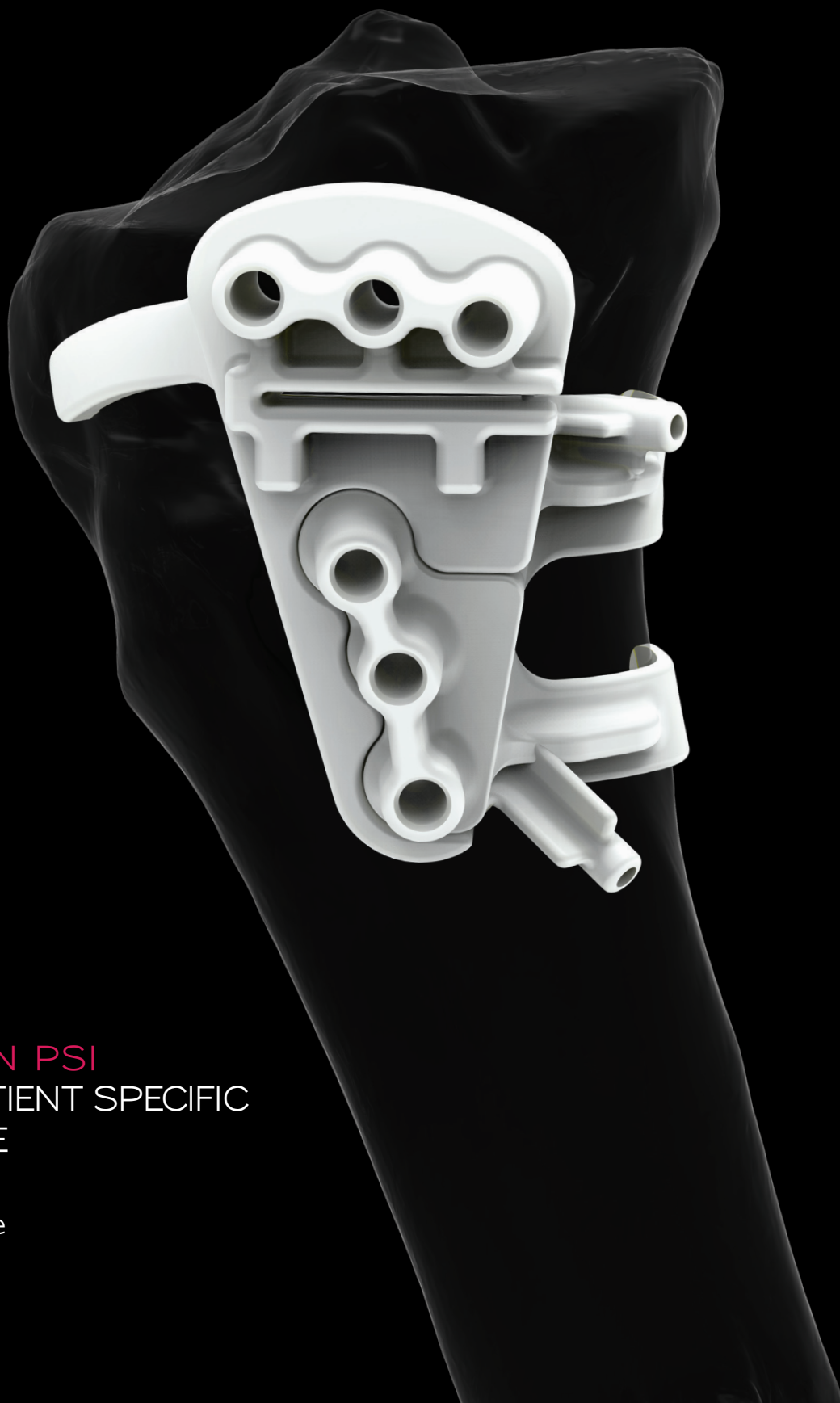




NEWCLIP-TECHNICS

.....
INNOVATION MEANS MOTION



ACTIVMOTION PSI
HTO USING PATIENT SPECIFIC
CUTTING GUIDE

Surgical technique

ACTIVMOTION PSI

Indications: The implants of the ACTIVMOTION range are intended for knee osteotomy in adults.

Contra-indications:

