

BPK-S INTEGRATION

BRIEF INSTRUCTION PRIMARY SURGICAL TECHNIQUE

(SOURCE: SURGICAL TECHNIQUE - BPK-S INTEGRATION PRIMARY)

A Extramedullary tibial alignment

After the *Extramedullary Tibial Alignment Guide* has been assembled and after selection of the *Tibial Resection block anatomic* or *Tibial Cutting Block adjustable*, the *Extramedullary Tibial Alignment Guide* is attached to the lower leg, adjusted to the length of the tibia, and secured with a *Headed Pin Ø 3,15 x 70 mm* in the area of the eminentia intercondylaris. Then the varus/valgus adjustment (green) and posterior slope adjustment (orange) are made.

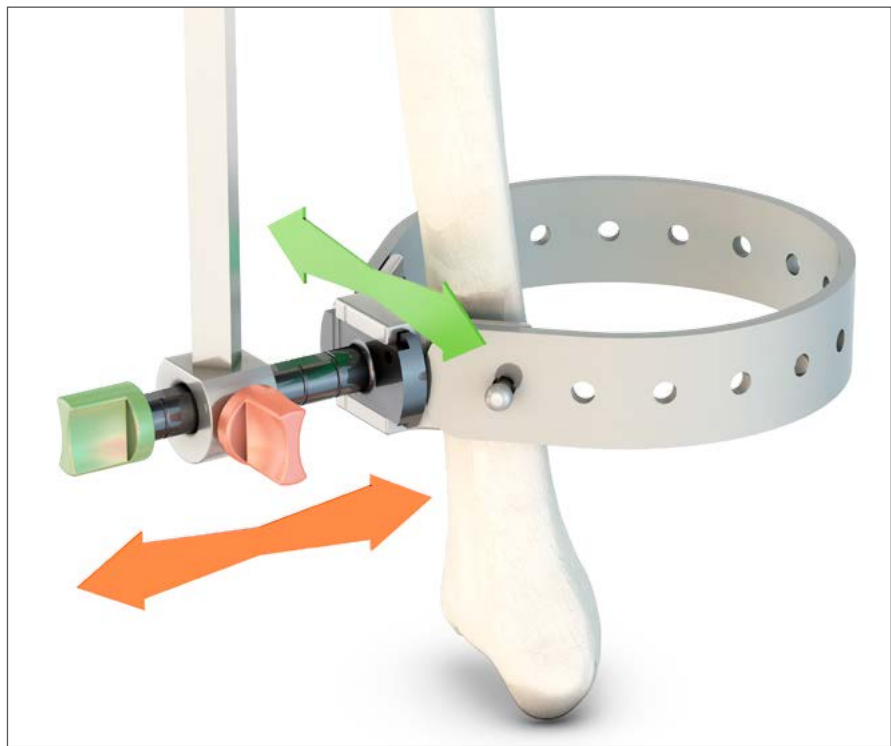
Alignment parallel to the axis of the tibia corresponds to a 3° posterior slope of the tibial plateau.



Assembling the Tibial Alignment Guide



Adjusting the Tibial Alignment Guide



Varus/valgus and slope adjustments

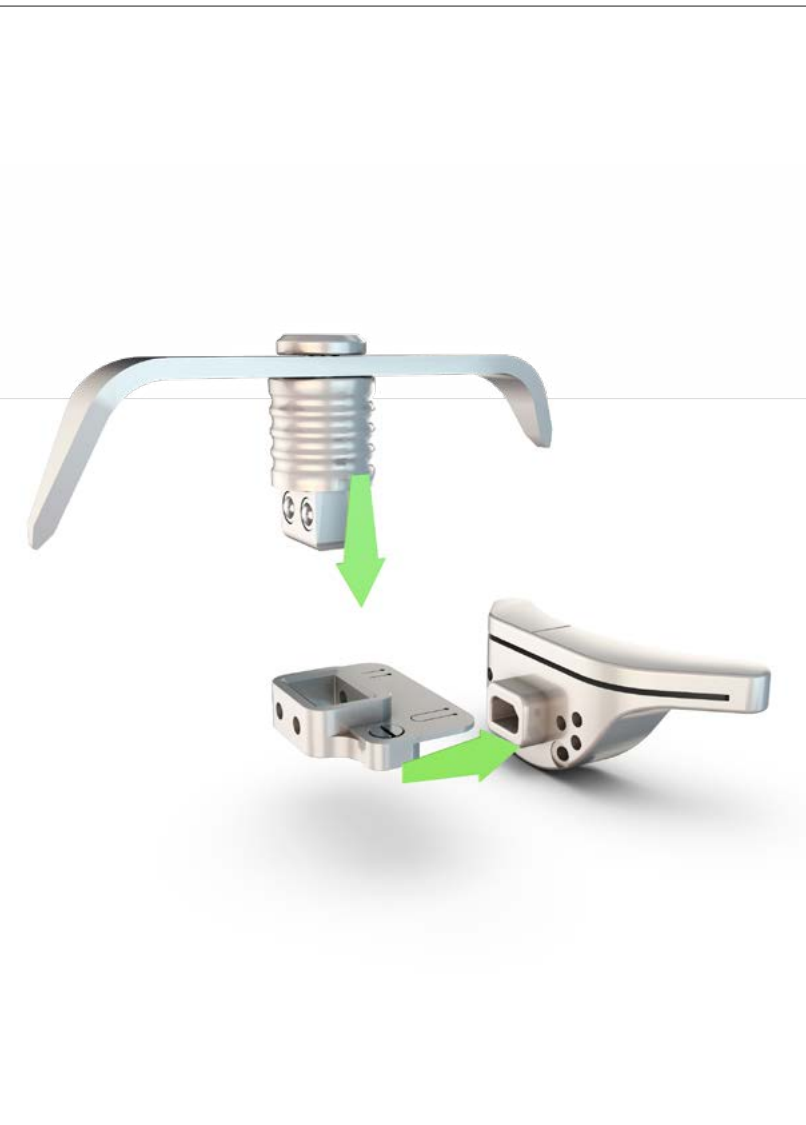
B Tibial resection

The level of the tibial resection is set with the *Tibial Depth Resection Guide* either on the more severely damaged side at 2 mm or on the less severely damaged side at 10 mm (corresponding to the minimum height of the construct: at least 7 mm PE-INSERT + 3 mm TIBIA Component) and the resection guide is lowered to the articular surface with the knurled screw.

