

# MUTARS®

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implantcast

**Modular Universal Tumor And  
Revision System**

# 25 Years MUTARS® - 2017



- 2018 The 50,000<sup>th</sup> MUTARS® implantation will be performed
- 2016 Market launch of the EPORE® metaphyseal components
- 2015 Market launch of the EPORE® cones
- 2014 The first 3D-printed, CE certified prosthesis - EPORE® - gets implanted
- 2013 Market launch MUTARS® GenuX® MK
- 2010 The MUTARS® RS Arthrodesis gets implanted for the first time
- 2009 First implantation of a LUMiC® prosthesis
- 2007 CE certification for MUTARS® silver
- 2005 Performance of the first MUTARS® Xpand surgery
- 2004 The first MUTARS® silver implantation takes place
- 2002 First implantation of the MUTARS® proximal humerus
- 2000 Performance of the 1000<sup>th</sup> MUTARS® implantation
- 1998 The MUTARS® revision system gets implanted for the first time
- 1995 Introduction of the first MUTARS® proximal tibia on the market
- 1993 Performance of the first MUTARS® distal femur surgery
- 1992 The first MUTARS® implantation is performed

# MUTARS®

## Modular Universal Tumor And Revision System

MUTARS® was developed in co-operation  
with Univ.-Prof. Dr. W. Winkelmann (ex-director) and  
Univ.-Prof. Dr. G. Gosheger (director) Department of General Orthopaedics  
and Orthopaedic Oncology at the University Hospital of Münster, Germany.  
MUTARS® is in successful clinical use since 1992.

### Table of Contents

Introduction .....	2
Information about components with PEEK-lock .....	4
Silver coating .....	6
TiN-coating .....	7
Special customized implants and instruments C-Fit 3D® .....	8
EPORE® defect filler .....	9
System Overview A-E .....	10
A Femoral Implants	
A.1 Proximal Femoral Replacement .....	14
A.1.1 Proximal Femoral Replacement Revision .....	15
A.2 Distal Femoral Replacement MK .....	16
A.3 Distal Femoral Replacement MK with RS Stem .....	16
A.4 Total Femoral Replacement MK .....	17
A.5 Proximal Femoral Replacement with intramedullary connected GenuX® MK .....	17
B Tibial Implants	
B.1 Total Knee Replacement MK with Distal Femur or with KRI .....	18
B.2 Proximal Tibia MK Replacement .....	18
C Other	
C.1 Arthrodesis Implant .....	19
C.2 Diaphyseal Implant .....	19
C.3 Attachement tube .....	29
D. Humeral Implants	
D.1 Proximal Humeral Replacement and Humerus Inverse .....	20
D.2 Distal Humeral Replacement .....	21
D.3 Total Humeral Replacement .....	21
D.4 Proximal Ulna Replacement .....	22
D.5 Total Elbow Replacement .....	22
D.6 Humeral Diaphyseal Implant .....	22
E. Revision Implants	
E.1 MUTARS® RS Hip System .....	23
E.2 MUTARS® RS Arthrodesis .....	23
E.3 GenuX® MK Knee Revision System .....	24
E.3.1 GenuX® MK Knee Revision System Monoblock .....	24
E.4 Intramedullary Total Femoral Replacement with GenuX® MK .....	26
E.5 KRI MK - Knee Reconstruction Implant .....	26
E.6 Intramedullary Total Femoral Replacement with KRI MK .....	27
E.8 LUMIC® .....	27
MUTARS® Biopsy Punch .....	28
Flexible Drill Nitinol .....	28
MUTARS® Xpand and BioXpand .....	30
MUTARS® Implants .....	32
MUTARS® Instruments .....	39



## Introduction

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The treatment of a major osseous defect in orthopaedic oncology focuses heavily on surgical techniques that are intended to preserve the affected limb as much as possible. Hence amputation, rotationplasty and arthrodesis is avoided as much as each patient's status will allow. The main options therefore involve the use of allograft and/or autologous graft and/or tumour prosthesis. And, in recent years modular segmental replacement systems have become increasingly popular as they offer the the surgeon a way to treat patients with defects which can vary significantly in size on an individual basis and with confidence.

Since it's introduction in 1992 the MUTARS® (**M**odular **U**niversal **T**umour **A**nd **R**evision **S**ystem) has been successfully used for the treatment of major osseous defects of the lower and upper extremities. Its modular design was developed in co-operation with Univ.-Prof. Dr. W. Winkelmann\* (em. Director) and Univ.-Prof. Dr. G. Gosheger (Director), Department of General Orthopaedics and Orthopaedic Oncology at the University Hospital of Münster, Germany. The system shows good functional results and allows an individualised solution for major osseous defects, including arthroplasties of the adjacent joints.

In the 25 years since its introduction more than 45,000 successful MUTARS® implantations have been performed. Our co-operation with leading European clinics has enhanced the continuous development of the implants and instruments, resulting in the proven versatile offerings available today. This close collaboration enables us to always remain up-to-date and continue further development by using the latest experience in the Tumour prosthesis sector by modifying our products according to current clinical best practice techniques and knowledge.

Perhaps the best example of this has been the development of the GenuX® MK (Modular Knee) in 2013 which built on the clinical success of the GenuX® knee revision implant which has been in use since 2006. The GenuX® MK has been developed to offer the intraoperative choice between Mobile-Bearing and Fixed-Bearing PE-Inlays. Specifically, the focus of this recent development was on the design of new tibial and femoral components to minimise bone resection as well as on the production of more intuitive instrumentation. The biomechanically optimized MUTARS® GenuX® MK coupling allows for 130° flexion.

To simplify the system the same stems are intended for use both on the femur and the tibia in conjunction with off-set adapters. The tibial and femoral components of the GenuX® MK system are fully compatible in tumour treatments with all MUTARS® standard products. With the MK components, the Mobile-Bearing option is possible. MUTARS® MK combines the advantages of the GenuX® MK system and the established MUTARS® system.

In tumour and revision surgery alike, it is very often not clear preoperatively just how much viable bone will actually be available intraoperatively. Moreover, this problem or uncertainty can be made even worse after any in-situ implants have been removed. It is highly important therefore to be able to adapt intraoperatively with a highly modular and quality system in all situations. With four sizes of femoral component, four sizes of tibial component, cemented stems and cementless stems (in four lengths and nine diameters) as well as four offset tibial and femoral stem adapters (each having 360° of rotational freedom) available the MUTARS® MK system offers the surgeon the intraoperative flexibility required. Additionally each of the four sizes of (left-sided or right-sided) femoral component may be combined with size-specific 5mm and/or 10mm thick posterior and/or distal augments to help fill any bony defects. Similarly each of the four sizes of tibial component may be combined with size-specific spacers - unicondylar options are available in 5mm and/or 10mm and/or 15mm and/or 20mm thicknesses while bicondylar options are available in 25mm or 35mm or 45mm thicknesses. The patella can be replaced by a cemented PE implant. Because the surgeon has the opportunity to combine a total of 152 components it is possible to create the optimal treatment for each individual case.

In summary the MUTARS® MK system combines intuitive instruments with a functional range of well designed implants to flexibly address the vast majority of clinical scenarios. The surgical technique is simple enough that the MUTARS® MK system can be effectively mastered after a relatively short learning curve.



Standard augmentation can only go so far so the EPORE® defect fillers, or cones, were made available in early 2017. They were developed to provide additional augmentation in knee reconstruction and are effective in reinforcing and rebuilding the implant fixation surfaces in scenarios of more extensive bone loss. The tibial options come in a range of sizes each with multiple configurations as do the femoral options which are also sided to make installation easier. They are made from titanium alloy ( $\text{TiAl}_6\text{V}_4$ ) and the outer implant surface of EPORE® features a porous structure which supports bone ingrowth. Please refer to page 9 for more Information.

The non-invasive MUTARS® Xpand Growing Prosthesis has been developed together with our partner company Wittenstein Intense. The first implantations of the biological Growing Prosthesis MUTARS® BioXpand have shown promising results. Up until 2017 a total of 650 MUTARS® Xpand and MUTARS® BioXpand Growing Prostheses have been implanted successfully. More detailed information about it can be found on page 30 and 31 of this brochure.

For some years now the CE certified MUTARS® Silver components have been considered standard option for the treatment of tumour patients in several major tumour centers throughout Europe and to date more than 12,500 successful MUTARS® Silver implantations have been performed. More information can be found on page 6.

The modular MUTARS® system provides the surgeon with the ability to offer patients a functional joint replacement in cases of major osseous defects whether they be caused by tumour resection, fracture or by the removal of an infected (or non-infected) prosthesis. Joint replacements in the upper limb may be carried out using the constrained hinge joint at the elbow, the anatomic shoulder components or indeed the inverse shoulder options available. In the lower limb the constrained rotational components are available for the knee while at the hip a combination of regular components with the MUTARS® system allows for hemi arthroplasty or the total joint replacement. Depending on the type of prosthesis used and the clinical scenarios encountered fixation can be achieved with or without cement.



Fig. 1: Hexagonal implant bed in a bone model



Fig. 2: Adjustment of the version angle

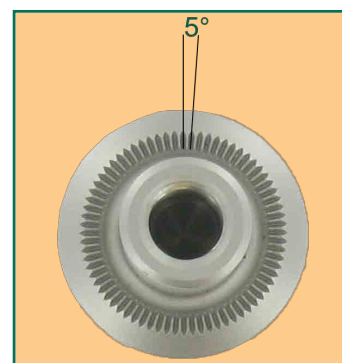


Fig. 3: MUTARS® toothing

There are two types of intramedullary stems available: one designed for a cementless fixation ( $\text{TiAl}_6\text{V}_4$ ) and one designed for cementation (CoCrMo). The cementless stem has a microporous surface and is also available with a hydroxylapatite coating (HA).

The stems have a hexagonal cross section (Fig. 1) which provide for an optimal intramedullary fixation. In the femoral area, the stem was designed to correspond with the physiological antecurvature of the femur. Hexagonal rasps are used to achieve a primary stability of 70 Nm [1]. For an alternative method of cementless fixation there are special tapered stems and the RS stems and the RS coupling device available to meet specific bone geometries and clinical conditions.

The toothed connecting faces of all components allow precise intraoperative adjustment of the rotational angle relative to the pre-implanted implanted stem. Thus, rotational malalignments can be avoided or corrected. The teeth also allow an exact intraoperative adjustment in 5° increments of the version angle in the lower extremities or 10° in the upper extremities (Fig. 2 shows an example in the hip and Fig. 3 shows the MUTARS® toothing).

[1] Orthopädie und Orthopädische Chirurgie, C. J. Wirth und L. Zichner, 2005 Georg Thieme Verlag AG

In order to provide the correct implant length in each individual case The MUTARS® system consists of a range of extension pieces to allow an intra-operative adjustment in 20mm increments (10mm increments for the total femoral replacement). On special request a 30mm extension piece is available to adjust the implant length for the lower extremity in increments of 10mm. The localisation and size of the tumour determines the name of the MUTARS® treatment.

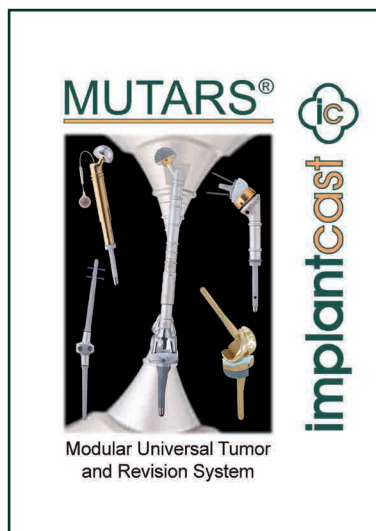
Soft tissue refixation or capsular reconstruction is performed using the MUTARS® Attachment tube (made of PET polyethylene terephthalate), which is fixed to the prosthesis by means of a non-absorbable suture material, which can reduce the probability of luxation of the shoulder and hip joint.

As an additional prevention against allergic reactions, most components that are made of CoCrMo alloy may optionally be finished with a titanium nitride coating (TiN). If individual cases require special component features, the modular MUTARS® system can be supplemented by custom manufactured components, which have a 4 week delivery time-frame, thus providing an optimal solution for each individual case. Up until the end of 2016 a total of 3025 custom devices have been implanted globally.

## Information about treatments with PEEK-lock and M-O-M-coupling

The brochure contents all knee treatments with the latest MK coupling. The suffix „MK“ clearly defines these types of knee treatments. I.e. in chapter A.2 the Distal Femoral Replacement MK is described. Please use the nomenclature when placing an order to prevent misunderstandings or mistakes. All knee treatments using the PEEK-lock and the former M-O-M-coupling are still available. Please refer to the known MUTARS® brochure (see below on the left) to order these components.

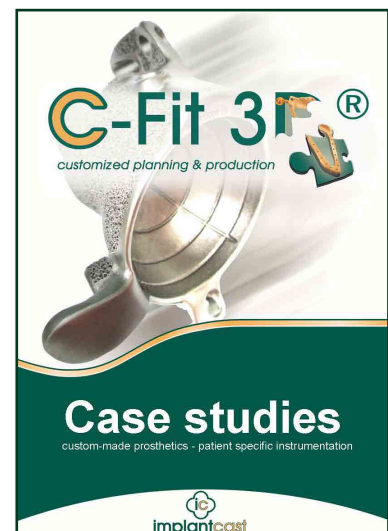
Additional information about the special customized implants and instruments can be found on page 8 as well as in the the C-Fit 3D® case study brochure (depicted to the right below along with its reference number for ordering purposes). Similarly more on the Xpand growing prostheses can be found on page 30 of this document and in a specific brochure (depicted below in the centre along with its reference number for ordering purposes).



Order no./REF no.: MUTSYOVE



Order no./REF no.: XPASYOVE



Order no./REF no.: CFITCASE

**MK components for  
MUTARS® MK femoral treatments**

**MK components for  
MUTARS® MK tibial treatments**

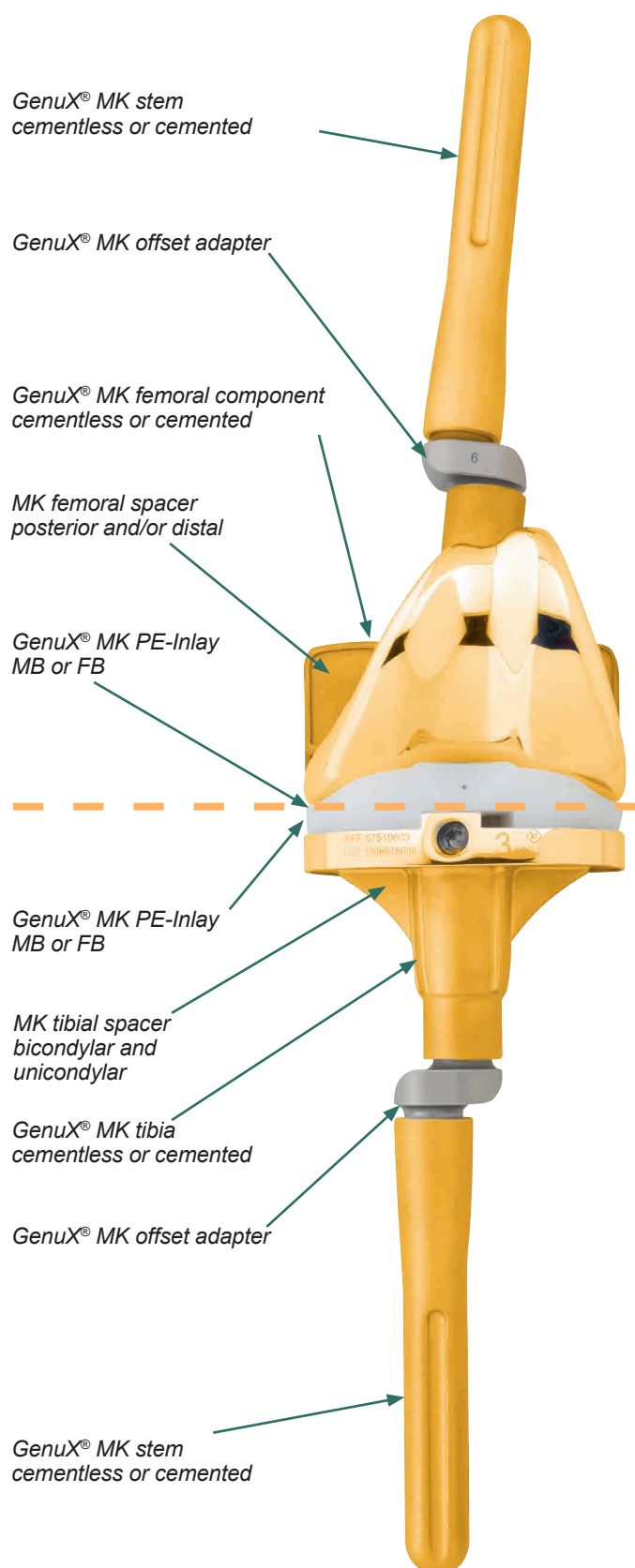




Fig. 3: Total Humerus Inverse

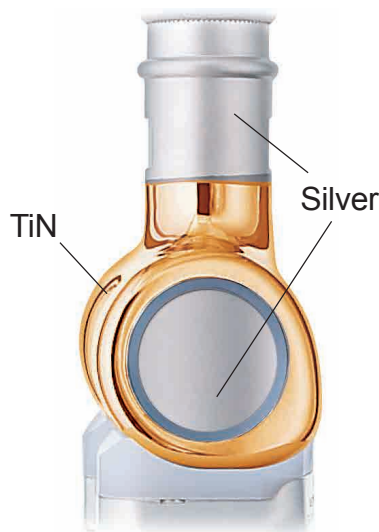


Fig. 4: Distal Femur M-O-M \*SN coated with *Silver* and TiN



Fig. 5: Distal Femur M-O-M, with *Silver* coated plates on the PE plugs

## The Silver coating

The effect of silver ions has been known for centuries e.g. the disinfection of potable water is based on this principle. Infection represents the most severe complication of Tumour arthroplasty treatments. Although local and systemic antibiotic treatments are considered, the scientific literature reports of infection rates of 5 to 35 percent [2].

The reasons for these high rates are, for example, the long surgery time, the large incisions and the immunosuppression due to chemotherapy and radiotherapy as well as the increasing resistance of the bacteria against antibiotic drugs. Silver is known for its broad-spectrum antimicrobial activity and this is particularly true of free silver ions. The silver coating which is applied to the MUTARS® system has been shown to reduce bacterial colonization on the device surface hence implants remain viable for longer. The efficiency of the MUTARS® silver coating has been demonstrated in preclinical studies as well as clinical studies [3].

Ongoing tests are being performed to investigate the impact of silver ions on osteointegration to assess whether intra-medullary cementless stems (in the primary and/or revision setting) can be silver coated in the future. Until now only non-articulating surfaces and surfaces without direct bony contact are coated with silver. Silver coated plates in the PE-plugs of the Distal Femur M-O-M (see Fig. 5) assure that sufficient silver is provided in the area of the distal femur.

All implantcast devices have an eight digit catalogue number which is sometime suffixed with the letters S and/or N. Where the suffix S is used this indicates that a particular MUTARS® component is available in a silver coated version. Similarly if the suffix N is used then that particular component is available in a TiN coated version. When the suffix SN is used this means that this component can be coated with both silver and TiN (see Fig. 4).

[2] 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.

[3] Harges J, von Eiff C, Streitburger A, Balke M, Budny T, Henrichs MP, Hauschild G, Ahrens H. "Reduction of periprosthetic infection with silver-coated megaprotheses in patients with bone sarcoma." *J Surg Oncol.* 2010 Jan 29

[4] Effekt einer Oberflächenbeschichtung von Kobalt-Chrom-Molybdän- und Edelstahl-Prüfkörpern mit TiN bzw. TiN auf Nickel-, Chrom-, und Kobaldfreisetzung: Beurteilung über Eluatanalyse und in-vitro-Zytokinfreisetzung peripherer humaner Blutzellen, Universität München (D) (On File)

[5] Test Report A219/05.1 IMA Dresden. Data File



Fig. 6: GenuX®, TiN coated

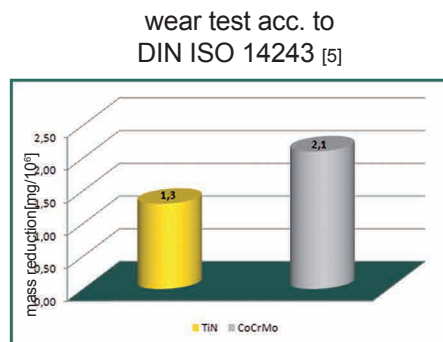
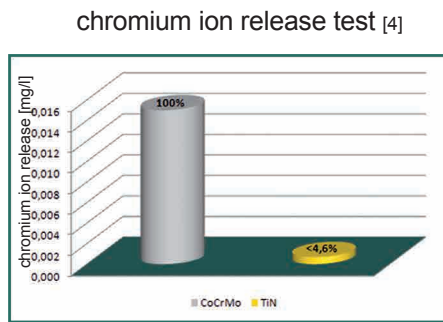


Fig. 7: The properties of the TiN-coating



Fig. 8: Distal Femur, TiN coated

## The TiN-coating for allergy prophylaxis

The articulating metallic parts of the MUTARS® system are made of CoCrMo alloy. Since the late 1970's some Cobalt Chromium implants have retained a small Nickel content to add strength to the implant. 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 [6]. 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 [7]. Also in clinical practice there have never been any evidence of allergic reactions with implants that have been TiN-coated showing an intact surface [9] Therefore the TiN-coating on implant components is especially suitable for patients with sensitivity to nickel, chromium or cobalt [8][9].

