

extrait

d'une brochure de 52 pages
réalisée pour Implanet.

Production des images,
maquette et mise en pages.



gold standards
for everyBody

Madison
Total knee prosthesis



IMPLANTS

Femoral components

- 8 sizes (1 to 8)
- Cruciate retaining or postero stabilized
- Cementless HA coated or cemented
- Anatomical trochlea

Tibial inserts

- 8 sizes (1 to 8)
- Cruciate retaining (CR) or ultra congruent (UC) or postero stabilized (PS)
- 10, 12 and 14 mm thickness for CR
- 10 to 20mm thickness for UC and PS (inc.2mm)

Tibial components

- 8 sizes (1 to 8)
- Symetrical
- Fixed ou mobile
- Cementless HA coated or cemented
- Delta keel design

Tibial extension stems

- 9, 11 and 13 mm diameter
- Lengths 35, 55 and 95 mm

Patella components

- 4 diameters : 30, 33, 36 and 39mm
- 2 thicknesses : 8 and 10mm
- Resurfacing and cemented with 3 pegs



MECHANICAL TESTS

Wear test according to ISO 14243-1 & 14243-2

4 prosthesis (femoral component, UHMWPE insert and tibial base) were mounted on simulators reproducing walking cycles. Tests were made at a frequency of 1Hz for 5 million cycles.

- Results : all of the 4 prosthesis successfully passed the test, with no delamination, fracture or failure of the UHMWPE inserts.

Dynamic tests on tibial bases according to ISO 14879-1 & ISO 21536

5 tibial bases were tested in flexion at 10Hz during 10M of cycles, under a compressive load of 900N.

- Results : all of the 5 tibial bases successfully passed the test, with no deformation, fracture or failure.

Shear tests were performed on 6 femoral components

These tests were made because Madison femoral components have no reinforcement under the trochlea, in order to save a reaming step during the surgery and to preserve bone stock.

During all the test, one condyle of each femoral component were fixed and the load were applied on the other one.

- Results : All of the 5 femoral components failed under a static load exceeding 1 ton, with an elastic limit over 250kg. One femoral component passed the fatigue test a 10M of cycles under a load of 900N.

DESIGN

Madison implants are designed for bone preservation

- 8mm thickness for the femoral component
- Thin trochlea design without a bump on the inner anterior surface
- Minimal PS box resection
- Crenellated V keel for a maximized surface contact, without macrostructure, easy to remove in case of revision

Madison implants are designed for long term results

- Large contact surfaces
- Single ML radius
- Severe mechanical tests

Madison instrumentation is designed for precision

- AP and ML sizing and external rotation on the same instrument
- True femoral external rotation
- Whiteside line protractor
- Unique design for tibial extramedullary option validated with CAS
- Micrometric adjustment on the tibial cutting guide available for both EM and IM alignment options

