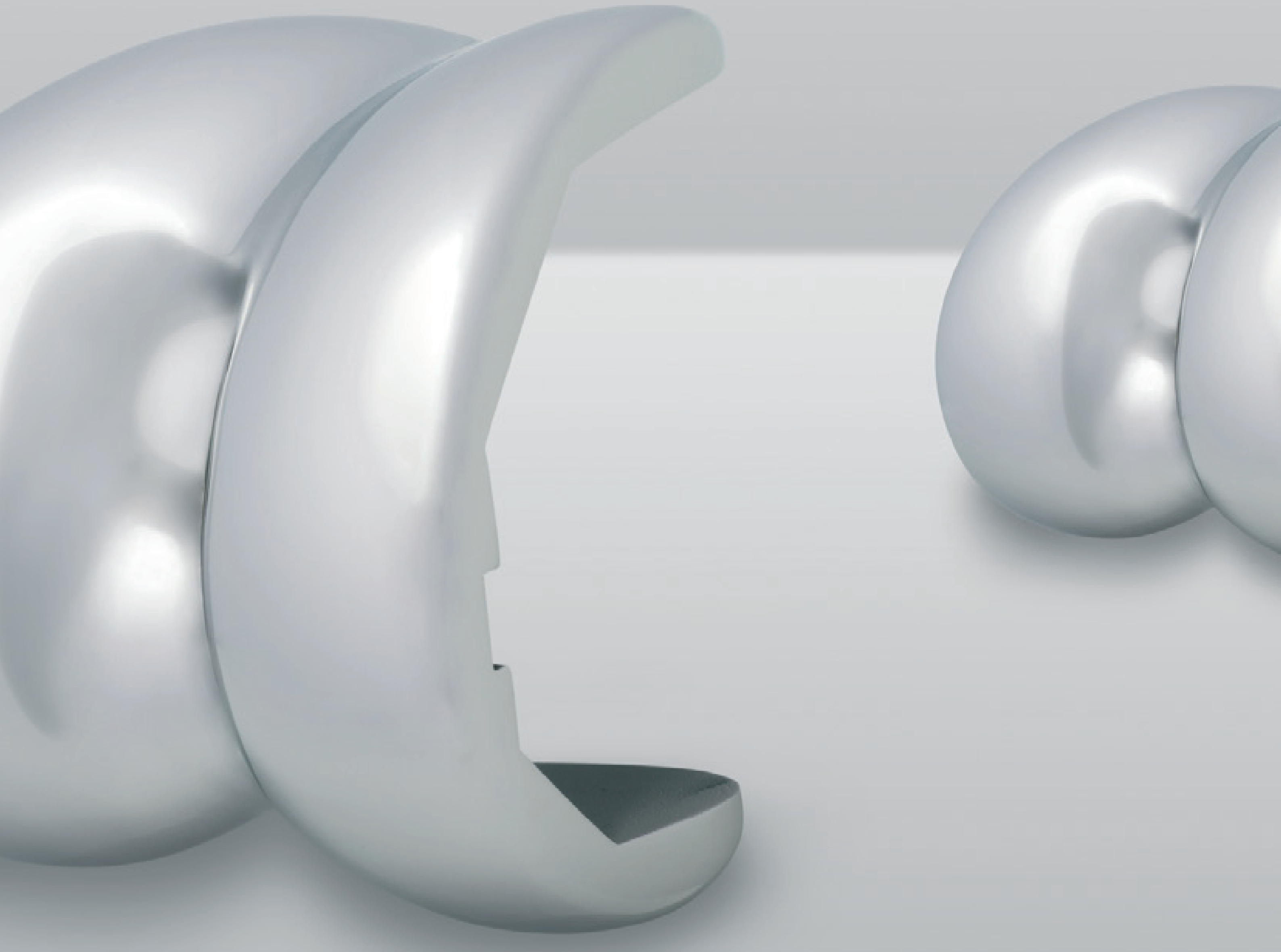
TREKKING®

PRIMARY KNEE SYSTEM



Rationale and Surgical Technique

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Trekking® Primary Knee Integrated System
Rationale

The implant system

Trekking is one of the most advanced systems for total knee arthroplasty available today. All the principal technical and clinical issues have been analysed and solved in the most efficient way, with a lot of new and exciting solutions.
One of the most important features is the flexibility of the System: primary and revision, mobile and fixed, cruciate retaining, posterior stabilised or ultra-congruent, cemented and uncemented versions can be implanted with the same set of instruments, enabling the surgeon to choose the final Components at the very last moment, and even to combine “hybrid” primary and revision Components in a single implant for maximum customisation of the surgical treatment.

The Trekking System includes four sets of primary implants (Fig.1): cemented, uncemented, cemented hypoallergenic (Titanium-Niobium NItrate TINb coated), uncemented hypoallergenic.
Each set is made of: Fixed Bearing Cruciate Retaining (FB CR), Fixed Bearing Cruciate Sacrificing (FB PS), Mobile Bearing Ultra Congruent-Deep Dish, Mobile Bearing Cruciate Sacrificing.

Furthermore, the system encompasses a set of components for difficult primaries (high deformities, bone/ligament instabilities), and a revision set, including a semi-constrained fixed bearing, a non constrained, high flex fixed bearing, a single radius-high kinematic condyle, a Tibial plate, Tibial and Femoral stems, augmentations and offsets.

Fig.1 - Trekking Primary System

The press-fit version comes with a coating of pure titanium applied by vacuum plasma spray. The coated surface is perfectly flat and in contact with the bone.

Fixed bearing

The fixed bearing system offers both Cruciate Retaining (CR) and Posterior Sacrificing (PS) options. The connection between the liner and the Tibial plate is secured by means of a simple metal wire applied to the anterior part of the liner and a bowl-shaped Tibial plate with a mirror-polished ‘floor’.
The Tibial plate is flat, with no additional spines, ripples or screw-holes, in order to minimize the backside polyethylene wear.
The Tibial plate has a 4° posterior slope and a 6° articular surface slope.

Fig. 2
Fixed Bearing Components

Mobile bearing

The mobile bearing system includes a Posterior Sacrificing and an Ultra-Congruent Component. Thanks to its 1:1 congruency, and to the anterior leap distance ranging from 6.6 (size 1) to 11.4 mm (size 5), the use of the Ultra-Congruent implant is indicated for both the preservation and the sacrifice of the posterior cruciate ligament.

Fig. 3
Mobile Bearing Components

The rotation, based on a central-pivot design, is obtained by articulating a PE peg into the Tibial plate keel hole. The hight of the peg prevents dislocation and its design minimises polyethylene wear.
The Tibial plate has a 0° posterior slope and 6° articular surface slope.

Design features

During the last 30 years, knee implant design has had a evolution.
Huge problems have been overcome in many different fields, including anatomy, biology, mechanics and materials.

Today, implant design has achieved a satisfactory level of standardization.
However, some issues are yet to be completely addressed. The scientific challenge is now focused on four main areas: *polyethylene wear, gait kinematics, bone preservation and specific surgical instruments.*

Polyethylene wear

The stress induced by the Femoral Component on
the polyethylene bearing depends on three main factors:

- Patient weight
- Ligament tension
- Loading conditions (including the mechanical characteristics of the implant)

Surface roughness and stresses have a major impact on the wear process.
The best way to reduce stresses on the PE liner and to influence the loading conditions, is to maximize the contact area between the liner and the Femoral Component. In order to do this it is necessary to design the Femoral Component and the liner with the same radius, for a perfect and complete contact (Figs.4-5).

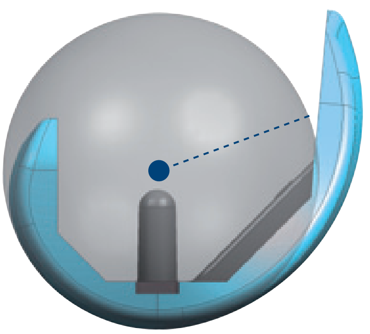


Fig. 4 - Sagittal single gradius

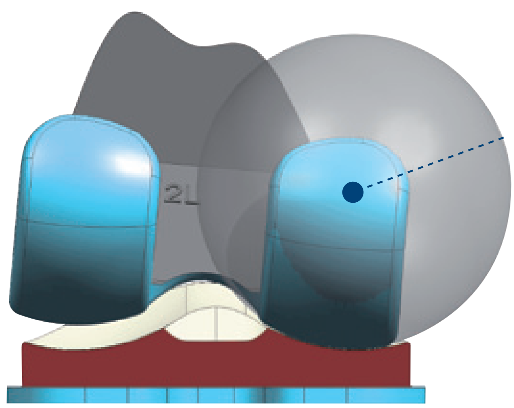


Fig. 5 - Frontal condylar single gradius

The same concept can be applied to the central spine of the PS liner. The spine in the Trekking PS liner has a large surface and rounded corners in order to offer a better highly conforming surface to the Femoral counterpart, avoiding narrow contact surfaces and high stresses.

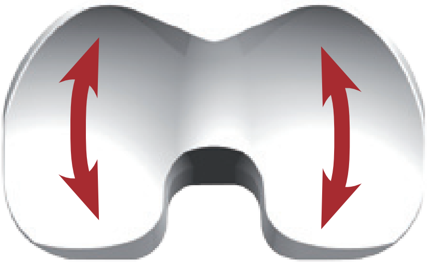


Fig. 6 - Spherical Track

Fig. 7 - Bowl-shaped metal back

The articular surface of the fixed bearing knee has been subject to important improvements as well: the Spherical Track surface of the Trekking fixed bearing knee (Fig.6) enhances the contact area across the whole flexion and rotation range.
The polyethylene backside wear has been carefully addressed as well.

