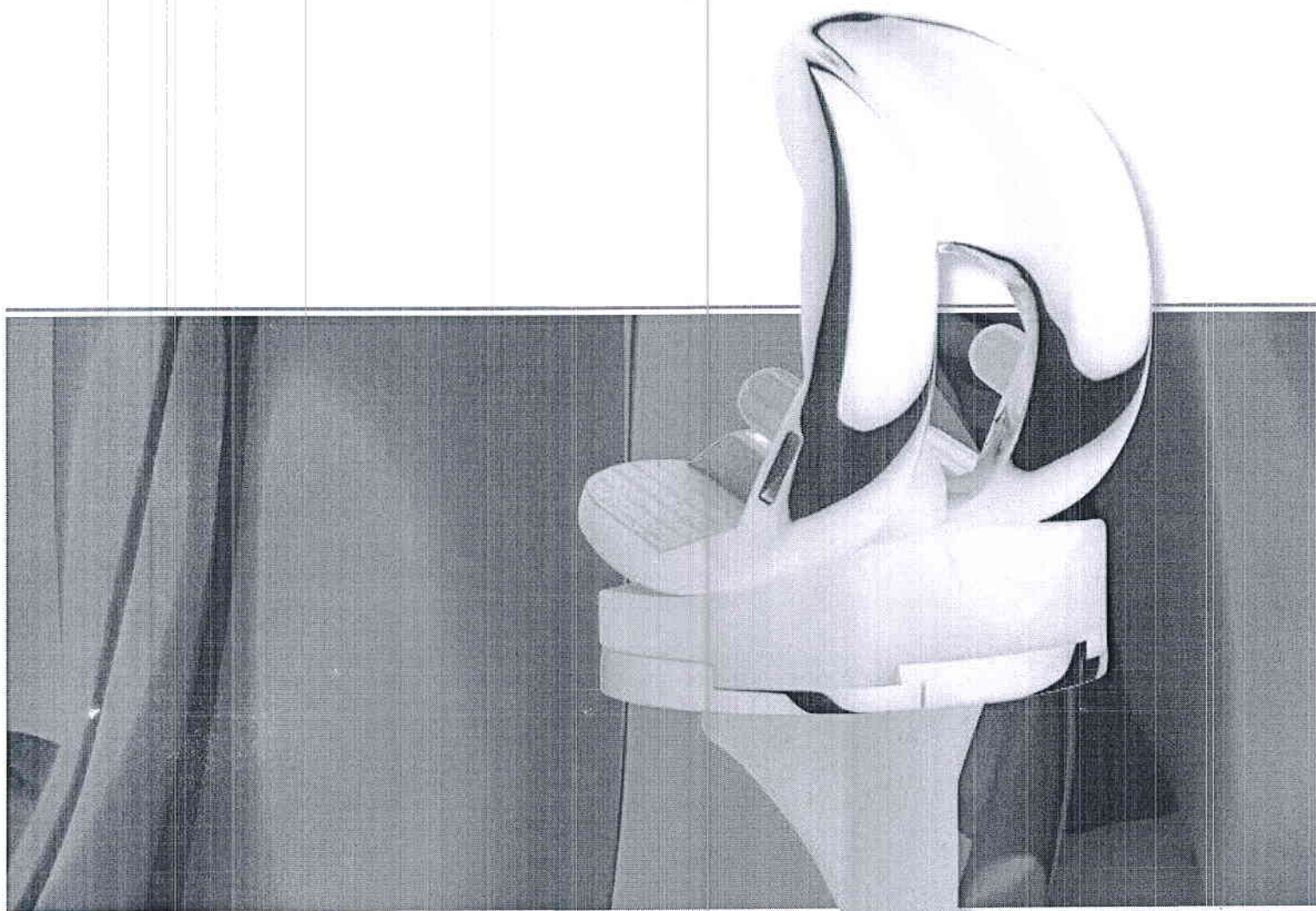


Surgical Technique

4-in-1

Conventional

Instrumentation



ANATOMIC
Primary Total Knee System
Fixed bearing
Cemented or cementless

AMPLITUDE 

ANATOMIC® Total Knee System Overview

The ANATOMIC® TKS is a PCL-sacrificing, posterior-stabilized, fixed bearing implant for primary knee arthroplasty.

Its mediolateral coverage matches the morphology of the femur.

Stability is provided:

- in extension thanks to a congruent anterior rim
- in flexion thanks to a late contact between the cam and the spine of the posterior-stabilization mechanism.



ANATOMIC[®] Total Knee System Overview

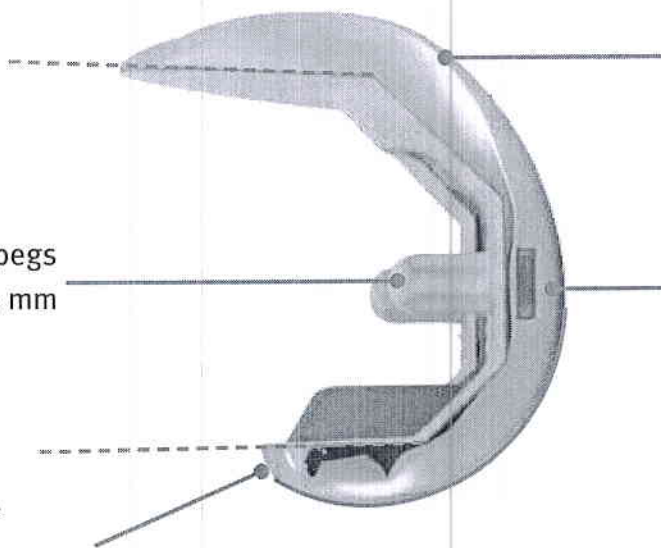
1. Femoral component:

