MUTARS®-Münster

implantcast

Proximal Tibia

Surgical Technique

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MUTARS® was developed in co-operation with
Prof. Dr. W. Winkelmann
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Clinic and Polyclinic for General Orthopedics
at the University Hospital of Münster, Germany.
MUTARS® has been in successful clinical use since 1992.

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Nota Bene: The described surgical technique is the suggested treatment for the uncomplicated procedure. In the final analysis the preferred treatment is that which addresses the needs of the individual patient.

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 immunosupression 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 H_2O_2, 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 CoCrMo 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 megaendoprostheses in a rabbit model – an analysis of the infection rate and toxicological side effects. Biomaterials 25, 5547-5556.

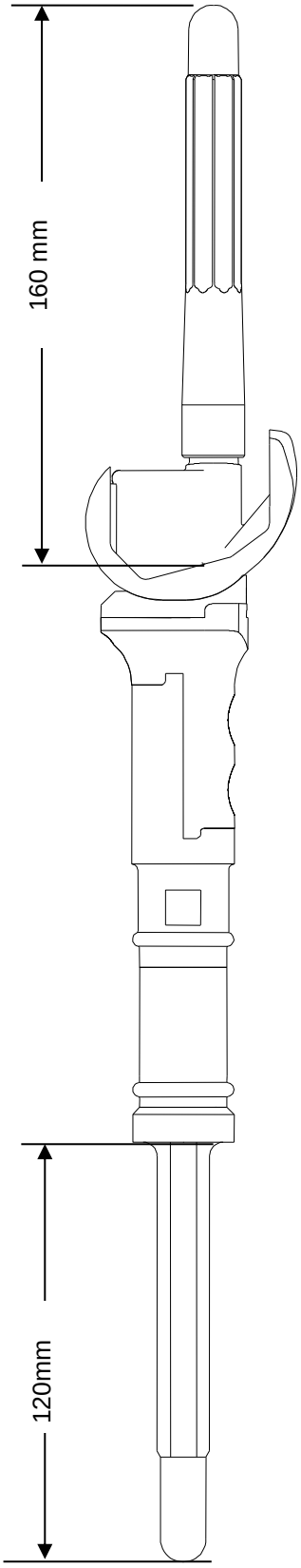
[2] Eben R et al. (2009) Implantatallergieregister - ein erster Erfahrungsbericht. Orthopäde 38: 557-562

[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

System Overview



MUTARS® GenuX® stem
length: 160 mm
cementless
diameter: ø 12, 14, 16, 18 mm
cemented
diameter: ø11, 13, 15, 17 mm

MUTARS® GenuX® femoral component
cementless and cemented
size 3, 4, 5

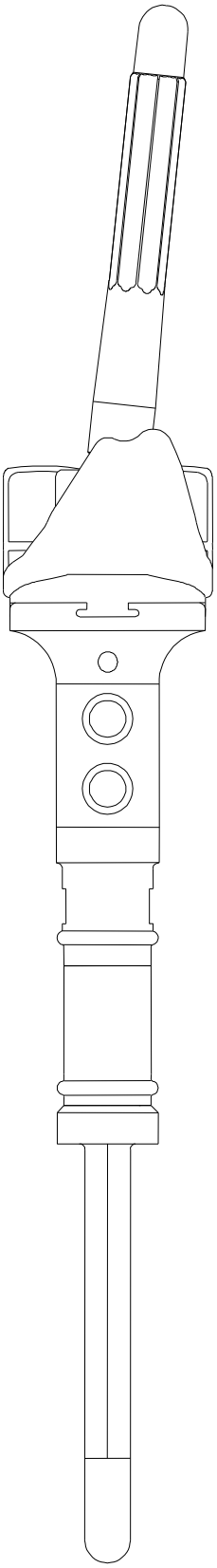
MUTARS® coupling 15 mm

MUTARS® PE-insert xsmall

MUTARS® proximal tibia

MUTARS® connecting part for modular proximal tibia

MUTARS® tibial stem
length: 120 mm
cementless
diameter ø11-16 mm
cemented
diameter ø11, 13, 15 mm
information about loan set content and weight limitation on p.23



MUTARS® Proximal Tibia

assembling options
(length in mm)

reconstruction	components			
	femoral component	**connecting part**	**extension piece**	**screw**
115	x	105	-	25
135	x	125	-	45
155	x	105	40	65
175	x	105	60	85
195	x	105	80	105
215	x	125	80	125
235	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 is 115 mm.

figure 1a

figure 1b

figure 2

figure 3

figure 4a figure 4b

Femoral preparation

Choose the correct femoral size with the femoral sizing template (fig. 1a). Fix the femoral alignment stylus to the femoral resection block and place the assembly on the distal femoral bone.
Slide the stylus as far as possible under the quadriceps muscle and assure that the stylus stays in contact with the anterior cortex. Open the intramedullary cavity using the 9 mm initiator drill (fig. 1b) and remove the instruments.

Ream with the 10 mm reamer manual up to a stable fit (If you use a bigger reamer, make sure that you stay 3-4 mm smaller than the preoperative planed stem) (fig. 2).

Adjust the rotation of the femoral resection block referencing on the posterior femoral condyles. Use two of the 3,2 mm fixation pins to fix the femoral resection block to the bone Remove the alignment stylus.

Anterior femoral resection

Check the resection with the resection check (fig. 3)
Place the saw capture to perform the anterior resection by the use of the ACS® saw blade (fig. 3).

Posterior femoral resection

Change the position of the saw capture to resect the posterior condyles (fig. 4).

Distal femoral resection

Mount the distal femoral cutting block[1] 6° facing the „L“ for the left knee or „R“ for the right knee to the femoral alignment guide and lock the resection block in such a way that the block corresponds with the mark on the medial side[2] of the alignment guide to determine the level of the distal bone resection (fig. 5).