The simple mirror-polished, bowl-shaped metal back (Fig.7) and the connection mechanism with a metal wire wedging in the notched edge of the metal back prevent polyethylene debris from spreading into the surrounding tissues.

Kinematics

In the Posterior Sacrificing option, the shape of the liner is the most important factor affecting the relative movement of the femur and the tibia.
The geometry of the post in the Trekking PS liner has been studied to guide the movement of the femur throughout the gait cycle, in order to obtain a consistent and early rollback starting from 40° of flexion, with close-to physiological movement and enhanced ROM. The rollback also helps reducing the patellar pressure, which in return has a positive effect on the ROM.

The Single Radius per Single Condile in the frontal plane of the femoral component enables the maximum contact in all loading condition. Even in the critical case of extreme lift-off, one condyle is always completely in contact with the liner. This leads to a higher stability and knee comfort.

The shape of the troclear groove is a good compromise between stability and patellar loading and optimizes the patellar tracking, while the single radius applied to the patellar track in the femoral component gives good stability and smooth sliding to the patella.

Bone preservation

Minimally Invasive Surgery is currently one of the most discussed techniques. A widely accepted aspect of MIS is the tissue sparing concept, a technique aiming at maximum tissue preservation and minimum damage, regardless of the incision length.

The Trekking System has been carefully designed for maximum bone stock respect.
The Tibial plate has been totally redesigned using a Finite Element Model, for the exact evaluation of stresses and the optimisation of thickness, which has been reduced from the usual 5 mm down to 3 mm still preserving its safety.

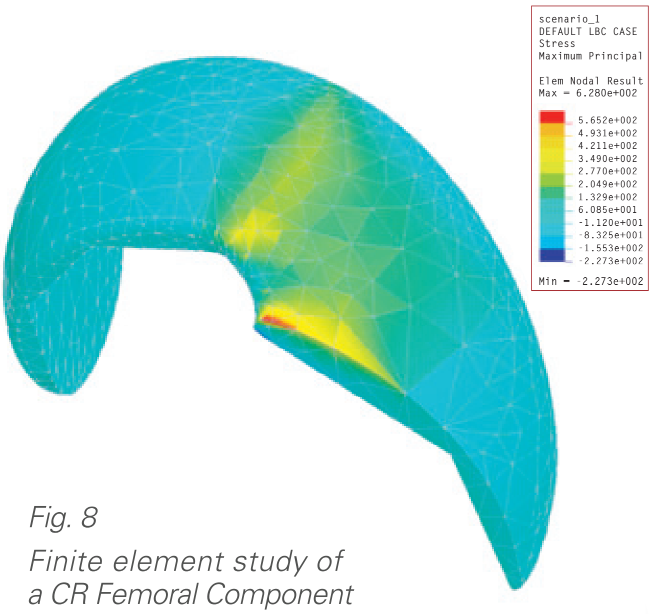
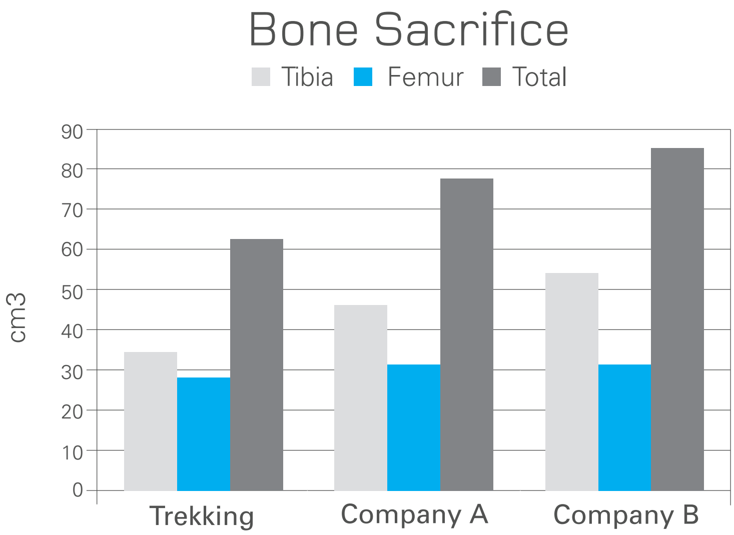


Fig. 8
Finite element study of a CR Femoral Component

The same process has been used for the Femoral Component. The FEM computer calculation allowed our designers to keep an optimal mechanical resistance with a reduced thickness (8 mm) of the Femoral Component, both distally and posteriorly (Fig.8).
Finally, thanks to the quality of the Ethylene Oxide-sterilised polyethylene, and the attention paid to tribological issues, the minimum Trekking liner thickness has been reduced down to 6 mm, still preserving the poly strength.



Thanks to this careful design, the Tracking System is one of the most bone preserving system in the market. Maximum total bone saving for a size 5 CR model is 20 cm^3 (Fig.9) .

Fig. 9
Total bone sparing with a size 5 Trekking tibia, liner and femur vs two different competitor systems.

Materials

Vitamin E-stabilzed cross-linked polyethylene
Oxidation and lower mechanical characteristics are known drawbacks of the crosslinked polyethylene. Vitamin E is a molecular stabilizer that, if properly applied, can solve both problems. Thanks to the scientific support of polymer material group of IFM Chemistry Dept. (Turin. Italy), first to propose Vitamin E Polyethylene, SAMO developed the Second Generation vitamin E cross-linked Polyethylene, manufactured with a blending process to form the bar with no cementing, no annealing, no diffusion heating. This leads to: high mechanical resistance, outstanding oxidation protection, ultra low wear.
Hypoallergenic, low wear implants coated with Titanium-Niobium nitrates ceramized layer
Titanium-Niobium Nitrides-coated implants are not only a reliable solution in cases of allergies thanks to the reduction of the metal ion release down to barely detectable levels, but also a low-friction solution for all cases thanks to its high wettability.

Innovative instruments

Unlike implants, the basic principles of TKA instruments have not changed for at least 35 years, and concepts and techniques defined for the first systems have remained in use ever since.
SAMO developed a really new, compact, modular, integrated instrumentation, making the procedure safer, more accurate, faster and simpler.
All the terms above are not casual. Let’s analyse them:

- **Integrated:** all the Trekking Components (primary and revision) can be implanted by means of the same instrument set, with the addition of only 3 baskets for a complete revision implant.

- **Modular:** the instruments are available in containers that can be either used or left aside, depending on the implant system the surgeons is planning to use. For example, Fig. 10 shows the solution for a PS, Fixed Bearing implant.

Fig. 10
Instruments set for a Posterior Sacrificing Fixed bearing implant

- **Compact:** only 5 trays, plus two small square baskets, are necessary for one implant.

- **Simple and fast:** the unique *6-Action Femoral Guide* (Fig.11) allows time-saving, unique *3-Step Femoral Cuts (Fig.12)*

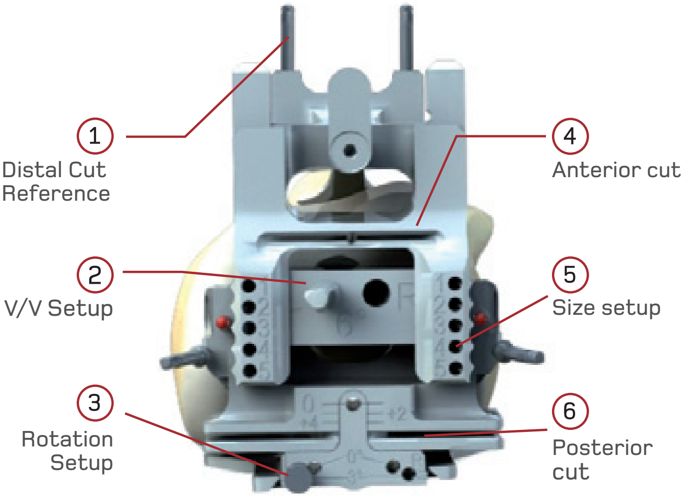
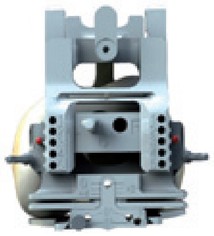
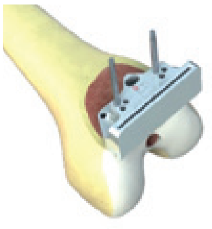


Fig. 11
6-actions Femoral guide

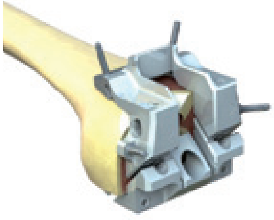
The classical bone-cut-sequence of most current instrument sets typically includes 5 steps: 1 – Varus Valgus setup; 2 – Distal cut; 3 – Size setup; 4 – A/P and oblique cuts; 5 – Box or trochlear groove cuts.



1
Mechanical axis set-up, external rotation, Femoral sizing, distal cut references, A/P cuts



2
Distal cut



3
Chamfers, trochlear groove/box cuts

Fig. 12 - 3-Steps Femoral Cuts

- **Accurate:**
  - Fixed, wide Femoral stylus with size reference for the best size each time
  - Stable guides - cuts are always precise and accurate allowing easy press-fit implant application.
  - All the anatomical landmarks (Whiteside line, Epycondilar line, posterior condyles) can be considered in order to determine the correct rotation of the implant.
  - Unique Reference Switch system for automatic anterior or posterior reference, depending on the surgeon’s preference.