6° anterior cut

Two stabilisation pegs
Ø 8 mm, length 13 mm

2° posterior cut

Reduced radius of curvature to increase flexion

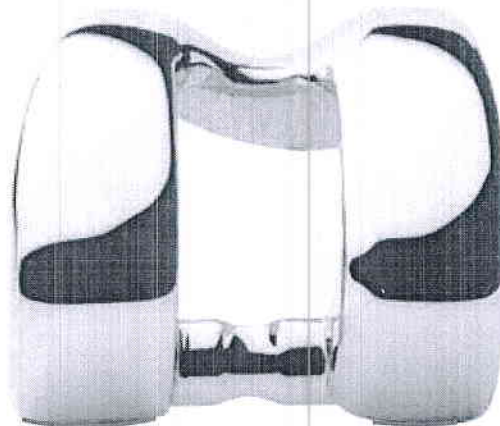


Made of cobalt-chrome; cementless version has dual coating of plasma-sprayed titanium and HA (80 µm each); cemented version is microblasted

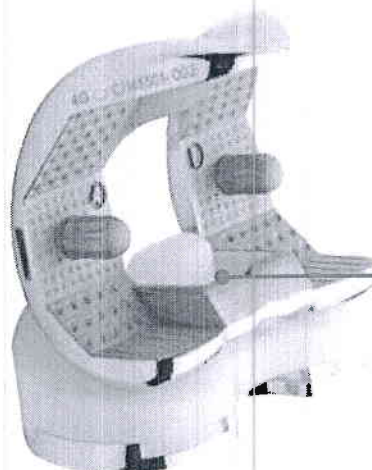
Thickness: 8 mm

Consistent radius of curvature from 0° to more than 100° flexion

Trochlear groove lateralised by an average of 2.3 mm



Asymmetrical contact surfaces:
✓ quasi-physiological joint kinematics



Post-cam contact beyond 90° flexion and up to 130° flexion

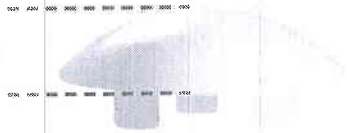


ANATOMIC® Total Knee System Overview

Polyethylene patellar implant available in two versions:

Onset patellar implant - cemented

Thickness: 8 mm



Distance between pegs changes based on size

Inset patellar implant - cemented

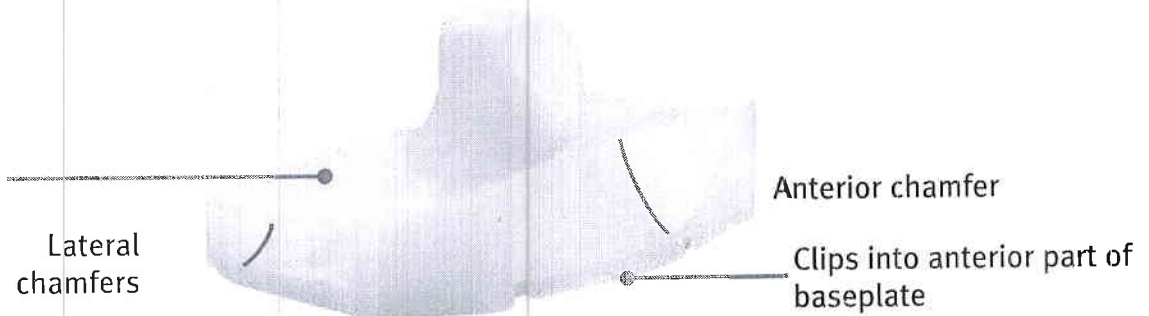
Thickness: 7 mm



2. Tibial component:

Fixed-bearing insert:

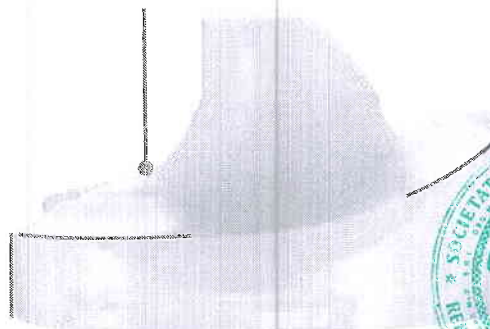
Polyethylene component



Posterior post position
✓ beneficial for flexion

The shape of the post's backside allows rollback

Thickest in posterior aspect
✓ Creep in flexion minimised



Flat baseplate posteriorly
✓ Condyle rollback during flexion

Anterior congruency

✓ Extension stability

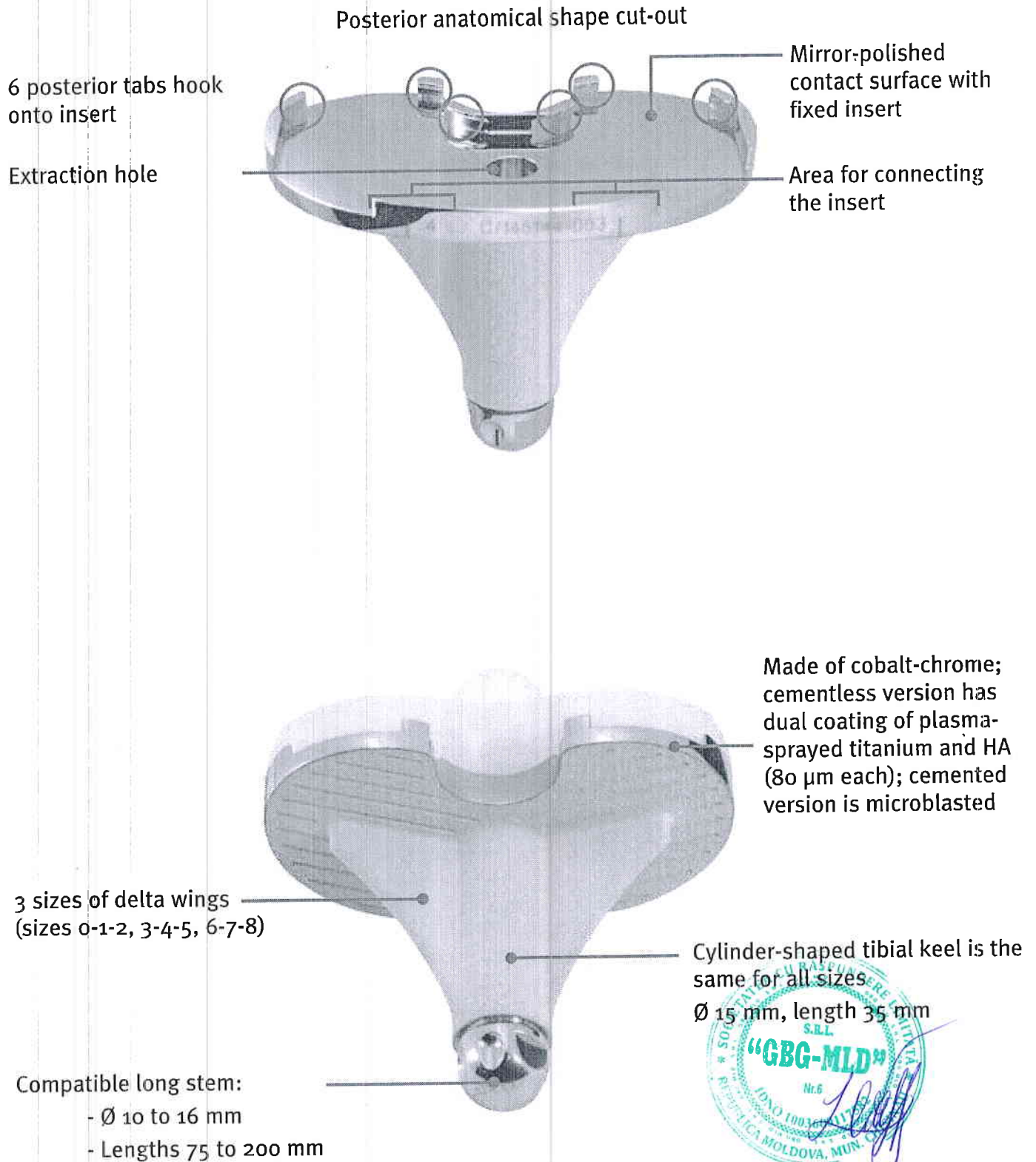
✓ Allows up to 10°

S.L.L.recurvatum (before post-cam contact)



ANATOMIC[®] Total Knee System Overview

Tibial baseplate:



ANATOMIC[®] Total Knee System Overview

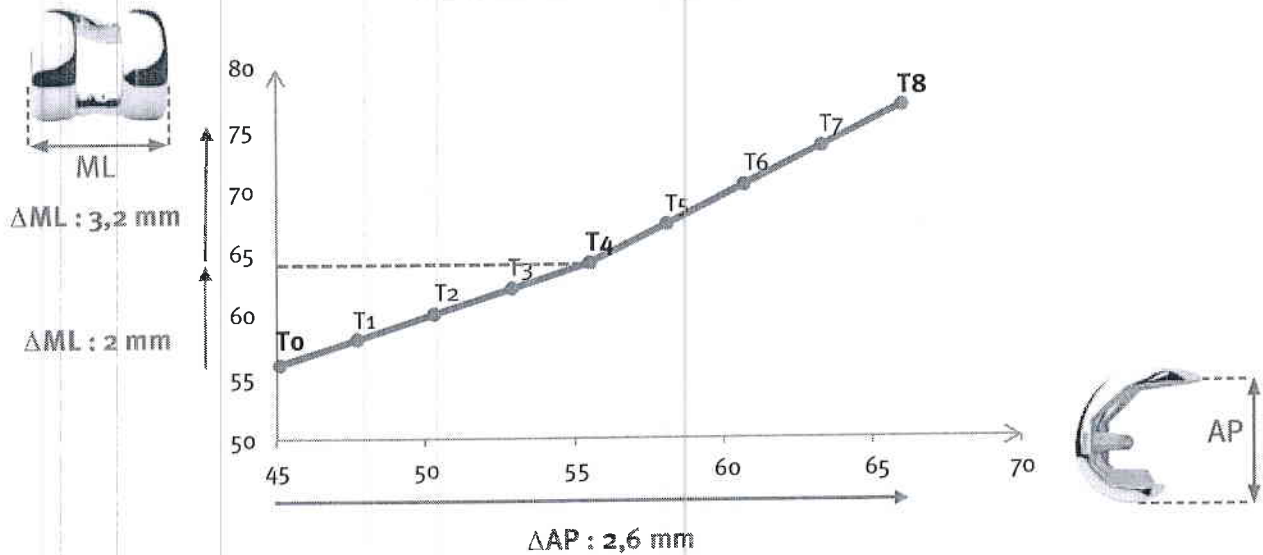
3. Product range:

- **Femoral components:**

- Cemented: 9 sizes (0 and 8 are optional)
- Cementless: 9 sizes (0 and 8 are optional)

Mediolateral implant coverage matches bone morphology:

ML width as a function of AP size

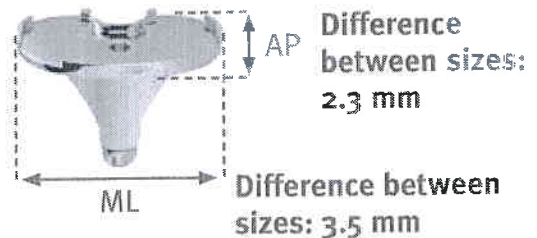


- **Patellar components:**

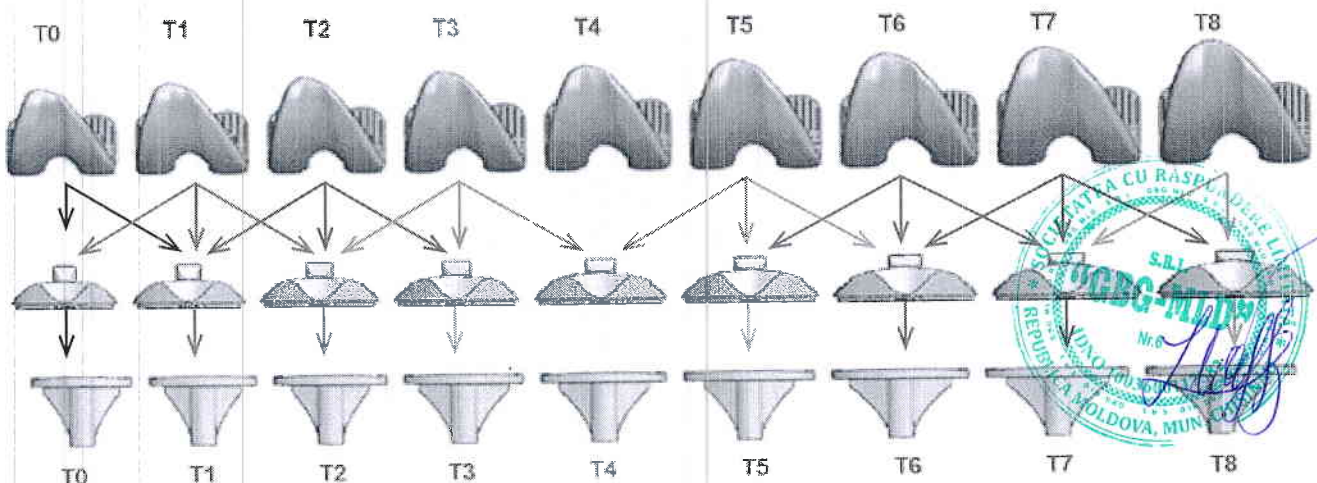
- Onset patellar implant – cemented: Ø 30, 33 and 36 mm
- Inset patellar implant – cemented: Ø 23, 26 and 29 mm

- **Tibial components:**

- Cemented: 9 sizes (0 and 8 are optional)
- Cementless: 9 sizes (0 and 8 are optional)
- Inserts: 9 sizes (0 and 8 are optional)
6 heights (10, 12, 14, 16, 18 and 20 mm)



4. Components compatibility:



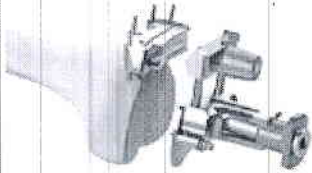
Overview of instrumentation

- This surgical technique relates to the ANATOMIC® instrumentation and the 4-in-1 femoral resection instrumentation used to implant the ANATOMIC® TKS.
- Either the tibial cut or the distal femoral cut can be performed first.
- In the following surgical technique description, the distal femoral cut is performed first.
- The instrumentation can be used either:
 - without navigation (conventional method)
 - with navigation (by adding the Universal Knee Navigation Tools)
 - with the customised i.M.A.G.E.® instrumentation (by adding the i.M.A.G.E.® 4-in-1 tools)



Summary of surgical technique

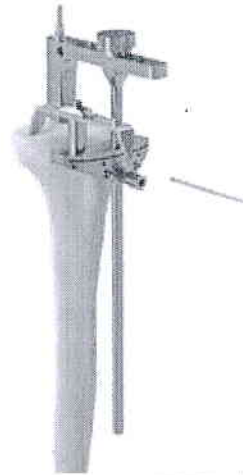
Distal femur preparation



- Place the intramedullary aiming.
- Place the distal slide bar and distal resection guide onto the valgus barrel.
- Use a motorized handpiece and the universal or AO snap-in connector to drive two $\varnothing 3,2$ mm headless pins into the \circ holes.
- Use two other converging pins to stabilise the resection guide and perform the cut.

1

Intramedullary tibial aiming



- Assemble on the bracket the slide bar with the right or left tibial resection guide.
- Place the entire assembly on the intramedullary rod.

2

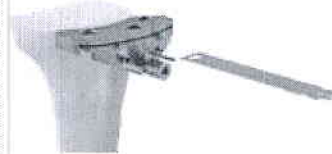
Extramedullary tibial aiming



- Assemble on the bracket the slide bar with the right or left tibial resection guide.
- Assemble the malleolar clamp, extramedullary aiming column and the slide bar.
- Place the malleolar clamp around the ankle, adjust the rotation and impact the arm.
- Clip the tibial stylus onto the resection guide and set the resection height.

3

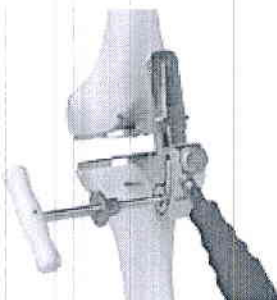
Tibial resection



- Drill 2 headless pins using the quick release adaptor (universal or AO) into the \circ holes on the tibial resection guide.
- Holes +2 and +4 will be used if a further tibial resection is required.

4

Extension gap measurement

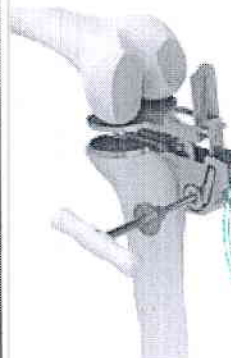


Important: Remove the 2 headless pins left in anterior part

- In extension: Insert the ligament balancer into the knee joint with the knee extended.
- Apply the desired amount of tension turning the H5 screwdriver to operate the distraction mechanism.
- Make sure the tibial and distal femoral cuts are parallel, and check the height of the tibiofemoral gap.

5

Transfer of gap into flexion

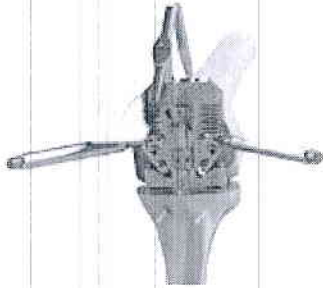


- In flexion: Insert the balancer and apply the desired tension.
- Read the flexion gap value and femur rotation value (induced by ligament laxity) relative to the tibia.

6

Summary of surgical technique

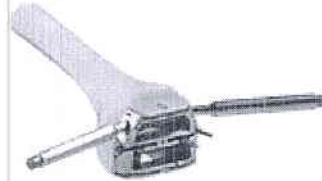
Transfer of gap into flexion



- On the back table: set the femoral rotation based on the measurement taken with the balancer.
- Determine the femoral component size.
- Verify the size by placing the resection gauge into the slots to preview the anterior cut position.
- Set the posterior plate position to make the flexion gap equal to the extension gap.
- Insert the distal pins.