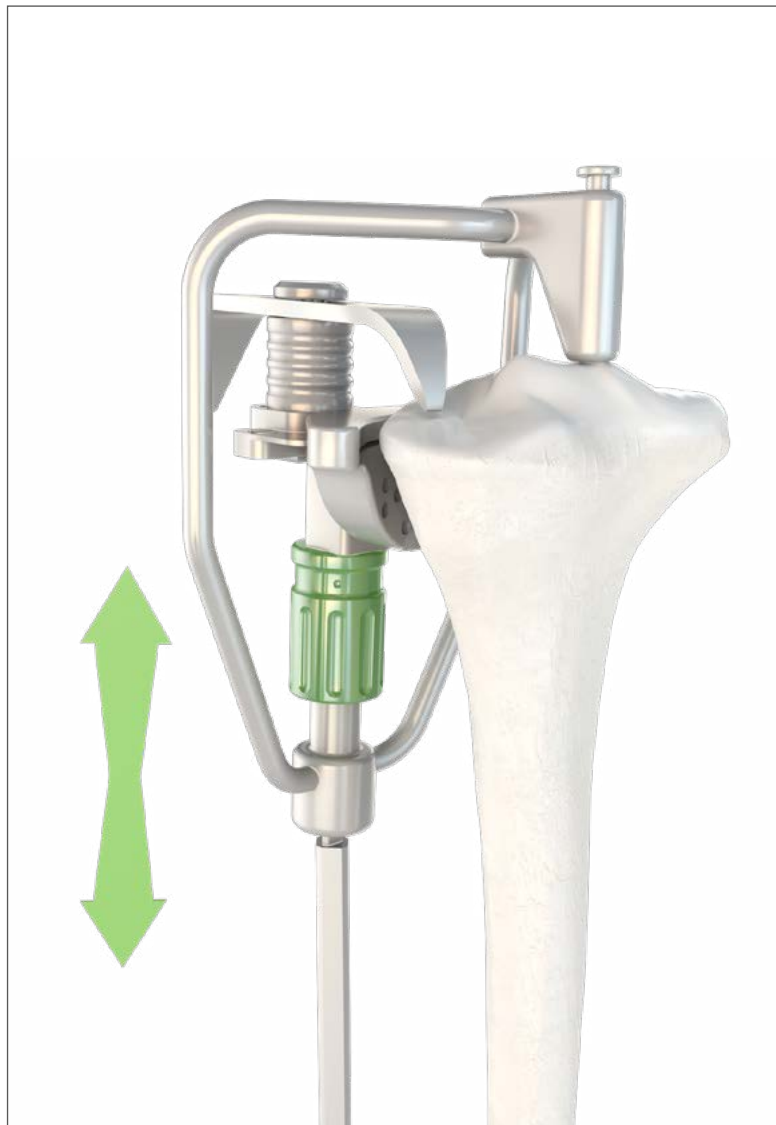
One turn of the knurled screw corresponds to a change of 2 mm in height.

The *Extramedullary Tibial Alignment Guide* is secured with a second *Headed Pin Ø 3,15 x 70 mm*, and the level of the resection and posterior slope are verified with the *Visualisation Guide S*. Then the *Tibial Resection Guide* is secured with at least 2 pins, the *Extramedullary Tibial Alignment Guide* is removed, and the tibial resection is performed.

Moving the *Tibial Resection Guide* one pair of holes corresponds to a change in position of 2.5 mm.



Assembling the Tibial Depth Resection Guide



Setting the resection height



Checking resection and slope

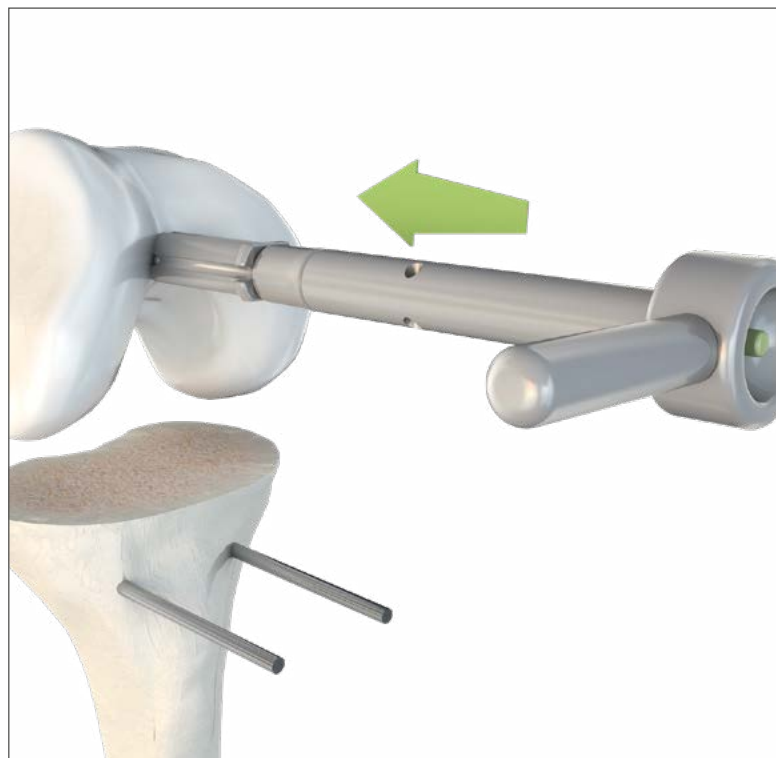
C Preparing the femur

The medullary canal is opened with the aid of the *Femoral Drill Guide*. Next, the *Intramedullary Guide* (120, 220, or 320 mm) is assembled and inserted, and the size of the FEMUR Component is determined using the *Femoral Sizing Template*.

The respective marking on the *Drill Sleeve for Femoral Drill Guide* (L=left, R=right) must be clearly visible anteriorly.



Opening the medullary canal



Intramedullary Guide



Determining size

D Femoral rotation

After the *Valgus Plate right* or *left* (valgus angle of 1°, 3°, 5°, 6°, 7°, 8°, or 9°) has been placed, the *Flexion Measuring Device* is attached to the *Valgus Plate*. The *Valgus Plate* must be in contact with the bone on at least one side.

When adjusting axial rotation, the feeler gauge must not lie on the anterior lateral cortex.

To determine rotational alignment, the *Shoe left* or *right* is attached to the *Flexion Measuring Device* in 90° of flexion, placed on the surface of the tibial osteotomy, and a *Spacer* of suitable height (7 – 17 mm) is inserted to achieve sufficient tension of the ligaments. Proper rotational alignment is thus determined with respect to soft tissue structures and is secured with the aid of two *Headed Pins Ø 3,15 x 30 mm* in the *Valgus Plate*.

The instrumentation offers additional options for determining axial rotation (Whiteside line, epicondylar axis, posterior condyles).