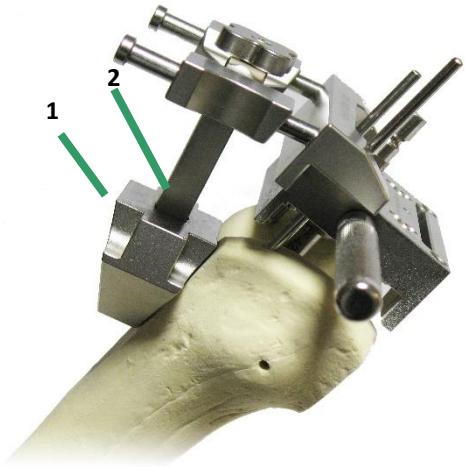


figure 5

Place the whole assembly on the femoral resection block (fig. 6).

Leave the initiator drill in the bone for additional stability.

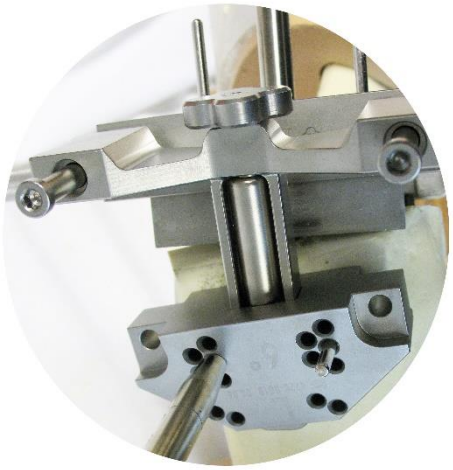


figure 6

The distal femoral cutting block should lie flush with the anterior resection plane[3] and it is attached to the bone using two predrilled pins[4] (fig. 7).

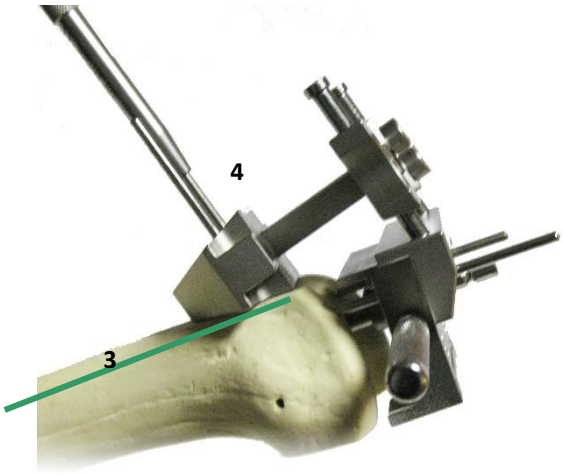
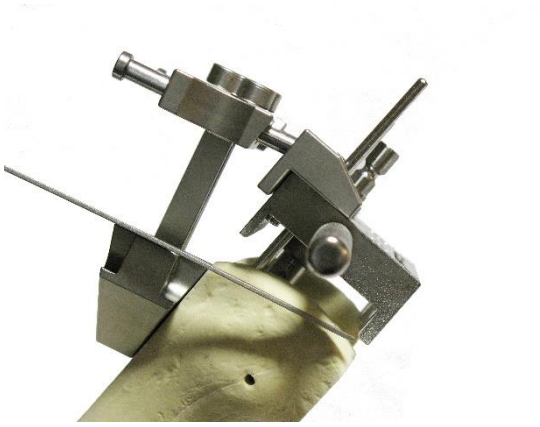
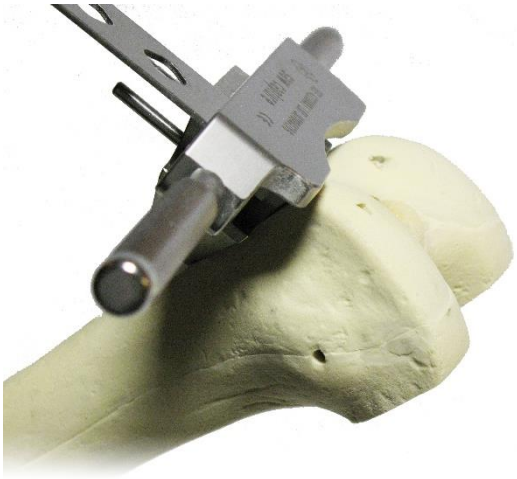


figure 7



To make sure that the distal cut is correct use the resection check (fig. 8).

figure 8



Remove all instruments except the distal femoral cutting block; add the saw capture and resect the distal femur with the ACS® saw blade (fig. 9).

figure 9

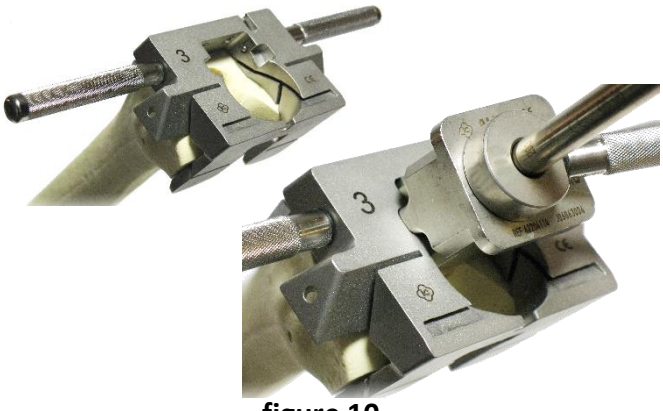


figure 10

Femoral stem preparation

Place the finishing guide to the distal femoral bone. The guide should rest completely on both the distal and the anterior bone surface. Another option is to fix the finishing guide above the last reamer and the long stem sleeve. (fig. 10).

Slide the long stem sleeve (next size) into the guide. Drill with the reamer until the 200 mm mark reaches the top of the sleeve (fig. 12).