Madison instrumentation is designed for minimal invasive or standard procedures

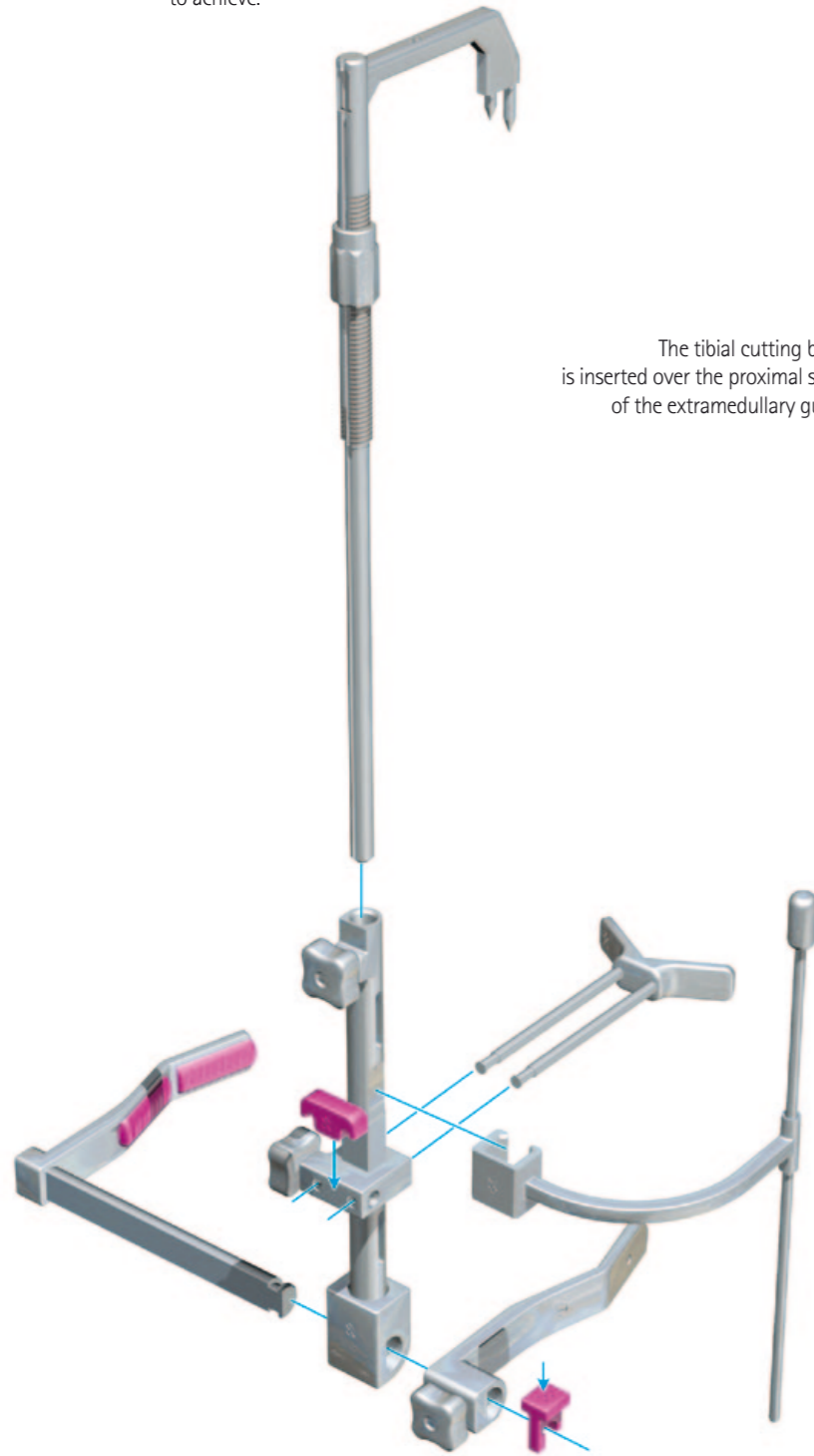
- Optimized instrument dimensions
- Medial distal femoral cutting guide
- Medial proximal tibial cutting guides with patella tendon protection

TIBIA EXTRAMEDULLARY OPTION

The extramedullary system is assembled.
It allows to determine exactly the tibial mechanical axis.

The choice between the 0° or 4° posterior slope tibial cutting block is made according to the slope that the surgeon wants to achieve.

The tibial cutting block is inserted over the proximal shaft of the extramedullary guide.