7

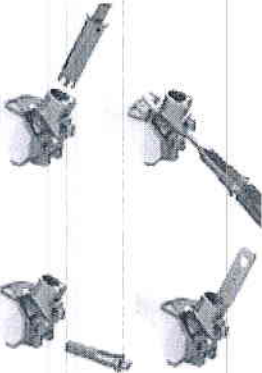
Femoral cuts



- Set the femoral resection guide that corresponds to the measured size on the distal pins in the middle holes (neutral position).
- Make sure distal side of the resection guide is flush with the distal cut.
- Secure the sides of the resection guide with the pins.
- Make the cuts: anterior, posterior and the 2 chamfer cuts.

8

Femoral preparations



- Choose and place the femoral preparation guide of the same size as the 4-in-1 resection guide used.
- Prepare:
 - The femoral notch with the notch reamer
 - The trochlea with the trochlear box chisel
 - PS cam space with the L-shaped chisel
- Finalise the preparation by removing the bone ridge with the osteotome.
- The peg holes preparation can be prepared either using the femoral preparation guide or using the trial component.

9

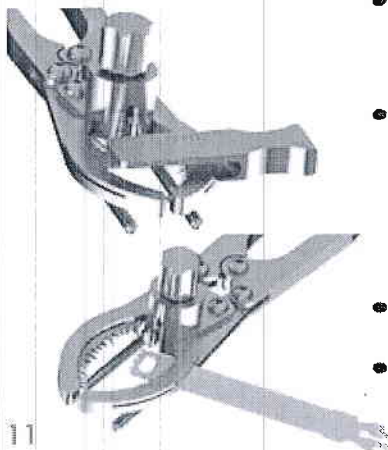
Tibial preparation



- Determine the size of the tibial baseplate needed. The baseplate can be one size larger or smaller than the size of the femoral component.
- Important: Remove the 2 headless pins left in the tibia.
- Place the tibial fin punch guide onto the trial baseplate and verify that the sizes are compatible.
- With a motorized handpiece, drive the tibial keel drill bit into the guide until it stops.
- Prepare the fins by pushing the appropriately sized tibial fin punch until it stops.

10

Patella preparation Resurfacing option



- Position the patella guide with the lugs facing the anterior side of the patella.
- Using the adjustment wheel, slide the 8 mm sensor into the slot such that it touches the joint face. The jaws of the forceps must be opened.
- Tighten and lock the forceps.
- Perform the resection through the slot.

11

Patellar preparation Patellar reaming option



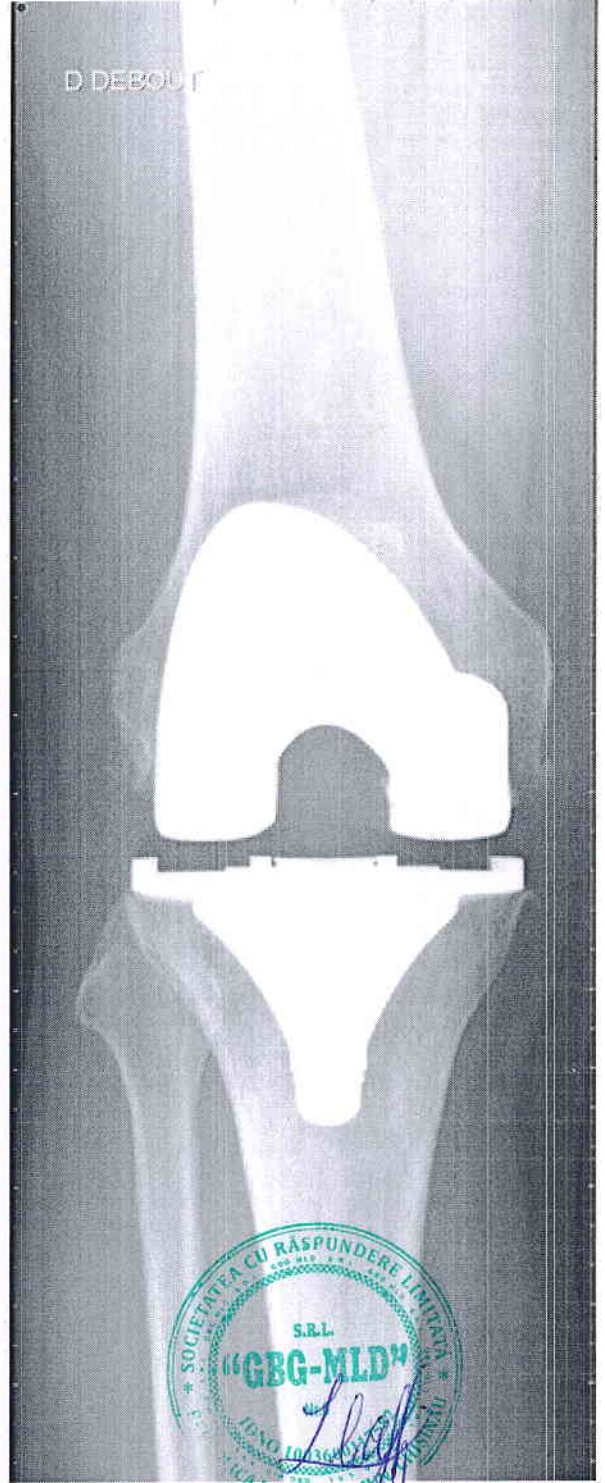
- Assemble the clamp corresponding to the chosen patellar implant size onto the locking patellar reaming forceps.
- The inferior jaw on the reaming forceps must rest against the anterior side of the patella. Use the thumb knob to tighten the reaming forceps.
- Ream the patella until the stop is reached.
- Remove the patellar reaming forceps, place the trial cemented patellar implant and test the articulation of the patella in the trochlea.
- Assemble the patella binding clamp onto the locking patellar reaming forceps.
- Insert the chosen patellar component.

12

D DEBOUT



D DEBOUT



Pre-operative planning

Radiographs and templates are used to evaluate the following:

- Bone-related elements:

On the tibia: Choice between intra- or extramedullary alignment method.
Lateral and A/P position of the entry point for the intramedullary rod.
Match between the tibial keel and fins and the metaphysis (e.g. following osteotomy).
Presence of osteophytes.
Magnitude of wear in each compartment.
Potential need for a tibial extension stem.
Estimated tibial baseplate size and insert height.

