LINK®

LINK SLED Prosthesis

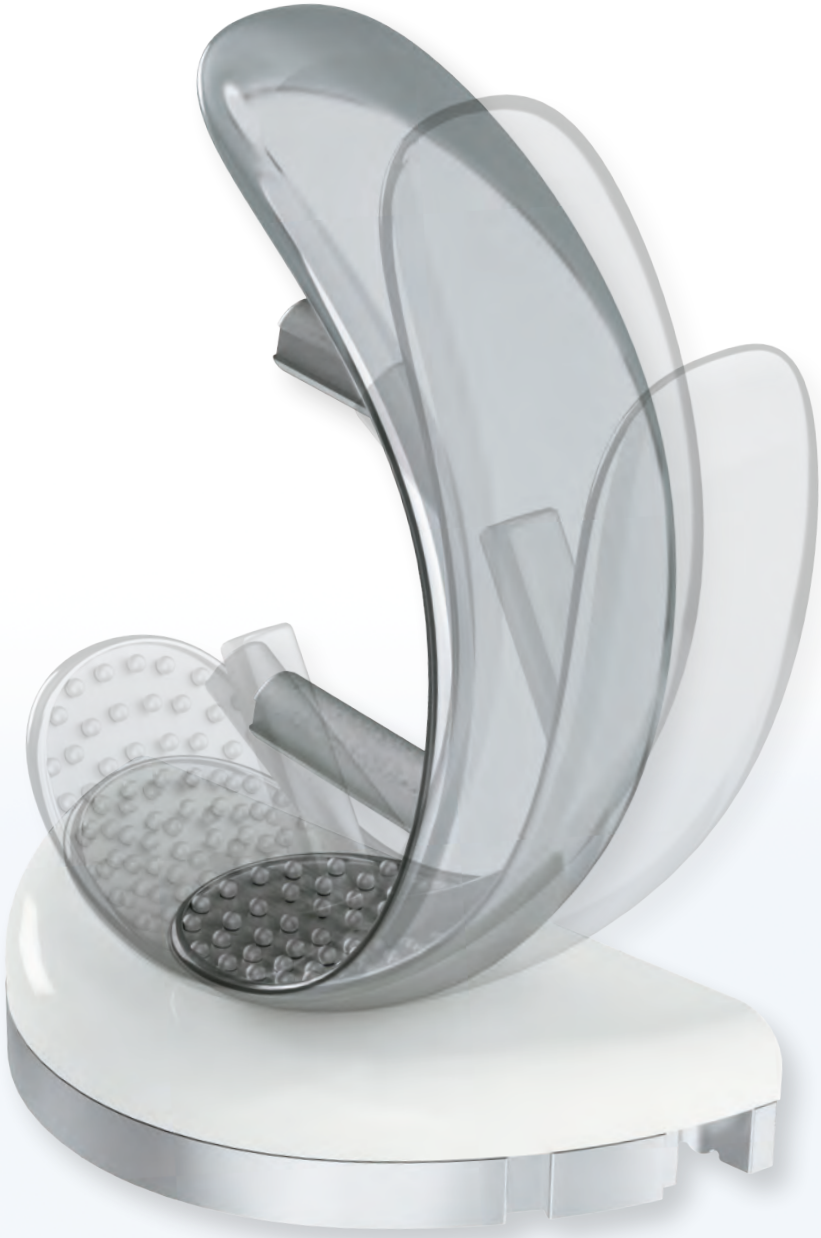
Surgical Technique

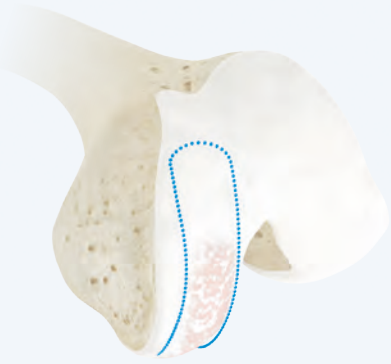
CE 0482

Explanation of Pictograms			
	Manufacturer	REF	Article number
MAT	Material number	CE	Product meets the applicable requirements, which are regulated in the EU harmonization legislation for the affixing of the CE marking.

LINK SLED Prosthesis

LINK SLED Prosthesis
with MITUS **ART** Instrument Set





LINK SLED Prosthesis
with MITUS **ART** Instrument Set

This surgical technique guide was written in conjunction with:
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We would like to thank him for his valuable contribution.

LINK SLED Prosthesis

Femoral Components

The femoral component is designed considering a polycentric (multi radius) curvature. That means that the femoral component follows the anatomical curvature of the bone and mimics the natural shape of the knee.
To avoid excessive bone loss, the back of the femoral component has no facets. Therefore the preparation of the femoral condyle doesn't require bone resection. Only cartilage will be removed.
The non-bulky design of the runnerprevents patella impingement. The surface for bone cement bonding on the femoral components has a macro structure for cement bonding (globular structure). The design incorporates two pegs for fixation.

The Femoral Components are available in four sizes:

- Small (16 x 40 mm)
- Medium small (17 x 46 mm)
- Medium (18 x 52 mm)
- Large (20 x 60 mm)

Tibial Plateaus

As a result of their symmetrical shape the tibial plateaus can be used for both the medial and lateral tibial compartments. The sizing is adapted to the anatomical shape of the tibia.

- **All-poly Design**
  This design comes in four heights: 7, 9, 11 and 13 mm and four diameters: 45, 50, 55 and 58 mm.

- **Metal-backed Design**
  This design comes in four heights: 8, 9, 11 and 13 mm and three diameters: 45, 50 and 55 mm.

LINK PorEx Technology – Surface Modification

(TiNbN = Titanium Niobium Nitride)

The LINK PorEx Surface Modification leads to a ceramic-like surface, which significantly reduces the release of ions and can improve the spectrum of indications for patients who are sensitive to metal[1].

This surface is extremely hard and possesses wear properties similar to those of ceramics. These qualities and the wetting angle of the surface give it a low friction coefficient when in contact with fluids.

1 Internal study of the influence of TiNbN-coating on the ion release of CoCrMo-alloys in SBF buffer simulator testing.

MITUS ART Instrument Set (Anatomic Reconstruction Technique)

All the instruments can be dismantled without tools and are stored on instrument trays in a clear and structured manner which ensures that they are sterile and ready-at-hand when needed.

The **A**natomic **R**econstruction **T**echnique allows for a patient individual femoral preparation. It ensures a pure removal of cartilage thus preserving maximal femoral bone stock.

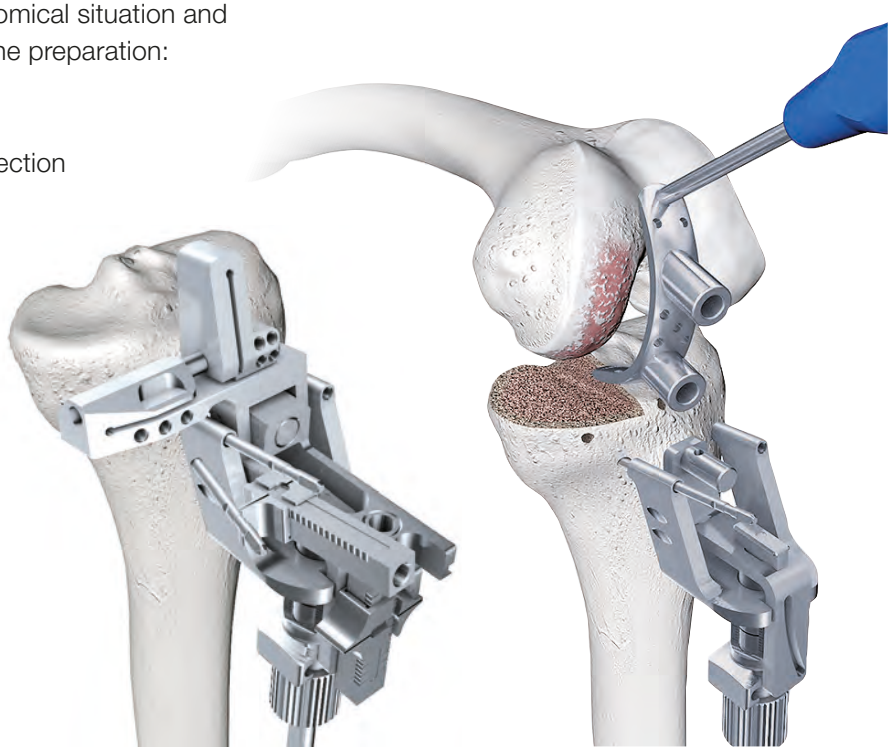
The **MITUS ART Instrument Set** offers a good number of advantages:

- Restoration of alignment and full control of tibial resection:
  - Posterior slope
  - Varus/valgus
  - Resection height
- Anatomically adapted femoral preparation
- Tibial preparation with milling system
- Possible application medial and lateral

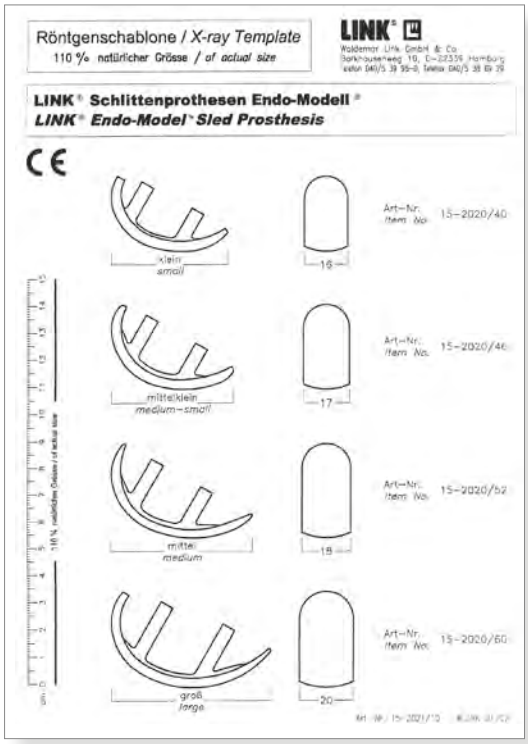
The purpose of the LINK SLED Prosthesis is to restore the damaged joint surfaces which will restore the original mechanical axis. Most patients will present with an underlying ‚constitutional' varus and a slight, undercorrection of alignment can be achieved if desirable to reproduce this.

The **Tibial Saw Guide** is used for resection, ensuring accurate reproduction of the anatomical situation and enabling precise, reproducible bone preparation:

- Setting of the posterior slope
- Adjustment of varus/valgus correction
- Precise adjustment of the resection height



Patient Selection and Surgical Planning



Imaging:
Pre-operative planning is an essential part of the surgery.

The following baseline radiographs are recommended; Weight bearing AP views or Rosenberg PA view taken in slight flexion are essential These may be supplemented by varus/valgus stress views and Rosenberg view to ensure a correctable deformity.True lateral (femoral condyles overlapping) to assess for posterior tibial plateau erosion seen with chronic ACL deficiency Skyline PFJ view.

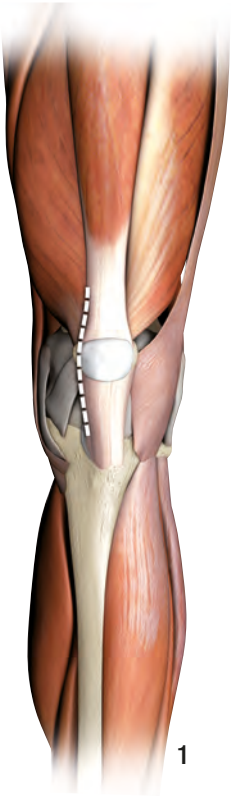
X-ray Templates of the individual components (femur and tibia) which are 110% the actual size are available. A note should be made of the natural tibial slope which will act as a guide during the tibial resection. These views may be supplemented by a long leg X-ray to determine the pre-operative weight bearing axis and any extra-articular deformity. We also support electronic computerized planning and cooperate with the leading manufacturers of electronic templating systems. We would be pleased to provide you with more information on request.

The MITUS ART Instruments are suitable both for the traditional approach and for a less invasive approach, producing less soft tissue damage. When the instruments are used as described below, the intervention can be p erformed with a small incision yet maximum precision.

Patient Positioning and Surgical Approach

Positioning

Following general/spinal anaesthesia and application of a tourniquet (optional), the patient is placed in the supine position and the flexion range of the knee joint is checked. It should be possible to flex the knee at least 120°. Coverage of the tibia and ankle should not be too thick in order to reliably determine the center of the ankle for later application of the tibial jig.



1

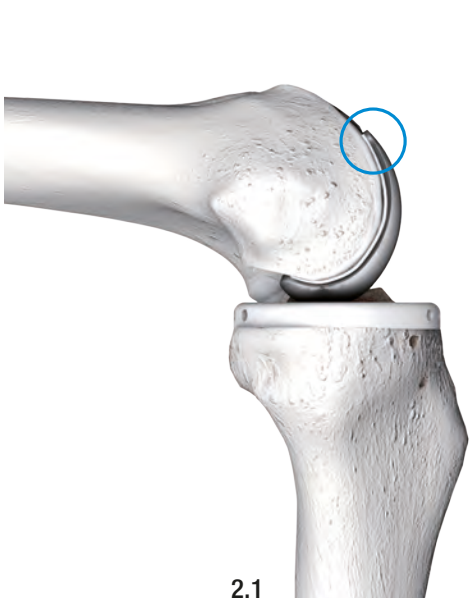
Suggested Approach: Medial UKR

With the knee flexed 90°, a medial paramedian skin incision is made extending from a point 4 cm above the patella to a point midway between the tibial tuberosity and the joint line. A medial para patellar (omega) capsular incision is made which runs along the side of the patella tendon (**1**).

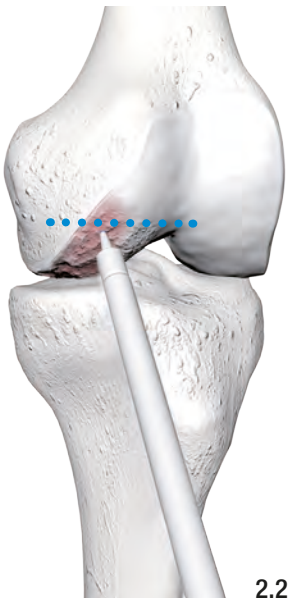
We recommend partial excision of the fat pad to allow direct visualization of the lateral wall of the medial femoral condyle.

A medial meniscectomy is performed taking care to protect the superficial meniscal attachment to the medial collateral ligament. The osteophytes are then removed from the medial and lateral borders of the medial femoral condyle and the medial border of the tibial plateau to define the true borders.

Finally the leg is fully extended and a horizontal line is marked on the femoral condyle to demarcate the future anterior margin of the femoral prosthesis (**2.1**). If the femoral component projects beyond this mark, there is an increased risk of patellar impingement (**2.2**).

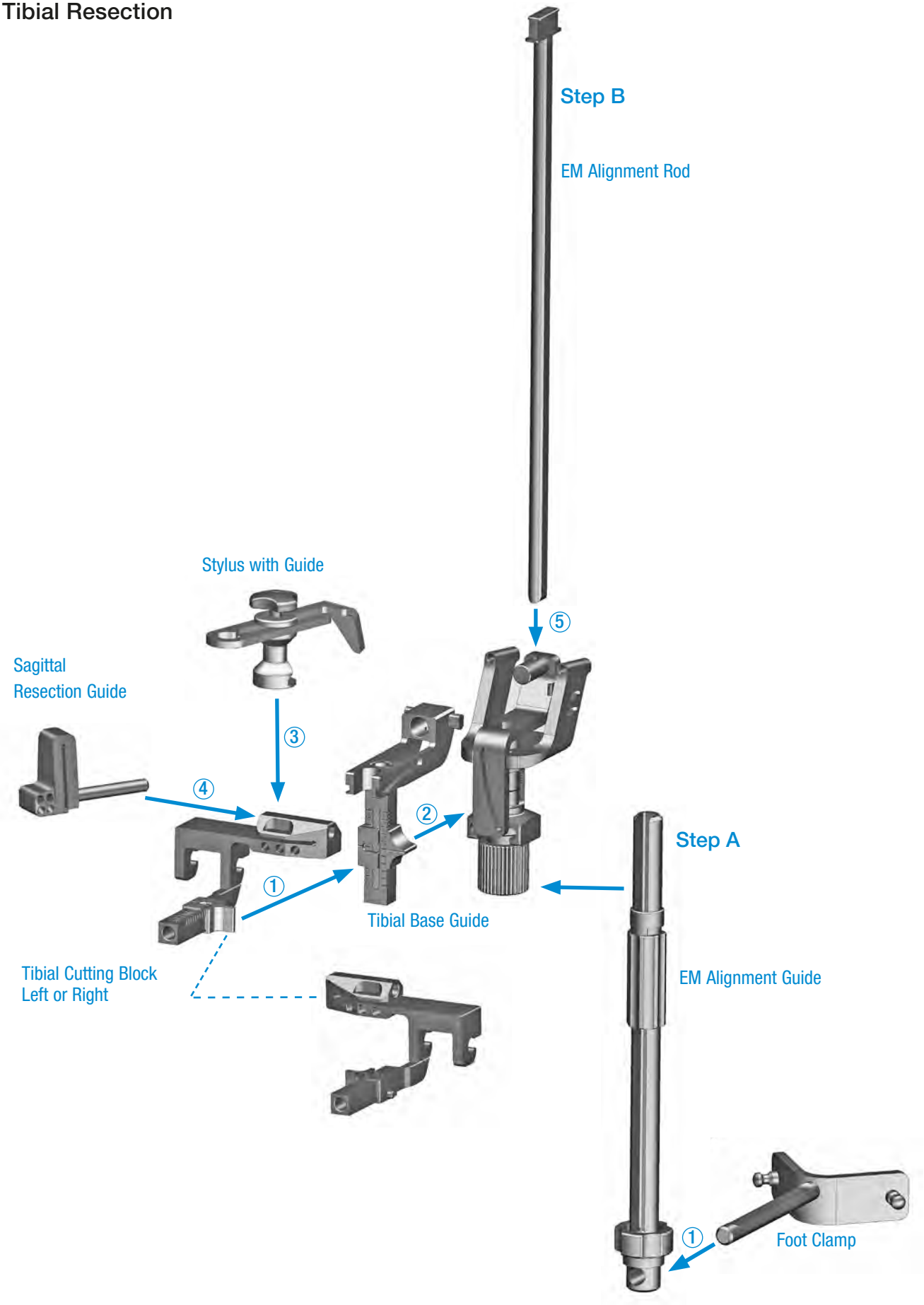


2.1



2.2

Tibial Resection

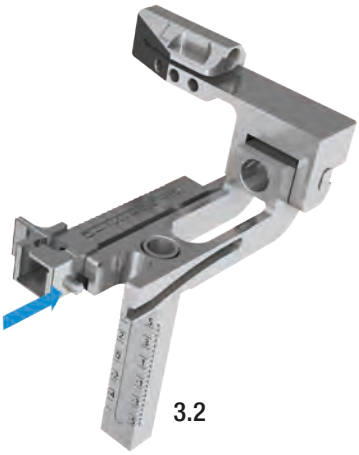


Assembly and Application of the Extramedullary Tibial Guide

(Instrument Sets 35-1000/01)

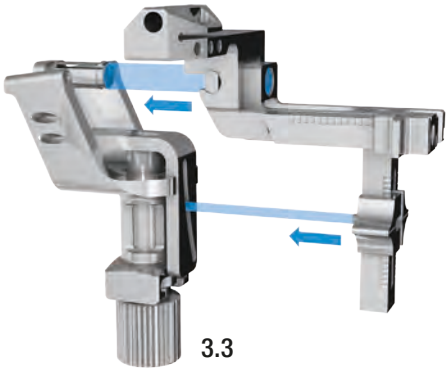
3.1

Slide the Tibial Cutting Block (Left or Right) 90° onto the proximal end of the Tibial Base Guide (**3.1**).



3.2

Insert the Posterior Slope Selector onto the Tibial Cutting Block and position it at “0” (**3.2**).
Be sure that the Selector Pin is inserted into the slot of the Tibial Base Guide.

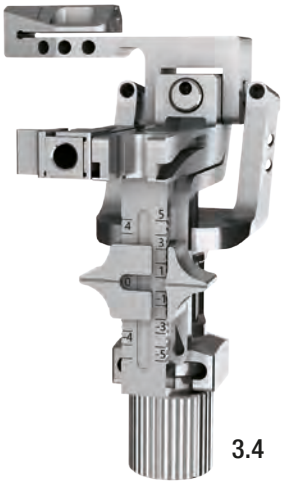


3.3

Slide the Tibial Cutting Block Assembly into the Tibial Base Guide.

Be sure that the big peg of the Tibial Base Guide is aligned with the hole on the proximal end of the Tibial Cutting Block Assembly (**3.3**).

Attention:
Set the resection micro adjustment to ‘neutral’.



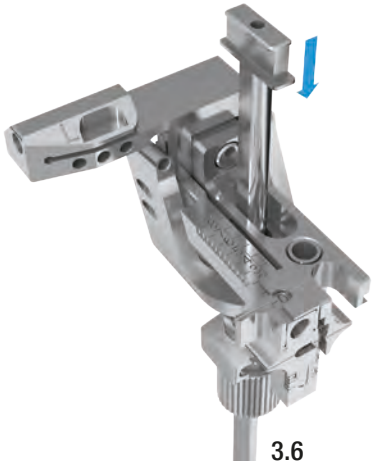
3.4

Tibial Cutting Block Assembly (**3.4**).

Position all Selectors (posterior slope and varus/valgus adjustment) at “0”.

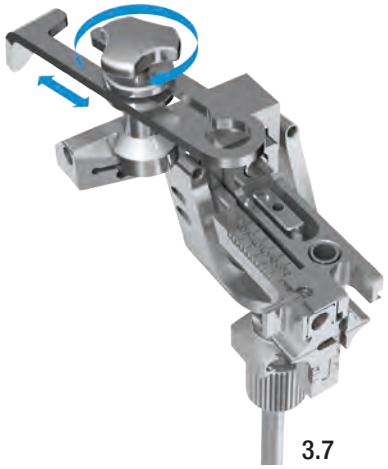
3.5

Fixation at the ankle is achieved either by the Silicone Strap or the optional Spring Clamp and is then assembled to the EM Guide and positioned. The Alignment Guide is positioned parallel to the tibial shaft axis by releasing the Set Screw and pushing the EM Guide in a anterior-posterior direction until the desired position is achieved. The Set Screw is then tightened again (**3.5**).