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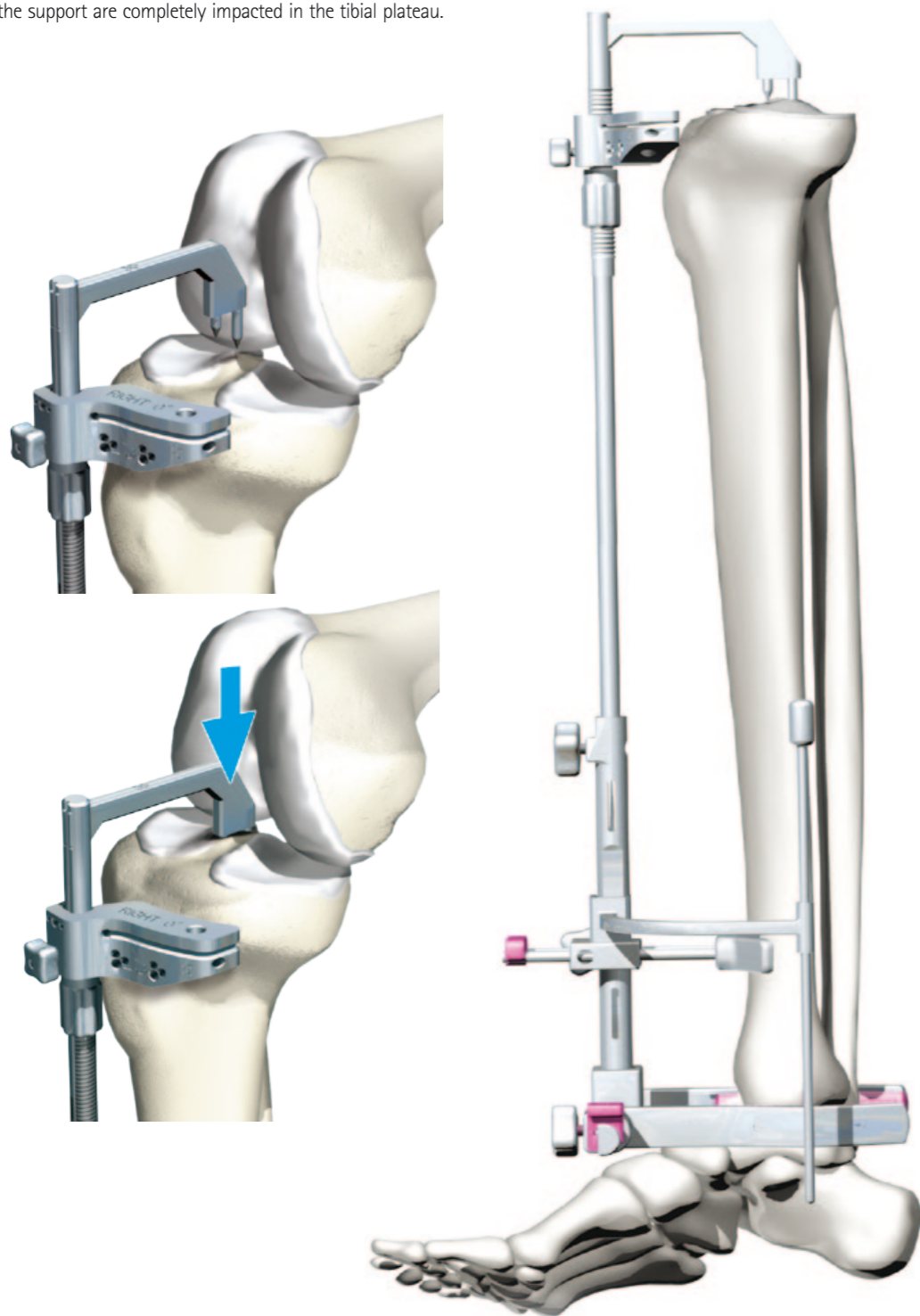
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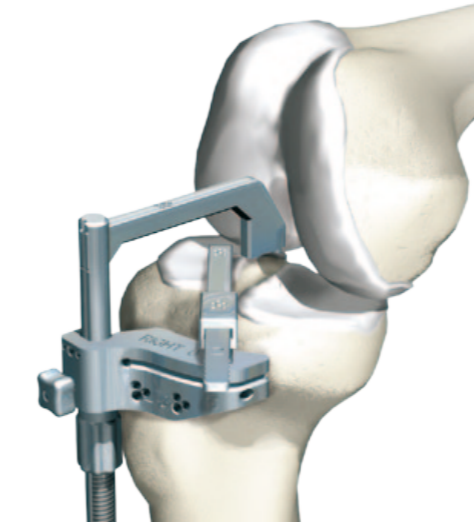
TIBIA EXTRAMEDULLARY OPTION

The posterior slope adjustment is checked with reference to the parallelism between the axis of the tibia in profile and the alignment of the distal shaft, mounted on the removable arc.

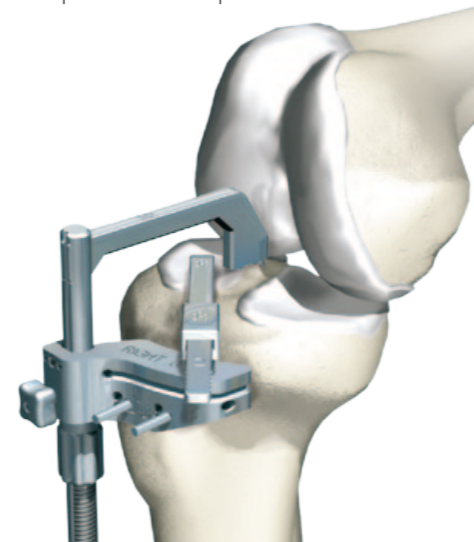
Once these two adjustments are set the two proximal spikes of the support are completely impacted in the tibial plateau.