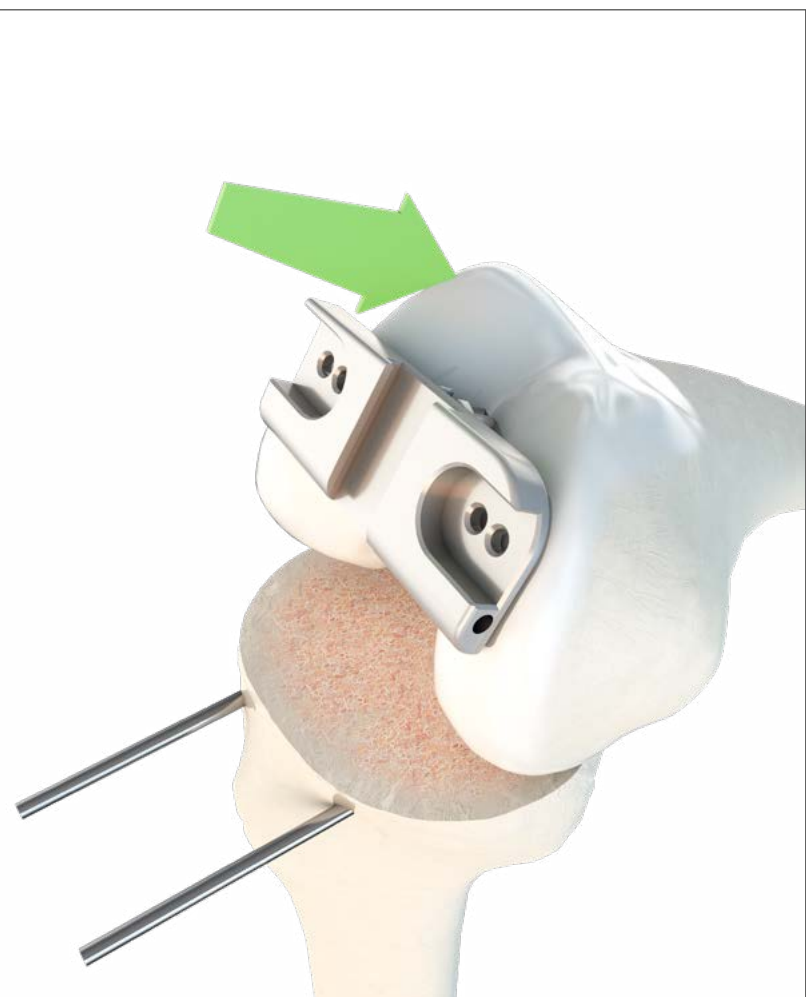
Whiteside line



Epicondylar axis



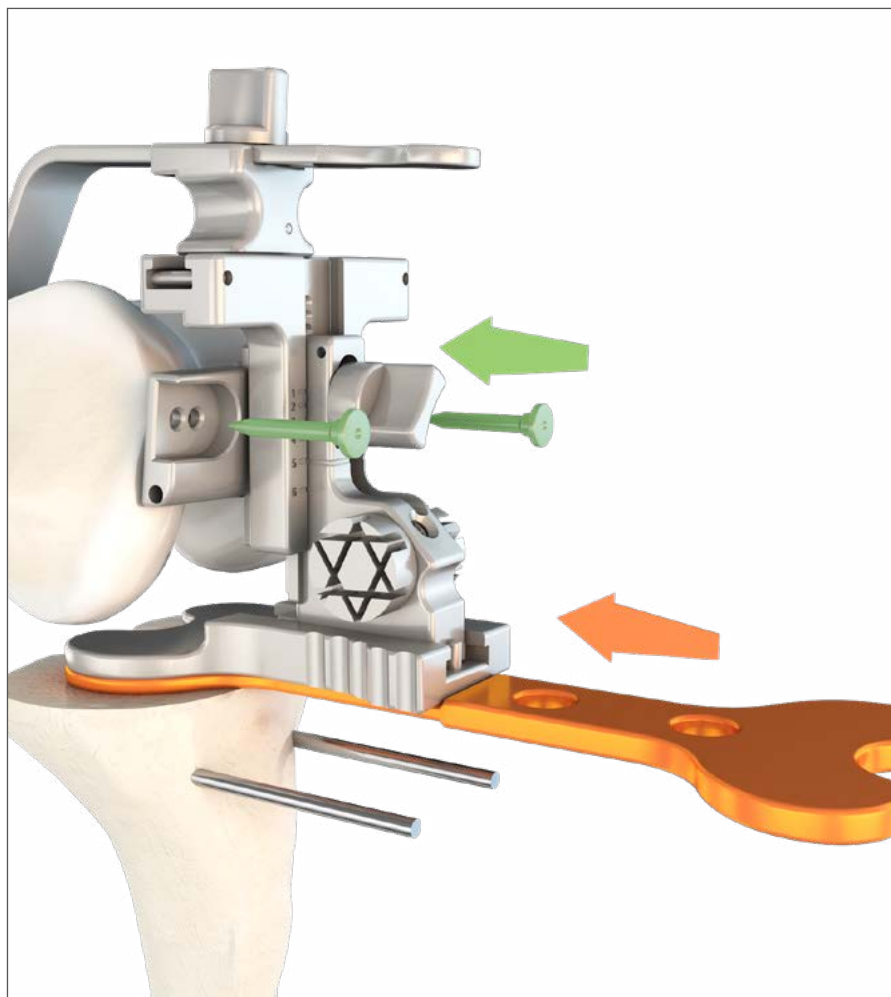
Posterior condyles



Valgus Plate



Flexion Measuring Device



Rotational alignment

E Determining femoral size and joint space

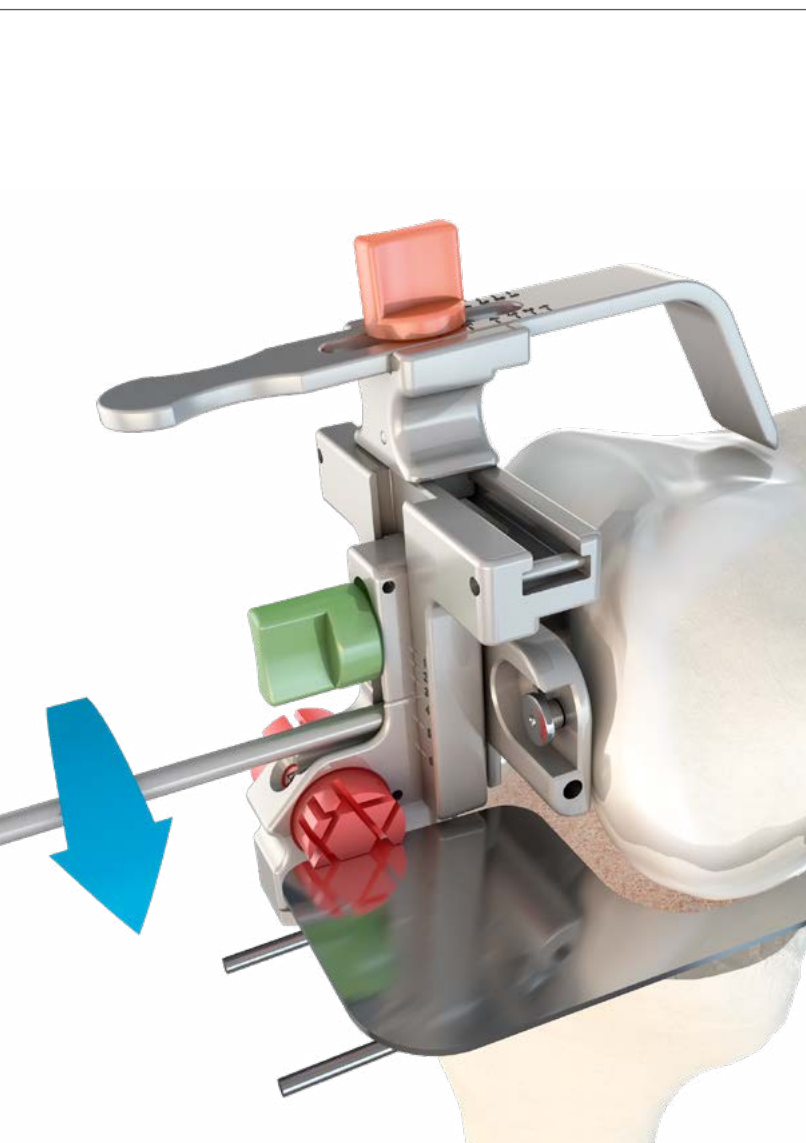
The *Flexion Measuring Device* (green), the resection gauge (red), and the feeler gauge (orange) are set to the size measured previously. Then the feeler gauge is lowered onto the highest point of the anterolateral cortex and secured (blue). The posterior osteotomy is checked with the *Visualisation Guide* on the osteotomy indicator. If