

MUTARS[®]



Proximal Tibia MK
Surgical Technique



implantcast

MUTARS®

Proximal Tibia MK Surgical technique

MUTARS® was developed in co-operation with
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MUTARS® has been in successful clinical use since 1992.
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Nota Bene: The described surgical technique is the suggested treatment for uncomplicated procedures. In the final analysis the preferred treatment is that which addresses the needs of the individual patient.

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The silver-coating

Infections represent the most severe complications of tumour arthroplastic treatments. Although local and systemic antibiotic treatments are considered, the scientific literature reports of infection rates from 5 to 35 percent [1]. Reasons for these high rates are, for example, the long surgery time, the large incisions and the immunosuppression due to chemo therapy and radio therapy as well as the increasing resistance of the bacteria against antibiotic drugs.

Silver, in particular free silver ions, is well known for its broad-spectrum antimicrobial activity. The silver-coating has been shown to reduce bacterial colonization on the device surface.

Until now only non-articulating surfaces and surfaces without direct bony contact are coated with silver. In the catalogue information of this surgical technique you can find the supplement *S indicating which MUTARS® components are available in a silver coated version. The eight digit REF-number receives an addition after the last digit (e.g. 5220-0020S).

Important intra-operative instructions for the use of silver-coated implants

It is not permitted to flush the wound with antiseptics that contain H₂O₂, Iodine or heavy metals (such as Betaisodona®) and acetic acid during surgery since this can lead to a subsequent loss of effectiveness of the silver coating due to their oxidative properties. Alternatively, solutions such as NaCl or Lavasept® and Prontosan® can be used. The additional use of antibiotic-containing bone cement can be an advantage particular in case of a septic revision.

The TiN-coating for allergy prophylaxis

All metallic implant components release ions to their environment over time. In some patients such ions can elicit allergic reactions. Nickel, cobalt and chromium, which are elements of the base material Co-CrMo of the articulating implant components, are considered the most frequently allergy eliciting metals [2]. The TiN-coating is biocompatible and acts like a barrier; the potential release of allergy eliciting ions of the base material is reduced to a minimum [3]. Also in clinical practice there have never been any evidence of allergic reactions with implants that have been TiN-coated showing an intact surface [5]. Therefore the TiN-coating on implant components is especially suitable for patients with sensitivity to nickel, chromium or cobalt [4][5].

Since almost all components of the MUTARS® tumor system consist of titanium alloy, this only concerns those components, which are made of a CoCrMo alloy. The REF-numbers of the TiN-coated implants have the suffix N after the last digit (e.g. 5720-0005N). Items which are available with silver and TiN-coating have the suffix SN after the last digit (e.g. 5720-0005SN).

***S:** Implants are available with silver-coating!

***N:** Implants are available with TiN-coating!

***SN:** Implants are available with silver- and TiN-coating!

[1] Gosheger et al. 2004. Silver-coated megaendoprotheses in a rabbit model – an analysis of the infection rate and toxicological side effects. *Biomaterials* 25, 5547-5556.

[2] Eben R et al. (2009) Implantatallergieregister - ein erster Erfahrungsbericht. *Orthopäde* 38: 557-562

[3] Wisbey et al. (1987) Application of PVD TiN coating to Co-Cr-Mo based surgical implants. *Biomaterials*, 11

[4] Prof. Thomas LMU München Final Report Effect of a TiNbN or TiN surface coating on cobaltchromium- molybdenum and stainless steel test specimens regarding the release of nickel, chromium and cobalt: evaluation via eluate analysis and in-vitro cytokine release from peripheral human blood cells, Data on file

[5] Baumann A. (2001) Keramische Beschichtungen in der KTEP Standardlösung für Allergiker. *JATROS Orthopädie & Rheumatologie* 6: 16-17

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Preoperative Planning

Pre-operative planning and precise surgical techniques are mandatory for optimal results. The instructions and the procedure given in the surgical technique to the system must be adhered to. Familiarity with the recommended surgical technique and its careful application is essential to achieve the best possible outcome.

Before surgery a surgical planning with regard to the dimensions of the prosthetic model and the positioning of the implant components in the bone has to be carried out by the surgeon.

For this purpose, x-ray templates are available:

Digital templates: Digital templates are included in the data base of the common planning systems. For missing templates, please contact the provider of the planning software and request for these templates.

Radiographic templates: Alternatively radiographic templates are available in various scale factors, which can be obtained from your local representative.



Figure A: MUTARS® proximal tibia MK Implant in A/P-view



Figure B: MUTARS® proximal tibia MK Implant in M/L-view



MUTARS® Proximal Tibia MK- the modular tumor system

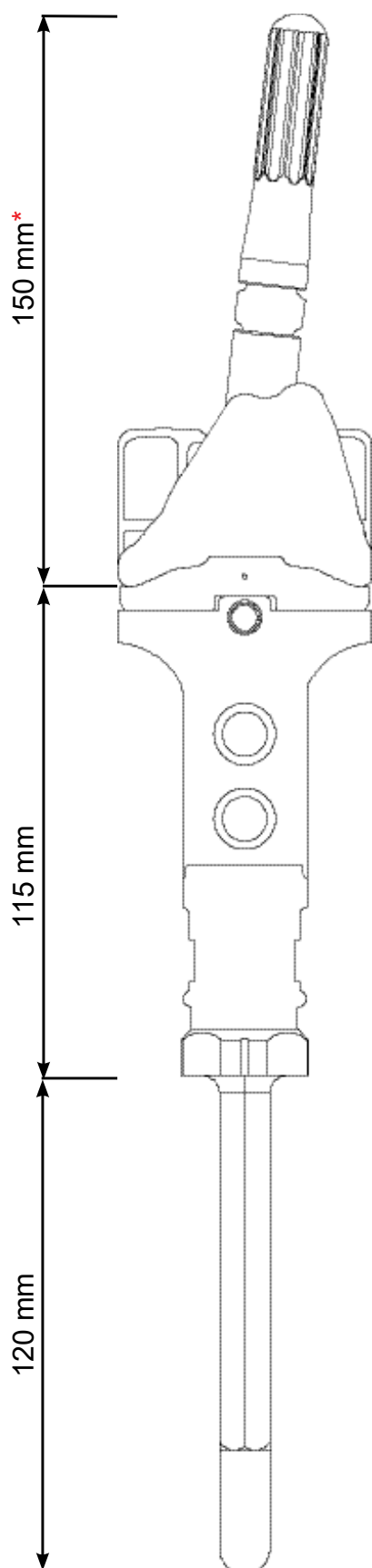


characteristics

- fully constrained tumor system
- mobile-bearing and fixed-bearing PE-inserts
- up to 20° rotation (mobile-bearing)
- cemented and cementless
- 360° free offset
- femoral offsets 0, 2, 4 and 6mm
- fixation of femoral spacers
- 1 tibial size
- 5 femoral sizes

MUTARS® Proximal Tibia MK

System Overview



MUTARS® GenuX® MK stems

femoral

length: 125, 150, 200, 250mm*

Ø 11-19mm cemented

Ø 12-28mm cementless

* loan shipments include the stems of length 150mm. If longer stems are planned, they must be ordered separately!

MUTARS® GenuX® MK offset adapter

femoral and tibial

offset: 0, 2, 4, 6mm

MUTARS® GenuX® MK femur

size 2-6**

cemented and cementless

** Size 6 is not included in loan set and has to be ordered separately.

MUTARS® GenuX® MK

PE-insert

size 2

MB and FB

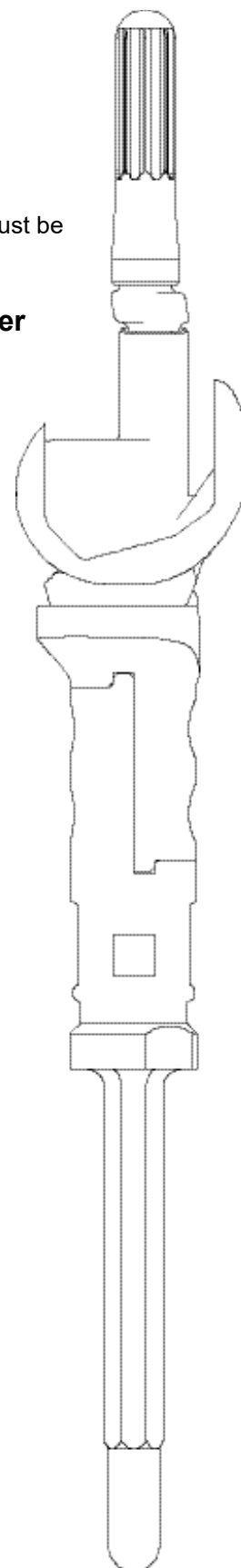
MUTARS® MK proximal tibia

MUTARS® tibial stem

length : 120mm

Ø 11-15mm cemented

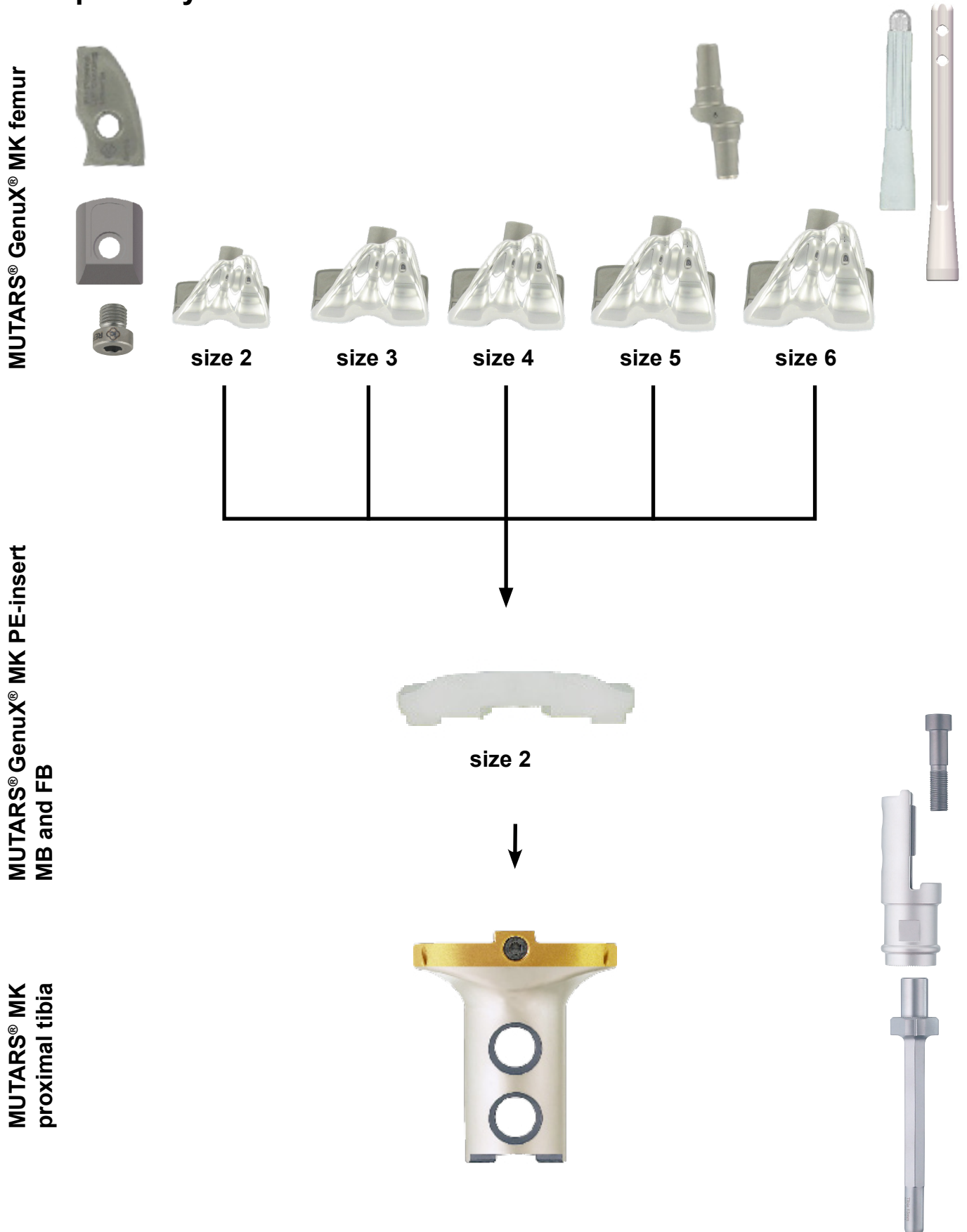
Ø 12-16mm cementless HA





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Compatibility Matrix





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Assembling Options

(Length in mm)

components				
reconstruction	proximal tibia	connecting part	extension piece	screw
115 mm	x	105	-	25
135 mm	x	125	-	45
155 mm	x	105	40	65
175 mm	x	105	60	85
195 mm	x	105	80	105
215 mm	x	125	80	125
235 mm	x	125	40 + 60	145

Note: Please notice that the amount of implants and instruments send with an individual shipment may differ from the information in the catalogue information of this brochure. Please make sure, during the preoperatively planning, that all necessary implants and instruments are available for the surgery.