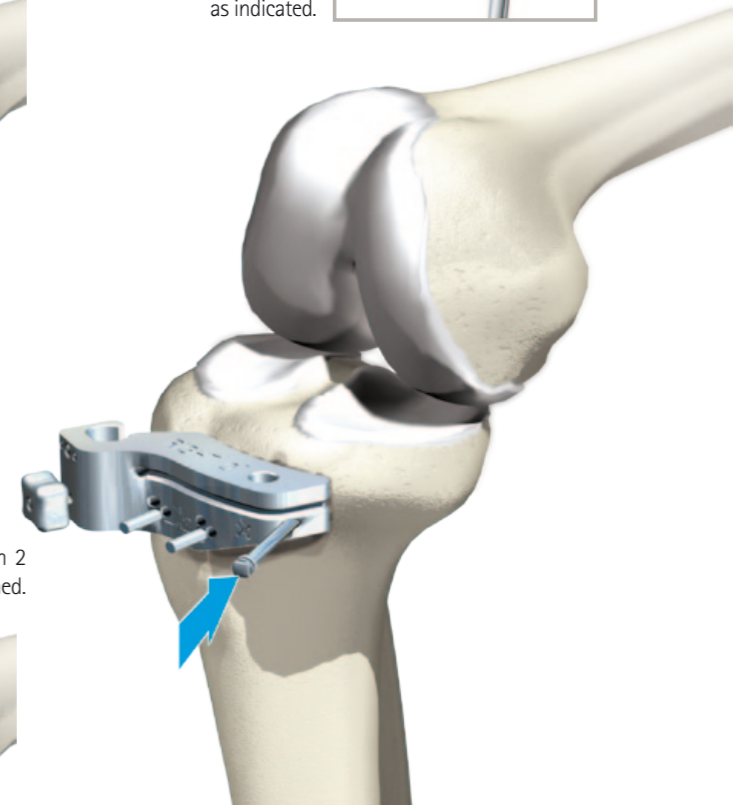
TIBIA EXTRAMEDULLARY OPTION



Using the same procedure as intramedullary option with 2 mm or 10 mm stylus the cutting block position is determined. Secure its position with two pins used in "0" holes.



After unlocking all the support, remove the external tibial guide with the extractor as indicated.

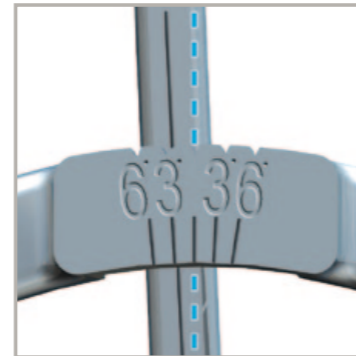
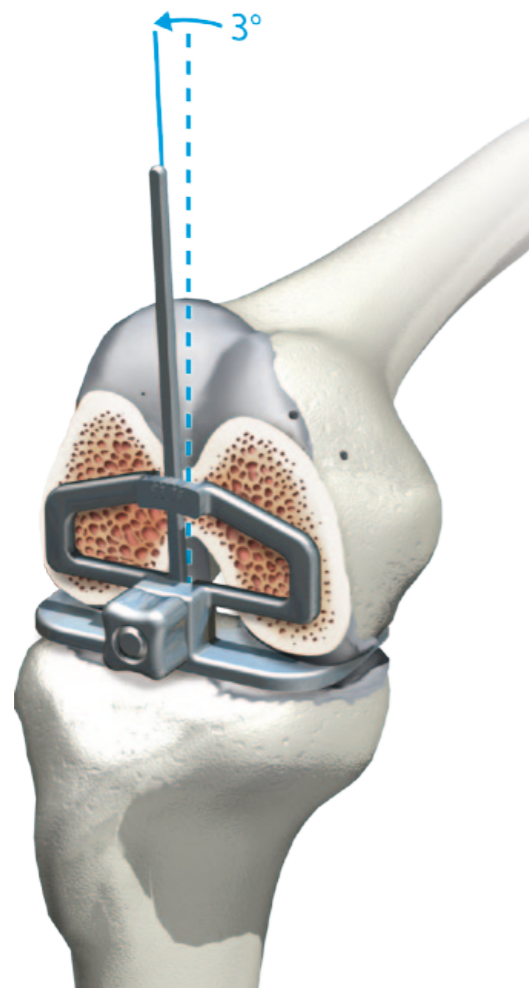


The cutting block is approached from the anterior tibia and finally secured with a headed pin.