Please use the sleeves and reamers of growing diameters in the same way enhancing the diameter in 2 mm steps. For additional stability please slide the femoral reamer sleeve over reamer shaft (fig. 11). Please reference to table 1 and 2 to find out the recommended diameter for the bone preparation when a cementless or cemented stem fixation is planned.

figure 11

table 1: cementless implantation
femoral stem 12 mm ➔ reamer 11 mm
femoral stem 14 mm ➔ reamer 13 mm
femoral stem 16 mm ➔ reamer 15 mm
femoral stem 18 mm ➔ reamer 17 mm

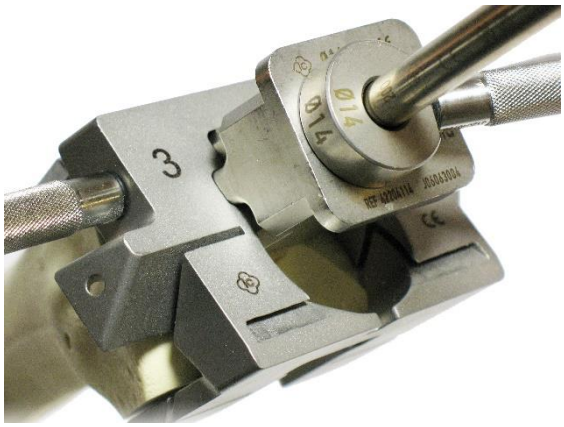


figure 12

table 2: cemented implantation
femoral stem 11 mm ➔ reamer 12 mm
femoral stem 13 mm ➔ reamer 14 mm
femoral stem 15 mm ➔ reamer 16 mm
femoral stem 17 mm ➔ reamer 18 mm

Drill with the final reamer until the 200 mm mark reaches the top the sleeve (fig. 12).

Please leave the reamer and the sleeves in place and insert two fixations pins to stabilise the finishing guide in the correct M/L position (fig. 13).

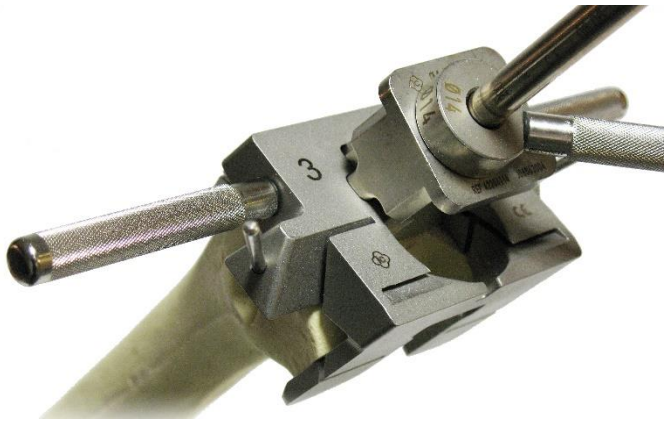


figure 13

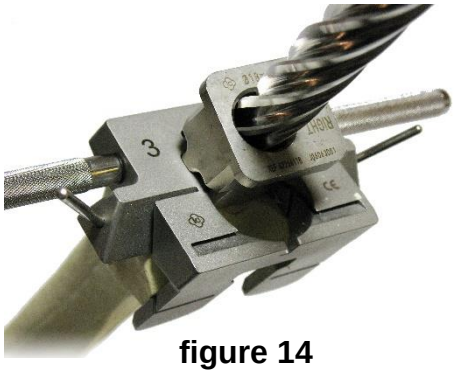


figure 14

Use the 18 mm reamer and the 18 mm sleeve (fig. 14) to remove additional bone, to allow a proper seating of the taper connection of the femoral component.
Please ream deep enough that the reaming part of the reamer will stay app. 1 cm out of the sleeve (fig. 15).

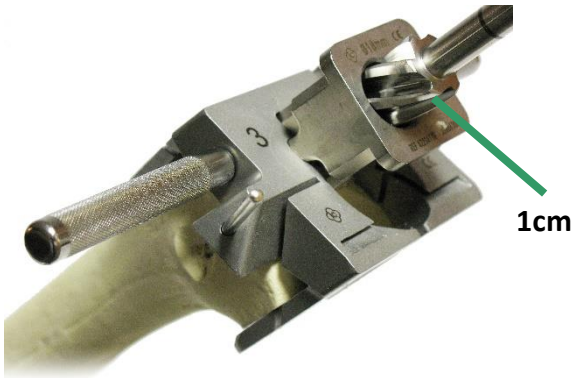


figure 15

Then remove the 18 mm reamer and the 18 mm sleeve. Slide the box reamer guide into the finishing guide (fig. 16).

figure 16

Remove the intracondylar bone by using the box reamer until it is stopped by the box reamer guide (fig. 17a and 17b).

figure 17a

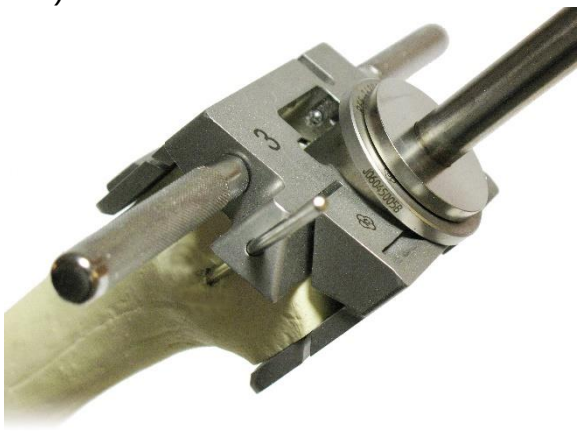


figure 17b

Use the narrow ACS® saw blade to perform the chamfer cuts to finalise the femoral bone preparation.

figure 18

Start with the anterior chamfer cut (fig. 18) and perform the posterior chamfer (fig. 19).