3.6

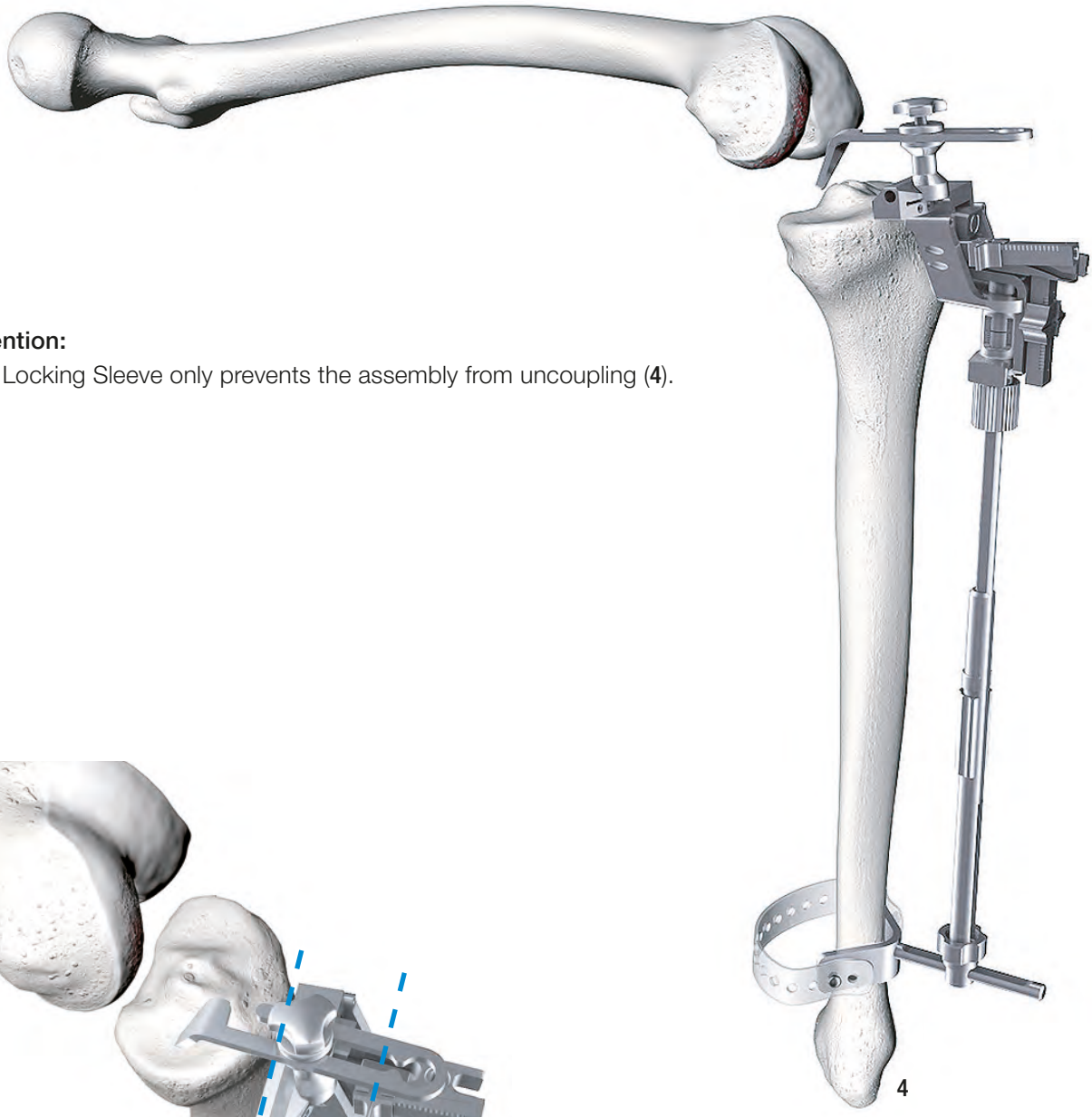
The EM Alignment Rod is pushed through the Tibial Cutting Block Assembly (**3.6**).



3.7

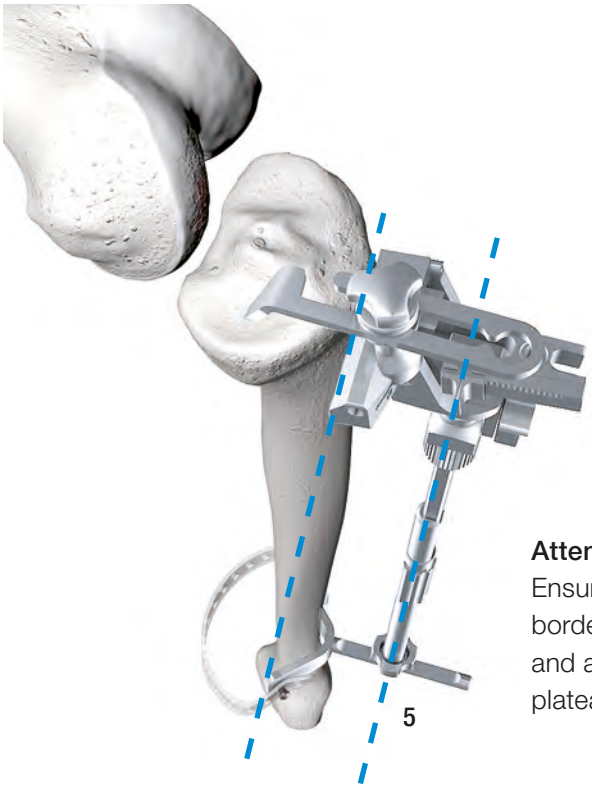
The 5-mm Stylus (optional 7 mm) is inserted in the Guide and positioned on the Tibial Base Frame. We recommend measuring an inital 5 mm initial bony cut from the anterior aspect of the tibial defect. This allows for the use of a 7-mm Component
(5 mm bone + 2 mm cartilage) (**3.7**).

Attention:
The Stylus know is locking the Stylus assembly to the Tibial Cutting Block Assembly.



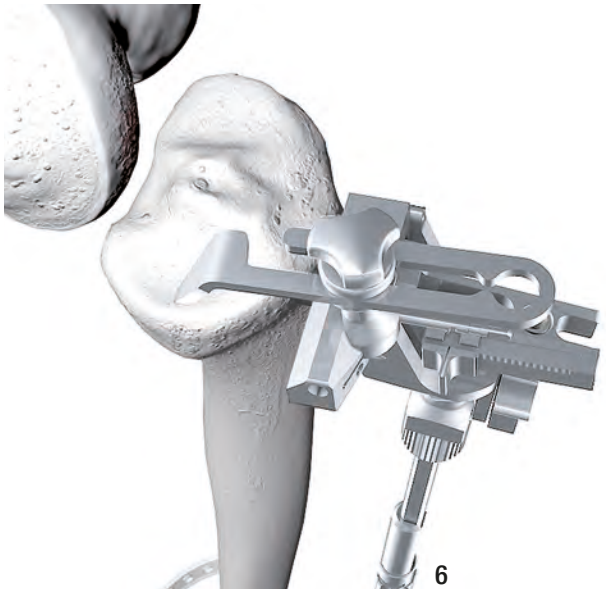
4

Attention:
The Locking Sleeve only prevents the assembly from uncoupling (**4**).

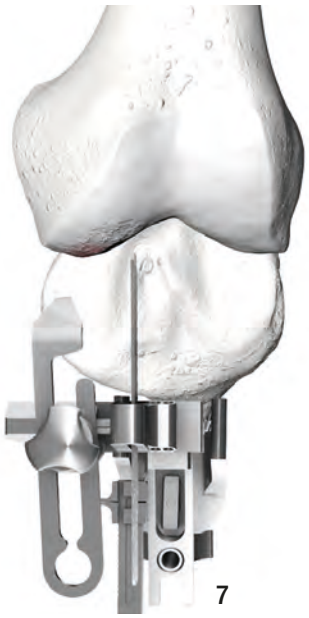


5

Attention:
Ensure that the Alignment Rod is parallel with the anterior border of the tibial shaft (to realise the preset posterior slope) and also in the mechanical axis of the tibia (mid-point of plateau to mid-point of ankle joint) (**5**).


6

Determine the height of resection. The 5-mm Stylus is used and should reference from the anterior margin/ edge of the chondral defect. A good view must be ensured for this (if necessary open the joint slightly using a lamina spreader) (**6**).


7

Attention:
The correct alignment and height of resection can be checked using the Cutting Template through the cutting slots for the saw (**7**).

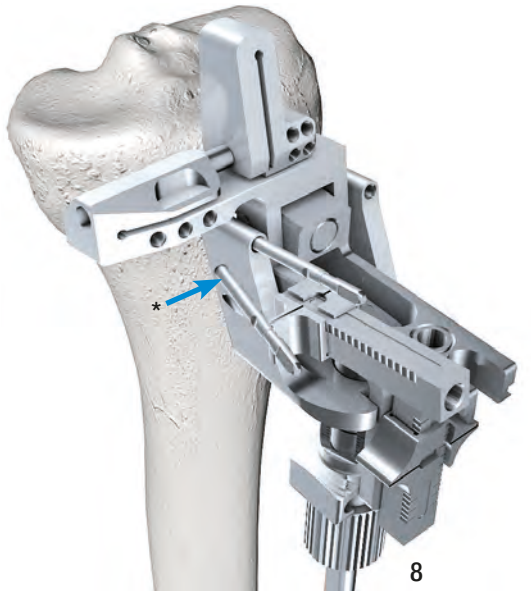
The eminentia intercondylaris and in particular the insertion of the anterior cruciate ligament serve for orientation.

Attention: The sagittal cut should be made just medial to the ACL attachment point on the tibial spine in order to maximize the size of the tibial base

The Tibial Base Frame initially is secured medially with a Drill Pin.

Attention: Sufficient initial stability is usually achieved by the single Pin and the Foot Clamp. If necessary an additional Drill Pin can be inserted medially (*).

The Guide with Stylus is removed. Fine adjustments can then made for precise tibial resection (**8**).

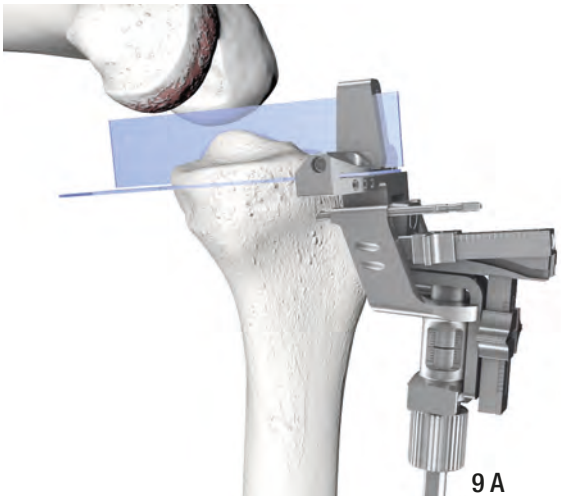


8

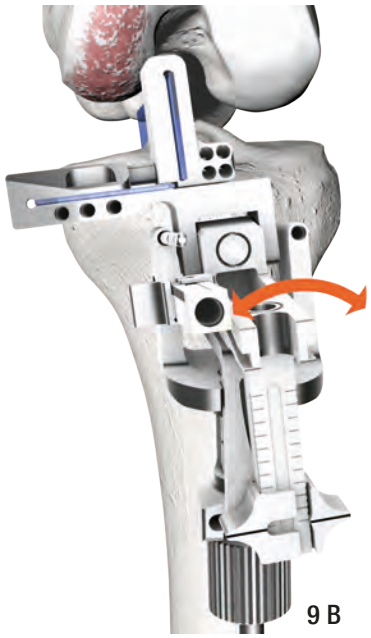
Optional: Fine adjustments for the tibial resection

Posterior Slope (A)
Orientation of the posterior slope to the natural preoperative situation, so that the biomechanics of the individual patient are not changed.
The resection can be checked for control purposes. It should have the same thickness ventral-dorsal parallel. If an uneven cut is made it can be recut/ adjusted in 1° steps.

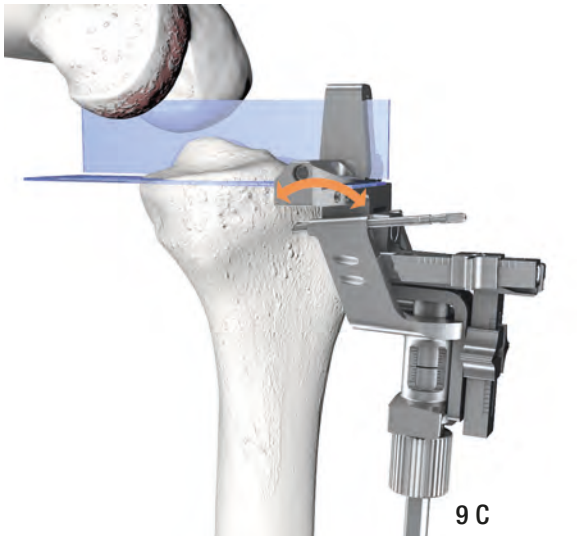
Attention: Kinematic results suggested that 5° to 7° of posterior slope were preferable, and that excessive posterior slope (> 7°) should be avoided.

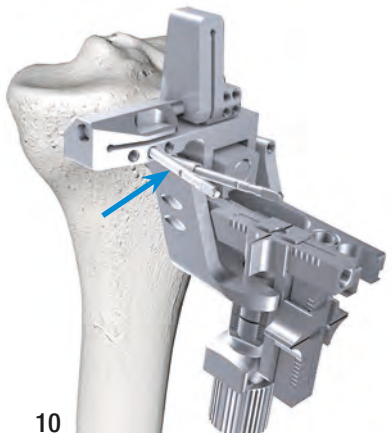

9 A

Varus-valgus Adjustment (B)
Precise varus or valgus alignment is possible with fine adjustment.
Warning: Overcorrection in valgus should be avoided under all circumstances. Position the tibia in 0° to 3° varus. Place the Alignment Rod through the Tibial Cutting Block Assembly to check position of the cut plane to avoid overcorrection.


9 B

Tibial Resection Height (C)
Fine-tune of the resection height is possible by acting on the micro adjustment screw.


9 C



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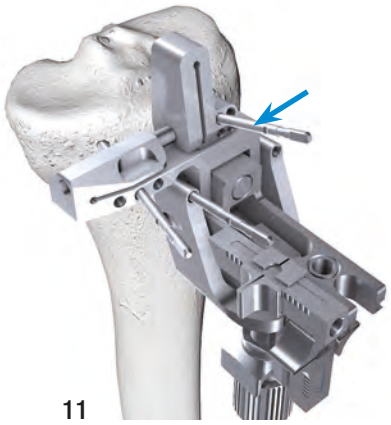
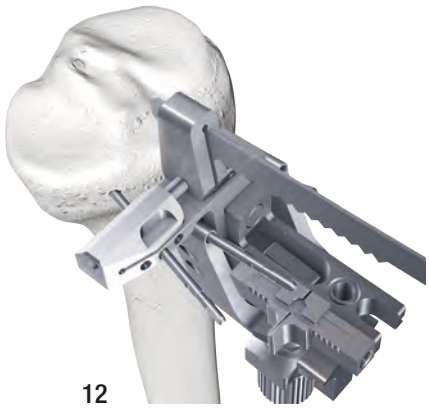
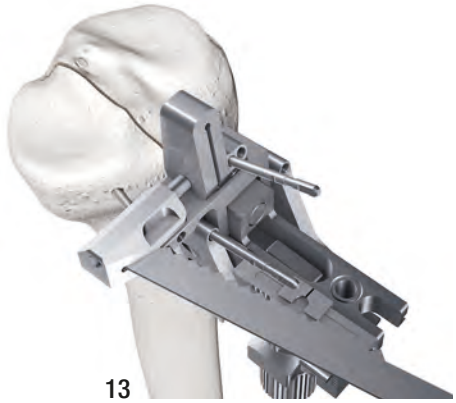


11



12

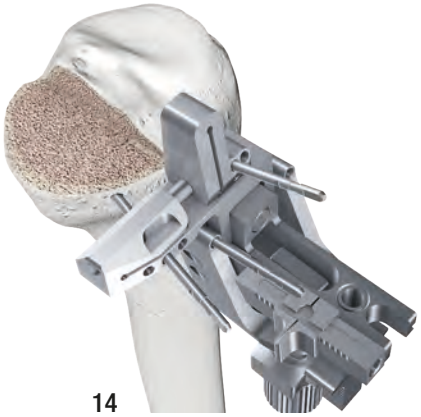
After a final inspection of the proposed tibial resection, the Tibial Cutting Block (**10**) and (if desired) the Sagittal Resection Guide are then fixed with a Drill Pin (**11**). The reciprocating Saw is introduced through the vertical slot and should be in line with the lateral border of the medial femoral condyle (**12**). The cut should be in the AP direction. The sagittal Saw is then introduced through the cutting slot (**13**). Care must be taken to ensure no damage is done to the superficial MCL, which may be protected with a Retractor.



13

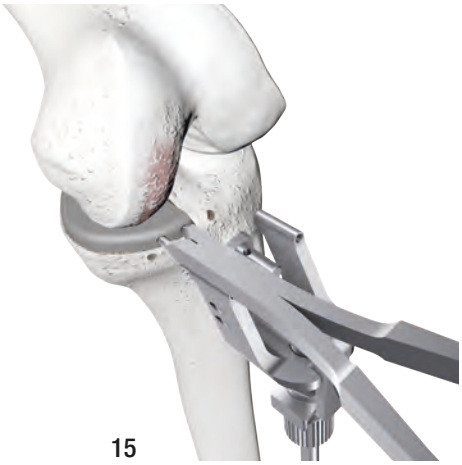
The Drill Pins for the Tibial Cutting Block and the Sagittal Resection Guide are removed and then the Sagittal Resection Guide with the Tibial Cutting Block are removed from the Tibial Base Frame (**14**). If, later on, it becomes evident that the joint space is too small, the Tibial Cutting Block can be simply repositioned and, after correcting the height setting, resection can be performed again.

The resected Plateau is then inspected to assess its thickness and the evenness of the cut in the AP and medial/lateral planes. The Plateau can then be sized by comparison with the Tibial Templates. It is important to ensure that all bony fragments/ retained resection material and meniscal remnants are removed from the posterior aspect of the joint to allow easy positioning of the appropiate Femoral Drill Guide.



14

A 7-mm Trial is provided to insert onto the resected Plateau which allows assessment throughout the range of motion (**15**).
Attention: Check that there is no overcorrection. The tibia plateau should be in 0° to 3° varus.



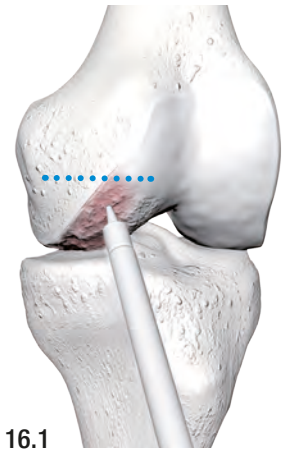
15

Femoral Component Positioning / Alignment

The positioning of a Unicondylar Sled Prosthesis onto an anatomically unique femoral condyle will always involve a degree of compromise. However there are certain guidelines to aid in the positioning of the implant.

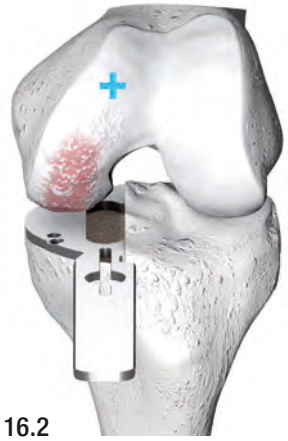
Femoral – Tibial Contact
In an attempt to prevent edge loading of the Tibial Component the femoral prosthesis should be positioned in order to be in contact with the center of the Tibial Plateau. Marks can be made on the femoral condyle during cyclical flexion/extension which correspond to the contact point of the femoral condyle with the centre of the Plateau throughout flexion.

Attention: In fixed-bearing medial UKA the optimal target for the surgeon should be a central implantation of the femoral component for expecting the best clinical and biomechanical outcome.



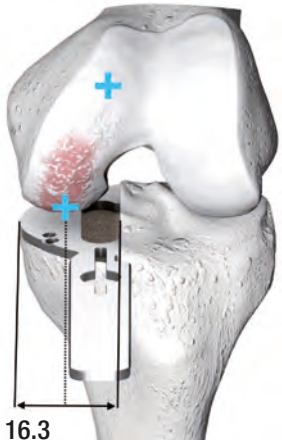
16.1

Step 1
Marking of the anterior margin of the femoral prosthesis with the knee in extension.



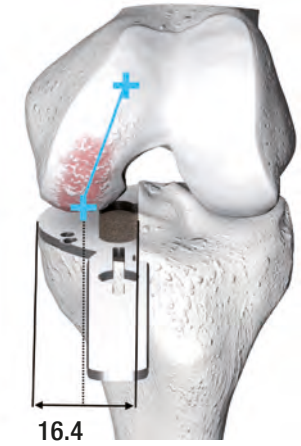
16.2

Step 2
Knee in flexion.



16.3

Step 3
Marking of center of the condyle in flexion.

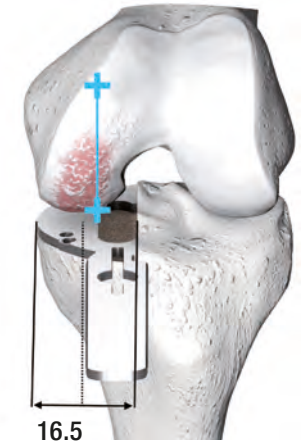


16.4

Step 4
Connecting of the two markings. This describes the femoral component alignment.

Option: Position the femoral component perpendicular to the tibia.

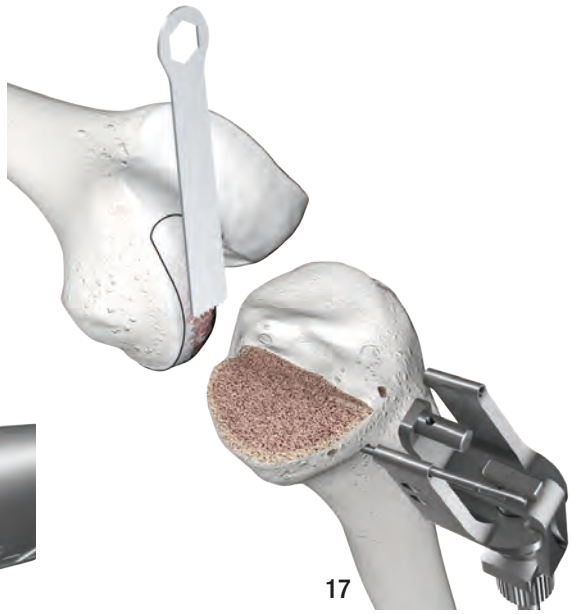
Attention: Do not select the femoral component too large in order not to run too far anteriorly.



16.5

Femoral Cartilage Removal

Suitable sizing of the Femoral Component required the femoral cartilage to be removed (**17**). Appropriate instruments for cartilage removal include the burr, Curette, Sharp Spoon or Sawblade. At this stage remove any posterior osteophytes using a curved Osteotome (**18**).



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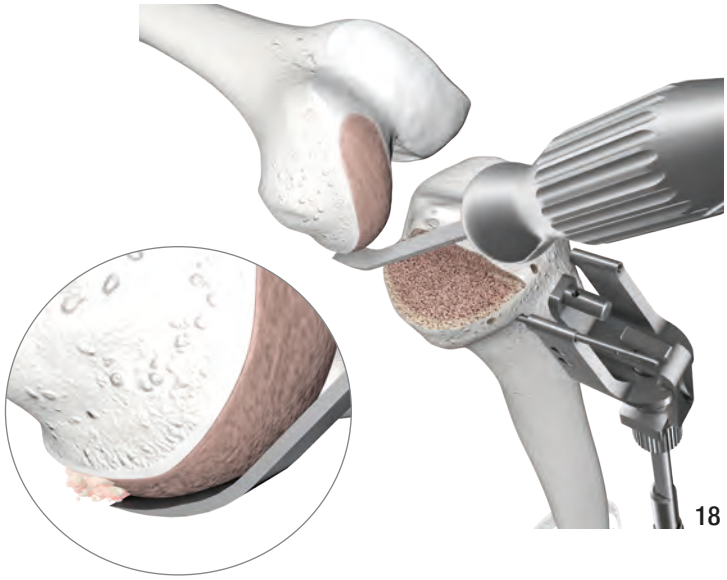
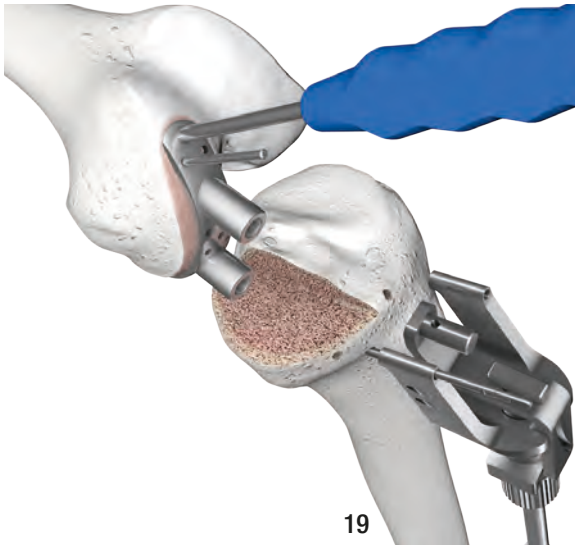


18

The Drill Guides match the component geometries and can be used as a surrogate sizing device. The Drill Guide should cover the femoral condyle to allow tibio femoral contact in deep flexion and extend up to but not significantly beyond the anterior mark made during the approach and avoid any possibility of Tibial Component ‘edge loading’. The selected Femoral Drill Guide is fixed with Drill Pins (**19**).