applicable, this procedure will have to be repeated with other sizes until the proper size has been found.

Joint space is measured in flexion (90° of flexion) with the *Spacers* (7 – 17 mm). Once the *Flexion Measuring Device* has been withdrawn, *Spacers* (7 – 17 mm) are used to evaluate joint space in extension.

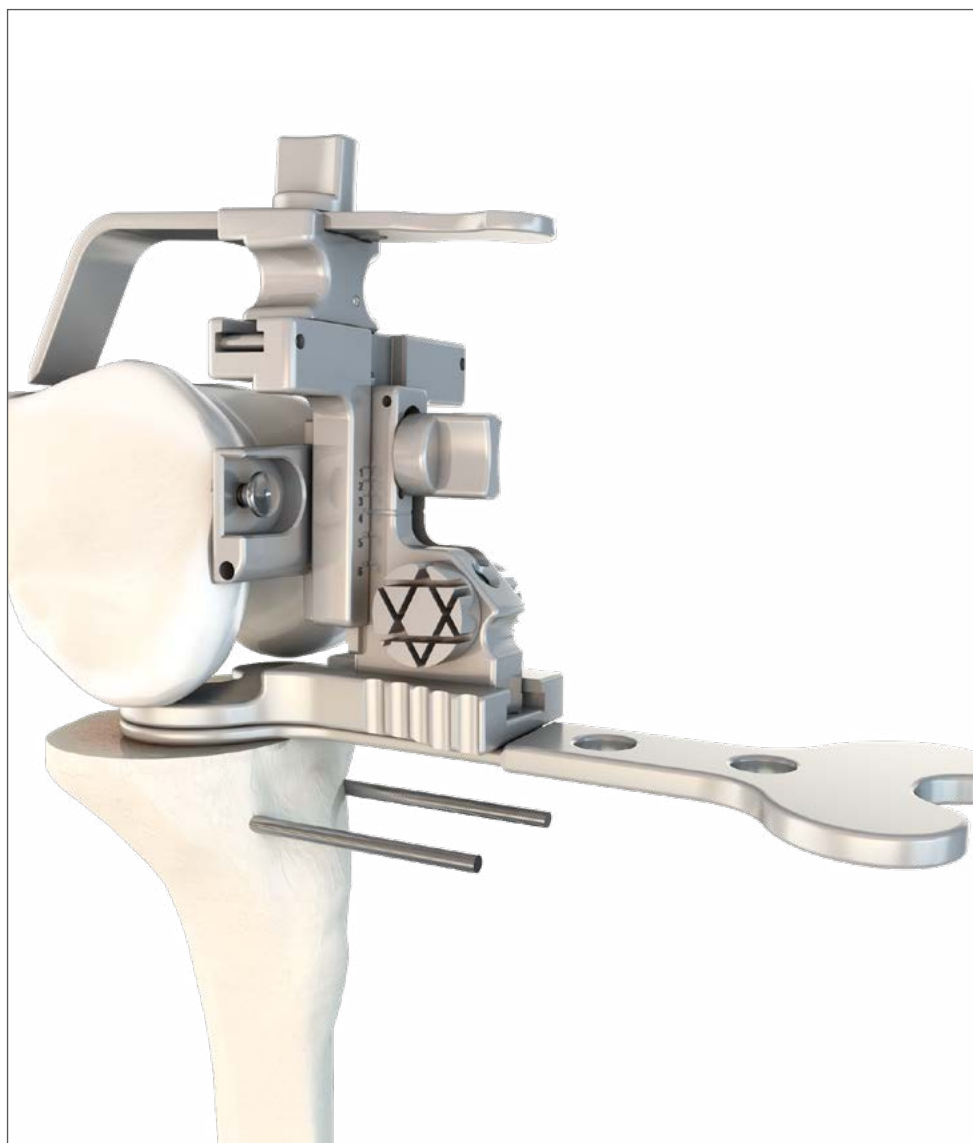
Extension space can be adjusted by up to +/- 4 mm at the distal osteotomy.

> If flexion and extension space are too narrow, more bone should be resected from the tibia.

> If only flexion space is too narrow, a smaller femoral component may be considered.