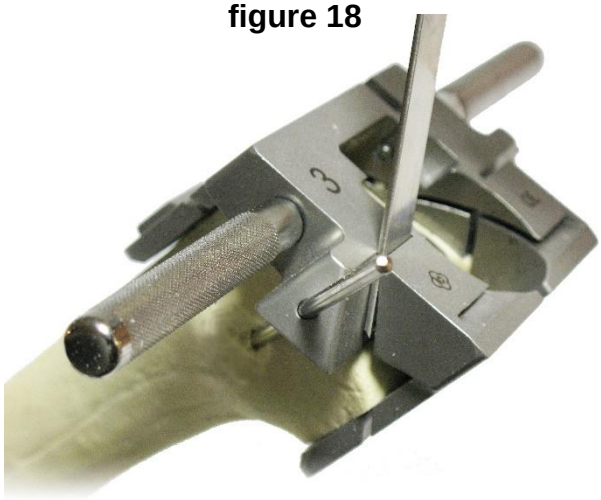


figure 19

Cut out the anterior groove with the osteotome (fig. 20).

The femoral bone preparation is now performed.

figure 20

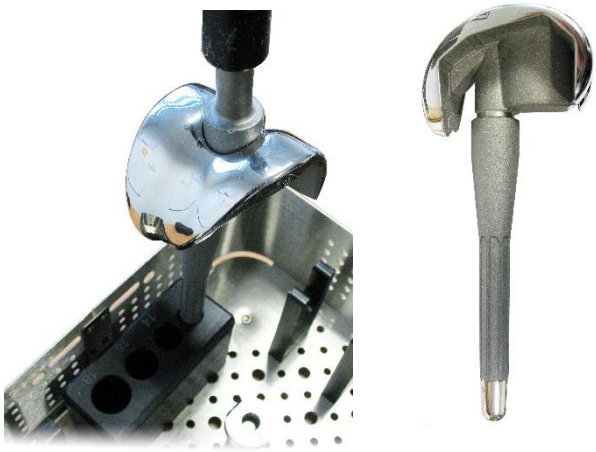


figure 21

Assembling of the femoral implants

Choose the femoral stem of the correct size and version, cemented or cementless.

Place the stem into the assembling block of the instrument tray and connect the femoral component.

Use the femoral impactor and a mallet to enhance the taper connection (fig. 21).

figure 22

Implantation of the femoral implants

Insert the femoral component with the assembled stem into the femoral bone and impact the components with the impactor inserted in the notch of the femoral component (fig. 22).

If sufficient seating is achieved, the impactor is removed.

figure 23

figure 24

For adjustment of the femoral component after seating, you could remove the femoral component by the use of the extractor mounted on the slide hammer (fig. 23 and 24).

Assemble the MUTARS® coupling 15 mm and the special MUTARS® instrument for locking mechanism. Therefore turn the attachment part of the lock by 100 degrees until it rests in the sleeve of the locking instrument (fig. 25a and 25b).

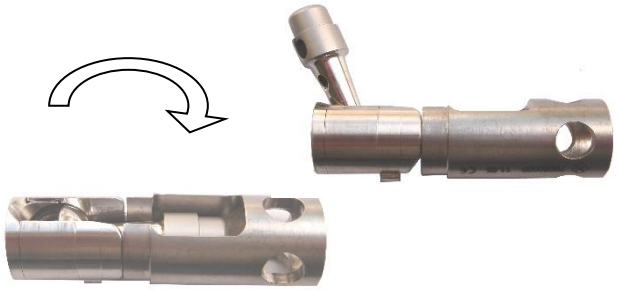


figure 25 a and 25b

Insert the lock into the intracondylar notch of the femoral joint (fig. 26).

figure 26

Use the socket wrench to turn the locking instrument and the lock clockwise by 180 degrees (fig. 26). The lock is correctly positioned when the attachment partly falls out of the sleeve of the locking instrument (fig. 27). Remove the locking instrument.

figure 27

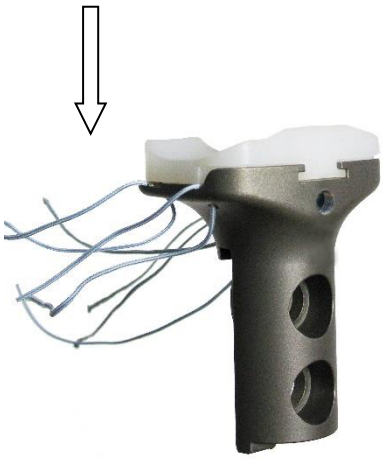


figure 28

Fill the 4 suture holes of the Proximal Tibia component with non absorbable sutures (Ethibond is recommended) to allow the fixation of the attachment tube. Insert the PE insert x-small in the Proximal Tibia. Move the PE-insert towards the anterior locking rim and push it down at the posterior part until it is locked securely (fig. 28).

figure 29

Attach the coupling to the proximal tibia. Therefore, use the setting instrument or the setting instrument for coupling angled. The screw hole should be placed forward-turned to enable locking (fig. 29).

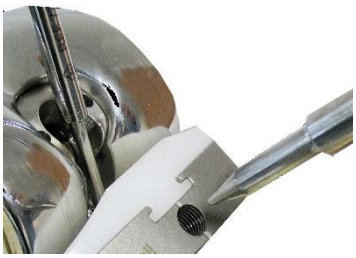


figure 30

The positioner is inserted into the screw hole of the short stem of the coupling mechanism (fig. 30).

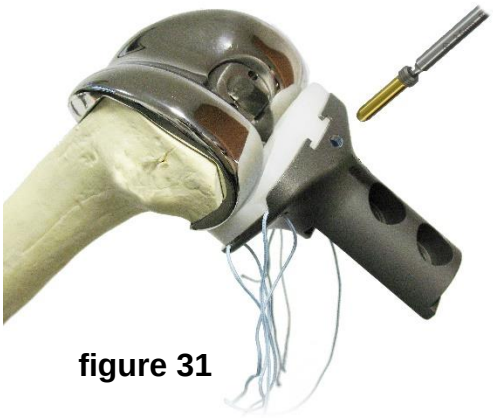


figure 31

Remove the positioner and insert the screw with the 3.5 mm hex screw driver. To complete the connection, please insert the Multilock security screw also with the 3.5 mm hex driver (fig. 31).