There are four sizes of the Femoral Component available (40, 46, 52 and 60 mm). The appropriate size is selected using a best fit philosophy.

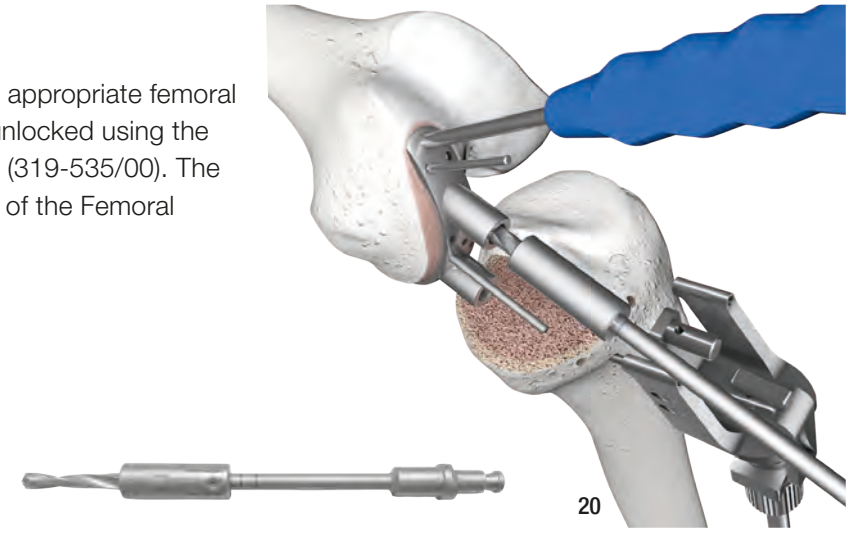


19

Femoral Preparation

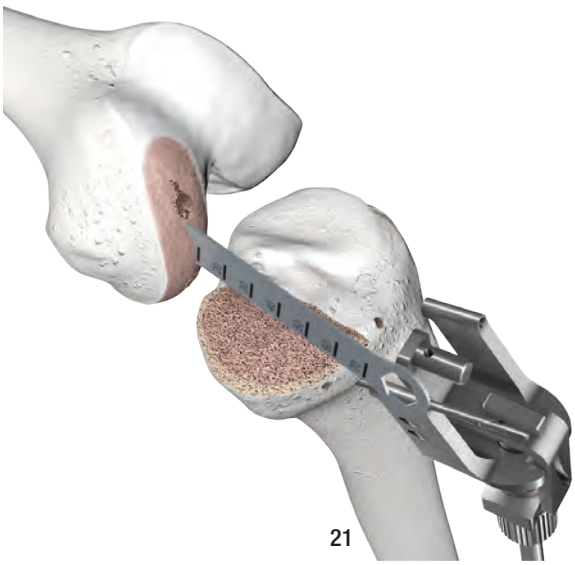
The fixation holes are drilled using the appropriate femoral drill length (**20**).The drill stop is to be unlocked using the corresponding Hex Head Screwdriver (319-535/00). The stop is adjusted according to the size of the Femoral Component:

Femoral Size	
Small	S/MS/M
Medium-small	S/MS/M
Medium	S/MS/M
Large	L



20

Corresponding to the Femoral Drill Guides there are Femoral Trial Components available. Prior to positioning the trial use a Chisel or an Oscillating Saw to prepare a groove between the two fixation holes ensuring that the fin on the backside of the Femoral Component will fit (**21**).



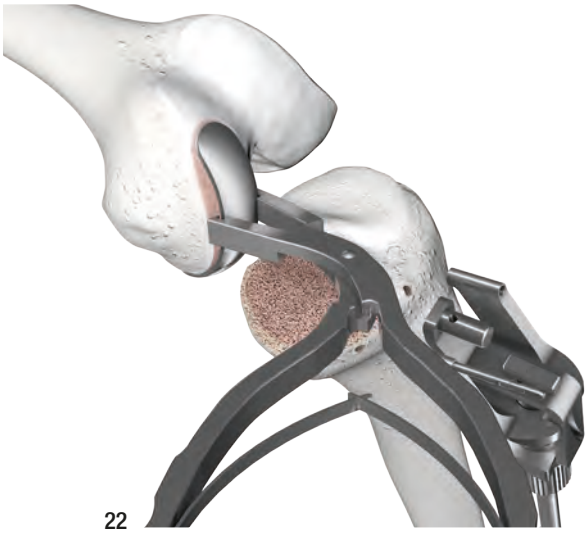
21

To ensure adequate bony resection and 'balance' a trial reduction is performed. The Trial Sled Prosthesis is placed on the prepared femoral condyle using the Inserting Forceps (**22**).

Attention: The appropriate orientation for the pegs have to be considered (**22.1-22.2**).

22.1

22.2

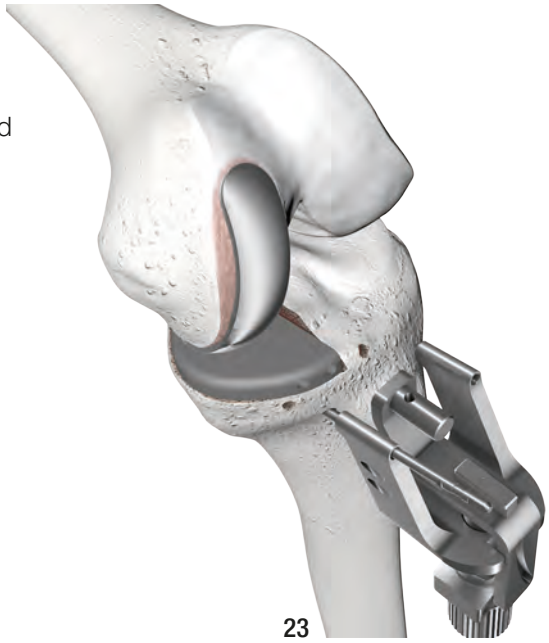


22

Tibial Spacer Blocks are avaiable in the Instrument Set for evaluating the joint space (**23**).

If the joint space is too small, the space can be corrected by re-cutting the tibial surface following re-application of the Tibial Jig over the Guide Pin.

If the result is satisfactory, the Tibial Resection Guide is taken off.



23

Tibial Preparation

The tibial preparation consists of:

- Sizing and aligning the Tibial Plateau
- Preparation of the Tibial Keel
- Shaping/final preparation of the Tibial Keel

Two options are available for the tibia: a Metal-backed Tibial Component or an All-poly Tibial Component.

Due to the different profile of the backside of the implant the preparation required differs:

All-poly Tibial Component
Preparation can be done with either a Milling System or a Keel Chisel and is concluded using a Bone Compressor.

Metal-backed Tibial Component
Here preparation is done exclusively with a Keel Chisel.

The Tibial Template used is based on the implant decision (metal-backed or all-poly):

All-poly Tbial Components

Size (A/P) mm	Width (M/L) mm
45	22
50	27
55	29
58	31

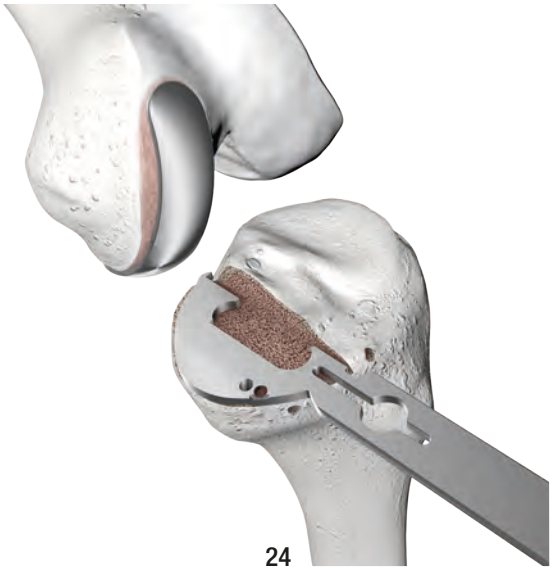
Metal-backed Tibial Components

Size (A/P) mm	Width (M/L) mm
45	22.5
50	25.0
55	27.5

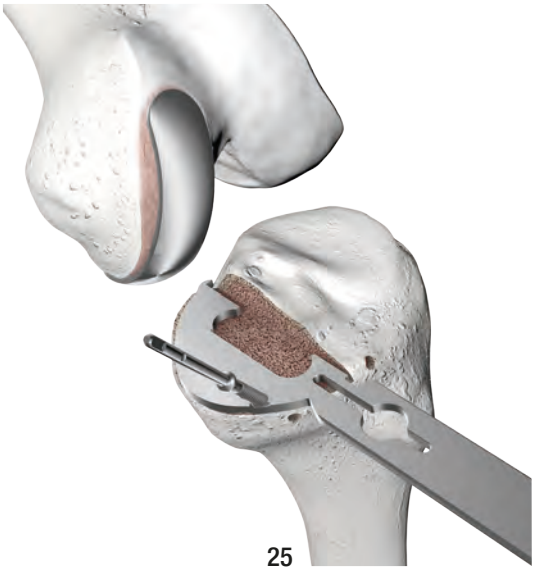
Tibial Preparation: All-poly Component

The appropriately sized Tibial Template is put into place. It can be used left/right and medial/lateral. The ideal size (a/p) is determined by positioning the hook at the end of Tibial Template posterior of the intercondylar eminence. The Template should be perfectly aligned with the anterior margin of the tibia. Do not undersize (**24**). The Tibial Template is secured using a **Pin with stop** (Drill Pin with stop 319-566/00 or alternatively Thread Pin with stop 319-560/01) (**25**).

Attention: It is important to achieve maximal coverage of the tibial plateau. Determine the tibial component as large as possible. However, an overhang, especially anteriorly, should be avoided.

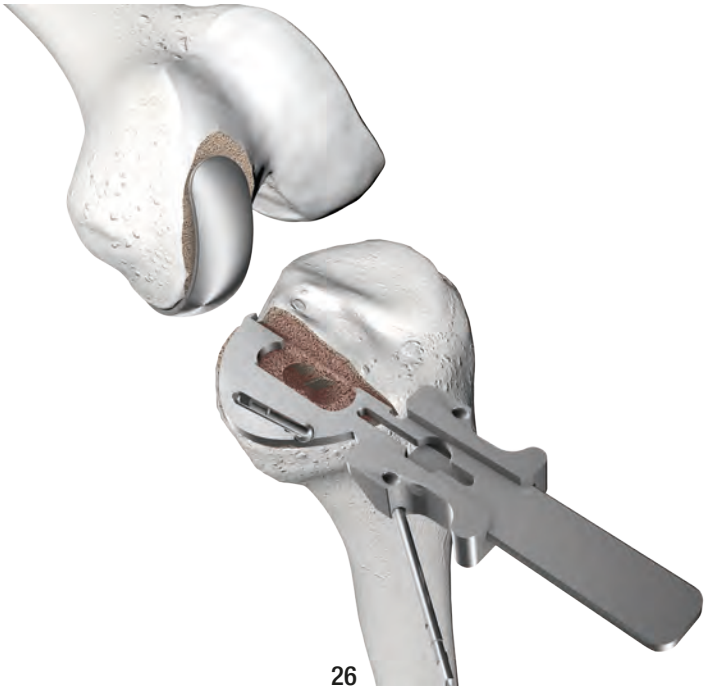


24



25

Optional: In case of insufficient stability or poor bone quality, the Tibial Template can be additionally secured by the Mill Fixation Adapter and further Drill Pins (**26**).

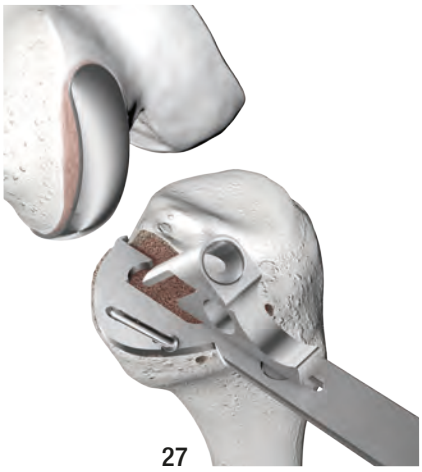


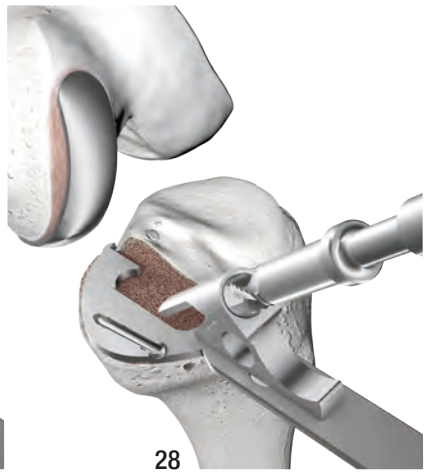
26

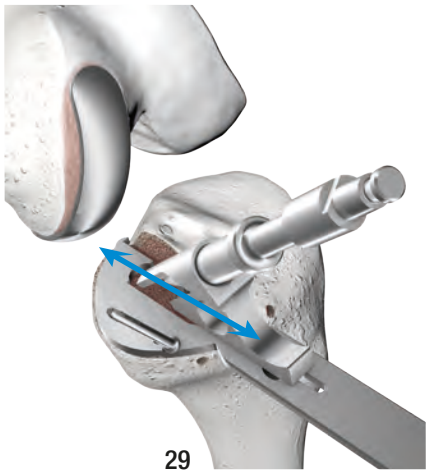
There are two options for preparing the keel.

1. Milling System
The tibial mill limits the depth and AP excursion of the mill and is selected according to the component size.

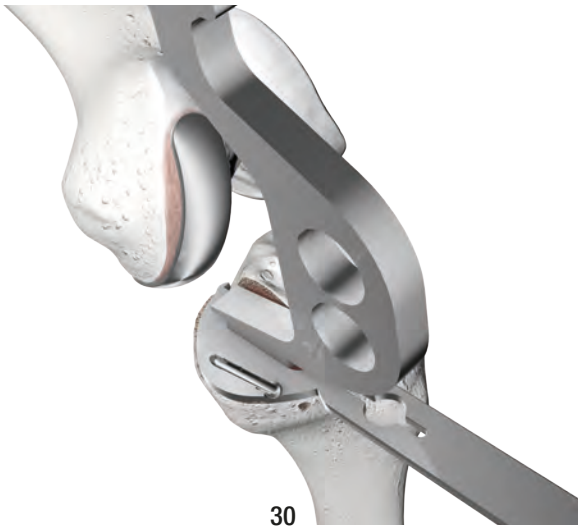
- The **Tibial Mill Guide** is placed in the Tibial Template in anterior position (**27**).
- The **Tibial Cutter** is inserted and put into operation, milling is then performed up to the stop and the Tibial Cutter is subsequently removed (**28**).
- The **Tibial Mill Guide** is pushed toward posterior and the mill is operated up to the stop. Then, with the mill operating, the Tibial Mill Guide is moved toward anterior/posterior in order to prepare the box (**29**).


27


28


29

Once preparation is complete, the Tibial Cutter is removed followed by the Tibial Mill Guide. For final preparation, the Bone Compressor which corresponds to the selected tibial size is chosen and inserted/impacted into the prepared box (**30**).

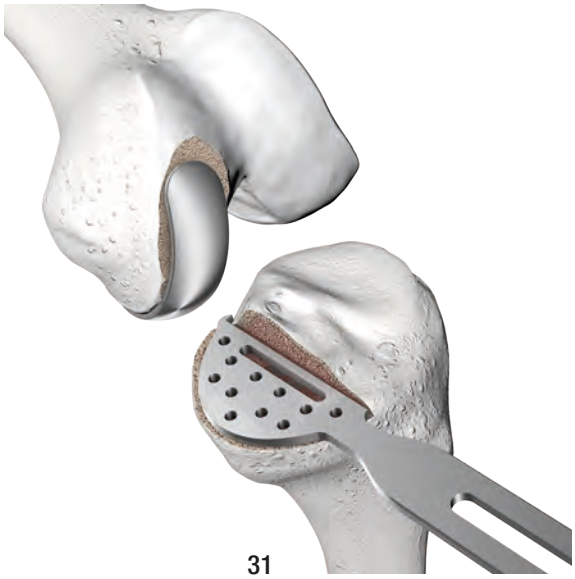

30

2. Keel Chisel
As an alternative to the Milling System, the box for the Tibial Component can also be prepared with a Keel Chisel. As described above, the Tibial Template is fixed into place in order to determine both size and position.

The tool of the corresponding size is selected, guided through the recess in the Tibial Template and then used for chiseling. The bone block is released by means of a posterior/anterior tilting motion and the Keel Chisel is removed. The Bone Compressor can then be inserted.

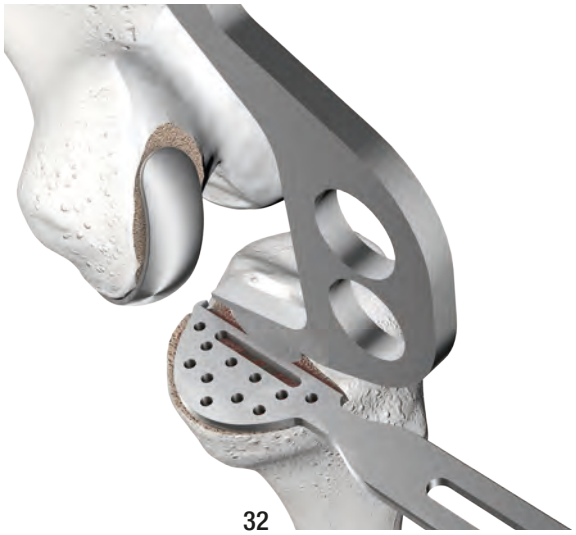
Tibial Preparation: Metal-backed Component

For preparation of the keel for Metal-backed Tibial Components there is the dedicated Keel Chisel to be used. As described above, the relevant Tibial Template is placed and fixed onto the tibia in order to determine both size and position (**31**).



31

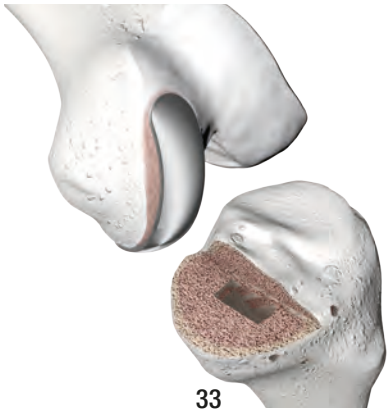
The tool of the corresponding size is selected, guided through the recess in the Tibial Template and then used for chiseling. As such, the bony structure is displaced, compressed and then the Chisel is removed by tilting it posterior/anterior (**32**).



32

Trial Reduction

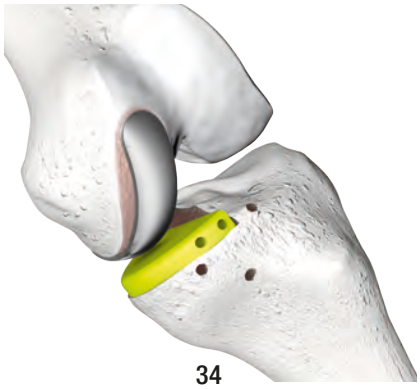
The Tibial Trial Prosthesis (with keel) is selected – All-poly (yellow) or Metal-backed (red). As a rule, the smallest Trial Component is used. For this, the knee joint should be flexed at least 90° (**33**).



33

Attention:
The Tibial Trial Prosthesis is easier to put into place with slight valgus loading.

The knee is moved through its entire range of motion to check joint stability. The height of the Tibial Component is to be selected so that the natural tension of the ligaments is restored. With valgus loading of the knee joint, it should be possible to open the medial joint space 1-2 mm (**34**).



34

Attention: It is important to ensure a slight under correction of the limb alignment and have appropriate ligamentous tension restored (2 - 3 mm of laxity) in flexion and extension.

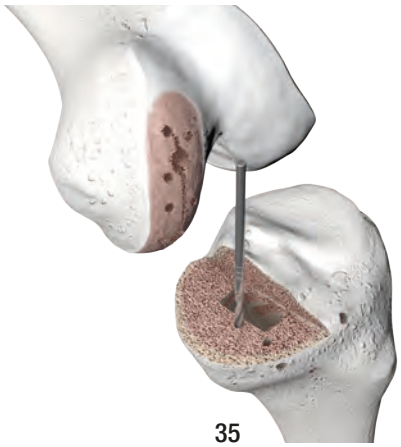
Implantation and Cementation

Warning:
A good fixation of the implant components is a prerequisite to achieve long-term success of the application. Cementing technique is one of the factors that play an important role in this respect. Therefor the following instructions have to be carefully considered.

In sclerotic bone, multiple holes should be drilled with a small drill (Max diam 3.0 mm-drill pins can be used as an alternative) to ensure better bone cement interdigitation. Due to the preparation technique, this is particularly important for the femoral condyle. Cleanse all cement-receiving bone surfaces thoroughly using pulse lavage and dry with a clean, dry lap sponge (**35**). The Bone Cement is prepared, taking account of the manufacturer's specific instructions.

The implantation of the tibial and femoral components should be done in two stages. This ensures that there is sufficient time to position the component, remove excess bone cement and allow it to harden without inadvertently manipulating the implant-bone cement-bone interface.

The bone cement, which has been prepared according to the manufacturer's instructions, is applied both to the back of the implant and to the bone.
Beginning with the tibial component, the bone cement is carefully applied evenly to ensure a homogeneous cement mantle. A steady pressure is maintained with the tibial impactor during curing.
The femoral component is then cemented.



35

Important:
Ensure that excess Bone Cement is completely removed and no loose Bone Cement particles remain, especially in the posterior aspect of the joint.

Tibial Component

The Bone Cement is applied to the prepared bony surface including the keel and the underside of the implant.

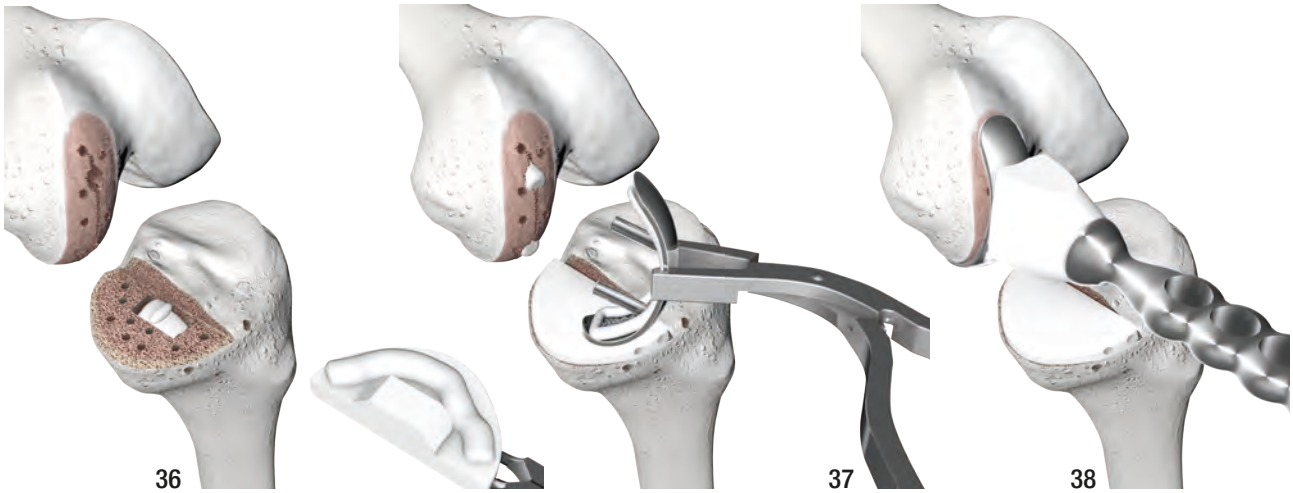
Attention: It should be considered to apply bone cement at the vertical wall a too.