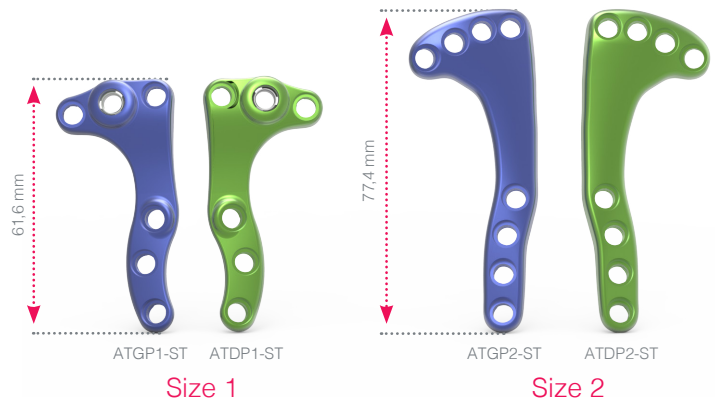
- Serious vascular deterioration, bone devitalization.
- Pregnancy.
- Acute or chronic local or systemic infections.
- Lack of musculo-cutaneous cover, severe vascular deficiency affecting the concerned area.
- Insufficient bone quality preventing a good fixation of the implants into the bone.
- Muscular deficit, neurological deficiency or behavioral disorders, which could submit the implant to abnormal mechanical strains.
- Allergy to one of the materials used or sensitivity to foreign bodies.
- Serious problems of non-compliance, mental or neurological disorders, failure to follow post-operative care recommendations.
- Unstable physical and/or mental condition.

TECHNICAL FEATURES

HIGH TIBIAL OSTEOTOMY PLATE

→ TECHNICAL FEATURES

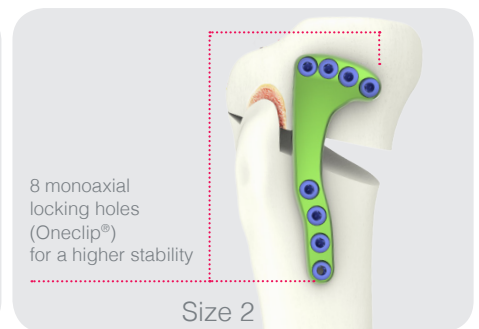
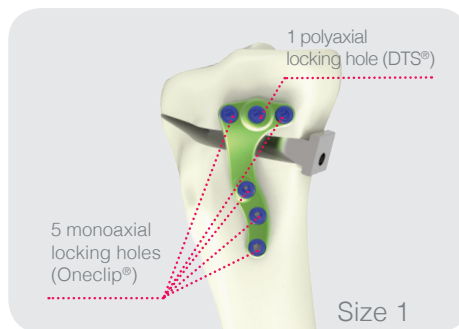
- **Anatomical asymmetrical implant** (green anodized for right plate and blue anodized for left plate),
- Proximal curve,
- Metaphyseal slope adapted to the anatomy,
- Material: **Titanium** alloy,
- Size 1 - Up to 16° of correction.
Size 2 - Up to 20° of correction.



FIXATION

→ TECHNICAL FEATURES

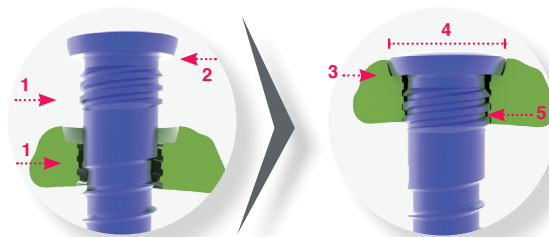
- Ø4.5 mm reinforced core screws for optimal mechanical stability (progressive core diameter Ø3.9 to 4.5 mm),
- Buried screws to minimize risks of soft tissue irritation.



→ MONOAXIAL LOCKING FIXATION

• **Features:**

- The threaded section under the screw head and inside the hole have strictly the **same characteristics** (1):
 - Cylindrical internal thread profile,
 - Cylindrical external thread profile,
- Screw head cap (2),
- Plate and screws made from the same material: titanium alloy.



• **Results :**

- **Low profile construct:**
 - The screw is stopped in the hole by its cap, ensuring the locking (3),
 - The screw head is buried in the plate (4),
- **Construct limiting cold welding risks for improved removal properties:**
A perfect coaptation of both profiles when locking (5).

TECHNICAL FEATURES

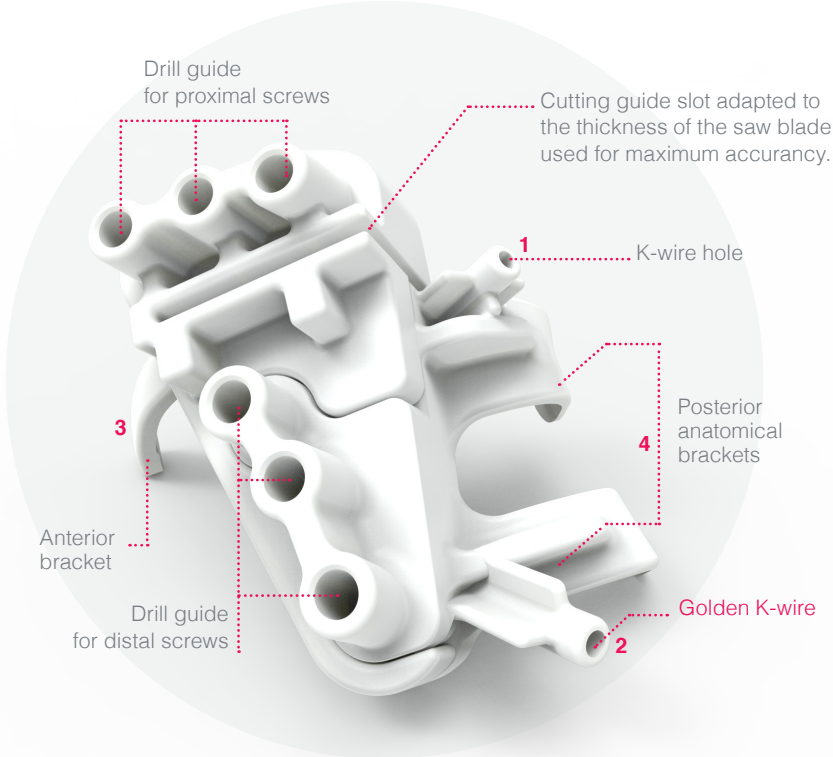
PATIENT SPECIFIC CUTTING GUIDE - STEP BY STEP