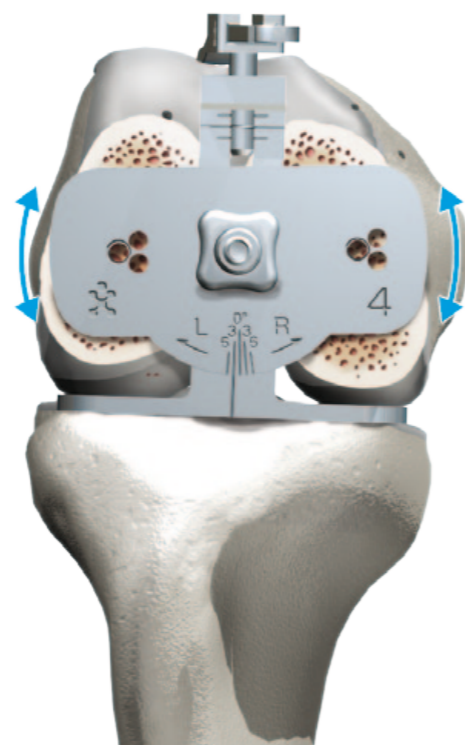
FEMUR

SIZING AND EXTERNAL ROTATION

A protractor is used to determine the femoral external rotation based on the Whiteside line and the posterior condyles line.



The calculated angle is transferred to the AP-ML sizing and rotation guide.
Example of 3 degrees external rotation for a right knee.



Rotation angle / Whiteside landmark

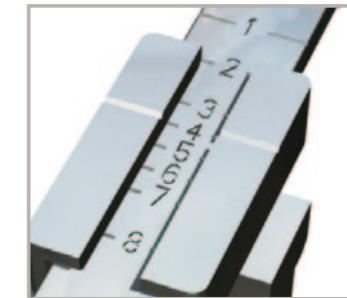
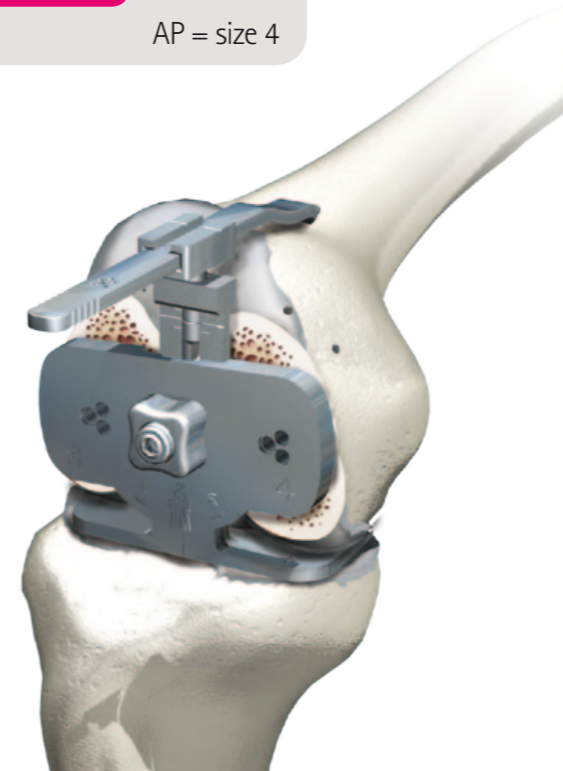


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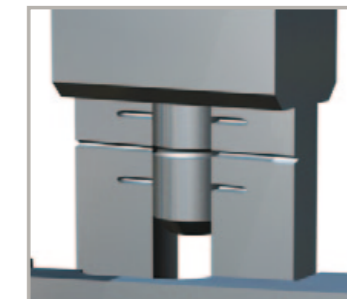
SIZING AND EXTERNAL ROTATION

