembly ②.
- ▶ Flexion and extension alignment is proper when the long axis of the assembly parallels the weight-bearing axis of the tibia in both the coronal and sagittal planes. Usually, there is less space between the assembly and the tibia proximally than there is distally. Alignment can be verified using the universal alignment tower and universal alignment rod, which can be assembled to the anterior inferior hole on the tibial adjustment housing.
- ▶ The proper tibial resection should be 0 to 3 degrees of slope in the sagittal plane, depending on surgeon preference and the type of implant used.

Note: It is important that there is no anterior slope in the tibial resection.

Instrument Bar



6541-6-700

MIS Uncaptured Tibial Resection Guide-Right



6541-6-701

MIS Uncaptured Tibial Resection Guide-Left



6541-6-702

MIS Captured Tibial Resection Guide-Right



6541-6-703

MIS Captured Tibial Resection Guide-Left



6541-2-610

Tibial Alignment Distal Assembly EM



6541-2-609

Tibial Alignment Ankle Clamp EM



6541-2-429

Tibial Stylus



6541-2-807

Tibial Alignment Handle



0° slope 6541-2-704

3° slope 6541-2-705

Tibial Adjustment Housing



6541-6-611

MIS Proximal Rod EM

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Referencing the medial compartment

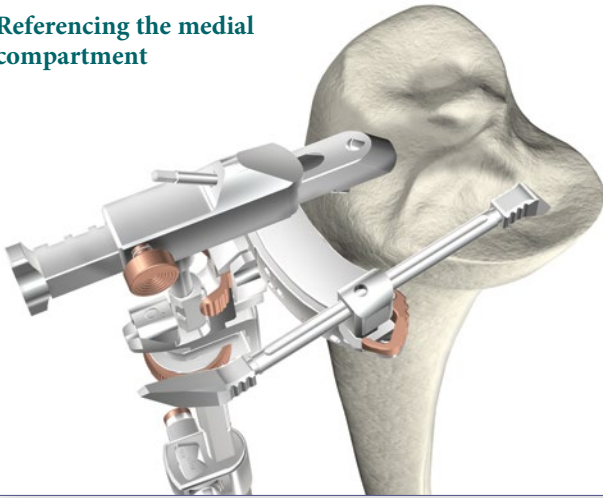


Figure 5

Referencing the lateral compartment

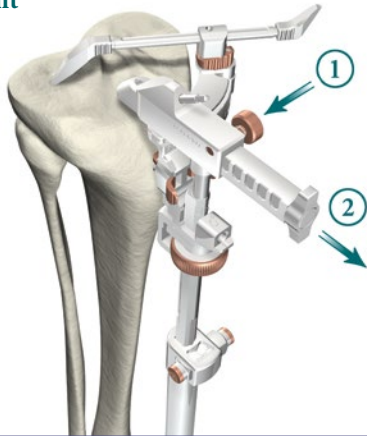


Figure 6

Establishing the Tibial Resection Level

- ▶ Once the tibial assembly is fixed in place, the tibial resection level must be established using the tibial stylus. This attaches to the tibial resection guide referencing either the lowest level of the affected compartment or the highest level of the unaffected compartment. Typically, in a varus knee, the lateral compartment is relatively unaffected so placing the “9” referencing end on the unaffected lateral side will insure at least a 9mm thickness for the tibial component. If the surgeon desires a thicker tibial component or if there is a defect on the medial side of the tibia necessitating resection, further resection can be made.
- ▶ To reference the lateral compartment, retraction of the proximal rod arm is performed by pressing the bronze button ①, and sliding the arm away from the knee ②.
- ▶ Alternatively, by placing the tibial resection guide with the “2” referencing end, the resection carried out would be 2mm lower than the point chosen. For a coarse gross adjustment, the bronze wheel can be pressed and the assembly slid up or down. For the final fine adjustment, the bronze wheel is turned to the right to move the assembly up the proximal rod or turned left to move the assembly down the proximal rod.

Tip: When using the stylus, it is important to make sure the construct is under tension. This will ensure adequate resection levels.

- ▶ Once the final position is chosen, two headless pins are drilled into the “0” neutral holes securing the level of the tibial resection guide. For additional stability, the oblique “X” pinhole can be utilized. Once the tibial resection guide is secured, all alignment instruments are removed.
- ▶ Alternatively, one can reference a 14mm resection off of the ACL footprint. This correlates with a 10mm resection level off of the lateral tibial plateau and an 8mm resection off of the medial tibial plateau.

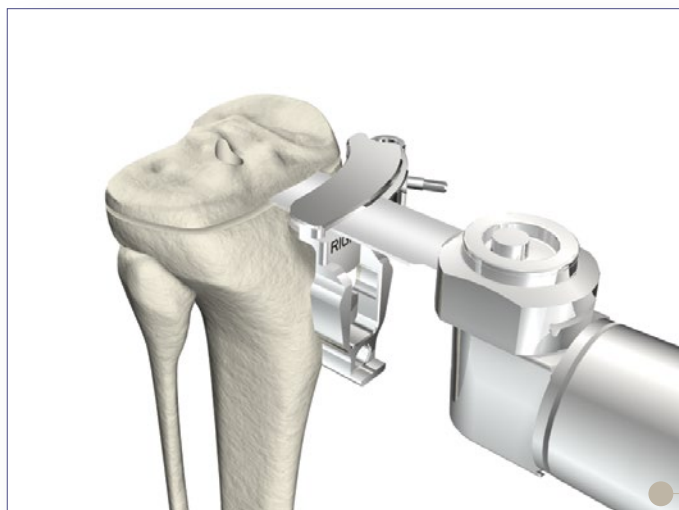


Figure 7

Final Tibial Resection

- Once all alignment instruments are removed leaving the tibial resection guide in place, the proximal tibia is osteotomized using either the right or left captured or uncaptured tibial resection guide. If the entire resection cannot be completed, the guide is removed and the resection completed free-hand. Care must always be taken not to injure the patella tendon, neurovascular structures, or collateral ligaments. Often some bone is left unresected near the posterior aspect of the lateral tibial plateau and the anterior aspect of the lateral tibial plateau near Gerdy's tubercle. Once the resection guide is removed, final resection can be completed either with an oscillating saw, bone file or a rongeur.

Note: Leaving the pins in place will allow for an additional 2mm or 4mm of tibial resection. The pins must be removed prior to cutting the tibial keel.

Instrument Bar



6541-2-610

Tibial Alignment Distal Assembly EM



6541-2-609

Tibial Alignment Ankle Clamp EM



6541-2-807

Tibial Alignment Handle



6541-2-429

Tibial Stylus



6541-6-611

MIS Proximal Rod EM



0° slope 6541-2-704

3° slope 6541-2-705

Tibial Adjustment Housing



6541-6-700

MIS Uncaptured Tibial Resection Guide-Right



6541-6-701

MIS Uncaptured Tibial Resection Guide-Left



6541-6-702

MIS Captured Tibial Resection Guide-Right



6541-6-703

MIS Captured Tibial Resection Guide-Left



6541-4-003

Headless Pins - 3"

Triathlon Knee System

MIS Surgical Protocol

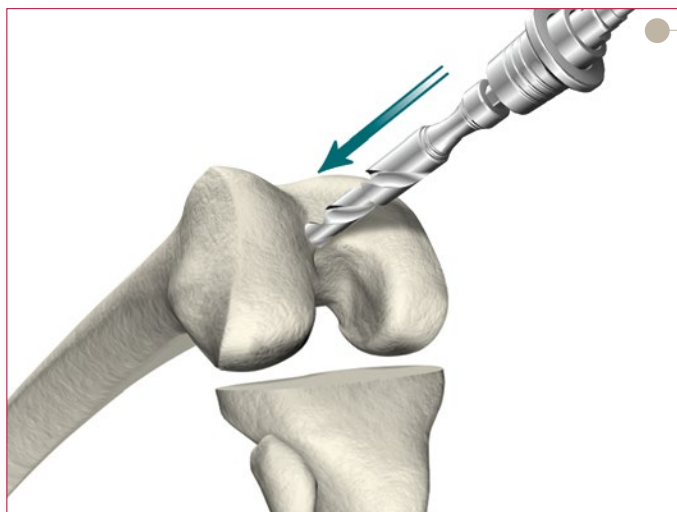


Figure 8

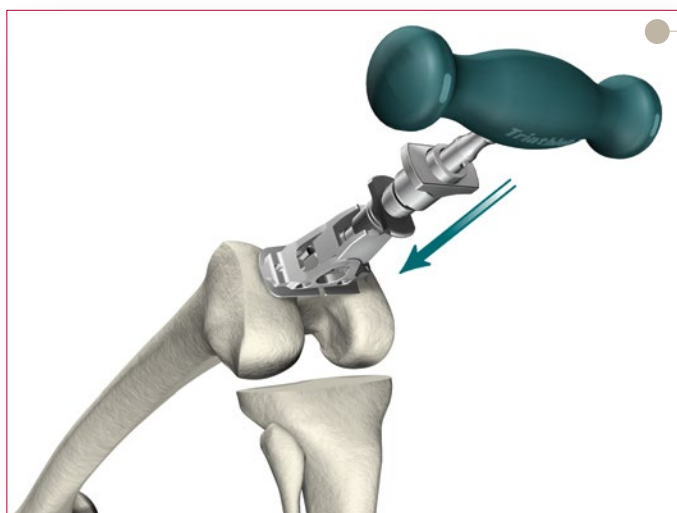


Figure 9

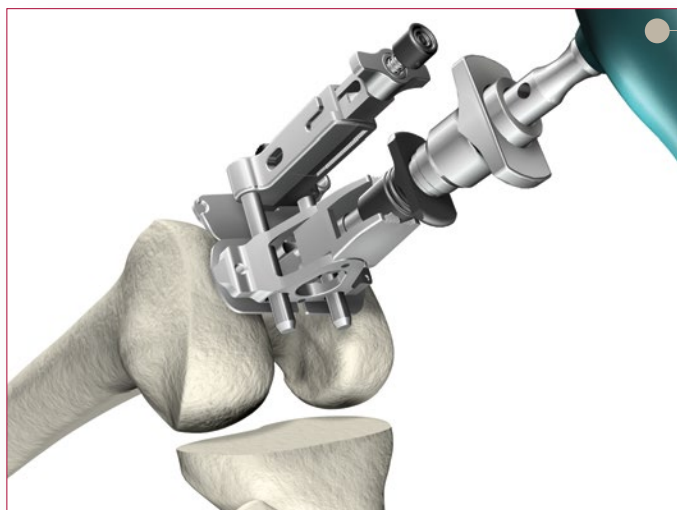


Figure 10

Femoral Preparation

Femoral Intramedullary Alignment

- ▶ The Universal Driver allows for attachment of all drills and pins. The Universal Driver may be attached directly to a reamer, drill, or a Jacob's Chuck.
- ▶ Locate the IM drill hole; it is approximately 1cm anterior to the femoral attachment of the posterior cruciate ligament and slightly medial to the midline of the distal femur.
- ▶ Identification of landmarks may be aided by removal of osteophytes from the margins of the intercondylar notch.
- ▶ Attach the $\frac{3}{8}$ " IM Drill to the Universal Driver and drill into the IM canal ensuring that the drill is parallel to the shaft of the femur. The first diameter will create a tight fit around the IM Rod. If further clearance is desired, continue to drill until the larger step diameter opens the hole. This will allow the IM canal to dictate the position of the rod avoiding the need to "toggle" the drill to create clearance.
- ▶ Attach the T-Handle Driver to the $\frac{5}{16}$ " IM Rod. Insert the IM Rod into the MIS Femoral Alignment Guide. The MIS Femoral Alignment Guide is designed for use on either the left or right knee and may be set between 2° and 9° of valgus (Note: this is typically set between 5° and 7°). Set the instrument to the desired angle by pulling back on the black knob of the MIS Femoral Alignment Guide and placing it in the appropriate notch. Advance the rod, with attached guide, slowly up the IM canal until the desired depth is reached ensuring that the alignment guide is flush against the most prominent condyle.
- ▶ Snap the MIS Distal Resection Guide onto the MIS Adjustment Block and insert the posts of the MIS Adjustment Block into the two holes in the MIS Femoral Alignment Guide.
- ▶ Place the MIS Femoral Alignment Guide in contact with the more prominent distal femoral condyle and align the guide in neutral I/E rotation. The guide face is angled at 3° and has a tick mark to reference Whiteside's Line to set I/E rotation, if desired.
- ▶ Insert $\frac{1}{8}$ " headless pins into the converging pinholes on the MIS Femoral Alignment Guide to aid in stabilization.

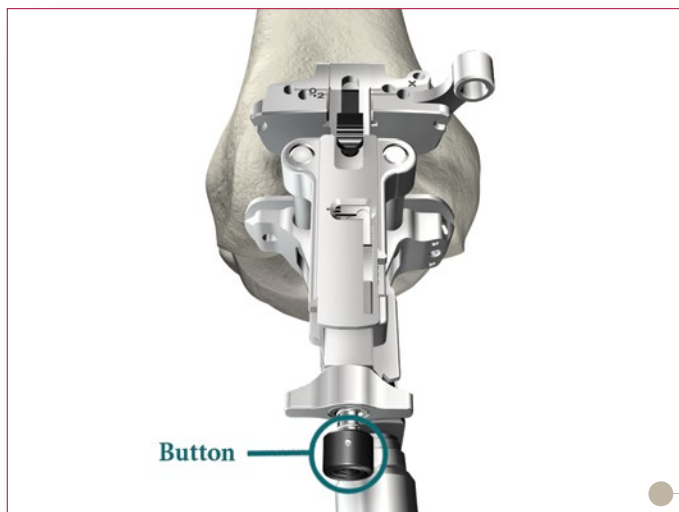


Figure 11

- ▶ Position the leg in 45°-60° of flexion.
- ▶ The MIS Adjustment Block allows for a 2mm through 12mm resection level.
- ▶ Press the black button on the end of the MIS Adjustment Block and push/pull the carrier to set the resection to the desired level.

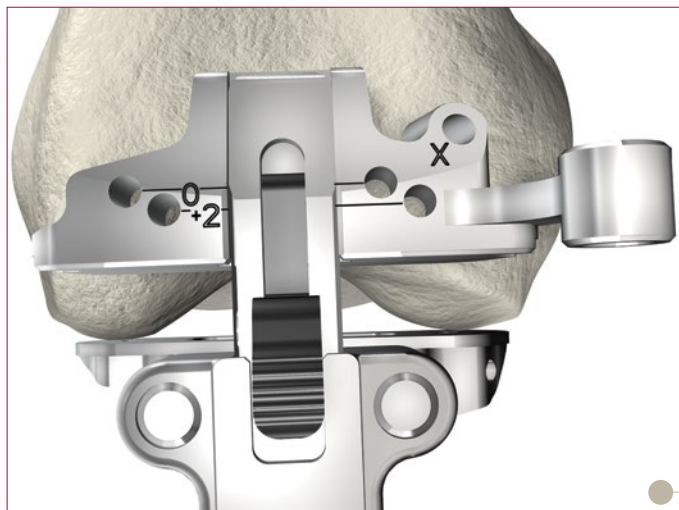


Figure 12

- ▶ The Triathlon MIS Knee System Instruments allow for a clear view of the bone that is being resected to ensure the appropriate level is set.
- ▶ Slide the Adjustment Block Assembly posteriorly within the Femoral Alignment Guide until the Distal Resection Guide contacts the anterior surface of the femur.

Instrument Bar

6541-4-801

Universal Driver



6541-4-538

3/8" IM Drill



6541-4-800

T-Handle Driver



6541-4-516

5/16" IM Rod



6541-5-629

MIS Femoral Alignment Guide



6541-5-721

MIS Distal Resection Guide - Left



6541-5-722

MIS Distal Resection Guide - Right



6541-5-601

MIS Femoral Adjustment Block



6541-4-003

Headless Pins - 3"



Triathlon Knee System

MIS Surgical Protocol



Figure 13

Optional Check

- ▶ Prior to pinning the Distal Resection Guide to the femur, an optional external alignment check may be performed. Attach the Femoral EM Alignment Tower to the MIS Femoral Adjustment Block and insert a Universal Alignment Rod into the handle.
- ▶ Alignment is correct when the rod intersects the center of the femoral head and roughly parallels the axis of the femur in the lateral view.
- ▶ Once satisfactory alignment is achieved, remove the Femoral EM Alignment Tower and the Universal Alignment Rod.