## Ceramic coatings have following properties:

- increased hardness of the articulating surface
- increased scratch resistance
- lower friction coefficient
- improved wettability
- reduced wear of the counter surface
- higher corrosion resistance
- decreased metal ion release
- enhanced bone ingrowth capacity
- increased biocompatibility

Since almost all MUTARS® components are made from titanium alloy the above allergy information only relates to those few MUTARS® components made of CoCrMo alloy. In the catalogue information of this brochure you can find the supplement \*N indicating which MUTARS® component is available in TiN coated version.

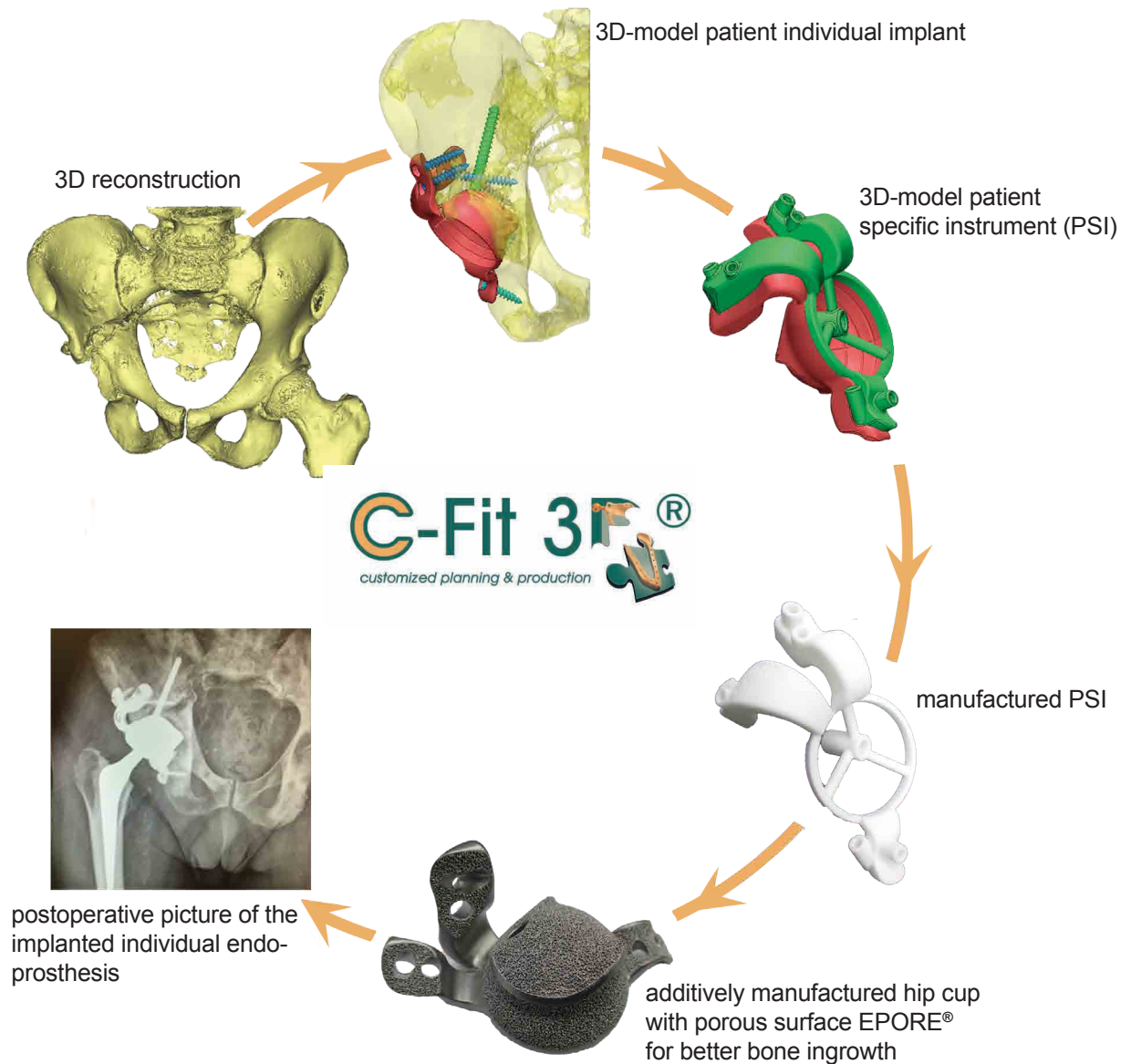
[6] Eben R et al. (2009) Implantatallergieregister - ein erster Erfahrungsbericht. Orthopäde 38: 557-562

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

[8] 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

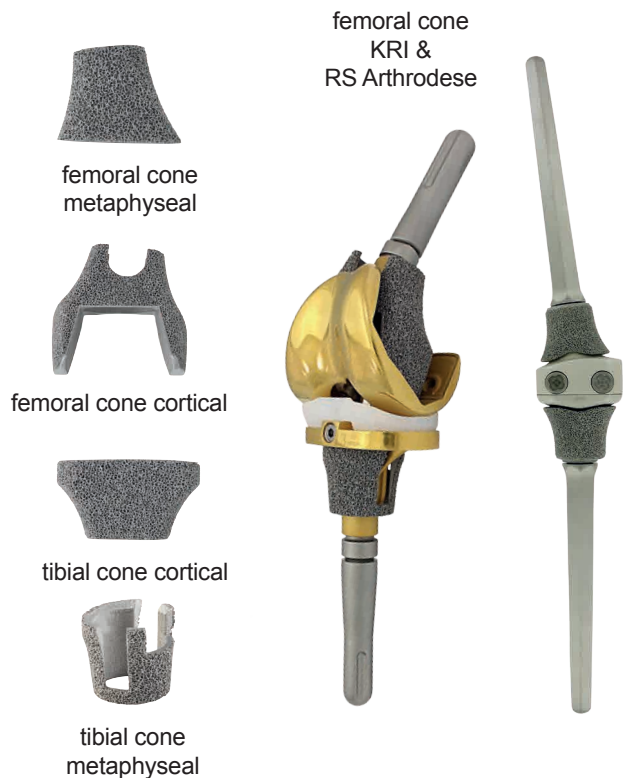
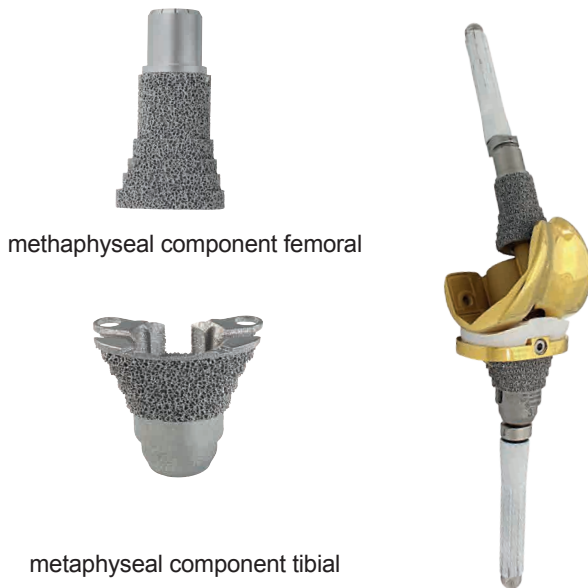
[9] Baumann A. (2001) Keramische Beschichtungen in der KTEP Standardlösung für Allergiker. JATROS Orthopädie & Rheumatologie 6: 16-17





### 3D planning and manufacturing of individual endoprosthesis - C-Fit 3D®

Some complicated and/or extensive bony defects (perhaps created after implant removal or tumour resection) cannot be treated adequately by standard prostheses alone and therefore a custom prosthesis is sometimes required. The implantcast custom service has been available for some years and has recently been improved by the provision of additive 3D printing technology and investment in the associated software. It is now possible for us to create a 3D model of the deficient bone and/or joint from high-resolution MRI or CT data which can then be used to create the patient-specific prosthesis and any required instrumentation with the help of clinician input. Our highly experienced bio engineers work closely with the clinician to plan and produce a solution based on clinician specifications and patient requirements. This method enables exact adjustment of the implant to the anatomical conditions of the patient and the precise planning leads to minimized bone loss. Due to its highly accurate planning capability the risk of infection is also minimized resulting from the shortened operation time. The additive manufacturing enables our implants to be designed with the highly porous EPORE® surface giving a structure with a low modulus of elasticity that also enhances biological in-growth. The structure is characterized by rods of 330-390 µm thickness which are arranged in such a way that it mimics cancellous bone. The production time for such an individual prosthesis, depending on its complexity, is approximately 2-9 weeks.



## EPORE® defect filler

Standard augmentation can only go so far hence the (TiAl<sub>6</sub>V<sub>4</sub>) EPORE® defect fillers, or cones were developed to provide additional augmentation in knee reconstruction and are effective in reinforcing and rebuilding the implant fixation surfaces in scenarios of more extensive bone loss. A range of sizes and configurations is available (see below) each featuring an outer implant surface which is porous in structure so that it supports bone ingrowth.

## EPORE® metaphyseal components

EPORE® metaphyseal components are used to fill smaller central bone defects in the metaphysis and are usually placed in cancellous bone.

The tibial EPORE® component is screwed directly to the tibial tray just like a standard augment but the femoral EPORE® component is connected by a morse taper to the femoral implant to form a strong coupling.

The outer surfaces of EPORE® metaphyseal components are porous and are hence intended for cementless fixation directly against bone. Due to the direct fixation of the EPORE® metaphyseal components with the knee endoprosthesis, the implantation is performed cementless.

The EPORE® metaphyseal components are available for the implant systems  
MUTARS® GenuX® MK  
and ACS® SC MB.

For further information refer to the EPORE® defect filler brochure. REF EPCMFLYE

**Note:** The EPORE® defect filler program will be available completely in 2. half of 2017.

## EPORE® cones

EPORE® cones are designed for addressing larger defects and are usually anchored against cortical bone. The EPORE® metaphyseal cones for the MUTARS® KRI and MUTARS® RS Arthrodesis are designed to fit their special geometry.

When implanting an EPORE® cone it is first impacted securely without cement into the metaphyseal bone until it is stable and correctly aligned. Then the chosen knee prosthesis is cemented in place. The EPORE® cones and the cones for KRI and RS arthrodesis can thus be used in combination with competitor products.







## A Femoral Implants

A.1 Proximal Femoral Replacement

Replacement of the proximal femur

A. 1.1 Proximal Femoral Replacement Revision Replacement of the prox. femur with retention of greater trochanter

A.2 Distal Femoral Replacement MK

Replacement of the distal femur with knee joint

A.3 Distal Femoral Replacement MK

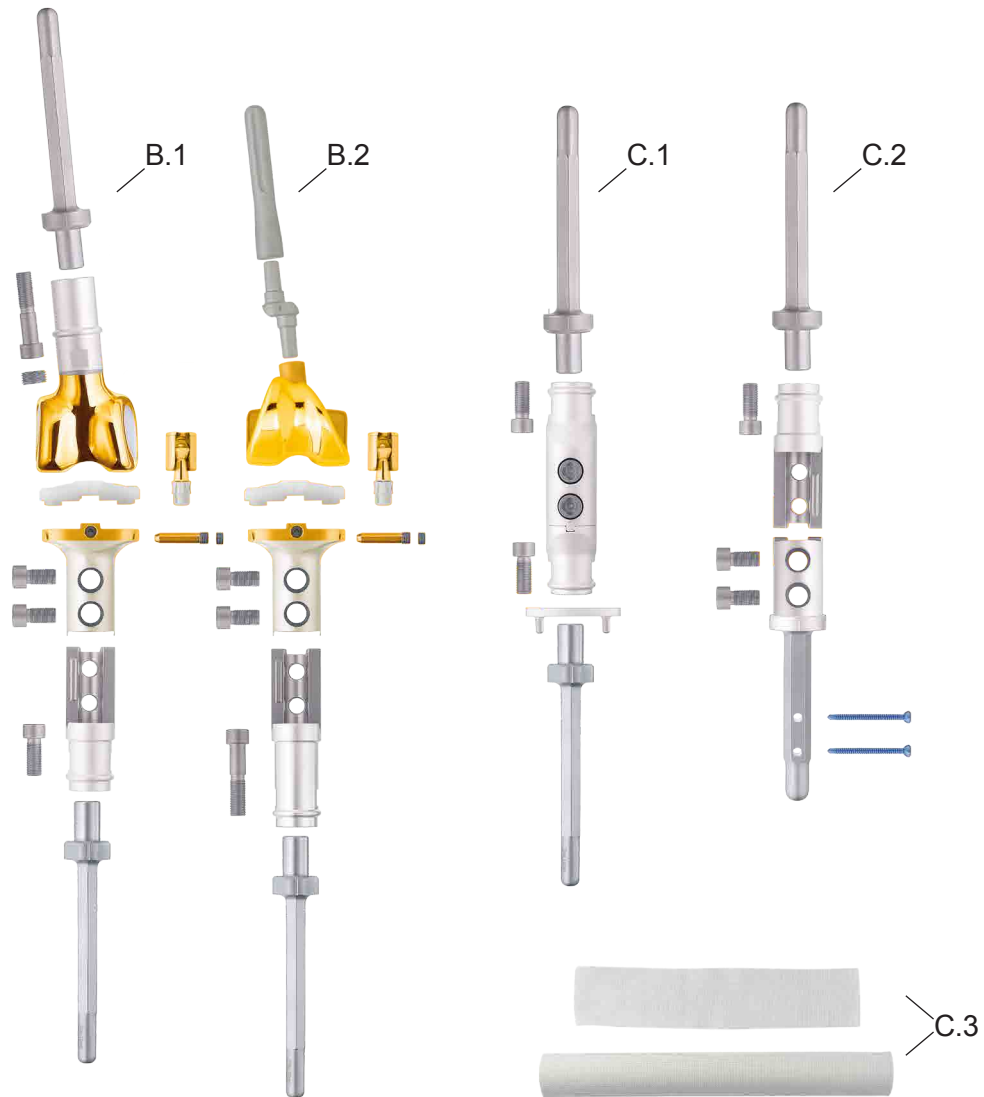
Replacement of the distal femur with RS stem

A.4 Total Femoral Replacement MK

Replacement of the entire femur with knee joint

A.5 Prox. Femoral Replacement with MK

Replacement of the prox. femur with IM. conn. to the knee



## B Tibial Implants / C Other

B.1 Total Knee Repl. MK

B.2 Proximal Tibial MK

C.1 Arthrodesis Implant

C.2 Diaphyseal Implant

C.3 Attachment tube

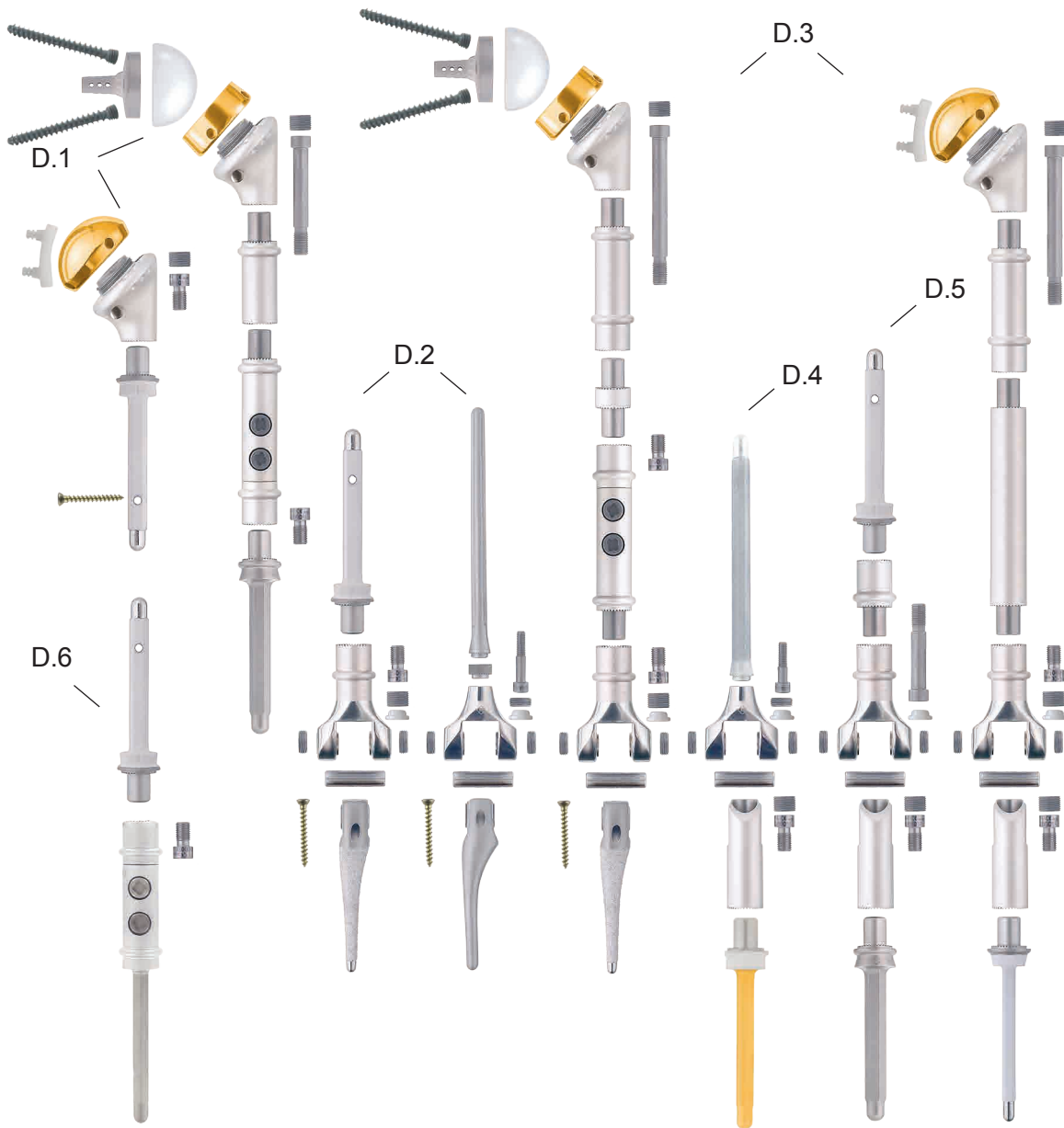
Knee arthroplasty with Proximal Tibia and Distal Femur or KRI

Replacement of the proximal tibia with resurfacing of the femur

Fusion of the knee joint

Diaphyseal reconstruction of femoral or tibial defect

Soft tissue reattachment at the tibia, femur and humerus



## D Humeral Implants

D.1 Proximal Humeral Replacement	Replacement of the proximal humerus (anatomic and inverse)
D.2 Distal Humeral Replacement	Replacement of the distal humerus (60mm or 30mm resection)
D.3 Total Humeral Replacement	Replacement of the entire humerus including joint components
D.4 Proximal Ulna Replacement	Replacement of the proximal ulna with 30mm Distal Humerus
D.5 Total Elbow Replacement	Replacement of the Elbow joint with humeral and ulnar components
D.6 Humeral Diaphyseal Implant	Diaphyseal reconstruction of humeral defect



## E Revision Implants

E.1 MUTARS® RS hip system

E.2 MUTARS® RS Arthrodesis

E.3 GenuX® knee system

E.4 GenuX® Intramedullary tot. Femoral Repl.

E.5 Knee Reconstruction Implant (KRI)

E.6 Intramedullary tot. Femoral Repl. with KRI

E.7 MUTARS® RS Cup

E.8 LUMiC®

Modular revision of the hip joint

Arthrodesis of the knee joint

Modular revision arthroplasty of the knee joint

Combined replacement of the hip and knee joint (revision)

Replacement of the distal femur (short resections)

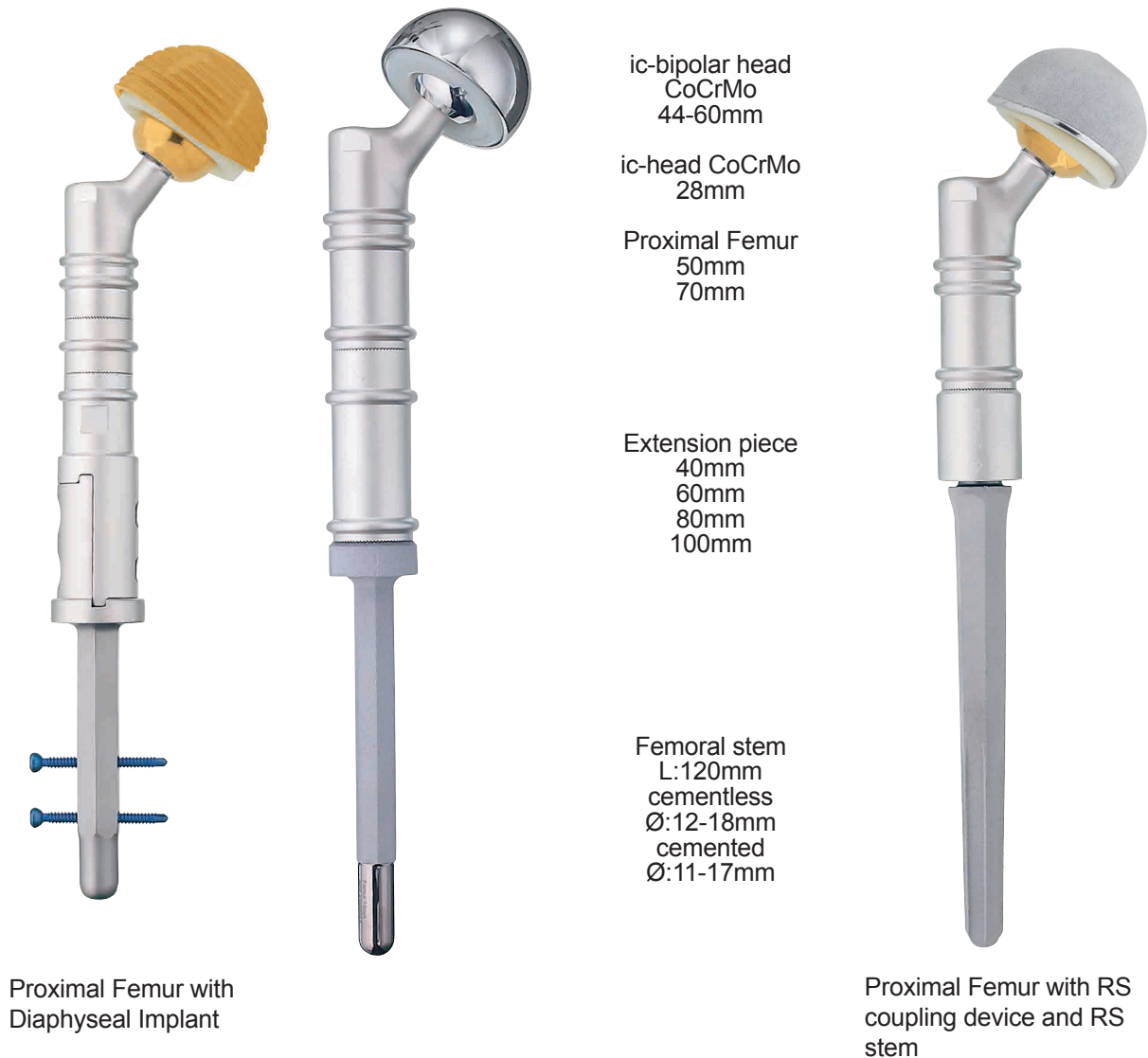
Combined Replacement of hip and knee (loss of condyles)

Revision acetabular cup

Partial pelvic reconstruction

# MUTARS®

## Proximal Femoral Replacement



### A.1 Proximal Femoral Replacement

#### Indication:

Tumours in the area of the proximal femur or other major bone defects including hip joint arthroplasty as hemi prosthesis or total hip replacement

#### System Components:

Proximal Femur in two different lengths of 50mm and 70mm with taper (12/14), with retention rings for fixation of the attachment tube, curved femoral stem in different diameters, cemented (CoCrMo) and cementless (TiAl<sub>6</sub>V<sub>4</sub>) with HA-coating

head: CoCrMo, ceramic (Al<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub>) or TiN. The length of resection can be adjusted via the use of the extension pieces in 20mm increments. The Proximal Femur allows the adjustment of the version angle in 5° increments. All components allow the rotational adjustment of 5° increments, too.