Based on patients CT scan, the patient specific cutting guide for HTO offers an optimal correction of HKA axis and tibial slope.

→ TECHNICAL FEATURES

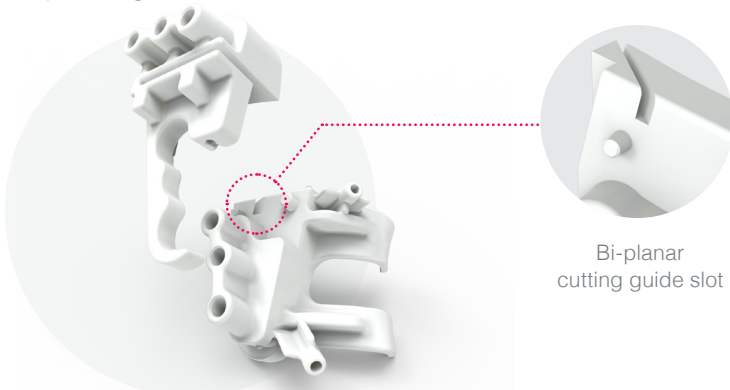
One single use patient specific cutting guide (PSI) for each Activmotion plates:

- 1 specific cutting guide for Activmotion plate size 1
- 1 specific cutting guide for Activmotion plate size 2

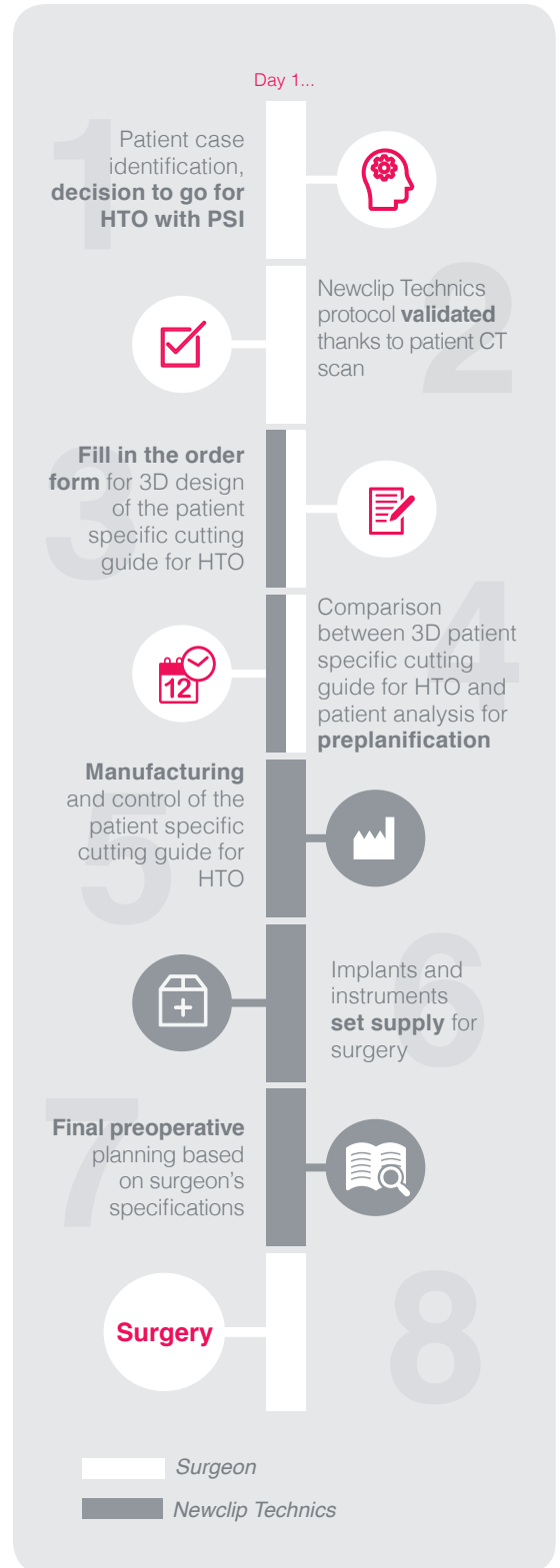


- The K-wire going through this hole allows to check:
 - The direction of the osteotomy cut,
 - The PSI position (compliance of the real position with the planned position).