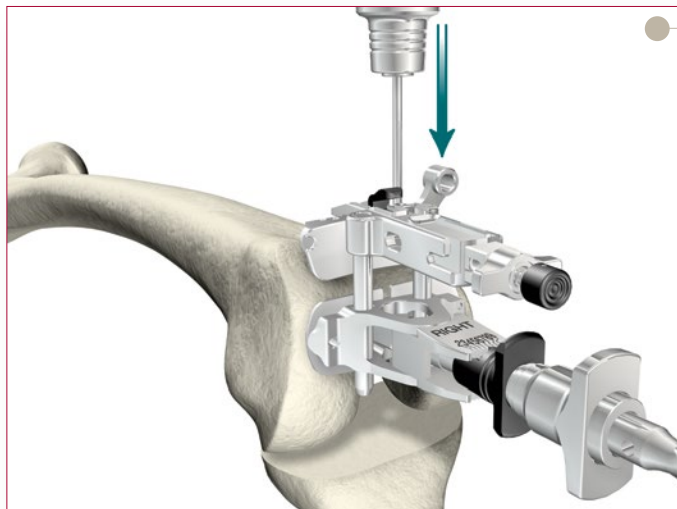


Figure 14

- ▶ Pin the Distal Resection Guide to the anterior femur using Headless Pins. Insert the pins into the Headless Pin Driver (which is inserted into the Universal Driver) and drill through the set of holes marked "0" on the Distal Resection Guide. The pins are automatically released from the driver as it is pulled back.

Note: Ensure that 1/2" of the pin is protruding from all guides after insertion. This will aid in pin removal.

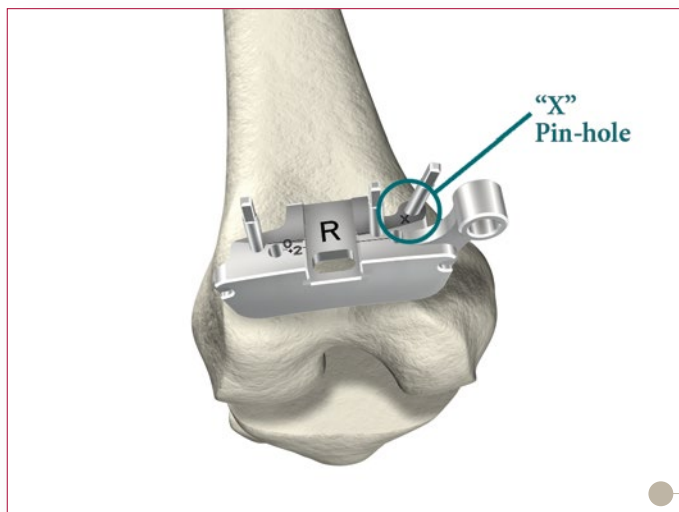


Figure 15

- ▶ Pinning through the “X” pin hole will aid in further securing the guide.
- ▶ After the Distal Resection Guide is pinned in place, remove headless pins from the Femoral Alignment Guide and remove the IM rod. The Femoral Alignment Guide and the Adjustment Block may be removed by pressing the black button on top of the Adjustment Block.

Instrument Bar



6541-7-808
MIS Femoral EM Alignment Tower



6541-5-601
MIS Femoral Adjustment Block



6541-4-602
Universal Alignment Rod



6541-5-721
MIS Distal Resection Guide - Left



6541-5-722
MIS Distal Resection Guide - Right



6541-4-801
Universal Driver



6541-4-809
Headless Pin Driver



6541-5-629
MIS Femoral Alignment Guide

Triathlon Knee System

MIS Surgical Protocol

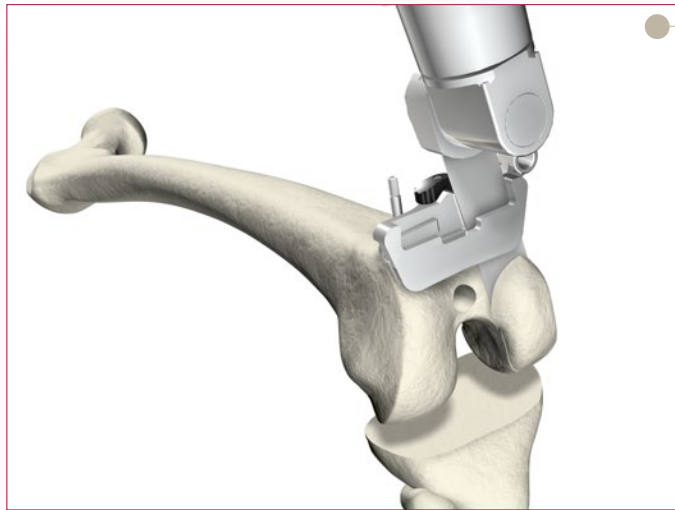


Figure 16

Distal Femoral Resection

- ▶ The distal resection level may be altered by repositioning the Distal Resection Guide in the 2 holes. This will remove an additional 2mm of bone.
- ▶ Once the final resection level is determined, the distal femoral resection is made. An optional Modular Capture can be attached to the Distal Resection Guide.
- ▶ The Triathlon MIS Knee System Instruments are designed to provide control of the saw blade during bone resections. When using captures or cutting through slots, a .050" (1.25mm) thick blade is used.

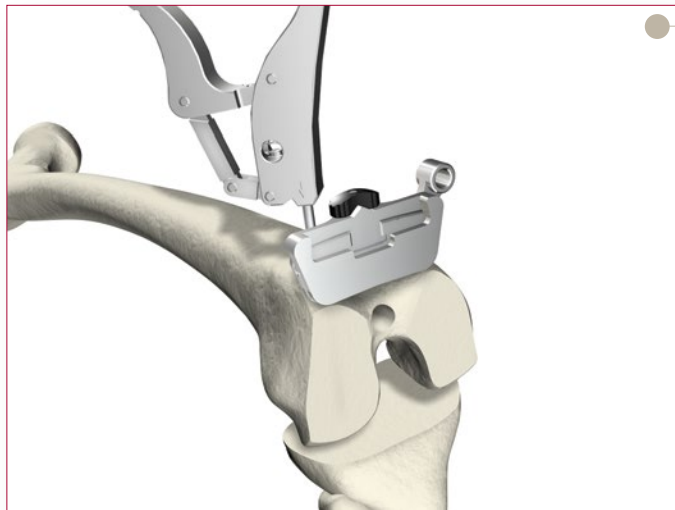


Figure 17

- ▶ Remove the modular capture and check the resection for flatness.
- ▶ Remove the Headless Pins in the Distal Resection Guide by placing the Headless Pin Extractor over the pin and place it flush on the Guide. Squeeze the handle approximately three times, ensuring that after each squeeze, the Headless Pin Extractor is placed flushed with the Distal Resection Guide. This will allow the tongue on the Headless Pin Extractor to back out the pin.

Note: If the "X" pin hole is used, the pin must be removed prior to repositioning or removing the Distal Resection Guide.

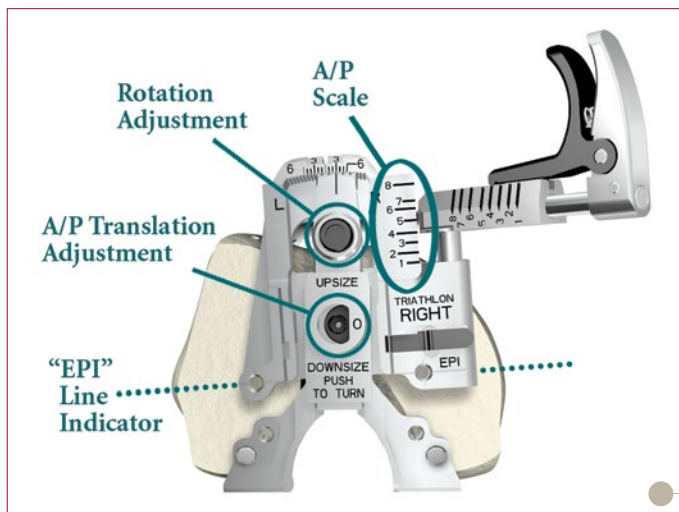


Figure 18

Femoral A/P Sizing

- ▶ Pre-assemble the MIS Femoral Sizer Body (Left or Right) onto the MIS Femoral Sizer Adjustment Housing
- ▶ Place the MIS Femoral Sizer Assembly onto the resected distal femur, sliding the feet of the Sizer under the posterior condyles.
- ▶ External rotation (0-6° Left or Right) is set by depressing the black button on the top of the Femoral A/P Sizer and rotating mediolateral. For mechanical alignment set rotation in order to cut parallel to the epicondylar axis.
- ▶ Assemble the MIS Femoral Stylus to the MIS Femoral Sizer and extend the stylus over the lateral flange to rest on the anterior cortex of the femur at the desired run-out point of the anterior resection.

Note: The MIS Femoral Stylus uses two sizing references. First, read the A/P scale by viewing the position of the indicator lip of the femoral stylus against the A/P scale on the medial side of the A/P sizer. Second, adjust the superior/inferior position of the stylus to match the first A/P scale reading. Check to verify the two sizing references match. If the A/P scale reading then changes, reset the S/I stylus position to the newly indicated reading. Repeat steps until the two readings converge.

Instrument Bar

6541-5-721

MIS Distal Resection Guide - Left



6541-5-722

MIS Distal Resection Guide - Right



6541-5-723

MIS Modular Distal Capture



6541-4-003

Headless Pins - 3"



6541-4-804

Headless Pin Extractor



6541-5-500

MIS AP Sizer Adjustment Housing



6541-5-508

MIS AP Sizer Body - Left



6541-5-509

MIS AP Sizer Body - Right



6541-5-510

MIS Femoral Stylus



Triathlon Knee System

MIS Surgical Protocol

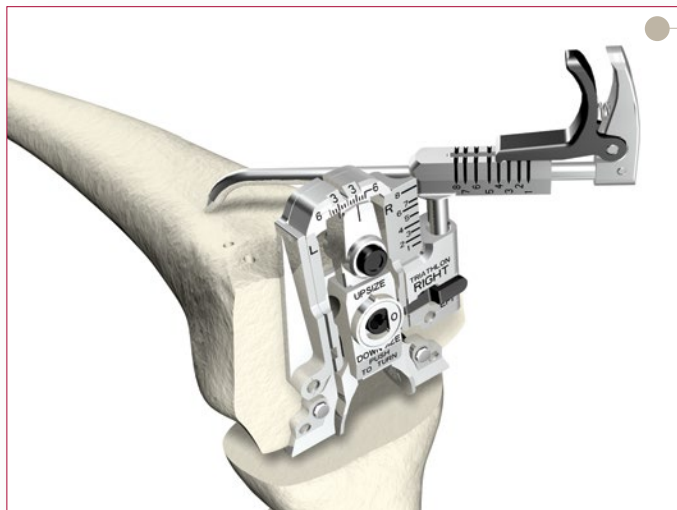


Figure 19

- It is important that the Femoral Stylus point rest on bone and not soft tissue or an osteophyte. In an MIS procedure this may be hard to see.

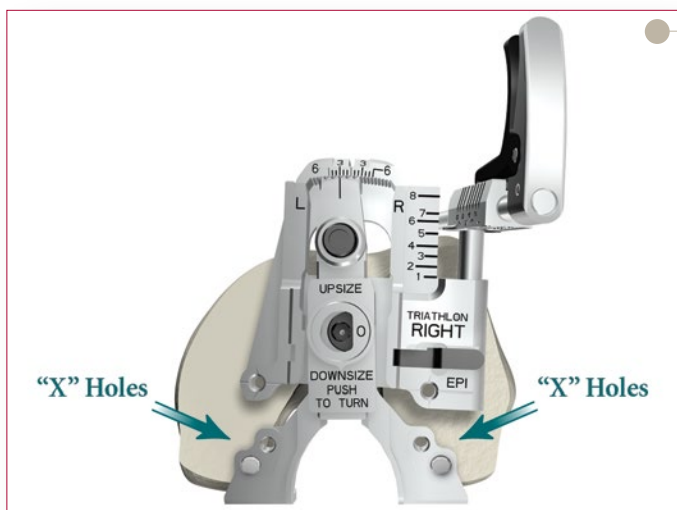


Figure 20

- The Femoral Sizer can be pinned in place through the holes marked "X" with Headed Pins.

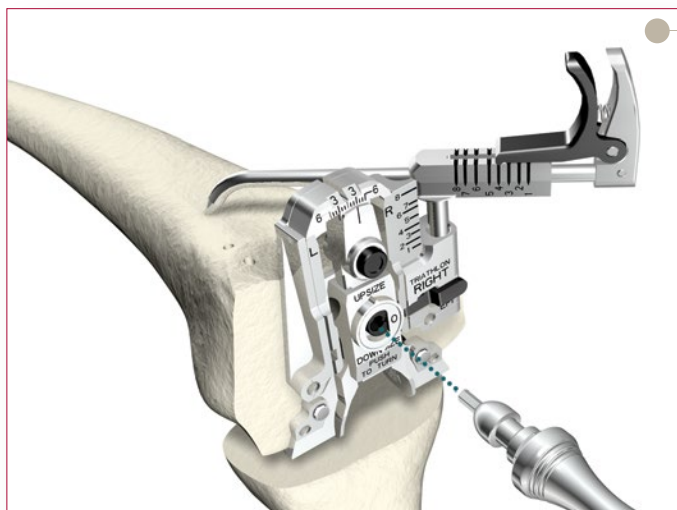


Figure 21

Note: If the femoral stylus reads in-between sizes, an optional A/P translation feature may be used. Simply use the Hex Driver found on the reverse side of the Femoral Flexion Impactor to translate the A/P Femoral Sizer up or down 1.5mm. (Triathlon Primary prosthesis grows in the anterior direction approximately 3mm between sizes.)

- A tertiary check to verify external rotation is to assess A/P axis with the Blade Runner through the slot in the top of the guide.

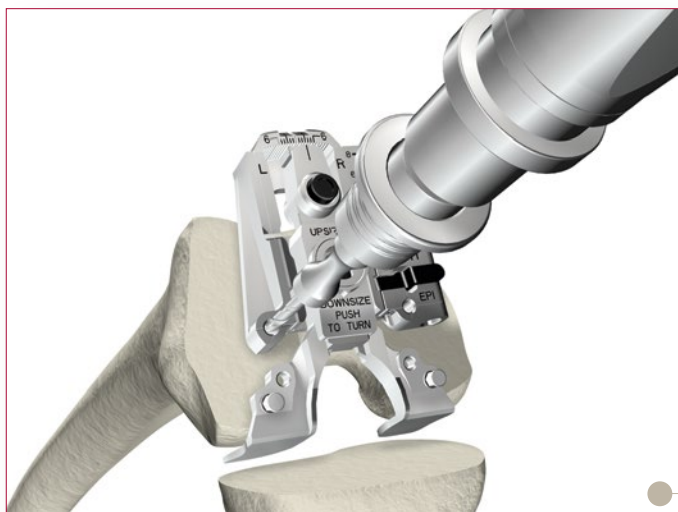


Figure 22

- ▶ Once size confirmation is complete, attach the 1/8" Peg Drill to the Universal Driver and create fixation pin holes (for the 4:1 Cutting Block) through the holes on the face of the Femoral Sizer marked "EPI".
- ▶ Remove the Headed Pins using the Headed Pin Extractor.

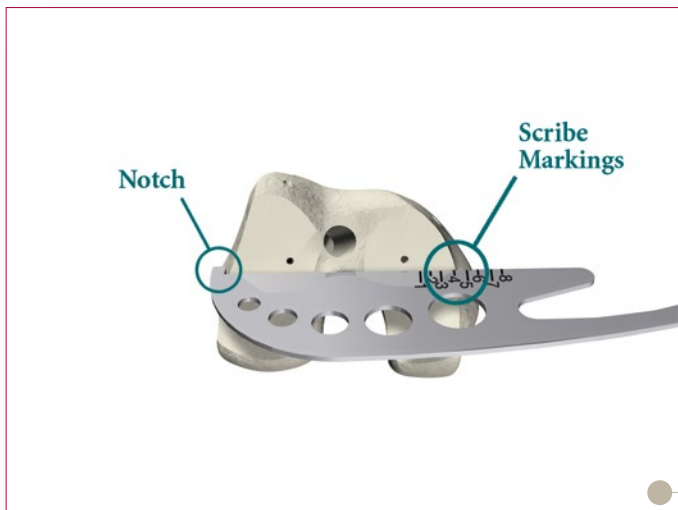


Figure 23

- ▶ As a secondary sizing check, use the Blade Runner to check the M/L width of the Femoral component.
- ▶ Line the Blade Runner up with the epicondyles and determine the component size. Ensure that the notch of the Blade Runner is on the outside of the femur. The Blade Runner scribe marks correspond to component sizes 1 through 8. If the M/L width is between sizes, the 4:1 Cutting Block can be downsized if needed.