Size adjustment



Determining flexion space



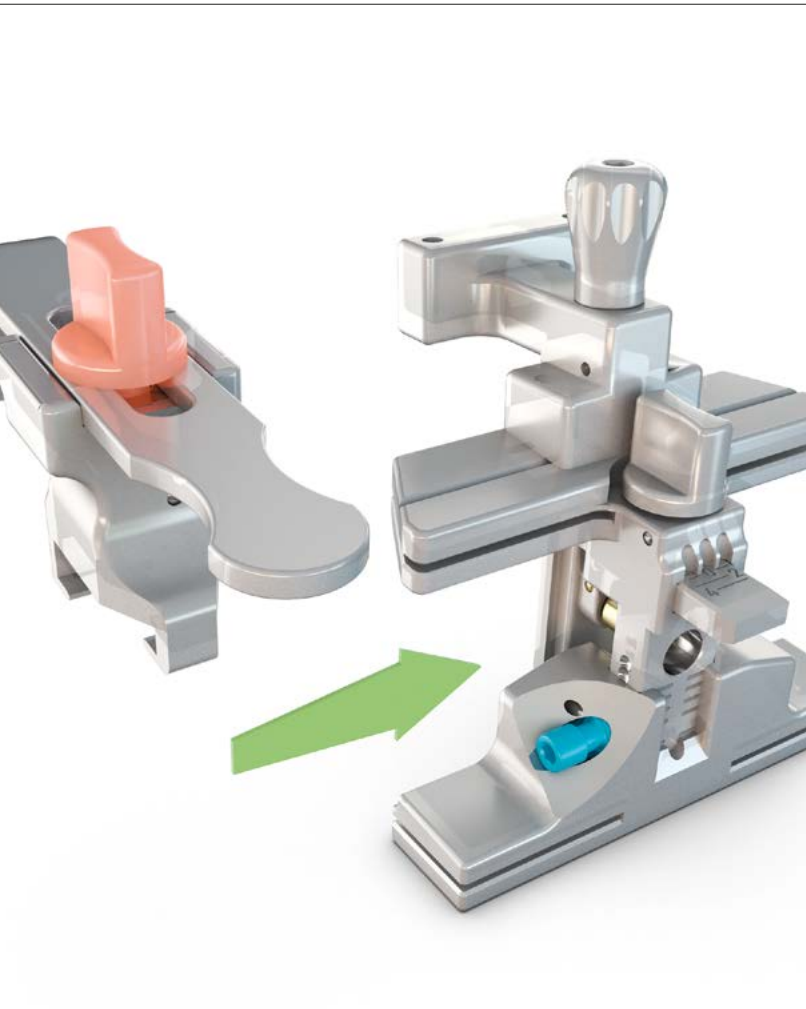
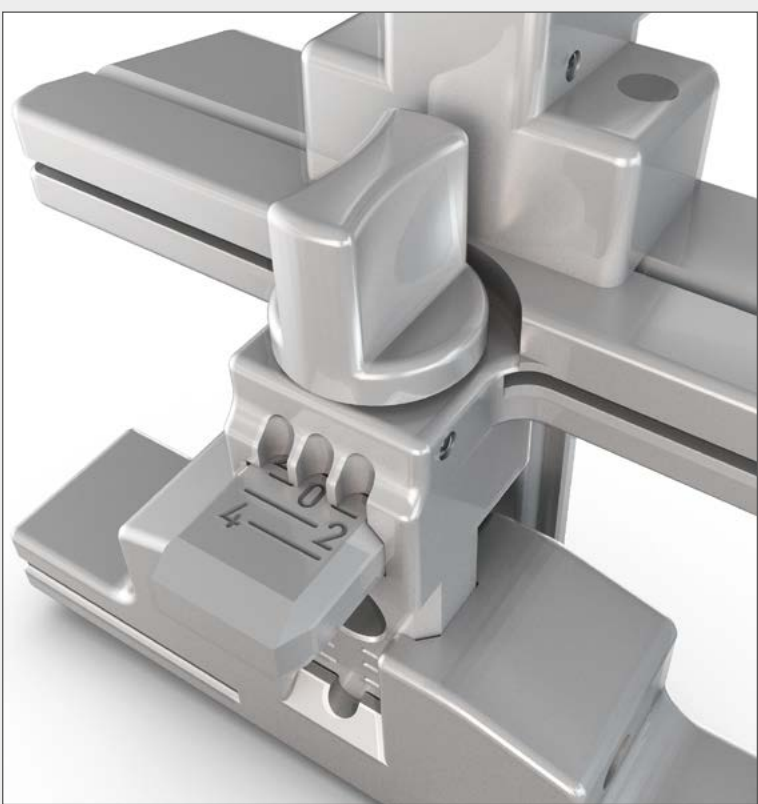
Determining extension space

F A/P femoral resection

The distal resection is adjusted on the *A/P Resection Guide* up to +/- 4 mm according to the previously determined flexion and extension space.

The previously determined femoral component size is set on the *Femoral Stylus* (orange) and on the *A/P Resection Guide* (blue). Then the *Femoral Stylus* is lowered onto the highest point of the anterolateral cortex and the *A/P Resection Guide* is secured.

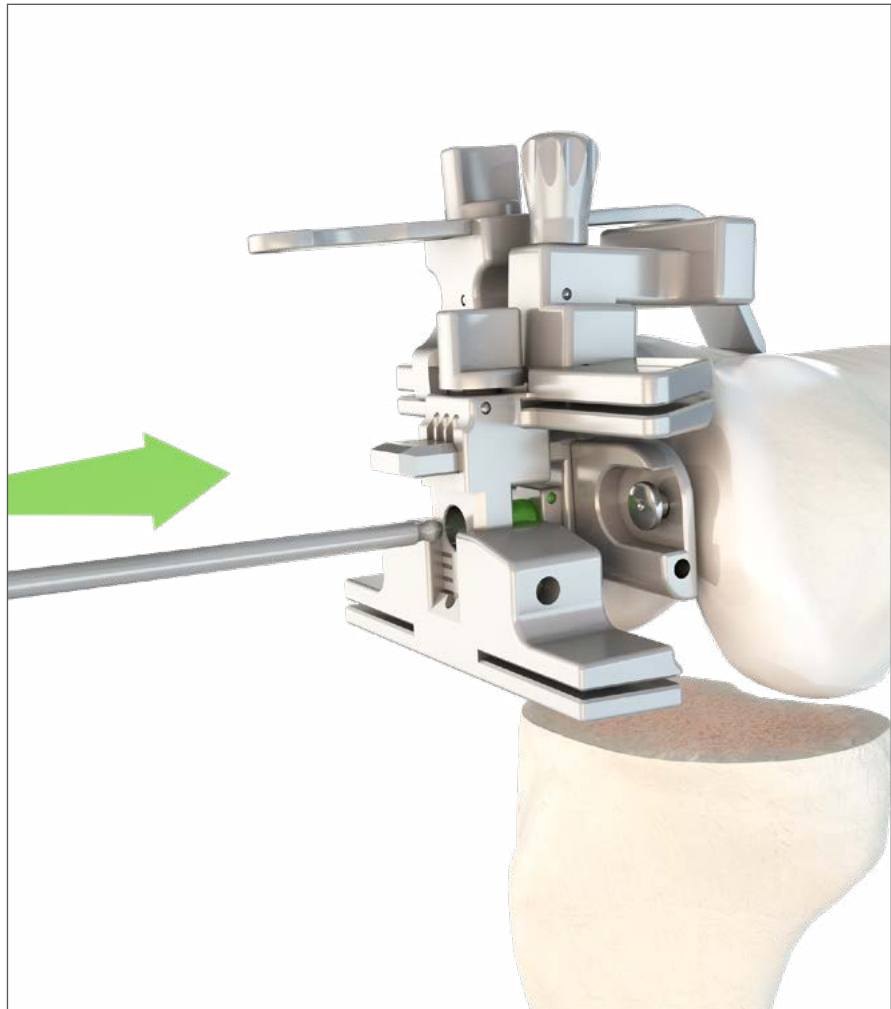
Once the A/P osteotomy plane has been verified with the *Visualisation Guide S* and the *Femoral Stylus* has been removed, the osteotomies are performed.