Alternative fixation to the bone: with Diaphyseal Implant and connecting part, RS coupling device (30mm) and tapered RS stem as well as tapered, cementless stems

#### Length of reconstruction:

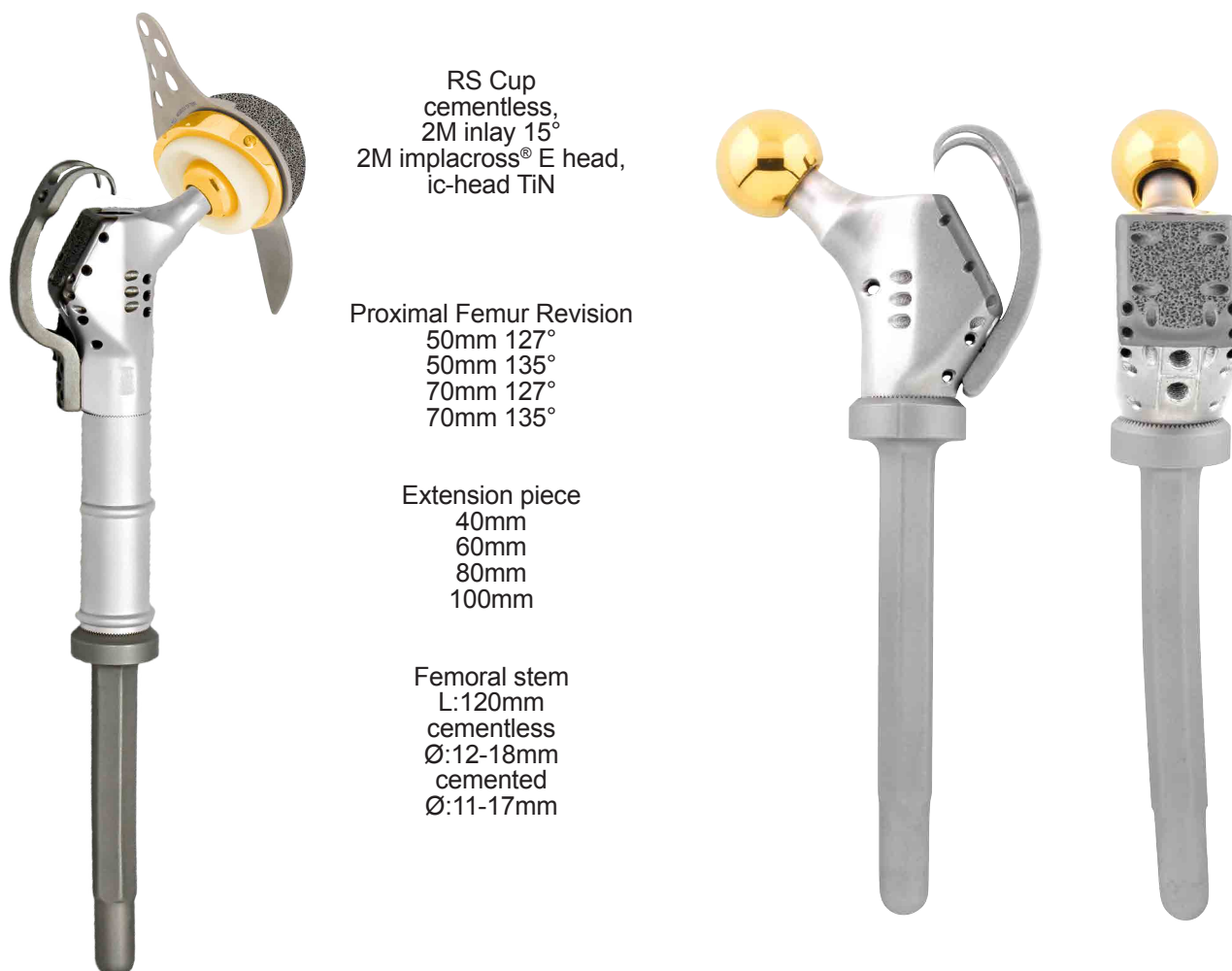
≥ 80mm

#### Materials:

implatan®, TiAl<sub>6</sub>V<sub>4</sub>, implavit®, CoCrMo, UHMW-PE, implacross E®, crosslinked UHMW-PE with vitamin E

# MUTARS®

## Proximal Femoral Replacement Revision



Proximal Femur Revision with  
Extension piece

Proximal Femur RS with and without trochanter  
plate

### A.1.1 Proximal Femoral Replacement Revision

#### Indication:

Tumours in the area of the proximal femur or other major bone defects including hip joint arthroplasty as hemi prosthesis or total hip replacement where retention of greater trochanter is possible

#### System Components:

Proximal femur revision in lengths of 50mm and 70mm, both with a choice of 127° and 135° CCD angle with taper (12/14), with trochanter plate rings for fixation of the trochanter, curved femoral stem in different diameters, cemented (CoCrMo) and cementless (TiAl<sub>6</sub>V<sub>4</sub>) with HA-coating head: CoCrMo, ceramic (Al<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub>) or TiN. The length of resection can be adjusted via the use of the extension pieces in 20mm increments. The Proximal Femur allows the adjustment of the version angle in 5° increments. All components allow the rotational adjustment of 5° increments.

Alternative fixation to the bone: with Diaphyseal Implant and connecting part, RS coupling device (30mm) and tapered RS stem as well as tapered, cementless stems

#### Length of reconstruction:

≥ 80mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>, implavit®, CoCrMo, implacross®; crosslinked UHMW-PE, implacross E®; crosslinked UHMW-PE with vitamin E

## MUTARS® Distal Femoral Replacement MK



Femoral stem

Distal Femur MOM  
(left & right)

Patella

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Tibial plateau MK  
cementless  
cemented

Offset adapter MK

Tibial spacer MK  
5-45mm

GenuX® MK stem  
cementless  
cemented

### A.2 Distal Femoral Replacement MK

#### Indication:

Tumours in the area of the distal femur with a rotating hinge knee arthroplasty

#### System Components:

Distal Femur 90mm and 110mm, PE-Inlay MK, MUTARS® GenuX® MK coupling, curved femoral stem, GenuX® MK stem cemented or cementless, Tibial plateau MK cementless and cemented, cemented Patella replacement, Offset adapter MK

#### Length of reconstruction:

≥ 100mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
UHMW-PE

## MUTARS® Distal Femoral Replacement MK with RS stem



RS stem

RS adapter

Distal Femur MOM  
(left & right)

Patella

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Tibial plateau MK  
cementless  
cemented

Offset adapter MK

Tibial spacer MK  
5-45mm

GenuX® MK stem  
cementless  
cemented

### A. 3 Distal Femoral Repl. MK with RS stem

#### Indication:

Tumours in the area of the distal femur after extended extraarticular resections

#### System Components:

Distal Femur 90mm and 110mm, RS Adapter, PE-Inlay MK, MUTARS® GenuX® MK coupling, curved femoral revision stem, GenuX® MK stem cemented or cementless, Tibial plateau MK cementless and cemented, cemented Patella replacement, Offset adapter MK

#### Length of reconstruction:

≥ 120mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
UHMW-PE



## MUTARS® Total Femoral Replacement MK



EcoFit® 2M cup  
cementless

2M implacross® E head

ic-head TiN

Proximal Femur

Extension piece

connecting part

reducer

Distal Femur MOM

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Tibial plateau MK  
cementless  
cemented

Offset adapter MK

Tibial spacer MK  
5-45mm

GenuX® MK stem  
cementless  
cemented

### A.4 Total Femoral Replacement MK

#### Indication:

Tumours throughout the entire femoral bone with replacement of the hip and knee joint

The reconstruction length can be adjusted in 10mm increments.

#### System Components:

Proximal Femur, Head: CoCrMo, Ceramic or TiN, 2M implacross® E head, EcoFit® 2M Cup, Distal Femur MOM, PE-Inlay MK, MUTARS® GenuX® MK coupling, Connecting part, Reducer, Tibial plateau MK, Offset adapter MK, GenuX® MK stem

#### Length of reconstruction:

≥ 280mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>

implavit®; CoCrMo

UHMW-PE, implacross E®; crosslinked UHMW-PE with vitamin E, Al<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub>

## MUTARS® Prox. Fem. Replacement with Revision Knee GenuX® MK



EcoFit® 2M cup  
cementless

2M implacross® E head

ic-head TiN

Proximal Femur

RS adapter  
30mm

Intramedullary connecting  
module GenuX® MK

GenuX® MK Femur  
(left & right)  
size.:2-5

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Tibial plateau MK  
cementless  
cemented

Offset adapter MK

Tibial spacer MK  
5-45mm

GenuX® MK stem  
cementless  
cemented

### A.5 Prox. Femal Repl. with Revision Knee GenuX® MK

#### Indication:

Tumours in the area of the proximal femur.

Intramedullary connection to a revision knee

#### System Components:

Proximal Femur, Head: CoCrMo, Ceramic or TiN, 2M implacross® E head, EcoFit® 2M Cup, RS adapter, IMFR GenuX® MK, GenuX® MK femoral component, PE-Inlay MK, MUTARS® GenuX® MK coupling, Tibial plateau MK, Offset adapter MK, GenuX® MK stem

#### Implant length:

≥ 260mm (prox. reconstruction ≥ 100mm)

#### Materials:

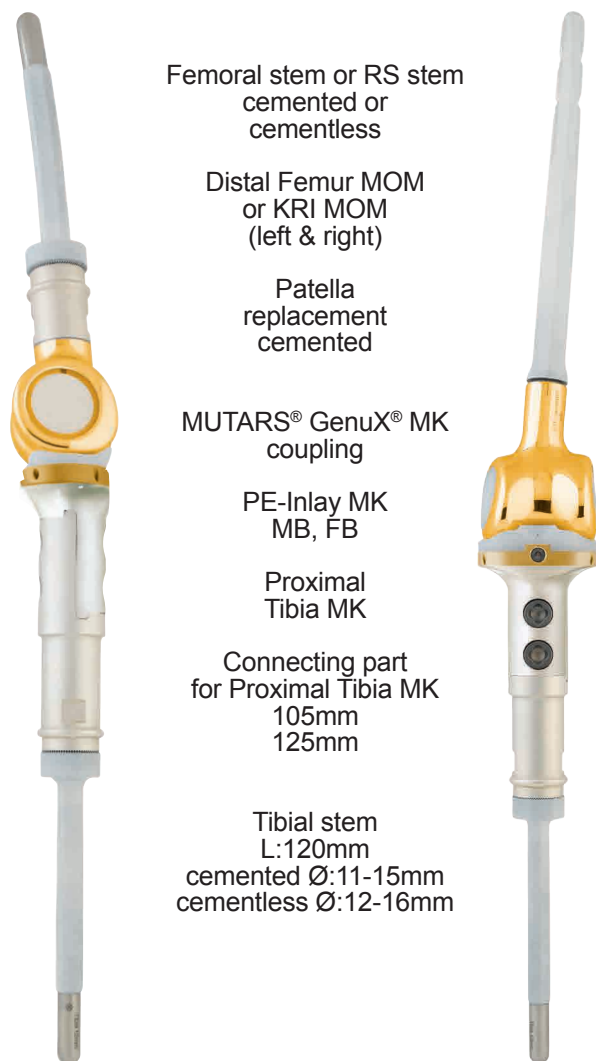
implatan®; TiAl<sub>6</sub>V<sub>4</sub>

implavit®; CoCrMo

UHMW-PE

implacross E®; crosslinked UHMW-PE with vitamin E

## MUTARS® Total Knee Replacement MK with Distal Femur or KRI



Femoral stem or RS stem  
cemented or  
cementless

Distal Femur MOM  
or KRI MOM  
(left & right)

Patella  
replacement  
cemented

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Proximal  
Tibia MK

Connecting part  
for Proximal Tibia MK  
105mm  
125mm

Tibial stem  
L:120mm  
cemented Ø:11-15mm  
cementless Ø:12-16mm

### B.1 Total Knee Replacement MK with Distal Femur or KRI

#### Indication:

Tumours in the area of the knee joint with major femoral and tibial bone loss - rotating hinge knee arthroplasty

#### System Components:

Femoral stem, Distal Femur MOM or KRI MOM, GenuX® MK coupling, Proximal Tibia MK, PE-Inlay, Connecting part for Proximal Tibia MK, Tibial stem cemented and cementless, cemented patella replacement

#### Length of reconstruction:

with Distal Femur ≥ 215mm  
(femoral 100mm, tibial 115mm),

with KRI ≥ 165mm  
(femoral 50mm, tibial 115mm)

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>, implavit®, CoCrMo  
UHMW-PE

## MUTARS® Proximal Tibia MK Replacement



GenuX® MK stem  
cementless  
cemented

Offset adapter MK

GenuX® MK  
femoral component  
(left & right)  
cementless  
cemented

Patella  
replacement  
cemented

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Proximal  
Tibia MK

Connecting part  
for Proximal Tibia MK  
105mm  
125mm

Tibial stem  
L:120mm  
cemented Ø:11-15mm  
cementless Ø:12-16mm

### B.2 Proximal Tibia MK Replacement

#### Indication:

Tumours in the area of the proximal tibia with a rotating hinge femoral resurfacing knee replacement

#### System Components:

GenuX® MK stem, GenuX® MK femoral components, Proximal Tibia MK, PE-Inlay MK size 2, Connecting part for Proximal Tibia MK, Tibial stem cemented and cementless, cemented patella replacement

#### Length of reconstruction:

≥ 115mm

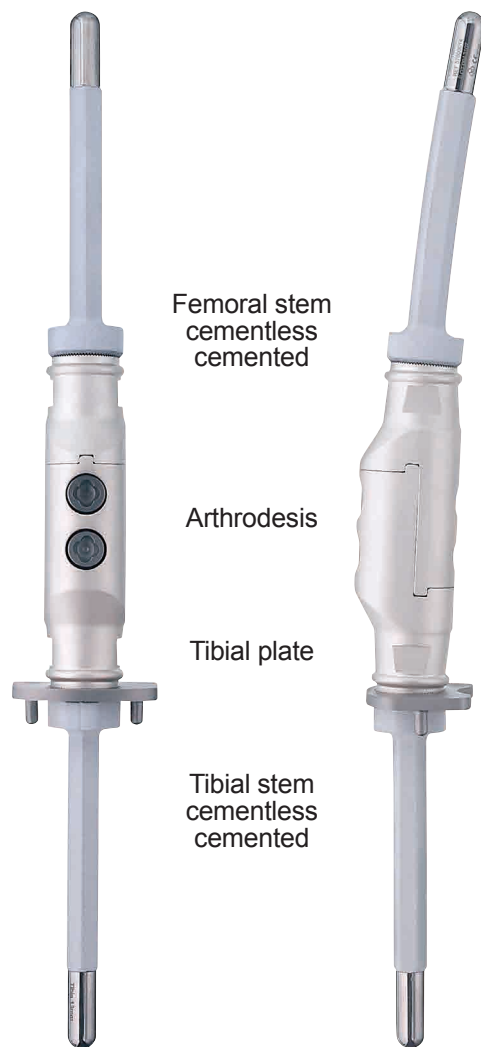
#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>

implavit®; CoCrMo

UHMW-PE

## MUTARS® Arthrodesis Implant



### C.1 Arthrodesis Implant

#### Indication:

Tumours in the area of the knee joint. Arthrodesis of the knee joint

#### System Components:

Femoral stem, Arthrodesis, tibial plate, tibial stem cementless or cemented

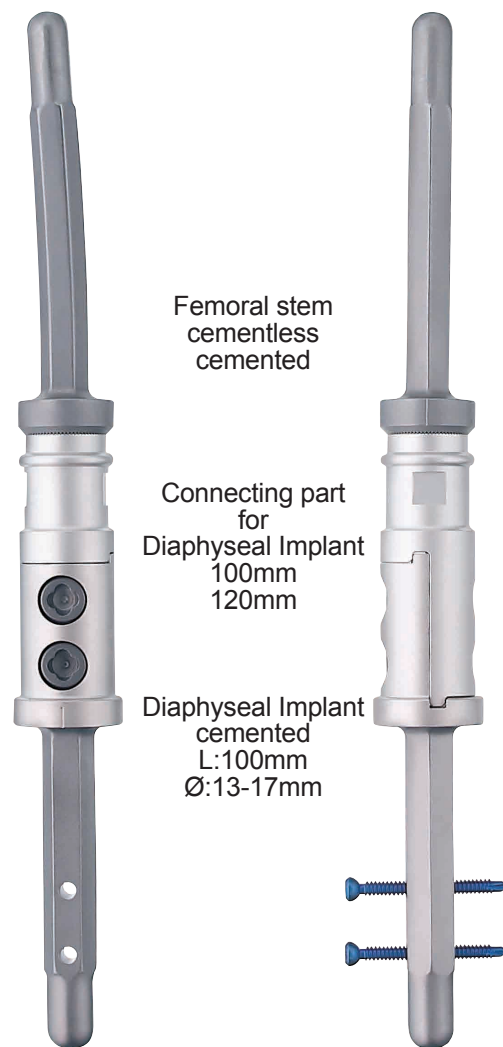
#### Length of reconstruction:

≥ 145mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo

## MUTARS® Diaphyseal Implant



### C.2 Diaphyseal Implant

#### Indication:

Tumours in the area of the femoral or tibial diaphysis - the Diaphyseal Implant should be orientated always towards the nearest joint. An interlocking with screws is recommended.