Note: For accurate size determination, ensure that all osteophytes on the medial and lateral condyles are removed prior to sizing.

Instrument Bar



6541-5-500
MIS AP Sizer Adjustment Housing



6541-5-508
MIS AP Sizer Body - Left



6541-5-509
MIS AP Sizer Body - Right



6541-5-510
MIS Femoral Stylus



6541-4-400
Bladerunner



6541-4-802
1/8" Hex Drive



6541-4-518
1/8" Peg Drill



6541-4-801
Universal Driver



6541-4-300
Headed Pin Impactor Extractor



6541-4-515
Headed Nails - 1 1/2"

Triathlon Knee System

MIS Surgical Protocol

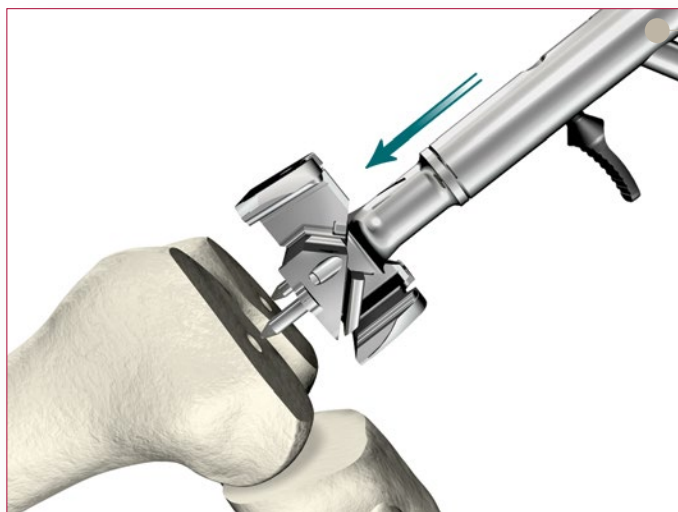


Figure 24

Femoral Anterior, Posterior, and Chamfer Resections

- ▶ Locate the fixation pegs of the appropriate size 4:1 Cutting Block into the pin holes created on the distal femur.
- ▶ Attach the 4:1 Impactor Extractor to the 4:1 Cutting Block.

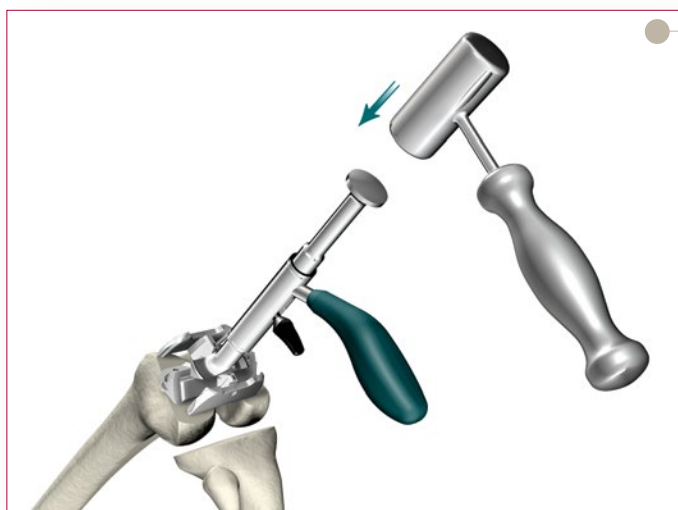


Figure 25

- ▶ Impact the 4:1 Impactor Extractor until the 4:1 Cutting Block is seated flush onto the distal femur.

Note: Do not impact the 4:1 Cutting Block without the 4:1 Impactor Extractor in place.



Figure 26

- ▶ Remove the 4:1 Impactor Extractor from the 4:1 Cutting Block.

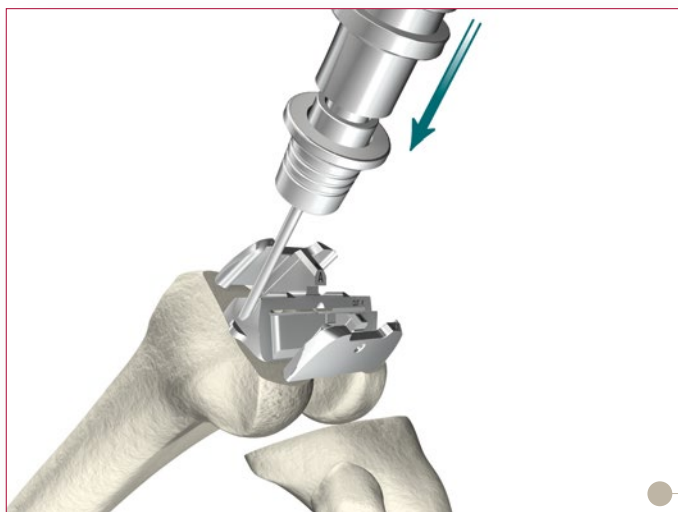


Figure 27

- ▶ Headless Pins should be utilized for further stabilization.

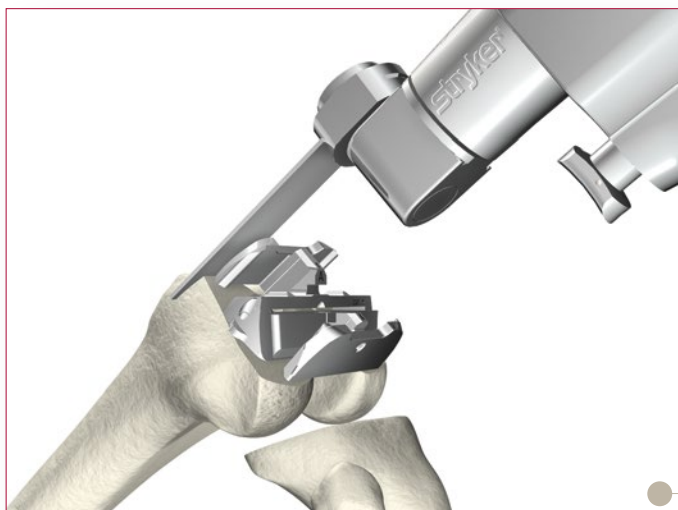


Figure 28

- ▶ The use of a .050" (1.25mm) thick saw blade is recommended.
- ▶ Complete the remaining four femoral bone resections.
- ▶ The order of bone resections is not critical; however, a recommended sequence for improved stability of the 4:1 Cutting Block is:
- ▶ 1. Anterior cortex. The 4:1 Modular Capture may be added for the anterior resection.

Note: Check run-out of the anterior cut. If there is a pronounced positive step, consider selecting the next smaller size 4:1 Cutting Block if the anterior femur preparation is not adequate.

Instrument Bar

- # 1 - 6541-5-701
- # 2 - 6541-5-702
- # 3 - 6541-5-703
- # 4 - 6541-5-704
- # 5 - 6541-5-705
- # 6 - 6541-5-706
- # 7 - 6541-5-707
- # 8 - 6541-5-708

MIS 4:1 Cutting Block



6541-7-806

MIS 4:1 Impactor / Extractor



6541-5-806

MIS 4:1 Modular Capture



6541-4-003

Headless Pins - 3"



6541-4-801

Universal Driver



Triathlon Knee System

MIS Surgical Protocol

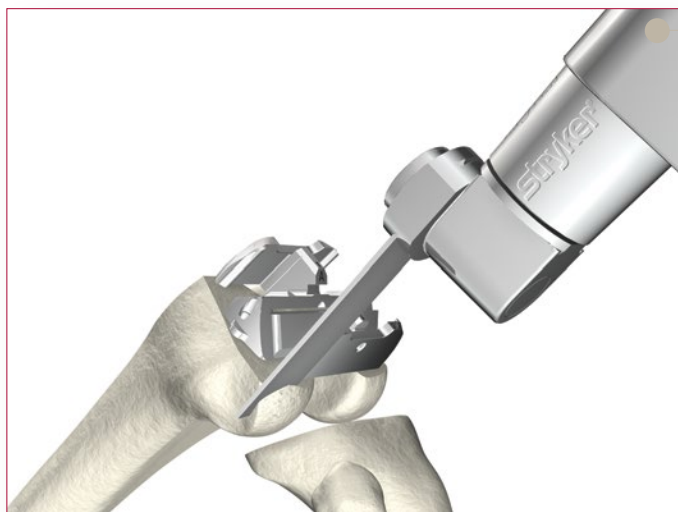


Figure 29

- ▶ 2. Posterior condyles. The 4:1 Modular Capture may be added for the posterior resection.

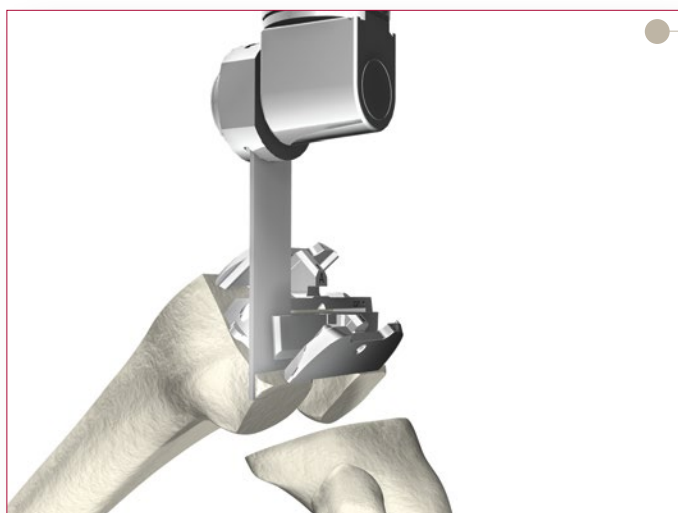


Figure 30

- ▶ 3. Posterior chamfer through the permanent capture on the 4:1 Cutting Block.

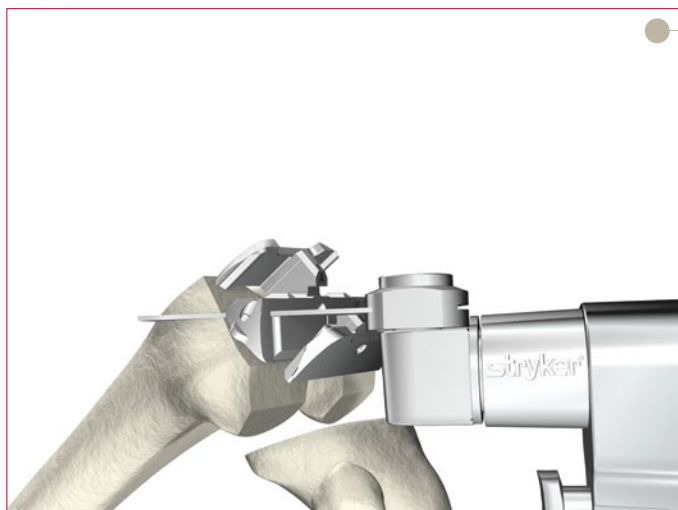


Figure 31

- ▶ 4. Anterior chamfer through the permanent capture on the 4:1 Cutting Block.
- ▶ When performing the anterior chamfer resection, the saw blade should pass over the midline of the femur so that the center portion of bone is resected.
- ▶ Care should be taken not to bias the blade while resecting the bone, as it will cause excess friction between the blade and the 4:1 Cutting Block.

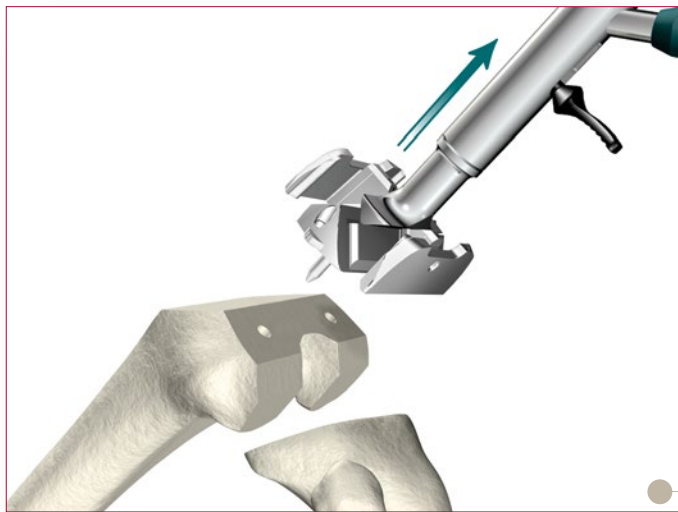


Figure 32

- ▶ Remove the 4:1 Cutting Block.
- ▶ If preparing for a Cruciate Retaining Knee, where no PS box preparation is needed, proceed to Femoral Trial Assessment on page 36.

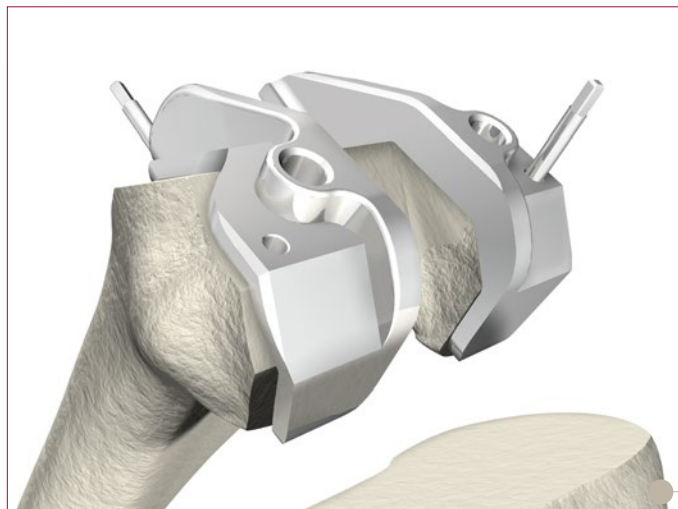


Figure 35

PS Box Preparation

- ▶ If the surgeon has chosen a PS knee, then the intercondylar notch must be resected. In order to accomplish this, the PS box guide is placed onto the distal femur using the femoral trial Impactor/Extractor. Since the width of the distal portion of the guide represents the exact width of the implant, it should be centered and placed in the desired position flush with the distal resection. The box guide is then pinned to the femur using the headless pins through one of the holes on the anterior surface, as well as one of the holes on the distal surface of the cutting guide.