Tumor resection

Resect the tumor and measure the dimension of the explant.
The minimum bone resection (tibially) is 115 mm.

Tibial preparation

Use the medullary cavity reamer cross-hole to prepare the tibial bone.

Cemented fixation

Ream the tibial medullary cavity preferably up to a depth of 130 mm with a rigid reamer that is 2 mm larger than the size of the tibial stem.

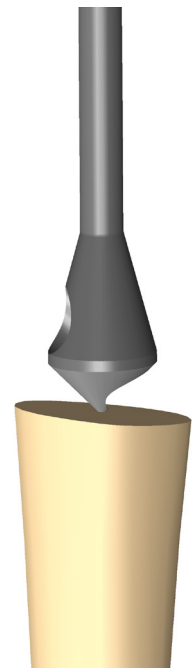
Cementless fixation

Ream the tibial medullary cavity preferably up to a depth of 130 mm with a rigid reamer that is 1.5 mm smaller than the size of the tibial stem.

Make sure that at least a 9cm contact between reamer and cortical bone is achieved

Note

The use of a tibial rasp for a cemented stem is optional. Generally you can proceed with the trial reduction.



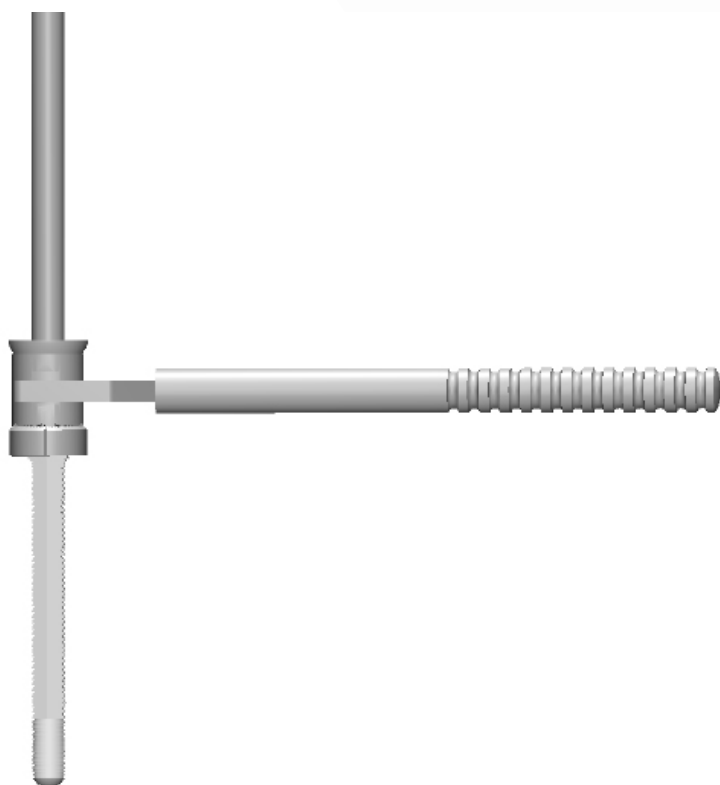
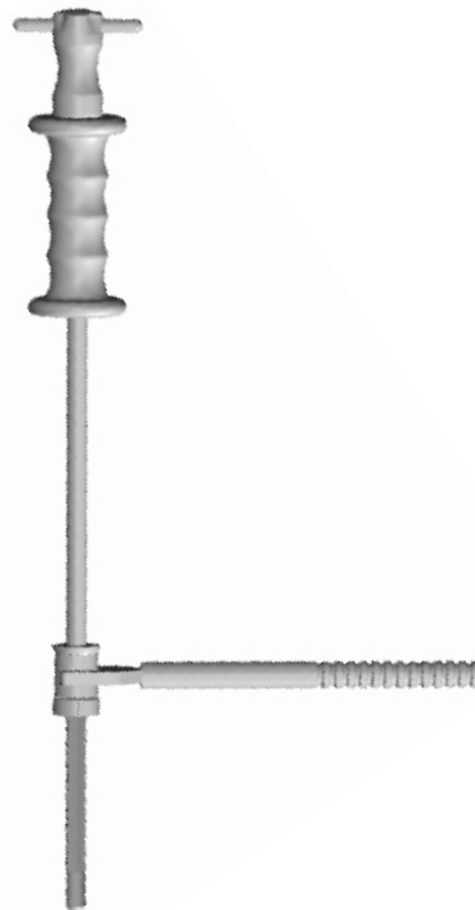
MUTARS® Proximal Tibia MK

Cementless preparation

Choose the tibial rasp of the preoperatively planned size.

Assemble the tibial rasp of the appropriated size (see table below), the sleeve and the slide hammer. Lock the rasp on the slide hammer by using the engineers' wrench.

Stem size	Rasp Size
12mm	12mm
13mm	13mm
14mm	14mm
15mm	15mm
16mm	16mm





Optional technique for the use of cemented stems

If you want to prepare for a cemented stem with the tibial rasp, please use the rasp which is 2mm larger than the preoperatively chosen cemented tibial stem.

That will provide a cement mantle of 1mm thickness. Use the 16mm rasp to prepare for the 15mm stem.

Stem size	Rasp size
11mm	13mm
13mm	15mm
15mm	16mm

Although the tibial stem is not curved it is recommended to mark the anterior aspect of the tibial bone to assure that the rotation of the final stem corresponds to the rotation of the rasp.

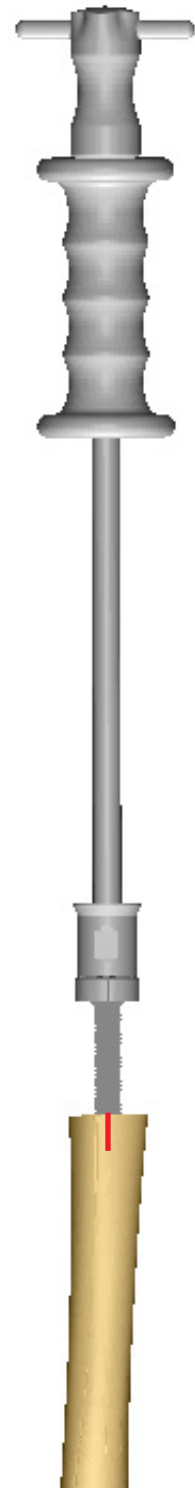
Rasp the medullary cavity with the chosen tibial rasp. Careful use of the slide hammer is recommended.

To prevent fractures of the cortical bone it is helpful to fix a bone forceps around the tibial bone while rasping.

Note

It is recommended to clean the rasp of bone chips during the rasping.

Remove the slap hammer and leave the tibial rasp in the bone for the trialing.



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Trial reduction

Attach the MUTARS® connecting part for the Proximal Tibia (length: 105 mm or 125 mm) to the tibial rasp. Mark the rotation of both components with methylene blue.



Femoral preparation

Open the femoral intramedullary canal by use of the 9mm initiator drill.

Ream with the rigid drills till the preoperatively determined stem diameter is reached. Place the drill sleeve of the corresponding drill diameter over the rigid drill. Please make sure that the drill sleeve is completely countersink in the bone. Make sure that the sleeve is countersink in the medullary canal while reaming. Thus the rigid drill is centered over its whole length in the medullary canal.

The drill diameter, as well as the sleeve diameter if applicable, is increased stepwise till the pre-operatively determined stem diameter and stem length is reached.

For optimal anchorage of the stem in the medullary canal, you should drill till cortical contact occurs at the drill tip.

Note: To ensure adequate drill depth, adhere to the “Table for femoral drill depth“ on the next page (page 14). Make sure that the correct stem length mark, located on the drill, matches the femoral distal resection plane.



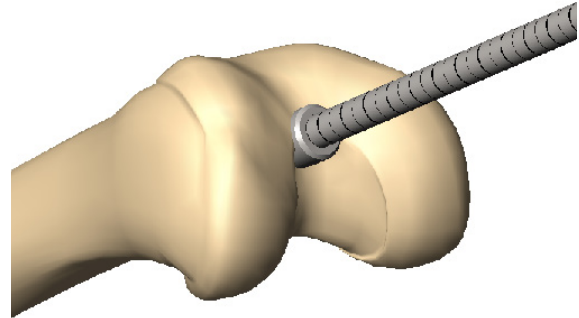


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Leave the lastly used rigid drill (the largest used drill diameter) together with the corresponding drill sleeve if applicable in the medullary canal.

This drill indicates the implant diameter to choose for a cementless respectively a cemented stem implantation.

Note: Ensure that the largest used drill diameter is of an uneven number. Thus a press-fit is reached with the cementless stems and space for a 1mm cement layer is given for the cemented stems.



drill diameter	MUTARS® GenuX® MK stem cementless	MUTARS® GenuX® MK stem cemented
11mm	12mm	/
13mm	14mm	11mm
15mm	16mm	13mm
17mm	18mm	15mm
19mm	20mm	17mm
21mm	22mm	19mm

Table for femoral drill depth

Stem length	femoral	
	cementless*	cemented*
125mm*	125	150
150mm	150	175
200mm*	200	225
250mm*	250	275

***Note:** After each resection the drill needs to be inserted deeper. Make sure that the correct mark reach the resection plane.

***Note:** This preparation true only for 125, 200 and 250mm stems which need to be ordered separately.

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Determination of femoral size

For size determination of the femoral component the femoral sizing template of the supposed size is applied to the femoral bone. The inner contours of the template correspond to the inner contours of the femoral implant component of the respective size.