#### System Components:

Diaphyseal Implant with stem (cemented), connecting part for Diaphyseal Implant, femoral or tibial stems cemented or cementless- can be used cemented

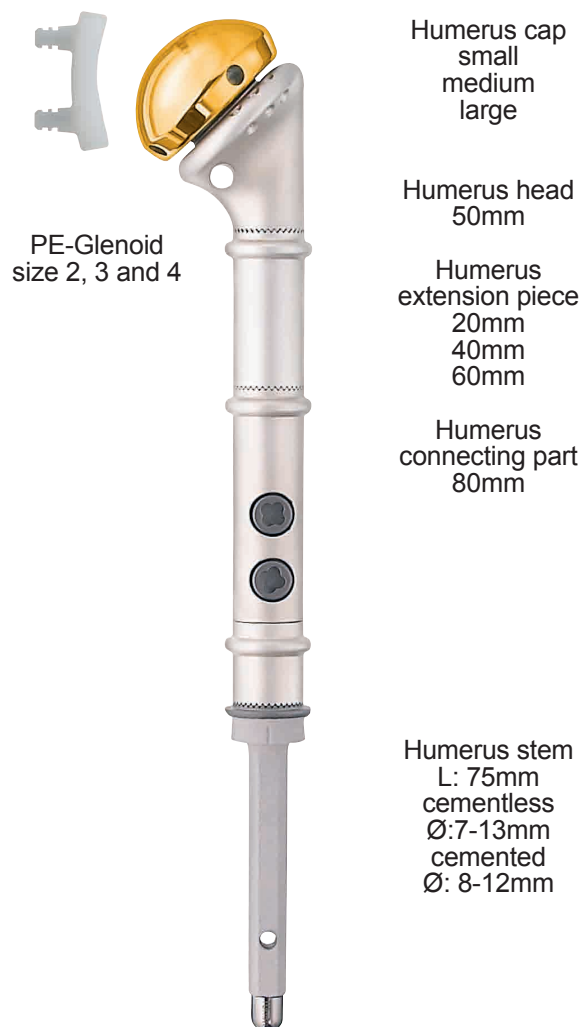
#### Length of reconstruction:

≥ 100mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo

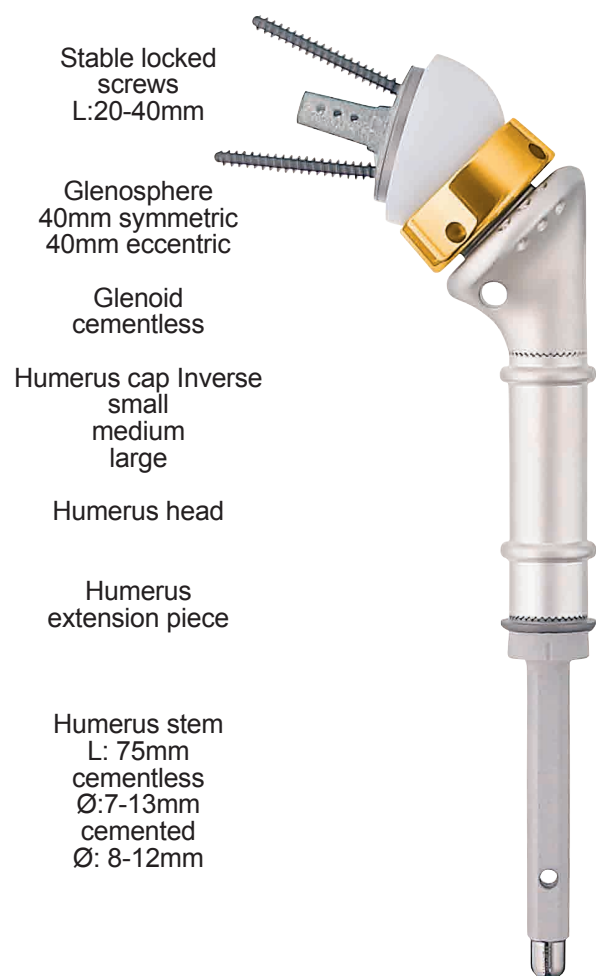
## MUTARS® Proximal Humeral Replacement



### The MUTARS® Humeral Components

The special system for the upper extremity offers the opportunity of a proximal, distal or total humeral reconstruction. The modular humeral caps are available in three different sizes and allow an optimal glenoid contact. The small head and the slightly medialized geometry provide improved soft tissue coverage. As an intraoperative option there are inverse humeral components available including an inverse Humerus cap and glenoid replacement. The design of the extension pieces allows for an intraoperative adjustment in length of 20mm increments. The modular construction allows the surgeon to treat the whole upper extremity with one universal system. If necessary, the implant may be extended intraoperatively to a total humerus prosthesis, thus providing an optimal solution to the individual requirements of each single case.

## MUTARS® Proximal Humeral Replacement Inverse



### D.1 Proximal Humeral Replacement and Humeral Replacement Inverse

#### Indication:

Tumours in the area of the proximal humerus or bone defects after fracture or revision surgery -with the inverse option in case of rotator cuff insufficiencies.

#### System Components:

Humerus head, Humerus cap, Humerus inverse cap, Humerus connecting part and Humerus extension piece, glenoid and glenosphere, PE-glenoid, cancellous screws 4mm, stable lock screws 4,2mm, Humerus stem cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo)

#### Length of reconstruction:

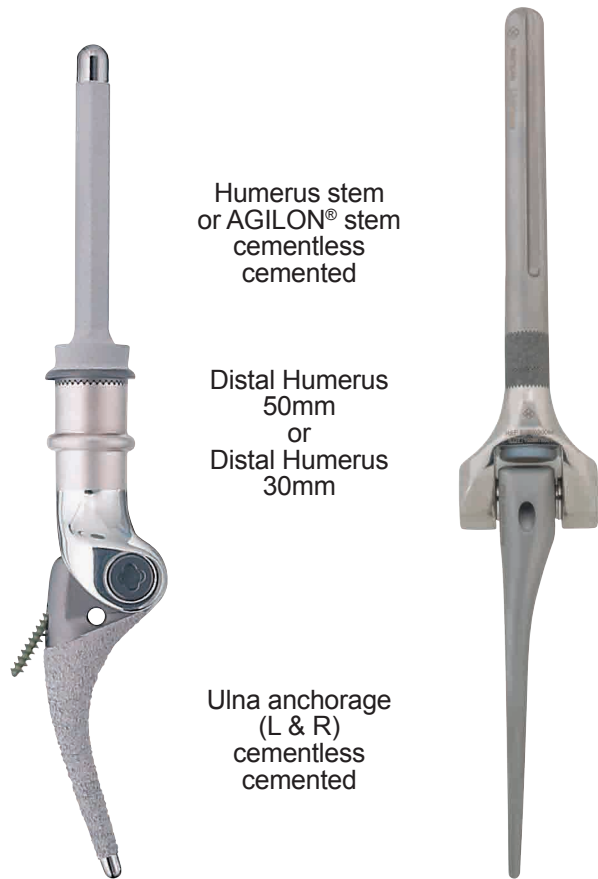
≥ 60mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>

implavit®; CoCrMo, pure titanium, UHMW-PE

## MUTARS® Distal Humeral Replacement



### D.2 Distal Humeral Replacement

#### Indication:

Tumours in the area of the distal humerus with a constrained replacement of the humeroulnar joint

#### System Components:

Distal Humerus 50mm or 30mm, Humerus and AGILON® stem cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo), Ulna anchorage: cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo), The combination with the Proximal Ulna is possible and described in chapter D.4.

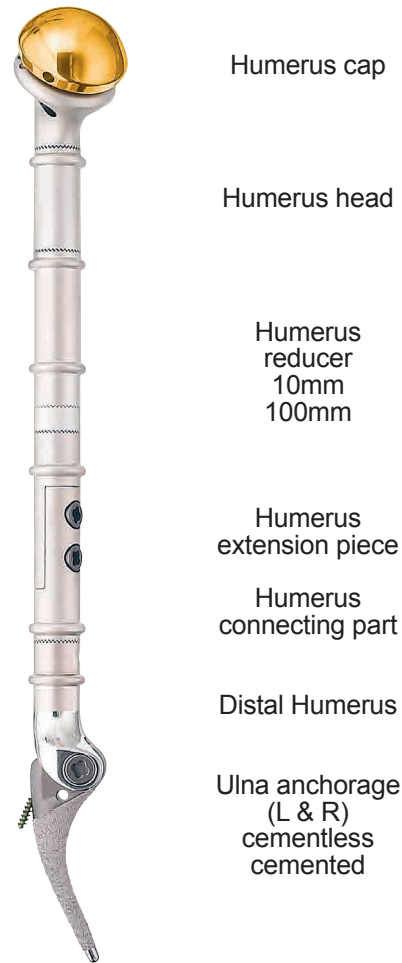
#### Length of reconstruction:

≥ 60mm (30mm if the Distal Humerus 30mm is used)

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo

## MUTARS® Total Humeral Replacement



### D.3 Total Humeral Replacement

#### Indication:

Extensive tumours of the humerus, partial replacement of the shoulder joint, constrained arthroplasty of the humeroulnar joint

#### System Components:

Humerus cap, Humerus head, reducer, extension piece and Humerus connecting part, Ulna anchorage: cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo),

The combination with the Proximal Ulna is possible and described in chapter D.4.

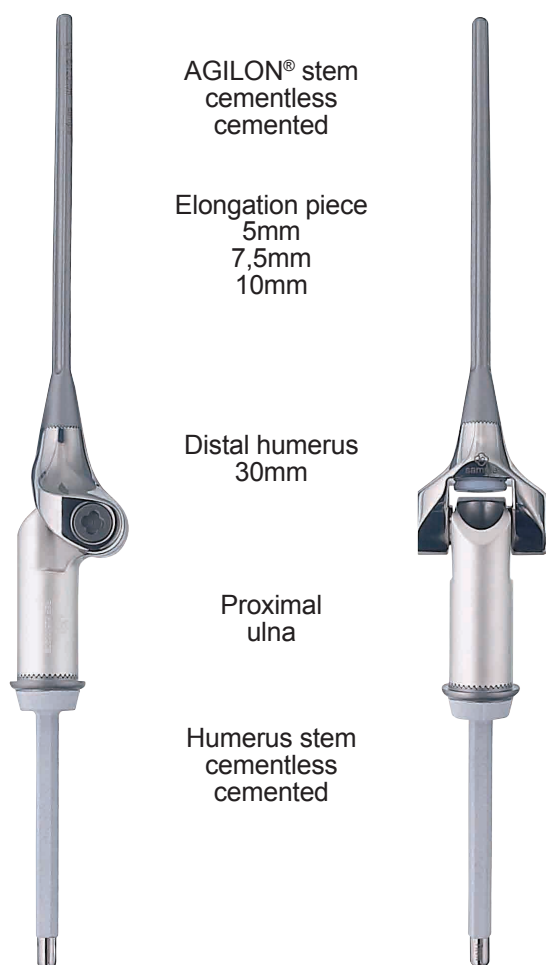
#### Length of reconstruction:

≥ 190mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo

## MUTARS® Proximal Ulnar Replacement



### D.4 Proximal Ulnar Replacement

#### Indication:

Tumours in the area of the proximal ulna with a constrained replacement of the humeroulnar joint

#### System Components:

Distal Humerus 30mm, Proximal Ulna (TiAl<sub>6</sub>V<sub>4</sub>), AGILON® stem cemented and cementless, AGILON® extension piece, humerus stem: cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo),

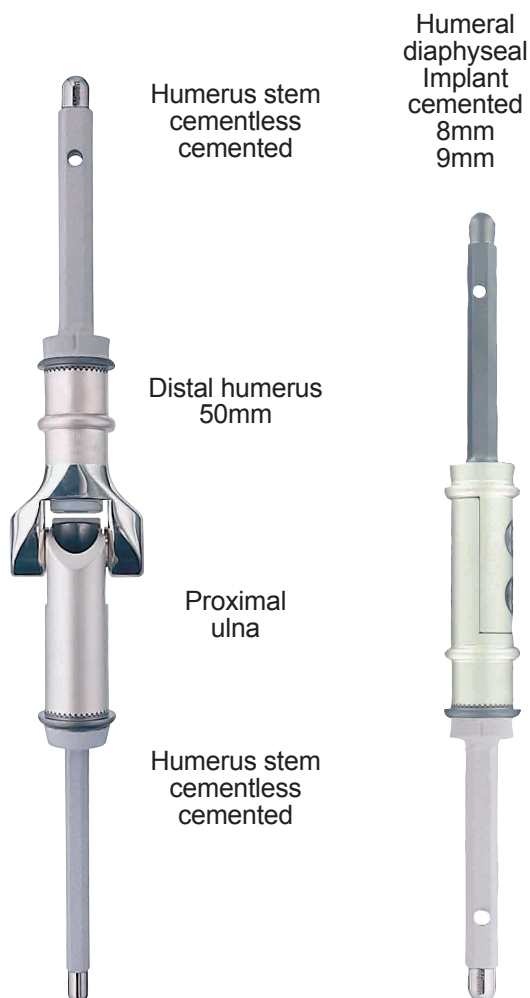
#### Length of reconstruction:

≥ 60mm ulnar

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo

## MUTARS® Total Elbow Replacement/Diaphyseal Implant



### D.5 Total Elbow Replacement

#### Indication:

Tumours in the area of the distal humerus and the proximal ulna with a constrained replacement of the humeroulnar joint.

#### System Components:

Distal Humerus, Proximal Ulna (TiAl<sub>6</sub>V<sub>4</sub>), humerus stem: cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo),

#### Length of reconstruction:

≥ 60mm (ulnar and humeral)

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo

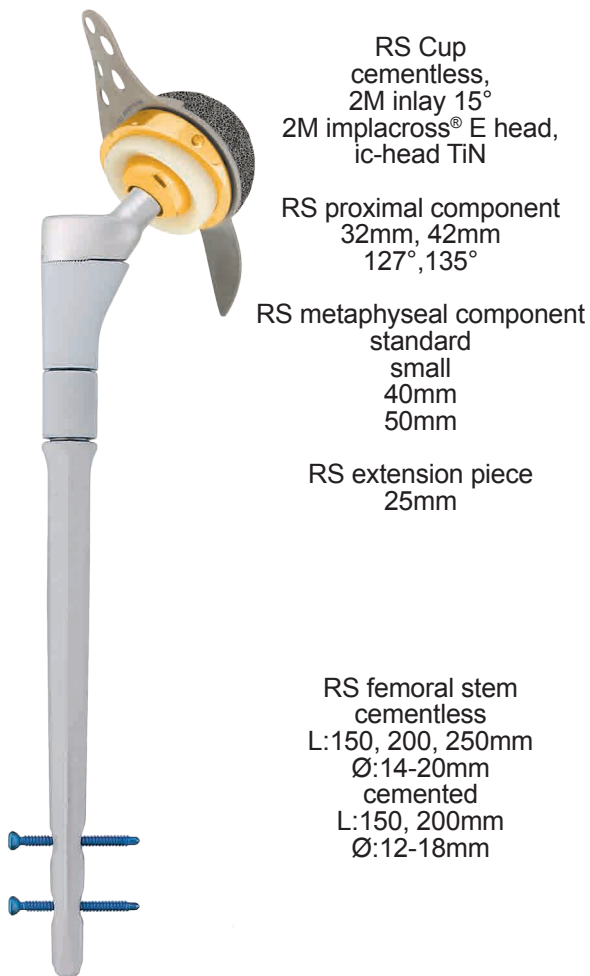
### D.6 Humeral Diaphyseal Implant

#### Indication:

Tumours in the area of the humeral diaphysis. The cemented Diaphyseal Implant (8 and 9mm) should be orientated towards the nearest joint.



## MUTARS® RS Hip Revision System



RS Cup  
cementless,  
2M inlay 15°  
2M implacross® E head,  
ic-head TiN

RS proximal component  
32mm, 42mm  
127°, 135°

RS metaphyseal component  
standard  
small  
40mm  
50mm

RS extension piece  
25mm

RS femoral stem  
cementless  
L: 150, 200, 250mm  
Ø: 14-20mm  
cemented  
L: 150, 200mm  
Ø: 12-18mm

### E.1 MUTARS® RS Revision Hip Replacement

#### Indication:

Revision of the hip joint

#### System Components:

RS cup, 2M inlay 15°, 2M implacross® E head, ic-head TiN, RS proximal component, RS metaphyseal component, RS extension piece 25mm, RS stem cementless (TiAl<sub>6</sub>V<sub>4</sub>) with HA-coating and cemented (CoCrMo), alternatively the extra small RS stems can be used (direct combination to the proximal part without metaphyseal part)

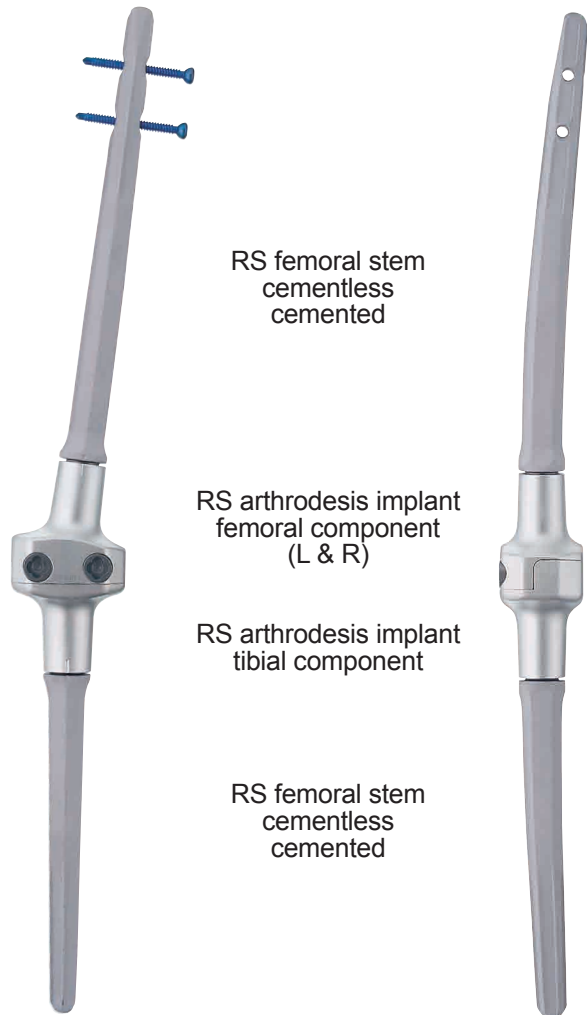
#### Implant length:

≥ 220mm, proximal reconstruction ≥ 72mm (32mm if an extra small RS stems is used)

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
UHMW-PE

## MUTARS® RS Arthrodesis Implant



RS femoral stem  
cementless  
cemented

RS arthrodesis implant  
femoral component  
(L & R)

RS arthrodesis implant  
tibial component

RS femoral stem  
cementless  
cemented

### E.2 MUTARS® RS Arthrodesis

#### Indication:

Arthrodesis with possible cementless fusion of the knee joint

#### System Components:

RS arthrodesis implant femoral component (TiAl<sub>6</sub>V<sub>4</sub>), RS arthrodesis implant tibial component (TiAl<sub>6</sub>V<sub>4</sub>), RS stem cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo),

#### Length of reconstruction:

≥ 90mm (30mm, if the stem connecting portions are inserted into the bone)

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
implacross®; crosslinked UHMW-PE,  
implacross E®; crosslinked UHMW-PE  
with vitamin E



## GenuX® MK Knee Revision System



GenuX® MK stem  
cementless  
cemented

Offset adapter MK

Femoral spacer  
cemented

GenuX® MK  
femoral component  
(left&right)  
cementless  
cemented

Patella  
replacement  
cemented

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Tibial Plateau MK  
cementless  
cemented

Tibial spacer MK

Offset adapter MK

GenuX® MK stem  
cementless  
cemented

### E.3 GenuX® MK Knee Revision System

#### Indication:

Constrained revision knee replacement, large bone defects can be augmented

#### System Components:

GenuX® MK femoral component, GenuX® MK stem cementless and cemented, Tibial plateau MK cementless and cemented, Offset adapter MK

#### Implant length:

≥ 120mm tibial and femoral, augmentation:  
5-20mm tibial unicondylar, 25-45mm tibial bicondylar, femoral 5 and 10mm,

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
UHMW-PE

## GenuX® MK Monoblock



GenuX® MK Monoblock  
femoral component  
(left&right)  
cemented

Patella  
replacement  
cemented

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Tibial plateau MK  
Monoblock  
cemented

### E.3.1 GenuX® MK Monoblock

#### Indication:

Coupled, cemented revision treatment of the knee without major bone defects

#### System Components:

GenuX® MK Monoblock femoral component cemented, Tibial plateau MK Monoblock cemented, PE-Inlay MK, MUTARS® GenuX® MK coupling

#### Length of reconstruction:

≥ 125mm tibial und femoral

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
UHMW-PE

## GenuX® MK Revision System



Fig. 9: GenuX® MK offset  
femoral / tibial

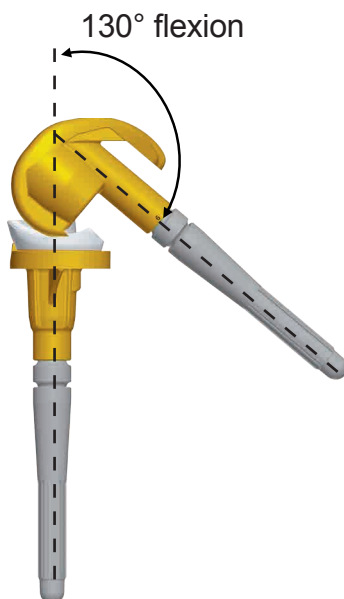


Fig. 10: GenuX® MK flexion

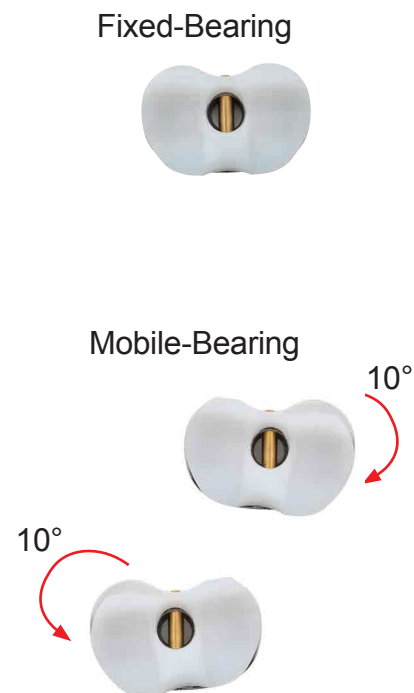


Fig. 11: GenuX® MK PE inlay  
MB and FB

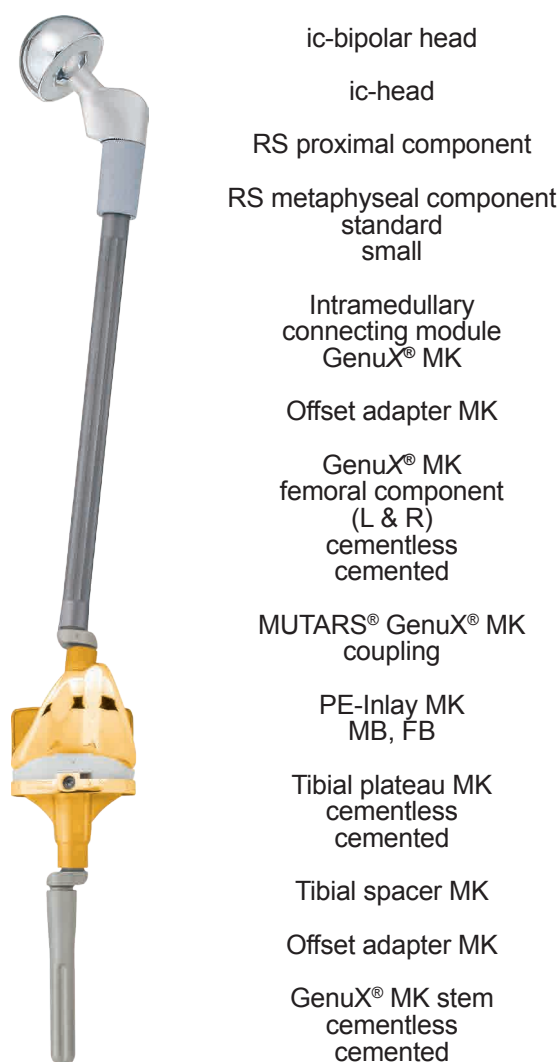
### The GenuX® MK (Modular Knee)

The GenuX® MK is a further development of the existing GenuX® revision knee implant. The modular design coupled with the 360° freely rotating offset male-male double taper offset adapter makes it possible for the same range(s) of cemented or cementless femoral or tibial stems to be utilised. The new design of the femoral component allows 130° of flexion. The newly designed femoral component features a greatly reduced intercondylar box that preserves much more of the intercondylar bone. The thickness of the new tibial plateau is reduced by 2.5mm and this allows the intraoperative choice of mobile bearing PE with a possible 20° rotation and fixed bearing PE which is the same as the GenuX®. The tibial plateau was designed with reference to the ACS® SC geometry which allows implantcast the opportunity to seamlessly consolidate the instrument platform to allow the surgeon to change from a planned ACS® SC to a fully coupled knee prosthesis. The new system will incorporate the use of tibial and femoral spacers. The femoral components will allow independent posterior and distal spacer placement. The new system has four femoral and tibial sizes that are freely combinable and available in uncemented and cemented version.