Size adjustment



Assembling the A/P Resection Guide

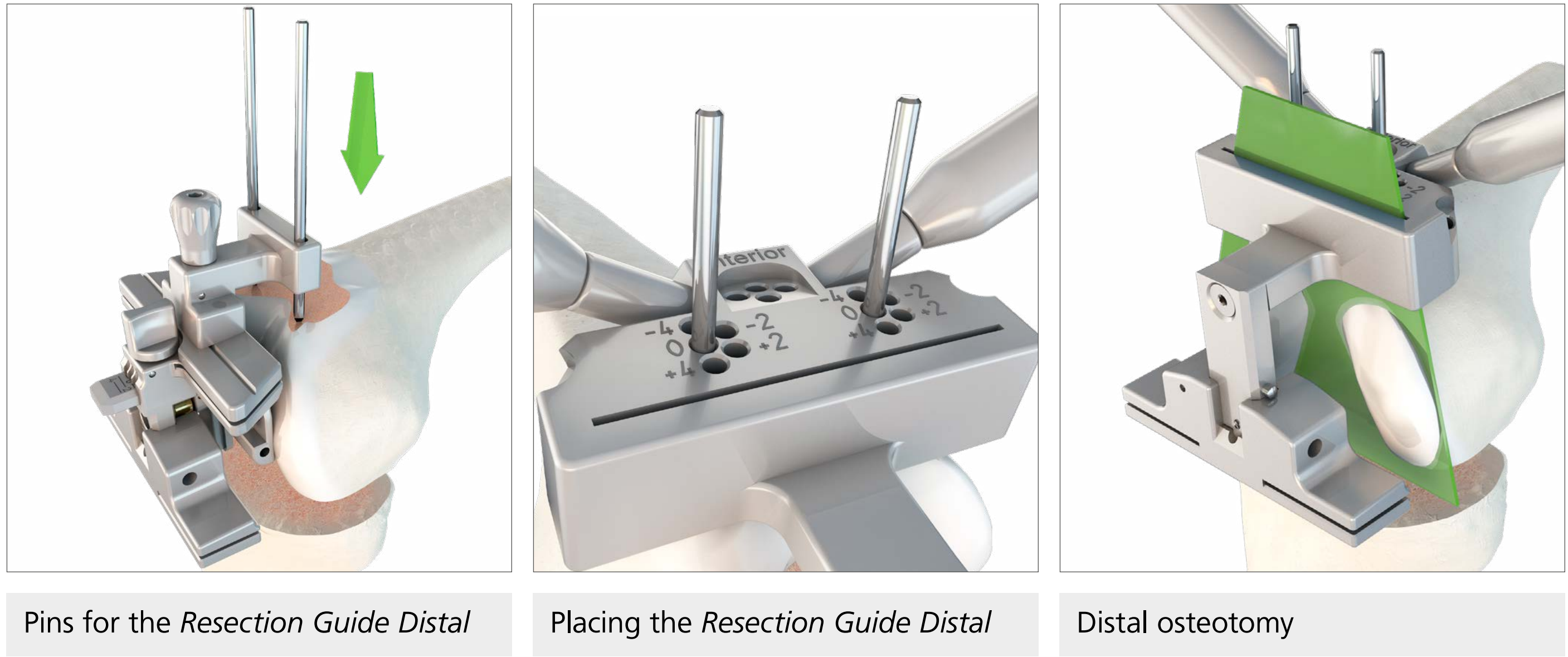


Securing the A/P Resection Guide

G Distal femoral resection

To attach the *Resection Guide Distal*, two *Pins with Trocar Ø 3,2 x 85 mm* are inserted through the *Pin Setting Guide*. Then, the *Pin Setting Guide*, *A/P Resection Guide*, *Valgus Plate*, and *Intramedullary Guide* are removed.

The *Resection Guide Distal* is placed over the drill holes for the neutral osteotomy with the „0“ marking on the pins in order to transfer the setting 1:1 from the *A/P Resection Guide* (up to +/- 4 mm). Now the distal osteotomy is performed.