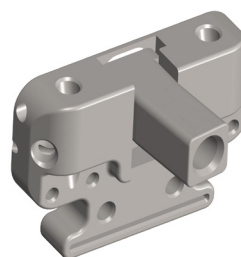
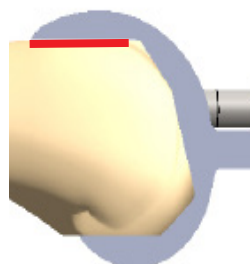
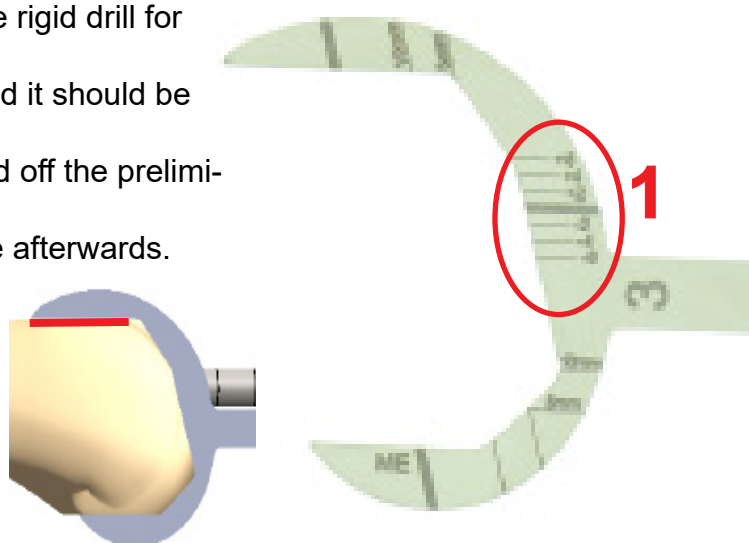
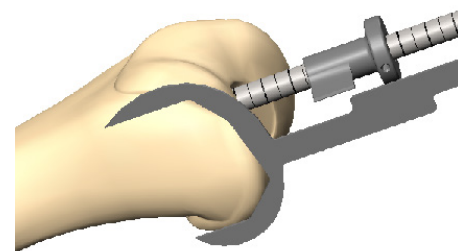
The anterior inner edge of the template should be parallel to the anterior femoral cortex.

The femoral sizing template allows to read a potentially needed offset **1**; slide the offset indicator over the rigid drill for that purpose.

The indicator blade should point to medial and it should be aligned in parallel with the epicondylar line.

The indicator blade points to the scale to read off the preliminary offset.

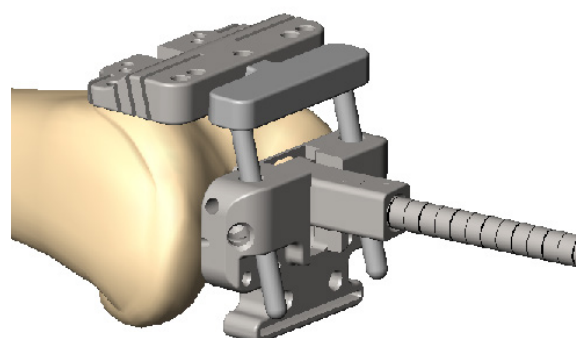
Remove the indicator and the sizing template afterwards.



Femoral alignment

Use the femoral alignment guide to align the distal femoral cutting block to 6°-valgus, as the femoral stem is orientated in 6°-valgus.

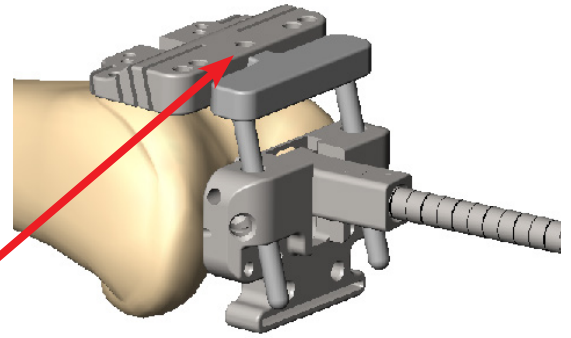
Attach the femoral alignment guide to the rigid drill.





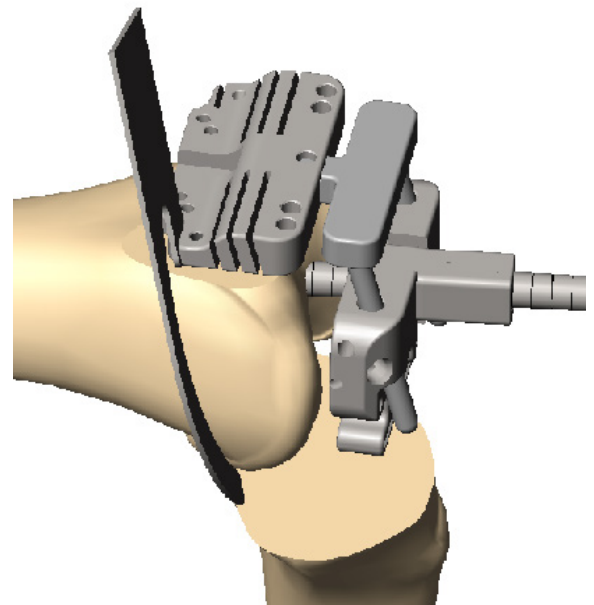
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Afterwards attach the distal femoral cutting block to the alignment guide. The coupling is correct, when the implantcast logo (ic-clover-leaf) of the alignment guide is visible through the central hole on the anterior side of the distal femoral cutting block.



Lower the cutting block till it contacts the anterior femoral bone.

In the proximal slot the epicondylar line can be checked with help of the resection check.

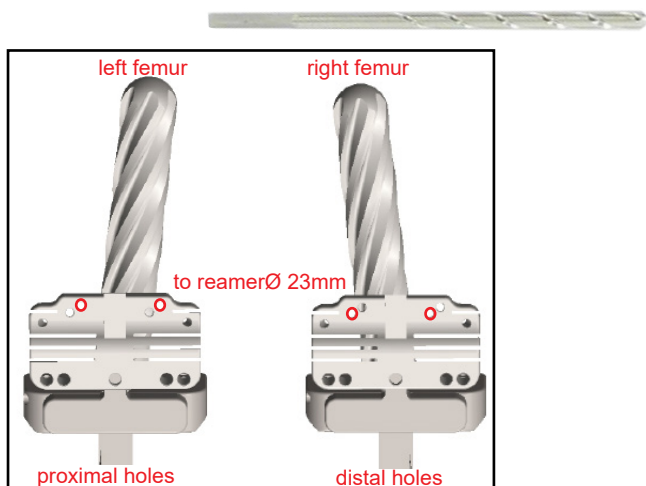


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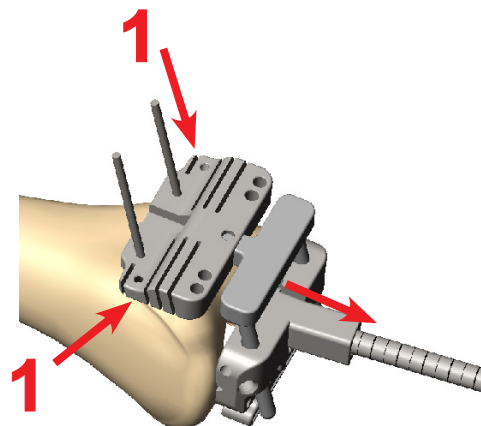
Distal femoral resection

Fix the distal cutting block with two pins to the anterior femur. To avoid interference between pin and rigid drill, use the marked holes for pin fixation up to rigid drill diameter of 23mm as follows.

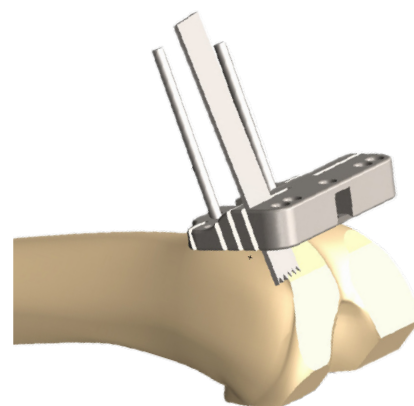
Note: Screw pins can be used alternatively.



holes to use for pin fixation up to drill \varnothing 23mm



In case of using rigid drills larger than 23mm in diameter, use the lateral oblique holes **1** for pin fixation. Use these holes also for increased stability by insertion of a third pin. Remove the rigid drill and the femoral alignment guide afterwards. Resect the distal femur through the distal slot of the cutting block.

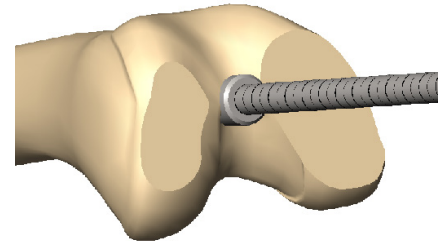


Determination of the femoral offset

Reinsert the lastly used rigid drill (together with the corresponding drill sleeve if applicable).

Note: Ensure an adequate drill depth. Consider „Table for femoral drilling depth“ page 14.

After each resection the drill needs to be inserted deeper. Make sure that the correct mark reach the resection plane.

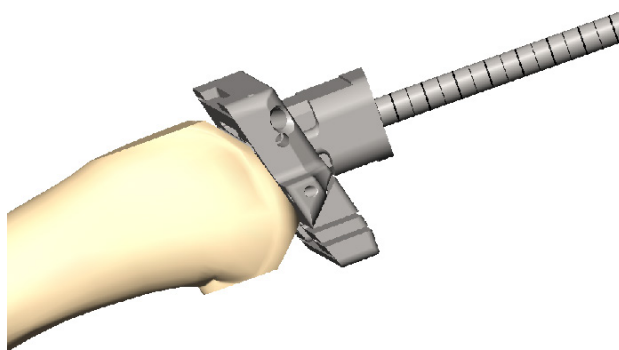
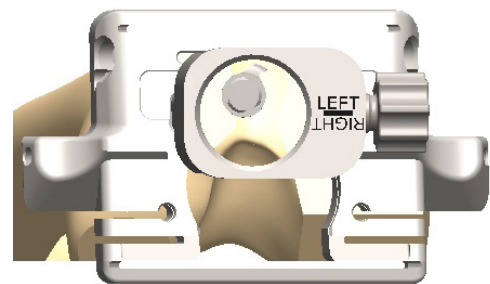


Connect the 4in1 femoral cutting block of the afore determined size and the long stem sleeve offset.

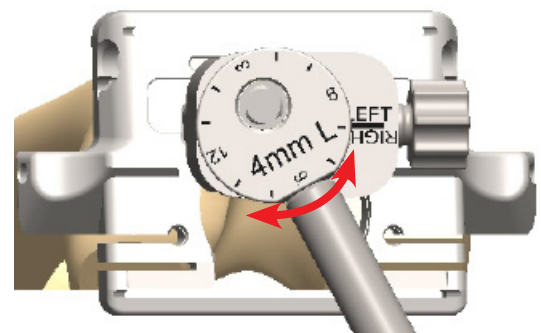
In doing so the etching for the affected side „left“ respectively „right“ of the long stem sleeve offset should be legible anteriorly in case of topview on the cutting block.

Attach the cutting block and the sleeve to the rigid drill till the cutting block rests flush on the distal femur.

For ease the positioning handles can be fixed to the 4in1 cutting block.

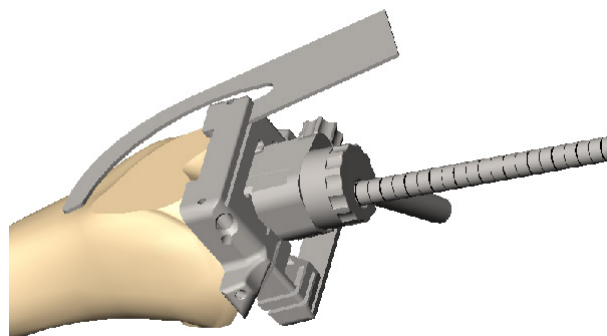


Insert the offset sleeve 0, 2, 4 or 6mm of the affected side into the long stem sleeve offset. A „fast fix“ handle can be applied to the offset sleeve for manipulation. The position of the cutting block is adjusted by rotating the offset sleeve.



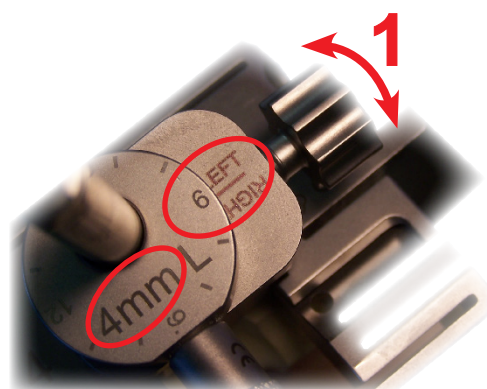
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Check the anterior and posterior resection plane with the resection check.