Instrument Bar

- # 1 - 6541-5-701
- # 2 - 6541-5-702
- # 3 - 6541-5-703
- # 4 - 6541-5-704
- # 5 - 6541-5-705
- # 6 - 6541-5-706
- # 7 - 6541-5-707
- # 8 - 6541-5-708

MIS 4:1 Cutting Block



6541-7-806

MIS 4:1 Impactor / Extractor



6541-5-806

MIS 4:1 Modular Capture



- # 1 - 6541-5-711
- # 2 - 6541-5-712
- # 3 - 6541-5-713
- # 4 - 6541-5-714
- # 5 - 6541-5-715
- # 6 - 6541-5-716
- # 7 - 6541-5-717
- # 8 - 6541-5-718

MIS PS Box Cutting Guide



6541-7-807

MIS Femoral Trial Extractor



3.5" - 7650-1038

2.5" - 7650-1039

Headless 1/8" Pin



6541-4-804

Headless Pin Extractor

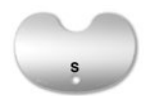


Size S - 6541-7-812

Size M - 6541-7-813

Size L - 6541-7-814

Tibial Protector Plate



Triathlon Knee System

MIS Surgical Protocol

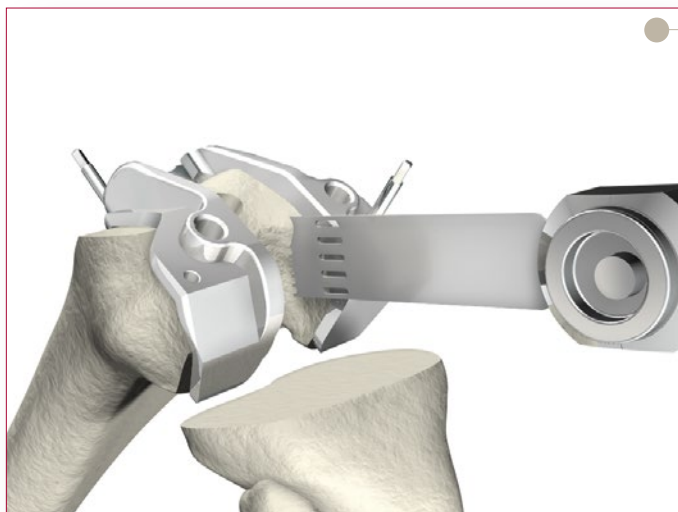


Figure 36

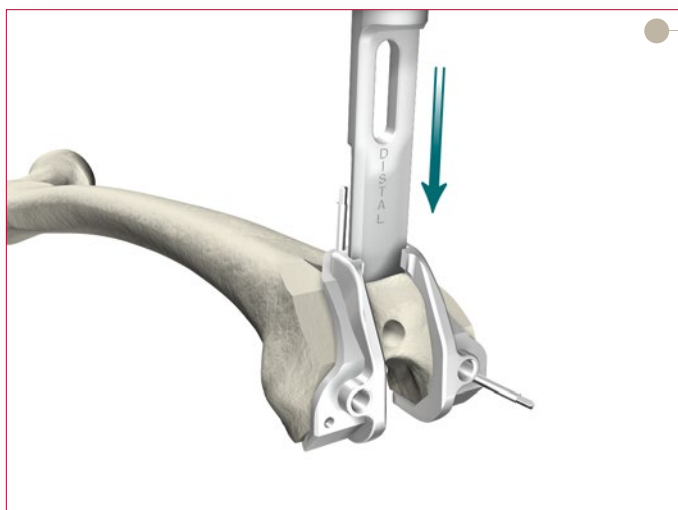


Figure 37

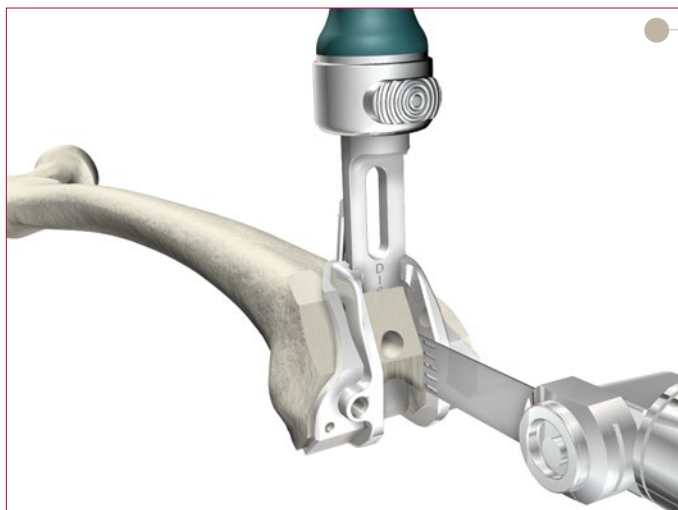
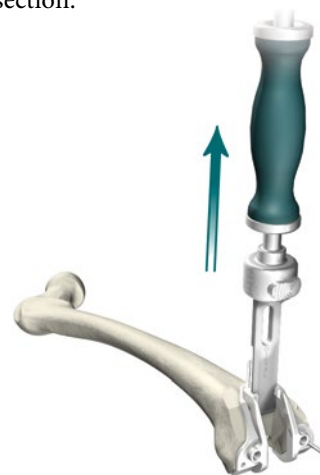


Figure 38

- ▶ The intercondylar region can be resected in two ways. The surgeon may elect to resect the proximal portion of the intracondylar notch using the box chisel. First, using the inside surfaces of the box opening as guides, score the posterior cortex on both sides of the posterior portion of the intercondylar notch as well as the anterior using an oscillating saw. The chisel is assembled to the impaction handle and then placed within the slot of the box cutting guide with the surface reading “distal” towards the distal portion of the femur. The chisel is then impacted until fully seated and left in place. The rest of the box is then resected using either a reciprocating saw or oscillating saw taking care to make a flush resection. The box chisel is then removed either by hand or by using a slap hammer.
- ▶ Alternatively, a small reciprocating saw can be used to resect the medial and lateral borders of the intercondylar notch to the proximal portion of the cutting guide. A thin, narrow oscillating saw is then used through the proximal slot to resect the distal portion of the femur. The cuts are connected and the intracondylar bone is removed. Care should be taken, especially when using saw medially and laterally, to avoid injury to the tibial plateau and either a retractor should be used to lift the distal femur from below or the tibial plateau can be protected with the optional tibial plateau protector.
- ▶ The 1/8-inch pins are then removed and the PS box cutting guide is then removed.

Note: In order to prepare a proper rectangular box, care should be taken not to bias the saw blade. Preparation of a proper rectangular shape will facilitate an accurate implantation of the PS component with minimal bone resection.



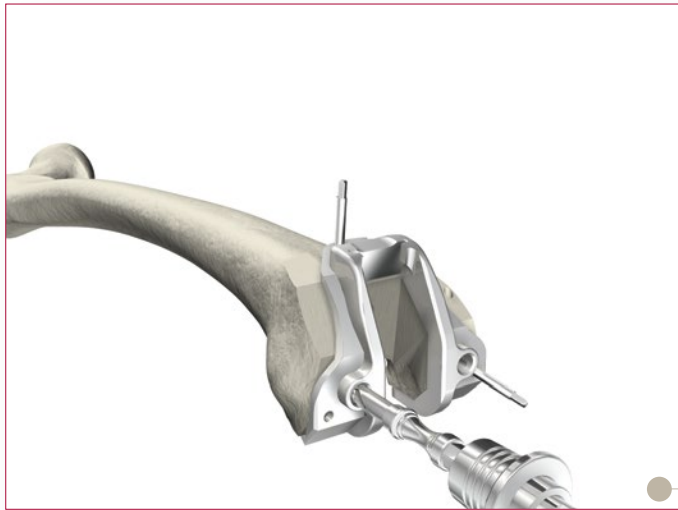


Figure 39

- If Modular Femoral Distal Fixation Pegs are to be used, the location holes may be prepared at this stage using the 1/4" Peg Drill attached to the Universal Driver. (The peg holes may also be prepared later through the PS Femoral Trial.)

Note: For the cementless PS femoral component, peg preparation is required because fixation pegs are a standard feature.

Instrument Bar

- # 1 - 6541-5-711
- # 2 - 6541-5-712
- # 3 - 6541-5-713
- # 4 - 6541-5-714
- # 5 - 6541-5-715
- # 6 - 6541-5-716
- # 7 - 6541-5-717
- # 8 - 6541-5-718



MIS PS Box Cutting Guide

6541-4-709

Box Chisel



6541-4-810

Impaction Handle



6541-4-803

Slap Hammer



6541-4-525

1/4" Peg Drill



6541-4-801

Universal Driver



6541-7-807

MIS Femoral Trial Extractor



3.5" - 7650-1038

2.5" - 7650-1039

Headless 1/8" Pin



6541-4-804

Headless Pin Extractor



Size S - 6541-7-812

Size M - 6541-7-813

Size L - 6541-7-814

Tibial Protector Plate



Triathlon Knee System

MIS Surgical Protocol

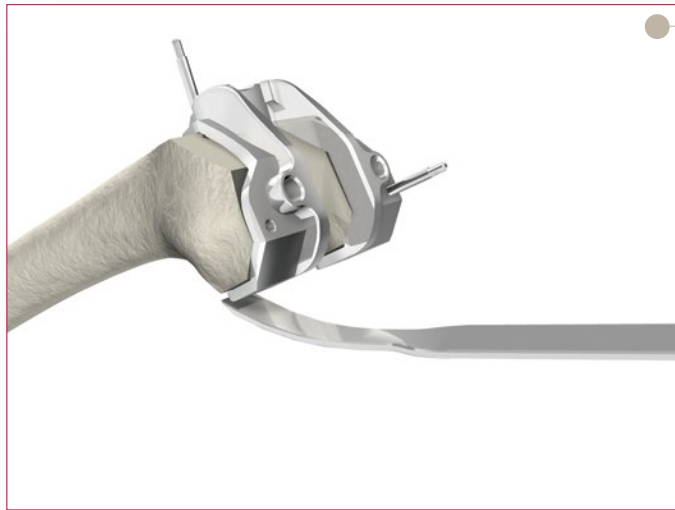


Figure 40

- ▶ To avoid impingement of the femoral component and improve flexion, any curved osteotome or the optional Posterior Osteophyte Removal Tool may be used to remove the osteophytes beyond the posterior aspect of the PS Box Cutting Guide.
- ▶ Remove the Headless Pins with the Headless Pin Extractor.
- ▶ Remove the PS Box Cutting Guide using the MIS Femoral Trial Impactor/Extractor.



Figure 41

Femoral Trial Assessment

(The remaining portion of the technique should be used for a Posterior Stabilized or Cruciate Retaining knee)

- ▶ Assemble the appropriate size and side (Left/Right) PS or CR Femoral Trial to the MIS Femoral Trial Extractor.
- ▶ Impact the PS or CR Femoral Trial onto the prepared distal femur. Use the Femoral Trial Extractor to ensure the Femoral Trial is aligned with the distal plane.
- ▶ Remove the MIS Femoral Trial Extractor and assess the fit of the PS or CR Femoral Trial. Care must be taken to ensure that all of the osteophytes beyond the end of the posterior femoral condyles are removed.
 - Cruciate Retaining Knee: Attach the 1/4" Peg Drill to the Universal Driver and create the Femoral Distal Fixation Peg holes. The Posterior Osteophyte Removal Tool or any curved osteotome may be used to remove posterior osteophytes.
 - Posterior Stabilized Knee: If the Modular Femoral Distal Fixation Pegs are to be used, and the holes were not prepared through the PS Box Cutting Guide, use the 1/4" Peg Drill, attached to the Universal Driver to prepare the distal femoral peg holes.
- ▶ For all cementless knees the Distal Fixation Peg holes must be prepared. For added stability, only insert the drill three quarters of the way down.

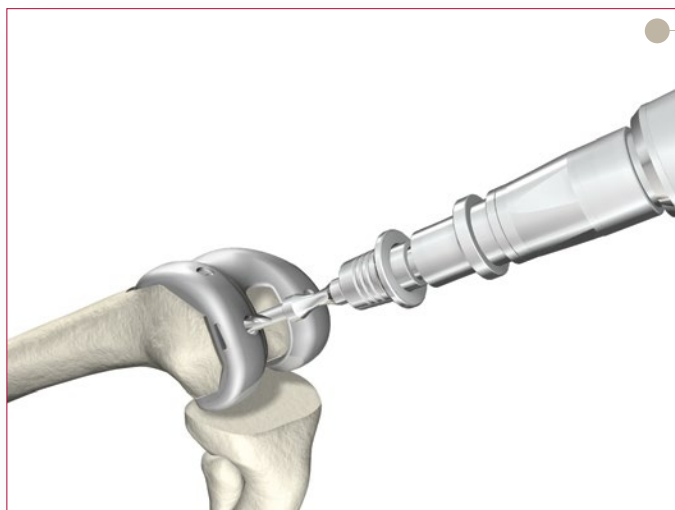


Figure 42



Figure 43

- Attach the Femoral Trial Extractor to the PS or CR Femoral Trial and remove from the femur (unless proceeding to balance gaps and trial assessment).

Instrument Bar

6541-4-525

1/4" Peg Drill



6541-4-801

Universal Driver



1 - **6541-5-711**

2 - **6541-5-712**

3 - **6541-5-713**

4 - **6541-5-714**

5 - **6541-5-715**

6 - **6541-5-716**

7 - **6541-5-717**

8 - **6541-5-718**

MIS PS Box Cutting Guide



6541-4-710

Posterior Osteophyte Removal Tool



6541-4-810

Impaction Handle



6541-4-300

Headed Pin Impactor Extractor



6541-7-807

MIS Femoral Trial Extractor



See Catalog

PS Femoral Trial



See Catalog

CR Femoral Trial



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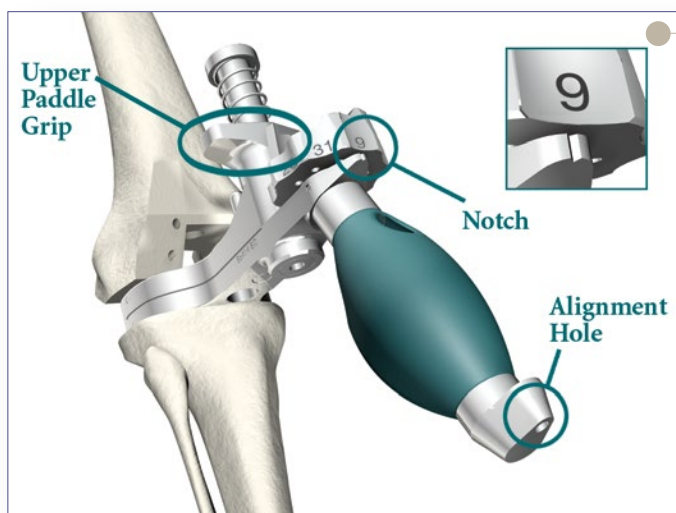


Figure 44

Gap Balancing and Tibial Sizing

Flexion and Extension Gaps

- ▶ The flexion gap (90°) and extension gap (0°) may be assessed using the optional Adjustable Spacer Block. The numbers on the thumbwheel correspond to the implant insert thickness. Align the notch with the appropriate thickness.
- ▶ A Universal Alignment Rod can be placed through the hole on the Adjustable Spacer Block to check alignment.
- ▶ Gap assessment may also be performed during trial assessment.

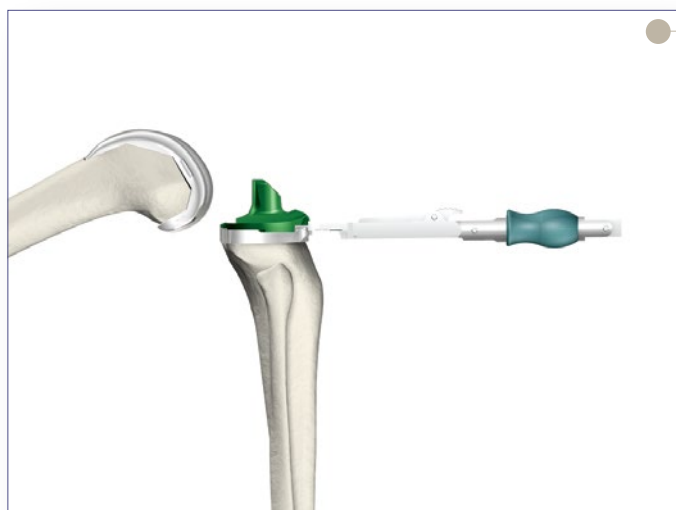


Figure 45

Tibial Component Sizing

- ▶ Place the PS or CR Femoral Trial on the femur using the MIS Femoral Trial Extractor.
- ▶ Assemble a Universal Tibial Template, Alignment Handle and a PS or CR Tibial Insert Trial.
- ▶ Place the assembly on the resected tibial plateau and choose the size that best addresses rotation and coverage.
- ▶ Perform a trial reduction to assess overall component fit, ligament stability and joint range of motion.

Note: Ensure all excess debris (bone and soft tissue) is cleared from the Universal Tibial Template. Do not impact the Tibial Insert Trial.

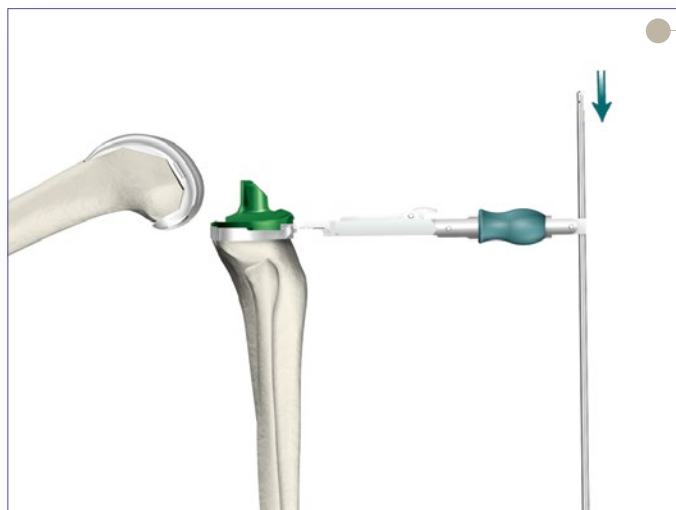


Figure 46

Tibial Trial Assessment

- ▶ For an optional tibial alignment check, insert a Universal Alignment Rod into the most anterior hole of the Alignment Handle and check alignment.

