MUTARS® RS

implantcast

MUTARS® RS Cup

Surgical Technique

MUTARS® RS

MUTARS® RS Cup
SURGICAL TECHNIQUE

MUTARS® RS Cup was developed in co-operation with
Prof. Dr. G. Gosheger, Director Clinic
and Polyclinic for General Orthopedics at the
University Hospital of Münster, and
Prof. Dr. R. Windhager, Director Clinic
for General Orthopedics, University Wien.
MUTARS® has been in successful clinical use since 1992.

TABLE OF CONTENT

Nota Bene: The author of this technique has outlined the procedure for the uncomplicated surgical scenario. Ultimately however it is the operating surgeon who is best placed to assess and address the individual needs of each patient.

DESIGN FEATURES

The MUTARS® RS cup system is the first implantcast system which is manufactured by the use of the generative manufacturing process. It was developed by strong cooperation with the universities of Muenster and Vienna. The implant functions as a socket similar to the acetabular ring, but is not combined with a cemented PE-cup.

Different from the usual treatment, the system offers different types of articulating liners made of implacross® polyethylene.

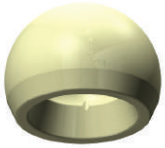
The cup is available in 5 different sizes for the left and right acetabula. For enhanced fixation the implant has a caudal and cranial flange which can be bent to meet the patients' anatomy.

Cancellous screws with diameter 6,5mm are used in the cup and to lock the cranial flange.

The overview on page 5 shows the different types of implant configuration of the MUTARS® RS cup system.

MUTARS® RS cup

SYSTEM OVERVIEW

head	2M implacross® E head	2M® insert 15° for MUTARS® RS cup		MUTARS® RS cup cementless reamer	
Ø	Ø	Ø	Ø	Ø	Ø
22	38	38	39	46	46
28	42	42	44	50	50
28	44	44	48	54	54
28	46	46	52	58	58
28	46	46	52	62	62



head	implacross® insert 15° Offset 0mm or 4mm		MUTARS® RS cup cementless reamer	
Ø	Ø	Ø	Ø	Ø
32	32	39	46	46
36	36	44	50	50
36	36	48	54	54
36	36	52	58	58
36	36	52	62	62

PREOPERATIVE PLANNING

Preoperative planning and precise surgical techniques are mandatory for optimal results. The instructions and the procedure given in the surgical technique to the system must be adhered to. Familiarity with the recommended surgical technique and its careful application is essential to achieve the best possible outcome.
Before surgery a surgical planning with regard to the dimensions of the prosthetic model and the positioning of the implant components in the bone has to be carried out by the surgeon.
For this purpose, x-ray templates are available:

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

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

figure A: MUTARS® RS Cup with implacross® PE-Insert A/P-View

figure B: MUTARS® RS Cup with implacross® PE-Insert M/L-View

Further prior to surgery the following should be ensured:

- all needed components are available during surgery. An adequate number of various implant components should be available for surgery.
- all instruments for the implantation are present and are matching the corresponding implants. The insertion instruments must be adapted to the implant. The implants may only be used with the instruments provided by implantcast GmbH. An exeption are exclusively the standardized instruments used during surgery.