Adjust your offset by turning the offset sleeve. If necessary, change the offset sleeve in 0, 2, 4 or 6mm.

Is the optimal position of the 4in1 cutting block defined, fix the set-up with the lateral screw of the long stem offset sleeve **1**. Keep in mind the position of the offset and the offset sleeve (in the shown case 4mm, 6 o'clock) for assembling the trial as well as the implant components.



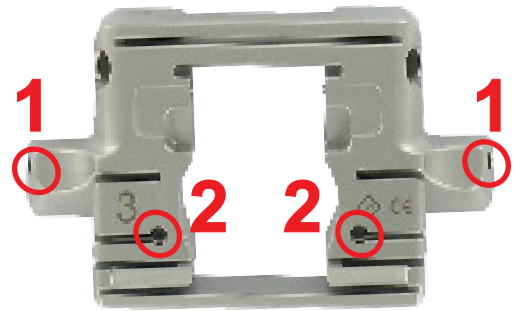


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There are different holes for fixation of the 4in1 cutting block with pins.

Depending on the used rigid drill and the offset, the 4in1 cutting block needs to be removed temporary via the pins to remove the rigid drill and the offset sleeve. The table below shows the maximal drill diameter referring to the offsetadapter, for bigger drill diameter, please remove the 4in1-cuttingblock.

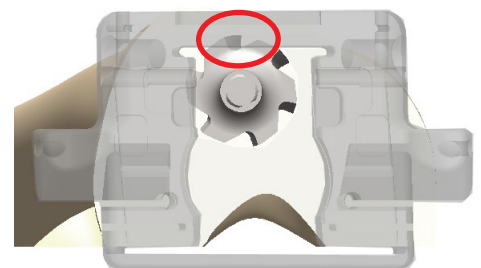
Note: If screw pins are used, it is necessary to insert the screw pins axially to the pin holes.



If the 4in1 cutting block can be left in place on the bone according to the table below, use the lateral oblique holes for fixation with pins **1**.

If the 4in1 cutting block needs to be removed via the pins, use the frontal holes **2** for pin fixation.

Offset 0 mm	Offset 2 mm	Offset 4 mm	Offset 6 mm	max. rigid drill Ø [mm]
✓	✓	✓	✓	12
✓	✓	✓	✗	16
✓	✓	✗	✗	20
✓	✗	✗	✗	24



Also use the holes **2** in case of changing the femoral size. The femoral cutting block is removed than via the two pins and the cutting block of another size is applied afterwards.

Note: In case of changing the femoral size the position of the anterior cut remains the same.

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Femoral preparation

Resect the anterior and posterior femur through the corresponding slots of the cutting block.

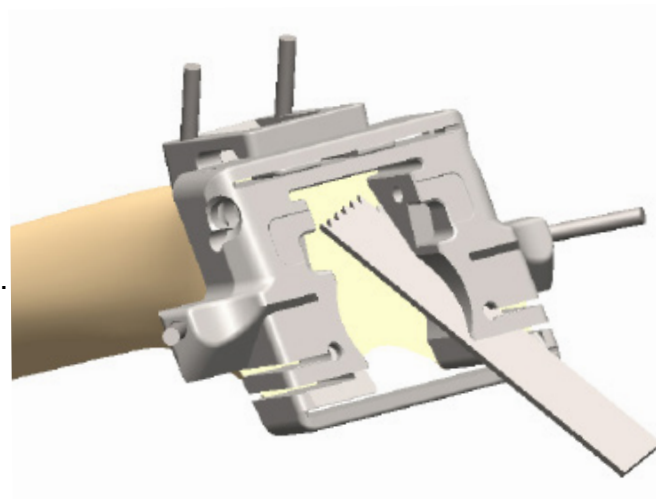
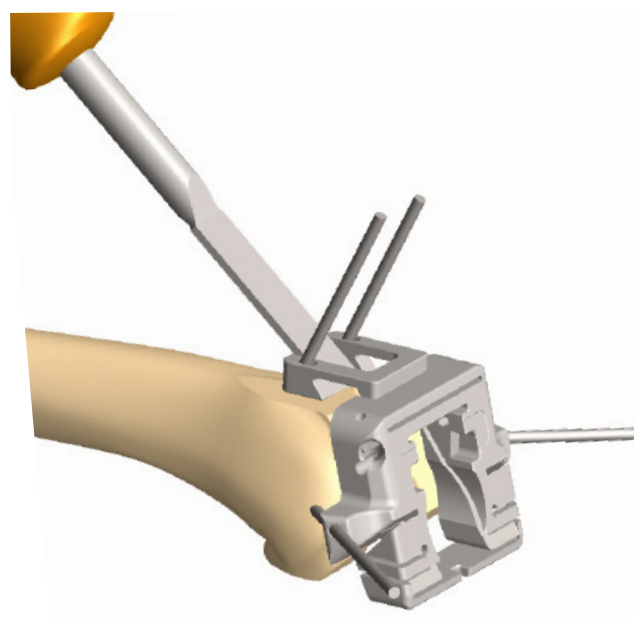
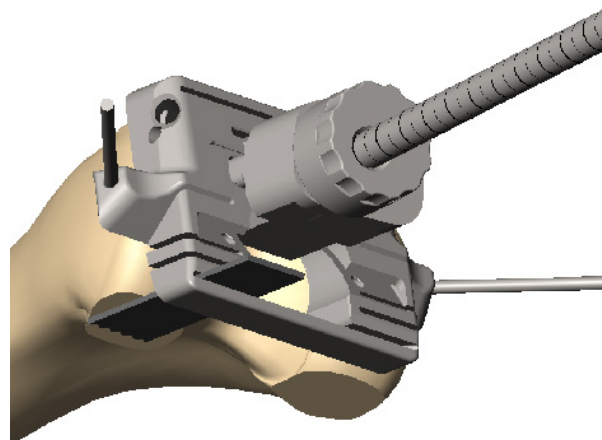
Afterwards remove the rigid drill and the long stem sleeve offset.

Note: Pay attention that the 4in1 cutting block needs to be removed via the frontal pins where required to remove the rigid drill (table previous page). After removal of the rigid drill the 4in1 cutting block can be put onto the distal femur again via the pins. For increased stability lateral pins can be inserted.

Apply the MK attachment notch preparation of the corresponding size (size 2-4 and 5-6) to the cutting block and fix it with two pins to the anterior femur. Use the osteotome to prepare the anterior notch.

Note: If screw pins are used, it is necessary to insert the screw pins axially to the pin holes.

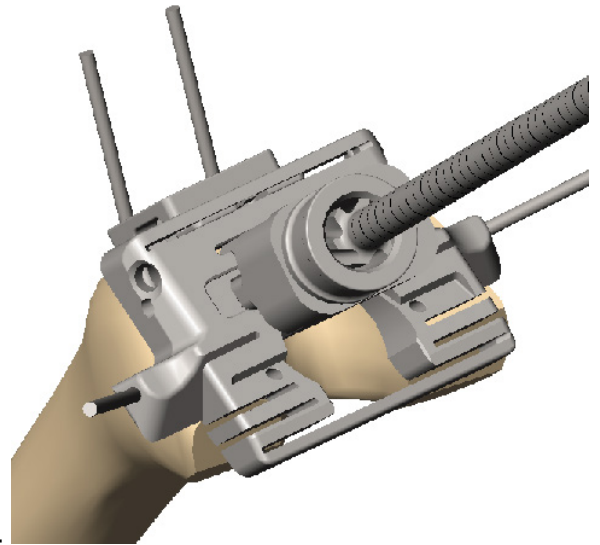
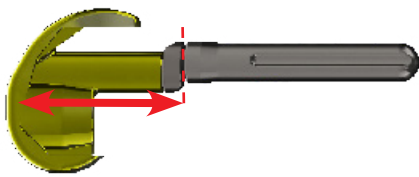
Perform the anterior and posterior chamfer cuts through the corresponding slots of the 4in1 cutting block. Avoid interference of the saw blade with the attachment notch preparation. Where required the attachment notch preparation needs to be removed.





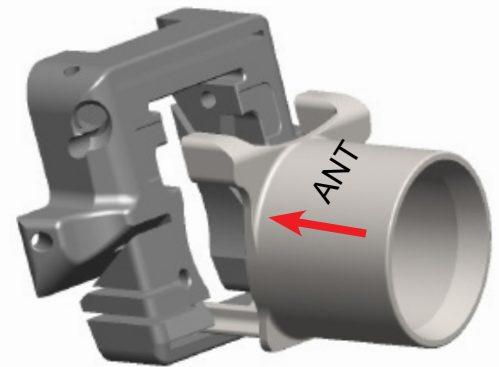
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Insert the GenuX® MK femoral drill guide 16mm in the long stem sleeve offset and drill with the rigid drill Ø16mm till the end of the cutting flutes is aligned with the femoral drill guide. This step prepares the transition stem-offset adapter.



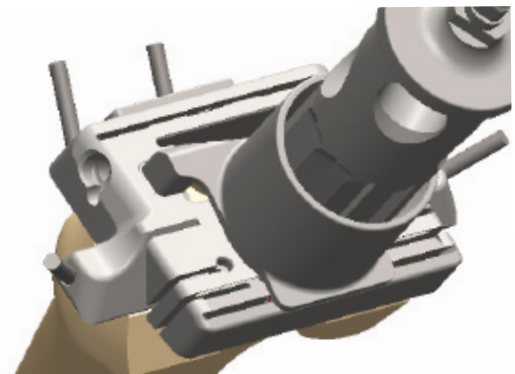
Femoral box preparation

Remove the offset long stem sleeve and attach the GenuX® MK femoral box reamer guide as shown to the bottom slot of the cutting block. The etching „ANT“ is aligned to the anterior femur.



Ream with the GenuX® MK femoral box reamer till the stop through the reamer guide. In case of using a power-tool ensure that the reamer is rotating prior to contact to the bone.

Remove potential bone residues in the posterior part of the box preparation with a Luer forceps.



Afterwards remove the 4in1 cutting block and the attachment notch preparation.

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Small Stem Preparation

The following stems feature a conical stem portion:

- stem diameter 11mm cemented all lengths
- stem diameter 12mm cementless all lengths
- stem diameter 14mm cementless all lengths



For preparation of this conical portion, connect the GenuX® MK stem reamer conical (diameter 11mm respectively 13mm) to the ic T-handle as follows:

stem Ø12mm cementless:

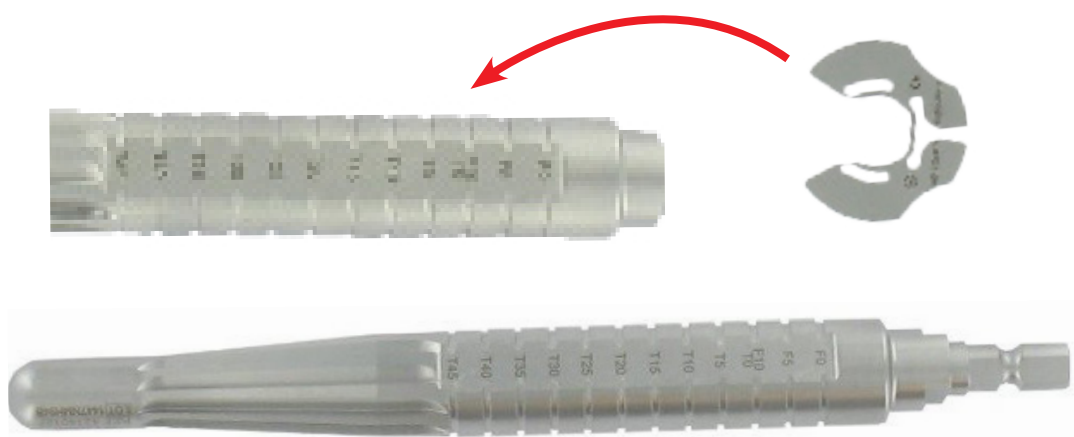
stem reamer conical diameter 11mm

stem Ø11mm cemented and Ø14mm cementless:

stem reamer conical diameter 13mm

To ensure the correct reaming depth, attach the stop to the corresponding marking of the reamer:

F0: femoral no use of spacer



Drive the stem reamer carefully into the prepared intramedullary canal and prepare manually the conical stem portion till it stop the distal resection part of the femur.