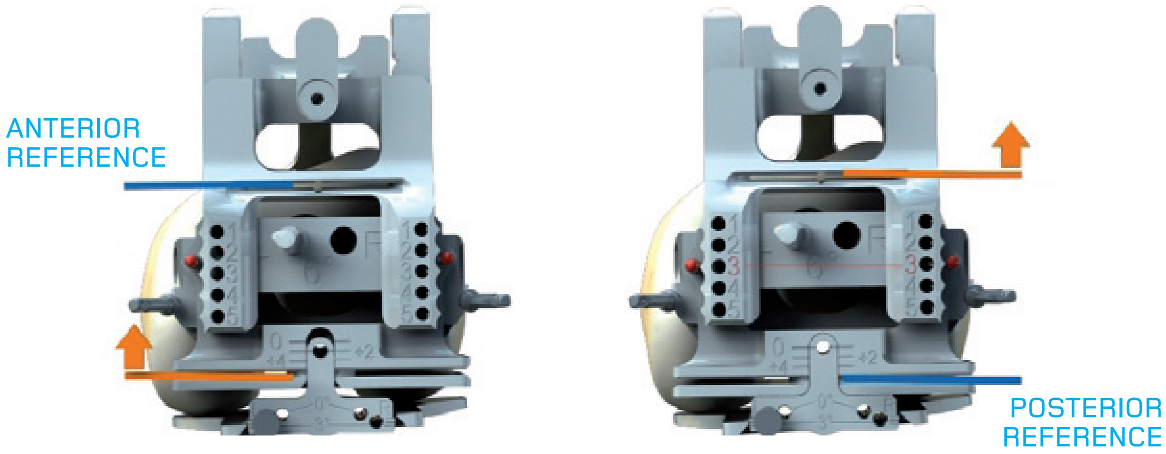


Fig. 13 - Automatic referencing Femoral guide

The system automatically switches between anterior and posterior reference-adjusting modes, following the surgeon's choice of the femoral size (Fig.13). Therefore, for in-between sizes, if the surgeon chooses the smaller size, the guide behaves as an anterior referencing system (posterior referencing, in such cases, would generate a risk of notching on the anterior cortex), while the guide behaves as a posterior referencing system if the surgeon chooses the larger size (an anterior referencing system, reducing the flexion gap, could cause tightness in flexion). In current systems, either the choice is forced (always larger OR always smaller size every time), or the surgeon must change instruments in order to change the reference from posterior to anterior or vice-versa.

- **Safe:**
  - *Recutting is allowed with minimal time loss and without affecting cut precision -* Thanks to the particular sequence of the cuts, tissue balance becomes a central step in the technique, and recutting, when needed, it is a simple and fast procedure.
  - *100% notching avoidance -* Thanks to the floating anterior cut guide, the notching is made impossible. Regardless of how precisely the cutting guide is placed, the cut will always be over the surface of the anterior cortical bone (Fig.14).

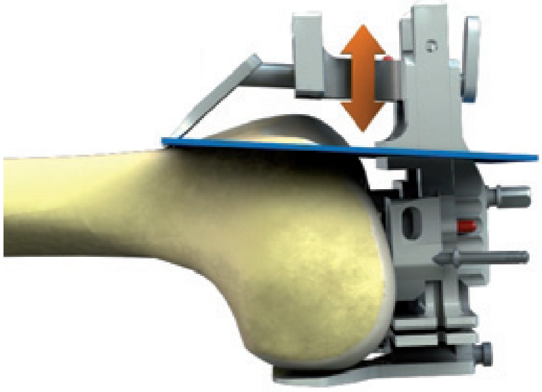


Fig. 14
0-notching system

These are only general concepts about **the highly innovative Trekking System Instrument Set.** *Please, read the following chapters to learn more about all the smart solutions introduced by this system.*

Trekking® Primary Knee Integrated System
Surgical Technique

The surgical technique of the TREKKING® Primary Knee System has been optimized in terms of precision, balance check, accuracy and execution speed.
The surgery can be schematized in the following 3 phases:

1. **Main cuts**
2. **Balance check**
3. **Finishing**

Performing tissues balance checks before chamfering allows precise and quick recuts, when necessary. When balancing is correct, the femur can be chamfered. The surgeon can then perform the trial reductions; any correction at this stage does not compromise the bone-implant fit.

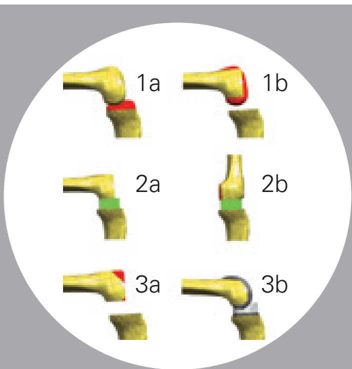
This surgical sequence has been designed to obtain maximum precision and easy solution in any unsatisfactory situation.
While it is possible to start either from the tibia or from the femur, the Tibial resection gives the surgeon a good benchmark to perform the Femoral cuts, and more room to operate in the Femoral part. Leaving the chamfers as the last cuts allows a much more accurate measurement of the articular gap and recutting is easier, if any is needed. The functional system of spacer augmentation helps the surgeon selecting the correct thickness of the liner.

At any stage, the surgeon can check articular aligment accuracy with a metal rod inserted in the eyelets available in most instrumentation Components.

1. Main cuts

2. Balance check

3. Finishing

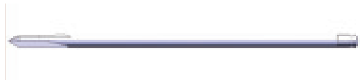


Conceptual phases of the TREKKING® Mobile Hollow surgical technique

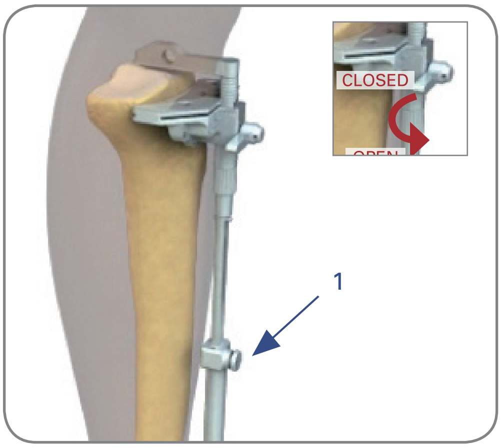
ADVICE: *The instrument set requires 1.27 mm (1/20”) thick, 13 mm (1/2”) wide and 90 mm (6.5”) long blades. Different blade parameters may hinder cutting operations. In particular, thicker blades are not compliant with the height of the guides, and must be avoided.*

LEGEND:

[.] - reference to a device of the instrument set, see the section at the end of the document
( ) - reference to a detail of the image
- general Surgical Technique
- specific Surgical Technique

Use of the pins		
45. Self-drilling Pin. GS.C0800		Fixation with parallel pins
46. Headed Medium Pin GS.C0600		Sizing
47. Headed Short Pin GS.C0700		Parameters set-up, trial Tibial plate fixation
48. Self-drilling Pin w. abutment GS.C0810		Fixation with slanting pins

1. MOBILE BEARING



The proposed surgical technique is based on a "tibia first" approach. For a 'femur first' technique, steps 1 to 7 should be read after step 15.

The Tibial System is to be mounted by inserting the Extramedullary Tibial Guide [13.] into the Extramedullary Tibial Guiding Tube [14.] and then lifting the Ankle Clamp [15.] into the guide in the lower part of the Guiding Tube. Place the Tibial Cut Block ([11. FB] for Fixed Bearing and TCK, [11. MBH] for Mobile Bearing) in its lodging at the top of the Extramedullary Tibial Guide, lock the Cut Block by pushing the lever and then turn it 90°.

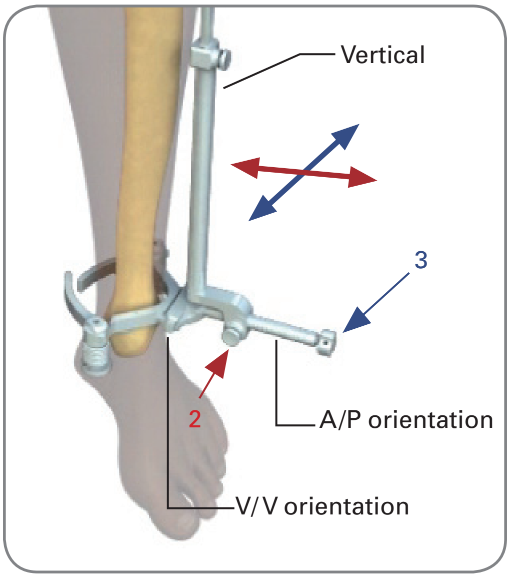
2.

Comfortable push-buttons (1,2) and a knob (3) allow the orientation of the cut in the proximal-distal, medio-lateral and Antero-Posterior (A/P) directions.

To fix the rotation of the tibial cut, especially in presence of a posterior slope, a short headed pin may be inserted into the hole placed in the upper part of the fixation arm (2 in step 3).

Regardless of whether you are using a mobile or fixed bearing implant, the alligment guide and anatomical axis of the tibia must be parallel. The different slope of the cut (0° for the mobile bearing implant and 4° for the fixed bearing implant) is given by the different cutting block.