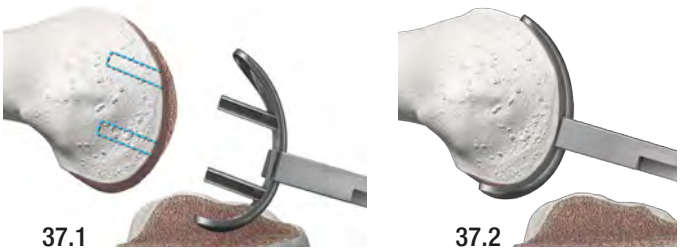
Apply a thin layer of cement over the entire underside of the tibial component. The cement should just overfill the bead strcuture on the underside of the tray, up to 1 mm proud posteriorly and 2 mm proud anteriorly.
Apply cement to the tibia and pressurize the cement, striving for penetration of 3-4 mm.
Use of a cement gun/cartridge equipped with a pressurizing nozzle is recommended to deliver and pressurize cement into the prepared holes and across the flat surface.
Alternatively, cement may be applied manually and pressurized into the bone using a flat osteotome.
The Tibial Component is inserted posteriorly initially, then pushed downward and finally pushed in anteriorly (**36**).

Attention: To facilitate placement, the knee is flexed and the tibia is externally rotated.

Femoral Component

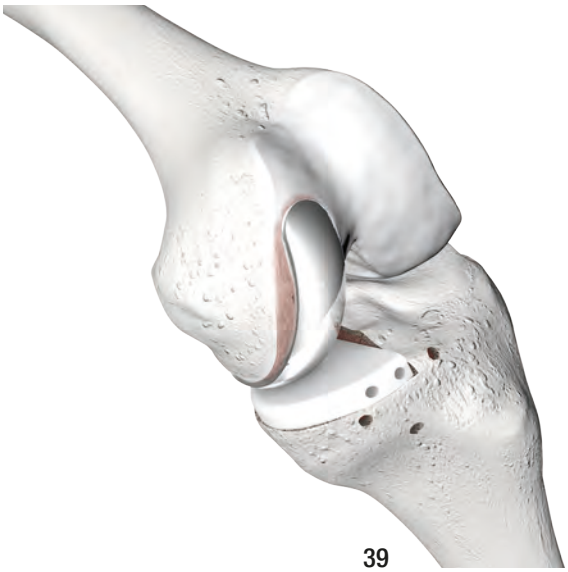
The Bone Cement is applied to the back of the Femoral Component. In addition, both drill holes for the fixation pegs are filled with Bone Cement. The Femoral Component is positioned using Inserting Forceps and both pegs are to be inserted into the prepared drill holes (**37**). The Femoral Component is then finally driven on using the Femoral Impactor (**38**).





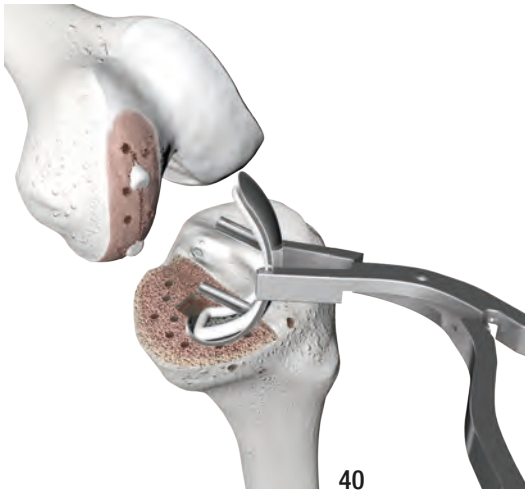
Final Reduction

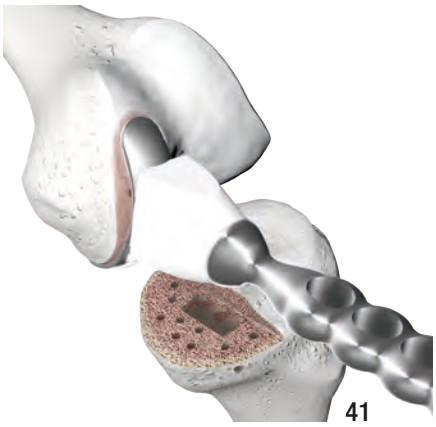
The leg is held in extension for the remainder of the cement curing process (**39**).



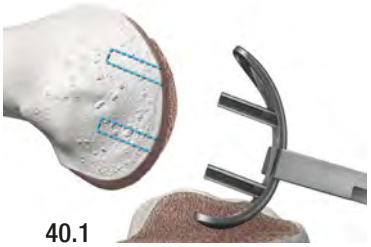
39

Optional: Femur First


40


41

Femoral Component
The Bone Cement is applied to the back of the Femoral Component. In addition, both drill holes for the fixation pegs are filled with Bone Cement. The Femoral Component is positioned using Inserting Forceps and both pegs are to be inserted into the prepared drill holes (**40**). The appropriate orientation for the pegs should be considered (**40.1** & **40.2**).


40.1


40.2

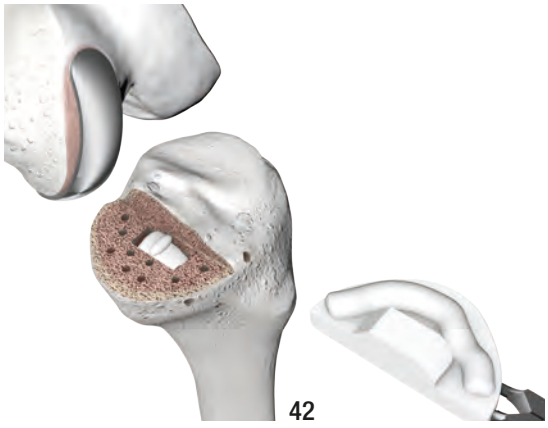
The Femoral Component is then finally driven on using the Femoral Impactor (**41**).

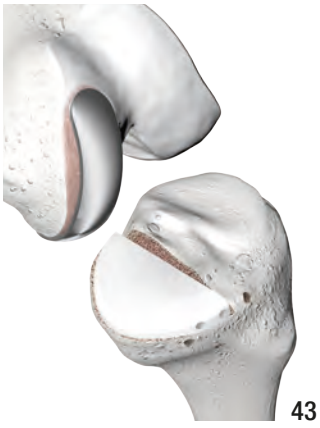
Tibial Component
The Bone Cement is applied to the prepared bony surface and the underside of the implant.

Attention: It should be considered to apply bone cement at the vertical wall a too.

Apply a thin layer of cement over the entire underside of the tibial component. The cement should just overfill the bead structure on the underside of the tray, up to 1 mm proud posteriorly and 2 mm proud anteriorly.
Apply cement to the tibia and pressurize the cement, striving for penetration of 3-4 mm.
Use of a cement gun/cartridge equipped with a pressurizing nozzle is recommended to deliver and pressurize cement into the prepared holes and across the flat surface.
Alternatively, cement may be applied manually and pressurized into the bone using a flat osteotome The Tibial Component is inserted posteriorly initially, then pushed downward and finally pushed in anteriorly (**42** & **43**).

Attention: To facilitate placement, the knee is flexed and the tibia is externally rotated.


42


43

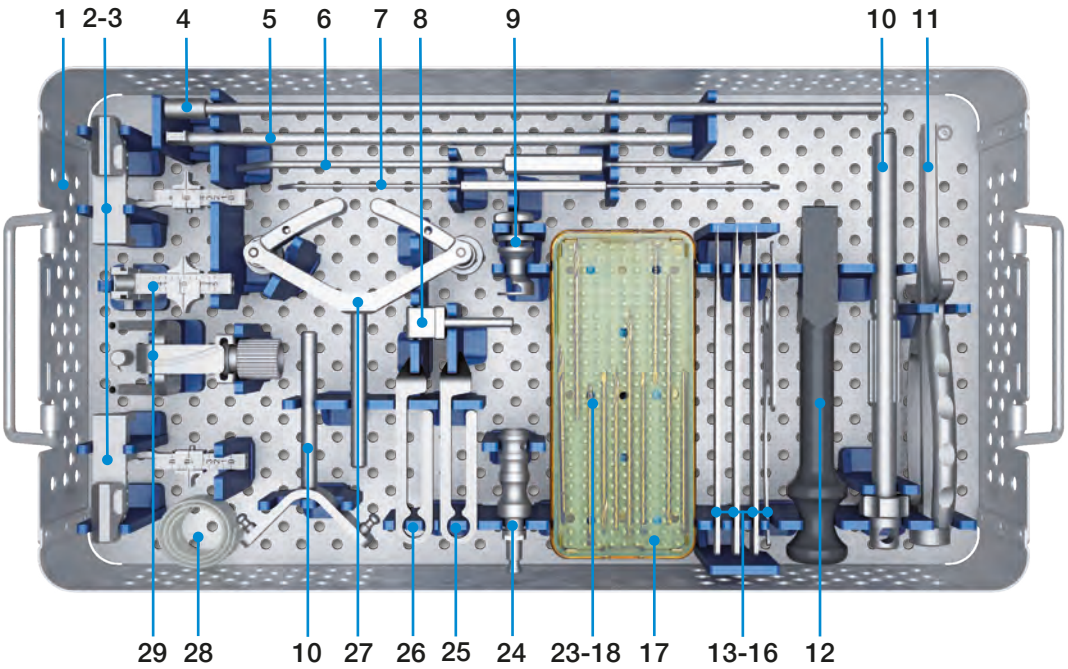
MITUS ART Instrument Set (Anatomic Reconstruction Technique)

Greater Safety and Higher Precision

- Instrument Set for optimal alignment and soft tissue adjustment with reproducible results
- The Instruments are arranged on the Trays in the correct surgical sequence
- All the Instruments can be dismantled without tools and are quick and easy to reassemble

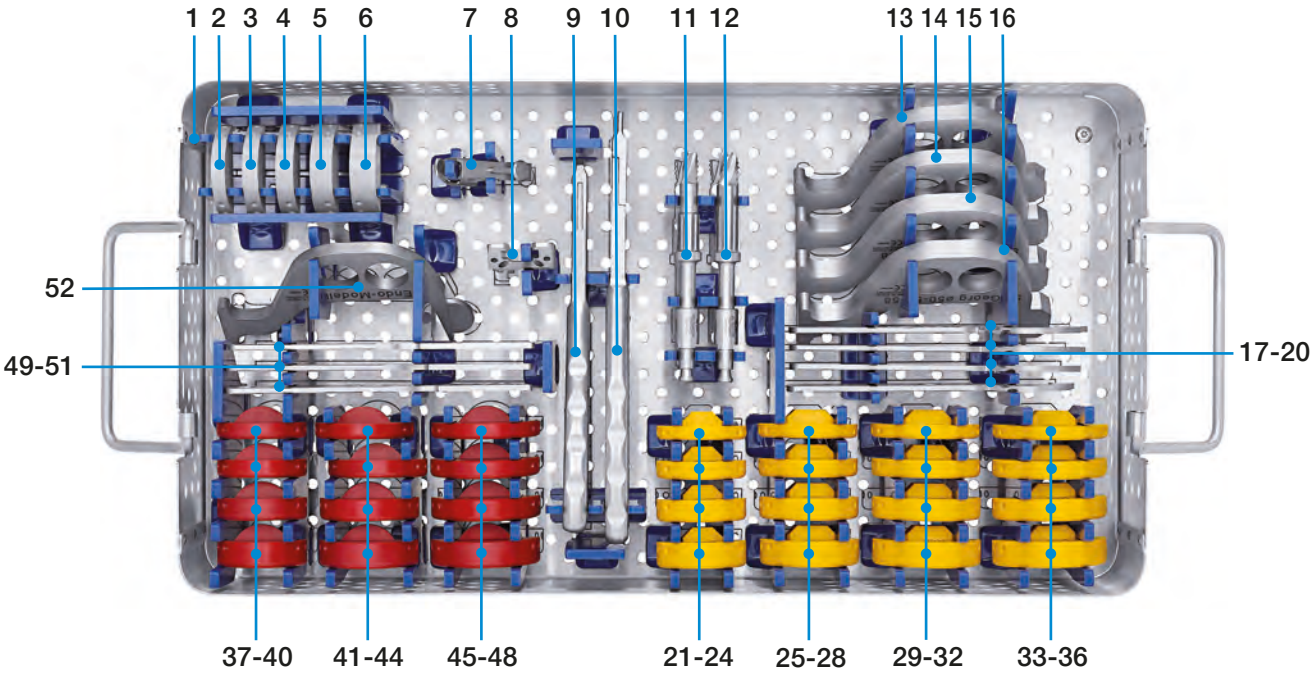
REF	MITUS ART Instrument Set
35-1000/01	Case – Tibia Resection
35-1100/00	Case – Tibia Preparation
35-2100/00	Case – Femur Preparation

35-1000/01 Case – Tibia Resection



1	35-0100/01	**Instruments Tray – Tibia Resection,** empty, 485 x 253 x 80 mm
2	35-1002/00	**Tibial Saw Guide,** asymmetrical, right
3	35-1001/00	**Tibial Saw Guide,** asymmetrical, left
4	319-520/01	**Alignment Rod,** extramedullary
5	319-110/01	**EM Alignment Rod,** for tibia alignment
6	15-2201/70	**Curette** to remove excess cement
7	15-2201/71	**Spatula,** double end, to remove excess cement
8	35-1003/00	**Tibial Sagittal Resection Guide**
9	35-1004/00	**Guide** for stylus
10	319-160/00	**Foot Clamp,** EM tibial alignment (2 parts)
11	317-586	**Inserter/Extraction Forceps,** for fixation pins Ø 3 mm
12	35-1017/00	**Tibial Impactor**
13	317-802/53	**Cutting Template**
14	15-2102/03	**Lambotte Osteotome,** width 15 mm
15	15-2201/17	**Lambotte Osteotome,** width 11 mm
16	15-2201/16	**Lambotte Osteotome,** width 9 mm
17	319-602/30	**Sterilizing Box** with base, silicon mat and top consisting of:
18	319-560/01	**Thread Pin,** Ø 3.5 mm, 70 mm (2 pieces)
19	319-566/00	**Drill Pin** with stop, Ø 3.0/3.5 mm, 85 mm (2 pieces)
20	319-581/00	**Drill Pin,** Ø 3 mm, 80 mm (3 pieces)
21	319-582/00	**Drill Pin,** Ø 3 mm, 110 mm (2 pieces)
22	35-1020/08	**Self-tapping Fixation Pin,** Ø 3 mm, 80 mm (3 pieces)
23	35-1021/00	**Locking Socket,** for tibia alignment rod (1 piece)
24	16-3287/00B	**Adapter,** LINK power tool snap lock adapter
25	35-1005/00	**Stylus,** height 5 mm
26	35-1007/00	**Stylus,** height 7 mm
27	319-183/00	**Flexible Belt,** spring fixation
28	317-538/01	**Plastic Connector,** 495 mm
29	319-140/01	**Tibial Base Guide** (2 parts)

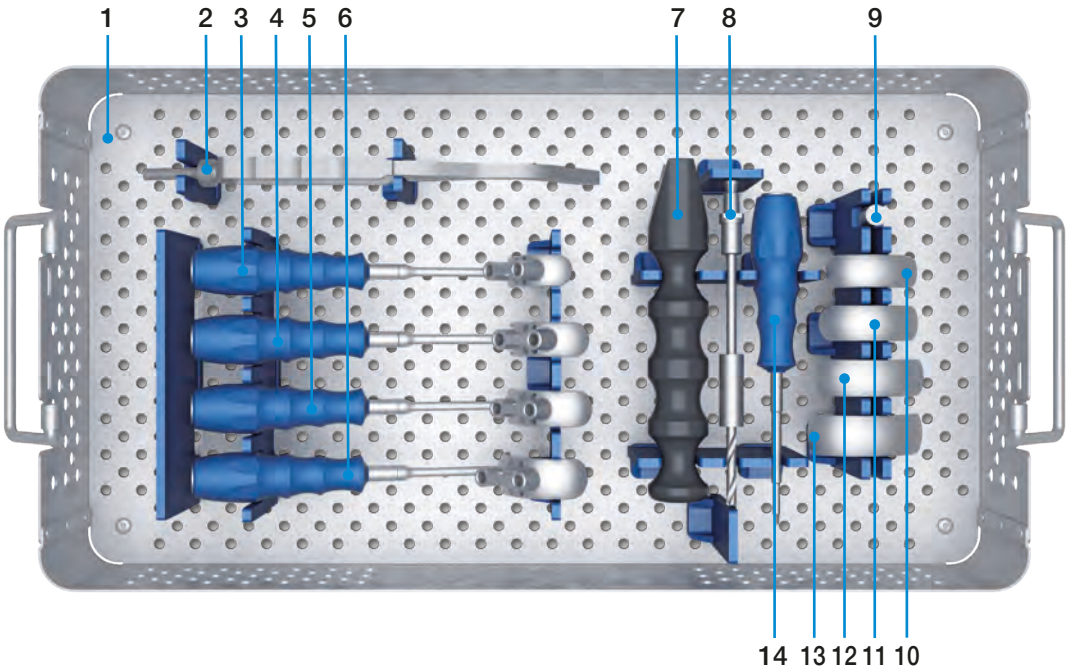
35-1100/00 Case – Tibia Preparation



1	35-0110/00	**Instruments Tray – Tibia Preparation,** empty, 485 x 253 x 80 mm
		Tibial Trial Plates, Ø 45 mm
2	35-1012/07	Height 7 mm
3	35-1012/08	Height 8 mm
4	35-1012/09	Height 9 mm
5	35-1012/11	Height 11 mm
6	35-1012/13	Height 13 mm
7	35-1010/00	**Tibia Milling Guide**
8	35-1011/00	**Milling Fixation Block**
9	15-2040/09	**Plateau Holding and Inserting Forceps,** for tibial plateaus (metal-backed)
10	15-2042	**Inserting Forceps,** for tibial trial prosthesis (all-poly) and tibial plateaus (all-poly)
11	35-1008/00	**Tibial Cutter,** small, for tibial plateaus (all-poly) Ø 45 mm
12	35-1009/00	**Tibial Cutter,** large, for tibial plateaus (all-poly) Ø 50, 55, 58 mm
13	35-1013/00	**Keel Chisel,** for tibial plateaus (all-poly), Ø 45 mm
14	35-1015/00	**Bone Compressor,** for tibial plateaus (all-poly), Ø 45 mm
15	35-1014/00	**Keel Chisel,** for tibial plateaus (all-poly), Ø 50, 55, 58 mm
16	35-1016/00	**Bone Compressor,** for tibial plateaus (all-poly), Ø 50, 55, 58 mm
		Tibial Templates for tibial plateaus (all-poly)
17	35-1158/00	Ø 58 mm
18	35-1155/00	Ø 55 mm
19	35-1150/00	Ø 50 mm
20	35-1145/00	Ø 45 mm

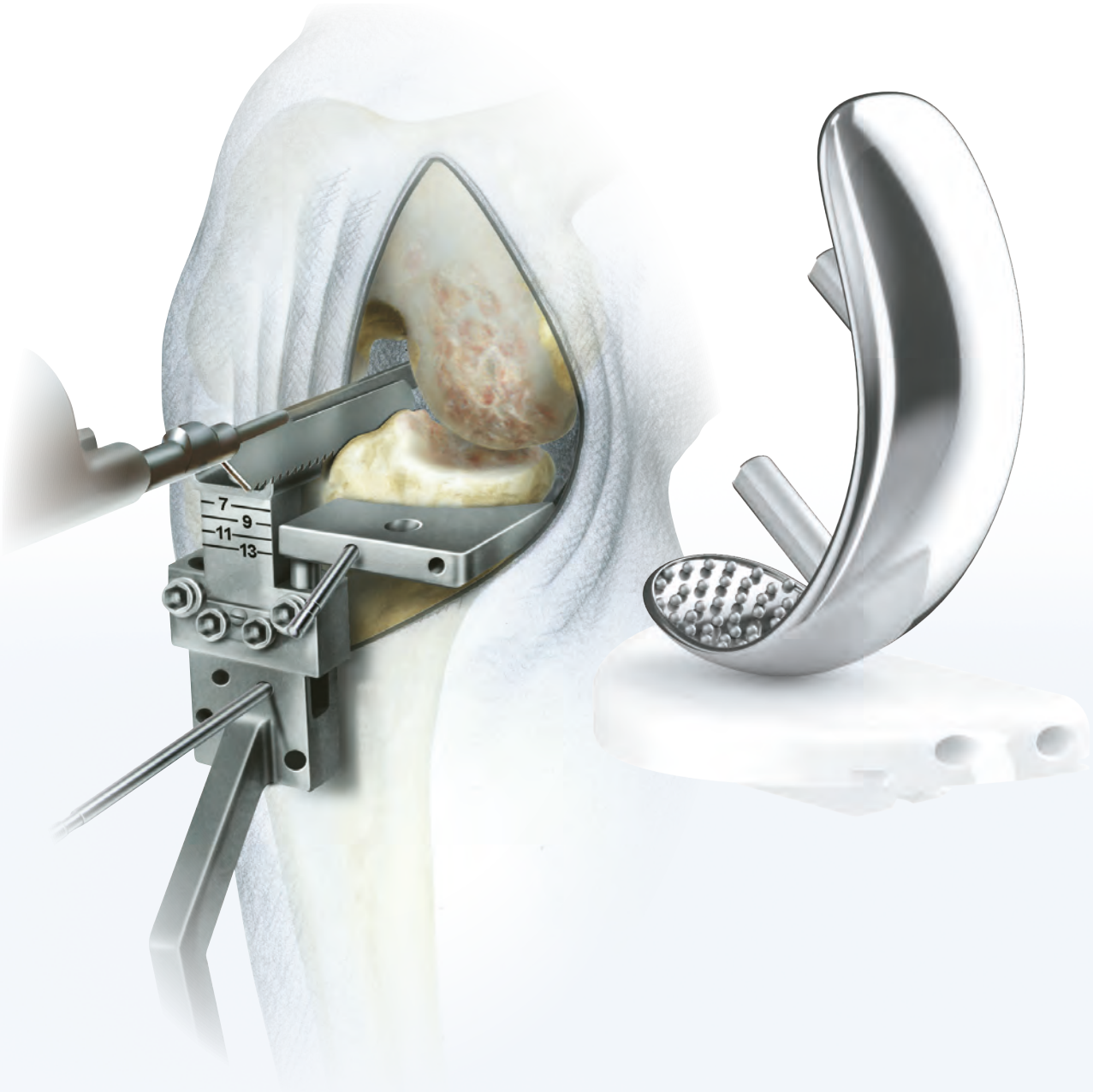
		Tibial Trial Prostheses, for tibial plateaus (all-poly)
21	35-1145/07	Ø 45 mm, Height 7 mm
22	35-1145/09	Ø 45 mm, Height 9 mm
23	35-1145/11	Ø 45 mm, Height 11 mm
24	35-1145/13	Ø 45 mm, Height 13 mm
25	35-1150/07	Ø 50 mm, Height 7 mm
26	35-1150/09	Ø 50 mm, Height 9 mm
27	35-1150/11	Ø 50 mm, Height 11 mm
28	35-1150/13	Ø 50 mm, Height 13 mm
29	35-1155/07	Ø 55 mm, Height 7 mm
30	35-1155/09	Ø 55 mm, Height 9 mm
31	35-1155/11	Ø 55 mm, Height 11 mm
32	35-1155/13	Ø 55 mm, Height 13 mm
33	35-1158/07	Ø 58 mm, Height 7 mm
34	35-1158/09	Ø 58 mm, Height 9 mm
35	35-1158/11	Ø 58 mm, Height 11 mm
36	35-1158/13	Ø 58 mm, Height 13 mm
		Tibial Trial Prostheses, for tibial plateaus (metal-backed)
37	35-1045/08	Ø 45 mm, Height 8 mm
38	35-1045/09	Ø 45 mm, Height 9 mm
39	35-1045/11	Ø 45 mm, Height 11 mm
40	35-1045/13	Ø 45 mm, Height 13 mm
41	35-1050/08	Ø 50 mm, Height 8 mm
42	35-1050/09	Ø 50 mm, Height 9 mm
43	35-1050/11	Ø 50 mm, Height 11 mm
44	35-1050/13	Ø 50 mm, Height 13 mm
45	35-1055/08	Ø 55 mm, Height 8 mm
46	35-1055/09	Ø 55 mm, Height 9 mm
47	35-1055/11	Ø 55 mm, Height 11 mm
48	35-1055/13	Ø 55 mm, Height 13 mm
		Tibial Templates, for tibial plateaus (metal-backed)
49	35-1055/00	Ø 55 mm
50	35-1050/00	Ø 50 mm
51	35-1045/00	Ø 45 mm
52	35-1012/00	**Keel Chisel,** for tibial plateaus (metal-backed)

35-2100/00 Case – Femur Preparation



1	35-0201/00	**Instruments Tray – Femur Preparation,** empty, 485 x 253 x 80 mm
2	15-2201/10	**Inserting Forceps,** for trial sled prostheses
		Drill Guides
3	15-2040/40	small
4	15-2040/46	medium-small
5	15-2040/52	medium
6	15-2040/60	large
7	35-2002/00	**Femoral Impactor**
8	15-2040/03B	**Twist Drill** with stop, Ø 5.5 mm, 160 mm, with B Hudson fitting
9	15-2201/53	**Fixation Pin** for stabilization of drill guide
		Trial Sled Prostheses
10	35-2340/00	small
11	35-2346/00	medium-small
12	35-2352/00	medium
13	35-2360/00	large
14	319-535/00	**Screwdriver,** hex 2.5 mm

LINK SLED Prosthesis
with MITUS Instrument Set



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LINK SLED Prosthesis

Femoral Components

The femoral component is designed considering a polycentric (multi radius) curvature. That means that the femoral component follows the anatomical curvature of the bone and mimics the natural shape of the knee.
To avoid excessive bone loss, the back of the femoral component has no facets. Therefore the preparation of the femoral condyle doesn't require bone resection. Only cartilage will be removed.
The non-bulky design of the runnerprevents patella impingement. The surface for bone cement bonding on the femoral components has a macro structure for cement bonding (globular structure). The design incorporates two pegs for fixation.