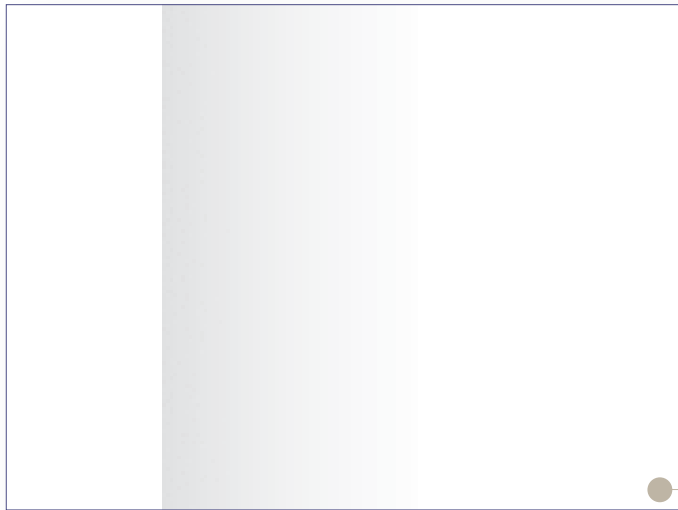


Figure 47

- ▶ Extend the knee to full extension and assess overall alignment in the A/P and M/L planes.
- ▶ A 1/8" drill can be inserted into the lateral hole on the anterior surface of the Femoral Trial to aid in alignment.

Instrument Bar



6541-4-610
Adjustable Spacer Block



6541-4-602
Universal Alignment Rods



See Catalog
PS Femoral Trial



See Catalog
CR Femoral Trial

- # 1 - 6541-2-601
- # 2 - 6541-2-602
- # 3 - 6541-2-603
- # 4 - 6541-2-604
- # 5 - 6541-2-605
- # 6 - 6541-2-606
- # 7 - 6541-2-607
- # 8 - 6541-2-608



Universal Tibial Template



6541-2-807
Tibial Alignment Handle



6541-7-807
MIS Femoral Trial Extractor



3170-0000
1/8" Drill



See Catalog
PS Tibial Insert Trial
PS Modified Hollow Tibial Insert Trial



See Catalog
CR Tibial Insert Trial
CR Modified Hollow Tibial Insert Trial



See Catalog
CS Tibial Insert Trial

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MIS Surgical Protocol

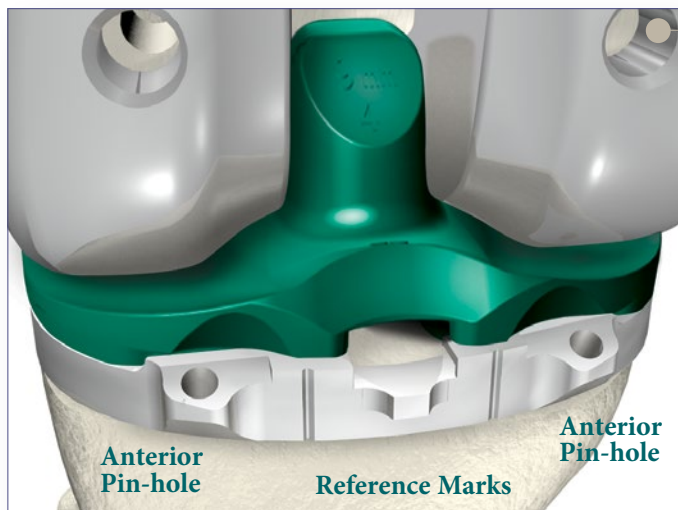


Figure 48

► There are two options to secure the Universal Tibial Template to the tibia:

- Option 1: Once satisfactory alignment and tibial component orientation are achieved, remove the PS or CR Femoral Trial. Place two Headless Pins in the anterior holes to secure the Universal Tibial Template. Disassemble the Tibial Trial Insert from the Universal Tibial Template.
- Option 2: Once satisfactory alignment and tibial component orientation are achieved, mark the anterior tibial cortex in line with the reference marks on the anterior border of the Universal Tibial Template. Remove the PS or CR Femoral Trial and disassemble the Tibial Trial Insert from the Universal Tibial Template. Reposition the Universal Tibial Template (if required) by aligning the anterior reference marks on the template with the reference marks on the anterior cortex. The template is positioned flush to the anterior tibial cortex. Place two Headless Pins in the anterior holes to secure the Universal Tibial Template.

Note: The Tibial Insert Trial can be removed by hand or with the aid of a retractor.

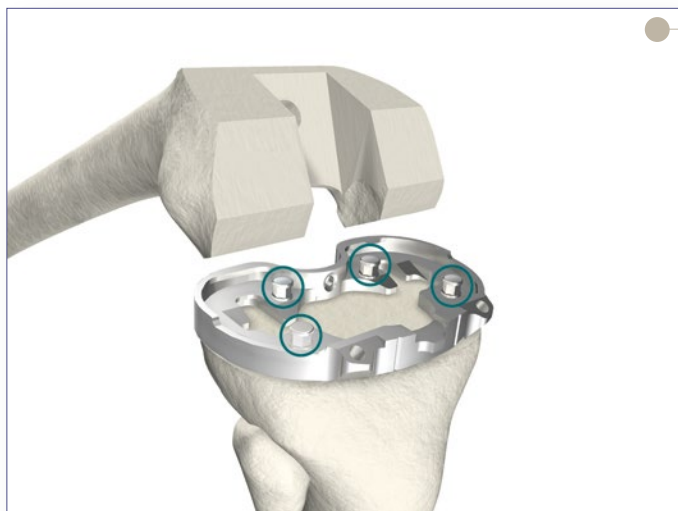


Figure 49

- If additional fixation is required after either Option 1 or 2 are used, place up to four optional Headed Nails in the holes on the Universal Tibial Template into the tibial plateau.
- Trials may be reassembled to the pinned template for any subsequent trial reductions.

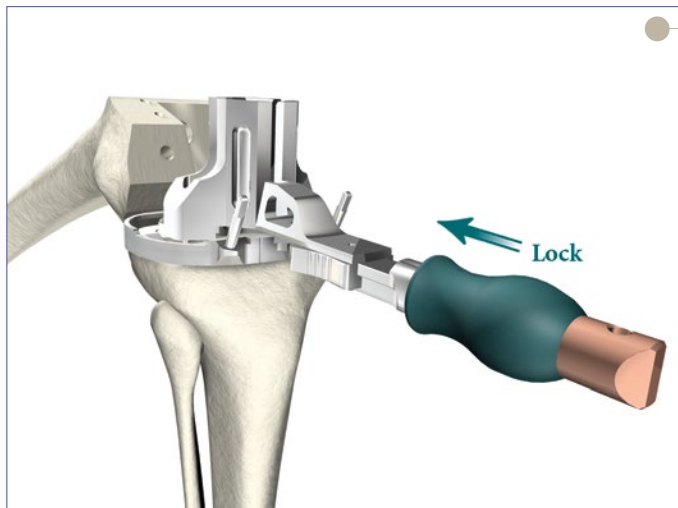


Figure 50

Tibial Keel Punching

- Making sure the punch guide is in the unlocked position, assemble the Keel Punch Guide to the Universal Tibial Template. Place the posterior tabs at a slight angle into the two locating slots toward the posterior portion of the Universal Tibial Template. Allow the Keel Punch Guide to sit flat on the Universal Tibial Template and push forward on the handle to lock the Keel Punch Guide to the Universal Tibial Template.

Instrument Bar

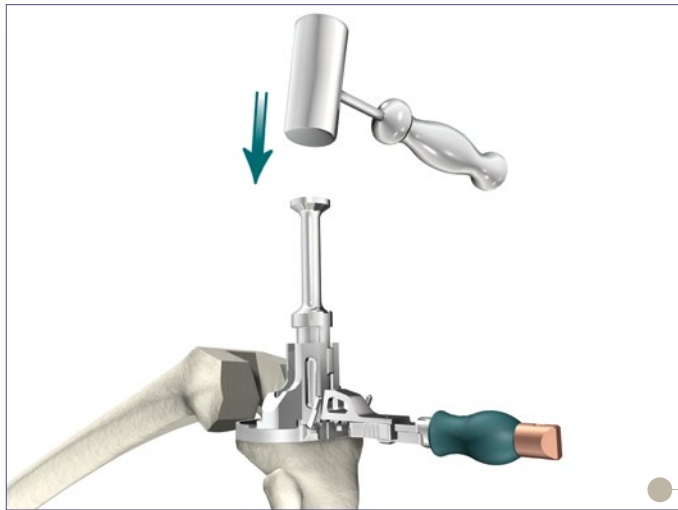


Figure 51

- Place the appropriate Keel Punch into the Keel Punch Guide. Use a mallet to impact the punch. Advance the Keel Punch until it seats fully in the Keel Punch Guide.

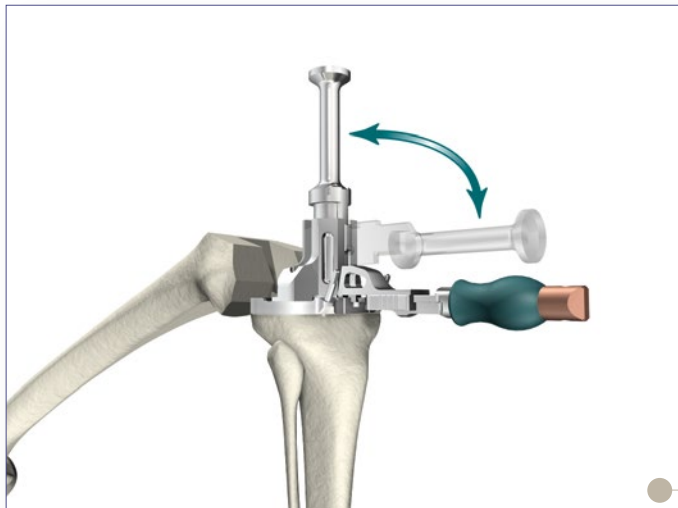


Figure 52

- To extract the Keel Punch, lift up on the Keel Punch handle and pull the handle down to cantilever the Keel Punch out of the tibia.
- Unlock and remove the Keel Punch Guide.
- Remove all pins and remove the Universal Tibial Template (unless using again for patella trial assessment).

6541-4-003

Headless Pins - 3"



6541-4-809

Headless Pin Driver



6541-4-801

Universal Driver



6541-4-515

Headed Nails - 1 1/2"



6541-4-575

Headed Nails - 3/4"



Size 1, 2, 3 - **6541-2-713**

Size 4, 5, 6, 7, 8 - **6541-2-748**

Keel Punch Guide



Sizes 1, 2, 3 - **6541-2-013**

Sizes 4, 5, 6 - **6541-2-046**

Sizes 7, 8 - **6541-2-078**

Keel Punch



6541-4-804

Headless Pin Extractor



Triathlon Knee System

MIS Surgical Protocol



Figure 53

Patella Preparation

- ▶ Determine the total thickness of the patella by using the Patella Caliper.
- ▶ There are two options for the patella preparation: bone removing method and bone remaining method.
- ▶ The patella should be prepared with the leg in full extension and the patellar bone turned 90 degrees to the joint line.

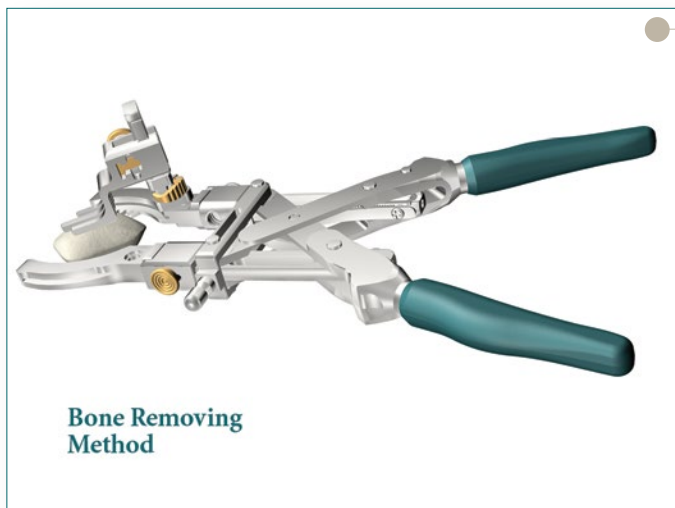


Figure 54

Option 1– Bone Removing Method

- ▶ Assemble Patella Clamp Jaws to the Patella Clamp. Attach the Patella Stylus to the circular hole on the topside of either jaw by squeezing the gold tab
- ▶ The Patella Stylus may swivel in this position to sweep over the highest portion of the articular surface.
- ▶ The Patella Stylus references the articular surface of the patella in order to determine how much bone to remove.
- ▶ Set the desired resection amount on the Patella Stylus by pressing the gold button and moving the body of the Patella Stylus to the resection line.
- ▶ The resection level should be set to match the thickness of the appropriate size patella implant.
- ▶ Ensure that the Patella Stylus is touching the desired point(s) on the articular surface of the patella.
- ▶ Close the Patella Clamp around the patella.
- ▶ Make resection through one of the resection slots.

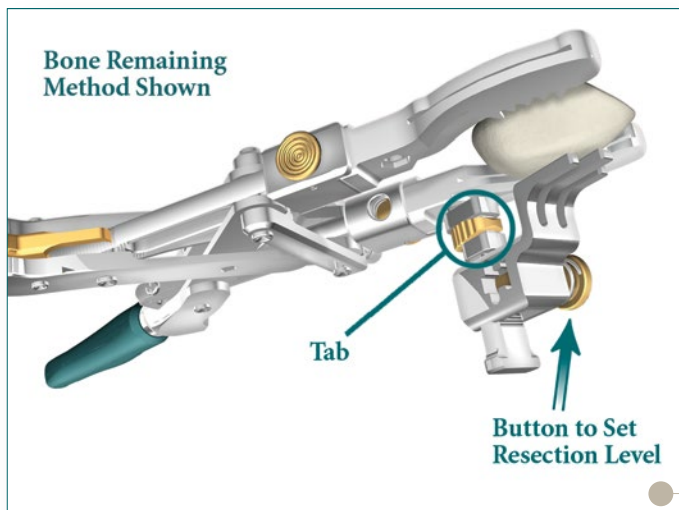


Figure 55

Option 2- Bone Remaining Method

- ▶ Assemble Patella Clamp Jaws to the Patella Clamp. Attach the Patella Stylus to the hex shaped hole on the bottom side of either jaw by squeezing the gold tab.
- ▶ The Patella Stylus locks in a position that will ensure the referencing prongs are pointed toward the clamping area.
- ▶ The Patella Stylus determines how much bone will remain.

Note: The resection level should not be set at a value less than 12mm.

- ▶ Close the Patella Clamp around the patella.

Instrument Bar

6541-3-602
Patella Caliper



6541-3-702
Small Patella Clamp Jaw Right



6541-3-703
Small Patella Clamp Jaw Left



6541-3-704
Large Patella Clamp Jaw Right



6541-3-705
Large Patella Clamp Jaw Left



6541-3-600
Patella Clamp



6541-3-601
Patella Stylus



Triathlon Knee System

MIS Surgical Protocol

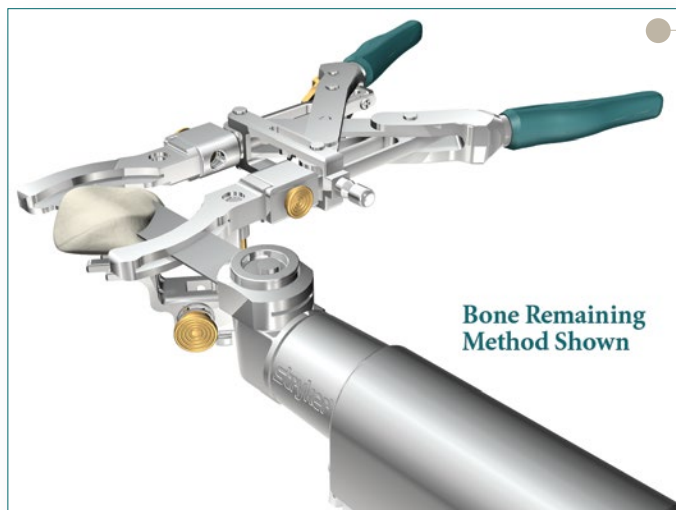


Figure 56

- ▶ Ensure that the Patella Stylus is touching the desired point(s) on the patella tendon.
- ▶ Make resection through one of the resection slots.