Tibial bone preparation

Use the medullary cavity reamer to prepare the tibial bone (fig. 32a and 32b).

figure 32a and 32b

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 (fig. 33a and 33b).

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 (fig. 33a and 33b).
Make sure that at least a 9cm contact between reamer and cortical bone is achieved.

Remark
The use of a tibial rasp for a **cemented stem** is optional. Generally you can proceed with the trial reduction (see page 16).

figure 33a and 33b

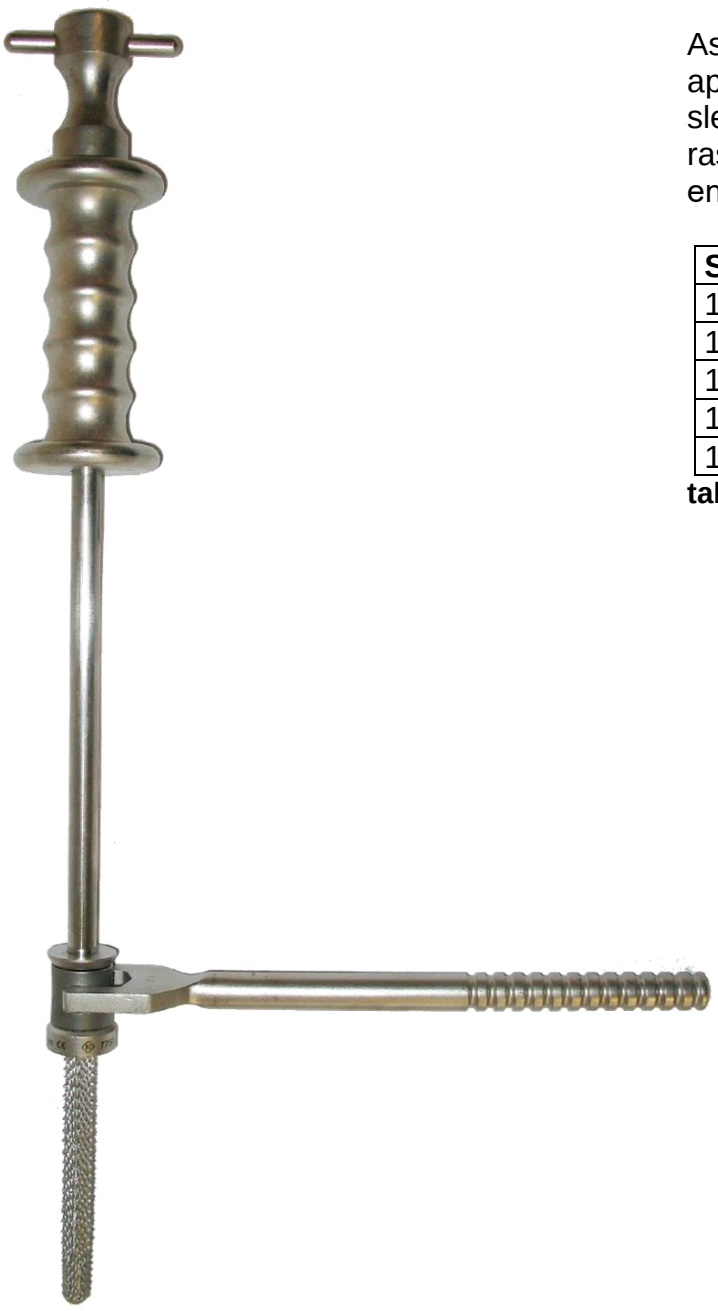


figure 34a

Cementless preparation

Choose the tibial rasp (fig. 34a and 34b) of the preoperatively planned size.

Assemble the tibial rasp of the appropriated size (see table 3 below), the sleeve and the slide hammer. Lock the rasp on the slide hammer by using the engineers' wrench (fig. 34).

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

table 3

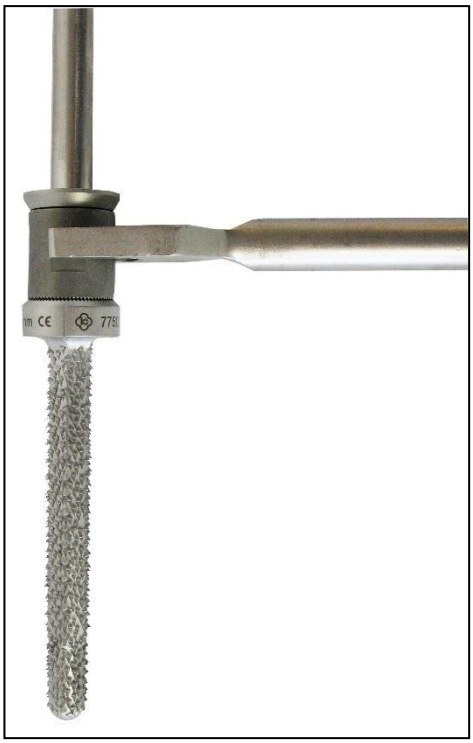


figure 34b

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 2 mm larger than the preoperatively chosen cemented tibial stem.

That will provide a cement mantle of 1 mm thickness (table 4). Use the 16mm rasp to prepare for the 15 mm stem.

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

table 4

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 (fig. 35a).

Rasp the medullary cavity with the chosen tibial rasp (fig. 35b). 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.

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

Leave the tibial rasp in the bone for the trialing.

figure 35a and 35b

figure 36

figure 37

Trial reduction

Attach the MUTARS® connecting part for the Proximal Tibia (length: 105 mm or 125 mm) to the tibial rasp (fig. 36). Mark the rotation of both components with methylene blue.

Remark
For the **cemented procedure** bone rasps are usually not available. Please insert the cemented stem (without cement) for trialling purposes.