The Femoral Components are available in four sizes:

- Small (16 x 40 mm)
- Medium small (17 x 46 mm)
- Medium (18 x 52 mm)
- Large (20 x 60 mm)

Tibial Plateaus

As a result of their symmetrical shape the tibial plateaus can be used for both the medial and lateral tibial compartments. The sizing is adapted to the anatomical shape of the tibia.

- **All-poly Design**
  This design comes in four heights: 7, 9, 11 and 13 mm and four diameters: 45, 50, 55 and 58 mm.

- **Metal-backed Design**
  This design comes in four heights: 8, 9, 11 and 13 mm and three diameters: 45, 50 and 55 mm.

LINK PorEx Technology – Surface Modification

(TiNbN = Titanium Niobium Nitride)

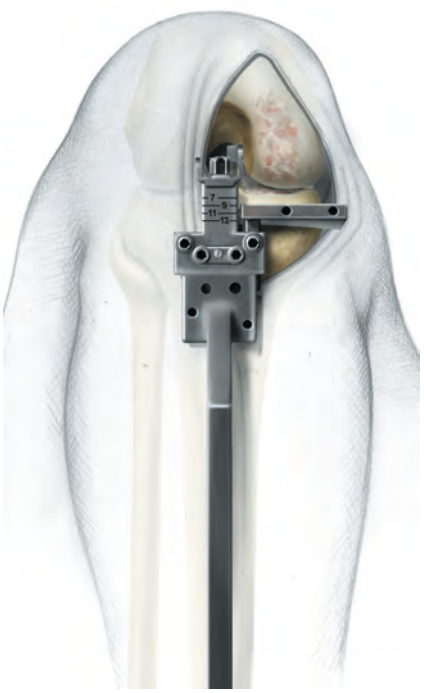
The LINK PorEx Surface Modification leads to a ceramic-like surface, which significantly reduces the release of ions and can improve the spectrum of indications for patients who are sensitive to metal[1].

This surface is extremely hard and possesses abrasion properties similar to those of ceramics. These qualities and the wetting angle of the surface give it a low friction coefficient when in contact with fluids.

1 Internal study of the influence of TiNbN-coating on the ion release of CoCrMo-alloys in SBF buffer simulator testing.

Rünow Minimally Invasive Surgical Technique

For implantation of a sled prostheses is it essential to select the correct indication. The concept is based on the fact that in early stages of knee osteoarthritis (OA) the cartilage damage is limited to a single compartment within the knee joint.



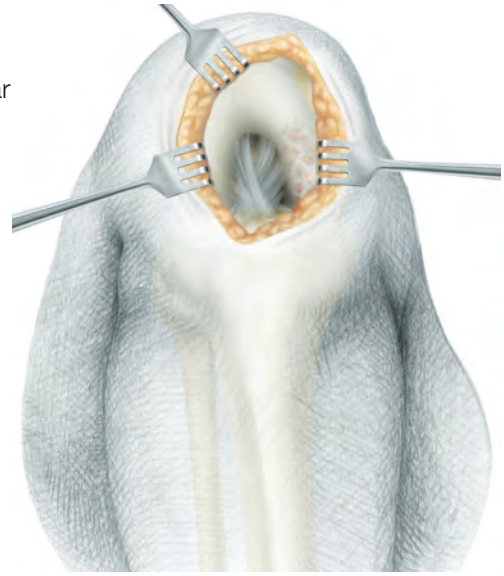
The design of the **LINK Sled Prosthesis** ensures that only minimal bone resection is required when preparing the bone to receive the femoral and tibial components. This preserves high-quality bone, particularly the hard sub-chondral bone, which is important for secure long-term fixation of the implant.

The **Tibial Saw Guide** supports resection according to anatomical conditions and ensures precise, reproducible bone cuts.

The **MITUS Instrument Set** offers distinct advantages to the surgeon:

- minimal bone resection
- full control over the level of tibial resection
- opportunity to try out different sizes using trial implants
- option to perform the surgery using either conventional or minimally invasive surgical techniques
- medial or lateral use of instruments possible

Two different forms of surgical approach can be used

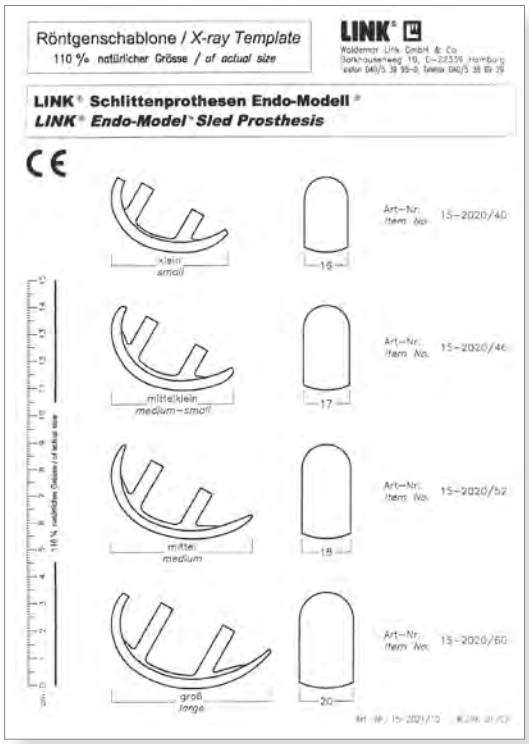


Conventional Approach: through a midline or a medial parapatellar skin incision. The joint cavity is reached via a medial parapatellar incision and splitting of the quadriceps tendon. The patella is everted laterally.

Minimally Invasive Approach: through a short parapatellar skin incision. The capsular incision is also parapatellar allowing access to the joint with minimal disturbance of the extensor mechanism and without dislocating the patella.

The minimally invasive technique reduces complications and can be performed with great precision provided the LINK® instruments are used correctly.

Patient Selection and Surgical Planning

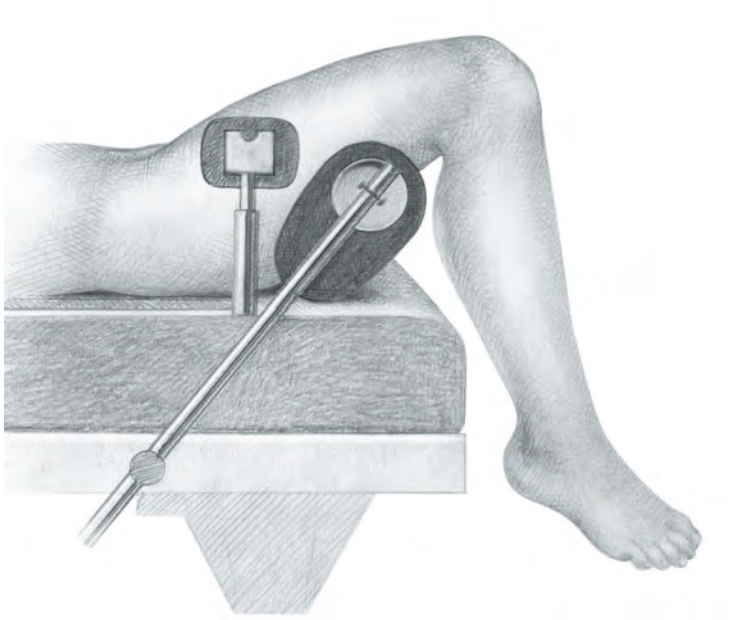


Imaging:
Pre-operative planning is an essential part of the surgery.

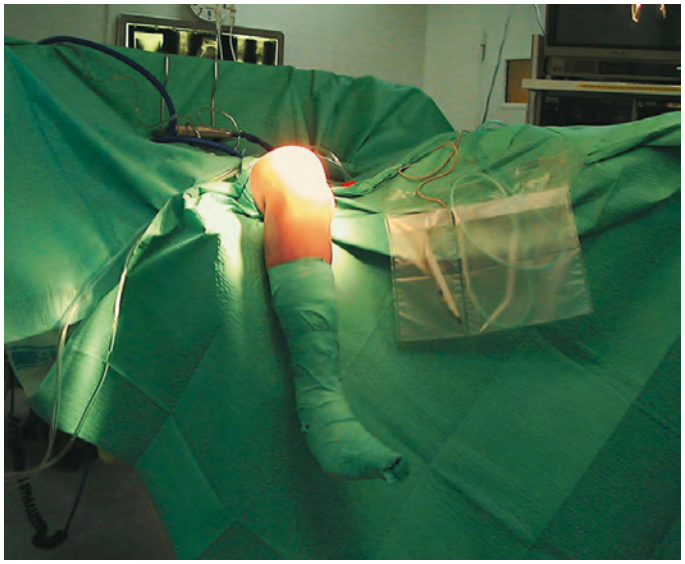
The following baseline radiographs are recommended; Weight bearing AP views or Rosenberg PA view taken in slight flexion are essential These may be supplemented by varus/valgus stress views and Rosenberg view to ensure a correctable deformity.True lateral (femoral condyles overlapping) to assess for posterior tibial plateau erosion seen with chronic ACL deficiency Skyline PFJ view.

X-ray Templates of the individual components (femur and tibia) which are 110% the actual size are available. A note should be made of the natural tibial slope which will act as a guide during the tibial resection. These views may be supplemented by a long leg X-ray to determine the pre-operative weight bearing axis and any extra-articular deformity. We also support electronic computerized planning and cooperate with the leading manufacturers of electronic templating systems. We would be pleased to provide you with more information on request.

Patient Positioning

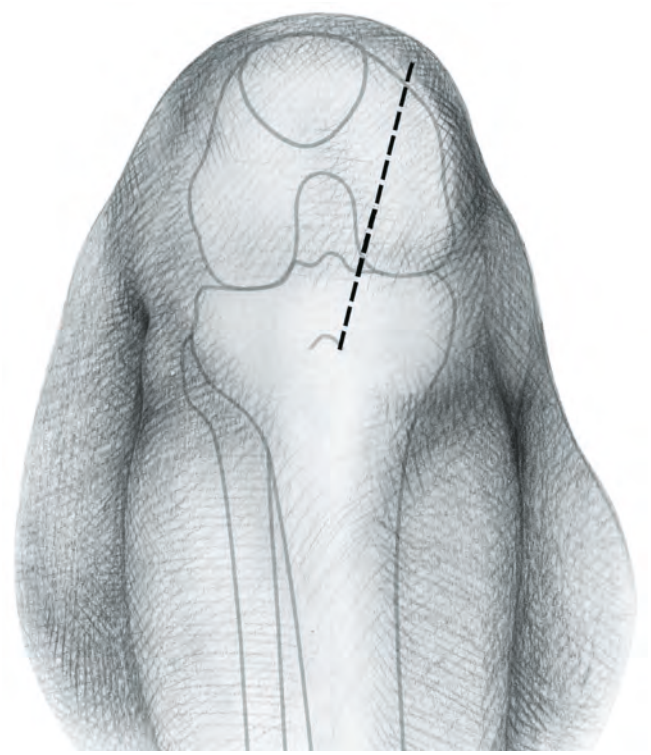


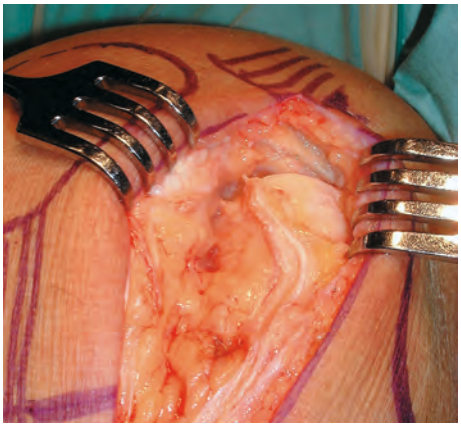
The limb is placed in a thigh support with 45° flexion of the hip. The leg is hanging down. It should be possible to flex the knee at least 120°. When using a medial incision a lateral thigh support is needed.



The operation is performed with the surgeon sitting in front of the flexed knee. The other leg is placed in a leg support leaving plenty of space for the surgeon and the assistant. The operation is performed in a bloodless field.

Patient Positioning



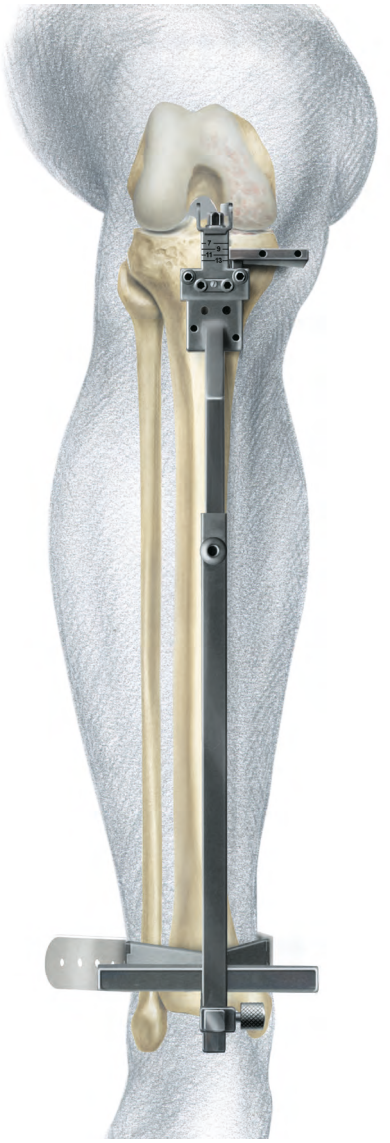


With the knee flexed 90°, a medial parapatellar incision is made starting at the margin of the vastus medialis 2–3 cm medial to the patella and extending distally and diagonally to the tibial tuberosity.

A medial parapatellar capsule incision is made. For better visualization the incision is angulated in its proximal part. The vastus medialis is detached. The capsule is released from the tibia almost to the front of the medial collateral ligament. The meniscus is removed. Partial excision of the retropatellar fat pad is necessary to gain better exposure of the intercondylar notch.

A retractor is placed in the lateral recess, allowing inspection of this compartment. To examine the patellar articulation, the knee is extended. If there are any doubts preoperatively about the condition of the other compartments diagnostic arthroscopy or MRI can be performed prior to the operation. After inspection, the retractor is placed in the intercondylar notch and the curved retractor behind the femoral condyle, to get a full view of the medial compartment.

Tibial Resection

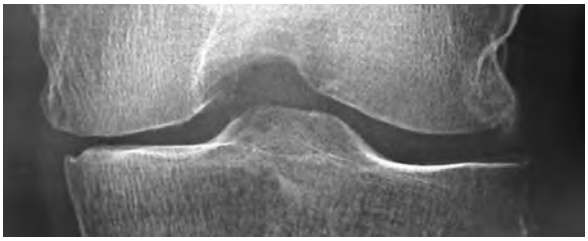


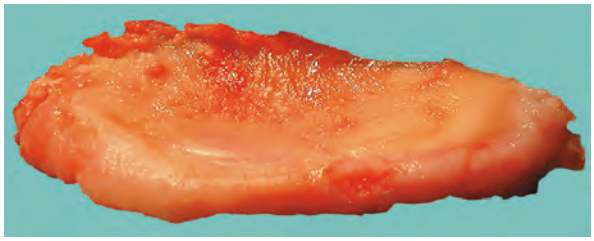
The purpose of the LINK Unicondylar Sled Prosthesis is to restore the damaged joint surfaces and the mechanical axis; a slight under-correction is desirable.

The Tibial Saw Guide allows the surgeon to determine and achieve the desired cutting depth precisely and to control the cutting in the frontal and the sagittal planes. The Saw Guide can be used with either a minimally invasive technique or the traditional exposure.

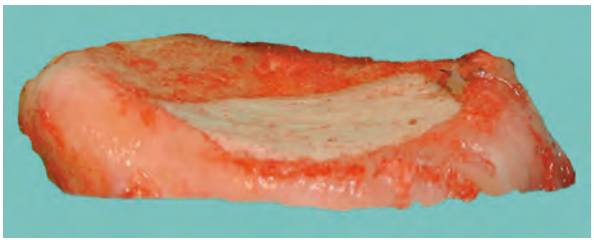
Tibial Resection

Grade I

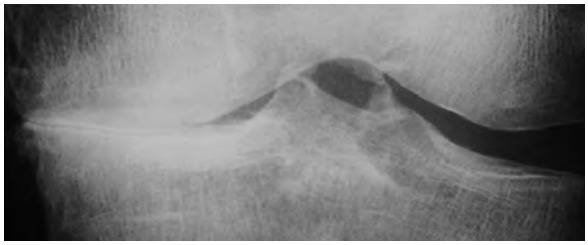


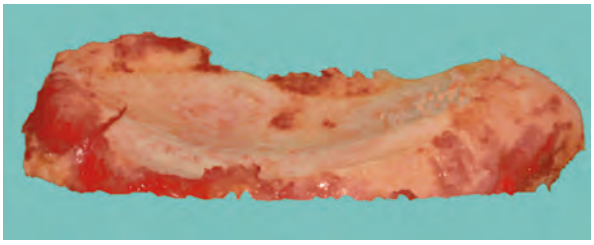


Grade II



Grade III





In knee replacement surgery by the traditional technique, the deepest point and the most damaged area of the tibial plateau are taken as the basis for determining the depth of the tibial resection. The depth of the resection is then highly dependent on the surgeon‘s experience. Often further resection is needed or the height of the Tibial Plateau must be changed to obtain the desired alignment and stability of the knee. The best aid to determining the depth of the horizontal cut is weight-bearing radiographs of the knee and pre-operative observations of the degree of cartilage damage. These allow a slight undercorrection of only a few degrees of varus to be achieved. The analysis of the weight-bearing radiographs is based on the classification of Ahlbäck.

The proposed resection depths are based on the use of a 9-mm high Tibial Plateau.

Grade I The joint space is reduced by one-half. The cartilage of the tibial condyle is preserved but reduced in height. The Cutting Platform should be adjusted to 11 mm depth. The stylus is placed at the deepest point of the remaining cartilage of the tibial condyle.

Grade II Total loss of the cartilage on both the femoral and the tibial condyles. The Cutting Platform should be adjusted to 9 mm depth and the stylus placed at the deepest point of the exposed bone of the tibial condyle.

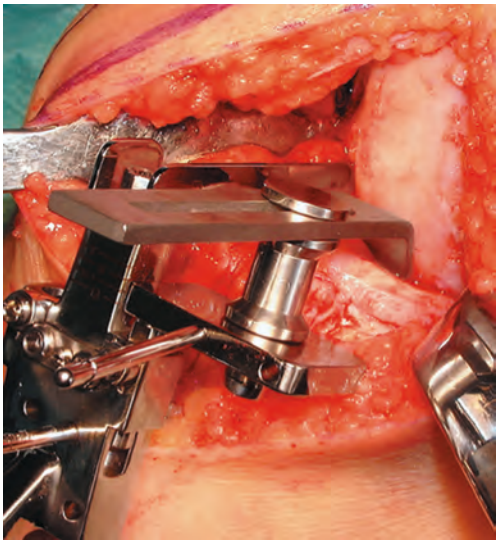
Grade III Half a centimeter bone attrition of the femoral and tibial condyles on the frontal view weightbearing radiograph. The Cutting Platform should be adjusted to 7 mm and the stylus placed at the border between the exposed and the eroded bone.

The stylus is not placed at the level of the planned surface of the Tibial Plateau. In Grade I the surface of the Tibial Plateau will be lower than the surface of the tibial condyle, and correspondingly in Grade III the surface of the Tibial Plateau will be higher than the surface of the damaged tibial condyle.

Tibial Resection

	Resection Height		
Height of Tibial Plateaus	**Grade I**	**Grade II**	**Grade III**
7 mm	9	7	–
9 mm	11	9	8
11 mm	13	11	9

Table 1:
Depth of the tibial resection (mm) in relation to the chosen height of the Tibial Plateau.



	Height of Tibial Plateaus		
Resection Height	**Grade I**	**Grade II**	**Grade III**
7 mm	–	7	9
9 mm	7	9	11
11 mm	9	11	13

Table 2:
Height of the Tibial Plateau (mm) in relation to the depth of the tibial cutting.