On the femur: Lateral and A/P position of the entry point for the intramedullary rod.
Degree of native femoral valgus.
Presence of posterior osteophytes.
Femoral component size estimation.

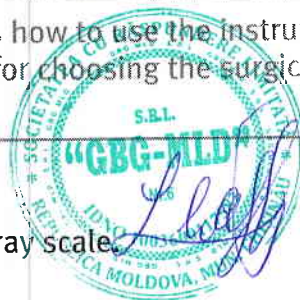
On the patella: Condition of structure.
Thickness.
Height relative to the joint line.

- Ligament-related elements:

Assessment of ligament balance using stress X-rays.

Reminder: This surgical technique describes how to use the instrumentation properly. The surgeon is fully responsible for choosing the surgical approach and technique.

Note: The provided templates have a 1:1 scale.
Make sure the template scale matches the X-ray scale.



Distal femoral cut

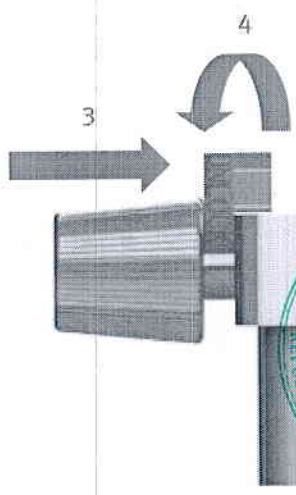
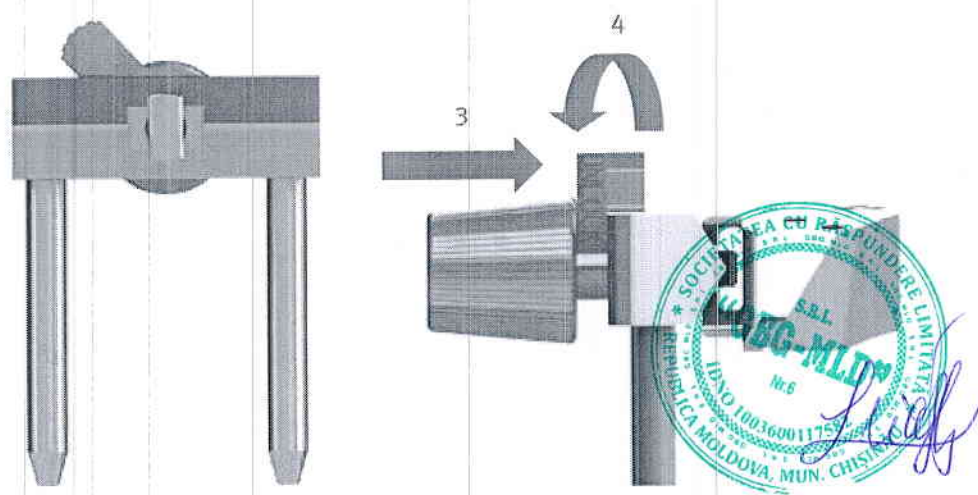
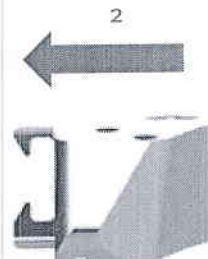
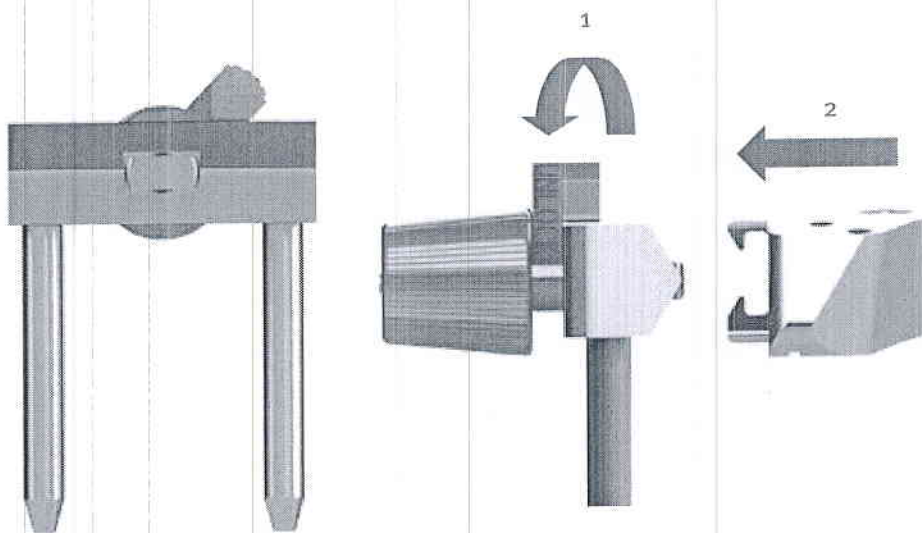
- Bend the knee at 90° .
- Remove any peripheral osteophytes.
- Clear out tissues to access the anterior cortex.
- Based on the pre-operative planning, locate the entry point on the femoral medullary canal, and drill a hole into it using a step drill bit.
- Place the 400 mm long intramedullary alignment rod on the T wrench, and insert it into the canal; the landmark must always be visible.

Note: If the rod cannot be inserted or there is a pre-existing THA, use the 250 mm intramedullary rod instead.

Distal femoral cut

- On the back table: Adjust the femoral valgus (3° , 5° , 7° , 9° or 11°) to match the femoral valgus measured during the pre-operative planning and place it on the operated leg (LEFT/RIGHT).
- Place the valgus barrel on the intramedullary rod.
- Make sure the barrel rests against a healthy portion of the distal condyle and confirm the femoral valgus reading.
- Impact the anti-rotational captive pins.