NOTE: *Each sign marked on the A/P orientation guide counts as a 0.5° of slope of the Tibial cutting block; the same applies to V/V inclination, i.e. by moving the vertical bar one space in A/P or V/V direction, the A/P or V/V inclination of the Tibial cutting block changes by ±0.5°.*



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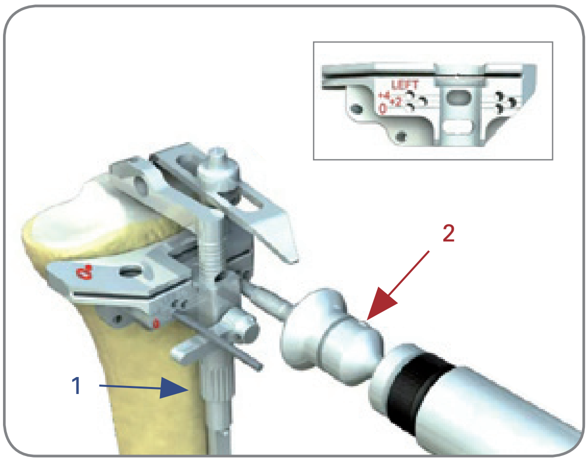


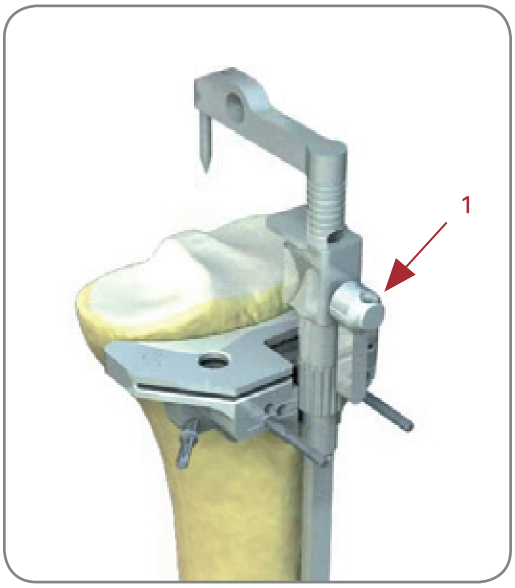
The proper height of the Tibial cut is set by means of the two-tips Tibial Stylus [12.], which has to be placed on the deepest point of the healthiest part of the Tibial plate. One tip of the stylus is marked as "Slot" and must be used if the surgeon plans to cut using the slot of the cutting block as a guide; the other one is marked as "Top", and must be used if the cut is performed leaning the blade onto the flat top of the guide.

In both cases, the cut performed is 9 mm, i.e. the minimum total thickness of the Tibial implant (liner + metal back). A threaded knob (1) may be used to lower or raise the cut.

When the Tibial Cutting Block is in the correct position, pins must be placed in the "zero" holes. The "+2" and "+4" holes are for recutting only.

The universal Drill Adapter (2) [34.] may be used. The setup of the Tibial guide can be checked by means of the Resection Tester [28.].

4.



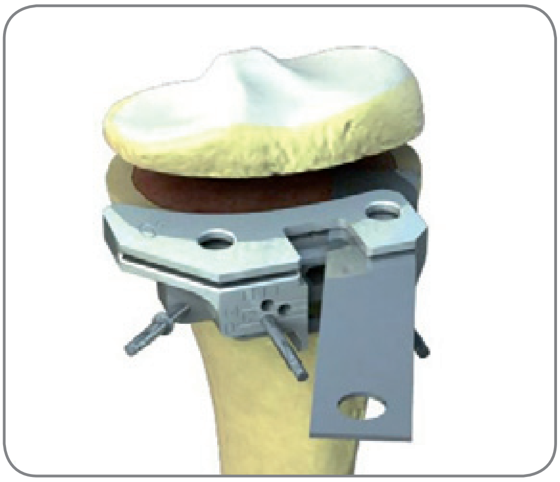
The Tibial Cutting Block can be completely freed just by turning the locking lever (1) placed in front of the block and by using the "fork tip" of the Extractor [41.].

For a good block stability, it is advisable to spike the cutting block with three pins as shown in steps 5 and 6.

5.

Before cutting, the alignment with the Tibial axis can be checked by inserting the checking rod [24.;25.] into the hole of the modular handle [33.], previously fixed on the Tibial Cutting Block [11.].

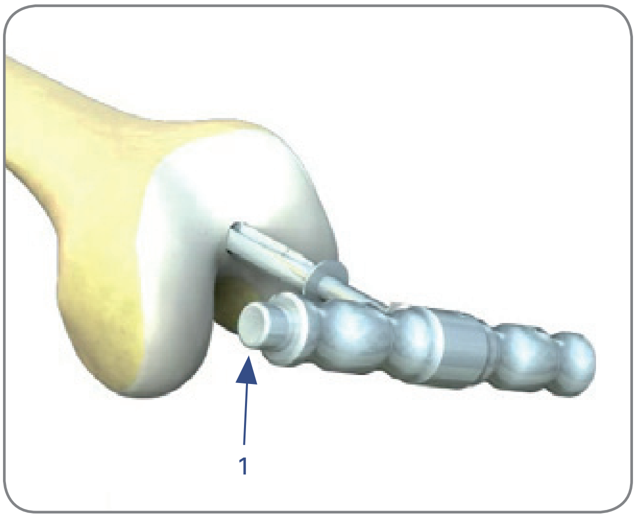
6.



As previously stated, the cut can be made either by using the slot or the top plane as guide, depending on the choice made in step 3.

Remove the cutting guide leaving the parallel pins in place for possible recuts whether the slot or top end of the stylus has been used.

7.



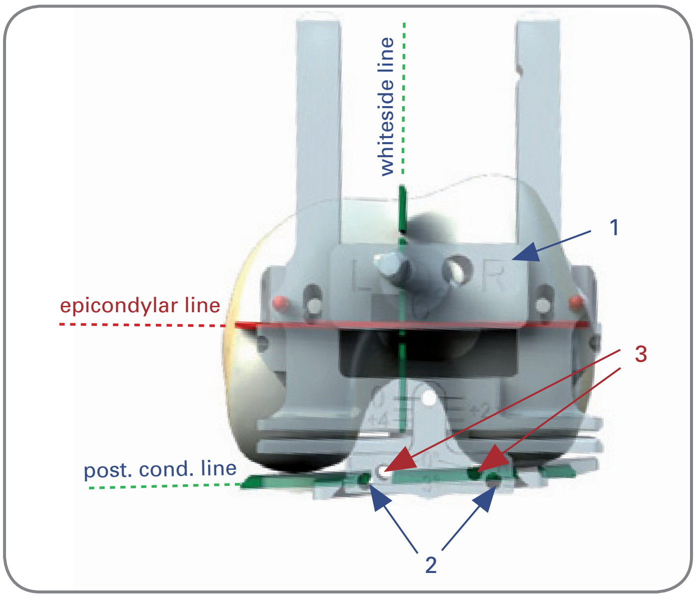
After distal femur drilling has been performed, the Femoral Intramedullary Rod [2.], provided with a modular handle [23.] is placed through the hole. Make sure the Rod is fully inserted. The handle can be placed and removed with a push-button (1).

8.

Before placing the 6-Action Femoral Guide [4.b.], choose the proper varus-valgus and internal-external rotation angle.

The varus-valgus angle is set using the varus-valgus block (1) [5.], while the intra/extra rotation of the implant is set either by introducing a short headed pin [47.] in the 0° (2) or 3° (3) hole or by aiming at the Whiteside line through the vertical bars or by aligning the guide with the intra-epycondilar axis.

In all cases, both posterior prongs must be kept in contact with the posterior condyles.



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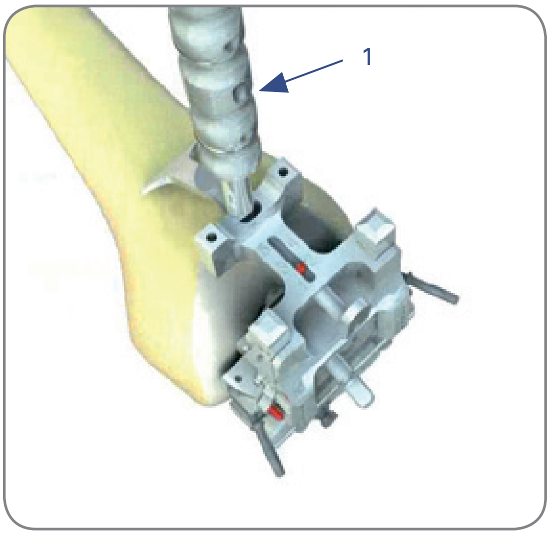
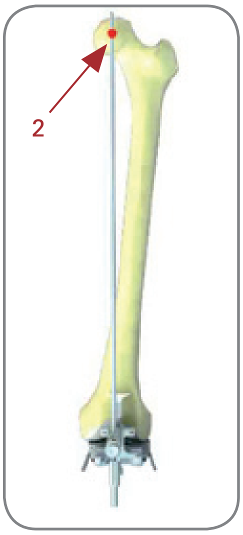
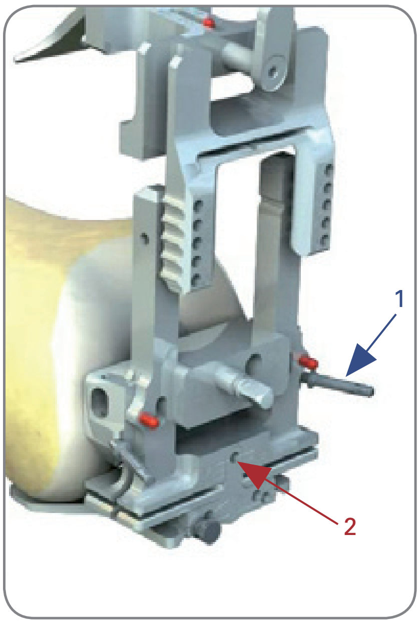




By means of the checking rod inserted into the hole of the modular handle [33.], (1), it is possible to check the conformity between varus-valgus block and individual patient's anatomy.