Connect the MUTARS® Proximal Tibia and the connecting part. Perform a trial reduction and check the joint stability and the rotational alignment (fig. 37).

Adjust the rotation if necessary. If the joint line could not be restored correctly, it might be necessary to change the length of the tibial reconstruction by a change of the connecting part, or adding of an extension piece in conjunction with an enlarged tibial bone resection.

Implantation of the tibial stem

Impact the MUTARS® tibial stem (fig. 38).

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 femoral bone during impaction.

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

Remove all instruments, especially during the cement hardening to prevent bending moments (fig. 39).

figure 38

figure 39

figure 40a and 40b

Final joint locking

Please attach the connecting part (and the possibly used extension pieces) to the tibial stem. Use the bar screw of the correct length (see table on page 2) to lock the component to the tibial stem (fig. 40a). Lock the screw by using the swing wrench and counter the assembly with the engineers' wrench SW 24 (fig. 40b).

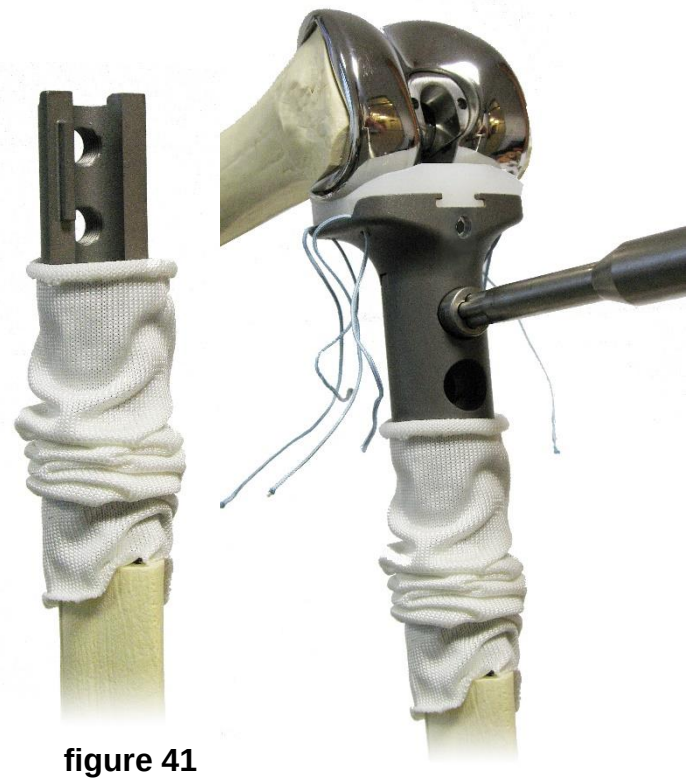


figure 41

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 (fig. 41.)

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 (fig. 42).

figure 42

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 (fig. 43a and 43b). Insert additional sutures around the attachment pads of the implant components.

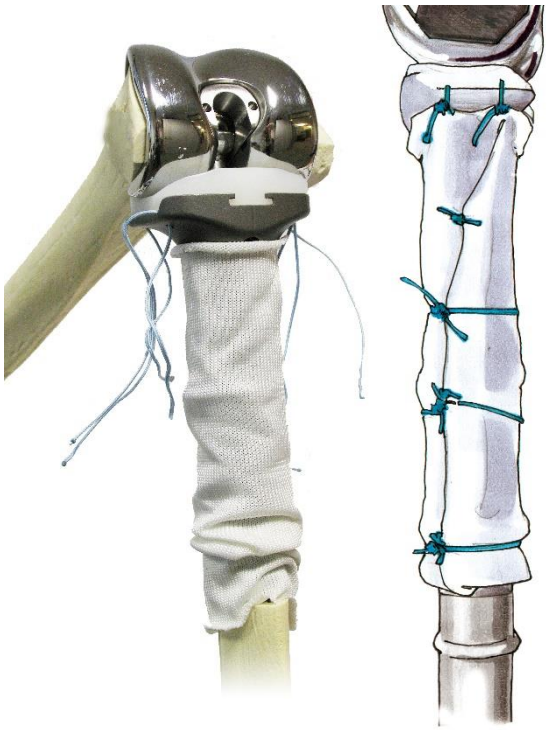


figure 43a and 43b

To reconstruct the extensor mechanism it is mandatory to perform a gastrocnemius muscle transfer. Release the muscle at its distal insertion (fig. 44a). Suture the muscle to the anterior portion of the attachment tube (fig. 44b).

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

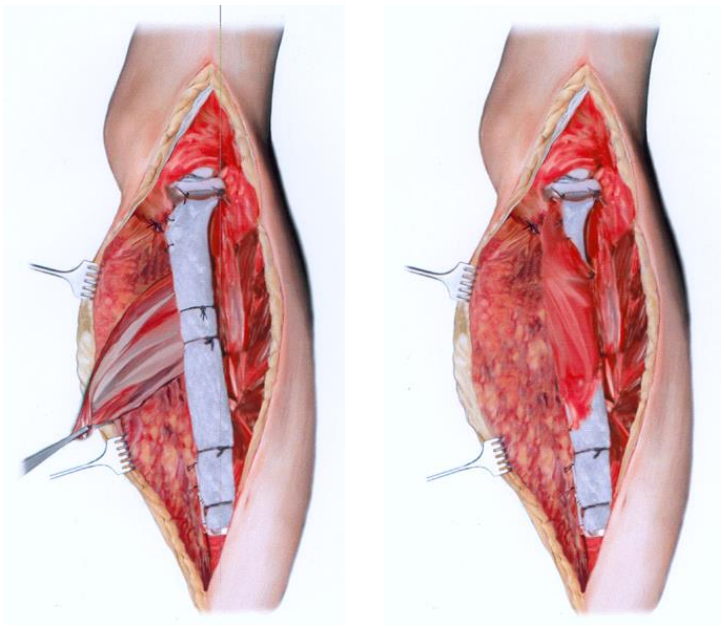


figure 44a and 44b

IMPLANTS

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

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

MUTARS® Genux® stem cementless

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

5761-1612	12/160 mm
5761-1614	14/160 mm
5761-1616	16/160 mm
5761-1618	18/160 mm

MUTARS® GenuX® stem cemented *N

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

5762-1611	11/160 mm
5762-1613	13/160 mm
5762-1615	15/160 mm
5762-1617	17/160 mm

MUTARS® GenuX® femoral component cemented *N

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

5720-0310	right size 3
5720-0315	left size 3
5720-0320	right size 4
5720-0325	left size 4
5720-0330	right size 5
5720-0335	left size 5