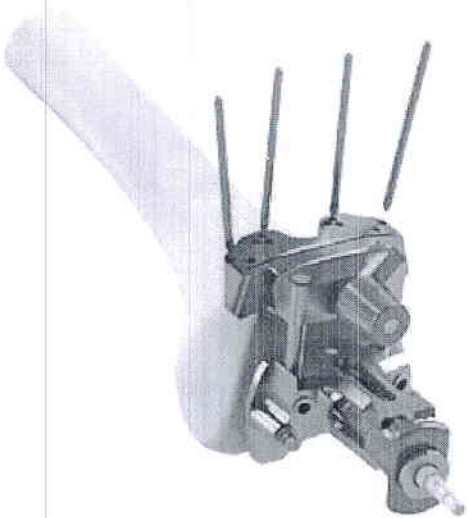
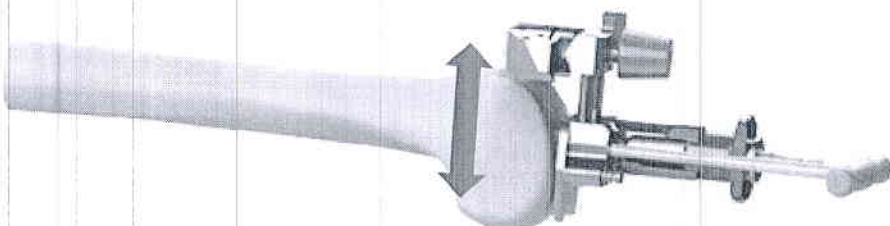
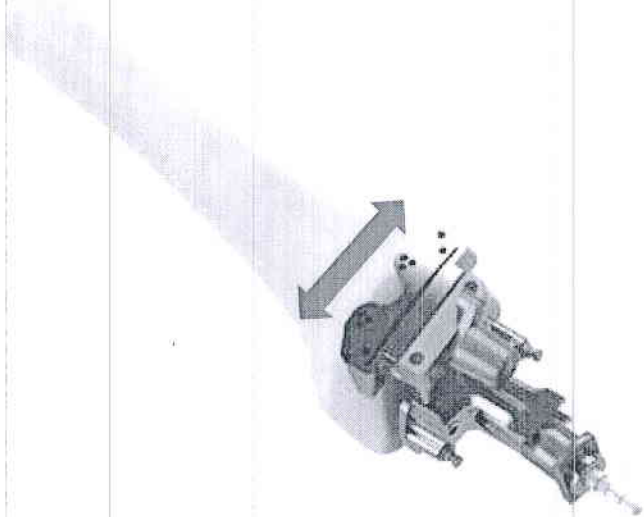




Distal femoral cut

- On the back table: assemble the distal resection guide and slide bar onto the valgus barrel.
- 1 - Loosen the wheel on the slide bar.
 - 2 - Make sure the upper lever is in the «unlock» position, join the distal resection guide and the slide bar together in a «V» by aligning the line on the resection guide with the one on the slide bar, the lines ensure that the two components are centred.
 - 3 - Press down on the wheel.
 - 4 - Turn the upper lever to the «lock» position to lock the two components in place.





Distal femoral cut

- Place the distal slide bar and distal resection guide onto the valgus barrel.
- Adjust the position of the distal resection guide:
 - in the mediolateral direction (to prevent patellar impingement).
 - in the anteroposterior direction (resection guide touches the bone).
- Fully tighten the wheel on the distal slide bar to lock the mediolateral position of the resection guide.
- Use the H3,5 screwdriver to secure the valgus barrel to the distal slide bar.

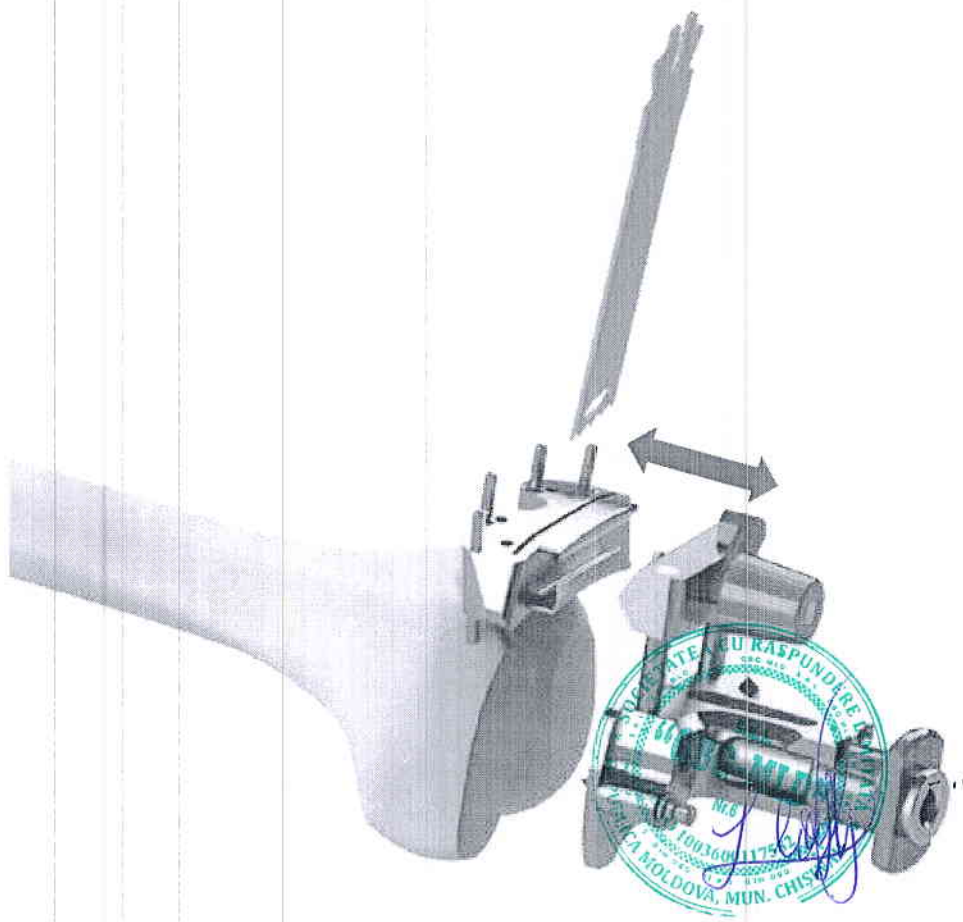
Pin insertion

- Use a motorized handpiece and the universal or AO snap-in connector to drive two \emptyset 3,2 mm headless pins into the o holes.