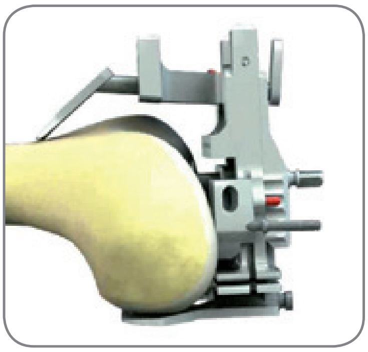
If the varus-valgus angle is placed correctly, the checking rod will ideally cross the Femoral rotation centre (2).

10.

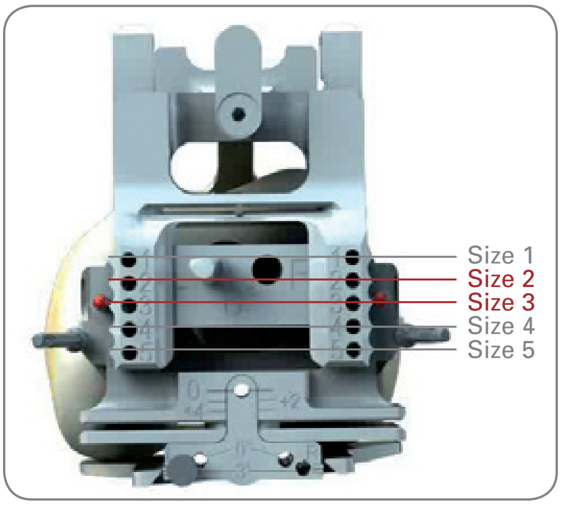


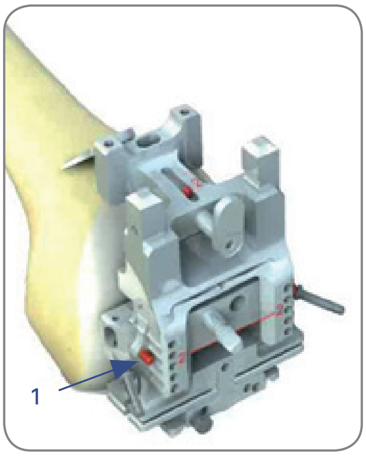
Fix the 6-Action Femoral Guide by means of [48.] pins (1). Once the jig has been properly placed and fixed, let the Size Jig [4.a.] slide into the 6-Action Femoral Guide, until the stylus touches the anterior part of the femur.
Observing the image below, note that both the anterior stylus and the posterior prongs are touching the bone. If necessary remove interposing soft tisusses and osteofites. Set the stylus at default temporary size ‘3’ on the scale on the upper part of the guide (step 11, left).

ADVICE: *Until step 12, make sure that the graduated scale (2) is set at zero by placing a pin on the hole (2), which must be removed before inserting the pin into the size hole, as indicated in step 12.*



11.





Read the size at the level of the red pins (1), which is flush with the centre of the holes. Often the measurement does not match with a precise size. In these cases, it is advisable to opt for the larger size only when the pointer is very close (⅔ or more) to the upper size. Set the chosen size on the stylus size scale (below).

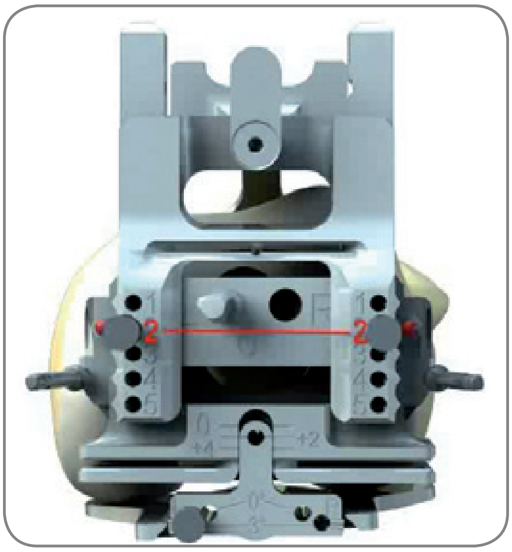
12.

IMPORTANT NOTE: If the smaller size has been chosen, remove the optional pin in central hole now.

Introduce two headed pins [46.] into the hole corresponding to the chosen size. The device will automatically slide, setting the cutting slots to the chosen size.

ADVICE: *In order for the device to reach the best position, the pins must NOT be hammered, but pushed by hand instead, vibrating it a bit in the vertical direction to facilitate the sliding of the mechanisms. Once the system has slid into the correct position, and the pins have reached the Femoral bone, use a hammer to fix the pins to the bone.*

If the smaller size is chosen, the graduated scale (1) will indicate +2 or +4; these numbers can be used in the distal cut (step 15).



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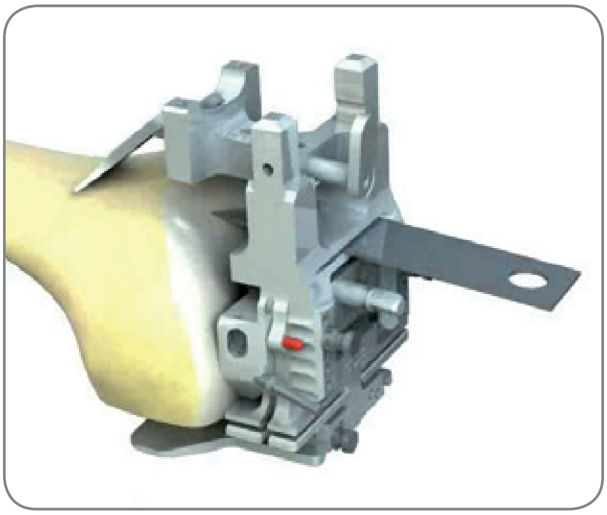
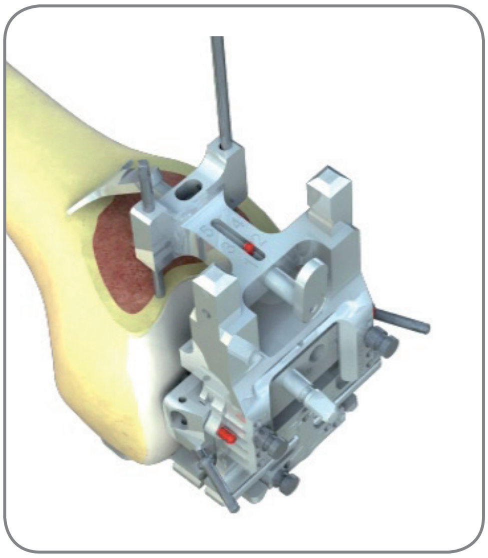


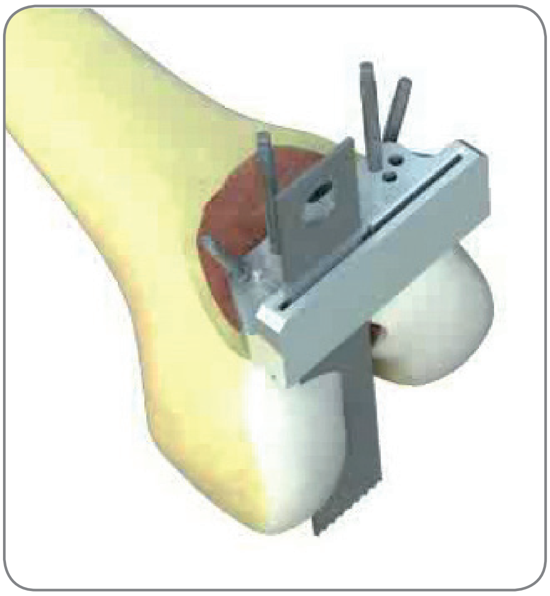
Make the anterior and posterior cuts through the corresponding slots. The stylus always indicates the proximal border of the anterior cut.

14.

Insert two pins [45.] into the anterior holes, then remove all devices, leaving the 2 anterior pins in place. To remove the devices, remove all the Headed Pins, lift and remove the Size Jig [4a.] and then extract the 6-Action Femoral Guide [4b.] and the Intramedullary Rod.



15.



The Distal Femoral Cutting Block [7.] presents 3 couples of holes, marked as 0, +2, +4. In order to balance the ligament tension in flection and extension, it is possible to use the cut depth following the number indicated in the lower graduated scale (1) in step 12.