MUTARS® GenuX® femoral component cementless *N

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

5720-0210	right size 3
5720-0215	left size 3
5720-0220	right size 4
5720-0225	left size 4
5720-0230	right size 5
5720-0235	left size 5

IMPLANTS

MUTARS® patella replacement cemented
mat.:UHMW-PE acc. to ISO 5834-2
5720-1000 standard

MUTARS® PE-insert
mat.: UHMW-PE acc. to ISO 5834-2
5721-0013 xsmall

MUTARS® modular proximal tibia incl. coupling 15 mm *S
incl. screw for coupling, counter screw and MUTARS® screw for connecting part (2x)
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3; mat. of coupling 15 mm: CoCrMo acc. to ISO 5832-12; PE-safety peg: UHMW-PE acc. to ISO 5834-2
5750-0003

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® 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

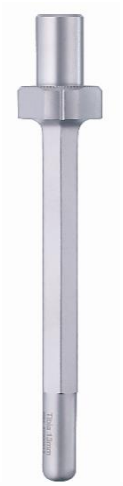
intramedullary plug
mat.: UHMW-PE acc. to ISO 5834-2
0299-4000 small
0299-4010 large

IMPLANTS

MUTARS® screw

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

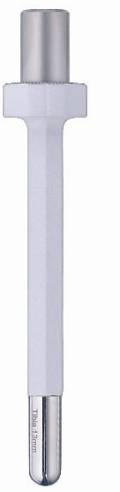
5792-1002	M10x 25 mm
5792-1004	M10x 45 mm
5792-1006	M10x 65 mm
5792-1008	M10x 85 mm
5792-1010	M10x105 mm
5792-1012	M10x125 mm
5792-1014	M10x145 mm
5792-1016	M10x165 mm
5792-1018	M10x185 mm
5792-1020	M10x205 mm
5792-1022	M10x225 mm



MUTARS® tibial stem cemented *N

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

5750-0511	11/120mm	max.75 kg
5750-0513	13/120mm	
5750-0515	15/120mm	

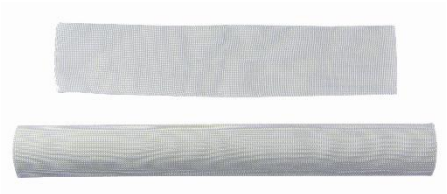


MUTARS® tibial stem cementless HA

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

5750-1511*	11/120mm	max. 60kg
5750-1512	12/120mm	
5750-1513	13/120mm	
5750-1514	14/120mm	
5750-1515	15/120mm	
5750-1516	16/120mm	

*stems with this size are not included in loan set and have to be ordered separately.



MUTARS® attachment tube

mat.: polyethylenterephtalat

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

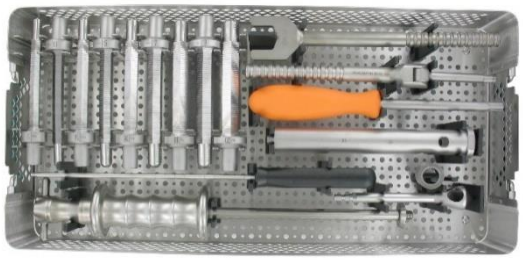
IMPLANTS

MUTARS® femoral spacer *S
distal
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3

ll/rm		rl/lm
5722-0530	size 3/10mm	5722-1030
5722-0535	size 3/5mm	5722-1035
5722-0540	size 4/10mm	5722-1040
5722-0545	size 4/5mm	5722-1045
5722-0550	size 5/10mm	5722-1050
5722-0555	size 5/5mm	5722-1055

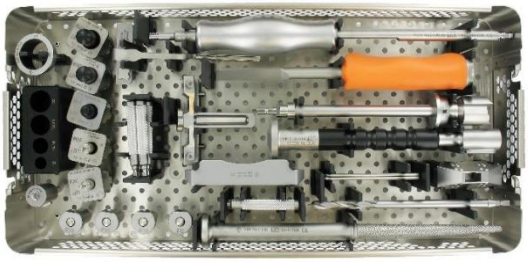
MUTARS® L- femoral spacer *S
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3

ll/rm		rl/lm
5722-1530	size 3/10mm	5722-2030
5722-1535	size 3/5mm	5722-2035
5722-1540	size 4/10mm	5722-2040
5722-1545	size 4/5mm	5722-2045
5722-1550	size 5/10mm	5722-2050
5722-1555	size 5/5mm	5722-2055