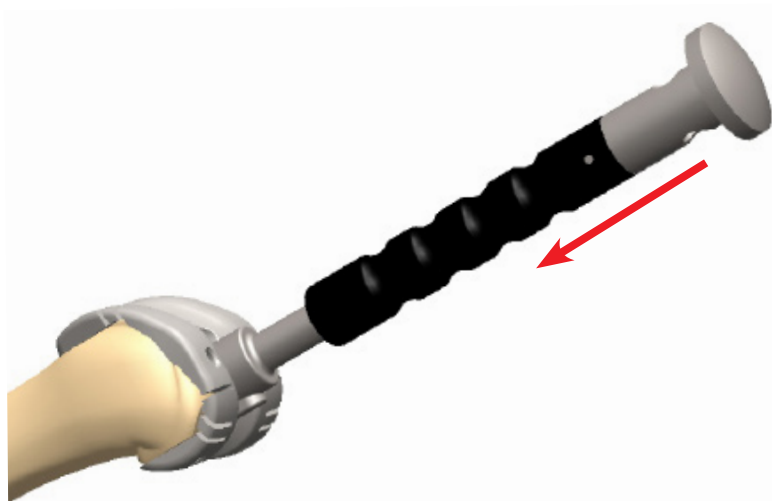
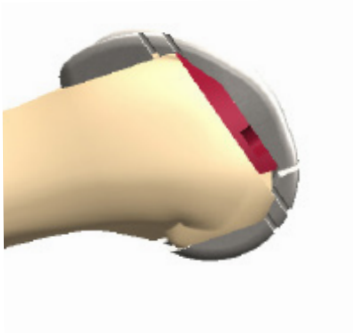
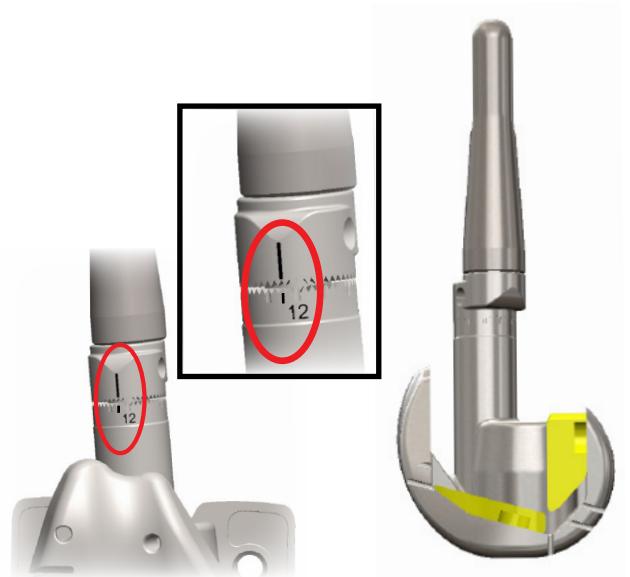


Thereby the femoral preparation is finished.

Trial reduction

Femorally the trial offset adapter of the afore determined offset is also connected to the femoral trial component. Ensure the correct positioning of the adapter and fix it by means of the hex screwdriver 3.5mm (in the shown case position 1). Afterwards the respective trial stem is screwed to the trial offset adapter.

Insert the femoral trial component by means of the femoral impactor.



MUTARS® Proximal Tibia MK

Use the instrument for the locking mechanism to insert the MUTARS® trial coupling 12,5mm into the femoral trial component.

The trial coupling and the instrument for the locking mechanism are assembled as shown **1**. Turn the coupling in a way that it falls into the sleeve of the instrument **2**.

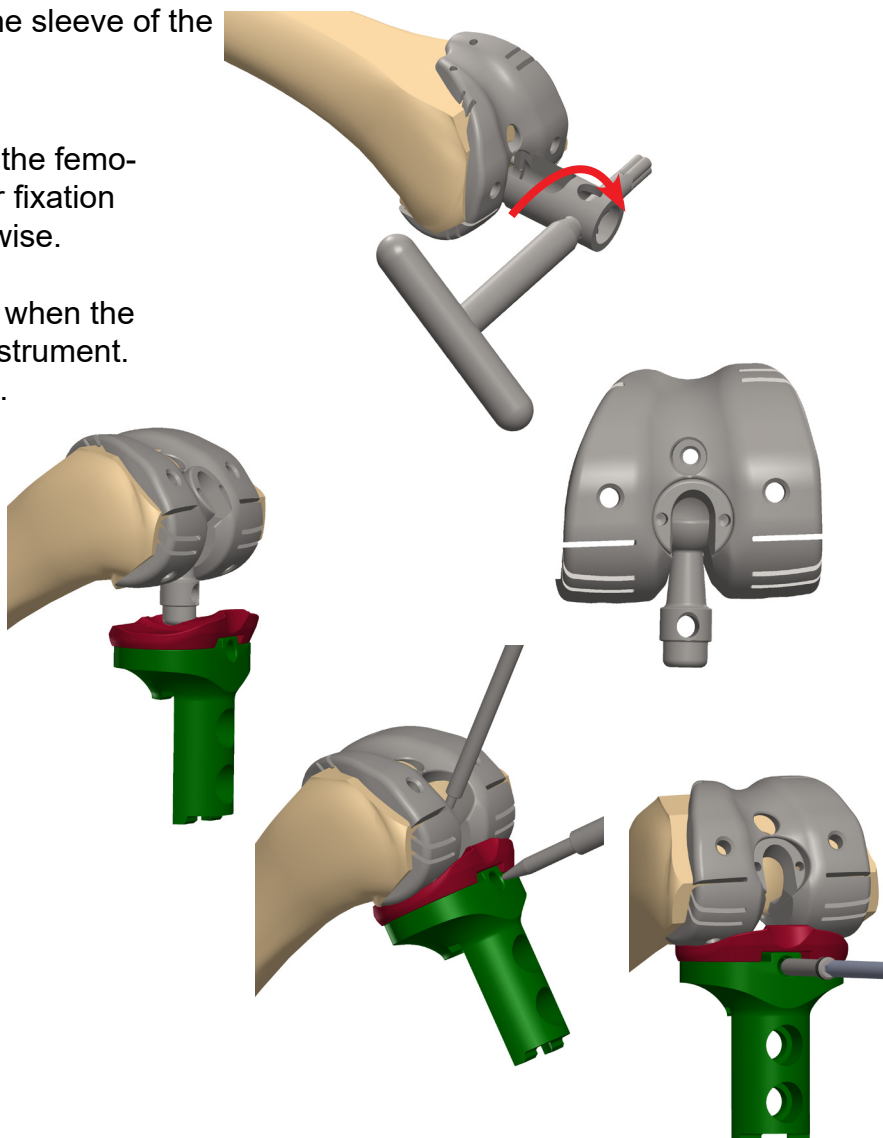


Afterwards insert the coupling into the femoral box with the knee in flexion. For fixation turn the trial coupling by 90° clockwise.

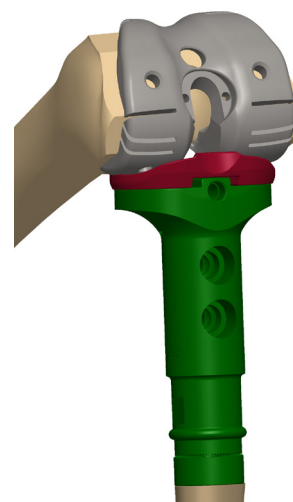
The coupling is positioned correct, when the peg falls out of the sleeve of the instrument. Remove the instrument afterwards.

Place the peg of the coupling in the opening of the proximal tibia trial component in a way that the hole is directed towards anterior. Use the setting instrument for the locking mechanism or the setting instrument for coupling angled as aid in positioning.

Insert the positioner from ventral into the hole of the tibial trial component to ensure the correct positioning of the peg.



Assemble the trial proximal tibia to the trial connecting Part for proximal tibia by using the socket wrenche and check the joint stability in flexion and extension.



Afterwards remove all trial components.



Implantation of the components

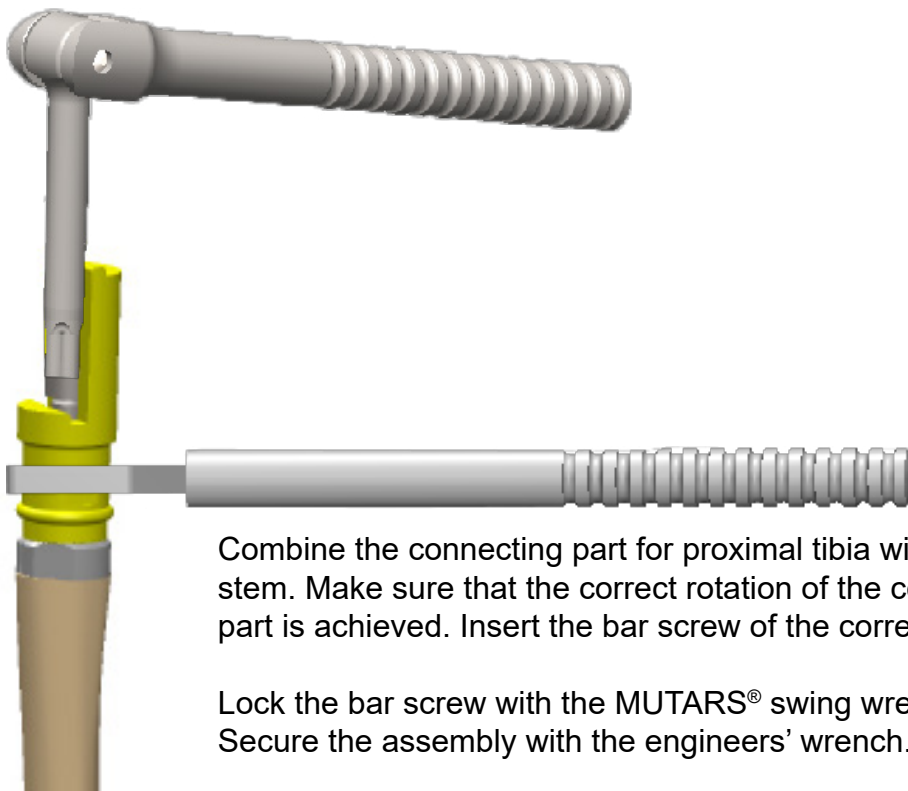
Impact the MUTARS® tibial stem.

Insert the stem of the same size as the rasp if a cementless stem is used.

To prevent fractures of the cortical bone it is helpful to fix a bone forceps around the tibial bone during impaction.

If a cemented implantation is planned, insert the cement and use the cemented stem which is 2 mm smaller than the previously used reamer or rasp.

Remove all instruments during the cement hardening to prevent bending moments.



Combine the connecting part for proximal tibia with the tibial stem. Make sure that the correct rotation of the connecting part is achieved. Insert the bar screw of the correct length.

Lock the bar screw with the MUTARS® swing wrench.
Secure the assembly with the engineers' wrench.

Lock the safety screw in the same way.