The new GenuX® MK has the following features:

- fully constrained rotating knee
- MB and FB option
- Max. 20° rotation (MB)
- cemented and cementless
- 360° freely adjustable offset
- Offset of 2mm, 4mm and 6mm
- fixation of femoral spacers (5-10mm) and tibial spacers (5 - 45mm)
- 4 femoral and tibial sizes
- full compatibility to MUTARS®
- combinable with the EPORE® *Defect filler*

## GenuX® MK Intramedullary Total Femoral Replacement



### E.4 GenuX® MK Intramedullary Total Femoral Replacement

#### Indication:

Combined revision joint replacement of the hip and knee joint using an intramedullary connection

#### System Components:

RS proximal component, RS metaphyseal component, RS Extension piece 25mm, Intramedullary connecting module, Offset adapter MK, GenuX® MK femoral component, Tibial plateau MK, GenuX® MK stem cementless and cemented

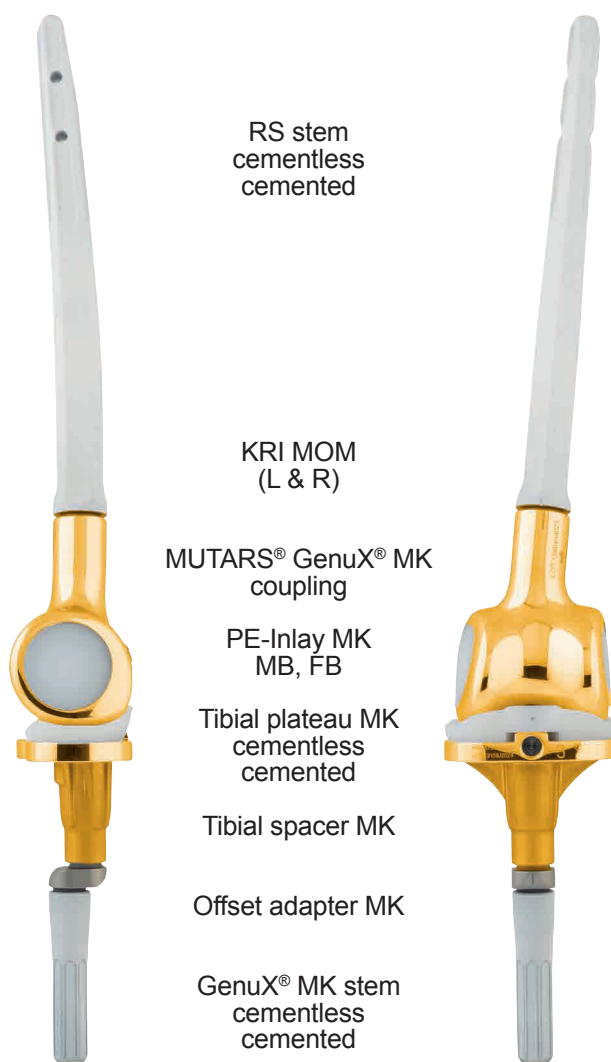
#### Length of reconstruction:

≥ 332mm (femoral length)

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
UHMW-PE

## KRI MK - Knee Reconstruction Implant



### E.5 KRI MK - Knee Reconstruction Implant

#### Indication:

Constrained revision knee replacement, huge bone defects can be augmented with loss of the distal femoral condyles

#### System Components:

RS stem, RS extension piece 25mm, KRI MOM (for allergic patients also TiN coated), Tibial plateau MK cemented, Offset adapter MK, GenuX® MK stem cementless and cemented

#### Length of reconstruction:

≥ 50mm

#### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>  
implavit®; CoCrMo  
UHMW-PE

# Intramedullary Total Femoral Replacement KRI MK

MUTARS®  
LUMiC®



EcoFit® 2M cup  
cemented  
2M implacross® E head  
ic-head TiN

RS proximal component

RS metaphyseal component  
standard  
small

Intramedullary  
connecting module  
for KRI  
Ø:15mm  
cementless

KRI MOM  
(L & R)

MUTARS® GenuX® MK  
coupling

PE-Inlay MK  
MB, FB

Tibial plateau MK  
cementless  
cemented

Tibial spacer MK

Offset adapter MK

GenuX® MK stem  
cementless  
cemented

## E.6 Intramedullary Total Femoral Repl. with KRI MK

### Indication:

Combined revision joint replacement of the hip and knee joint using an intramedullary connection with loss of the distal femoral condyles

### System Components:

RS proximal component, RS metaphyseal component, RS extension piece 25mm, Intramedullary connecting module, KRI MOM, Tibial plateau MK, Offset adapter MK, GenuX® MK stem cemented and cementless

### Length of reconstruction:

≥ 327mm (femoral length)

### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>

implavit®; CoCrMo

UHMW-PE, implacross E®; crosslinked

UHMW-PE with vitamin E



LUMiC® Cup  
3 sizes  
HA-coated  
smooth surface  
silver (only 60mm cup)



LUMiC® stems  
cementless  
cemented

3 articulation options  
-poly-on-metal  
-poly-on-ceramic  
-tripolar

## B.8 Partial Pelvic Replacement using the LUMiC®

### Indication:

Partial pelvic reconstruction replacement for the hip joint after many or complicated revisions or after major bone defects of the acetabulum

### System Components:

LUMiC® cup (TiAl<sub>6</sub>V<sub>4</sub>), cementless (TiAl<sub>6</sub>V<sub>4</sub>) and cemented (CoCrMo) stems, 2M inlay 15° (CoCrMo), implacross® PE-Insert (UHMW-PE), 2M implacross® E Head (UHMW-PE loaded with Vitamin E)

### Materials:

implatan®; TiAl<sub>6</sub>V<sub>4</sub>

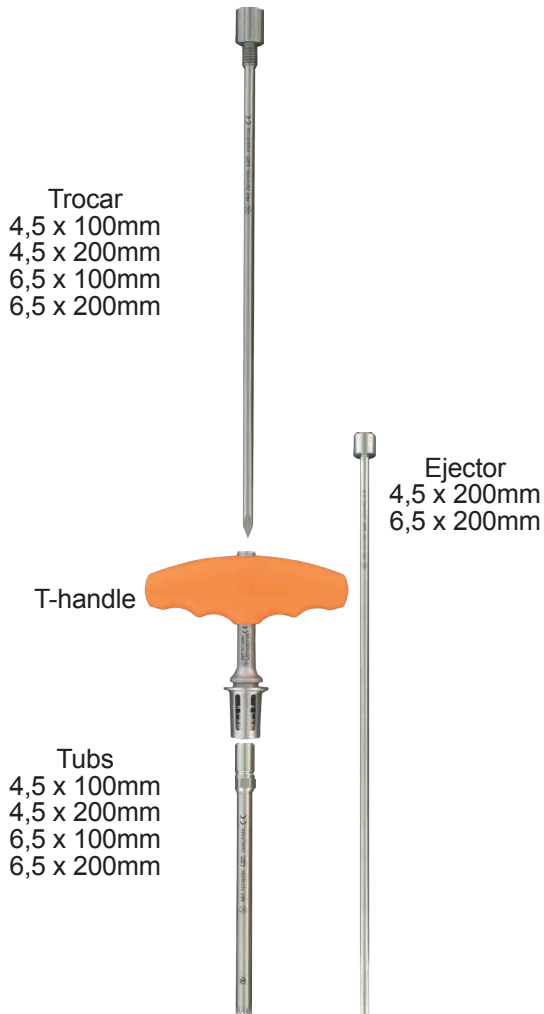
implavit®; CoCrMo

implacross®; crosslinked UHMW-PE,

implacross E®; crosslinked UHMW-PE

with vitamin E

## MUTARS® Biopsy Punch



### MUTARS® biopsy punch

#### Indication:

Sampling to identify undefined bone tumours or for sampling of bone

#### System Components:

ic T-handle WEB.c coupling, MUTARS® biopsy punch trocar, MUTARS® biopsy punch ejector, MUTARS® biopsy punch tubs.

#### Instrument length:

trocar (Ø 4,5 / 6,5mm in 100 / 200mm length)  
tubs (Ø 4,5 / 6,5mm in 100 / 200mm length)  
ejector (Ø 4,5 x 200 und Ø 6,5 x 200mm)

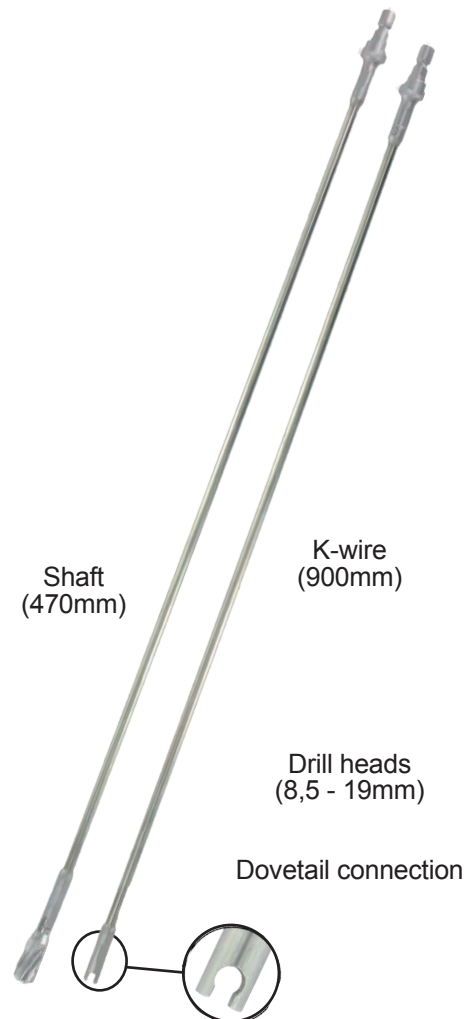
#### Compatibility:

ic-vac cement system

#### Material:

Stainless steel

## Flexible Drill Nitinol



### Flexible drill Nitinol

#### Indication:

Drilling of curved bones (e.g. femur)

#### System Components:

Shaft (l = 470mm)

Drill heads

(Ø 8,5 -19mm in 0,5mm increments)

k-wire (l = 900mm)

#### Material:

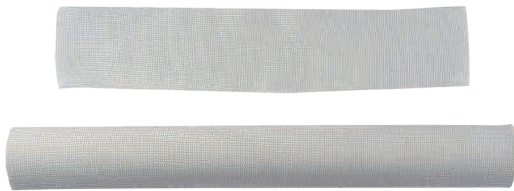
Nitinol

Stainless steel

# MUTARS®

## Attachment tube

Length: 300mm  
Ø:35mm + 55mm



### C.3 Attachment tube

Indication: The MUTARS® Attachment tube allows the fixation of muscle tissue and ligaments and assists the reconstruction of the joint capsule which helps prevent dislocation after major hip and shoulder surgery. In e.g. proximal tibial replacement the tube allows attachment of muscle flaps (e.g. gastrocnemius), the extensor apparatus as well as the patella ligament.

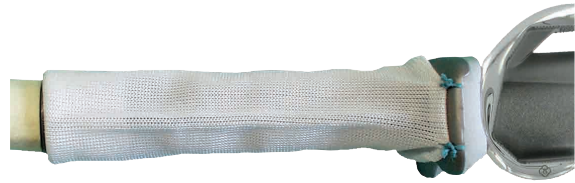
Length: 300mm

Material:

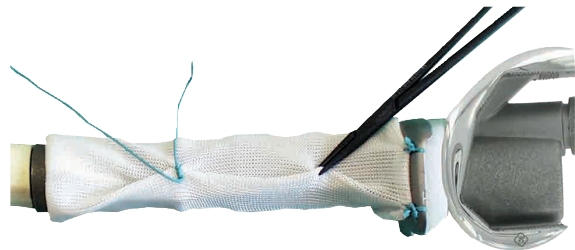
Polyethylenterephthalat (PET), available in two diameters of 35mm and 55mm



The retention rings of the MUTARS® components allow a safe fixation of the Attachment tube. It is recommended to start the fixation of the tube always at the proximal part.



Also the fixation holes of the MUTARS® proximal tibia allow a safe fixation of the Attachment tube.



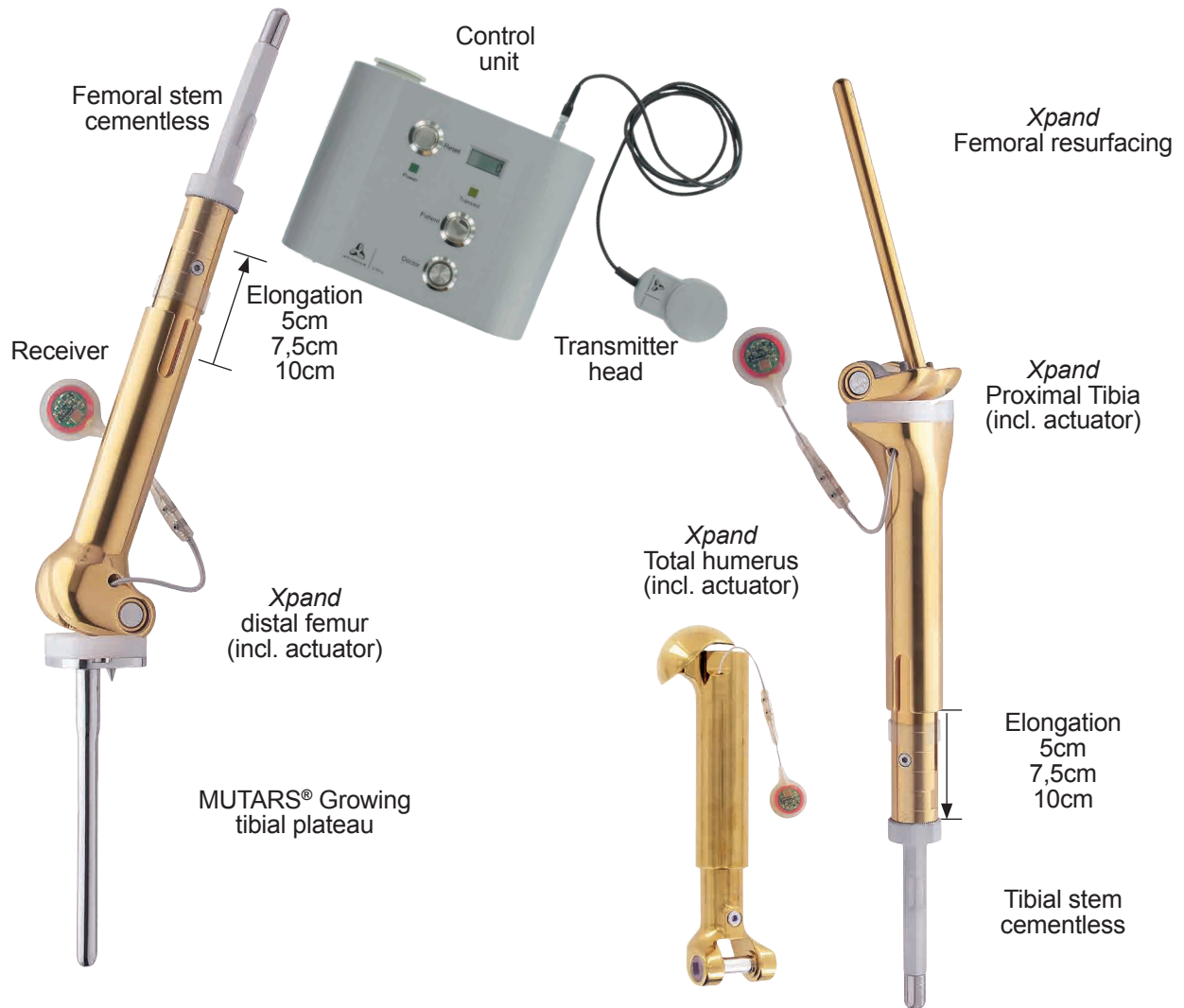
In order to provide for maximum stability, fixation is applied under tension, using non-absorbable suture material.



The suture should be guided at least three times through the tube material and should finally be sutured applying several surgical knots. In order to achieve maximum stability, all retention rings can be provided with two fixing-sutures, one above and one below the retention rings.



# MUTARS® Xpand Mechanical Growing Prostheses



## MUTARS® Xpand Growing Prostheses

The endoprosthetic treatment of pre-adolescent tumour patients is a challenging procedure for the surgeon as well as for the implant. The intramedullary fixation of the prosthetic components leads to reduced growth of the treated extremity and leading to limb length discrepancies. Most of the available systems include lengthening modules which are elongated mechanically during surgical procedures. In order to reduce the exposure of the patients to several surgeries and rising the risk of infection, the MUTARS® Growing Prosthesis follows a new concept. Based on an idea of Prof. Dr. R. Baumgart (Limb Lengthening Center Munich, ZEM-Germany) and in close collaboration with the company WITTENSTEIN intens GmbH (Igersheim) two new product systems (mechanical and biological) of growing prostheses have been developed.

### The elongation of the Prosthesis, using the MUTARS® Xpand Prosthesis

The mechanical, non-invasive growing modules of the MUTARS® Xpand using a miniaturized, mechatronic actuator inside the prosthesis which is activated by energy coupling from outside the skin. An additional invasive surgery is not necessary, which reduces the risk of infection (Elongation 5cm: reconstruction length 170mm/ 7,5cm: 195mm/10cm:220mm).

After the lengthening procedure the Xpand components are replaced by regular MUTARS® components.

**NB:** All components of the MUTARS® Xpand Growing Prostheses are customised implants which are planned, designed and manufactured for each patient based on a scaled x-ray.



# MUTARS® BioXpand Biological Growing Prostheses

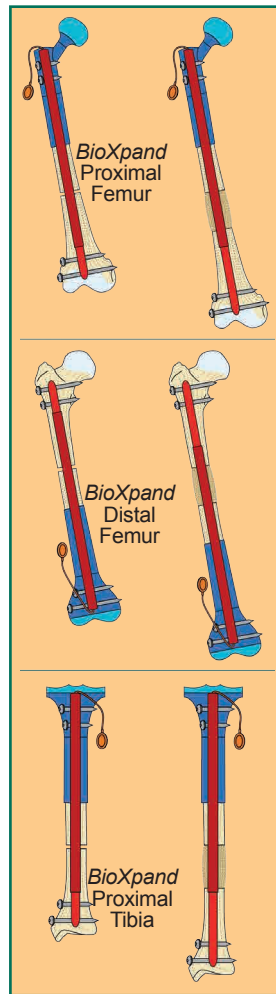
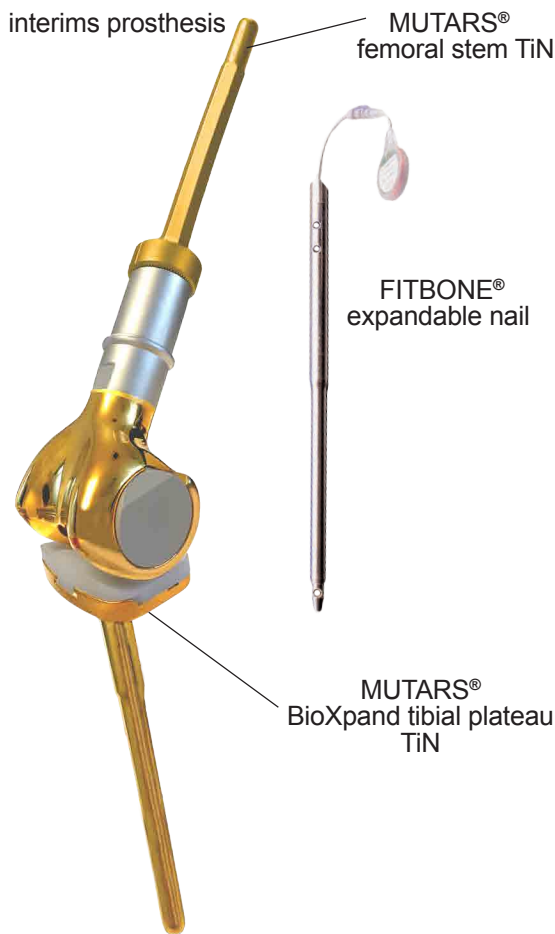


Fig. 1: Principle of the callus-formation with BioXpand

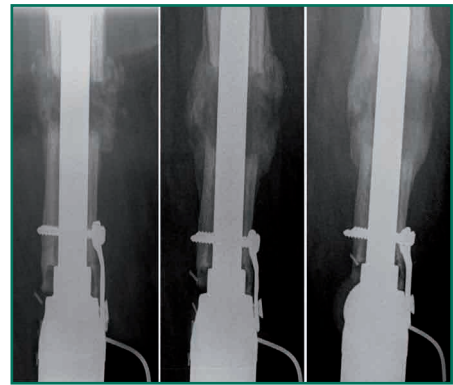


Fig. 2: Steps of callus formation (ZEM-Germany)

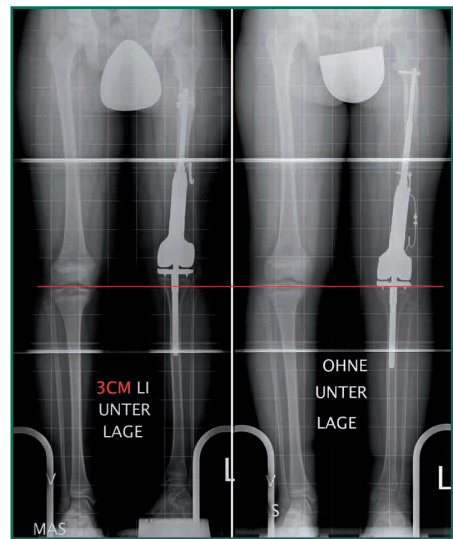


Fig. 3: Leg lengthening of 3cm with the BioXpand Prosthesis (ZEM-Germany)

## MUTARS® BioXpand Growing Prostheses

In the “biological” MUTARS® BioXpand growing prosthesis, an interim prosthesis is initially implanted. This will later be replaced by a lengthening nail (FITBONE®) at the time when lengthening should be initiated. In this type of growing prosthesis the electromagnetic technology is used to lengthen the bone of the patient and to gain bone stock.