Example for size 4

First case ML = size 4
AP = size 4



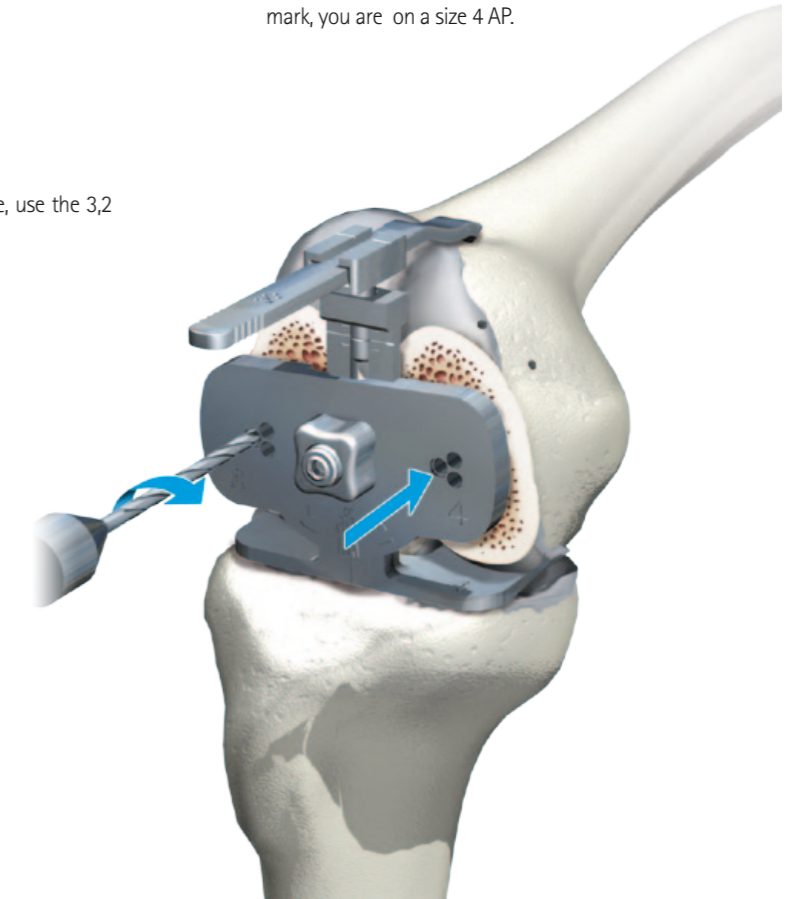
Adjust the stylus on 4 and insert stylus + support in the sizing guide.



If the center mark is aligned with the long mark, you are on a size 4 AP.

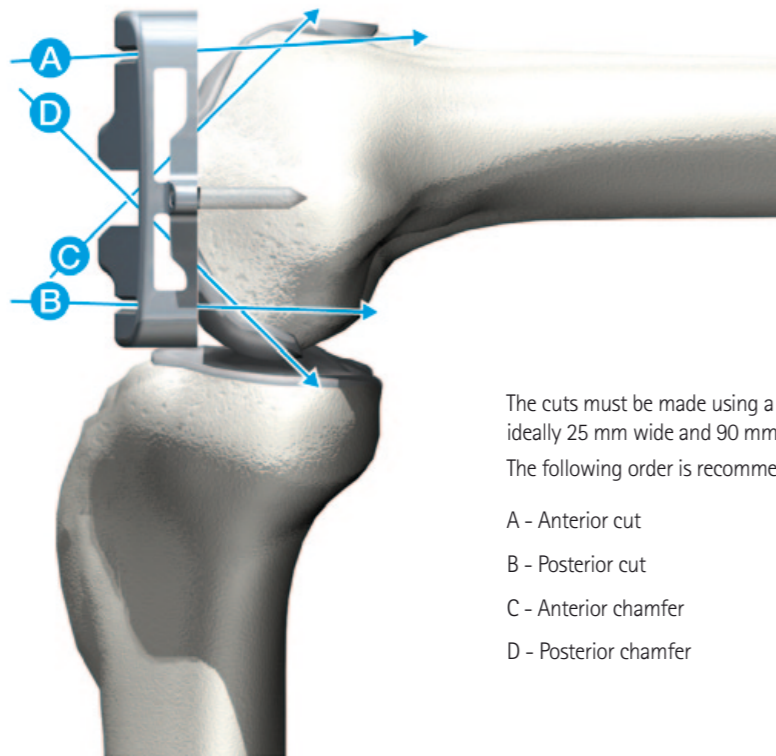
In this case if size 4 matches in ML and AP size, use the 3,2 mm drill through the middle holes as indicated.