Slide over the attachment tube. The trevira tube should be turned up inward on the end. If necessary cut the tube to the correct length



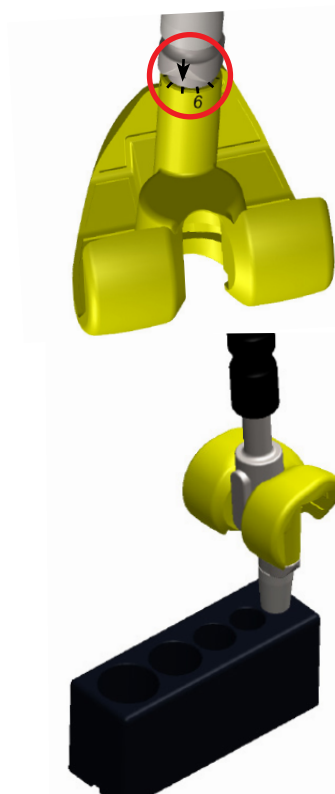
MUTARS® Proximal Tibia MK

The assembling of the implant components is performed analogical to the description for the trial components.

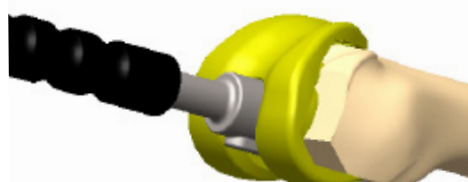
Place the offset adapter of the determined offset into the taper of the femoral component.

Ensure the correct positioning of the offset adapter.

Afterwards attach the stem of the determined size and length to the offset adapter. Fix the conical connection by means of the impactor for the femoral component in the stem assembly block.

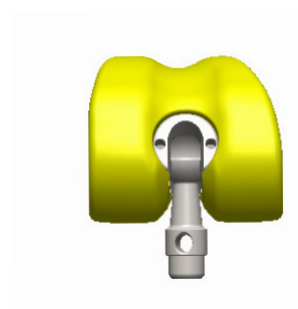
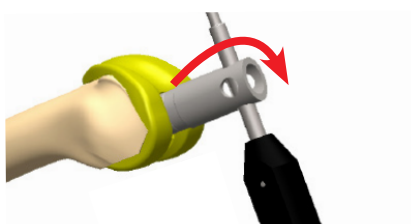
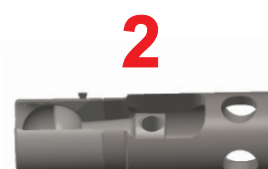
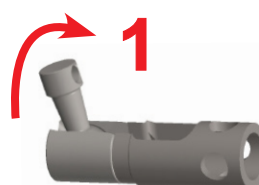


Impact the femoral component by means of the femoral impactor.



Arrow points in the direction of the component !!!!

Use the instrument for the locking mechanism to insert the MUTARS® coupling 12,5mm into the femoral component. The coupling and the instrument are assembled as shown **1**. Turn the coupling and the instrument in a way that the coupling falls into the sleeve of the instrument **2**.





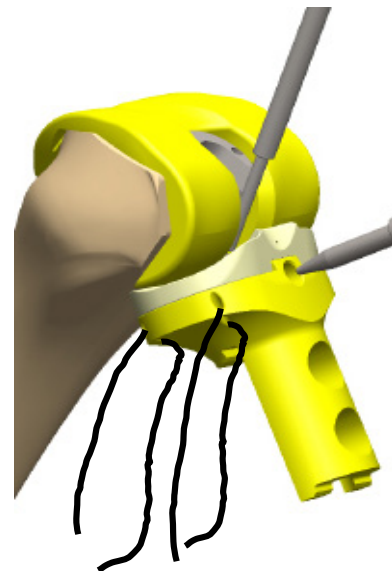
MUTARS® Proximal Tibia MK

Fill the 4 suture holes of the Proximal Tibia component with non resorbable sutures (Ethibond® is recommended) to allow the fixation of the attachment tube.

Insert the PE-insert size 2 (MB or FB) in the Proximal Tibia MK.

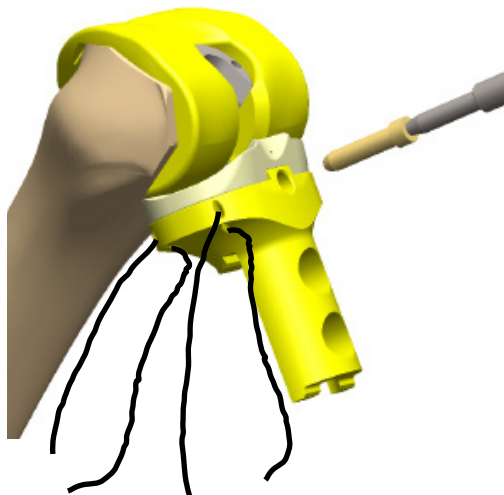


Place the peg of the coupling in the opening of the tibial component in a way that the hole is directed towards anterior. Use the setting instrument for the locking mechanism or the setting instrument for coupling angled as aid in positioning. Insert the positioner from ventral into the hole of the tibial component to ensure the correct positioning of the peg.



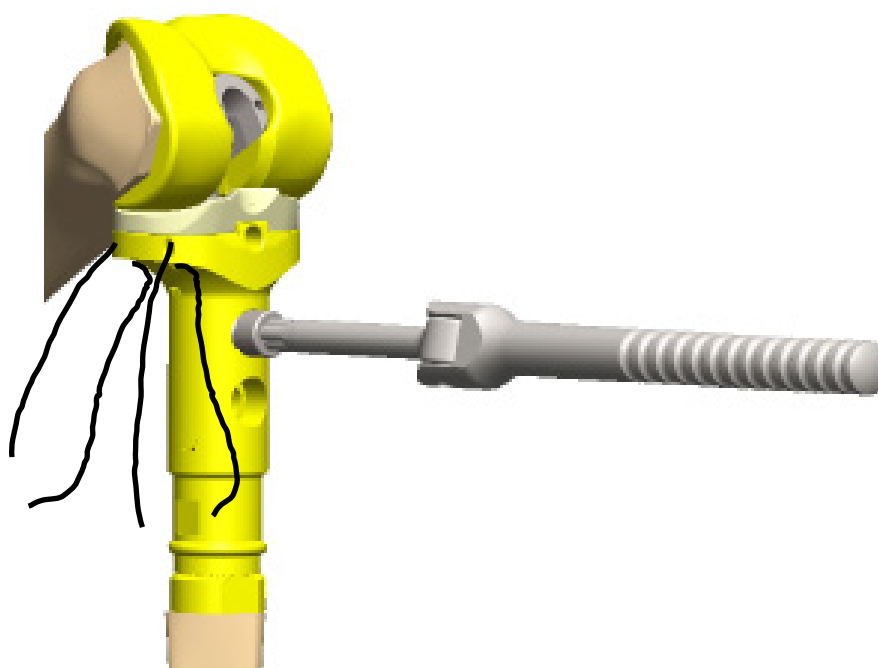
MUTARS® Proximal Tibia MK

Lock the coupling from ventral with the GenuX® MK locking screw for the coupling and the hex screwdriver 3.5mm.



Use the hex screwdriver 3.5mm to insert the counterscrew in the same way. In doing so the implantation of the components is finished. Make final joint stability tests in flexion and extension prior to closure of the lesion.

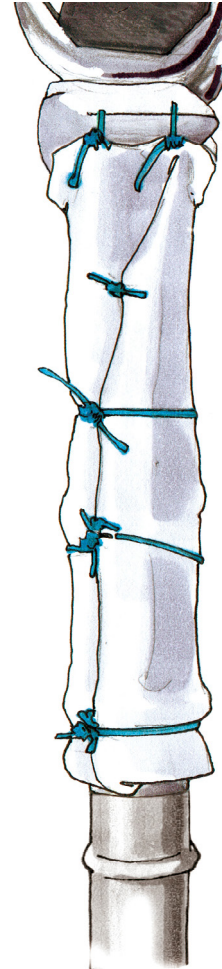
Combine the Proximal Tibia to the connecting part and insert the two locking screws into the anterior holes and lock them with the swing wrench.



Fixation on the attachment tube

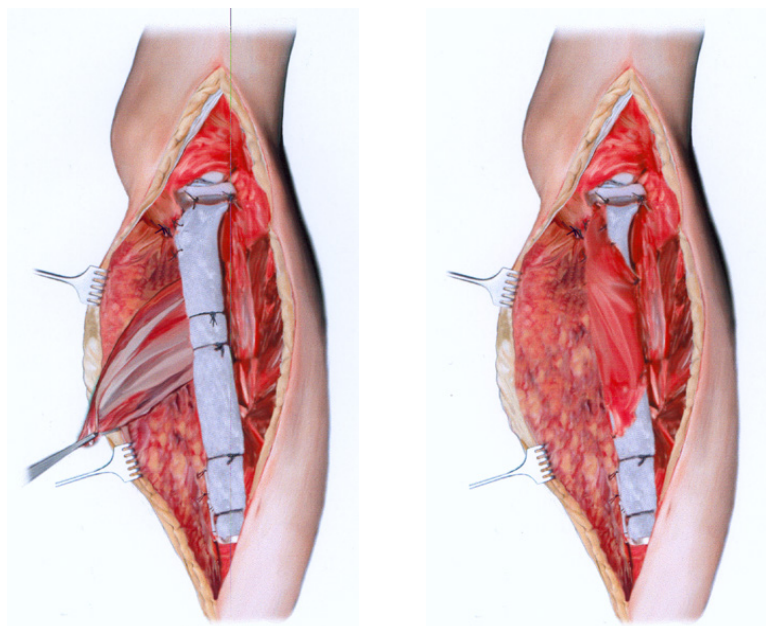
Please fix the tube to the upper part of the Proximal Tibia by using the previously inserted 4 sutures.

Fold the tube to achieve a very close covering of the components. Insert additional sutures around the attachment pads of the implant components.



To reconstruct the extensor mechanism it is mandatory to perform a gastrocnemius muscle transfer. Release the muscle at its distal insertion. Suture the muscle to the anterior portion of the attachment tube.

Reinsert the extensor structures to the gastrocnemius muscle and the tube to restore a reasonable function of the joint.



MUTARS® Proximal Tibia MK

Explantation of the components

In case of an explantation loosen the tibial counterscrew and the locking screw from ventral first by use of the hex screwdriver 3.5mm.

Use the instrument for the locking mechanism to remove the coupling from the femoral component.



Afterwards the femoral component can be removed by means of the extractor for the femoral component and the slap hammer.

Tibially fix the tibial extractor to the slap hammer and place it on top of the tibial component into the locking hole of the tibial component.

Lock the extractor with the locking bolt from ventral. Afterwards the tibial component can be removed with the slap hammer.



If the connection between femoral and tibial component becomes loose during explantation, the slap hammer adapter M5 can be screwed into the offset adapter, to remove it by means of the slap hammer.

If the connection between offset adapter and stem becomes loose during explantation, the adapter for the slap hammer can be screwed into the stem to remove it with the slap hammer.



Remove the two anterior screws from the proximal tibia by using the socket wrench and remove the proximal tibia.

Further loose the M10 screw by using the socket wrench and while counter with the engineers' wrench.

The connecting part for proximal tibia can be easily removed from the stem now.