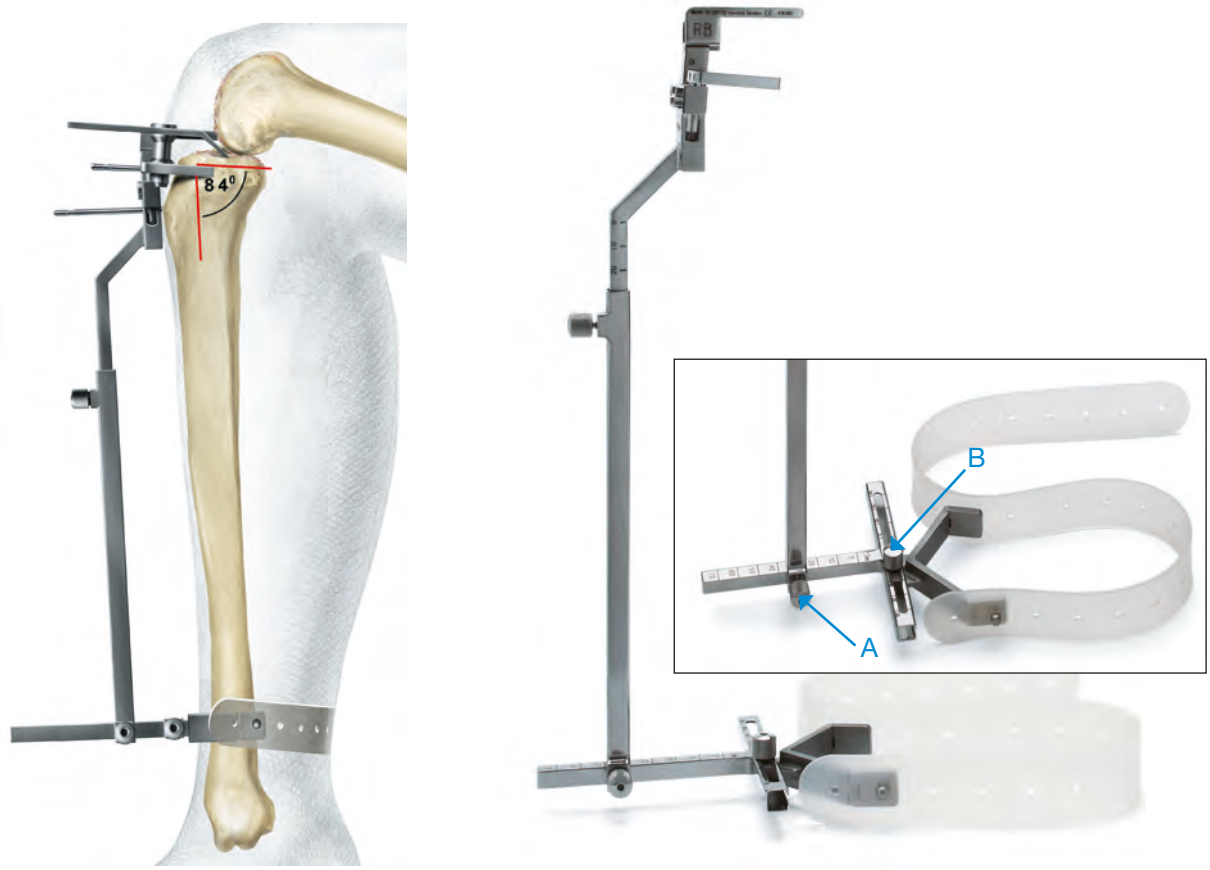
Table 1

When a 7-mm high Tibial Plateau is used, the tibial resection depth should be 9 mm in Grade I knees and 7 mm in Grade II knees. Because the construction of the Tibial Saw Guide does not permit less than 7 mm resection depth between the tip of the stylus and the Cutting Platform a 7-mm Tibial Plateau cannot be used in Grade III osteoarthrosis, and such knees must therefore be undercorrected. According to suggestions given above, the depth of the resection when using an 11-mm Tibial Plateau will be 13 mm in Grade I, 11 mm in Grade II, and 9 mm in Grade III. These resection depths will unnecessarily be too deep and will remove more bone than necessary.

Table 2

It is convenient to use the same resection depth independent of the degree of cartilage and bone damage. This means that a resection depth of 9 mm in relation to the tibial surface is needed in order to use a 7-mm Tibial Plateau in Grade I, a 9-mm Tibial Plateau in Grade II and an 11-mm Tibial Plateau in Grade III to achieve the same degree of alignment.

Tibial Resection



The clamp of the Tibial Saw Guide is placed at the level of the ankle directly proximal to the malleoli.

The posterior slope of the Tibial Component

Orientation of the posterior slope to the natural preoperative situation, so that the biomechanics of the individual patient are not changed.
The resection can be checked for control purposes. It should have the same thickness ventral-dorsal parallel. Note that the Cutting Platform has a posterior slope of 6° in relation to the long axis of the Guide. The Tibial Saw Guide should be adjusted in the vertical plane parallel to the long axis of tibia by moving the vertical rod ventrally. In most cases the Guide needs to be moved 20–25 mm anteriorly to obtain the required posterior angle of a 6°. **Lock Screw A.**

Orientation of the posterior slope to the natural preoperative situation, so that the biomechanics of the individual patient are not changed.

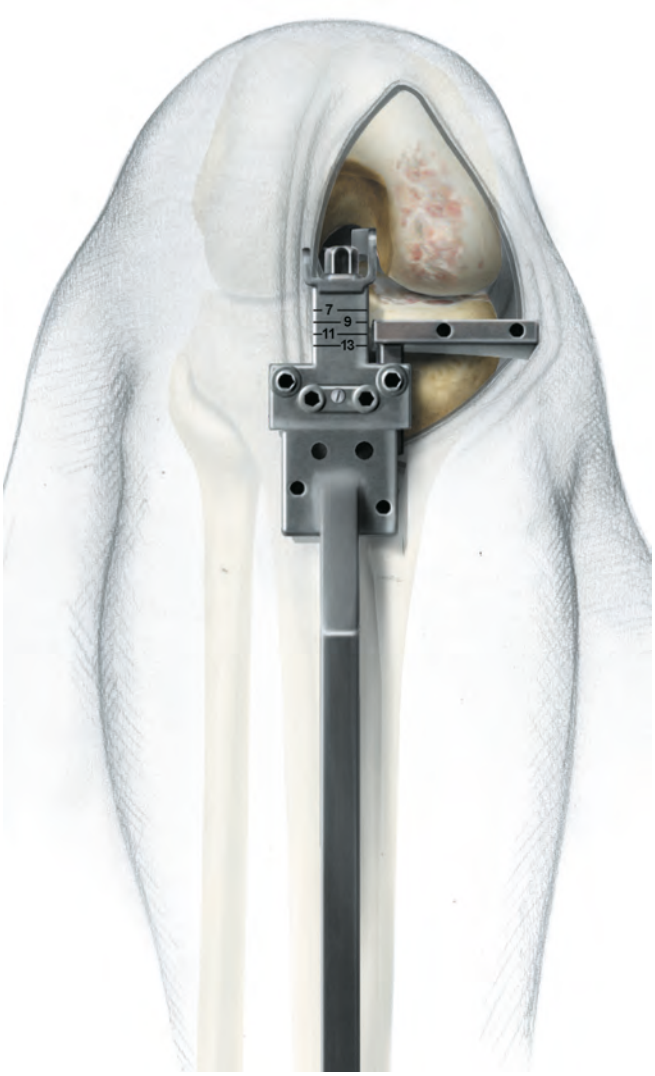
The resection can be checked for control purposes. It should have the same thickness ventral-dorsal parallel. **Attention:** Kinematic results suggested that 5° to 7° of posterior slope were preferable, and that excessive posterior slope (> 7°) should be avoided.

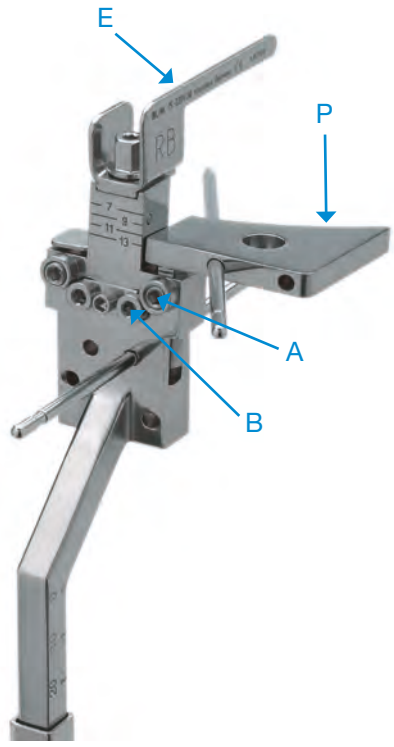
The varus-valgus alignment of the Tibial Component

The varus-valgus alignment of the Tibial Component can be adjusted by placing the distal fixation of the long rod beneath the actual tibia condyle. In women the rod is moved approximately 20–25 mm and in men 25–30 mm from the center to achieve a cutting surface perpendicular to the long axis of tibia. The varus-valgus alignment is controlled with the Alignment Rod. **Lock Screw B.**

Warning: Overcorrection in valgus should be avoided under all circumstances. Position the tibia in 0° to 3° varus. Place the Alignment Rod through the Tibial Cutting Block

Tibial Resection





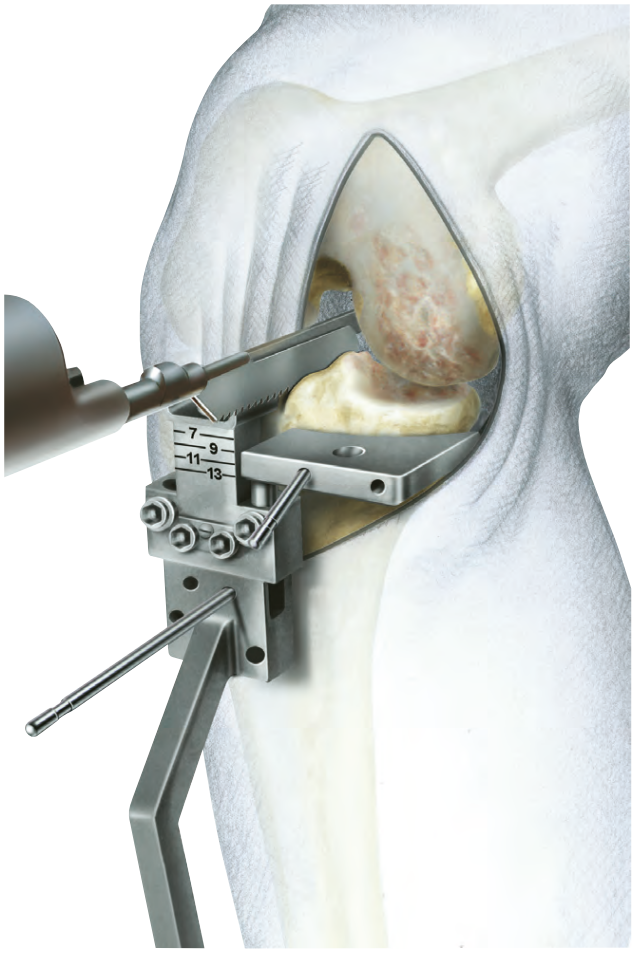
The **Eminentia Saw Guide (E)** is placed close and parallel to the eminentia along the planned sagittal cut.

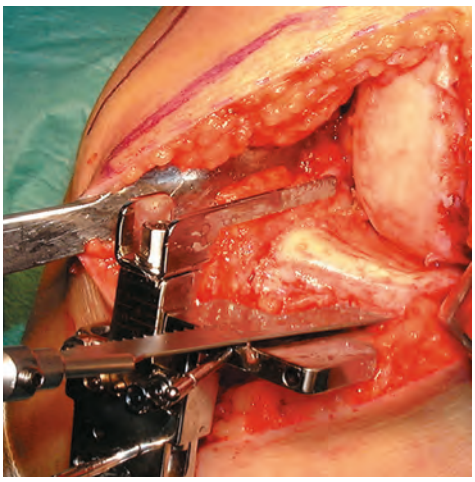
Attention: The eminentia intercondylaris and in particular the insertion of the anterior cruciate ligament serve for orientation. The sagittal cut should be made just medial to the ACL attachment point on the tibial spine in order to **maximize the size of the tibial base**.

There are **Cutting Platforms (P)** for the medial as well as the lateral compartments. The cutting depth can be set between 7 and 13 mm by using a Screwdriver in the adjustment **Hole (B)**. The Cutting Platform is secured and locked with **Screw (A)**.

The **Tibial Saw Guide** is fixed with a Fixation Pin in the central hole of the platform. The Pin is angulated centrally towards the eminentia. A second Fixation Pin is placed in the Tibial Saw Guide to secure the position.

Tibial Resection



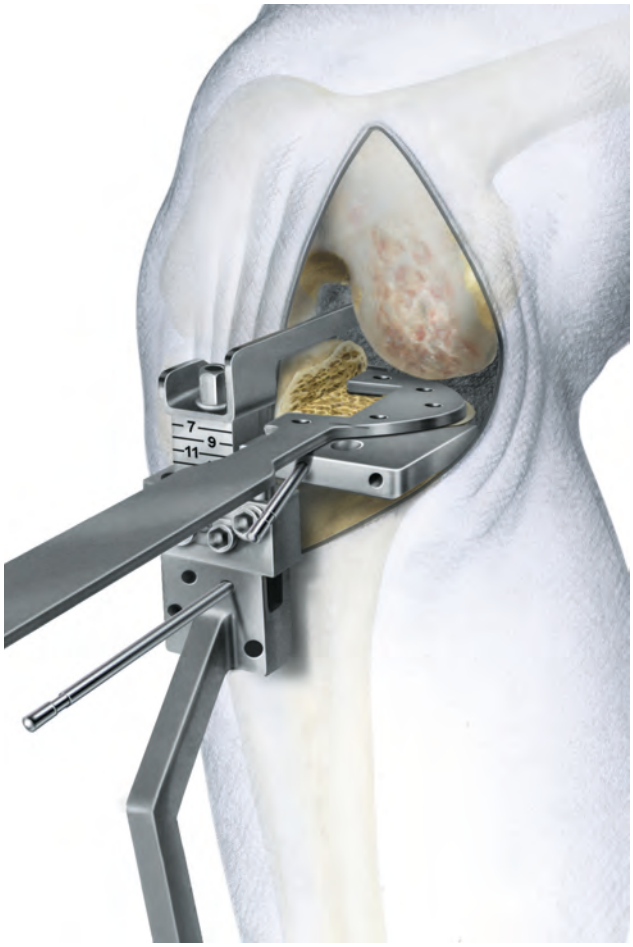


Bone Cuts

The **vertical cut** is performed along the Eminentia Saw Guide. The **horizontal cut** is guided by the Cutting Platform.

The resected Tibial Plateau and remaining parts of the meniscus are then removed.

Tibial Resection



Templates for Tibial Plateaus all-Polyethylene (3 sizes: 45, 50, 55 mm)

Templates for Tibial Plateaus metal-backed (3 sizes: 45, 50, 55 mm)

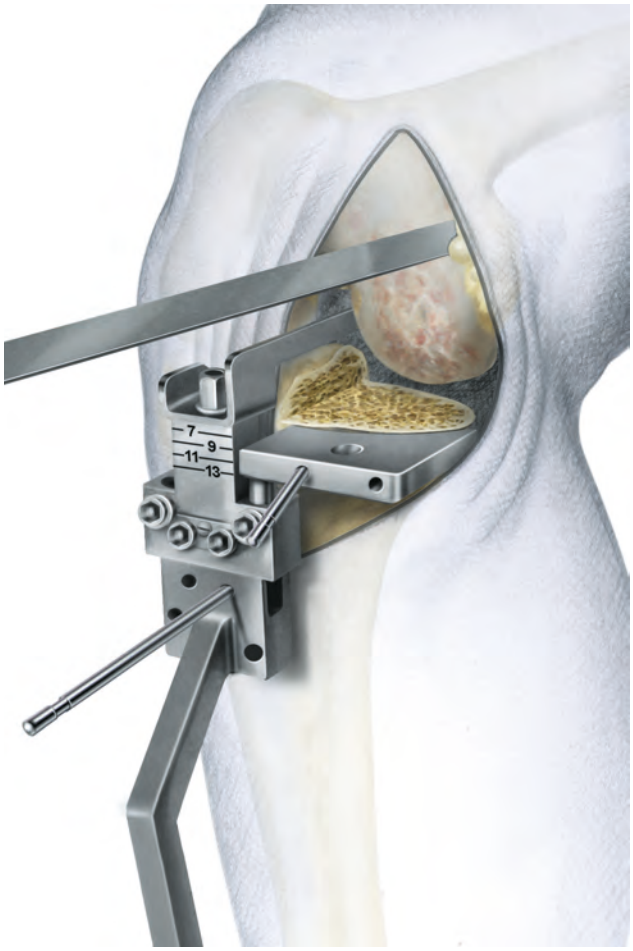
Depending on implant selection a **Template** is used for the sizing of the Tibial Plateau. Both are available in three sizes (45, 50 and 55 mm).

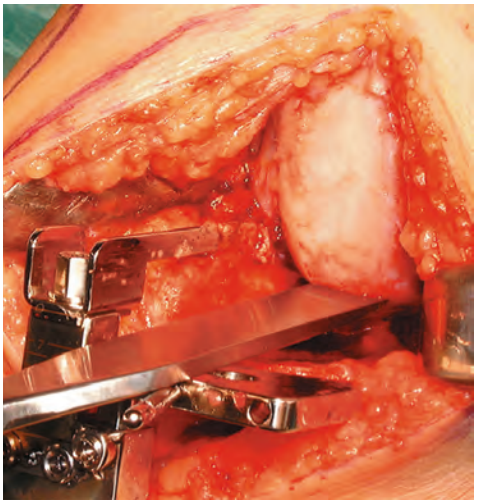
The size of the Tibial Plateau in the sagittal plane is determined by placing the hook of the Template behind the tibial condyle. If the anterior part of the Template is in alignment with the anterior border of the tibia, that is the right size.

The size must be checked medially to ensure there is no medial overhang.

Attention: It is important to achieve maximal coverage of the tibial plateau. Determine the tibial component as large as possible. However, an overhang, especially anteriorly, should be avoided.

Femoral Resection



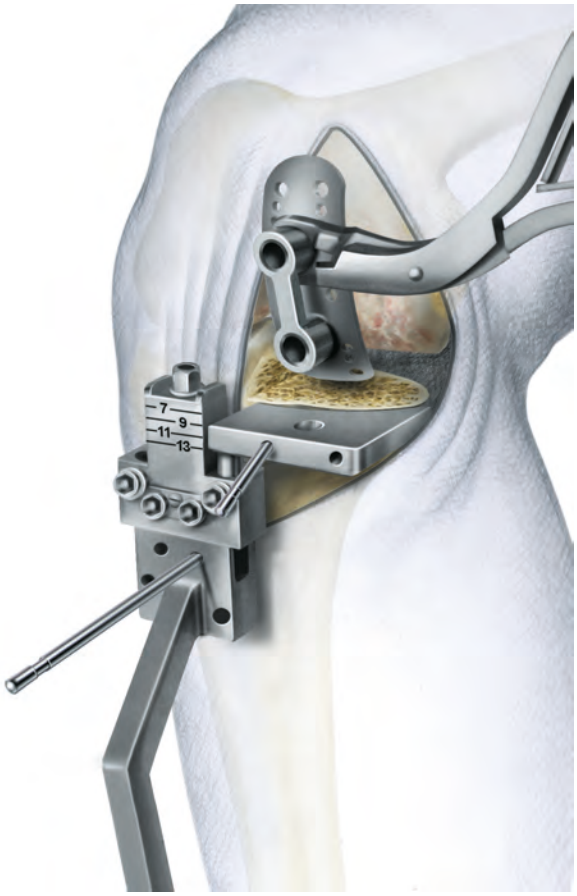


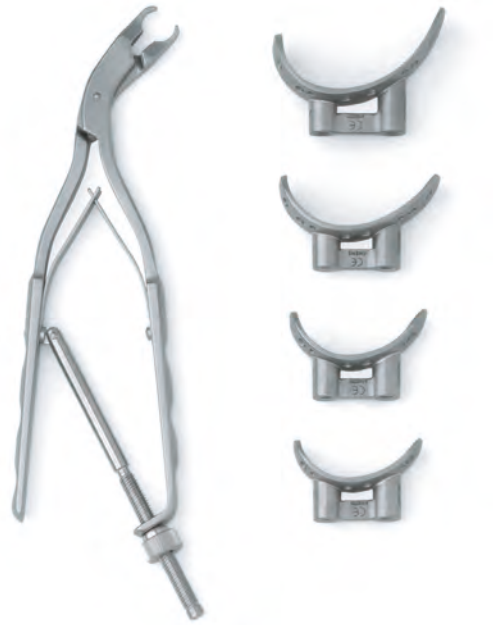
Do not remove the Tibial Saw Guide during the preparation for the Femoral Component.

Begin the preparation of the femoral condyle by cutting 3–5 mm of its posterior aspect to remove undamaged cartilage.

Resect central and medial osteophytes, with attention to osteophytes behind the medial collateral ligament.

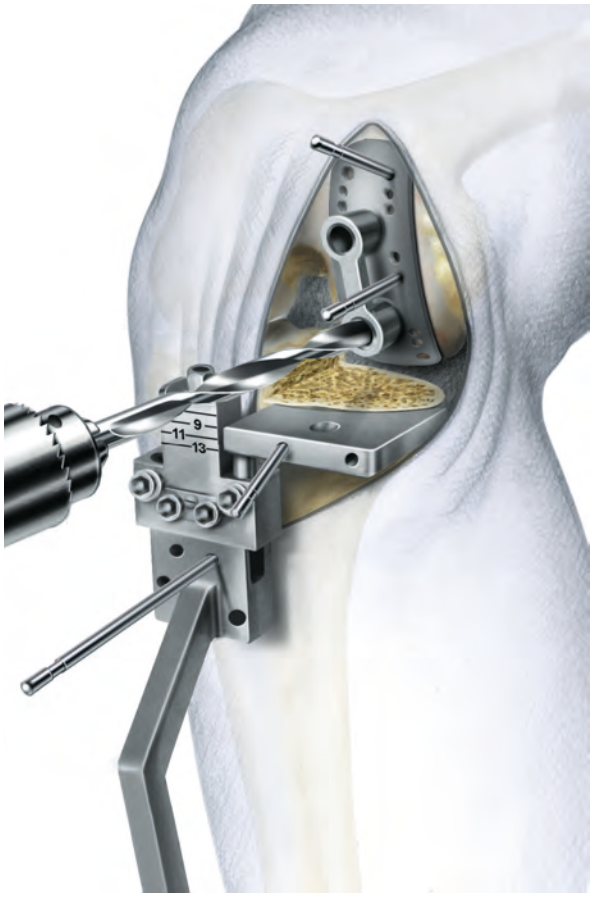
Femoral Resection





There are four sizes of the Femoral Components (40, 46, 52 and 60 mm) and corresponding Drill Guides to determine the correct size. The selected femoral Drill Guide is placed centrally on the femoral condyle and fixed with two short Fixation Pins.

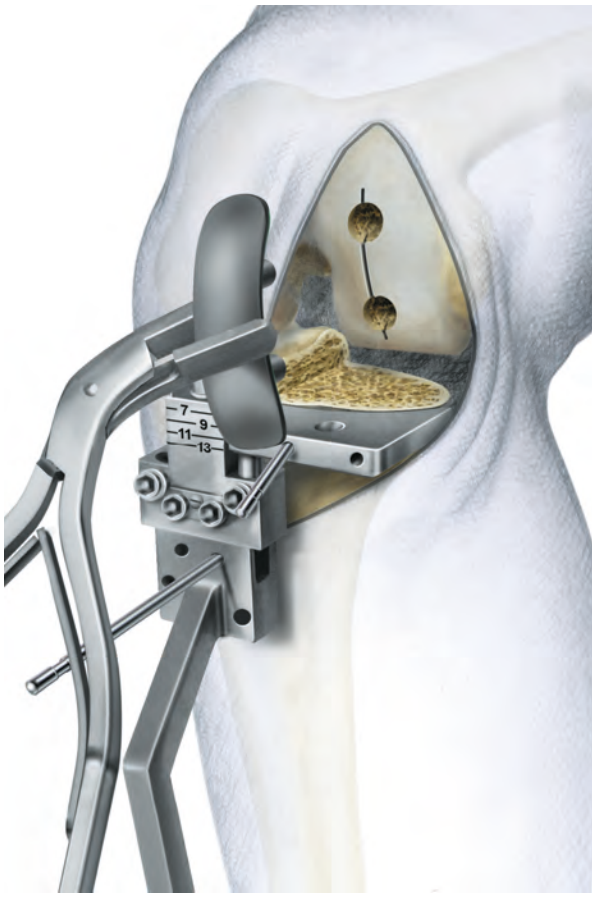
Trial Reduction

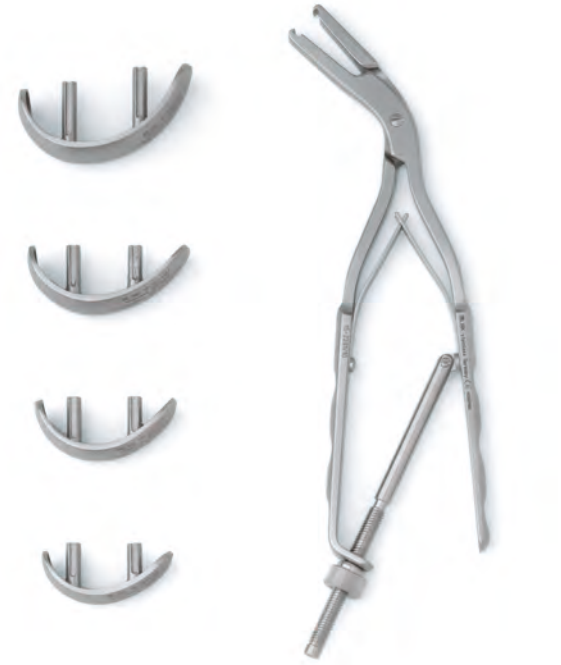


Drill the anchoring holes. If it is difficult to drill the lower hole at 100-110° of flexion of the knee, the Femoral Drill Guide is either too large or has been placed too far dorsally. Either change its position or chose a smaller Drill Guide.