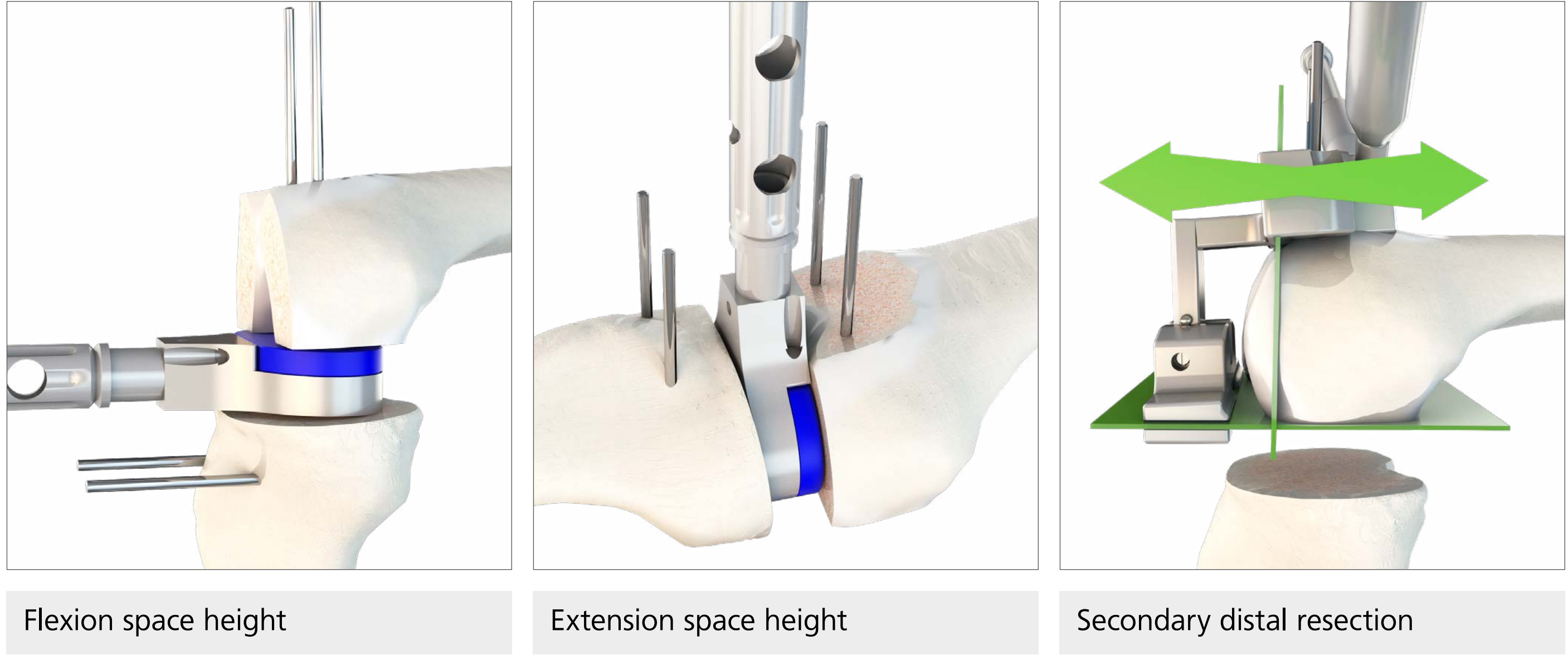


H Evaluating and balancing joint space

The *Spacer Flexion* and *Spacer Extension* are repeatedly used to check flexion and extension space. Joint space discrepancies can be addressed by altering the distal resection. A secondary distal resection > 0 will require a secondary posterior resection.



Observe correct indication Flexion (left / right) or Extension:



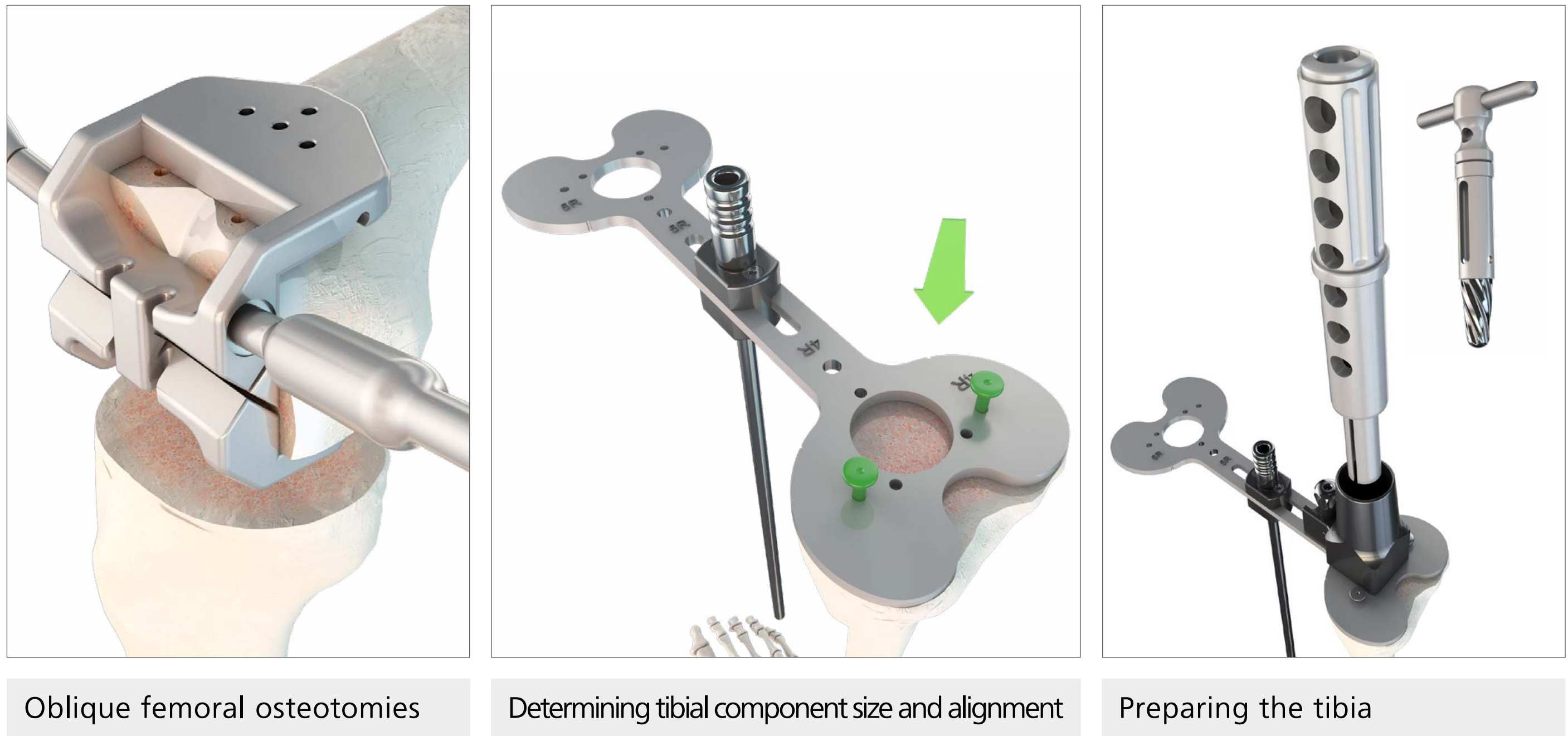
I Oblique femoral osteotomies and tibial preparation

Finally the oblique femoral osteotomies are performed. On the tibial side, the *Tibial Template* of the appropriate size is aligned on the tibial osteotomy and secured with two *Headed Pins Ø 3,15 x 30 mm*.

Be sure to use the proper right or left version of the *Tibial Template*.

The *Cancellous Bone Punch Sleeve* is attached and secured. Then cancellous bone is harvested from the tibial head with the *Cancellous Bone Punch Ø 15 mm* and the cavity is reamed out with the *Tibial Cone Reamer*.