Implants

***S:** For anti-infective treatment, silver coated implants are available.

***N:** For anti-allergic treatment, TiN coated implants are available.

***SN:** Implants with silver- and TiN-coating!



MUTARS® GenuX® MK femur cemented *N

mat.: *implavit®*, *CoCrMo* acc. to *ISO 5832-4*

size	left	right
2	5720-0505	5720-0500
3	5720-0515	5720-0510
4	5720-0525	5720-0520
5	5720-0535	5720-0530
6*	5720-0545	5720-0540



MUTARS® GenuX® MK femur cementless *N

mat.: *implavit®*, *CoCrMo* acc. to *ISO 5832-4*

size	left	right
2	5720-1405	5720-1400
3	5720-1415	5720-1410
4	5720-1425	5720-1420
5	5720-1435	5720-1430
6*	5720-1445	5720-1440



MK femoral spacer posterior (incl. MK screw) *S

mat.: *implatan®*, *TiAl₆V₄* acc. to *ISO 5832-3*

size	5mm	10mm
2**	5722-2005	5722-2010
3**	5722-3005	5722-3010
4**	5722-4005	5722-4010
5**	5722-5005	5722-5010
6**	5722-6005	5722-6010



MK femoral spacer distal (incl. MK screw) *S

mat.: *implatan®*, *TiAl₆V₄* acc. to *ISO 5832-3*

size	5mm		10mm	
	distal ll/rm	distal rl/lm	distal ll/rm	distal rl/lm
2**	5722-5205	5722-5200	5722-0205	5722-0200
3**	5722-5305	5722-5300	5722-0305	5722-0300
4**	5722-5405	5722-5400	5722-0405	5722-0400
5**	5722-5505	5722-5500	5722-0505	5722-0500
6**	5722-5605	5722-5600	5722-0605	5722-0600

* size 6 not included in loan set and has to be ordered seperately.

** femoral spacers are not included in loan set and have to be ordered seperately.

MUTARS® Proximal Tibia MK



MUTARS® GenuX® MK stem cementless HA

mat.: *implatan*®, $TiAl_6V_4$ acc. to ISO 5832-3 with HA-coating acc. to ISO 13779-2

diameter	L: 125mm**	L: 150mm	L: 200mm**	L: 250mm**
12mm	5767-1212	5767-1215	5767-1220*	5767-1225*
14mm	5767-1412	5767-1415	5767-1420*	5767-1425*
16mm	5767-1612	5767-1615	5767-1620*	5767-1625*
18mm	5767-1812	5767-1815	5767-1820*	5767-1825*
20mm	5767-2012	5767-2015	5767-2020*	5767-2025*
22mm	5767-2212	5767-2215	5767-2220*	5767-2225*
24mm	5767-2412			
26mm	5767-2612			
28mm	5767-2812			

* 2 distal holes (Ø5mm) form possible screw fixation

** stems of length 125, 200 and 250mm are not included in lone set and have to be ordered separately.



MUTARS® GenuX® MK stem cemented *N

mat.: *implavit*®, CoCrMo acc. to ISO 5832-4

diameter	L: 125mm**	L: 150mm	L: 200mm**	L: 250mm**
11mm	5766-1112	5766-1115	5766-1120*	5766-1125*
13mm	5766-1312	5766-1315	5766-1320*	5766-1325*
15mm	5766-1512	5766-1515	5766-1520*	5766-1525*
17mm	5766-1712	5766-1715	5766-1720*	5766-1725*
19mm	5766-1912	5766-1915	5766-1920*	5766-1925*

* 2 distal holes (Ø5mm) for possible screw fixation

** stems of length 125, 200 and 250mm are not included in lone set and have to be ordered separately.



MUTARS® GenuX® MK offset adapter

mat.: *implatan*®, $TiAl_6V_4$ acc. to ISO 5832-3

0mm	+2mm	+4mm	+6mm
5751-0000	5751-0002	5751-0004	5751-0006



MK screw for spacer

mat.: *implatan*®, $TiAl_6V_4$ acc. to ISO 5832-3

5720-1216



MUTARS® Proximal Tibia MK



MUTARS® coupling 12,5mm *N

mat.: CoCrMo acc. to ISO 5832-12; PE-safety peg: UHMW-PE acc. to ISO 5834-2
5720-1210



MUTARS® GenuX® MK MB PE-insert

mat.: UHMW-PE acc. to ISO 5834-2
size
2/12,5mm 5721-0102



MUTARS® GenuX® MK FB PE-insert

mat.: UHMW-PE acc. to ISO 5834-2
size
2/12,5mm 5721-0202



MUTARS® MK proximal tibia *S

incl. screw for coupling, counter screw and screws for connecting part
mat.: implatan®, $TiAl_6V_4$ acc. to ISO 5832-3
5750-0005



MUTARS® connecting part for modular proximal Tibia *S

mat.: implatan®, $TiAl_6V_4$ acc. to ISO 5832-3
5750-0105 105 mm
5750-0125 125 mm

MUTARS® Proximal Tibia MK



MUTARS® extension piece *S

mat.: *implatan®*; $TiAl_6V_4$ acc. to ISO 5832-3

5772-2504	40 mm
5772-2506	60 mm
5772-2508	80 mm
5772-2510	100 mm



MUTARS® connecting part *S

mat.: *implatan®*; $TiAl_6V_4$ acc. to ISO 5832-3

5730-0100	100 mm
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MUTARS® screw

mat.: *implatan®*; $TiAl_6V_4$ acc. to ISO 5832-3

5792-1002	M10x 25 mm
5792-1004	M10x 45 mm
5792-1006	M10x 65 mm
5792-1008	M10x 85 mm
5792-1010	M10x105 mm
5792-1012	M10x125 mm
5792-1014	M10x145 mm
5792-1016	M10x165 mm
5792-1018	M10x185 mm
5792-1020	M10x205 mm
5792-1022	M10x225 mm



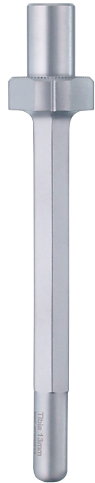
MUTARS® Proximal Tibia MK



MUTARS® tibial stem cemented with HA collar with TiN-coating

mat.: *implavit®*; CoCrMo acc. to ISO 5832-4 with TiN- and HA-coating acc. to ISO 13779-2

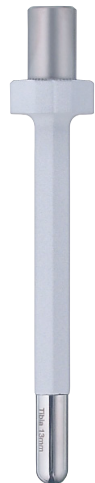
5759-1211	11/120mm
5759-1213	13/120mm
5759-1215	15/120mm



MUTARS® tibial stem cemented *N

mat.: *implavit®*; CoCrMo acc. to ISO 5832-4

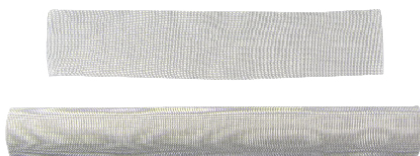
5750-0511	11/120mm
5750-0513	13/120mm
5750-0515	15/120mm



MUTARS® tibial stem cementless HA

mat.: *implatan®*; $TiAl_6V_4$ acc. to ISO 5832-3 with HA-coating acc. to ISO 13779-2

5750-1512	12/120mm
5750-1513	13/120mm
5750-1514	14/120mm
5750-1515	15/120mm
5750-1516	16/120mm



MUTARS® attachment tube

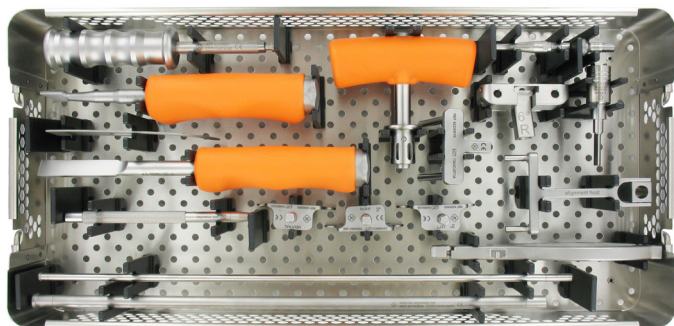
mat.: *polyethylen terephthalate*

5900-0300	300/35mm
5900-0310	300/55 mm

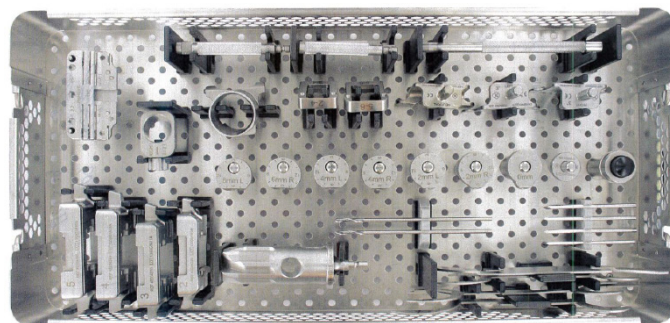


MUTARS® Proximal Tibia MK

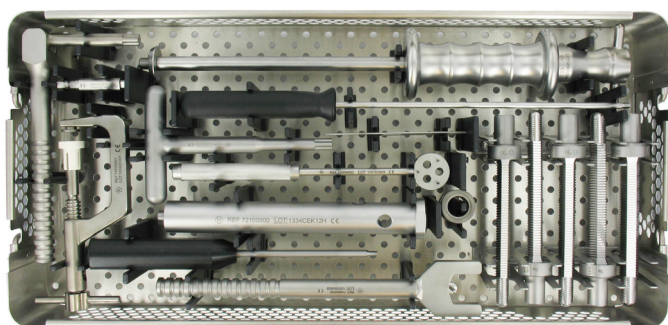
Instruments



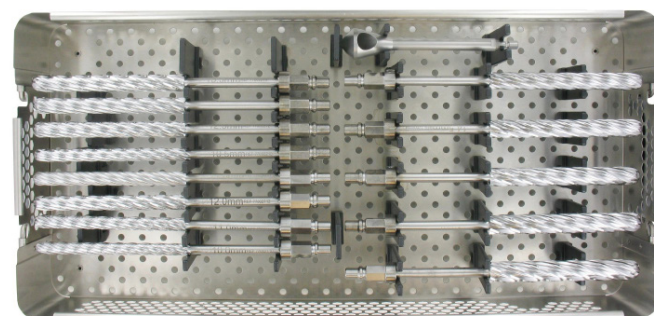
7999-5800 GenuX® MK basic container



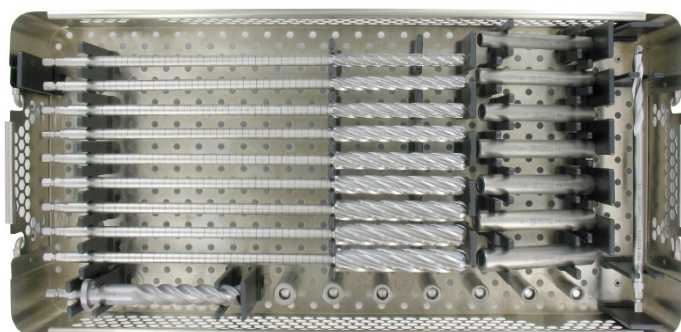
7999-5833 MUTARS® proximal tibia MK femoral container



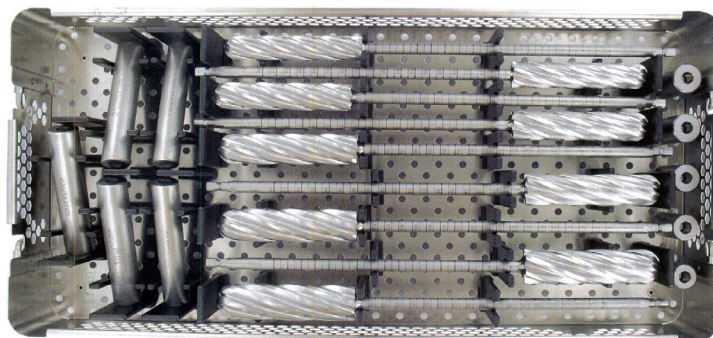
7999-5834 MUTARS® proximal tibia MK basic container



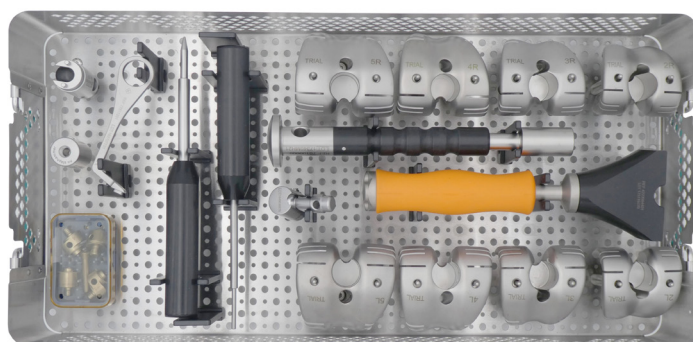
7999-5835 MUTARS® proximal tibia MK drill container