ADVICE: *The procedure described above is optional.In any case, the final evaluation of the cut depth must be made by the surgeon, following the actual anatomy of the patient.*

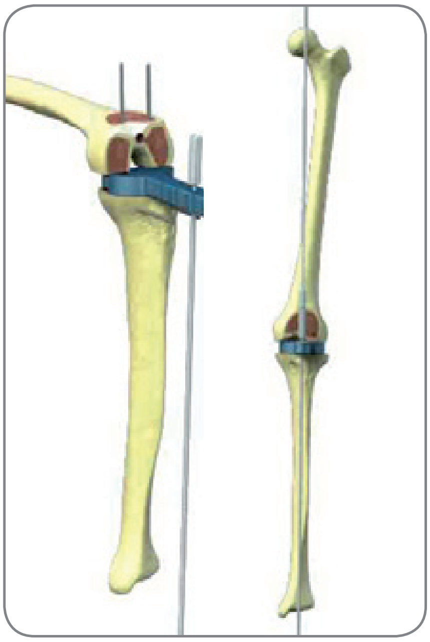
Cut the distal condyles by using the slot and by shielding the tibia with the Hohmann retractor [50.], then remove the Distal Cut Block, leaving the parallel pins in place.

16.

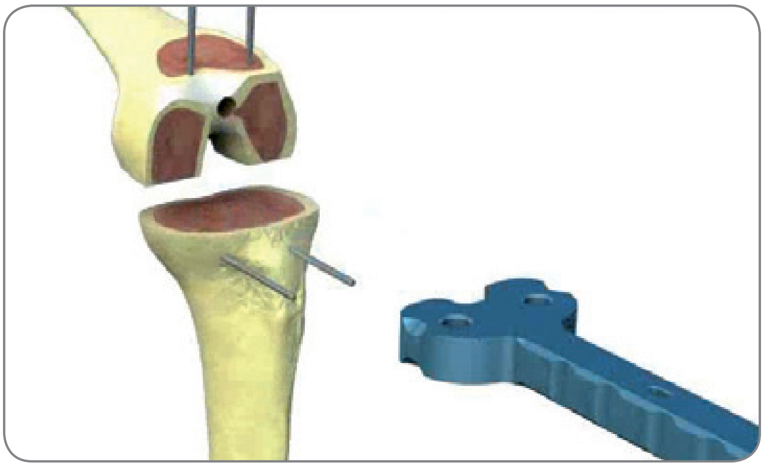
At this stage, it is very convenient to perform the balance checks by means of the appropriate spacer [26.], in order to check the Femoral and Tibial Component matching.
It is important to do it before chamfering, to obtain a more precise measurement and a much easier recutting, if necessary.

A very easy recutting is enabled by the presence of the pins in the original position (steps 6; 15).

Screwing the Male Control Rod [25.] onto the Female Control Rod [24.], check the mechanical axis alignment.



17.

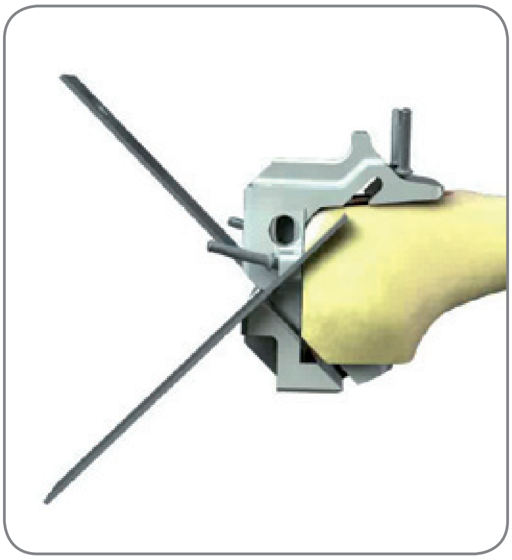


Spacer Augmentations [35.] are marked with thickness size (thickness reference number) of the corresponding liner.
Read the thickness reference number on the used augmentation (+2, +4, +7), so as to aware of the liner dimension. If the tension of the collateral ligaments is satisfactory without using any augmentation, then use the +0 liner.

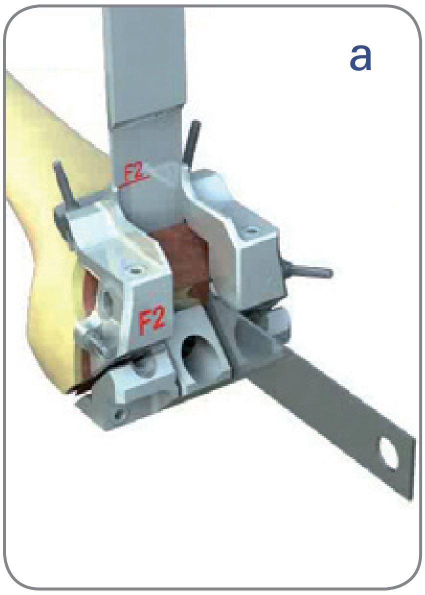
18.

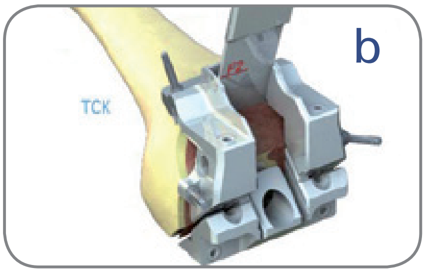
Except for the pin slots, the Femoral Chamfering Jig [19.] has the same lateral dimension as the Femoral Component.
This helps to place the jig properly and have a preview of the implant final setup.
In order to obtain the best stability of the jig, first fix it anteriorly with short headed pins, and then distally.

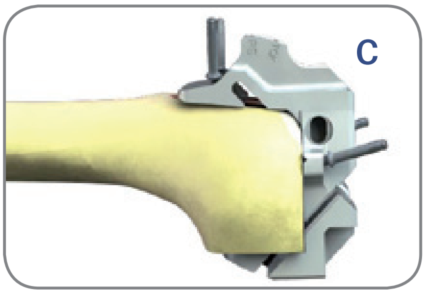
Make the oblique anterior and posterior cuts using the appropriate guides.



19. POSTERIOR SACRIFICING & TCK



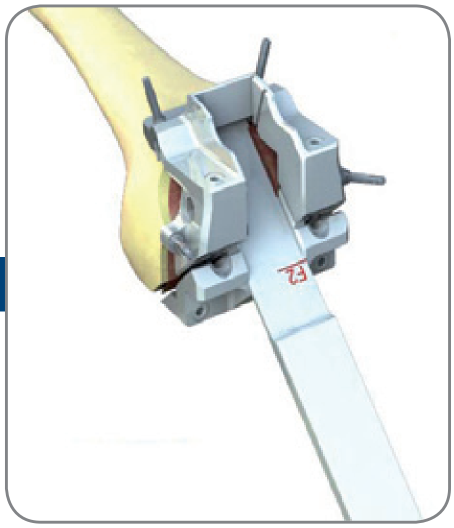




In PS and TCK implants, after step 18, make the proximal box cut (1) using the osteotome [38.] and the appropriate guiding rail (figs a, b, c); then complete the box by leaning the sawblade onto the two lateral and medial planes (2), keeping the osteotome as a shield. Then, using the Extractor [41.], remove the osteotome and perform the cut shown in step 20; then remove the jig. Do not drill the holes for the pins, which are not present in the PS implant.

20a. POSTERIOR SACRIFICING & TCK

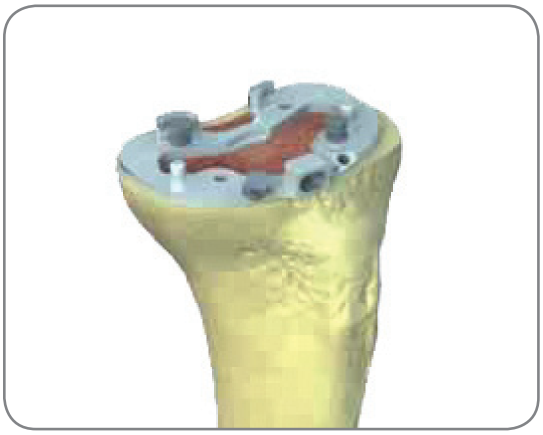
Make the central oblique cut leaning the blade on the oblique plane, or using the osteotome [38.] through the appropriate guide.



20b. CRUCIATE RETAINING

Notch 2mm of cortical bone on both lateral sides of the box, then make the central oblique cut leaning the blade on the oblique plane, or using the osteotome [38.] through the appropriate guide. Drill the holes for the pin (drill [6.]) and remove the Jig.

21.



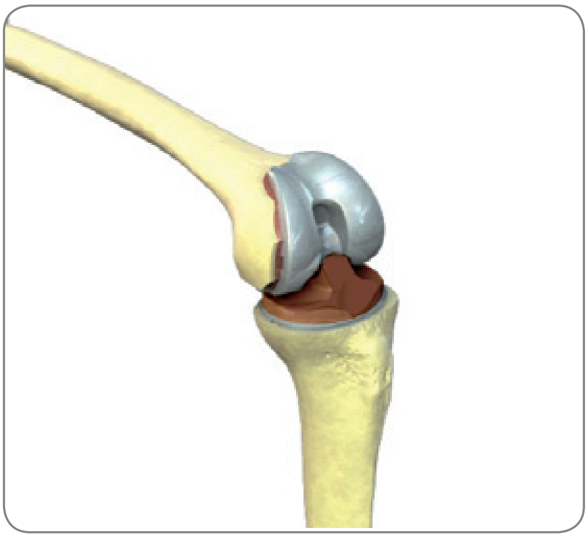
Place a trial tibial Tibial Tray [30.] after engaging the modular handle [33.]. Change the tray size until you find the most adequate for the Tibial Component. Spike it with at least four headed pins.

22.