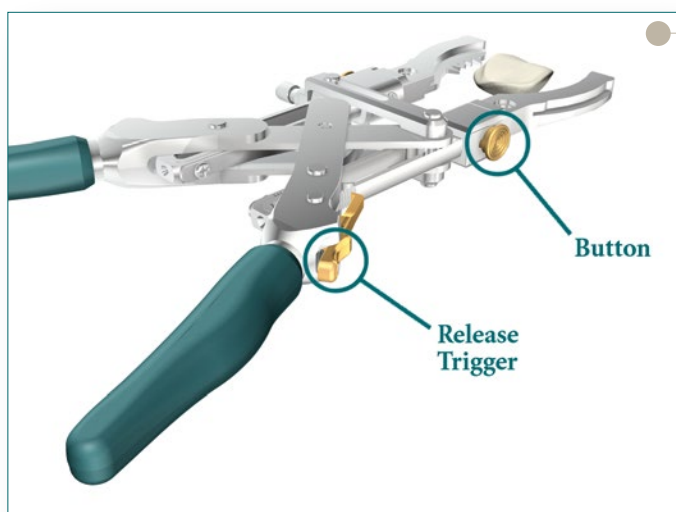


Figure 57

(The following applies to both bone removing method and bone remaining method)

- ▶ Disengage the Patella Clamp by pressing the gold release trigger.
- ▶ Press the gold buttons on the Patella Clamp to remove the Patella Clamp Jaws.

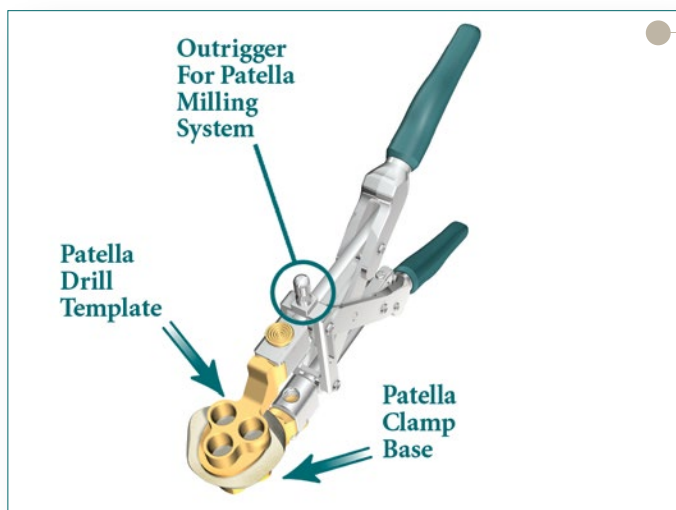


Figure 58

- ▶ Assess the size of the patella with a Patella Drill Template (Symmetric and Asymmetric are available).
- ▶ Assemble the desired Patella Drill Template and the Patella Clamp Base to the Patella Clamp. These are inserted in the same fashion as the Patella Clamp Jaws. Assemble the Patella Clamp Base first with the Patella Clamp's outrigger pointing superiorly.
- ▶ Close the Patella Clamp around the patella so that the Patella Clamp Base is touching the patella tendon and the base of the Patella Drill Template is touching the resected surface of the patella. Align the Patella Drill Template so that it is horizontal with respect to the poles of the patella.

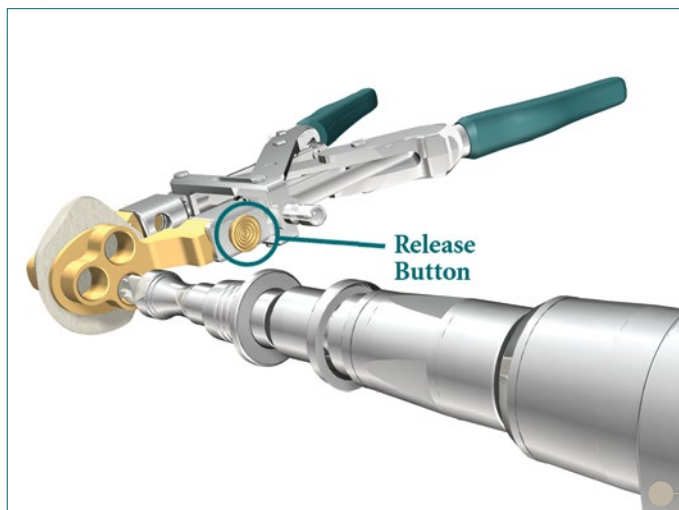


Figure 59

- ▶ Attach the All Poly Patella Drill with Stop or the Metal Back Patella Drill (for cementless patella) to the Universal Driver and drill through each fixation peg hole of the Patella Drill Template.
- ▶ Disengage the Patella Clamp by pressing the release trigger. Press the gold buttons on the Patella Clamp to remove the Patella Template.



Figure 60

Patella Trial Assessment

- ▶ Remove any residual cartilage and wash away all debris. Place correct size Patella Trial (Symmetric or Asymmetric) onto the prepared patella.
- ▶ Replace all Trials and assess patellar tracking by taking the knee through a ROM.

Instrument Bar

29mm - 6541-3-617

32mm - 6541-3-618

35mm - 6541-3-619

38mm - 6541-3-620

40mm - 6541-3-621

Asymmetric Patella Drill Template



27mm - 6541-3-627

29mm - 6541-3-629

31mm - 6541-3-631

33mm - 6541-3-633

36mm - 6541-3-636

39mm - 6541-3-639

Symmetric Patella Drill Template



6541-3-801

Patella Clamp Base



6541-3-600

Patella Clamp



6541-3-524

All-Poly Patella Drill w/Stop



6541-4-801

Universal Driver



See Catalog

Symmetric Patella Trial



See Catalog

Asymmetric Patella Trial



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Figure 61

Component Implantation

- ▶ If modular Femoral Distal Fixation Pegs are desired in a PS knee, they are added at this point.
- ▶ Insert the tip of the 1/8" Hex Drive into the Modular Femoral Distal Fixation Peg and turn the Slip Torque Handle to tighten.

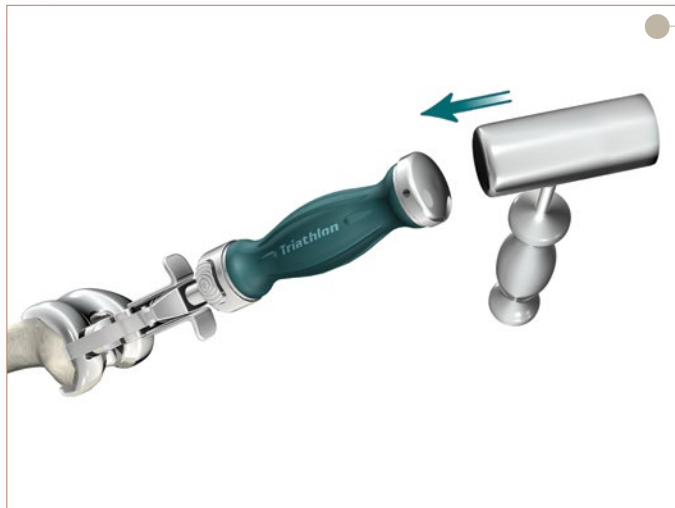


Figure 62

PS or CR Femoral Component – Cemented/ Cementless

- ▶ Attach the Femoral Impactor Extractor to the Impaction Handle and attach to the appropriate size and side Femoral Component. Place the Femoral Component on the femur and impact it until fully seated.
 - Posterior Stabilized Knee: If Modular Femoral Distal Fixation Pegs are to be used, assemble the pegs to the Femoral Component using the 1/8" Hex Drive and the Slip Torque Handle prior to implantation.



Figure 63

- ▶ The Femoral Flexion Impactor or the Femoral Impactor can be attached to the Impaction Handle to further seat the Femoral Component onto the prepared femur.

Note: Clear all excess bone cement (does not apply to cementless component).



Figure 64

Component Implantation Primary Tibial Baseplate – Cemented/Cementless

- ▶ Connect the Tibial Baseplate Impactor Extractor to the Impaction Handle. To connect this assembly to the Primary Tibial Baseplate, ensure the locking lever is in the unlocked position and place the head onto the Primary Tibial Baseplate straddling the central island. Ensure the Tibial Baseplate Impactor Extractor sits flat on the top surface of the Primary Tibial Baseplate and move the locking lever to the locked position.
- ▶ Introduce the Tibial Baseplate onto the prepared tibia and impact until the baseplate is seated. Unlock the locking lever and remove the assembly from the Tibial Baseplate.

Instrument Bar

6541-4-700

Bone File



6541-4-807

Femoral Impactor Extractor



6541-4-810

Impaction Handle



See Catalog

PS Femoral Component - Cemented/
Cementless



See Catalog

CR Femoral Component - Cemented/
Cementless



6541-4-802

1/8" Hex Drive



6541-4-825

Slip Torque Handle



See Catalog

Modular Femoral Distal Fixation Pegs



6541-4-811

Femoral Impactor



6541-4-805

Baseplate Impactor/Extractor



See Catalog

Primary Tibial Baseplate - Cemented/Cementless
Primary MIS Tibial Baseplate



6541-7-811

MIS Femoral Flexion Impactor



Triathlon Knee System

MIS Surgical Protocol

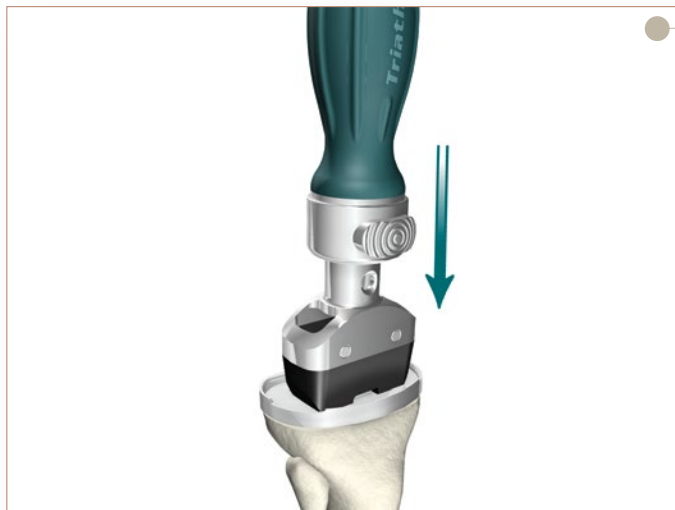


Figure 65

- ▶ To further seat the baseplate, attach the Tibial Baseplate Impactor to the Impaction Handle.
- ▶ Place the Tibial Baseplate Impactor on to the Primary Tibial Baseplate straddling the central island.
- ▶ Ensure the Tibial Baseplate Impactor sits flat on the top surface of the Primary Tibial Baseplate.
- ▶ Impact until the Primary Tibial Baseplate is fully seated.

Note: Clear all excess bone cement (does not apply to cementless component) while maintaining position of the Tibial Baseplate.

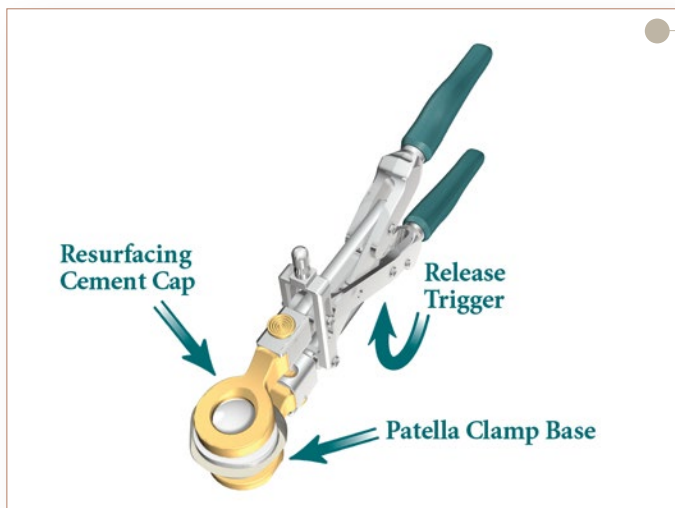


Figure 66

Symmetric or Asymmetric Patella

- ▶ Assemble the Patella Cement Cap and the Patella Clamp Base to the Patella Clamp.

Note: In cementless scenarios, if necessary, use a curette to mark the locations of the fixation peg holes.

- ▶ Place the Patella Component onto the prepared patella, making certain the fixation peg holes are aligned to the corresponding holes.
- ▶ Seat the Patella Component onto the prepared patella by clamping the Patella Cement Cap, Patella Clamp Base and Patella Clamp assembly.

Note: Ensure that the silicon O-ring of the Patella Cement Cap is placed on the articulating surface of the Patella Component.

Note: Leave the assembly clamped to the patella while excess cement is cleared and polymerization is complete.

- ▶ Disengage the Patella Clamp by pressing the gold release trigger.



Figure 67

Tibial Insert

- ▶ Prior to assembly of the Tibial Insert, the Tibial Trial Insert may be placed on the Tibial Baseplate to once more assess joint stability and range of motion.
- ▶ To assemble the Tibial Insert, distract the joint and angle the insert posteriorly into the Tibial Baseplate. The posterior lip of the Tibial Insert must fit beneath the lip on the posterior Tibial Baseplate wall.
- ▶ Attach the Tibial Insert Impactor to the Impaction Handle and impact to snap the Insert in place anteriorly. The Tibial Insert is fully seated once the locking wire locks under the barbs on the anterior/interior surface of the Tibial Baseplate wall.



Figure 68

- Assess the joint in flexion and extension.

Closure

- Close soft tissues in the normal layered fashion.