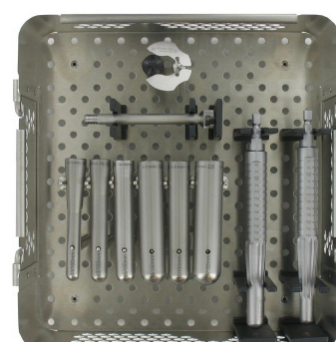
7999-5774 rigid drill container 1



7999-5775 rigid drill container 2



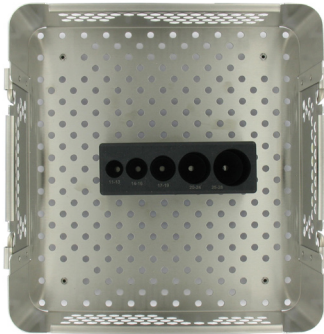
7999-5803 MK femoral trial container



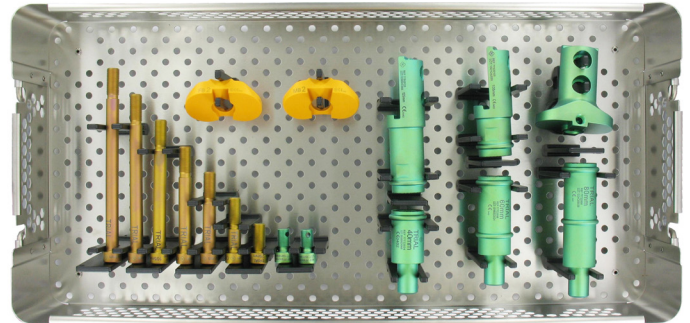
7999-5837 MUTARS® proximal tibia MK trial stem container



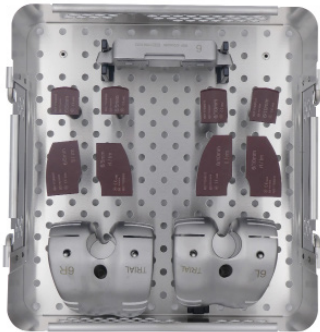
MUTARS® Proximal Tibia MK



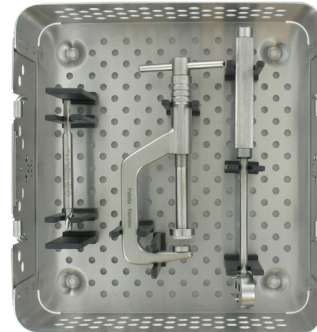
7999-5770 stem assembly container



7999-5836 MUTARS® proximal tibia MK trial container



7999-5818 MK femur trial container size 6



7999-5745 MUTARS® patella container

MUTARS® Proximal Tibia MK

Instruments

GenuX® MK basic container 7999-5800

resection check long
4220-0318



femoral alignment guide 6°
4220-0880



distal cutting-block adapter
4220-0819



external rotation guide
4220-0820 neutral
4220-0824 3° right
4220-0825 3° left



external alignment host
4223-0004



pin inserter 3,2 mm
4223-0006



ic T-handle Zimmer-Jakobs
4223-0023



slap hammer short
4223-0031



adapter M8 for slap hammer
4223-0032



external alignment rod
4223-0035



femoral/tibial extractor
4223-0036



osteotome size 2-6
4223-0060



ic adapter
4223-0022



pin extractor
7512-0800



ic Pin-Adapter
4220-0421



MUTARS® proximal tibia MK femoral con- tainer 7999-5833

GenuX® MK femoral box reamer
4214-0126



GenuX® MK femoral box reamer guide
4214-0122



femoral sizing template

4220-4032 2-2,5
4220-4033 3-4
4220-4035 5-6



MK 4in1 femoral cutting block

4220-4220 2
4220-4230 3
4220-4240 4
4220-4250 5



fixation pin 3,2mm x 77mm (4 pcs)
4223-0029



long stem sleeve offset
4220-0522



distal femoral cutting block
4220-0520



drill 126 x 3,2 mm
4221-0019



GenuX® MK femoral drill guide Ø16mm
4214-0121



pin inserter 3,2 mm
4223-0006



femoral resection guide 1,5mm
4220-0515



MK 4in1 attachment notch preparation

4220-0624 2-4
4220-0565 5-6



modular handle "fast fix"
4223-0017



offset sleeve

4220-0530 0mm
4220-0532 left 2mm
4220-0534 left 4mm
4220-0536 left 6mm
4220-1032 right 2mm
4220-1034 right 4mm
4220-1036 right 6mm



offset indicator
4220-0533





MUTARS® Proximal Tibia MK

external rotation guide
 4220-0824 3° right
 4220-0825 3° left



rotation guide revision neutral
 4220-0500

MUTARS® proximal tibia MK drill container 7999-5835

MUTARS® rigid reamer

7700-2110	10,0 mm
7700-2210	10,5 mm
7700-2111	11,0 mm
7700-2211	11,5 mm
7700-2112	12,0 mm
7700-2212	12,5 mm
7700-2113	13,0 mm
7700-2213	13,5 mm
7700-2114	14,0 mm
7700-2214	14,5 mm
7700-2115	15,0 mm
7700-2116	16,0 mm
7700-2117	17,0 mm



MUTARS® medullary cavity reamer
 4220-0000



MUTARS® proximal tibia MK basic container 7999-5834

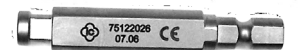
MUTARS® patella drill guide
 7350-0000



MUTARS® patella - clamp
 7352-0001



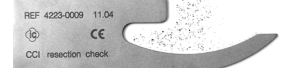
extractor universal
 7512-2026



hexagon screw driver short 3,5 mm
 0280-1007



resection check
 4223-0009



MUTARS® impact and extract sleeve
 7230-0000



MUTARS® socket wrench
 7420-0000



MUTARS® swing wrench
 7411-0000



MUTARS® engineers' wrench SW 24
 7490-0000



MUTARS® slide hammer
 7220-0001



MUTARS® universal impactor
 7210-0000



handle for intramedullary plug
 7512-4001



MUTARS® rasp for tibial stem

7750-0312	12 mm
7750-0313	13 mm
7750-0314	14 mm
7750-0315	15 mm
7750-0316	16 mm



MUTARS® Proximal Tibia MK

Rigid drill container 1 7999-5774

Drill sleeve

4211-1512 12/150mm
 4211-1513 13/150mm
 4211-1514 14/150mm
 4211-1515 15/150mm
 4211-1516 16/150mm
 4211-1517 17/150mm
 4211-1518 18/150mm

4211-2012 12/200mm
 4211-2013 13/200mm
 4211-2014 14/200mm
 4211-2015 15/200mm
 4211-2016 16/200mm
 4211-2017 17/200mm
 4211-2018 18/200mm



Rigid drill

4220-3110 Ø10/330mm
 4220-3111 Ø11/330mm
 4220-3112 Ø12/330mm
 4220-3113 Ø13/330mm
 4220-3114 Ø14/330mm
 4220-3115 Ø15/330mm
 4220-3116 Ø16/330mm
 4220-3117 Ø17/330mm
 4220-3118 Ø18/330mm



initiator drill 9mm
 4220-0014



drill for stem base
 7330-1010



Rigid drill container 2 7999-5775

Drill sleeve

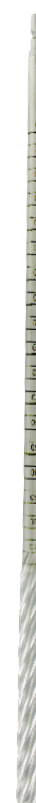
4211-1519 19/150mm
 4211-1520 20/150mm
 4211-1521 21/150mm
 4211-1522 22/150mm
 4211-1523 23/150mm

4211-2019 19/200mm
 4211-2020 20/200mm
 4211-2021 21/200mm
 4211-2022 22/200mm
 4211-2023 23/200mm



Rigid drill

4220-3119 Ø19/330mm
 4220-3120 Ø20/330mm
 4220-3121 Ø21/330mm
 4220-3122 Ø22/330mm
 4220-3123 Ø23/330mm
 4220-3124 Ø24/330mm
 4220-3125 Ø25/330mm
 4220-3126 Ø26/330mm
 4220-3127 Ø27/330mm





MUTARS® Proximal Tibia MK

MK femoral trial container 7999-5803

GenuX® MK extractor for femoral component
4214-0129



femoral impactor short
4223-0044



MUTARS® impactor for femoral component
7610-0000



MUTARS® positioner for locking mechanism
7610-0003



setting instrument for coupling angled
7751-1201



GenuX® MK trial femoral component

- 7720-1500 2 right
- 7720-1505 2 left
- 7720-1510 3 right
- 7720-1515 3 left
- 7720-1520 4 right
- 7720-1525 4 left
- 7720-1530 5 right
- 7720-1535 5 left



GenuX® MK trial offset adapter

- 7751-0000 0mm
- 7751-0002 2mm
- 7751-0004 4mm
- 7751-0006 6mm



setting instrument for locking mechanism
7751-1200



MUTARS® trial coupling 12,5mm
7720-1210



MUTARS® MK trial screw for coupling
7720-1213



MUTARS® instrument for locking mechanism
7720-1201



MUTARS® proximal tibia MK trial stem container 7999-5837

adapter for sledge hammer
4223-0033



GenuX® MK trial stem

- 7766-1115 11/150mm
- 7766-1315 13/150mm
- 7766-1515 15/150mm
- 7766-1715 17/150mm
- 7766-1915 19/150mm
- 7766-2115 21/150mm



GenuX® MK stem reamer conical
4214-0127 Ø11mm
4214-0128 Ø13mm



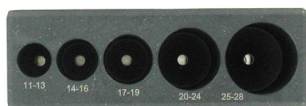
Stop for GenuX® MK stems reamer conical
4220-4211



MUTARS® Proximal Tibia MK

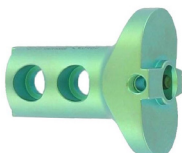
stem assembly container 7999-5770

MK stem assembly block
4223-4003



MUTARS® proximal tibia MK trial container 7999-5836

MUTARS® MK trial proximal tibia
7750-0005



MUTARS® trial screw for trial connecting part 100mm
7730-0106



MUTARS® trial extension piece for mod. prox. tibia
7750-0105 105mm
7750-0125 125mm



MUTARS® trial extension piece
7772-2504 40mm
7772-2506 60mm
7772-2508 80mm



MUTARS® trial bar screw

7792-1002 M10x25mm
7792-1004 M10x45mm
7792-1006 M10x65mm
7792-1008 M10x85mm
7792-1010 M10x105mm
7792-1012 M10x125mm
7792-1014 M10x145mm



GenuX® MK MB trial PE-insert 2/12,5mm
7721-0102



GenuX® FB MB trial PE-insert 2/12,5mm
7721-0202



MK femur trial container size 6 7999-5818

MK 4in1 femoral cutting block 6
4220-4260



GenuX® MK trial femur component
7720-1540 size 6 right
7720-1545 size 6 left



MK trial femoral spacer posterior
7723-6005 6/5mm 2x
7723-6010 6/10mm 2x



MK trial femoral spacer distal
7724-6005 ll/rm 6/5mm
7724-6010 ll/rm 6/10mm



7725-6005 rl/lm 6/5mm
7725-6010 rl/lm 6/10mm



MUTARS® patella container 7999-5745

MUTARS® patella drill guide
7350-0000



MUTARS® patella - clamp
7352-0001



alternatively

MUTARS® patella clamp
7352-0000



MUTARS® patella drill
7351-0000





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