K-wire 1 mm under the cut
- The **Golden K-wire** going through this hole serves as:
 - a **mechanical stop for the cut**,
 - an **indication of the hinge position** (hinge: 10-11 mm from the lateral cortex, distance from the tibial plateau varies between patients)
- Anterior bracket** between the anterior tuberosity and the patellar tendon for accurate positioning.
- Posterior anatomical brackets** congruent with the tibial surface for accurate positioning.



→ PROCESS

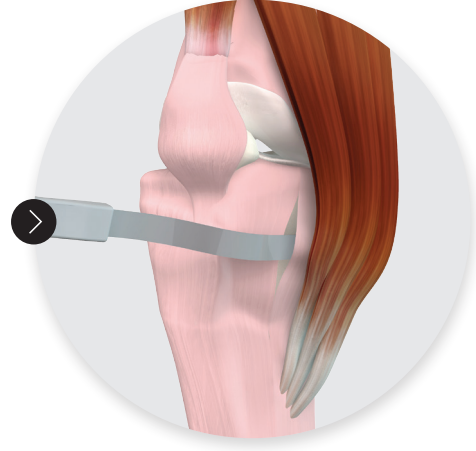


SURGICAL TECHNIQUE

SURGICAL APPROACH

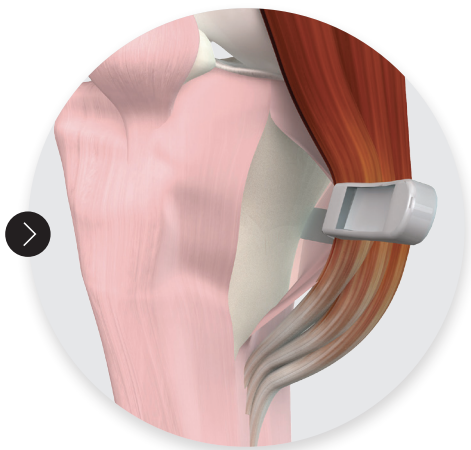


- The patient is positioned supine on the operating table. The procedure is performed under pneumatic tourniquet and a small pillow is placed under the buttock of the operated side in order to maintain the limb in neutral rotation.
- An 8 cm slightly oblique vertical incision is made along the antero-medial surface, running over the joint space down to under the tibial tuberosity.

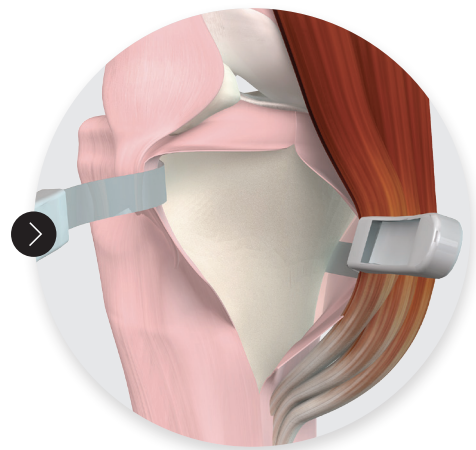


- A single-plane incision is made through the periosteum; then the hamstring and the medial collateral ligament (MCL) are retracted posteriorly.
The larger the angular correction must be, the more the hamstring and MCL should be released distally.

CAUTION : if the release is adequate, the opening of the osteotomy and the insertion of the bone graft can be performed with no risk of tearing the lateral cortical hinge. If it is not, forcing the graft in may tear the hinge, thus seriously jeopardizing complete bone mending.
ie: pseudarthrosis.



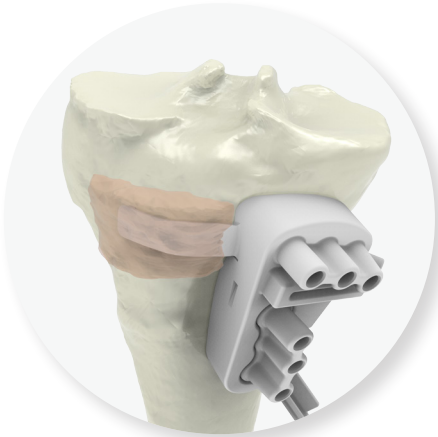
- An elevator is placed very carefully over the posterior surface of the tibial metaphysis and should remain in place as a protection during the osteotomy.



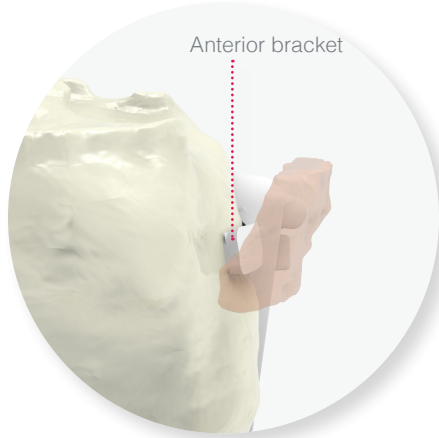
- Clear the deepest part of the patellar tendon down to its attachment onto the tibial tuberosity, and protect it using a retractor during the osteotomy.