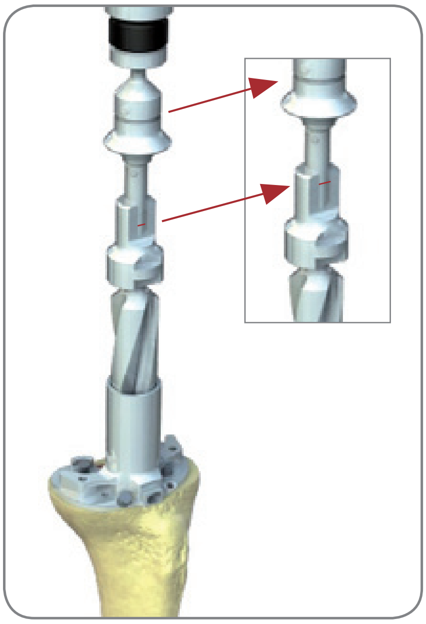
Put the Trial-Liner Adapter [8.] into its slot on the Trial Tibial Tray. Follow the indications on thickness (step 17) and choose the appropriate trial liner [53.; 54.; 55.; 56.] taking into account that, with the Mobile Hollow design, the liner must match the size of the Femoral Component exactly, while the Tibial Component can be ±1 size.

However, in case of FB, the liner must match the size of the Tibial Component exactly, while the Femoral Component can be ±1 size.

Place the Trial Femoral Component [42.; 51.] and perform flexion and extension trial reductions to check the fit of the whole implant.



23. MOBILE BEARING



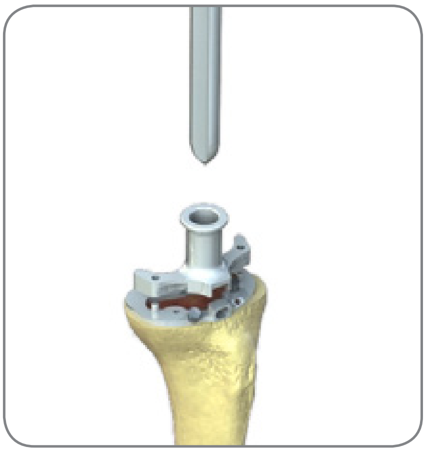
Remove all the trial Components, except for the Trial Tibial Tray. In order to extract the Trial Femoral Component, insert the flat tip of the Extractor [41.] into the tracks placed on either side of the trochlear groove of the trial Component.

Set the drill height in the MBH Tibial Drill [31.] at the size chosen in step 23.

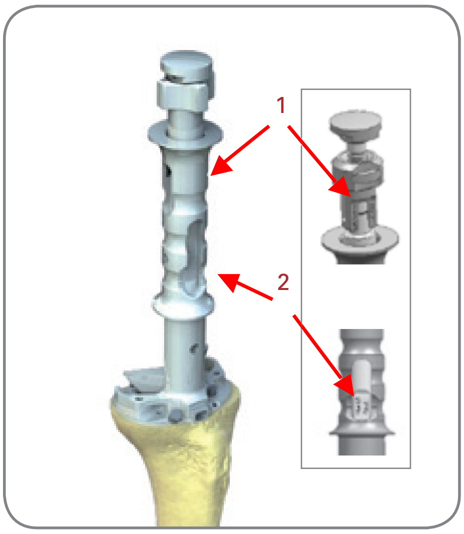
Place the MBH Tibial Drill Guide [21.] into its slot on the Trial Tibial Tray. Use the MBH Drill Guide [31.] to drill the hole.

23. TCK

In the case of TCK, after removing all the trial components except for the Trial Tibial Tray, place the TCK Tibial Drill Guide [18.] into its slot on the Trial Tibial Tray. Use the TCK Drill Guide [17.] to drill the hole.



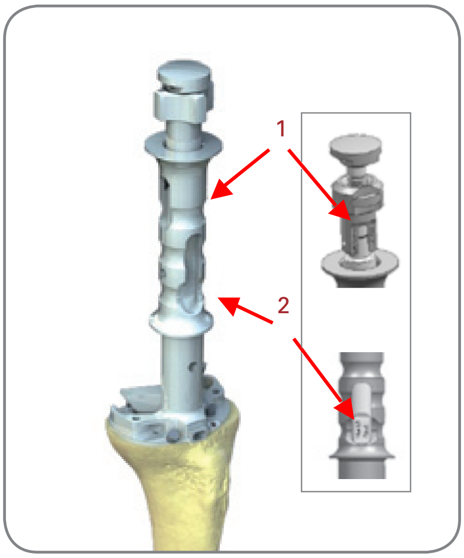
24. MOBILE BEARING



Remove all the instruments, except for the Trial Tibial Tray. Set the Tibial Plate size on the upper graduate scale of the harrow broach (1).
Place the Arrow Broach (0°) [22.] into its slot on the Trial Tibial Tray. Hammer in and then check that the broach is fully penetrated using the lower graduate scale (2).

24. FIXED BEARING & TCK

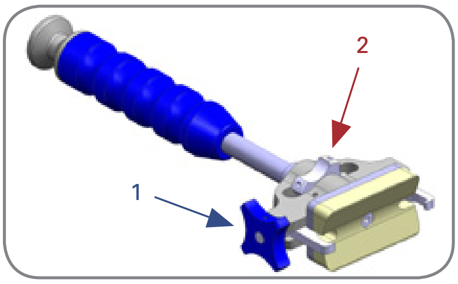
Remove all the instruments, except for the Trial Tibial Tray. Set the Tibial Plate size on the upper graduate scale of the harrow broach (1).
Place the Arrow Broach (4°) [22.] into its slot on the Trial Tibial Tray. Hammer in and then check that the broach is fully penetrated using the lower graduate scale (2).



25.

Fix the final Femoral/Tibial Component on the Positioner [43.] and hammer the Component in, then reduce the joint. Place the plastic liner on top of Tibial plate. In case of Fixed Bearing follow this procedure:

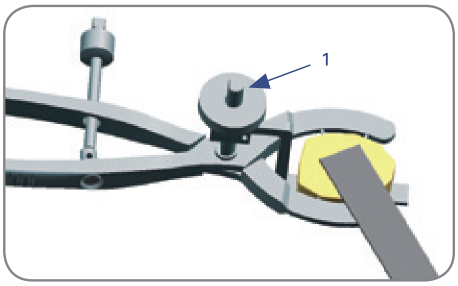
- push the liner posteriorly until it's perfectly flush and engaged with the posterior lip of the Tibial Component
- push with the finger or by means of the Tibial impactor snapping the liner into the Tibial plate **at 45° of inclination (see next page, Appendix A)**



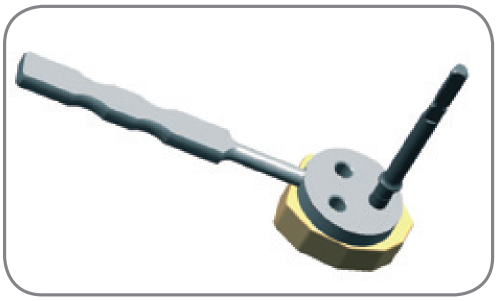
ADVICE: *Engage the Component by turning the lateral screw (1), push the plastic piston against the Component by turning the central knob (2).*

26.

When the Patellar Component is to be implanted, the first step is measuring the thickness of the patella. Subtract 9 mm (the thickness of the patellar Component) from the measured value, then set the resulting value on the graduated scale carved on the hinge pole (1) of the patellar resection pliers [37.].
Grasp the patella using the Patellar Pliers and lean it on the stylus.
Pay attention to the patellar resection slope.
Cut the posterior part of the patella.



27.



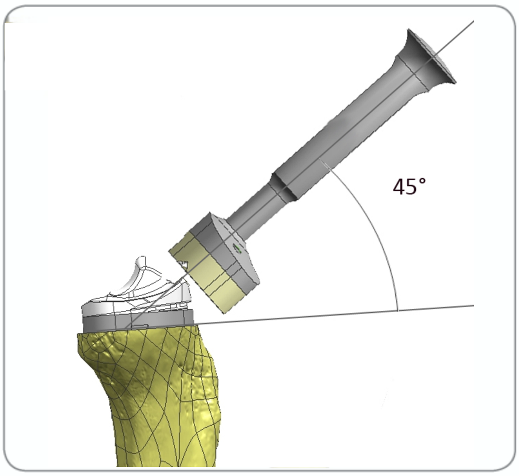
Among all available patellar Components, choose the one that best fits the resection.
Holding the Component by the side, make three holes with the Patellar Pin Drill.
Trial patellar Components are available in the instrument set.
During the cementing process, the Patellar Cementing Pliers [39.] can be used to keep the patellar Component pressed onto the bone.

Intramedullary alignment

The figure on the right shows the intramedullary system with the Checking Rod [24.] mounted. Open the path for the intramedullary Tibial rod using the Tibial twisted drill [9.]. Insert the intramedullary Tibial rod [10.] and mount the intramedullary Tibial guide (1) [29.]. Both in the extra and intramedullary technique, it is advisable to insert the slanting pin after removing the Tibial guide, in order to find the right distance from the block to the tibia.

The use of the endomedullary guide with heavily bent tibias is not adviced.