Note: In patients with flexion deformity, the distal cut (initially 8 mm) can be increased by placing the two pins into the +2 and +4 holes.

- Use two other converging pins to stabilise the resection guide.





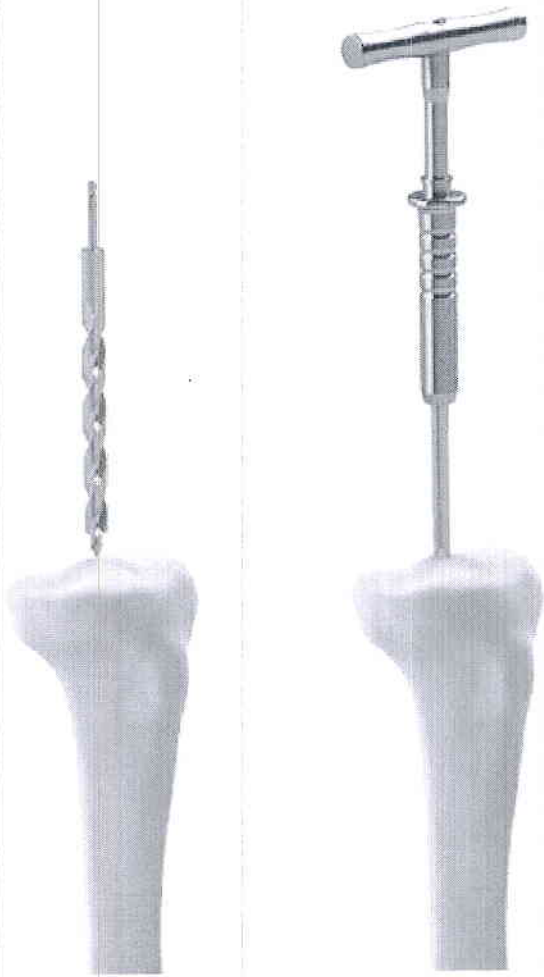
Making the distal femoral cut

- Extract the intramedullary rod using the T-handle wrench.
- Loosen the thumb knob on the distal slide bar by moving the upper lever to the «unlock» position and detach the entire distal resection guide.

Note: The distal cut can also be performed with the distal slide bar-distal resection guide assembly still in place.

- Check the cut thickness with the resection gauge.
- Perform the distal cut using a medium AMPLITUDE saw blade that matches the instrumentation set and motorized handpiece.
- Extract the converging pins with the handpiece or pin extractor.
- Slide the resection guide off the pins in the o holes, but leave the pins in place in case recutting is necessary.





Intramedullary tibial aiming: landmarks

- Place the knee in hyperflexing position and dislocate the tibia forward. One blunt and two sharp retractors are supplied.
- Based on the pre-operative planning, make a hole in the middle of the medullary canal using the step drill bit.
- Place the 400 mm long intramedullary rod onto the T wrench and insert it into the canal, the landmark must always be visible.

Note: If the rod cannot be inserted, use the 250 mm intramedullary rod.

Intramedullary tibial aiming

- Attach the tibial slide bar and the resection guide (left or right) together onto the bracket.
- Insert this entire unit onto the intramedullary rod, adjust its rotation relative to the anterior tibial tuberosity and then impact the tabs.
- Clip the tibial stylus onto the resection guide (make sure the clip is fully engaged).
- Set the resection height by using the stylus to palpate either the:
 - healthy side (10 mm cut relative to the chosen point),
 - worn side (0 mm cut relative to the chosen point (exit level of the saw blade)).

For other resection heights, use the 2 mm markings on the tibial slide bar.

- Verify the height of the bone cut with the resection gauge.

Optional: To determine if the tibial slide bar is perpendicular to the tibial cut, slide the universal handle onto the slide bar and use the alignment gauge to verify the alignment.

- Place the pins in the 0 mm holes (with the universal or AO snap-in connector).





Extramedullary tibial aiming

- Attach the tibial slide bar and the resection guide (left or right) together onto the bracket.
- Assemble the malleolar clamp with the extramedullary aiming column and with the slide bar.
- Place the malleolar clamp around the ankle, and then place the bracket on the intercondylar eminence.
- Set the rotational and sagittal alignments before impacting the tabs.
- Clip the tibial stylus onto the resection guide (make sure the clip is fully engaged).
- Set the resection height by using the stylus to palpate either the:
 - healthy side (10 mm cut relative to the chosen point),
 - worn side (0 mm cut relative to the chosen point (exit level of the saw blade)).

For other resection heights, use the 2 mm markings on the tibial slide bar.

- Verify the height of the bone cut with the resection gauge.

Optional: To determine if the tibial slide bar is perpendicular to the tibial cut, slide the universal handle onto the slide bar and use the alignment gauge to verify the alignment.

- Place the pins in the 0 mm holes (with the universal or AO snap-in connector).
-

Combined tibial aiming

- Based on the pre-operative planning, make a hole in the middle of the medullary canal with the step drill bit.
- Place the 400 mm long intramedullary rod on the T wrench and insert it into the canal; the landmark must always be visible.

Note: If the rod cannot be inserted, use the 250 mm intramedullary rod instead.

- Attach the tibial slide bar and the resection guide (left or right) together onto the bracket.
- Assemble the malleolar clamp with the aiming column and with the slide bar.
- Place the malleolar clamp around the ankle and then place the bracket onto the intercondylar eminence.
- Set the rotational and sagittal alignments before impacting the tabs.
- Clip the tibial stylus onto the resection guide (make sure the clip is fully engaged).
- Set the resection height by using the stylus to palpate either the:
 - healthy side (10 mm cut relative to the chosen point),
 - worn side (0 mm cut relative to the chosen point (exit level of the saw blade)).

For other resection heights, use the 2 mm markings on the tibial slide bar.

- Check the bone cut height with the resection gauge.

Optional: To determine if the tibial slide bar is perpendicular to the tibial cut, slide the universal handle onto the slide bar and use the alignment gauge to verify the alignment.

- Place the pins in the 0 mm holes (with the universal or AO snap-in connector).