After this, go to 4in1 cutting guide size 4.



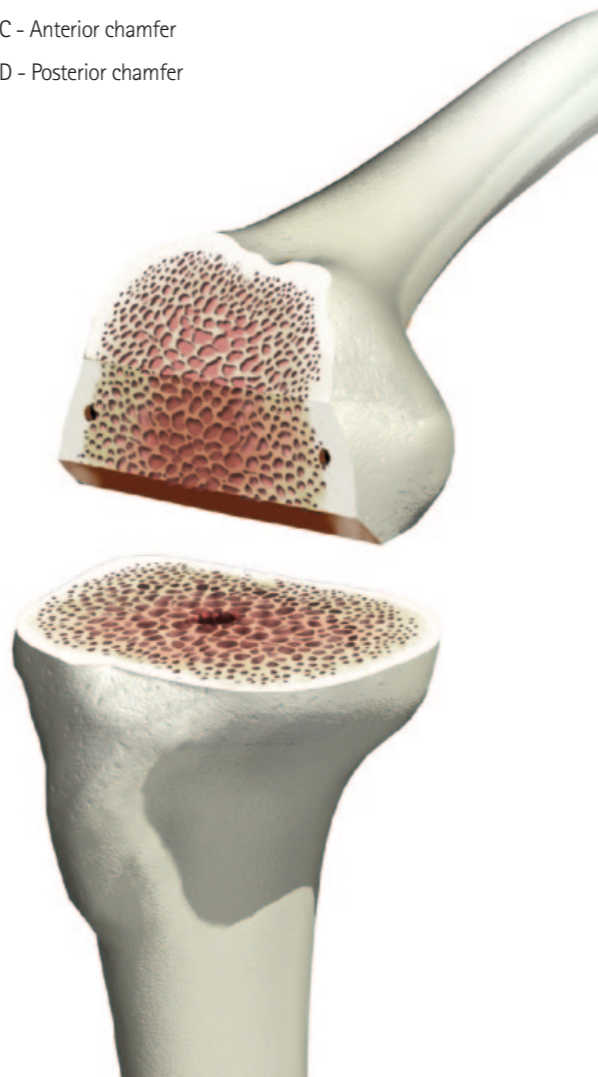
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ANTERIOR, POSTERIOR AND CHAMFERS CUTS

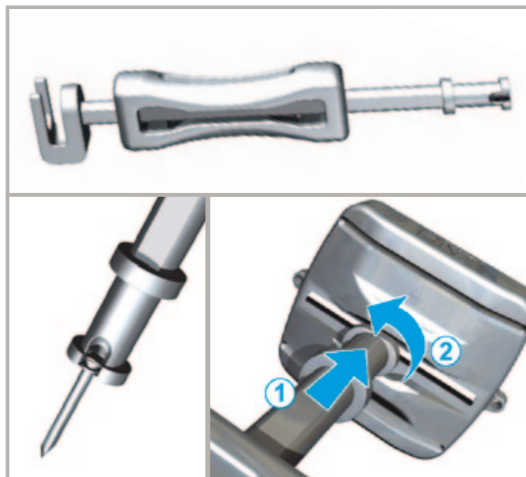


The cuts must be made using a saw blade 1.27 mm thick and ideally 25 mm wide and 90 mm long.
The following order is recommended :

- A - Anterior cut
- B - Posterior cut
- C - Anterior chamfer
- D - Posterior chamfer



Remove the headed pins and the cutting guide with the extractor.