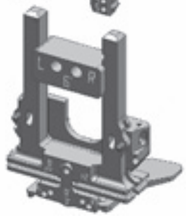
APPENDIX A

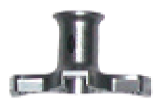


FIXED BEARING AND TCK
LINER-TIBIAL PLATE ASSEMBLY SEQUENCE
1. With the limb at 90° of flection, slide the liner under the posterior condyles, making sure that the tibial baseplate is properly clean
2. Ensure that both medial and lateral posterior notches of the liner engage correctly the posterior rim of the tibial plate
3. Gently impact the liner as shown in the figure to the left, placing the tibial impactor [32.] at approximately 45° degrees respect to the plane of the tibial osteotomy, making sure to impact symmetrically
4. After impaction, visually inspect the connection for a second check

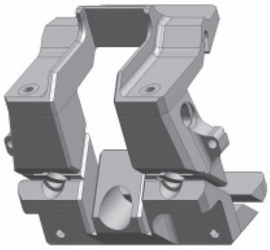
Trekking® Instrument Set

Images are not full scale; not all the parts are represented.

1. Femoral Twisted Drill GS.F0100		
2. Femoral Intramedullary Rod		L100 mm GS.F0200
		L240 mm GS.F02002
3. 6-Action Femoral Guide GS.F0300		
4. Size Jig (4.a), Orientation Jig (4.b)	 4.a  4.b	
5. Varus-valgus Block		Angle 4° GS.F0304
		Angle 6° GS.F0306
		Angle 8° GS.F0308
6. Twisted Drill for Femoral pins GS.F1400		
7. Distal Femoral Cutting Block GS.S2000		
8. MBHTrial-Liner Adapter GS.T1500		

9. Tibial Twisted Drill GS.T0100			
10. Tibial Intramedullary Rod GS.T0200			
11. Tibial Cutting Block		MBH (0°)	RIGHT GS.T9000
			LEFT GS.T8000
		FB (4°)	RIGHT GS.T8100
			LEFT GS.T9200
12. Tibial Stylus GS.T0400			
13. Extramedullary Tibial Guide GS.T0700			
14. Extramedullary Tibial Guiding Tube GS.T0300			
15. Ankle Clamp GS.T0600			
16. Tapered Adapter GS.T0600			
17. TCK Tibial Drill GS.R0014			
18. TCK Tibial Drill Guide GS.R0011			

19. Femoral Chamfering Jig



Size 1	GS.F1200CK
Size 2	GS.F1100CK
Size 3	GS.F1000CK
Size 4	GS.F0900CK
Size 5	GS.F0800CK

20. Femoral Impactor
GS.F1500

21. MBH Tibial Drill Guide
GS.T2600

22. Arrow Broach

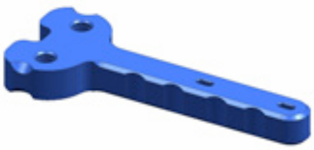
MBH (0°)	GS.F7300
FB (4°)	GS.T7400

23. Endomedullary Rod Handle
GS.C0100

24. Female Checking Rod
GS.C0400

25. Male Checking Rod
GS.C0404

26. Spacer
GS.T9700



27. Resection Tester
GS.C0300

28. Patellar Jig

GS.P1100
GS.P1200
GS.P1300

29. Intramedullary Tibial Guide
GS.T0500

30. Trial Tibial Tray

MBH	Size 1	GS.T1000
MBH	Size 2	GS.T1100
MBH	Size 3	GS.T1200
MBH	Size 4	GS.T1300
MBH	Size 5	GS.T1400
FB	Size 1	GS.T1001
FB	Size 2	GS.T1101
FB	Size 3	GS.T1201
FB	Size 4	GS.T1301
FB	Size 5	GS.T1401

31. MBH Tibial Drill
GS.T2700

32. Tibial Impactor
GS.T3100

33. Fast Handle
GS.C0200

34. Drill Adapter
GS.T3000

35. Spacer Augmentations

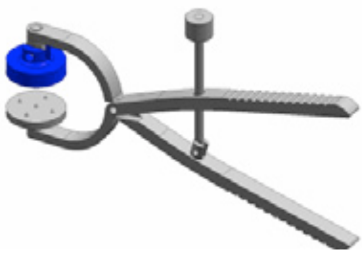
+2	GS.T9300
+4	GS.T9400
+7	GS.T9500
+10 (FB)	GS.T9640
+13 (FB)	GS.T9680

36. Patellar Pin Drill
GS.P0300

37. Patellar Resection Pliers
GS.F1700

38.
Osteotome
GS.F2100

39.
Patellar
Cementation Pliers
GS.1600



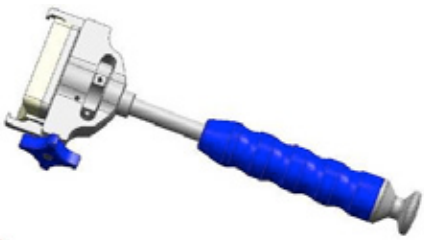
40.
Pin Impactor
GS.C0500

41.
Extractor
GS.C1000

42.
CR Trial Femoral
Comp. R/L

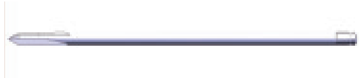
DX	Size 1	GS.F3000
	Size 2	GS.F3010
	Size 3	GS.F3020
	Size 4	GS.F3030
	Size 5	GS.F3040
SX	Size 1	GS.F3050
	Size 2	GS.F3060
	Size 3	GS.F3070
	Size 4	GS.F3080
	Size 5	GS.F3090

43.
Femoral
Component
Positioner
GS.0300



44.
Self-drilling pin
Driver
GS.C0900

45.
Self-drilling Pin.
GS.C0800



46.
Headed Medium
Pin
GS.C0600

47.
Headed Short Pin
GS.C0700

48.
Self-drilling Pin
w. abutment
GS.C0810

49.
Trial Patellar
Component

Size 1	GS.P0800
Size 2	GS.P0900
Size 3	GS.P1000

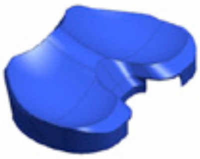
50.
Hohmann's Lever
GS.C1620

51.
PS Trial Femoral
Comp. R/L

DX	Size 1	GS.F3100
	Size 2	GS.F3110
	Size 3	GS.F3120
	Size 4	GS.F3130
	Size 5	GS.F3140
SX	Size 1	GS.F3150
	Size 2	GS.F3160
	Size 3	GS.F3170
	Size 4	GS.F3180
	Size 5	GS.F3190

52.
Extraction Forceps
GS.1506

53.
CR Trial Liner MBH

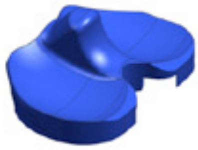


Size 1	0	GS.T3200
	+2	GS.T3300
	+4	GS.T3400
	+7	GS.T3500
Size 2	0	GS.T3600
	+2	GS.T3700
	+4	GS.T3800
	+7	GS.T3900
Size 3	0	GS.T4000
	+2	GS.T4100
	+4	GS.T4200
	+7	GS.T4300
Size 4	0	GS.T4400
	+2	GS.T4500
	+4	GS.T4600
	+7	GS.T4700
Size 5	0	GS.T4800
	+2	GS.T4900
	+4	GS.T5000
	+7	GS.T5100

54.
CR Trial Liner FB

Size 1	0	GS.T10000
	+2	GS.T10010
	+4	GS.T10020
	+7	GS.T10030
	+10	GS.T10040
	+13	GS.T10050
Size 2	0	GS.T10060
	+2	GS.T10070
	+4	GS.T10080
	+7	GS.T10090
	+10	GS.T10100
	+13	GS.T10110
Size 3	0	GS.T10120
	+2	GS.T10130
	+4	GS.T10140
	+7	GS.T10150
	+10	GS.T10160
	+13	GS.T10170
Size 4	0	GS.T10180
	+2	GS.T10190
	+4	GS.T10200
	+7	GS.T10210
	+10	GS.T10220
	+13	GS.T10230
Size 5	0	GS.T10240
	+2	GS.T10250
	+4	GS.T10260
	+7	GS.T10270
	+10	GS.T10280
	+13	GS.T10290

55.
PS Trial Liner MBH



Size 1	0	GS.T5200
	+2	GS.T5300
	+4	GS.T5400
	+7	GS.T5500
Size 2	0	GS.T5600
	+2	GS.T5700
	+4	GS.T5800
	+7	GS.T5900
Size 3	0	GS.T6000
	+2	GS.T6100
	+4	GS.T6200
	+7	GS.T6300
Size 4	0	GS.T6400
	+2	GS.T6500
	+4	GS.T6600
	+7	GS.T6700
Size 5	0	GS.T6800
	+2	GS.T6900
	+4	GS.T7000
	+7	GS.T7100

56.
PS Trial Liner FB

Size 1	0	GS.T10300
	+2	GS.T10310
	+4	GS.T10320
	+7	GS.T10330
	+10	GS.T10340
	+13	GS.T10350
Size 2	0	GS.T10360
	+2	GS.T10370
	+4	GS.T10380
	+7	GS.T10390
	+10	GS.T10400
	+13	GS.T10410
Size 3	0	GS.T10420
	+2	GS.T10430
	+4	GS.T10440
	+7	GS.T10450
	+10	GS.T10460
	+13	GS.T10470
Size 4	0	GS.T10480
	+2	GS.T10490
	+4	GS.T10500
	+7	GS.T10510
	+10	GS.T10520
	+13	GS.T10530
Size 5	0	GS.T10540
	+2	GS.T10550
	+4	GS.T10560
	+7	GS.T10570
	+10	GS.T10580
	+13	GS.T10590

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