Instrument Bar

6541-4-810

Impaction Handle



6541-4-812

Tibial Baseplate Impactor



6541-4-813

Tibial Insert Impactor



See Catalog

CR Tibial Insert



See Catalog

PS Tibial Insert



6541-3-800

Patella Cement Cap



6541-3-801

Patella Clamp Base



6541-3-600

Patella Clamp



See Catalog

Symmetric Patella



See Catalog

Asymmetric Patella

Asymmetric Metal-Backed Patella



Triathlon Knee System

MIS Surgical Protocol

Catalog #	Description	Quantity in Kit
MIS Miscellaneous Instruments Kit Contents		
3170-0000	1/8" Drill	1
6541-4-003	Headless pin- 3"	1
6541-4-300	Headed Pin Impactor Extractor	1
6541-4-400	Bladerunner	1
6541-4-515	Headed Nails- 1 1/2"	2
6541-4-516	5/16" IM Rod	1
6541-4-518	1/8" Peg Drill	1
6541-4-525	1/4" Peg Drill	1
6541-4-538	3/8" IM Drill	1
6541-4-575	Headed Nail- 3/4"	2
6541-4-602	Universal Alignment Rod	2
6541-4-610	Adjustable Spacer Block	1
6541-4-700	Bone File	1
6541-4-709	Box Chisel	1
6541-4-710	Posterior osteophyte removal tool	1
6541-4-800	T- Handle Driver	1
6541-4-801	Universal Driver	1
6541-4-802	1/8" Hex Drive	1
6541-4-803	Slap Hammer	1
6541-4-804	Headless Pin Extractor	1
6541-4-805	Baseplate Impactor Extractor	1
6541-4-806	Universal Alignment Handle	1
6541-4-807	Femoral Impactor Extractor	1
6541-4-809	Headless Pin Driver	1
6541-4-810	Impaction Handle	2
6541-4-811	Femoral Impactor	1
6541-4-812	Tibial Baseplate Impactor	1
6541-4-813	Tibial Insert Impactor	1
6541-4-825	Slip Torque handle	1
6541-8-004	Miscellaneous Instruments- Upper Tray	1
6541-8-104	Miscellaneous Instruments - Lower Tray	1
6541-9-000	Triathlon Case	1
		Total Quantity 36

Catalog #	Description	Quantity in Kit
Patella Preparation & Trialing Kit Contents		
5550-T-278	Symmetric Patella 27mm x 8mm	1
5550-T-298	Symmetric Patella 29mm x 8mm	1
5550-T-319	Symmetric Patella 31mm x 9mm	1
5550-T-339	Symmetric Patella 33mm x 9mm	1
5550-T-360	Symmetric Patella 36mm x 10mm	1
5550-T-391	Symmetric Patella 39mm x 11mm	1
5551-T-299	Asymmetric Patella 29mm (S/I) x 33mm (M/L) x 9mm	1
5551-T-320	Asymmetric Patella 32mm (S/I) x 36mm (M/L) x 10mm	1
5551-T-350	Asymmetric Patella 35mm (S/I) x 39mm (M/L) x 10mm	1
5551-T-381	Asymmetric Patella 38mm (S/I) x 42mm (M/L) x 11mm	1
5551-T-401	Asymmetric Patella 40mm (S/I) x 44mm (M/L) x 11mm	1
6541-3-524	All-Poly Patella Drill w/ Stop	1
6541-3-600	Patella Clamp	1
6541-3-601	Patella Stylus	1
6541-3-602	Patella Caliper	1
6541-3-617	Asymmetric Patella Drill Template-29mm	1
6541-3-618	Asymmetric Patella Drill Template- 32mm	1
6541-3-619	Asymmetric Patella Drill Template- 35mm	1
6541-3-620	Asymmetric Patella Drill Template- 38mm	1
6541-3-621	Asymmetric Patella Drill Template- 40mm	1
6541-3-627	Symmetric Patella Drill Template - 27mm	1
6541-3-629	Symmetric Patella Drill Template - 29mm	1
6541-3-631	Symmetric Patella Drill Template - 31mm	1
6541-3-633	Symmetric Patella Drill Template - 33mm	1
6541-3-636	Symmetric Patella Drill Template - 36mm	1
6541-3-639	Symmetric Patella Drill Template - 39mm	1
6541-3-702	Small Patella Clamp Jaw Right	1
6541-3-703	Small Patella Clamp Jaw Left	1
6541-3-704	Large Patella Clamp Jaw Right	1
6541-3-705	Large Patella Clamp Jaw Left	1
6541-3-800	Patella Cement Cap	1
6541-3-801	Patella Clamp Base	1
6541-8-005	Patella Preparation and Trialing -Upper Tray	1
6541-8-105	Patella Preparation and Trialing -Lower Tray	1
8050-5001L	Left Lateral Tibial Retractor	1
8050-5001R	Right Lateral Tibial Retractor	1
8050-5002	Anterior Femoral Retractor	1
6541-9-000	Triathlon Case	1
Total Quantity		38

Triathlon Knee System

MIS Surgical Protocol

Catalog #	Description	Quantity in Kit
MIS Size 3-6 Femoral & Tibial Preparation Kit Contents		
6541-2-013	Size 1-3 Keel Punch	1
6541-2-046	Size 4-6 Keel Punch	1
6541-2-429	Tibial Stylus	1
6541-2-603	#3 Universal Tibial Template	1
6541-2-604	#4 Universal Tibial Template	1
6541-2-605	#5 Universal Tibial Template	1
6541-2-606	#6 Universal Tibial Template	1
6541-2-609	Tibial Alignment Ankle Clamp EM	1
6541-2-610	Tibial Alignment Distal Assembly EM	1
6541-2-704	Tibial Adjustment Housing - 0 degree slope	1
6541-2-705	Tibial Adjustment Housing - 3 degree slope	1
6541-2-713	Size 1-3 Keel Punch Guide	1
6541-2-748	Size 4-8 Keel Punch Guide	1
6541-2-807	Tibial Alignment Handle	1
6541-5-500	MIS AP Sizer Adjustment Housing	1
6541-5-508	MIS AP Sizer Body - Left	1
6541-5-509	MIS AP Sizer Body - Right	1
6541-5-510	MIS Femoral Stylus	1
6541-5-601	MIS Femoral Adjustment Block	1
6541-5-610	MIS Femoral Navigation Stylus	1
6541-5-629	MIS Femoral Alignment Guide	1
6541-5-703	#3 MIS 4:1 Cutting Block	1
6541-5-704	#4 MIS 4:1 Cutting Block	1
6541-5-705	#5 MIS 4:1 Cutting Block	1
6541-5-706	#6 MIS 4:1 Cutting Block	1
6541-5-721	MIS Distal Resection Guide - Left	1
6541-5-722	MIS Distal Resection Guide - Right	1
6541-5-723	MIS Modular Distal Capture	1
6541-5-806	MIS 4:1 Modular Capture	2
6541-6-611	MIS Proximal Rod EM	1
6541-7-806	MIS 4:1 Impactor / Extractor	1
6541-7-807	MIS Femoral Trial Extractor	1
6541-7-808	MIS Femoral EM Alignment Tower	1
6541-7-811	MIS Femoral Flexion Impactor	1
6541-7-812	Tibial Protector Plate - S	1
6541-7-813	Tibial Protector Plate - M	1
6541-7-814	Tibial Protector Plate - L	1
6541-7-815	Patella Protector Plate - S/M	1
6541-7-816	Patella Protector Plate - M/L	1
6541-8-030	MIS Size 3-6 Femoral & Tibial Preparation - Upper	1
6541-8-130	MIS Size 3-6 Femoral & Tibial Preparation - Lower	1
6541-9-000	Triathlon Case	1
		Total Quantity 43

Catalog #	Description	Quantity in Kit
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Size 3-6 CR Femoral & Tibial Trialing Kit Contents

5510-T-301	CR Femoral Trial #3 Left	1
5510-T-302	CR Femoral Trial #3 Right	1
5510-T-401	CR Femoral Trial #4 Left	1
5510-T-402	CR Femoral Trial #4 Right	1
5510-T-501	CR Femoral Trial #5 Left	1
5510-T-502	CR Femoral Trial #5 Right	1
5510-T-601	CR Femoral Trial #6 Left	1
5510-T-602	CR Femoral Trial #6 Right	1
5530-T-309A	CR Tibial Insert Trial # 3 -9mm	1
5530-T-311A	CR Tibial Insert Trial # 3 -11mm	1
5530-T-313A	CR Tibial Insert Trial # 3 -13mm	1
5530-T-316A	CR Tibial Insert Trial # 3 -16mm	1
5530-T-319A	CR Tibial Insert Trial # 3 -19mm	1
5530-T-409A	CR Tibial Insert Trial # 4 -9mm	1
5530-T-411A	CR Tibial Insert Trial #4 -11mm	1
5530-T-413A	CR Tibial Insert Trial # 4 -13mm	1
5530-T-416A	CR Tibial Insert Trial # 4 -16mm	1
5530-T-419A	CR Tibial Insert Trial # 4 -19mm	1
5530-T-509A	CR Tibial Insert Trial # 5 -9mm	1
5530-T-511A	CR Tibial Insert Trial # 5 -11mm	1
5530-T-513A	CR Tibial Insert Trial # 5 -13mm	1
5530-T-516A	CR Tibial Insert Trial # 5 -16mm	1
5530-T-519A	CR Tibial Insert Trial # 5 -19mm	1
5530-T-609A	CR Tibial Insert Trial # 6 -9mm	1
5530-T-611A	CR Tibial Insert Trial #6 -11mm	1
5530-T-613A	CR Tibial Insert Trial # 6 -13mm	1
5530-T-616A	CR Tibial Insert Trial # 6 -16mm	1
5530-T-619A	CR Tibial Insert Trial # 6 -19mm	1
6541-8-008	Size 3-6 CR Femoral and Tibial Trialing- Upper Tray	1
6541-8-108	Size 3-6 CR Femoral and Tibial Trialing- Lower Tray	1
6541-9-000	Triathlon Case	1

Total Quantity 31

Triathlon Knee System

MIS Surgical Protocol

Catalog #	Description	Quantity in Kit
Size 3-6 PS Femoral & Tibial Trialing Kit Contents		
5511-T-301	PS Femoral Trial #3 Left	1
5511-T-302	PS Femoral Trial #3 Right	1
5511-T-401	PS Femoral Trial #4 left	1
5511-T-402	PS Femoral Trial #4 Right	1
5511-T-501	PS Femoral Trial #5 Left	1
5511-T-502	PS Femoral Trial #5 Right	1
5511-T-601	PS Femoral Trial #6 Left	1
5511-T-602	PS Femoral Trial #6 Right	1
5532-T-309A	PS Tibial Insert Trial # 3 -9mm	1
5532-T-311A	PS Tibial Insert Trial # 3- 11mm	1
5532-T-313A	PS Tibial Insert Trial # 3- 13mm	1
5532-T-316A	PS Tibial Insert Trial #3 -16mm	1
5532-T-319A	PS Tibial Insert Trial # 3 -19mm	1
5532-T-409A	PS Tibial Insert Trial # 4 -9mm	1
5532-T-411A	PS Tibial Insert Trial # 4 -11mm	1
5532-T-413A	PS Tibial Insert Trial # 4 -13mm	1
5532-T-416A	PS Tibial Insert Trial # 4 -16mm	1
5532-T-419A	PS Tibial Insert Trial # 4 -19mm	1
5532-T-509A	PS Tibial Insert Trial # 5 -9mm	1
5532-T-511A	PS Tibial Insert Trial # 5 -11mm	1
5532-T-513A	PS Tibial Insert Trial # 5 -13mm	1
5532-T-516A	PS Tibial Insert Trial # 5 -16mm	1
5532-T-519A	PS Tibial Insert Trial # 5 -19mm	1
5532-T-609A	PS Tibial Insert Trial # 6 -9mm	1
5532-T-611A	PS Tibial Insert Trial # 6 -11mm	1
5532-T-613A	PS Tibial Insert Trial # 6 -13mm	1
5532-T-616A	PS Tibial Insert Trial # 6 -16mm	1
5532-T-619A	PS Tibial Insert Trial # 6 -19mm	1
6541-5-713	#3 PS Box Cutting Guide	1
6541-5-714	#4 PS Box Cutting Guide	1
6541-5-715	#5 PS Box Cutting Guide	1
6541-5-716	#6 PS Box Cutting Guide	1
6541-8-009	Size 3-6 Femoral and Tibial Trialing- Upper Tray	1
6541-8-109	Size 3-6 PS Femoral and Tibial Trialing-Lower Tray	1
6541-9-000	Triathlon Case	1
		Total Quantity 35

Catalog #	Description	Quantity in Kit
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Size 2, 7 CR Preparation & Trialing Kit Contents

5510-T-201	CR Femoral Trial #2 Left	1
5510-T-202	CR Femoral Trial #2 Right	1
5510-T-701	CR Femoral Trial #7 Left	1
5510-T-702	CR Femoral Trial #7 Right	1
5530-T-209A	CR Tibial Insert Trial # 2 -9mm	1
5530-T-211A	CR Tibial Insert Trial # 2 -11mm	1
5530-T-213A	CR Tibial Insert Trial # 2 -13mm	1
5530-T-216A	CR Tibial Insert Trial # 2 -16mm	1
5530-T-219A	CR Tibial Insert Trial # 2 -19mm	1
5530-T-709A	CR Tibial Insert Trial # 7 -9mm	1
5530-T-711A	CR Tibial Insert Trial # 7 -11mm	1
5530-T-713A	CR Tibial Insert Trial # 7 -13mm	1
5530-T-716A	CR Tibial Insert Trial # 7 -16mm	1
5530-T-719A	CR Tibial Insert Trial # 7 -19mm	1
6541-5-702	#2 MIS 4:1 Cutting Block	1
6541-5-707	#7 MIS 4:1 Cutting Block	1
6541-2-078	Size 7-8 Keel Punch	1
6541-2-602	#2 Universal Tibial Template	1
6541-2-607	#7 Universal Tibial Template	1
6541-8-021	2,7 CR Preparation and Trialing- Upper Tray	1
6541-9-000	Triathlon Case	1

Total Quantity 21

MIS Size 2, 7 PS Preparation & Trialing Kit Contents

5511-T-201	PS Femoral Trial #2 Left	1
5511-T-202	PS Femoral Trial #2 Right	1
5511-T-701	PS Femoral Trial #7 Left	1
5511-T-702	PS Femoral Trial #7 Right	1
5532-T-209A	PS Tibial Insert Trial # 2- 9mm	1
5532-T-211A	PS Tibial Insert Trial # 2 -11mm	1
5532-T-213A	PS Tibial Insert Trial # 2 -13mm	1
5532-T-216A	PS Tibial Insert Trial # 2 -16mm	1
5532-T-219A	PS Tibial Insert Trial # 2 -19mm	1
5532-T-709A	PS Tibial Insert Trial # 7 -9mm	1
5532-T-711A	PS Tibial Insert Trial # 7 -11mm	1
5532-T-713A	PS Tibial Insert Trial # 7 -13mm	1
5532-T-716A	PS Tibial Insert Trial # 7 -16mm	1
5532-T-719A	PS Tibial Insert Trial # 7 -19mm	1
6541-5-702	#2 MIS 4:1 Cutting Block	1
6541-5-707	#7 MIS 4:1 Cutting Block	1
6541-5-712	#2 PS Box Cutting Guide	1
6541-5-717	#7 PS Box Cutting Guide	1
6541-2-078	Size 7-8 Keel Punch	1
6541-2-602	#2 Universal Tibial Template	1
6541-2-607	#7 Universal Tibial Template	1
6541-8-022	2,7 PS Preparation and Trialing- Upper Tray	1
6541-9-000	Triathlon Case	1

Total Quantity 23

Triathlon Knee System

MIS Surgical Protocol

Catalog #	Description	Quantity in Kit
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MIS Size 1, 8 CR Preparation & Trialing Kit Contents

5510-T-101	CR Femoral Trial # 1 Left	1
5510-T-102	CR Femoral Trial # 1 Right	1
5510-T-801	CR Femoral Trial # 8 Left	1
5510-T-802	CR Femoral Trial # 8 Right	1
5530-T-109A	CR Tibial Insert Trial #1 - 9mm	1
5530-T-111A	CR Tibial Insert Trial #1 - 11mm	1
5530-T-113A	CR Tibial Insert Trial #1 - 13mm	1
5530-T-116A	CR Tibial Insert Trial #1 - 16mm	1
5530-T-119A	CR Tibial Insert Trial #1 - 19mm	1
5530-T-809A	CR Tibial Insert Trial #8 - 9mm	1
5530-T-811A	CR Tibial Insert Trial #8 - 11mm	1
5530-T-813A	CR Tibial Insert Trial #8 - 13mm	1
5530-T-816A	CR Tibial Insert Trial #8 - 16mm	1
5530-T-819A	CR Tibial Insert Trial #8 - 19mm	1
6541-2-601	#1 - Universal Tibial Template	1
6541-2-608	#8 - Universal Tibial Template	1
6541-5-701	#1 MIS 4:1 Cutting Block	1
6541-5-708	#8 MIS 4:1 Cutting Block	1
6541-8-112	1-8 CR Lower Tray	1

Total Quantity 19

MIS Size 1, 8 PS Preparation & Trialing Kit Contents

5511-T-101	PS Femoral Trial # 1 Left	1
5511-T-102	PS Femoral Trial # 1 Right	1
5511-T-801	PS Femoral Trial # 8 Left	1
5511-T-802	PS Femoral Trial # 8 Right	1
5532-T-109A	PS Tibial Insert Trial # 1 - 9mm	1
5532-T-111A	PS Tibial Insert Trial # 1 - 11mm	1
5532-T-113A	PS Tibial Insert Trial # 1 - 13mm	1
5532-T-116A	PS Tibial Insert Trial # 1 - 16mm	1
5532-T-119A	PS Tibial Insert Trial # 1 - 19mm	1
5532-T-809A	PS Tibial Insert Trial # 8 - 9mm	1
5532-T-811A	PS Tibial Insert Trial # 8 - 11mm	1
5532-T-813A	PS Tibial Insert Trial # 8 - 13mm	1
5532-T-816A	PS Tibial Insert Trial # 8 - 16mm	1
5532-T-819A	PS Tibial Insert Trial # 8 - 19mm	1
6541-2-601	#1 - Universal Tibial Template	1
6541-2-608	#8 - Universal Tibial Template	1
6541-5-701	#1 MIS 4:1 Cutting Block	1
6541-5-708	#8 MIS 4:1 Cutting Block	1
6541-5-711	#1 PS Box Cutting Guide	1
6541-5-718	#8 PS Box Cutting Guide	1
6541-8-113	1-8 PS Lower Tray	1

Total Quantity 21

Catalog #	Description	Quantity in Kit
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Size 1-8 Max PS Tibial Trialing Kit Contents