### The lengthening of the remaining bone, using the MUTARS® BioXpand Prosthesis

The “biological”, non-invasive BioXpand growing prosthesis for the proximal and distal femur as well as for the proximal tibia simulate bone growth of remaining bone stock post tumour resection. Using the principles of callus distraction (Fig. 1 to 3) the interim prosthesis is replaced by a tumor prosthesis combined with a motorized lengthening nail (FITBONE®), an osteotomy is performed and the remaining bone can be lengthened. After the lengthening procedure the MUTARS® BioXpand components are replaced by conventional MUTARS® components.

**NB:** All components of the MUTARS® BioXpand Growing Prostheses are customized implants. For the procedure and the lengthening treatment Prof. Dr. R. Baumgart, ZEM-Germany in München should be consulted.

# MUTARS® Implants

## MUTARS® Implants

\*S: Implants are available with Silver coating!

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

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

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.



### Proximal Femur \*S

incl. safety screw

mat.: *implatan*®

5710-0205	50mm
5710-0207	70mm



### Proximal Femur Revision\*S

incl. safety screw

mat.: *TiAl<sub>6</sub>V<sub>4</sub>* with *EPORE*®

5710-0305	50/127°mm
5710-0307	70/127°mm
5710-0405	50/135°mm
5710-0407	70/135°mm



### trochanter plate for Proximal Femur Revision \*S

mat.: *TiAl<sub>6</sub>V<sub>4</sub>*

5710-1305	50mm
5710-1307	70mm



### screw for trochanter plate for Proximal Femur Revision

mat.:

5708-0001



### extension piece \*S

mat.: *implatan*®

5772-2503S	30mm*
5772-2504	40mm
5772-2506	60mm
5772-2508	80mm
5772-2510	100mm

\*only available with silver-coating



### connecting part \*S

Incl. screw for connecting part

mat.: *implatan*®

5730-0100 100mm



### reducer \*S

mat.: *implatan*®

5730-0220	20mm
5730-0230	30mm



### screw, M10

mat.: *implatan*®

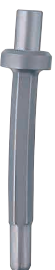
5792-1002	25mm
5792-1004	45mm
5792-1005	55mm
5792-1006	65mm
5792-1007	75mm
5792-1008	85mm
5792-1009	95mm
5792-1010	105mm
5792-1011	115mm
5792-1012	125mm
5792-1013	135mm
5792-1014	145mm
5792-1016	165mm
5792-1018	185mm
5792-1020	205mm
5792-1022	225mm
5792-1024	245mm



### femoral stem cementless, length 120mm

mat.: *implatan*® with *implaFix*® HA

5760-0111	11mm max. 60 kg
5760-0012	12mm
5760-0113	13mm
5760-0014	14mm
5760-0115	15mm
5760-0016	16mm
5760-0117	17mm
5760-0018	18mm
5760-0019	19mm
5760-0020	20mm



### femoral stem cemented \*N

mat.: *implavit*®

5760-0011	11 x 120mm max. 75 kg
5760-0013	13 x 120mm
5760-0015	15 x 120mm
5760-0017	17 x 120mm
5760-1116	11 x 160mm max. 75 kg
5760-1316	13 x 160mm
5760-1516	15 x 160mm
5760-1716	17 x 160mm
5760-1120	11 x 200mm max. 75 kg
5760-1320	13 x 200mm
5760-1520	15 x 200mm
5760-1720	17 x 200mm
5760-1124	11 x 240mm max. 75 kg
5760-1324	13 x 240mm
5760-1524	15 x 240mm
5760-1724	17 x 240mm



### femoral stem cemented TiN-coating and HA-collar

mat.: *implavit*® with TiN- and *implaFix*® HA

5769-1211	11 x 120mm
5769-1213	13 x 120mm
5769-1215	15 x 120mm
5769-1217	17 x 120mm
5769-1611	11 x 160mm
5769-1613	13 x 160mm
5769-1615	15 x 160mm
5769-1617	17 x 160mm
5769-2011	11 x 200mm
5769-2013	13 x 200mm
5769-2015	15 x 200mm
5769-2017	17 x 200mm
5769-2411	11 x 240mm
5769-2413	13 x 240mm
5769-2415	15 x 240mm
5769-2417	17 x 240mm

with locking holes for Ø 4,5mm screws



### MUTARS® end piece

mat.: *implatan*®

5860-0001



### RS proximal component \*S

incl. safety screw

mat.: *implatan*®

6710-1527	127° 32mm
6710-1535	135° 32mm
6710-1627	127° 42mm
6710-1635	135° 42mm



### RS metaphyseal component

mat.: *implatan*® with *implaFix*® HA

6730-4121	40mm
6730-5121	50mm
6730-4221	40mm small
6730-5221	50mm small



### RS Extension piece

mat.: *implatan*® with *implaFix*® HA

6730-0125 25mm



### RS screw, M8

mat.: *implatan*® with *implaFix*® HA

6720-4008	40mm
6720-5008	50mm
6720-6508	65mm
6720-7508	75mm
6720-9008	90mm
6720-1008	100mm
6720-1158	115mm
6720-1258	125mm



## RS stem\*\* , cementless

mat.: *implatan®* with *implaFix®* HA

6762-1512	12 x 150mm
6762-1513	13 x 150mm
6762-1514	14 x 150mm
6762-1515	15 x 150mm
6762-1516	16 x 150mm
6762-1517	17 x 150mm
6762-1518	18 x 150mm
6762-1519	19 x 150mm
6762-1520	20 x 150mm
6762-1521	21 x 150mm
6762-1522	22 x 150mm
6762-2012	12 x 200mm
6762-2013	13 x 200mm
6762-2014	14 x 200mm
6762-2015**	15 x 200mm
6762-2016**	16 x 200mm
6762-2017**	17 x 200mm
6762-2018**	18 x 200mm
6762-2019**	19 x 200mm
6762-2020**	20 x 200mm
6762-2021**	21 x 200mm
6762-2022**	22 x 200mm
6762-2514	14 x 250mm
6762-2515	15 x 250mm
6762-2516	16 x 250mm
6762-2517**	17 x 250mm
6762-2518**	18 x 250mm
6762-2519**	19 x 250mm
6762-2520**	20 x 250mm
6762-2521**	21 x 250mm
6762-2522**	22 x 250mm

\*\*with locking Holes for Ø 4,5mm screws



## RS stem extra slim, cementless

mat.: *implatan®* with *implaFix®* HA

6764-1514HA	14 x 190mm
6764-2014HA	14 x 240mm



## RS stem, cemented \*N

mat.: *implavit®*

6760-1212	12 x 120mm
6760-1412	14 x 120mm
6760-1612	16 x 120mm
6760-1812	18 x 120mm
6760-1215	12 x 150mm
6760-1415	14 x 150mm
6760-1615	16 x 150mm
6760-1815	18 x 150mm
6761-1220	12 x 200mm
6761-1420	14 x 200mm
6761-1620	16 x 200mm
6761-1820	18 x 200mm



## screw for RS adapter, M8

mat.: *implatan®*

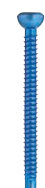
5792-0060	60mm
5792-0080	80mm
5792-0100	100mm
5792-0120	120mm
5792-0140	140mm



## RS coupling device 30mm \*S

mat.: *implatan®*

5772-0030



## cortical screw Ø 4,5mm

mat.: *implatan®*

5792-4525	25mm
5792-4530	30mm
5792-4540	40mm
5792-4542	42mm
5792-4545	45mm
5792-4550	50mm
5792-4555	55mm
5792-4560	60mm



## ic-bipolar head CoCrMo

mat.: *implavit®* and UHMW-PE

2151-0044	28/44mm
2151-0046	28/46mm
2151-0048	28/48mm
2151-0050	28/50mm
2151-0052	28/52mm
2151-0054	28/54mm
2151-0056	28/56mm
2151-0058	28/58mm
2151-0060	28/60mm



## ic-head CoCrMo

cone 12/14mm

mat.: *implavit®*

2312-2200	22mm, K
2312-2205	22mm, M
2312-2210	22mm, L
2387-2800	28mm, K
2387-2805	28mm, M
2387-2810	28mm, L
2387-2815	28mm, XL
2387-3200	32mm, K
2387-3205	32mm, M
2387-3210	32mm, L
2387-3215	32mm, XL
2387-3600	36mm, K
2387-3605	36mm, M
2387-3610	36mm, L
2387-3615	36mm, XL



## ic-head CoCrMo TiN

cone 12/14mm

mat.: *implavit®* with TiN-coating

2322-2200	22mm, S
2322-2205	22mm, M
2322-2210	22mm, L



## ic-head Titan TiN

cone 12/14mm

mat.: *implatan®* with TiN-coating

2787-2800	28mm, K
2787-2805	28mm, M
2787-2810	28mm, L
2787-2815	28mm, XL
2787-3200	32mm, K
2787-3205	32mm, M
2787-3210	32mm, L
2787-3215	32mm, XL
2787-3600	36mm, K
2787-3605	36mm, M
2787-3610	36mm, L
2787-3615	36mm, XL



## ic-head Biolox® delta

cone 12/14mm

mat.:  $Al_2O_3$  and  $ZrO_3$

2586-2800	28mm, K
2586-2805	28mm, M
2586-2810	28mm, L
2586-3200	32mm, K
2586-3205	32mm, M
2586-3210	32mm, L
2586-3215	32mm, XL
2586-3600	36mm, K
2586-3605	36mm, M
2586-3610	36mm, L
2586-3615	36mm, XL



## ic-head revision Biolox® delta

cone 12/14mm

mat.:  $Al_2O_3$  and  $ZrO_3$  and *implatan®*

2588-2800	28mm, K
2588-2805	28mm, M
2588-2810	28mm, L
2588-2815	28mm, XL
2588-3200	32mm, K
2588-3205	32mm, M
2588-3210	32mm, L
2588-3215	32mm, XL
2588-3600	36mm, K
2588-3605	36mm, M
2588-3610	36mm, L
2588-3615	36mm, XL

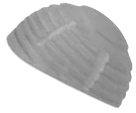
# MUTARS® Implants



## EcoFit® 2M Cup, cementless

mat.: implavit® with implaFix® Duo

0220-1042	Ø 38/42mm
0220-1044	Ø 40/44mm
0220-1046	Ø 42/46mm
0220-1048	Ø 44/48mm
0220-1050	Ø 46/50mm
0220-1052	Ø 48/52mm
0220-1054	Ø 50/54mm
0220-1056	Ø 52/56mm
0220-1058	Ø 54/58mm
0220-1060	Ø 56/60mm
0220-1062	Ø 58/62mm
0220-1064	Ø 58/64mm



## EcoFit® 2M cup, cemented

mat.: implavit®

0220-1144	Ø 38/44mm
0220-1146	Ø 40/46mm
0220-1148	Ø 42/48mm
0220-1150	Ø 44/50mm
0220-1152	Ø 46/52mm
0220-1154	Ø 48/54mm
0220-1156	Ø 50/56mm
0220-1158	Ø 52/58mm
0220-1160	Ø 54/60mm
0220-1162	Ø 56/62mm
0220-1164	Ø 58/64mm



## EcoFit® 2M cup, cemented

mat.: implavit® with TiN-coating

0220-1144N	Ø 38/44mm
0220-1146N	Ø 40/46mm
0220-1148N	Ø 42/48mm
0220-1150N	Ø 44/50mm
0220-1152N	Ø 46/52mm
0220-1154N	Ø 48/54mm
0220-1156N	Ø 50/56mm
0220-1158N	Ø 52/58mm
0220-1160N	Ø 54/60mm
0220-1162N	Ø 56/62mm
0220-1164N	Ø 58/64mm



## 2M implacross® E head

mat.: implacross® E

2905-2238	Ø 22/38mm
2905-2240	Ø 22/40mm
2905-2842	Ø 28/42mm
2905-2844	Ø 28/44mm
2905-2846	Ø 28/46mm
2905-3248	Ø 32/48mm
2905-3250	Ø 32/50mm
2905-3252	Ø 32/52mm
2905-3254	Ø 32/54mm
2905-3256	Ø 32/56mm
2905-3258	Ø 32/58mm



## MUTARS® RS cup

incl. central plug M16 x 1

mat.: TiAl V<sub>4</sub> with EPORE®

5712-0546	Ø 46mm left
5712-0550	Ø 50mm left
5712-0554	Ø 54mm left
5712-0558	Ø 58mm left
5712-0562	Ø 62mm left
5712-0046	Ø 46mm right
5712-0050	Ø 50mm right
5712-0054	Ø 54mm right
5712-0058	Ø 58mm right
5712-0062	Ø 62mm right



## Fastening bolt for MUTARS® RS cup

Mat.: implatan®

5712-0000



## LUMiC® cup

incl. safety screw

mat.: implatan®

5711-0050	50mm
5711-0054	54mm
5711-0160	60mm
5711-0060S	60mm silver
5711-0250	50mm HA
5711-0254	54mm HA
5711-0260	60mm HA



## fastening bolt for MUTARS® LUMiC® cup

mat.: implatan®

5711-1003



## LUMiC® stem, cementless

mat.: implatan® with implaFix® HA

5711-1865	8 x 65mm
5711-1875	8 x 75mm
5711-1885	8 x 85mm
5711-1065	10 x 65mm
5711-1075	10 x 75mm
5711-1085	10 x 85mm



## LUMiC® stem, cemented

mat.: implavit®

5711-2865	8 x 65mm
5711-2875	8 x 75mm
5711-2885	8 x 85mm



## LUMiC® screw, M6

mat.: implavit®

5711-1002 28mm



## 2M inlay 15° for MUTARS® RS Cup and LUMiC®

mat.: implavit® with TiN-coating, UHMW-PE

0242-3839	Ø 38/39mm
0242-4244	Ø 42/44mm
0242-4448	Ø 44/48mm
0242-4652	Ø 46/52mm



## implacross® PE-inlay 15° neutral 0mm

mat.: implacross®

0227-3239	Ø 32/39mm
0227-3644	Ø 36/44mm
0227-3648	Ø 36/48mm
0227-3652	Ø 36/52mm



## implacross® PE-inlay 15° neutral 4mm

mat.: implacross®

0228-3239	Ø 32/39mm
0228-3644	Ø 36/44mm
0228-3648	Ø 36/48mm
0228-3652	Ø 36/52mm

# MUTARS® Implants



## Distal Femur M-O-M \*S \*N \*SN

incl. safety screw

mat.: *implavit*®

5720-0035	110mm left extra small*
5720-0030	110mm right extra small*
5720-0037	90mm left extra small*
5720-0032	90mm right extra small*
5720-0045	110mm left
5720-0040	110mm right
5720-0047	90mm left
5720-0042	90mm right

\*size xsmall available on special request in Q3 2017



## KRI M-O-M \*N \*SN

incl. safety screw

mat.: *implavit*®

5720-0043	left
5720-0048	right



## screw for KRI, M8

mat.: *implatan*®

5720-2508	25mm
5720-5008	50mm



## GenuX® MK femoral component cemented \*N

mat.: *implavit*

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

\*size 6 available in Q3 2017



## GenuX® MK femoral component cementless \*N

mat.: *implavit*®

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

\*size 6 available in Q3 2017



## MUTARS® GenuX® MK femoral component Monoblock, cemented

mat.: *implavit*®

5720-0402	left	2/10mm
5720-0412	right	2/10mm
5720-0415	left	3/11mm
5720-0410	right	3/11mm
5720-0425	left	4/12mm
5720-0420	right	4/12mm
5720-0435	left	5/13mm
5720-0430	right	5/13mm



## MK Femoral spacer distal

incl. MK screw for spacer

mat.: *implatan*®

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

\*size 6 available in Q3 2017



## MK femoral spacer posterior

incl. MK screw for spacer

mat.: *implatan*®

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

\*size 6 available in Q3 2017



## MK screw for spacer

mat.: *implatan*®

5720-1216



## MUTARS® GenuX® MK coupling \*N

mat.: *implavit*®

5720-1210



## GenuX® MK MB PE-Inlay

mat.: *UHMW-PE*

5721-0102	size 2
5721-0103	size 3
5721-0104	size 4
5721-0105	size 5
5721-0106	size 6

\*size 6 available in Q3 2017



## GenuX® MK FB PE-Inlay

mat.: *UHMW-PE*

5721-0202	size 2
5721-0203	size 3
5721-0204	size 4
5721-0205	size 5
5721-0206	size 6

\*size 6 available in Q3 2017



## GenuX® MK offset adapter

mat.: *implatan*®

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



## patella replacement, cemented

mat.: *UHMW-PE*

5720-1000	standard
5720-1001	large



# MUTARS® Implants



## GenuX® MK tibial component cemented \*N

incl. safety screw + screw for coupling

mat.: *implavit*®

5751-0602	size 2
5751-0603	size 3
5751-0604	size 4
5751-0605	size 5
5751-0606	size 6

\*size 6 available in Q3 2017



## GenuX® MK tibial component cementless \*N

incl. safety screw + screw for coupling

mat.: *implavit*®

5751-0702	size 2
5751-0703	size 3
5751-0704	size 4
5751-0705	size 5
5751-0706	size 6

\*size 6 available in Q3 2017



## MUTARS® GenuX® MK tibial component Monoblock cemented

Incl. safety screw + locking screw

mat.: *implavit*

5751-0402	2/10mm
5751-0400	3/11mm
5751-0405	4/12mm
5751-0410	5/13mm



## MK tibial spacer \*S

incl. MK screw

mat.: *implatan*®

5740-5052	l/rm	size 2	5mm
5740-5053	l/rm	size 3	5mm
5740-5054	l/rm	size 4	5mm
5740-5055	l/rm	size 5	5mm
5740-5056	l/rm	size 6	5mm
5741-0052	r/lm	size 2	5mm
5741-0053	r/lm	size 3	5mm
5741-0054	r/lm	size 4	5mm
5741-0055	r/lm	size 5	5mm
5741-0056	r/lm	size 6	5mm
5740-5102	l/rm	size 2	10mm
5740-5103	l/rm	size 3	10mm
5740-5104	l/rm	size 4	10mm
5740-5105	l/rm	size 5	10mm
5740-5106	l/rm	size 6	10mm
5741-0102	r/lm	size 2	10mm
5741-0103	r/lm	size 3	10mm
5741-0104	r/lm	size 4	10mm
5741-0105	r/lm	size 5	10mm
5741-0106	r/lm	size 6	10mm
5740-5152	l/rm	size 2	15mm
5740-5153	l/rm	size 3	15mm
5740-5154	l/rm	size 4	15mm
5740-5155	l/rm	size 5	15mm
5740-5156	l/rm	size 6	15mm
5741-0152	r/lm	size 2	15mm
5741-0153	r/lm	size 3	15mm
5741-0154	r/lm	size 4	15mm
5741-0155	r/lm	size 5	15mm
5741-0156	r/lm	size 6	15mm
5740-5202	l/rm	size 2	20mm
5740-5203	l/rm	size 3	20mm
5740-5204	l/rm	size 4	20mm
5740-5205	l/rm	size 5	20mm
5740-5206	l/rm	size 6	20mm
5741-0202	r/lm	size 2	20mm
5741-0203	r/lm	size 3	20mm
5741-0204	r/lm	size 4	20mm
5741-0205	r/lm	size 5	20mm
5741-0206	r/lm	size 6	20mm

\*size 6 available in Q3 2017



## MK tibial spacer \*S

incl. MK screw

mat.: *implatan*®

5740-0252	size 2	25mm
5740-0352	size 2	35mm
5740-0452	size 2	45mm
5740-0253	size 3	25mm
5740-0353	size 3	35mm
5740-0453	size 3	45mm
5740-0254	size 4	25mm
5740-0354	size 4	35mm
5740-0454	size 4	45mm
5740-0255	size 5	25mm
5740-0355	size 5	35mm
5740-0455	size 5	45mm
5740-0256	size 6	25mm
5740-0356	size 6	35mm
5740-0456	size 6	45mm