SURGICAL TECHNIQUE

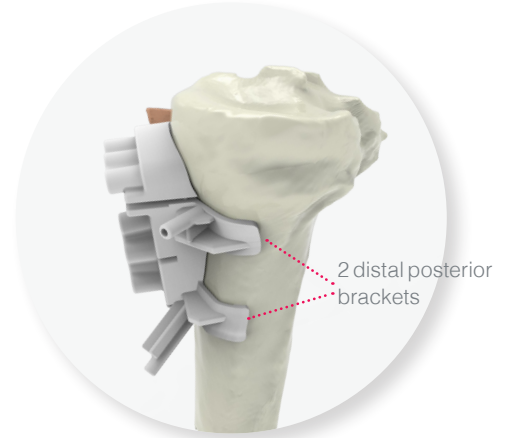
PSI POSITIONING



The PSI is anatomical and fits the medial-anterior surface of the tibia. To properly apply the anterior bracket, the entire PSI must be pushed down on the patellar tendon insertion.



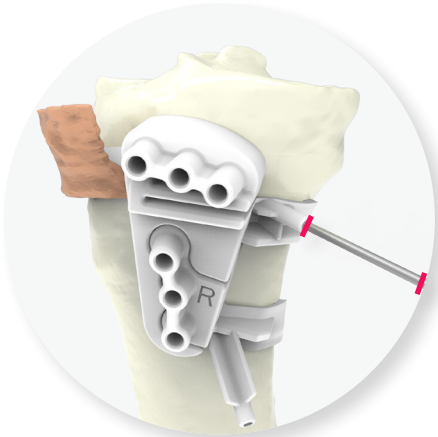
The anterior bracket is designed to have a slight interference with the bursa.



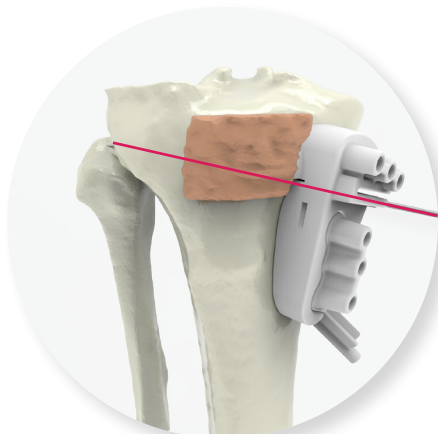
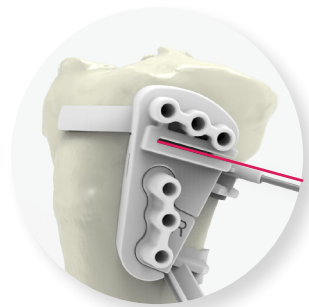
The **two distal posterior brackets** are 100% congruent to the tibial surface. They are elastic in order to prevent any gap.

Caution: Please do not modify the insertion of the patellar tendon. For the PSI to be perfectly anatomical, the bursa must be kept as is.

FIRST FIXATION AND POSITIONING VALIDATION

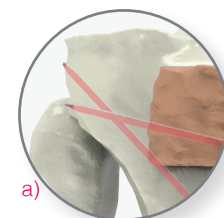
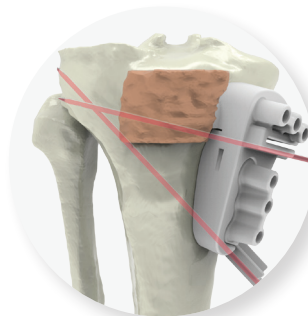


Once both PSI parts are clipped together and positioned, hold the custom jig against the bone by keeping pressure on it and insert a 2.2 mm K-Wire through the PSI and the tibia until the value mentioned in the planning file is reached.



The cut is ascendant and targets the fibula head. Its position is computed for each patient individually to obtain the ideal hinge location.

