LAMINA SPREADER
SURGICAL TECHNIQUE
Lamina Spreader Technique

Balanced and appropriate external rotation of the femoral component is important for tibio-femoral stability in flexion and patello-femoral tracking/function.

Depending on the surgeon’s preference, rotation may be set with reference to either key anatomical landmarks via a measured resection approach, or by balancing the soft tissues in flexion with the goal of generating a rectangular flexion gap.

The following technique describes the use of Lamina Spreaders to assess soft tissue balance, femoral sizing, and setting femoral rotation using the ATTUNE® Knee System INTUITION™ Instruments.

For all other surgical steps refer to the INTUITION™ Instruments Surgical Technique.
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Extension Space Balancing

After the distal femoral and proximal tibia resections are made, consider removing prominent osteophytes, particularly medial and lateral osteophytes, as they can affect soft tissue balancing. Use the Spacer Block or Lamina Spreaders medially and laterally to assess a rectangular gap in extension. The Spacer Block can be used to determine the appropriate thickness of the tibial insert in extension. Introduce the Alignment Rod through the Spacer Block in order to assess alignment.

If the alignment is correct and medial or lateral tightness remains after removal of osteophytes, selective releases can be performed at this time if the surgeon chooses.

Flexion Space Balancing

Lamina Spreaders may be used with the knee flexed to 90 degrees to set the femoral rotation in flexion.
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Marking the Bone

There are three ways to mark the femur to orient the femoral rotation.

Option 1:
With appropriate tension placed on the medial and lateral soft tissues, a transverse line that is parallel to the tibia can be marked across the distal femur a fixed distance from the resected tibial surface by using the edge of an Osteotome or a General Medical Ruler.

Option 2:
The Tibial Cutting Guide can be extended to reach the resected femoral bone surface as a guide to mark a line parallel to the tibial resection surface.

Option 3:
A perpendicular line can be drawn from the resected tibial surface by using the edge of an Osteotome or a General Medical Ruler.

As a secondary check, these lines can be compared against key anatomical landmarks to avoid malrotation of the femoral component.
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Placing the Measured Sizer

The Measured Sizing and Rotation Guide is then placed on the distal femur. The Measured Sizer allows placement in 0, 3, 5, or 7 degrees of external femoral rotation based on the posterior femoral condyles and can be adjusted on the bone.

Dependant on the method chosen to mark the femur, the Sizer can now be rotated so that the horizontal (the white line between the posterior reference holes) or vertical (the metal Uprod) lines on the Measured Sizer are parallel to the horizontal or vertical lines previously drawn on the femur.

Setting Rotation

Adjust the degree of external rotation by squeezing the Femoral Rotation Lever and rotating the anterior section while holding the feet of the device against the posterior condyles.

Checks for excessive rotation can be made against Whiteside’s line, the transepicondylar axis or the rotation markings on the Measured Sizer.
**Sizing the Femur**

The anterior Stylus is brought into contact with the anterior femoral cortex and checked from medial to lateral to obtain the femoral implant size.

Adjust the superior-inferior position of the Stylus to indicate the proper femoral component size. The position of the Stylus will have an effect on the femoral component sizing. Pick the M/L position of the Stylus to match the highest point of the anterior femur at the appropriate size indication on the Stylus scale. The position of the Stylus will then be located near the exit point of the Saw Blade. Read the scale from the distal side of the Size Locking Knob.

**CAUTION**

Be very careful not to apply a large force when contacting the anterior femur with the Stylus, avoiding excessive deflection of the Stylus which may bias the sizing.
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Pin Insertion

Insert Universal or Non-Headed Pins through the top pin holes for **anterior down** referencing

**OR**

Insert Universal or Non-Headed Pins through the bottom pin holes for **posterior up** referencing

Once the correct size and rotation are established, the Measured Sizing Guide then allows for pin placement using either an anterior down technique which is referenced off of the anterior cortex of the femur, or a posterior up technique which is referenced off of the posterior femoral condyles. Drill Pins are then placed in either the posterior up or anterior down referencing pin holes.
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A/P Chamfer Block

The ATTUNE Knee System femoral components increase in size by a consistent 3 mm in the A/P direction. The INTUITION A/P Chamfer Blocks allow the surgeon to adjust the A/P position of the femoral component by 1.5 mm in either direction.

This creates the intra-operative flexibility to position the femoral component based on the surgeon’s assessment of the flexion gap and the desired posterior condylar offset. If there is no cutout, a narrow component is not available for that size. Narrow components are available for sizes 3, 4, 5 and 6.

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When using the anterior offset pin holes, changing the size of the femoral component will alter the posterior femoral condyle resection.

To evaluate femoral size adjustments without altering the posterior femoral cut, place the A/P Chamfer Block onto the anterior Universal Pins and insert two additional pins through the posterior-up holes on the Block.

Then remove the anterior reference pins. This enables the femoral implant size to be adjusted without altering the flexion gap.

Alternatively, the Block can be moved 1.5 mm up or down (one hole location) to adjust the flexion gap, if necessary.

INFORMATION

Select the A/P Chamfer Block that matches the femur size. Place the Block over the two anterior or posterior Universal or Non-Headed Pins through the pin holes marked with a center line.

The flexion space can be checked by using a Spacer Block placed below the A/P Chamfer Block with the Modular Posterior Saw Capture removed.
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Use the Angel Wing to confirm the location of the cut and the degree of rotation. The Block can also be used at this stage to assess the M/L width of the implant size for both the standard or narrow sizes.