\*size 6 available in Q3 2017



## MK Proximal Tibia \*S

Incl. screw for connecting part

mat.: *implatan*® with TiN-coating

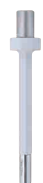
5750-0005



## connecting part for Proximal Tibia

mat.: *implatan*®

5750-0105	105mm
5750-0125	125mm



## tibial stem cementless N\*, length 120mm

mat.: *implatan*® with *implaFix*® HA

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



## tibial stem cemented, length 120mm

mat.: *implavit*®

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



## tibial stem cemented TiN-coating and HA-collar

mat.: *implavit*® with TiN-coating and *implaFix*® HA

5759-1211	11 max. 75kg
5759-1213	13
5759-1215	15

with locking holes for Ø 4,5mm screws



## tapered stem, cementless, length 130mm

mat.: *implatan*®

5760-2014	14mm
5760-2015	15mm
5760-2016	16mm
5760-2017	17mm
5760-2018	18mm
5760-2019	19mm
5760-2020	20mm
5760-2021	21mm
5760-2022	22mm
5760-2023	23mm





**GenuX® MK stem cementless HA**  
mat.: implatan® with implaFix® HA

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

\*with locking holes for Ø 4,5mm screws



**GenuX® MK stem cemented \*N**

mat.: implavit®

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

\*with locking holes for Ø 4,5mm screws



**Diaphyseal Implant \*S \*N, stem length 100mm**  
incl. screws for connecting part

mat.: implavit®

5730-1013	13mm*
5730-1015	15mm
5730-1017	17mm
5730-1019	19mm

\*without locking holes



**connecting part for Diaphyseal Implant \*S**

mat.: implatan®

5730-1100	100mm
5730-1120	120mm



**Arthrodesis \*S**

mat.: implatan®

5730-0162



**tibial plate \*N**

mat.: implavit®

5730-0164



**RS Arthrodesis femoral component \*S**

incl. safety screw

mat.: implatan®

6770-0011	left
6770-0021	right



**RS Arthrodesis tibial component \*S**

incl. safety screw and screw with safety pin

mat.: implatan®

6770-0031



**intramedullary connecting Module \*S**  
for KRI, cementless Ø 15mm

mat.: implatan®

5720-5100	100mm
5720-5120	120mm
5720-5140	140mm
5720-5160	160mm
5720-5180	180mm
5720-5200	200mm
5720-5220	220mm
5720-5240	240mm
5720-5260	260mm
5720-5280	280mm
5720-5300	300mm
5720-5320	320mm
5720-5340	340mm
5720-5360	360mm



**intramedullary connecting Module \*S**  
for GenuX® MK, cementless Ø 15mm

mat.: implatan®

5721-6100	100mm
5721-6120	120mm
5721-6140	140mm
5721-6160	160mm
5721-6180	180mm
5721-6200	200mm
5721-6220	220mm
5721-6240	240mm
5721-6260	260mm
5721-6280	280mm
5721-6300	300mm
5721-6320	320mm
5721-6340	340mm
5721-6360	360mm
5721-6380	380mm
5721-6400	400mm
5721-6420	420mm
5721-6440	440mm



**intramedullary plug**

mat.: UHMW-PE

0299-4000	small medullary cavity ≥ Ø: 9mm
0299-4010	large medullary cavity ≥ Ø: 14mm



**ic- cerclage titanium 2R**

mat.: pure titanium (cpTi)

0060-1018



**attachment tube, length 300mm**

mat.: Polyethylenterephthalat (PET)

5900-0300	Ø: 35mm
5900-0310	Ø: 55mm

# MUTARS® Implants



**Humerus cap**  
mat.: *implatan®* with TiN-coating  
5210-0000 small  
5210-0005 medium  
5210-0010 large



**Humerus inverse cap**  
mat.: *implatan®* with TiN-coating  
5210-1000  
5210-1005 + 5mm  
5210-1010 + 10mm



**Humerus head 50mm \*S**  
incl. safety screw  
mat.: *implatan®*  
5200-0000



**Humerus extension piece \*S**  
mat.: *implatan®*  
5220-0020 20mm  
5220-0040 40mm  
5220-0060 60mm



**Humerus connecting part \*S**  
incl. screws for connecting part  
mat.: *implatan®*  
5221-0080 80mm



**Humerus reducer \*S**  
mat.: *implatan®*  
5221-0000 10mm  
5221-0100 100mm



**Humeral screw, M8**  
mat.: *implatan®*  
5230-0015 15mm  
5230-0035 35mm  
5230-0055 55mm  
5230-0075 75mm



**Humeral stem, cementless, length 75mm**  
mat.: *implatan®* with *implaFix®* HA  
5240-0807 7mm  
5240-0808 8mm  
5240-0809 9mm  
5240-0810 10mm  
5240-0811 11mm  
5240-0812 12mm  
5240-0813 13mm  
5240-0814 14mm\*  
5240-0815 15mm\*  
5240-0816 16mm\*  
\*with locking holes for Ø 3,5mm screws



**Humeral stem, cemented \*N, length 75mm**  
mat.: *implavit®*  
5240-0408 8mm  
5240-0409 9mm  
5240-0410 10mm  
5240-0411 11mm  
5240-0412 12mm



**Humeral stem, cemented with TiN-coating and HA-collar, length 75mm**  
mat.: *implavit®* with TiN-coating and *implaFix®* HA  
5249-0408 8mm  
5249-0409 9mm  
5249-0410 10mm  
5249-0411 11mm  
5249-0412 12mm



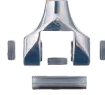
**Humerus end piece**  
mat.: *implatan®*  
5220-0001



**Humerus Diaphyseal Implant, cemented \*S**  
length 80mm  
incl. connecting part  
mat.: *implatan®*  
5731-1008 8mm  
5731-1009 9mm



**Distal Humerus 50mm \*SN**  
incl. axle, safety screw and 2 lock screws  
mat.: *implatan®* and *implavit®*  
5250-0000



**Distal Humerus 30mm**  
incl. axle, safety screw and 2 cover screws  
mat.: *implatan®* and *implavit®*  
5250-1300



**screw for Distal Humerus 30mm**  
mat.: *implatan®*  
5230-1815 15mm  
5230-1820 20mm  
5230-1825 25mm  
5230-1830 30mm



**Proximal Ulna \*S**  
incl. safety screw  
mat.: *implatan®* and *implavit®*  
5250-0030



**ulna anchorage, cementless**  
mat.: *implatan®* and *implavit®* with *implaFix®* Duo  
5250-1015 left  
5250-1020 right



**ulnar component, cemented \*N**  
mat.: *implavit®*  
5250-5070 left 70mm  
5250-0070 right 70mm  
5250-5100 left 100mm  
5250-0100 right 100mm



**ulna stop**  
mat.: UHMW-PE  
5250-1100



**AGILON® stem, cementless**  
mat.: *implatan®*  
3830-6010 10 x 60mm  
3830-6011 11 x 60mm  
3830-6012 12 x 60mm  
3830-6013 13 x 60mm  
3830-6014 14 x 60mm  
3830-6015 15 x 60mm  
3830-6016 16 x 60mm  
3830-6017 17 x 60mm  
3830-6018 18 x 60mm  
3831-2010 10 x 120mm  
3831-2011 11 x 120mm  
3831-2012 12 x 120mm  
3831-2013 13 x 120mm  
3831-2014 14 x 120mm  
3831-2015 15 x 120mm  
3831-2016 16 x 120mm  
3831-8009 9 x 180mm  
3831-8010 10 x 180mm  
3831-8011 11 x 180mm  
3831-8012 12 x 180mm  
3831-8013 13 x 180mm  
3831-8014 14 x 180mm  
3831-8015 15 x 180mm  
3831-8016 16 x 180mm  
3832-4009 9 x 240mm  
3832-4010 10 x 240mm  
3832-4011 11 x 240mm  
3832-4012 12 x 240mm  
3832-4013 13 x 240mm  
3832-4014 14 x 240mm  
3832-4015 15 x 240mm  
3832-4016 16 x 240mm



**AGILON® stem, cemented \*N**  
mat.: *implavit®*  
3820-9006 6 x 90mm  
3820-9008 8 x 90mm  
3820-9010 10 x 90mm  
3820-9012 12 x 90mm  
3821-2006 6 x 120mm  
3821-2008 8 x 120mm  
3821-2010 10 x 120mm  
3821-2012 12 x 120mm



## AGILON® extension piece

mat.: *implatan®*

3820-0050	5mm
3820-0075	7,5mm
3820-0100	10mm



## cancellous screw, angle stable locked Ø 4,2mm

mat.: *implatan®*

5794-4220	20mm
5794-4222	22mm
5794-4224	24mm
5794-4226	26mm
5794-4228	28mm
5794-4230	30mm
5794-4232	32mm
5794-4234	34mm
5794-4236	36mm
5794-4238	38mm
5794-4240	40mm



## spongiosa screw flat head Ø 6,5mm

mat.: *implatan®*

0280-1015	15mm
0280-1020	20mm
0280-1025	25mm
0280-1030	30mm
0280-1035	35mm
0280-1040	40mm
0280-1045	45mm
0280-1050	50mm
0280-1055	55mm
0280-1060	60mm
0280-1065	65mm
0280-1070	70mm



## glenoid

mat.: *pure titanium (cpTi) with implaFix® HA*  
3800-4001 size 3 round



## AGILON® glenoid anatomical

mat.: *pure titanium (cpTi) with implaFix® HA*  
3800-4028 size 2 short  
3800-4029 size 2 long  
3800-4009 size 3 short  
3800-4010 size 3 long



## AGILON® glenoid PE-insert anatomical

mat.: *UHMW-PE*

3803-1028	size 2
3803-1032	size 3
3803-1036	size 4



## AGILON® glenosphere

mat.: *UHMW-PE*

3803-2840	size 2	40mm eccentric
3803-3240	size 3	40mm eccentric
5210-1002	size 3	40mm symmetric

(MUTARS® glenosphere)



## AGILON® glenoid cemented

mat.: *UHMW-PE*

3803-0032	size 2
3803-0036	size 3
3803-0040	size 4

## material and coating catalogue

### materials:

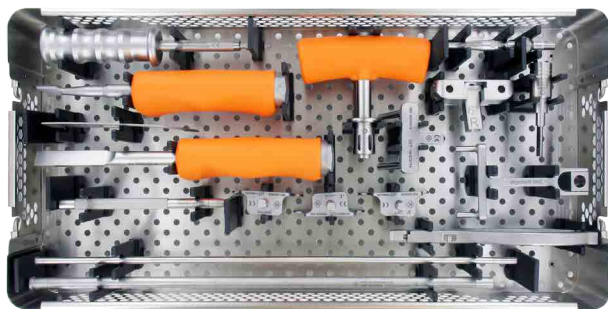
Al <sub>2</sub> O <sub>3</sub> and ZrO <sub>2</sub>	acc. to ISO 6474-2
implacross®; crosslinked UHMW-PE	
implacross E®; crosslinked UHMW-PE with vitamin E	
implatan®, TiAl <sub>6</sub> V <sub>4</sub>	acc. to ISO 5832-3
implavit®, CoCrMo	acc. to ISO 5832-4
implavit®, CoCrMo	acc. to ISO 5832-12
Polyethylenterephthalat (PET)	
pure titanium (cpTi)	acc. to ISO 5832-2
TiAl <sub>6</sub> V <sub>4</sub> mit EPORE®	
UHMW-PE	acc. to ISO 5834-2

### coatings:

implaFix®, cpTi-coating	
implaFix®, cpTi-coating and TCP-coating	
implaFix® Duo; implaFix® and implaFix® HA	
implaFix® HA; HA-coating	acc. to ISO 13779-2
silver-coating	
TiN-coating (titanium nitride coating)	



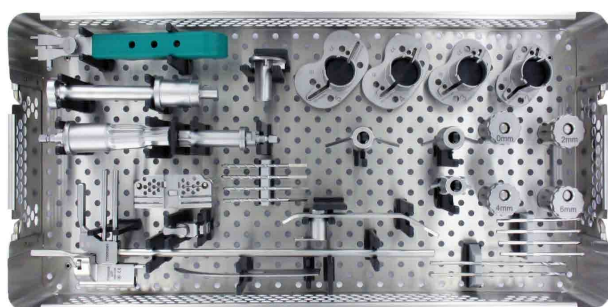
## MUTARS® Instruments



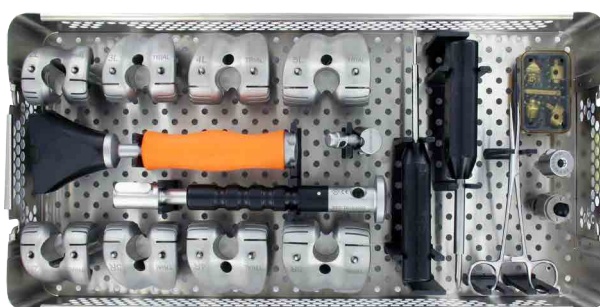
**MK basic  
container**  
7999-5800



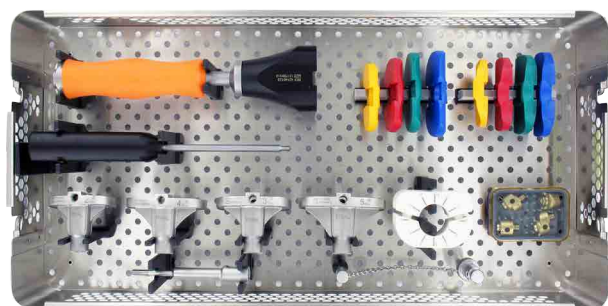
**MK femoral  
container**  
7999-5801



**MK tibial  
container**  
7999-5812



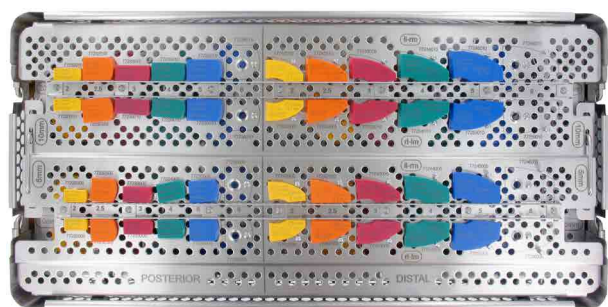
**MK femoral trial  
container**  
7999-5803



**MK tibial trial  
container**  
7999-5804



**MK trial stem  
container**  
7999-5805



**MK spacer container  
upper tray**  
7999-5806

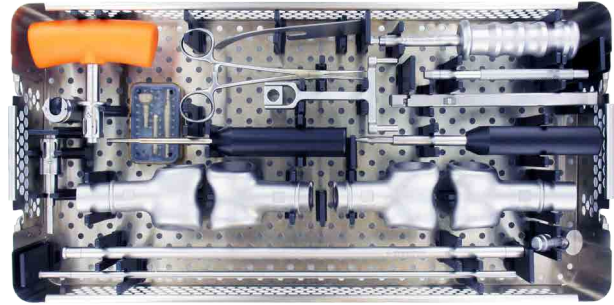


**MK spacer container  
middle tray**  
7999-5806

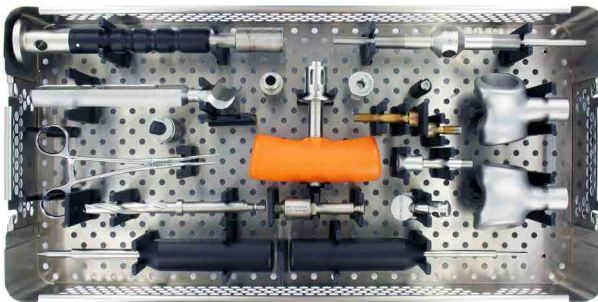




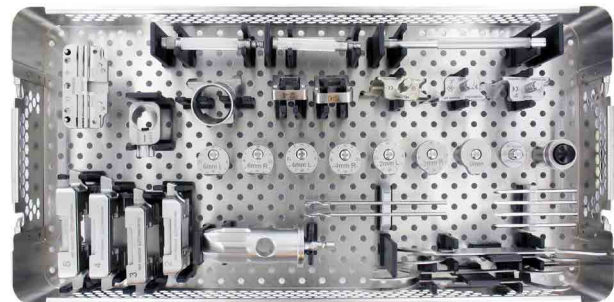
**MK spacer container  
bottom tray**  
7999-5806



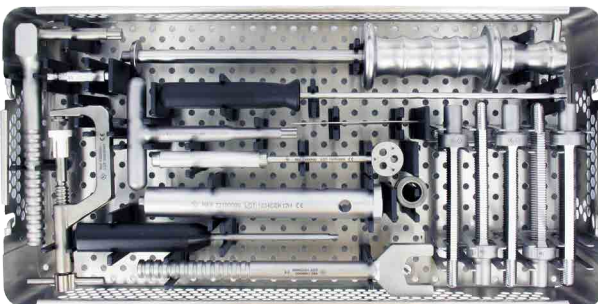
**MUTARS® distal femoral MK basic  
container**  
7999-5821



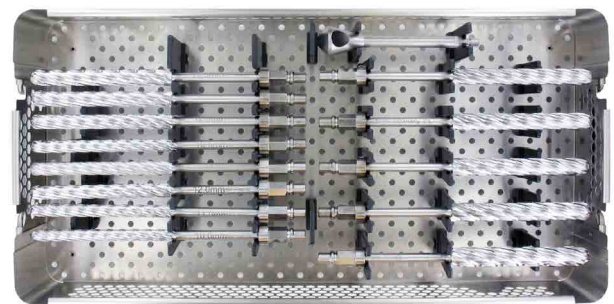
**MUTARS® KRI MK  
container**  
7999-5829



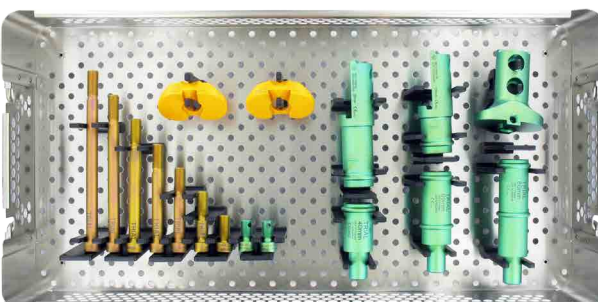
**MUTARS® proximal tibia MK femoral  
container**  
7999-5833



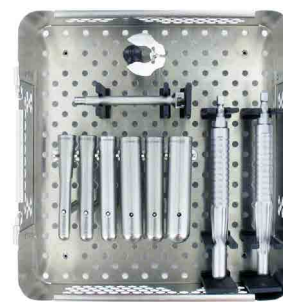
**MUTARS® proximal tibia MK basic  
container**  
7999-5834



**MUTARS® proximal tibia MK drill  
container**  
7999-5835

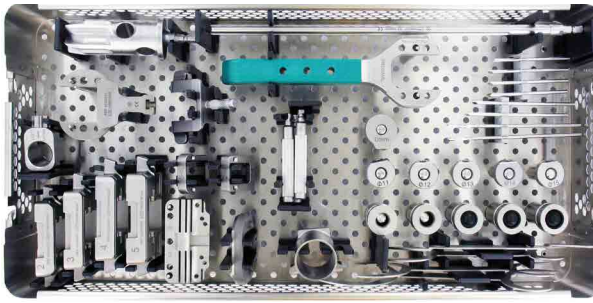


**MUTARS® proximal tibia MK trial  
container**  
7999-5836

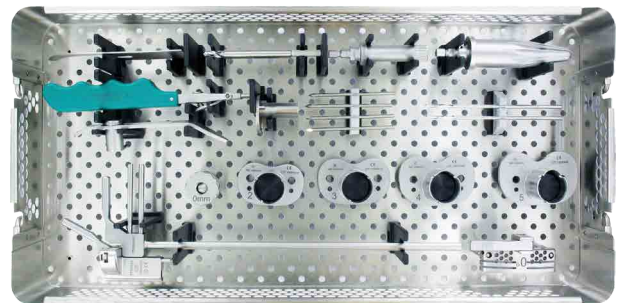


**MUTARS® proximal tibia MK trial stem  
container**  
7999-5837

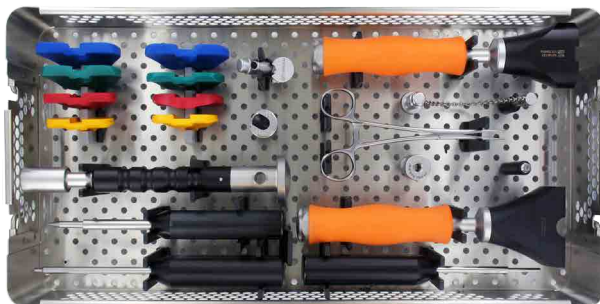




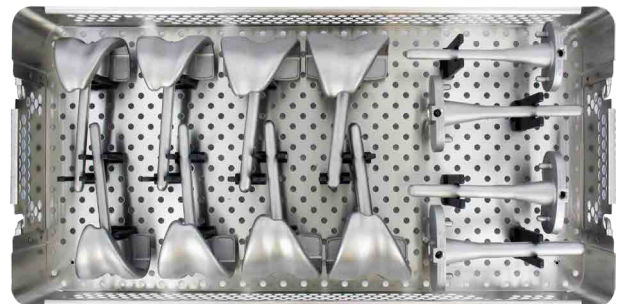
**GenuX® MK monoblock femoral container**  
7999-5840



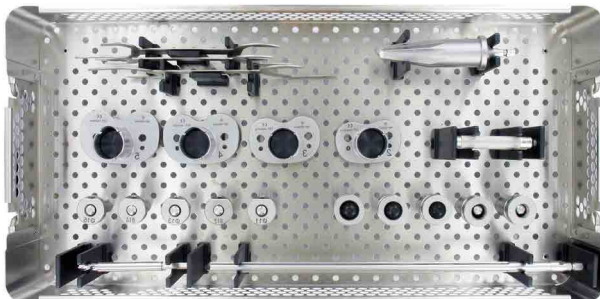
**GenuX® MK monoblock tibial container**  
7999-5841