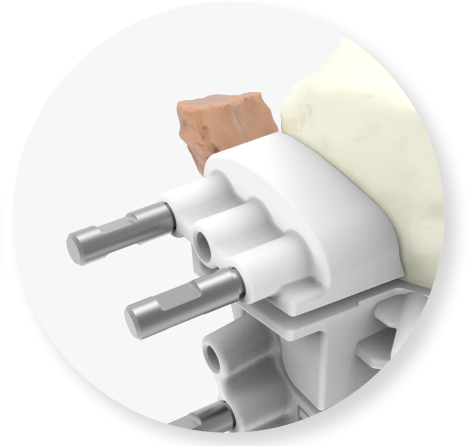
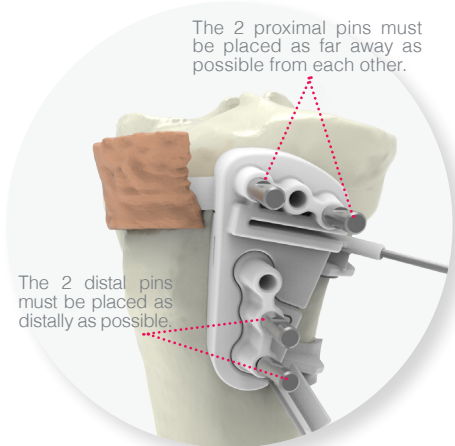
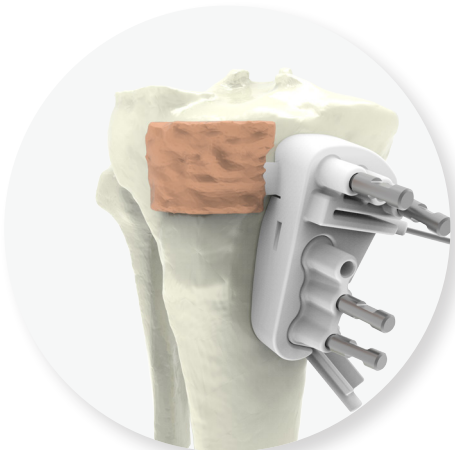
The K wire is placed 1 mm under the actual cut.



a) At this step, the Golden K-wire can also be inserted to check the PSI location with even more precision.

SURGICAL TECHNIQUE

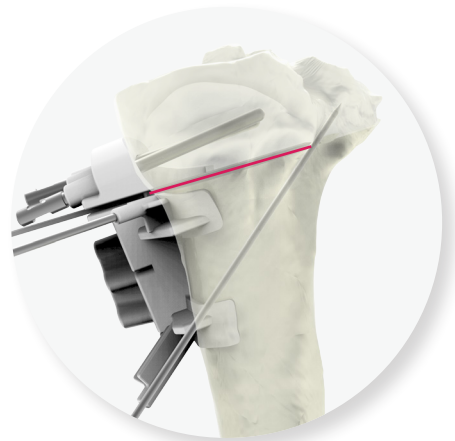
PSI TOTAL FIXATION



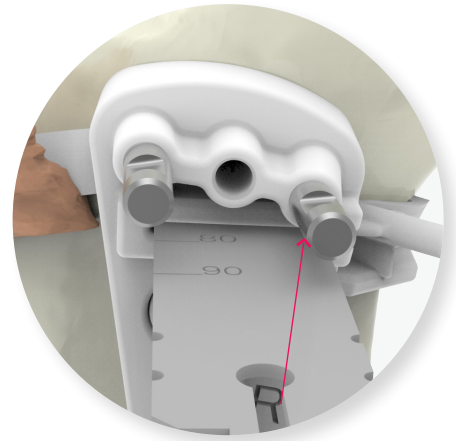
Now that the PSI is confirmed to be well positioned, **4 pins minimum** must be inserted in the tibia: at least 2 in the proximal part and 2 in the distal part, using the 4.0 mm drill bit. Whether the surgeon chooses to place 4, 5 or 6 pins, the **6 holes must be drilled**. The 3 proximal holes are to be monocortical and the 3 distal holes are to be bicortical.

The pins must be inserted all the way in using the hammer.

CUT : PHASE 1

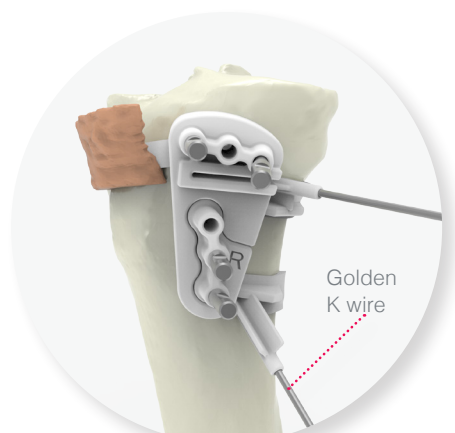


With the PSI now strongly fixed, the cut can be initiated. Place the saw blade in the window of the custom jig's upper part and cut until the stop is reached.

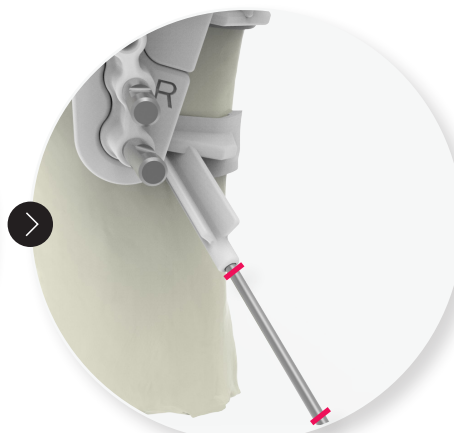


Mechanical stop built in the window of the PSI's upper part.

CUT : PHASE 2



After removing the saw blade, insert the Golden K-wire in the distal part of the PSI (reminder: this can also be done during the step: first finalization and positioning validation).