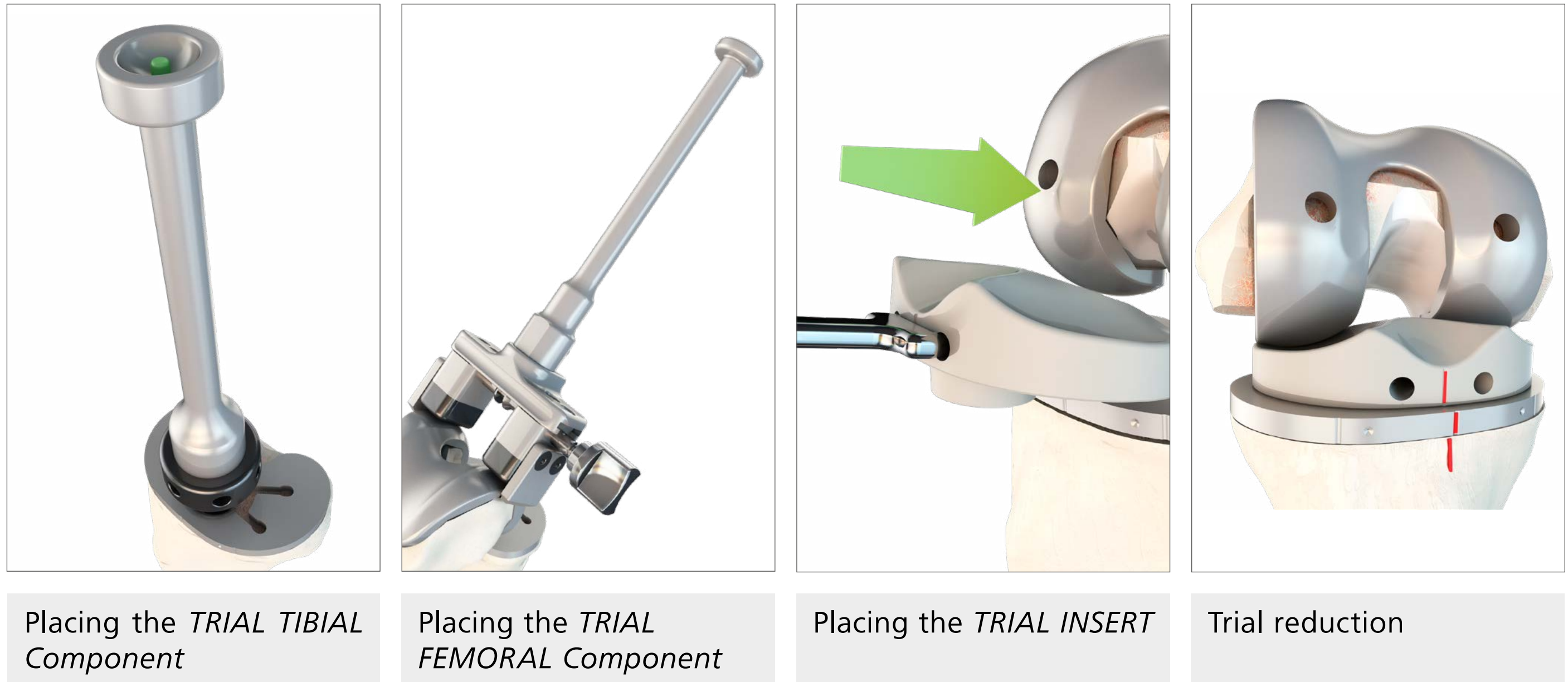
The removed cancellous bone within the *Cancellous Bone Punch Ø 15 mm* can be used to plug the femoral medullary canal.



J Trial components and reduction

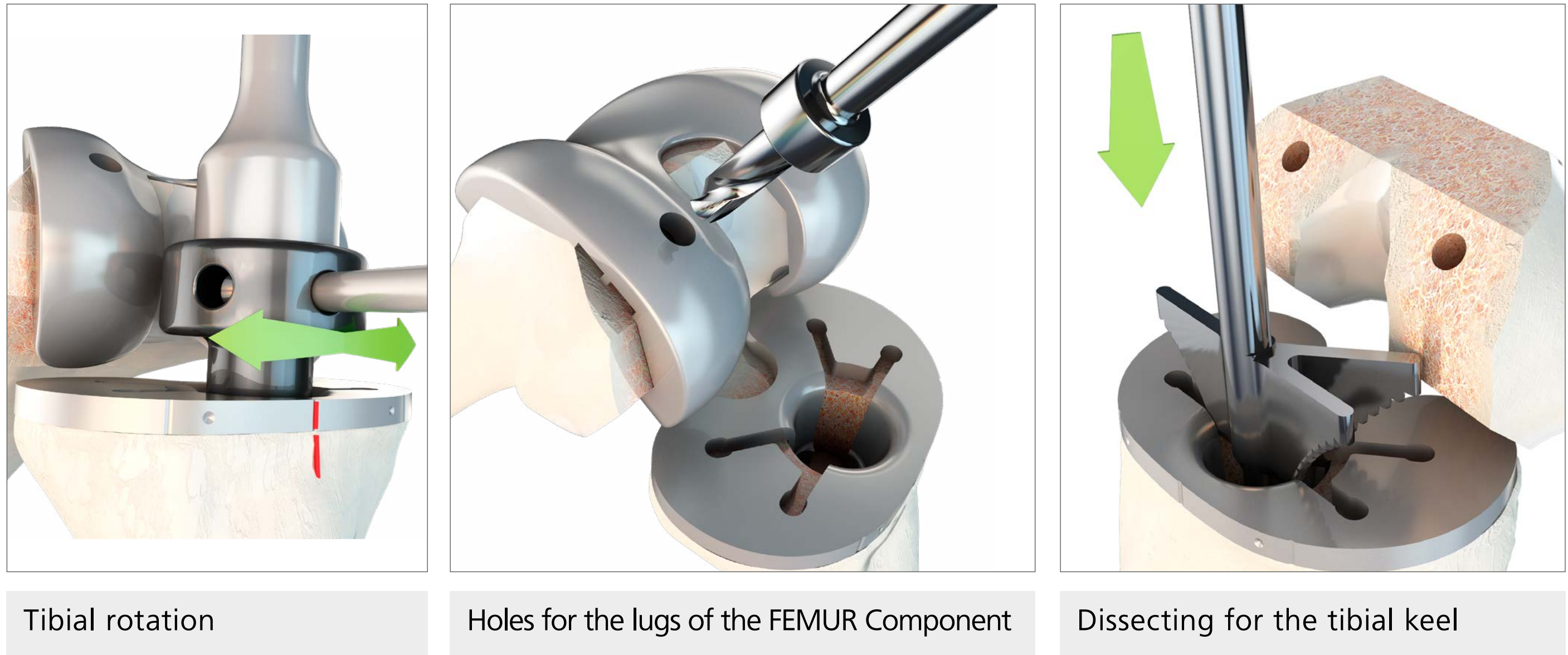
After the *TRIAL TIBIAL Component* and *TRIAL FEMORAL Component* have been placed, the trial reduction is performed with a *TRIAL INSERT* of the appropriate height. After the knee has been moved through its range of motion several times, the rotation of the *TRIAL INSERT* is marked on the anterior tibia.

The size of the PE-INSERT always corresponds to size of the FEMUR Component.



K Final steps

If a fixed insert is used, the *TRIAL TIBIA* is rotated according to the rotational marking of the *TRIAL INSERT*. The final tibial rotational adjustment is made by dissecting for the keel; the final femoral adjustment is made by drilling the holes for the femoral lugs.



L Placing the implants

After the *SEALING SCREW Femur / Tibia UC/SC* has been placed, the *TIBIA Component UC/SC* can be implanted. The *TIBIA Component UC/SC* is attached to the *Tibial Impactor/Extractor* and impacted. Next, the *FEMUR Component UC* is impacted and the *PE-INSERT UC or DD* is inserted.

Cemented and cementless versions of both the *TIBIA* and *FEMUR Components* are available.

IMPORTANT: The notes in Appendix A of the current surgical procedure manual must be closely observed when using the BPK-S Integration Ceramic.