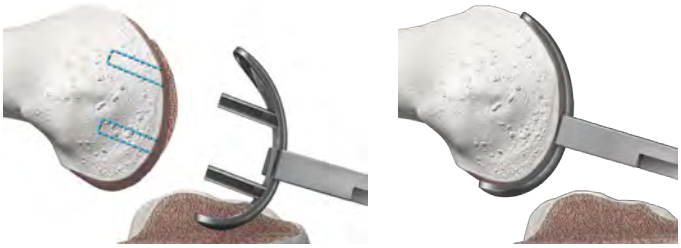
Mark the borders of the Drill Guide. Remove any cartilage inside the area marked for the Femoral Component.

Trial Reduction



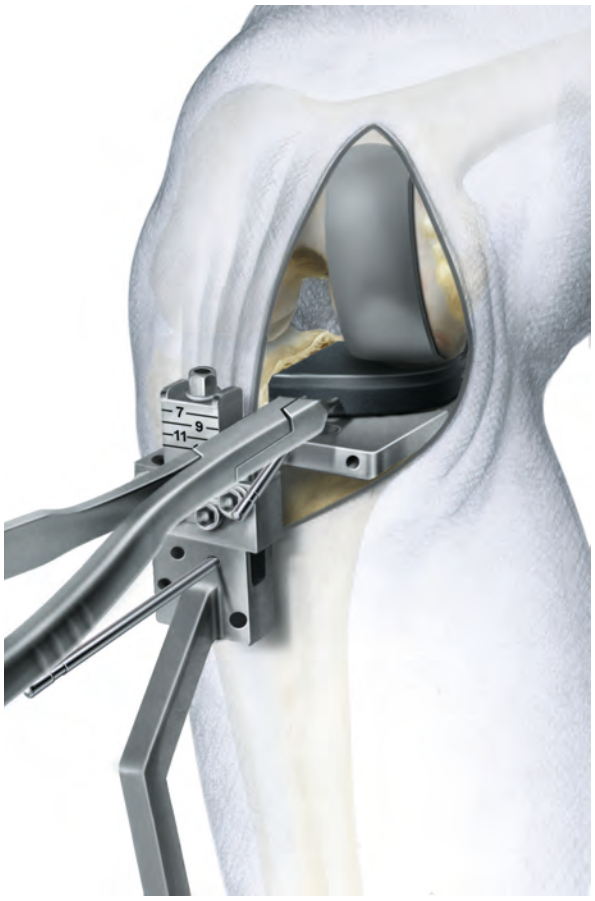


Corresponding to the Femoral Drill Guides are four **Femoral Trial Sled Prostheses**. Before trialing the chosen size, use a chisel or a saw to prepare a groove between the two anchoring holes. Place the Femoral Trial Sled Prosthesis using the **Inserting Forceps**.
Attention: The appropriate orientation for the pegs should be considered.



Test knee flexion and extension to make certain that the Femoral Trial Sled Prosthesis does not make contact with the patella at any point during the movement. If it does, remove that part of the patella that made the contact.

Trial Reduction



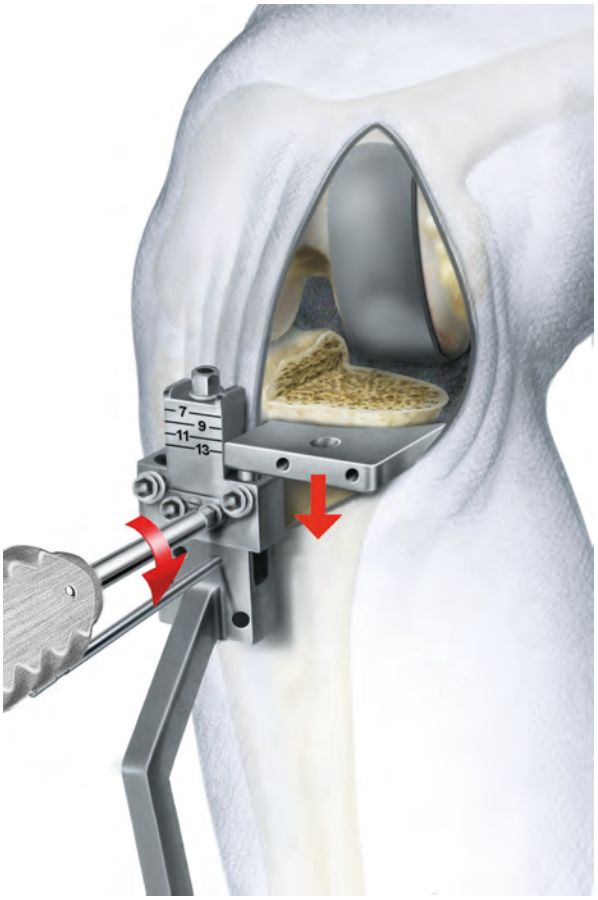
The **Tibial Plateaus** (all-polyethylene) are available in 4 heights (7, 9, 11 and 13 mm) and the Tibial Plateaus (metal-backed) in 3 heights (9, 11 and 13 mm).

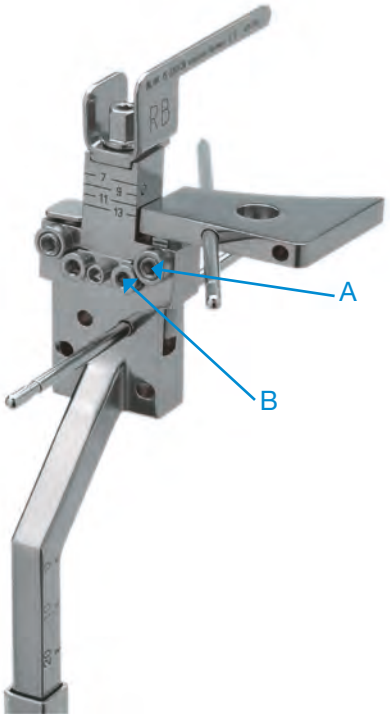
With the Femoral Trial Sled Prosthesis in place, a 9-mm **Tibial Trial Plateau** is positioned. This is easiest when the knee is flexed at least 90°. Some valgus load may be needed. If the Tibial Component has a tendency to tilt anteriorly, the posterior angle of slope is too small. This can be corrected with a rasp.

The knee is moved through its entire range of motion to check joint stability. The height of the Tibial Component is to be selected so that the natural tension of the ligaments is restored. With valgus loading of the knee joint, it should be possible to open the medial joint space 1-2 mm.

Warning: Overcorrection in valgus should be avoided under all circumstances. Position the tibia in 0° to 3° varus. It is important to ensure a slight under correction of the limb alignment and have appropriate ligamentous tension restored (2-3 mm of laxity) in flexion and extension.

Trial Reduction



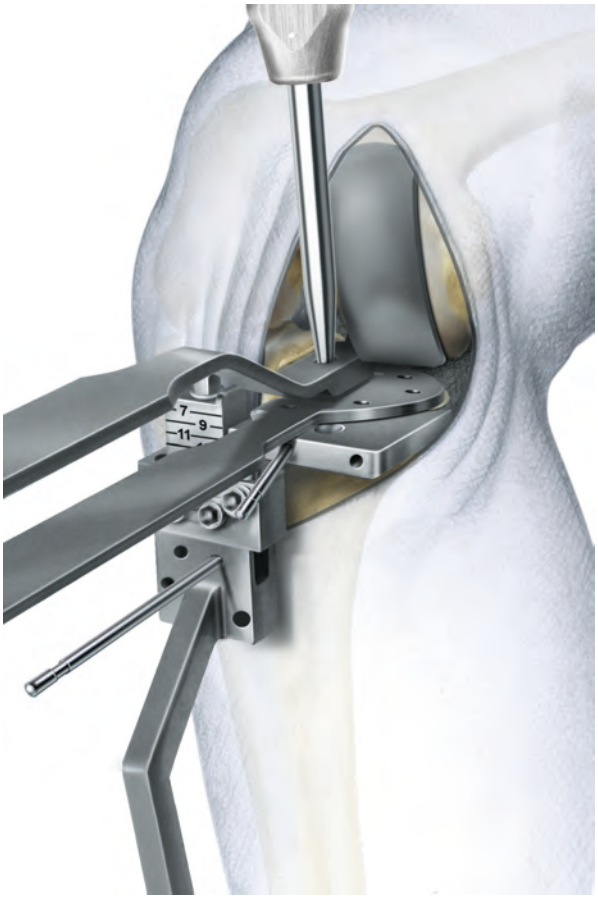


If the knee is too tight, remove the Tibial Trial Component and the Fixation Pin in the Cutting Platform and loosen **Screw (A)**. Deepen the resection by lowering the platform to the appropriate level by turning **Screw (B)** using a Screwdriver. As a rule 1-mm increase in resection depth increases varus angulation by 2 degrees.

Secure the Cutting Platform by tightening **Screw (A)** and stabilize it with a Fixation Pin through one of the unused holes in the Cutting Platform.

Perform the cut and repeat the trial by using the same height of the Tibial Trial Component.

Cementation



Prepare the space for the keel of the Tibial Plateau (metal-backed), place the head of the **Cancellous Bone Compressor** into the recess of the tibial Template and impact it using the **Impactor**.

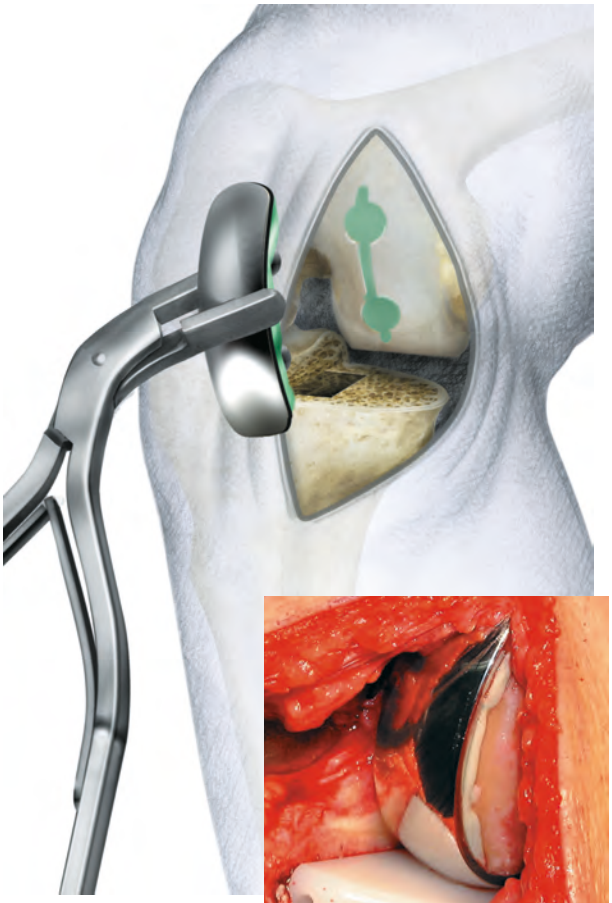
The keel of the Tibial Plateau (all-polyethylene) is larger. To prevent fractures of the tibial condyle remove some bone with a chisel before impacting the Bone Compressor.

Whichever Tibial Plateau is being used, the tibial surface needs to be protected during the compression of the bone with the tibial Template, which is laid on the sawing platform. Test that the final choice of Tibial Plateau fits and can be placed easily. Some valgus stress will be needed. The keel slot may be extended anteriorly if necessary.

Cementation

Preparation
Warning:
A good fixation of the implant components is a prereq-uisite to achieve long-term success of the application. Cementing technique is one of the factors that play an important role in this respect. Therefor the following instructions have to be carefully considered.

In sclerotic bone, multiple holes should be drilled with a small drill (Max diam 3.0 mm-drill pins can be used as an alternative) to ensure better bone cement interdigitation. Due to the preparation technique, this is particularly important for the femoral condyle.
Cleanse all cement-receiving bone surfaces thoroughly using pulse lavage and dry with a clean, dry lap sponge.



General remarks
The tibial and femoral components should be done in two stages. This ensures that there is sufficient time to position the component, remove excess bone cement and allow it to harden without inadvertently manipulating the implant-bone cementbone interface.
The bone cement, which has been prepared according to the manufacturer's instructions, is applied both to the back of the implant and to the bone.
Beginning with the tibial component, the bone cement is carefully applied evenly to ensure a homogeneous cement mantle.

Attention: It should be considered to apply bone cement at the vertical wall a too.

A steady pressure is maintained with the tibial impactor during curing.
The femoral component is then cemented.

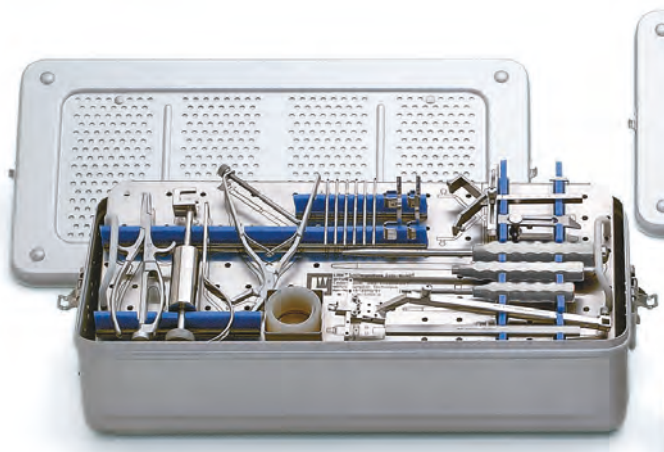
Option: Start the implantation with the femoral component.

Cementation of Tibial Component
Apply a thin layer of cement over the entire underside of the tibial component. The cement should just overfill the bead structure on the underside of the tray, up to 1 mm proud posteriorly and 2 mm proud anteriorly.
Apply cement to the tibia and pressurize the cement, striving for penetration of 3-4 mm.
Use of a cement gun/cartridge equipped with a pressurizing nozzle is recommended to deliver and pressurize cement into the prepared holes and across the flat surface.
Alternatively, cement may be applied manually and pressurized into the bone using a flat osteotome.

Cementation of Femoral Component
The Bone Cement is applied to the back of the Femoral Component . In addition, both drill holes for the fixation pegs are filled with Bone Cement. The Femoral Component is positioned u sing Inserting Forceps and both pegs are to be inserted into the prepared drill holes.
The Femoral Component is then finally driven on using the Femoral Impactor

MITUS Instrument Set

Minimally Invasive Surgical Technique for LINK Unicondylar Sled Prosthesis

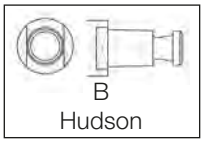


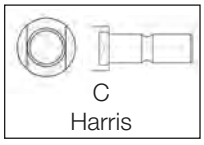
Container 2

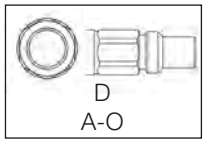
Container 1

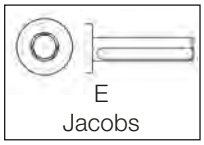
REF	Instrument Set, complete (Container 1 and 2)	
15-2201/01	**Set, complete** in 2 standard containers, on 3 trays with storage inserts, consisting of:	
05-2001/03	**N11 Standard Container,** empty, stainless steel, 575 x 275 x 100 mm	1ea.
05-2002/03	**N21 Standard Container,** empty, stainless steel, 575 x 275 x 130 mm	1ea.
15-2200/02	**Lower Tray (Container 1),** empty, perforated stainless steel, 550 x 265 x 50 mm	1ea.
15-2200/03	**Upper Tray (Container 1),** empty, perforated stainless steel, 550 x 265 x 50 mm	1ea.
15-2200/01	**Tray (Container 2),** empty, perforated stainless steel, 550 x 265 x 50 mm	1ea.

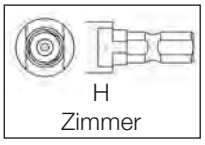
***Fittings:** How to order: 317-649/08B = Hudson fitting



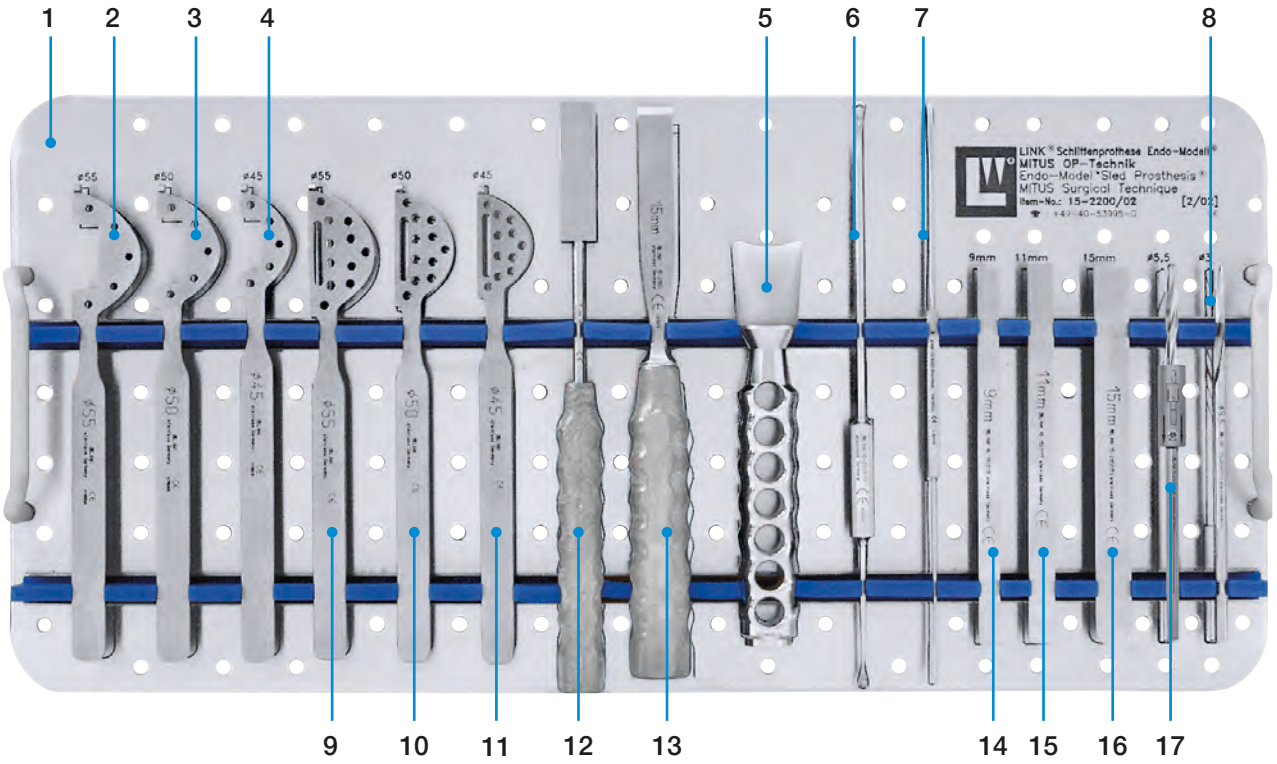






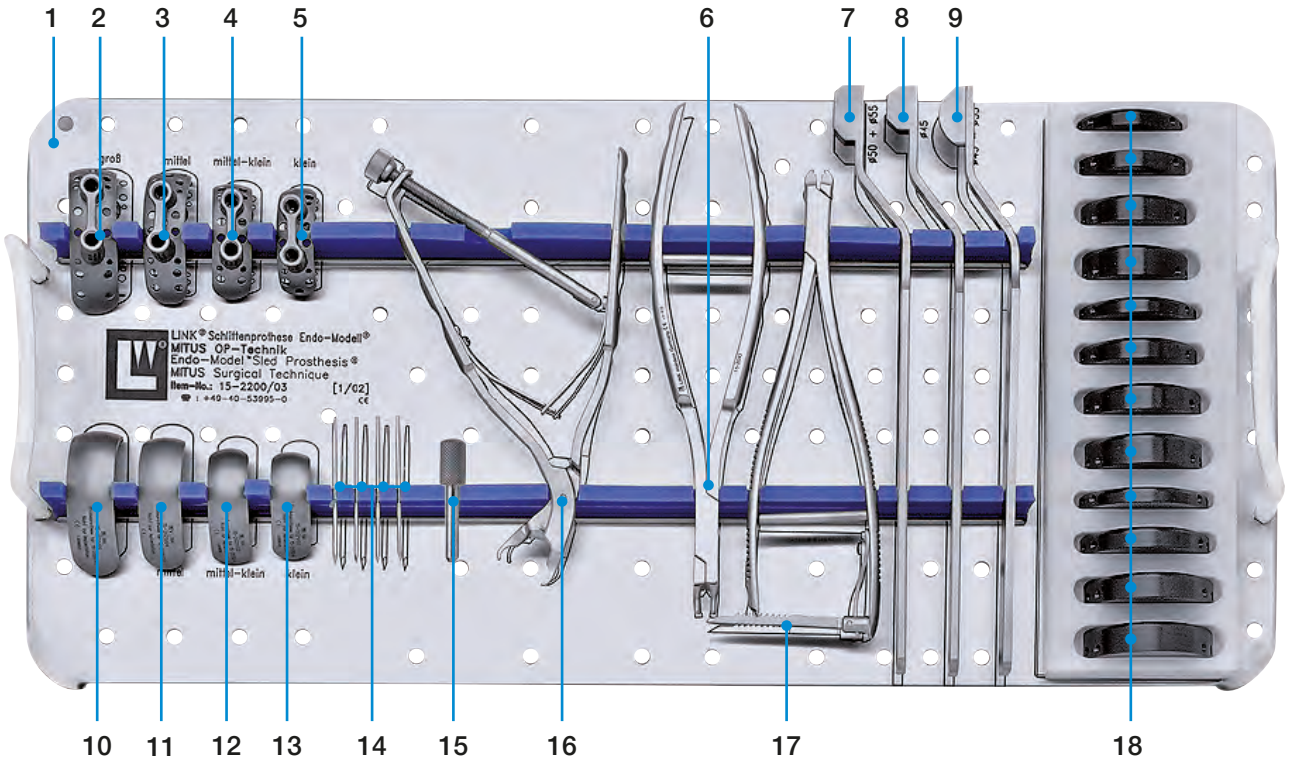


Lower Tray, Container 1



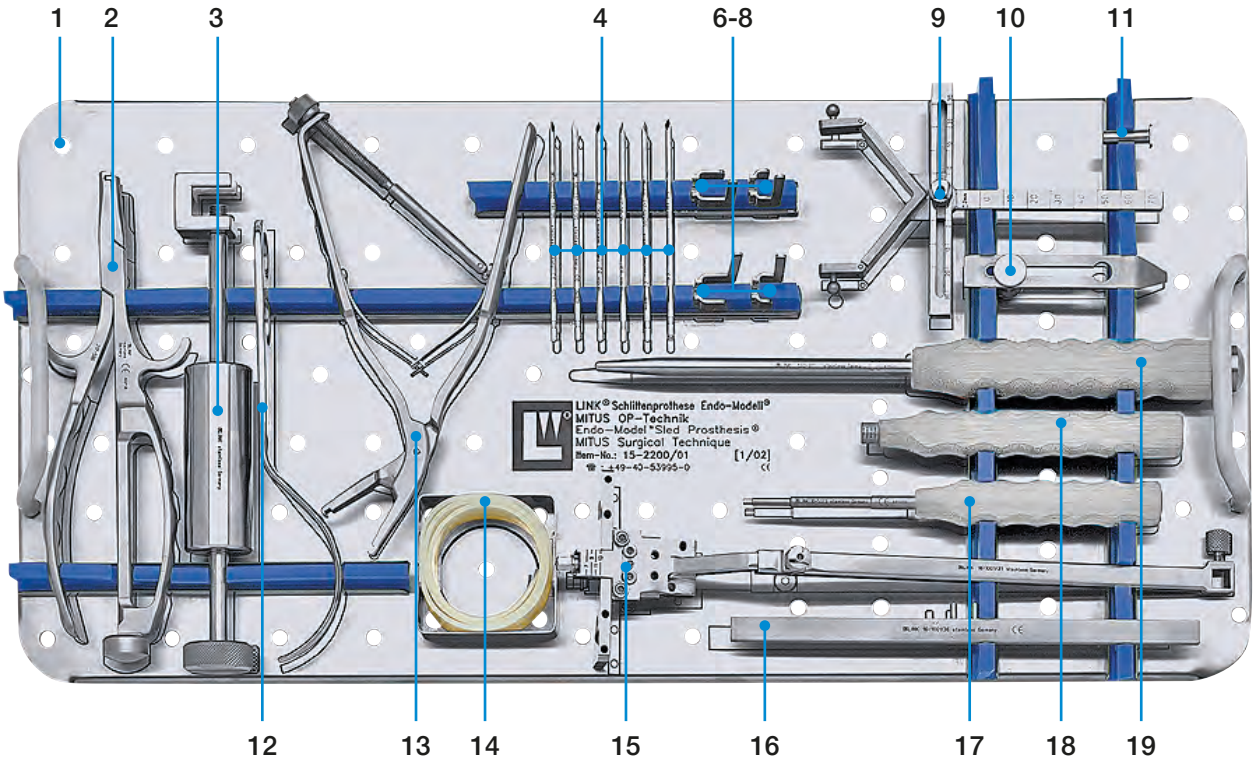
1	15-2200/02	**Lower Tray (Container 1),** empty, 550 x 265 x 50 m
		Drill and Saw Guide (templates) for tibial plateaus all-polyethylene
2	15-2201/55	55 mm
3	15-2201/50	50 mm
4	15-2201/45	45 mm
5	15-2040/05	**Sled Impactor,** for sled prosthesis metal-backed, 170 mm
6	15-2201/70	**Curette,** to remove excess cement
7	15-2201/71	**Spatula, double end,** to remove excess cement
8	15-2040/03E*	**Twist Drill with stop,** Ø 5.5 mm, 160 mm, fittings optional (see page 25)*
		Drill and Saw Guide (templates) for tibial plateaus metal-backed
9	15-2202/55	55 mm
10	15-2202/50	50 mm
11	15-2202/45	45 mm
12	317-802/53	**Plateau Impactor,** 250 mm
13	319-183/00	**Chip Chisel,** 15 mm wide, 240 mm
14	15-2201/16	**Lambotte Osteotome,** width 9 mm
15	15-2201/17	**Lambotte Osteotome,** width 11 mm
16	15-2102/03	**Lambotte Osteotome,** width 15 mm
17	15-2040/02E*	**Twist Drill,** Ø 3.0 mm, 160 mm, fittings optional (see page 24)*