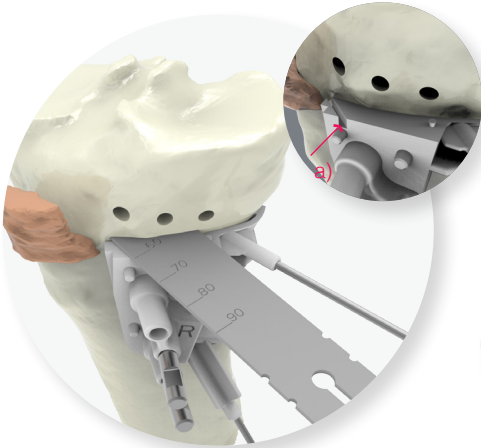
The Golden K-wire must go through the osteotomy site. It serves as a mechanical stop for the cut and as an indication of the hinge location. The length of the K-wire remaining outside of the PSI can be found in the planning guide. The K-wire can also be transfixant in order to protect the hinge during the opening.



The proximal pins and upper part of the PSI can now be removed.

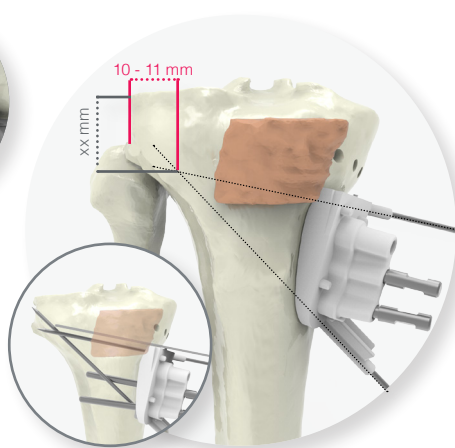
SURGICAL TECHNIQUE

CUT : PHASE 3

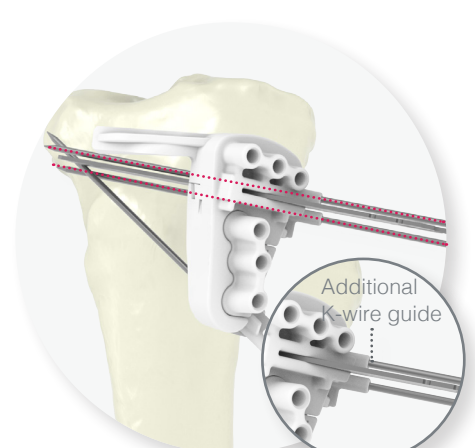


Re-insert the saw and finalize the cut.

a) A biplanar cut is possible while still protecting the patellar tendon. It must be decided during the PSI design phase (the PSI is designed so that the cut is made above the patellar tendon insertion on the ATT).



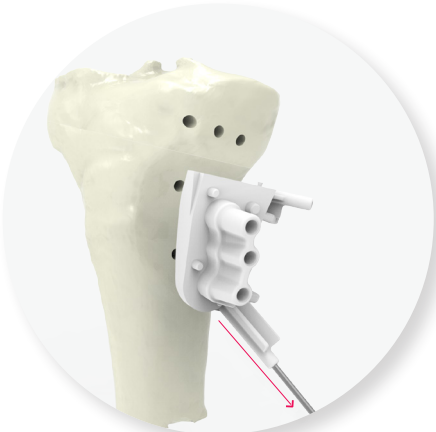
The golden K-wire can now be used as a mechanical stop. When the saw blade gets in contact with the K-wire, it has reached a theoretical point located 10-11 mm away from the external cortex. The distance between this theoretical point and the tibial plateau varies between patients. After reaching the K-wire, the pins, the K-wires and the lower part of the PSI can be removed.



Option:

Additional K-wire guide located above the cut guide in order to protect the saw blade during the cut.

OPENING



After reaching the K-wire, the pins, the K-wires can be removed. Then remove the lower part of the jig sliding along the golden pin.



Once the cut is made, the opening can be done. In order to do so, the plate is positioned using the 2 short distal pins and carefully pushing the plate on the tibia so that it does not move.

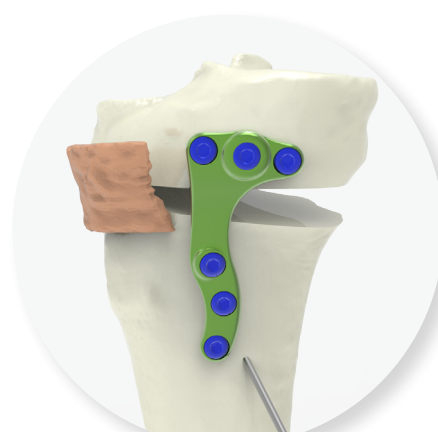


Short pins are designed for no posterior damages. The planned opening is reached in both planes (HKA and tibial slope) when the previously drilled proximal holes and the plate holes are facing each other. The proximal pins can then be reinserted in order to fix the plate and hold the opening.