5532-T-122	PS Femoral Trial # 1 - 22mm	1
5532-T-125	PS Femoral Trial # 1 - 25mm	1
5532-T-222	PS Femoral Trial # 2 - 22mm	1
5532-T-225	PS Femoral Trial # 2 - 25mm	1
5532-T-322A	PS Tibial Insert Trial # 3 - 22mm	1
5532-T-325A	PS Tibial Insert Trial # 3 - 25mm	1
5532-T-422A	PS Tibial Insert Trial # 4 - 22mm	1
5532-T-425A	PS Tibial Insert Trial # 4 - 25mm	1
5532-T-522A	PS Tibial Insert Trial # 5 - 22mm	1
5532-T-525A	PS Tibial Insert Trial # 5 - 25mm	1
5532-T-622A	PS Tibial Insert Trial # 6 - 22mm	1
5532-T-625A	PS Tibial Insert Trial # 6 - 25mm	1
5532-T-722A	PS Tibial Insert Trial # 7 - 22mm	1
5532-T-725A	PS Tibial Insert Trial # 7 - 25mm	1
5532-T-822A	PS Tibial Insert Trial # 8 - 22mm	1
5532-T-825A	PS Tibial Insert Trial # 8 - 25mm	1
6541-8-120	Triathlon 1-8 Max PS - Upper Tray	1
6541-9-000	Triathlon Case	1

Total Quantity 18

MIS Tibial Resection Guides (Either Captured or Uncaptured Required)

6541-6-700	MIS Uncaptured Tibial Resection Guide - Right	1
6541-6-701	MIS Uncaptured Tibial Resection Guide - Left	1
6541-6-702	MIS Captured Tibial Resection Guide - Right	1
6541-6-703	MIS Captured Tibial Resection Guide - Left	1

Total Quantity 4

Triathlon Knee System

MIS Surgical Protocol

Catalog #	Description	Sizes	Qty
Triathlon CS Tibial Insert Trials Part Numbers			
5531-T-X09	CS Tibial Insert Trial 9mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-T-X11	CS Tibial Insert Trial 11mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-T-X13	CS Tibial Insert Trial 13mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-T-X16	CS Tibial Insert Trial 16mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-T-X19	CS Tibial Insert Trial 19mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-T-X22	CS Tibial Insert Trial 22mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-T-X25	CS Tibial Insert Trial 25mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Catalog #	Description	Sizes	Qty
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Triathlon CR Femoral Component - Cemented Part Numbers

5510-F-X01	Triathlon CR Femoral Component -Left Cemented	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5510-F-X02	Triathlon CR Femoral Component -Right Cemented	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Triathlon CR Femoral Cementless Component - Beaded Part Numbers

5513-F-X01	Triathlon CR Femoral Component -Left Cementless Beaded	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5513-F-X02	Triathlon CR Femoral Component -Right Cementless Beaded	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Triathlon CR Femoral Cementless Component - Beaded w/ Peri-Apatite Part Numbers

5517-F-X01	Triathlon CR Femoral Component -Left Cementless Beaded w/ PA	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5517-F-X02	Triathlon CR Femoral Component -Right Cementless Beaded w/ PA	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Triathlon PS Femoral Component - Cemented Part Numbers

5515-F-X01	Triathlon PS Femoral Component -Left Cemented	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5515-F-X02	Triathlon PS Femoral Component -Right Cemented	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Triathlon PS Femoral Cementless Component - Beaded Part Numbers

5514-F-X01	Triathlon PS Femoral Component -Left Cementless Beaded	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5514-F-X02	Triathlon PS Femoral Component -Right Cementless Beaded	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Triathlon PS Femoral Cementless Component - Beaded w/ Peri-Apatite Part Numbers

5516-F-X01	Triathlon PS Femoral Component -Left Cementless Beaded w/ PA	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5516-F-X02	Triathlon PS Femoral Component -Right Cementless Beaded w/ PA	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Modular Femoral Distal Fixation Peg

5575-X-000	Modular Femoral Distal Fixation Peg (2 per pack)		1
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Triathlon Knee System

MIS Surgical Protocol

Catalog #	Description	Sizes	Additional Instruments Required
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Primary Tibial Baseplate Options Part Numbers

5520-B-X00	Primary Tibial Baseplate - Cemented	X = 1,2,3,4,5,6,7 and 8	
5520-M-X00	Primary MIS Baseplate - Cemented	X = 1,2,3,4,5,6,7 and 8	6541-2-113 - Size 1-3 MIS Keel Punch
			6541-2-146 - Size 4-6 MIS Keel Punch
			6541-2-178 - Size 7-8 MIS Keel Punch
5523-B-X00	Primary Tibial Baseplate - Beaded	X = 1,2,3,4,5,6,7 and 8	6541-6-013 Sizes 1-3 Cementless Keel Punch
5526-B-X00	Primary Tibial Baseplate - Beaded with Peri-Apatite	X = 1,2,3,4,5,6,7 and 8	6541-6-046 Sizes 4-6 Cementless Keel Punch
			6541-6-078 Sizes 7-8 Cementless Keel Punch
5521-B-X00	Universal Baseplate	X = 1,2,3,4,5,6,7 and 8	6543-7-527 Boss Reamer
			6543-4-818 Torque Wrench

Catalog #	Description	Sizes	Qty
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Triathlon CR Tibial Inserts - Conventional Polyethylene and X3 Part Numbers

Conventional Polyethylene Inserts			
5530-P-X09	Triathlon CR Tibial Insert - Conventional Polyethylene 9mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-P-X11	Triathlon CR Tibial Insert - Conventional Polyethylene 11mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-P-X13	Triathlon CR Tibial Insert - Conventional Polyethylene 13mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-P-X16	Triathlon CR Tibial Insert - Conventional Polyethylene 16mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-P-X19	Triathlon CR Tibial Insert - Conventional Polyethylene 19mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
X3 Inserts			
5530-G-X09	Triathlon CR Tibial Insert - X3 9mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-G-X11	Triathlon CR Tibial Insert - X3 11mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-G-X13	Triathlon CR Tibial Insert - X3 13mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-G-X16	Triathlon CR Tibial Insert - X3 16mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5530-G-X19	Triathlon CR Tibial Insert - X3 19mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Catalog #	Description	Sizes	Qty
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Triathlon CS Tibial Inserts - Conventional Polyethylene and X3 Part Numbers

Conventional Polyethylene Inserts			
5531-P-X09	Triathlon CS Tibial Insert - Conventional Polyethylene 9mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-P-X11	Triathlon CS Tibial Insert - Conventional Polyethylene 11mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-P-X13	Triathlon CS Tibial Insert - Conventional Polyethylene 13mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-P-X16	Triathlon CS Tibial Insert - Conventional Polyethylene 16mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-P-X19	Triathlon CS Tibial Insert - Conventional Polyethylene 19mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-P-X22	Triathlon CS Tibial Insert - Conventional Polyethylene 22mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-P-X25	Triathlon CS Tibial Insert - Conventional Polyethylene 25mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
X3 Inserts			
5531-G-X09	Triathlon CS Tibial Insert - X3 9mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-G-X11	Triathlon CS Tibial Insert - X3 11mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-G-X13	Triathlon CS Tibial Insert - X3 13mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-G-X16	Triathlon CS Tibial Insert - X3 16mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-G-X19	Triathlon CS Tibial Insert - X3 19mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-G-X22	Triathlon CS Tibial Insert - X3 22mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5531-G-X25	Triathlon CS Tibial Insert - X3 25mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Triathlon PS Tibial Inserts - Conventional Polyethylene and X3 Part Numbers

Conventional Polyethylene Inserts			
5532-P-X09	Triathlon CS Tibial Insert - Conventional Polyethylene 9mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-P-X11	Triathlon CS Tibial Insert - Conventional Polyethylene 11mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-P-X13	Triathlon CS Tibial Insert - Conventional Polyethylene 13mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-P-X16	Triathlon CS Tibial Insert - Conventional Polyethylene 16mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-P-X19	Triathlon CS Tibial Insert - Conventional Polyethylene 19mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-P-X22	Triathlon CS Tibial Insert - Conventional Polyethylene 22mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-P-X25	Triathlon CS Tibial Insert - Conventional Polyethylene 25mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
X3 Inserts			
5532-G-X09	Triathlon PS Tibial Insert - X3 9mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-G-X11	Triathlon PS Tibial Insert - X3 11mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-G-X13	Triathlon PS Tibial Insert - X3 13mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-G-X16	Triathlon PS Tibial Insert - X3 16mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-G-X19	Triathlon PS Tibial Insert - X3 19mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-G-X22	Triathlon PS Tibial Insert - X3 22mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size
5532-G-X25	Triathlon PS Tibial Insert - X3 25mm	X = 1,2,3,4,5,6,7 and 8	1 Each Size

Triathlon Knee System

MIS Surgical Protocol

Catalog #	Description	Sizes	Qty
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Symmetric Patella - Conventional Polyethylene and X3 Part Numbers

Conventional Polyethylene Patellas			
5550-L-278	Symmetric Patella - Conventional Polyethylene	S27 mm x 8 mm	1
5550-L-298	Symmetric Patella - Conventional Polyethylene	S29 mm x 8 mm	1
5550-L-319	Symmetric Patella - Conventional Polyethylene	S31 mm x 9 mm	1
5550-L-339	Symmetric Patella - Conventional Polyethylene	S33 mm x 9 mm	1
5550-L-360	Symmetric Patella - Conventional Polyethylene	S36 mm x 10 mm	1
5550-L-391	Symmetric Patella - Conventional Polyethylene	S39 mm x 11 mm	1
X3 Patellas			
5550-G-278	Symmetric Patella - X3	S27 mm x 8 mm	1
5550-G-298	Symmetric Patella - X3	S29 mm x 8 mm	1
5550-G-319	Symmetric Patella - X3	S31 mm x 9 mm	1
5550-G-339	Symmetric Patella - X3	S33 mm x 9 mm	1
5550-G-360	Symmetric Patella - X3	S36 mm x 10 mm	1
5550-G-391	Symmetric Patella - X3	S39 mm x 11 mm	1

Asymmetric Patella - Conventional Polyethylene and X3 Part Numbers

Conventional Polyethylene Patellas			
5551-L-299	Asymmetric Patella - Conventional Polyethylene	A29 mm (S/I*) x 9 mm	1
5551-L-320	Asymmetric Patella - Conventional Polyethylene	A32 mm (S/I*) x 10 mm	1
5551-L-350	Asymmetric Patella - Conventional Polyethylene	A35 mm (S/I*) x 10 mm	1
5551-L-381	Asymmetric Patella - Conventional Polyethylene	A38 mm (S/I*) x 11 mm	1
5551-L-401	Asymmetric Patella - Conventional Polyethylene	A40 mm (S/I*) x 11 mm	1
X3 Patellas			
5551-G-299	Asymmetric Patella - X3	A29 mm (S/I*) x 9 mm	1
5551-G-320	Asymmetric Patella - X3	A32 mm (S/I*) x 10 mm	1
5551-G-350	Asymmetric Patella - X3	A35 mm (S/I*) x 10 mm	1
5551-G-381	Asymmetric Patella - X3	A38 mm (S/I*) x 11 mm	1
5551-G-401	Asymmetric Patella - X3	A40 mm (S/I*) x 11 mm	1

S/I - Superior/Inferior

Indications

General Total Knee Arthroplasty (TKR) Indications include:

- Painful, disabling joint disease of the knee resulting from: non-inflammatory degenerative joint disease (including osteoarthritis, traumatic arthritis or avascular necrosis) or rheumatoid arthritis.
- Post-traumatic loss of knee joint configuration and function.
- Moderate varus, valgus, or flexion deformity in which the ligamentous structures can be returned to adequate function and stability.
- Revision of previous unsuccessful knee replacement or other procedure.
- Fracture of the distal femur and/or proximal tibia that cannot be stabilized by standard fracture management techniques.

Additional Indications for Posterior Stabilized (PS) Components:

- Ligamentous instability requiring implant bearing surface geometries with increased constraint.
- Absent or non-functioning posterior cruciate ligament.
- Severe anteroposterior instability of the knee joint.

The Triathlon Tritanium Tibial Baseplate and Tritanium Metal-Backed Patella components are indicated for both uncemented and cemented use.

The Triathlon Total Knee System beaded and beaded with Peri-Apatite components are intended for uncemented use only.

Contraindications

- Any active or suspected latent infection in or about the knee joint.
 - Distant foci of infection which may cause hematogenous spread to the implant site.
 - Any mental or neuromuscular disorder which would create an unacceptable risk of prosthesis instability, prosthesis fixation failure, or complications in post-operative care.
 - Bone stock compromised by disease, infection or prior implantation which cannot provide adequate support and/or fixation to the prosthesis.
 - Skeletal immaturity.
 - Severe instability of the knee joint secondary to the absence of collateral ligament integrity and function.
- See package insert for warnings, precautions, adverse effects, information for patients and other essential product information.

Before using Triathlon MIS instrumentation, verify:

- Instruments have been properly disassembled prior to cleaning and sterilization;
- Instruments have been properly assembled post-sterilization;
- Instruments have maintained design integrity; and,
- Proper size configurations are available.

For Instructions for Cleaning, Sterilization, Inspection and Maintenance of Orthopaedic Medical Devices, refer to LSTPI-B.

Triathlon Knee System

MIS Surgical Protocol

Notes

Femoral Component/ Insert Compatibility

Size Matching: One up, one down, e.g., size 5 femur with size 4 or 6 insert/ baseplate.

Note: Cementless implants are not to be used with cement.

	Femoral Components	Insert Type			
		CR	CS	PS	TS
Cementless	CR Cemented	✓	✓	No	No
	PS Cemented	No	✓	✓	✓
	TS Cemented	No	No	✓	✓
	CR Beaded	✓	✓	No	No
	PS Beaded	No	No	✓	No
	CR Beaded with PA	✓	✓	No	No
	PS Beaded with PA	No	No	✓	No

Femoral Component/ Patella Compatibility

Size Matching: Every patella articulates with every femur due to a common radius across all sizes.

	Femoral Components	Patella Type			
		Asymmetric	Asymmetric Metal Backed	Symmetric Metal Backed	Symmetric
Cementless	CR Cemented	✓	✓	✓	✓
	PS Cemented	✓	✓	✓	✓
	TS Cemented	✓	✓	✓	✓
	CR Beaded	✓	✓	✓	✓
	PS Beaded	✓	✓	✓	✓
	CR Beaded with PA	✓	✓	✓	✓
	PS Beaded with PA	✓	✓	✓	✓

Tibial Insert/Baseplate Compatibility

Size Matching: Size Specific, e.g., size 4 insert to be used only with size 4 baseplate.

Note: TS insert can only be used with the cemented universal baseplate.

	Tibial Baseplates	Insert Type			
		CR	CS	PS	TS
Cementless	Cemented Cruciform	✓	✓	✓	No
	Cemented Universal	✓	✓	✓	✓
	Beaded Cruciform	✓	✓	✓	No
	Beaded Screw Fix	✓	✓	✓	No
	Beaded with PA Cruciform	✓	✓	✓	No
	Beaded with PA Screw Fix	✓	✓	✓	No
	Tritanium	✓	✓	✓	No

Triathlon TS Augments

Distal Augments are for use with both the medial and lateral portions of the side indicated, e.g. #4 right is used for medial and lateral compartments on a right femur.

Posterior Augments are universal size specific, e.g. size 4 posterior augments are for the size 4 femur.

Tibial Augments are size specific and come in left medial/right lateral or right medial/left lateral configurations.

References:

1. Silva M., Schmalzried TP et al. Knee Strength after Total Knee Arthroplasty. The Journal of Arthroplasty. Vol. 18 (5) 605-11. 2003. LIT# LRP100
2. Bonutti PM et al. Minimally Invasive Total Knee Arthroplasty. JBJS. Vol. 86-A. Suppl 2 26-32. 2004. LIT# LRP124
3. Dalury DF et al. A Comparison of the Mid-vastus and Paramedian Approaches for Total Knee Arthroplasty. Vol. 14 (1) 33-37. 1999. LIT# LRP98
4. Cooper RE et al. Mid-vastus Approach in Total Knee Arthroplasty: A Description and a Cadaveric Study Determining the Distance of the Popliteal Artery From the Patellar Margin of the Incision. The Journal of Arthroplasty. Vol. 14 (4) 505-08. 1999. LIT# LRP116

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