FEMUR

PS BOX AND IMPLANT POSITIONING

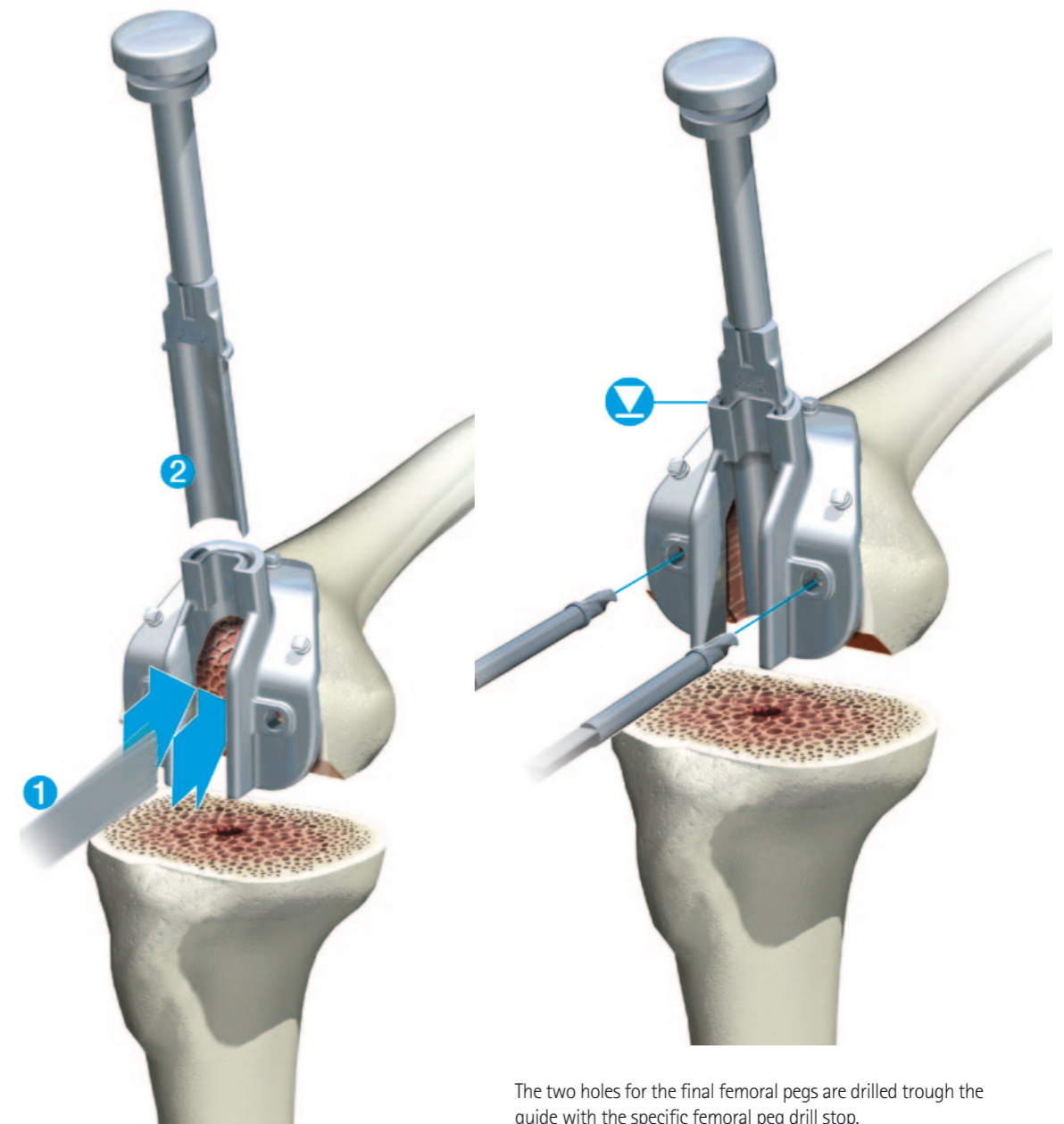
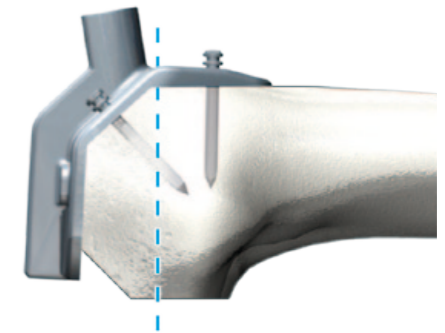
NOT FOR CR

The PS notch cutting block is chosen according to the selected femoral implant size (ML dimension corresponds exactly to the one of the femoral selected implant).

This step freezes the final position of the femoral implant. Three headed pins are inserted to lock the position of the guide.

The notch box is created with an oscillating saw along both left and right inner edges of the guide (1).

The corresponding PS notch chisel inserted in the dedicated guiding slot and impacted to finalize the notch box (2).



The two holes for the final femoral pegs are drilled through the guide with the specific femoral peg drill stop.