Upper Tray, Container 1



1	15-2200/03	**Upper Tray (Container 1),** empty, 550 x 265 x 50 m
		Drill Guides for sled prostheses
2	15-2201/60	large
3	15-2201/52	medium
4	15-2201/46	medium-small
5	15-2201/40	small
6	15-2042	**Inserting Forceps,** for tibial plateaus all-polyethylene and trial plateaus, 215 mm
		Cancellous Bone Compressors, for tibial plateaus all-polyethylene
7	15-2201/14	Ø 50-55 mm
8	15-2201/15	Ø 45 mm
9	15-2201/19	**Cancellous Bone Compressor,** for tibial plateaus metal-backed, Ø 45-55 mm
		Trial Sled Prostheses
10	15-2201/05	large
11	15-2201/04	medium
12	15-2201/03	medium-small
13	15-2201/02	small
14	15-2201/12	**Fixation Pins,** for drill guides, Ø 2 mm, 60 mm
15	15-2201/53	**Fixation Pin,** to stabilize the drill guide, Ø 5.4 mm, 50 mm (4 ea.)
16	15-2201/13	**Holding and Inserting Forceps,** for drill guides
17	15-2040/09	**Inserting Forceps,** for tibial plateaus metal-backed
18	15-2040/08	**Set** of **Trial Plateaus,** on storage tray, Ø 45, 50, 55 mm, heights: 7, 9, 11, 13 mm (12 ea.)

Tray, Container 2



1	15-2200/01	**Tray (Container 2),** empty, 550 x 265 x 50 m
2	317-586	**Inserter/Extraction Forceps,** for fixation pins, 210 mm
3	15-2201/18	**Extractor,** for fixation pins, to be used with 317-586
4	317-585/95	**Fixation Pins,** Ø 3 mm, 95 mm (6 ea.)
		Eminentia Saw Guides
5	15-2201/32	left, height A
6	15-2201/37	left, height B
7	15-2201/33	right, height A
8	15-2201/38	right, height B
9	15-2201/34	**Tibial Alignment Device,** extramedullary
10	15-2201/35	**Stylus**
11	15-2201/39	**Spacer Bolt,** to 15-2201/31
12	15-2201/11	**Retractor**
13	15-2201/10	**Inserting Forceps,** for trial sled prostheses
14	317-538/01	**Flexible Belt,** 495 mm
15	15-2201/31	**Tibial Saw Guide Base,** adjustable
16	15-2201/36	**Alignment Rod,** transversal, 200 mm
17	10-5373	**Hex Screwdriver,** hex 2.5 mm, 180 mm
18	317-648	**Universal Wrench,** hex 6.0 mm, 140 mm
19	130-611	**Impactor,** 280 mm

Additional Instruments (not included in Instrument Set, complete)

Trial Tibial Plateaus, Ø 58 mm,
suitable for tibial plateaus all-polyethylene
(without metal-backed)

REF	Height mm	Width mm
15-2047/13	7	31
15-2047/14	9	31
15-2047/15	11	31
15-2047/16	13	31

Trial Tibial Plateaus Height 8 mm,
suitable for tibial plateaus with metal-backed

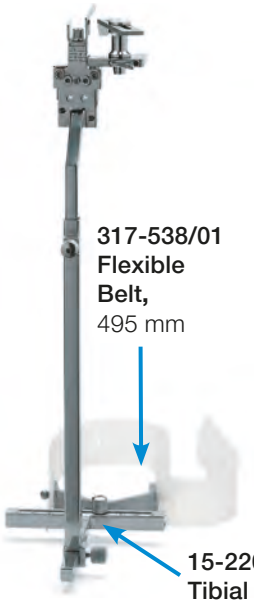
REF	Height mm	Width mm	Ø mm
15-2040/33	8	22.5	45
15-2040/34	8	25.0	50
15-2040/35	8	27.5	55

15-2048/04
Storage Tray, separate
for all-polyethylene trial tibial plateaus, Ø 58 mm

15-2048/05
Storage Tray, separate
for trial tibial plateaus height 8 mm

15-2201/58
Drill and Saw Guide (templates)
for tibial plateaus all-polyethylene,
Ø 58 mm

Tibial Saw Guide 15-2201/30



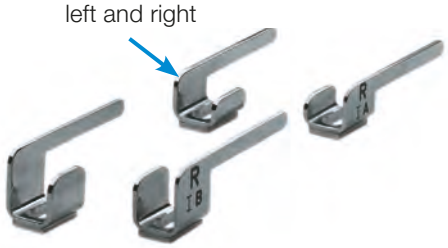
317-538/01
Flexible Belt,
495 mm

15-2201/34
Tibial Alignment Device,
extramedullary

The tibial saw guide consists of a base with one cutting platform for medial resection and another for lateral resection. The stylus is inserted into a hole on the cutting platform. The spacer bolt is fixed on the opposite side. To protect the intercondylar eminence, eminentia saw guides are available.

The adjustable extramedullary tibial saw guide base determines the correct axial alignment. A transversal alignment rod helps to align the saw guide horizontally. The saw guide is fixed distally using a plastic connector. The saw guide is secured proximally with fixation pins.

15-2201/32 - /38
Eminentia Saw Guide,
left and right



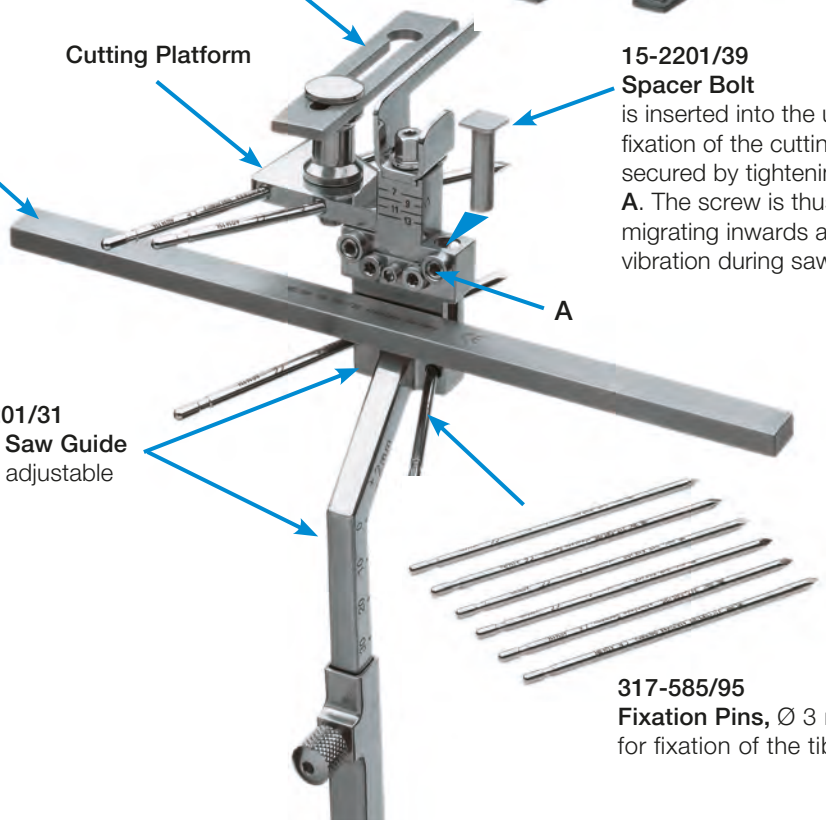
15-2201/35
Stylus

Cutting Platform

15-2201/36
Alignment Rod,
transversal,
200 mm

15-2201/39
Spacer Bolt
is inserted into the unused opening for fixation of the cutting platform and is secured by tightening fixation screw **A**. The screw is thus prevented from migrating inwards as a result of the vibration during sawing

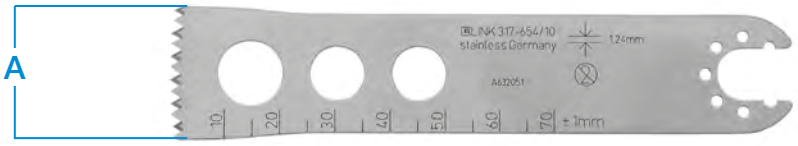
A



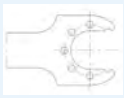
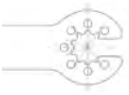
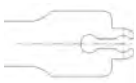
15-2201/31
Tibial Saw Guide base, adjustable

317-585/95
Fixation Pins, Ø 3 mm, 95 mm
for fixation of the tibial saw guide

Additional Instruments



Sawblades,
without offset teeth, 1.24 mm thick

Width (**A**) 25 mm	Width (**A**) 13 mm	Fitting	
317-654/10	317-656/10	Synthes	
317-654/11	317-656/11	Aesculap Combi	
317-654/13	317-656/13	Zimmer/Hall Combi	
317-654/14	317-656/14	Stryker System 4	

15-2040/08
Set of **Trial Plateaus** on storage tray,
Ø 45, 50, 55 mm, heights: 7, 9, 11, 13 mm (12 ea.)

15-2048/04
Storage Tray, separate
for all-polyethylene trial tibial plateaus, Ø 58 mm

15-2048/05
Storage Tray, separate
for trial tibial plateaus height 8 mm

15-2201/11
Retractor

LINK SLED Prosthesis

Implant Components

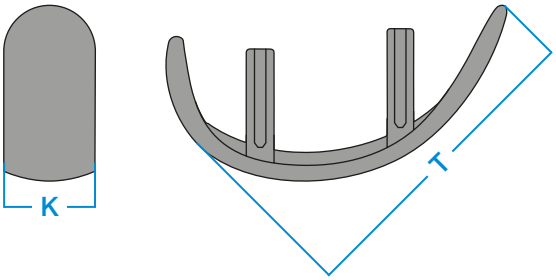
LINK SLED Prosthesis
Implant Components

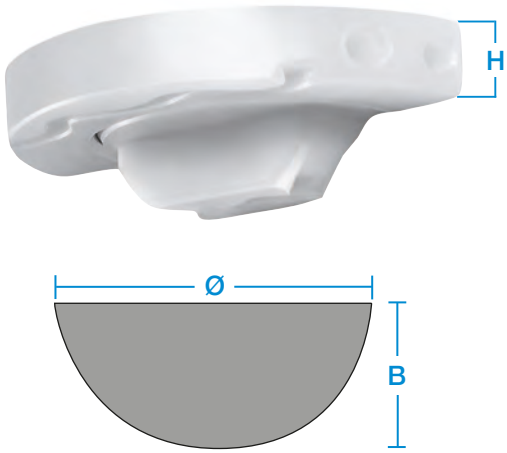
Femoral Components

MAT CoCrMo or CoCrMo/TiNbN

REF CoCrMo	REF CoCrMo/ LINK PorEx*	Size	Width (K) mm	Length (T) mm
15-2020/40	15-2220/40	small	16	40
15-2020/46	15-2220/46	medium small	17	46
15-2020/52	15-2220/52	medium	18	52
15-2020/60	15-2220/60	large	20	60

* LINK PorEx: TiNbN = Titanium Niobium Nitride; hypoallergenic coating (gold colour).



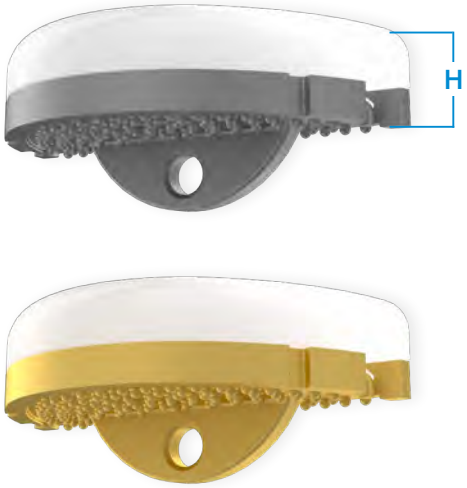


Tibial Plateaus – All-polyethylene

MAT UHMWPE/ CoCrNiMoFe

REF UHMWPE/ CoCrNiMoFe	Height (H) mm	Ø mm	Width mm
15-2028/01	7	45	22
15-2028/02	9	45	22
15-2028/03	11	45	22
15-2028/04	13	45	22
15-2028/05	7	50	27
15-2028/06	9	50	27
15-2028/07	11	50	27
15-2028/08	13	50	27
15-2028/09	7	55	29
15-2028/10	9	55	29
15-2028/11	11	55	29
15-2028/12	13	55	29
15-2028/13	7	58	31
15-2028/14	9	58	31
15-2028/15	11	58	31
15-2028/16	13	58	31

Important information:
Tibial Components of 7-mm hight offer the advantage of particular bone preservation and allow for a good range of motion. The suitability of these particular components have to be medically indicated. The Tibial Components of 7-mm hight are not suitable for obese or very active patients.

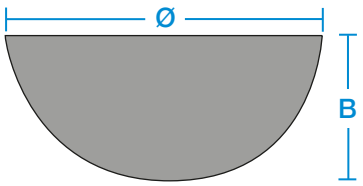


Tibial Plateaus – metal-backed

MAT CoCrMo or CoCrMo/TiNbN, UHMWPE

REF CoCrMo	REF CoCrMo/ LINK PorEx*	Height (H) mm	Ø mm	Width (B) mm
15-2030/13	15-2230/13	8	45	22.5
15-2030/02	15-2230/02	9	45	22.5
15-2030/03	15-2230/03	11	45	22.5
15-2030/04	15-2230/04	13	45	22.5
15-2030/14	15-2230/14	8	50	25.0
15-2030/06	15-2230/06	9	50	25.0
15-2030/07	15-2230/07	11	50	25.0
15-2030/08	15-2230/08	13	50	25.0
15-2030/15	15-2230/15	8	55	27.5
15-2030/10	15-2230/10	9	55	27.5
15-2030/11	15-2230/11	11	55	27.5
15-2030/12	15-2230/12	13	55	27.5

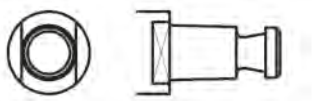
* LINK PorEx: TiNbN = Titanium Niobium Nitride; hypoallergenic coating (gold colour).



Adapter for Power Tool Chuck
Different adapters are available to ensure compatibility to allow various connections:

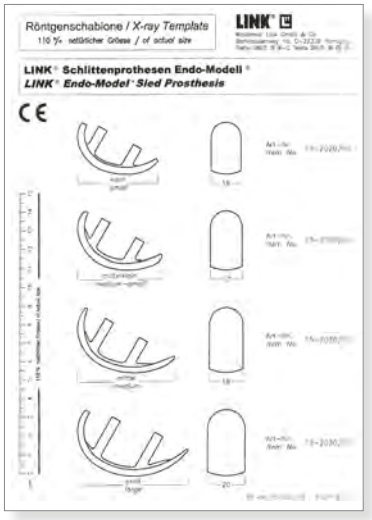
REF	Attachment	
16-3283/01	Jakobs-Fitting (E)	
16-3284/00	AO-Fitting (D)	
16-3285/00	Harris-Fitting (C)	

Hudson-Fitting
Standard tool connection.



X-ray Templates, 110% actual size, one sheet

REF	Application
15-2021/10	for Unicondylar Sled Prosthesis 15-2020/40 to 15-2020/60
15-2021/14	for Tibial Plateaus, metal-backed 15-2030/02 to 15-2030/13 and 15-2230/02 to 15-2230/13
15-2021/13	for Tibial Plateaus, all-polyethylene 15-2028/01 to 15-2028/16



Further Information

LINK PorEx Technology
(TiNbN = Titanium-Niob-Nitride) Surface Modification
for metal sensitive patients

For more information please register at **mediathek.linkorthopaedics.com**

Important Information for X-ray Investigations

X-ray investigations
X-ray images can be used to evaluate implant positioning post-operatively.
Images taken from certain angles can create the impression that the implant has broken.

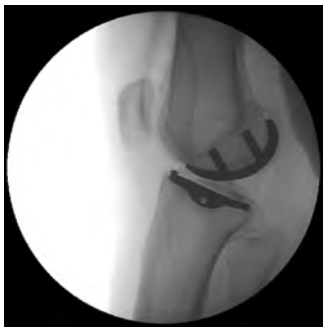


Fig. 1: Post-operative X-ray 1

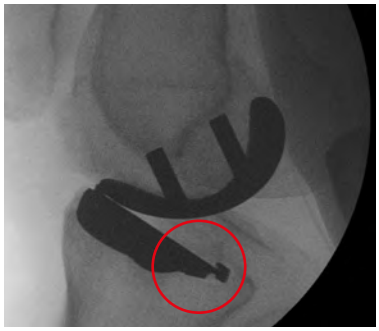


Fig. 2: Post-operative X-ray 2

Attention:
The LINK Tibial Plateau metal-backed is delivered as one piece, i.e. the Polyethylene Component and the Metal Component are pre-assembled as a single unit. The manufacturing process of the components has never been changed. For secure connection the polyethylene engages with a mechanical coupling device.

These technical specifications can lead X-ray images taken from certain angles to appear distorted, which may give the impression that the Tibial Plateau is broken. Examples of such distorted images are shown below:

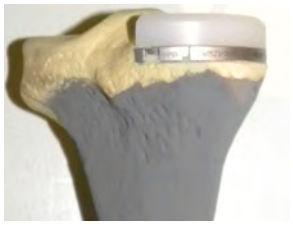


Fig. 3a: Photograph of externally rotated tibia

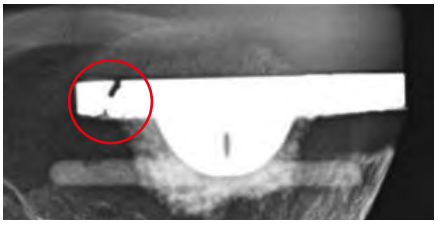


Fig. 3b: X-ray image of figure 3a

As a broken Tibial Plateau is most unlikely, the diagnosis should be verified with additional X-ray images.
Verification: Rotation of the tibia ensuring strictly lateral alignment for the follow-up X-ray.

Fig. 4a: Photograph of tibia from a strictly lateral position

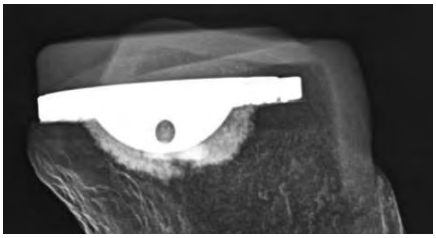


Fig. 4b: X-ray image of figure 4a

Specified indications and contraindications:	LINK Sled	LINK Sled with PorEx*
General Indications:		
Severe unicompartmental disease with limitation of mobility due to degenerative or post-traumatic arthrosis/arthritis.	X	X
Unicompartmental arthrosis in a stable knee (intact ligaments including anterior and posterior cruciate ligaments) with a correctable varus / valgus deformity (<10°).	X	X
Contraindications (absolute):		
Acute / chronic infections, local or systemic – insofar as they compromise the successful implantation of a unicondylar Sled prosthesis.	X	X
Any neuro-muscular disease affecting the limb which would put an arthroplasty 'at risk'.	X	X
Insufficient / inadequate bone stock preventing stable fixation of either prosthesis.	X	X
Unstable knee (Insufficient crucial and/or collateral ligaments).	X	X
Non-compliant patient.	X	X
Contraindications (relative):		
Hypersensitivity to (implant) materials (LINK PorEx indication).	X	–

* LINK PorEx: TiNbN = Titanium Niobium Nitride; hypoallergenic coating (gold colour).

Important Information

Please note the following regarding the use of our implants:

1. **Choosing the right implant is very important.**
   The size and shape of the human bone determines the size and shape of the implant and also limits the load capacity. Implants are not designed to withstand unlimited physical stress. Demands should not exceed normal functional loads.

2. **Correct handling of the implant is very important.**
   Under no circumstances should the shape of a finished implant be altered, as this shortens its life span. Our implants must not be combined with implants from other manufacturers. The instruments indicated in the Surgical Technique must be used to ensure safe implantation of the components.

3. **Implants must not be reused.**
   Implants are supplied sterile and are intended for single use only. Used implants must not be used again.

4. **After-treatment is also very important.**
   The patient must be informed of the limitations of the implant. The load capacity of an implant cannot compare with that of healthy bone!

5. **Unless otherwise indicated, implants are supplied in sterile packaging.**
   Note the following conditions for storage of packaged implants:
- Avoid extreme or sudden changes in temperature.
- Sterile implants in their original, intact protective packaging may be stored in permanent buildings up until the “Use by” date indicated on the packaging.
- They must not be exposed to frost, dampness or direct sunlight, or mechanical damage.
- Implants may be stored in their original packaging for up to 5 years after the date of manufacture. The “Use by” date is indicated on the product label.
- Do not use an implant if the packaging is damaged.

6. **Traceability is important.**
   Please use the documentation stickers provided to ensure traceability.

7. **Further information** on the material composition is available on request from the manufacturer.

Follow the instructions for use!

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