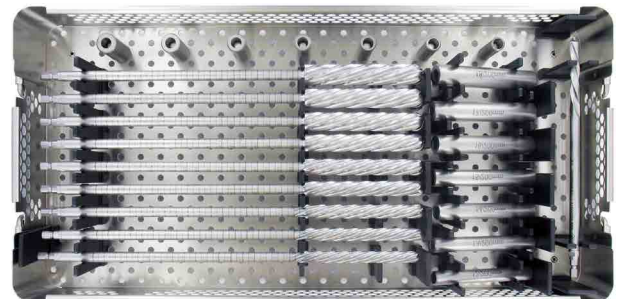
**GenuX® MK monoblock trial container 1**  
7999-5842



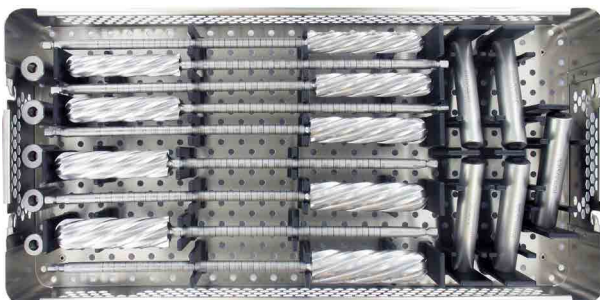
**GenuX® MK monoblock trial container 2**  
7999-5843



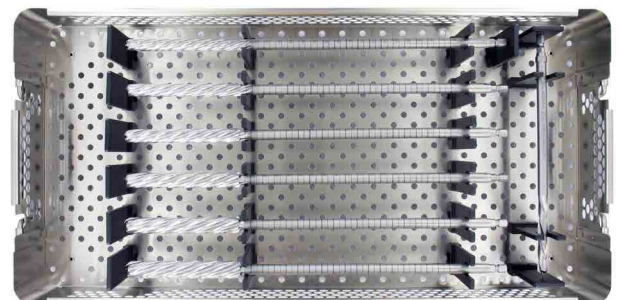
**GenuX® MK monoblock extension container**  
7999-5844



**Rigid drill container 1**  
7999-5774

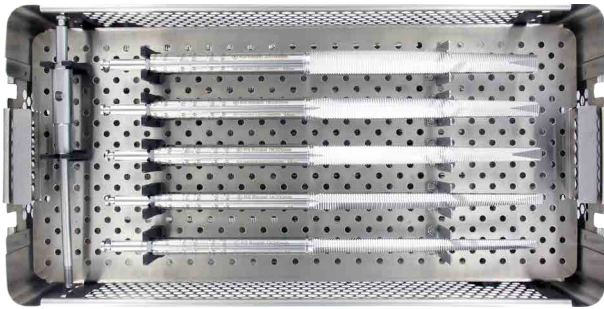


**Rigid drill container 2**  
7999-5775

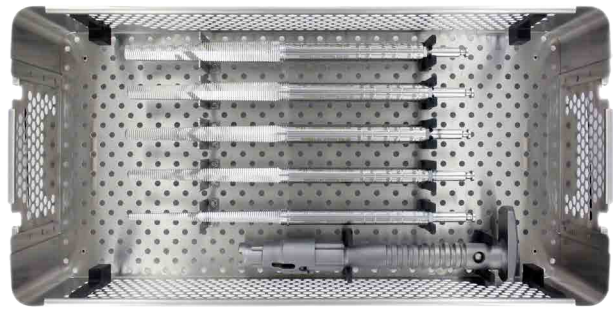


**Rigid drill container 3**  
7999-5776

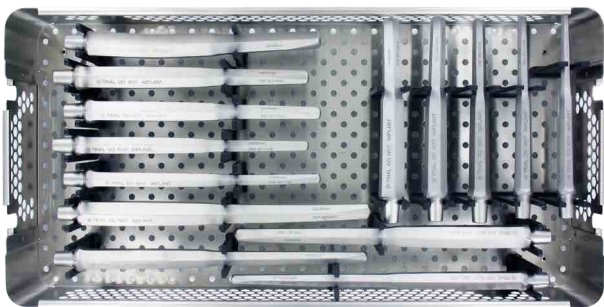




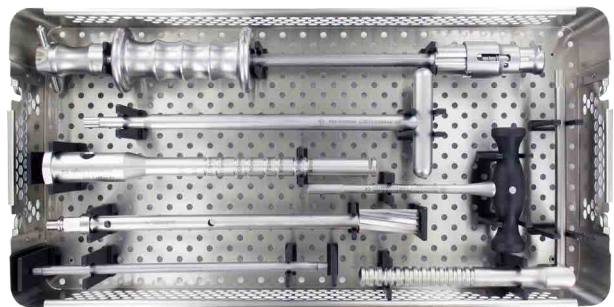
**MUTARS® RS broach container  
upper tray**  
7999-6721



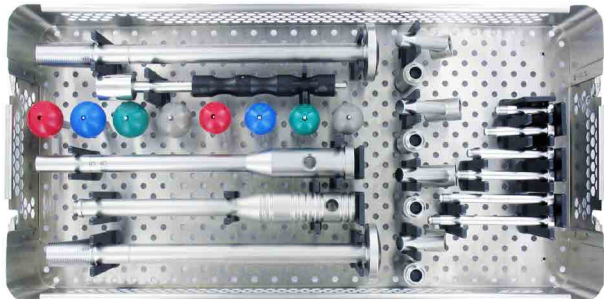
**MUTARS® RS broach container  
lower tray**  
7999-6721



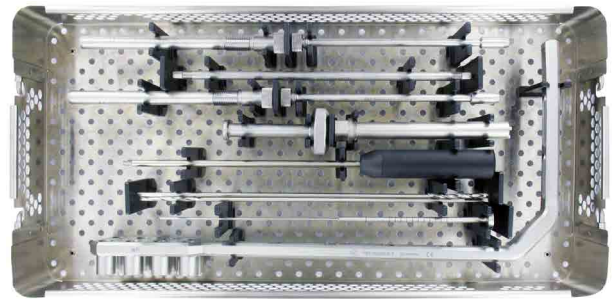
**MUTARS® RS trial stem  
container**  
7999-6724



**MUTARS® RS ES  
container 2**  
7999-6715



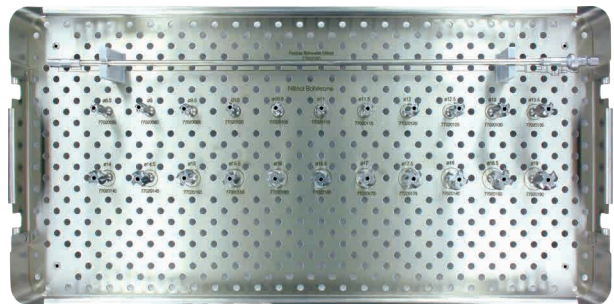
**MUTARS® RS ES  
container 3**  
7999-6716



**MUTARS® RS  
container 5**  
7999-6705



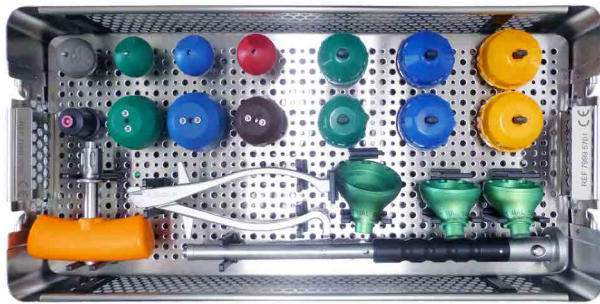
**stem assembling  
container**  
7999-5770



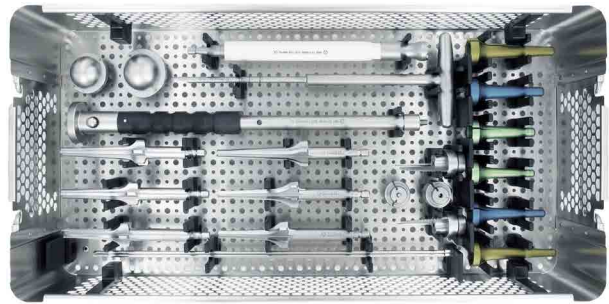
**Flexible drill Nitinol  
container**  
7999-7000



# MUTARS® Instruments



**MUTARS® LUMiC® container 1**  
upper tray  
7999-5701



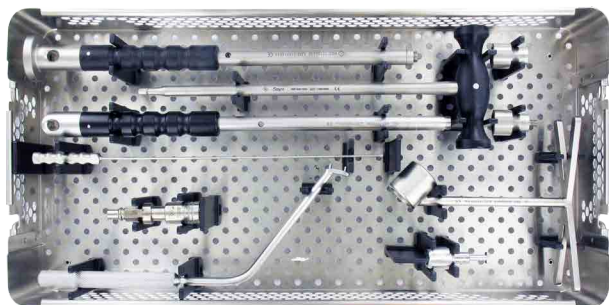
**MUTARS® LUMiC® container 1**  
lower tray  
7999-5701



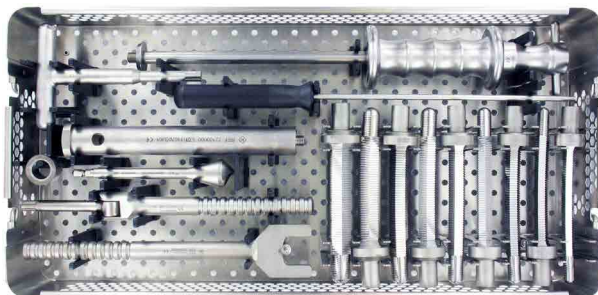
**MUTARS® 2M trial LUMiC® container**  
7999-5704



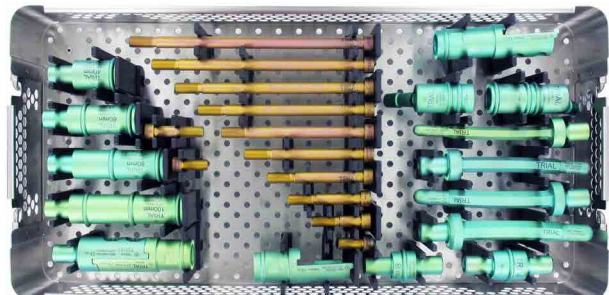
**trial insert 15° container  
for LUMiC**  
2950-1068



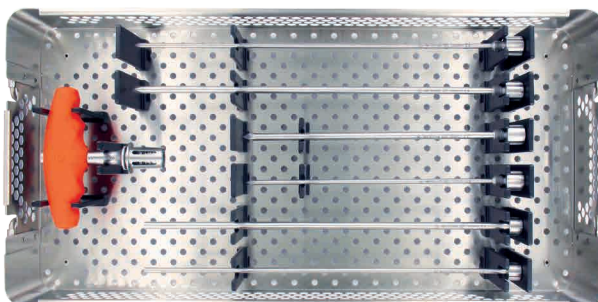
**MUTARS® LUMiC® container 2**  
7999-5702



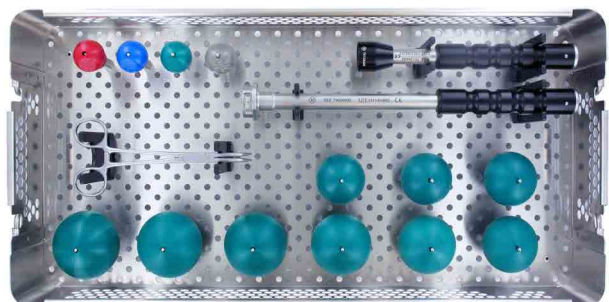
**MUTARS® basic container**  
7999-5712



**MUTARS® trial container**  
7999-7701

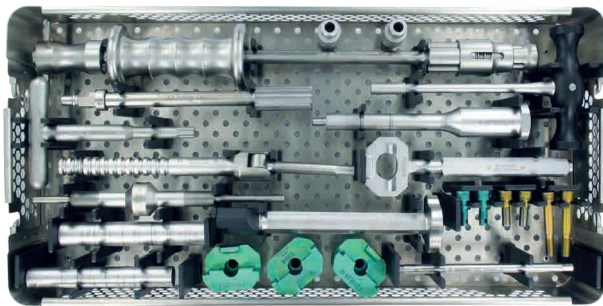


**MUTARS® biopsy punch container**  
7999-7211

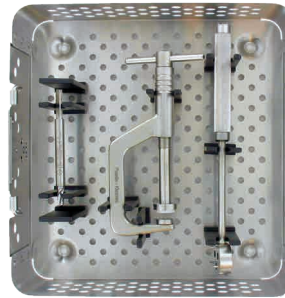


**ic-bipolar container**  
7960-9999





**MUTARS® RS arthrodesis  
container**  
7999-6770



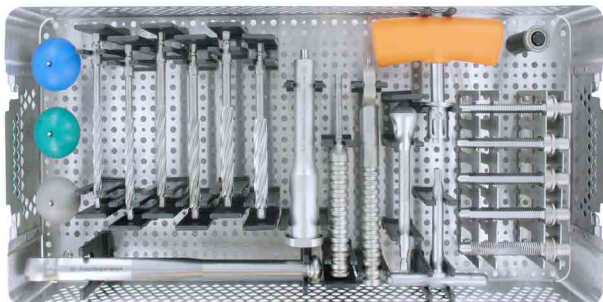
**MUTARS® patella  
container**  
7999-5745



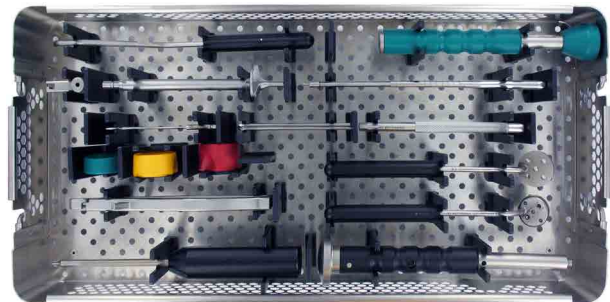
**MUTARS® IMFR KRI trial container  
upper tray**  
7999-7720



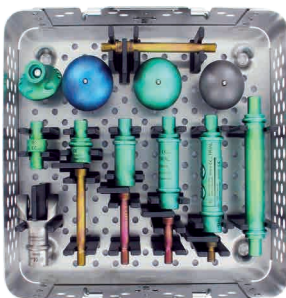
**MUTARS® IMFR KRI trial container  
lower tray**  
7999-7720



**MUTARS® humerus  
container**  
7999-5200



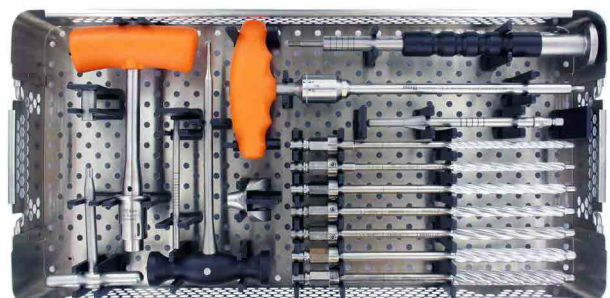
**MUTARS® humerus inverse  
container**  
7999-5201



**MUTARS® humerus trial  
container**  
7999-5202

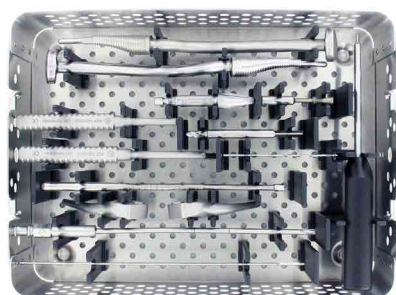


**MUTARS® prox. ulna  
container**  
7999-5205

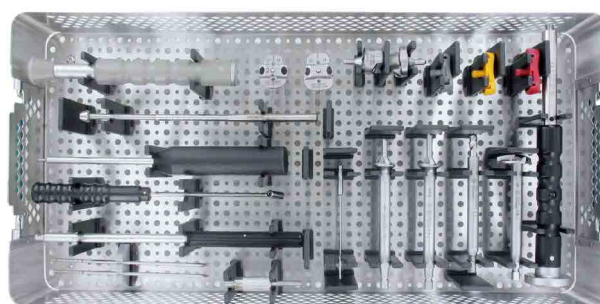


**MUTARS® distal humerus 30mm  
container**  
7999-5208

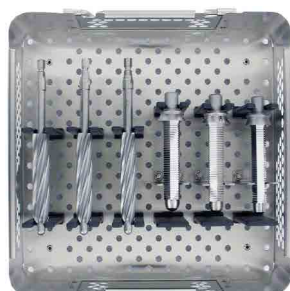
## MUTARS® Instruments



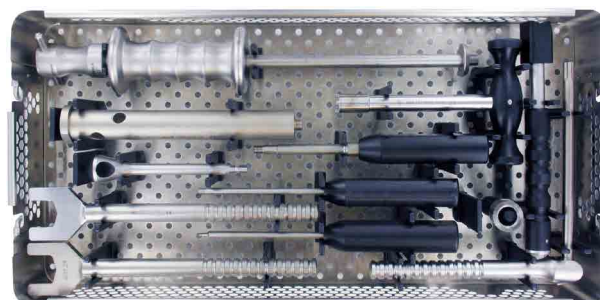
**MUTARS® distal humerus container**  
7999-5150



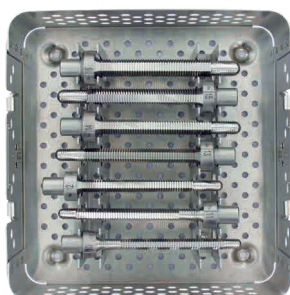
**AGILON® glenoid cementless sz. 2-4 container**  
7999-3837



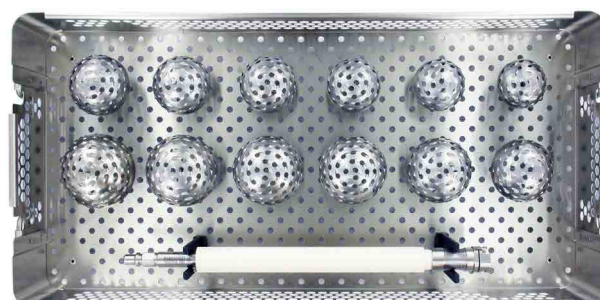
**MUTARS® humerus container 14-16mm**  
7999-5210



**MUTARS® Xpand basic container**  
7999-5780



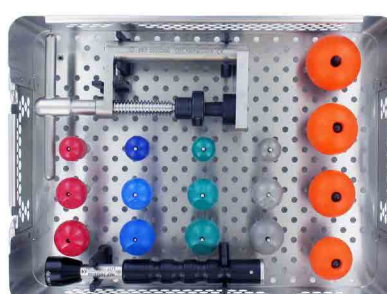
**MUTARS® Xpand**  
7999-5781 tibial rasps  
7999-5782 femoral rasps



**Acetabulum reamer container**  
0282-0001

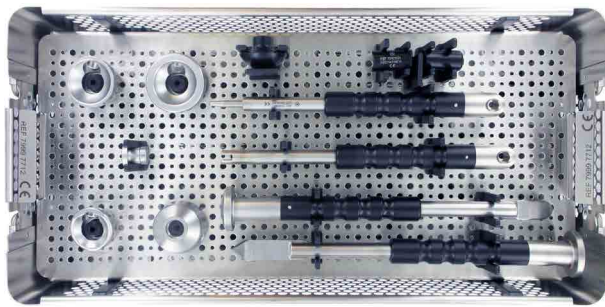


**GenuX® MK IMFR trial container**  
7999-7722

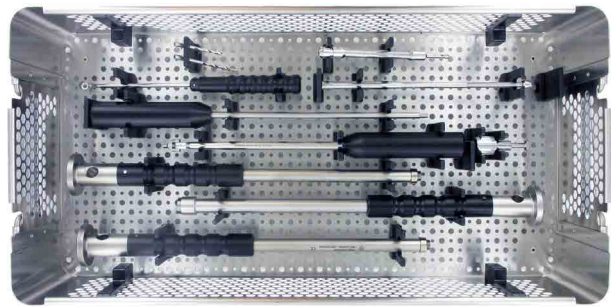


**MUTARS® 2M trial RS Cup container**  
7999-7716





**MUTARS® RS cup container  
upper tray**  
7999-7712



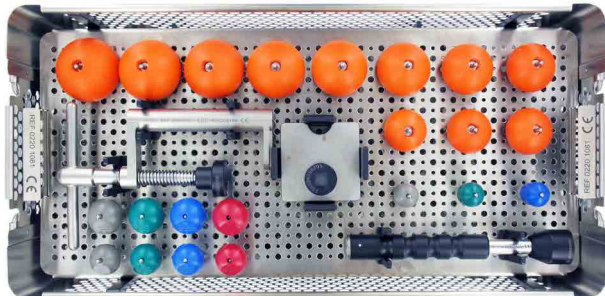
**MUTARS® RS cup container  
bottom tray**  
7999-7712



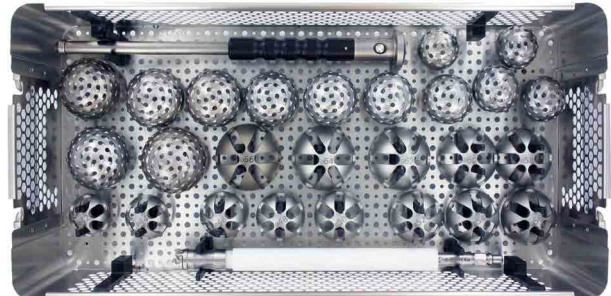
**MUTARS® RS cup trial cup  
container**  
7999-7713/14 left/right



**MUTARS® RS Cup PE-trial insert  
container**  
7999-7715



**EcoFit® 2M container I  
upper tray**  
0220-1081



**EcoFit® 2M container I  
bottom tray**  
0220-1081



**EcoFit® 2M  
container 2**  
0220-1082



**EcoFit® 2M  
container 3**  
0220-1083



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