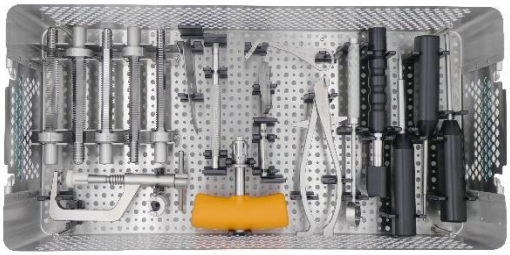
INSTRUMENTS

MUTARS® basic container
7999-5712

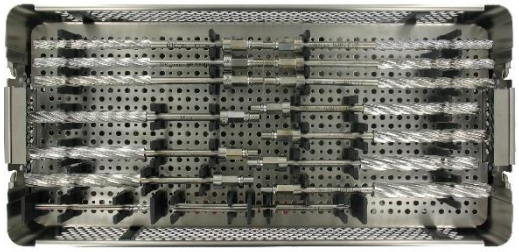


MUTARS® GenuX® femur container 1
7999-5723

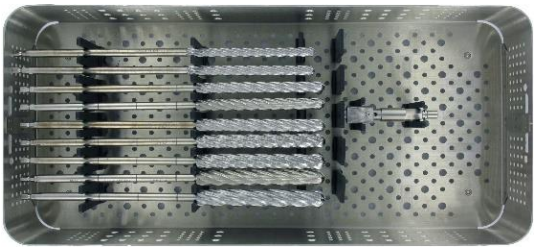
MUTARS® Genux® femur container 2
7999-5722



MUTARS® proximal tibia container
bottom tray
7999-5734



MUTARS® proximal tibia container
top tray
7999-5734



MUTARS® rigid drills container
7999-5735

INSTRUMENTS

MUTARS® basic container
7999-5712

MUTARS® universal impactor
7210-0000

MUTARS® impact and extract sleeve
7230-0000

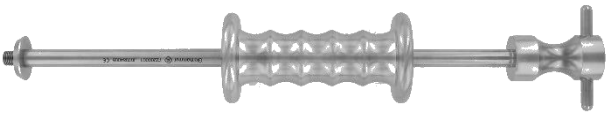
MUTARS® socket wrench
7420-0000

alternatively
MUTARS® socket wrench
7421-0000

MUTARS® swing wrench
7411-0000

MUTARS® engineers wrench SW 24
7490-0000

MUTARS® slide hammer
7220-0001



MUTARS® rasp for femoral stem

7760-0112	12 mm
7760-0113	13 mm
7760-0114	14 mm
7760-0115	15 mm
7760-0116	16 mm
7760-0117	17 mm
7760-0118	18 mm

handle for intramedullary plug
7512-4001

MUTARS® medullary cavity reamer cross-hole
4220-0000

MUTARS® GenuX® femur container 1
7999-5723

distal femoral cutting block 6°
4220-0018

femoral alignment guide
4220-0028

femoral alignment stylus
4220-0012

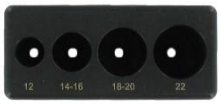
fixation pins 3,2 mm x 97 mm
4223-0008 2x

modular handle
4223-0015 2x

modular handle “fast fix”
4223-0017 4x

MUTARS® femoral chamfer
7630-1035

slap hammer
4223-0005



fitting block for stem
4223-4002

ACS® SC sleeve for long stem primary
4220-4110 – 4220-4118 10 mm – 18 mm

femoral reamer sleeve
4220-5112 –4220-5118 12 mm – 18 mm

Mutars® extractor for femoral component
7610-0002

Mutars® impactor for femoral componenet
7610-0000

initiator drill 9 mm
4220-0014

osteotome size 2-6
4223-0060

ic universal rasp
7512-1000

MUTARS® femoral reamer sleeve
7630-1028

saw capture „fast fix“
4221-0102

MUTARS® GenuX® femur container 2
7999-5722

MUTARS® femoral cutting block

7630-1000	size 3
7630-1002	size 4
7630-1001	size 5

femoral sizing template

4220-0010	size 3/4
4220-0011	size 5/6

MUTARS® femoral resection block

7320-0003	size 3
7320-0004	size 4
7320-0005	size 5

MUTARS® femoral trial component

7720-0210	size 3 right
7720-0215	size 4 right
7720-0220	size 5 right
7720-0225	size 3 left
7720-0230	size 4 left
7720-0235	size 5 left

MUTARS® proximal tibia container top tray
7999-5734

fixation pin Ø3,2 mm / 77 mm
4223-0029 4x

drill 126mm x 3,2 mm
4221-0019 2x

MUTARS® patella drill
7351-0000

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® proximal tibia container bottom tray
7999-5734

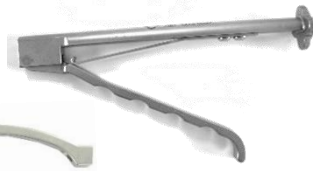
MUTARS® patella drill guide
7350-0000

MUTARS® patella clamp
7352-0000

or alternative

MUTARS® patella - clamp
7352-0001

pin inserter
4223-0006



pin extractor
4223-0007

or alternative
ic- pin extractor
7512-0800

setting instrument for coupling angled
7751-1201

ic-T-handle Zimmer-Jakobs
4223-0023

resection check
4223-0009

MUTARS® instrument for locking mechanism
7720-1201

extractor universal
7512-2026

hexagon screw driver short 3,5 mm
0280-1007

MUTARS® positioner for locking mechanism
7610-0003

setting instrument for locking mechanism
7751-1200

MUTARS® impactor for PE-inlay
7210-0001

MUTARS® trial PE-insert
7721-0003 extra small

or alternative
MUTARS® trial PE-insert
7721-0013 xsmall

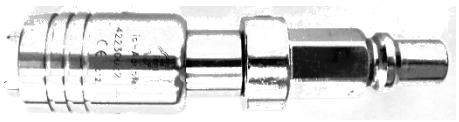
MUTARS® rasp for tibial stem
7750-0312 12 mm
7750-0313 13 mm
7750-0314 14 mm
7750-0315 15 mm
7750-0316 16 mm

MUTARS® rigid drills container
7999-5735

MUTARS® rigid reamer

4220-4010.1	∅ 10 mm
4220-4011.1	∅ 11 mm
4220-4012.1	∅ 12 mm
4220-4013.1	∅ 13 mm
4220-4014.1	∅ 14 mm
4220 4015.1	∅ 15 mm
4220 4016.1	∅ 16 mm
4220 4017.1	∅ 17 mm
4220 4018.1	∅ 18 mm

ic adapter outside A/O,
inside ic canulated
7512-3602



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