LOCKING THE PLATE



The 2 free holes can be used to lock the plate while the 4 pins remain inserted. Do not forget to use the countersink (ANC120-US) before inserting each screw to prepare the first cortical. One screw (ST4.5Lxx) placed proximally and one screws placed distally.



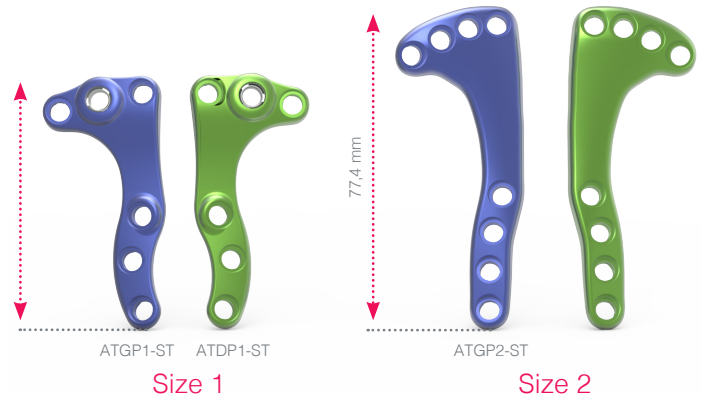
The 4 remaining screws can be locked in the plate. Each pin must only be removed right before inserting a screw in its place.

REFERENCES

OPENING TIBIAL PLATES*

Ref.	Description
ATDP1-ST	Medial opening wedge HTO plate - Right - Size 1 - STERILE
ATGP1-ST	Medial opening wedge HTO plate - L - Size 1 - STERILE
ATDP2-ST	Medial opening wedge HTO plate - Right - Size 2 - STERILE
ATGP2-ST	Medial opening wedge HTO plate - Left - Size 2 - STERILE

Manufacturer : NEWCLIP TECHNICS (FRANCE) - Class : IIb - Notified body: SGS - CE 0120



Ø4.5 MM DTS® SELF TAPPING SCREWS*

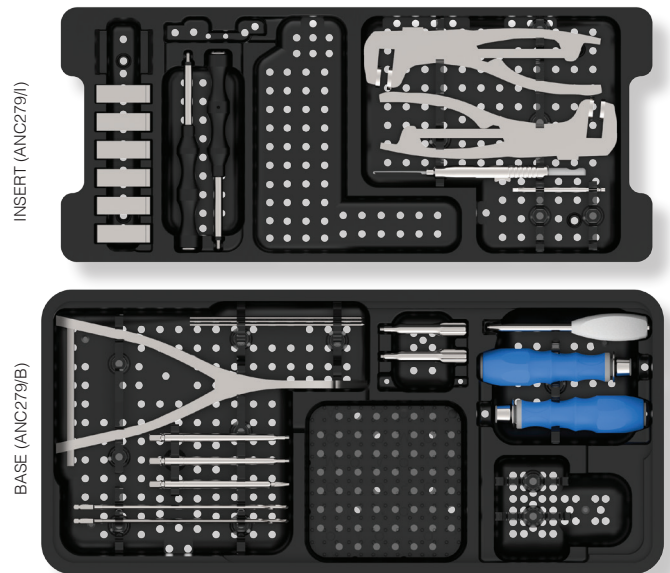
Ref.	Description
ST4.5Lxx-ST	DTS® self-tapping screw Ø4.5 mm L30 to 75 mm (incrementation : 5 mm) STERILE

Manufacturer : NEWCLIP TECHNICS (FRANCE) - Class : IIb - Notified body: SGS - CE 0120

INSTRUMENTS REFERENCES

INSTRUMENTS

Ref.	Description	Qty
ANC019	Metallic wedge 6 mm high	1
ANC020	Metallic wedge 8 mm high	1
ANC021	Metallic wedge 10 mm high	1
ANC022	Metallic wedge 12 mm high	1
ANC023	Metallic wedge 14 mm high	1
ANC024	Handle for metallic wedge and cutting guide	2
ANC025	Metallic wedge 16 mm high	1
ANC047	HTO fusion cage handling tool	1
ANC119-SK	3.0 mm quick coupling hexagonal non prehensor screwdriver	2
ANC120-US	Ø4.2 mm countersink with US quick coupling system	1
ANC210	Length gauge for Ø4.5 mm screws	1
ANC211	Ø4.0 mm quick coupling drill bit	2
ANC212	Ø4.0 mm DTS® Trauma drill guide	2
ANC235	HTO Meary pliers	1
ANC240	Pliers for bending ACTIV plates	2
ANC312	3.0 mm quick coupling hexagonal screwdriver	1
ANC352	Ø6 mm US quick coupling handle	2
ANC657	Ø3.9 mm pin for cutting guide - L 75 mm	6
ANC774	Pin for cutting guide	6
33.0222.150	Pin Ø2.2 L150 mm	3
16202	Farabeuf pliers 170 mm	1



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