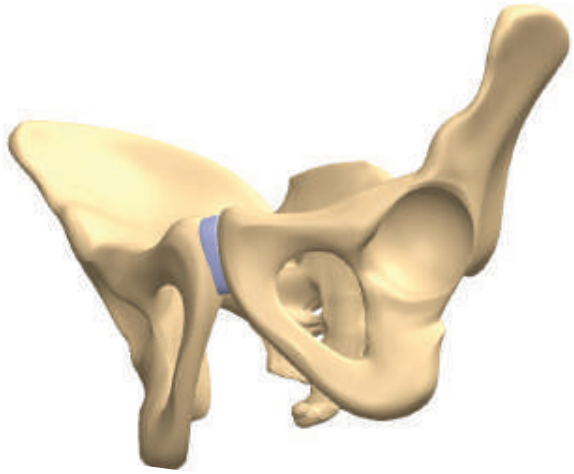


Figure 1

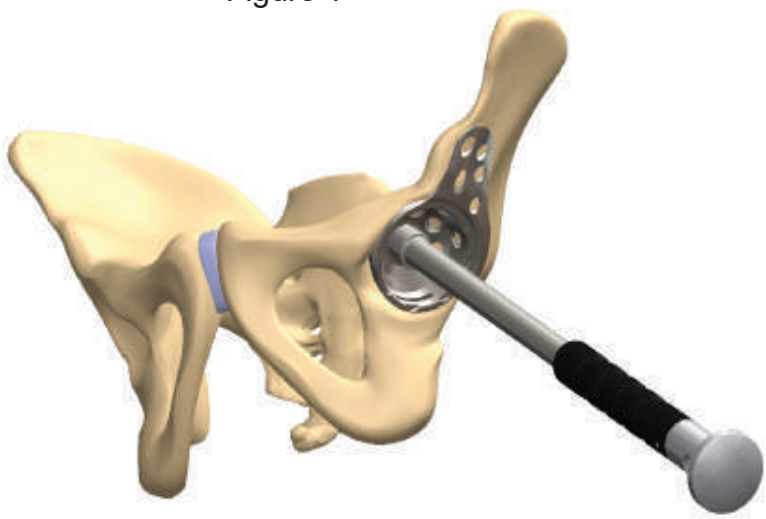


Figure 2

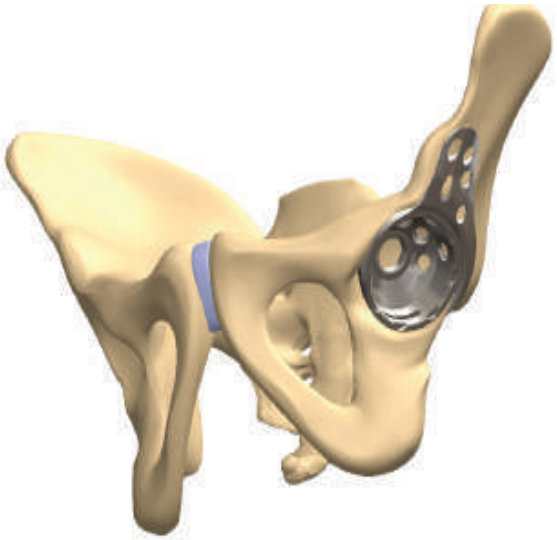


Figure 3

SURGICAL TECHNIQUE

Expose the hip joint completely (Fig. 1). Start with the removal of all components of previous prosthesis.

Important information: If it is necessary to ream the acetabulum, reamers are available in increments of 2 mm. Please make sure that you ream to the appropriate diameter which fits to the cup size (table 1).

acetabular reamer Ø	trial cup outer Ø	**RS Cup** size	RS Cup Outer Ø
46mm	45mm	46	46,7mm
50mm	49mm	50	51,6mm
54mm	53mm	54	55,7mm
58mm	57mm	58	59,8mm
62mm	61mm	62	63,9mm

table 1

Connect the RS trial cup of the previously planned size to the impactor and check the stability (Fig. 2).

There will be no pressFit because the diameter of the trial cup is 1mm smaller than the implant (table1).

Check the position of the trial cup (Fig. 3). If necessary readjust the trial cup.

Mark the position of the caudal flange through the slot of the trial cup and prepare the bone for the flange by using the small chisel first (Fig. 4).

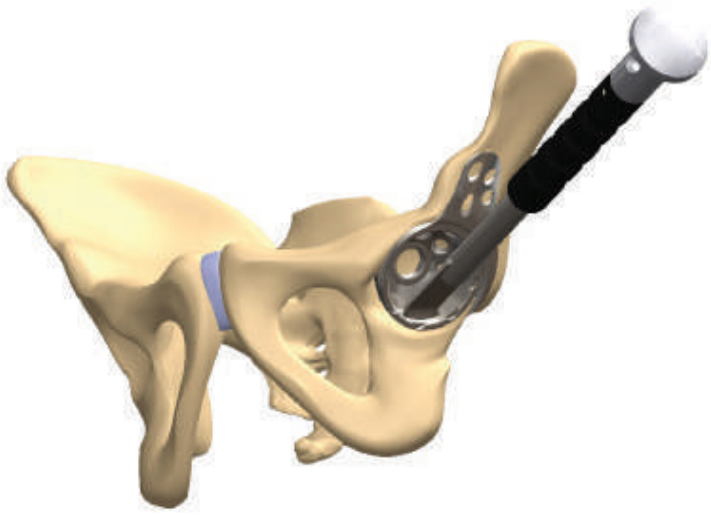


Figure 4

Remove the trial cup and enlarge the flange preparation with the large chisel (Fig. 5).

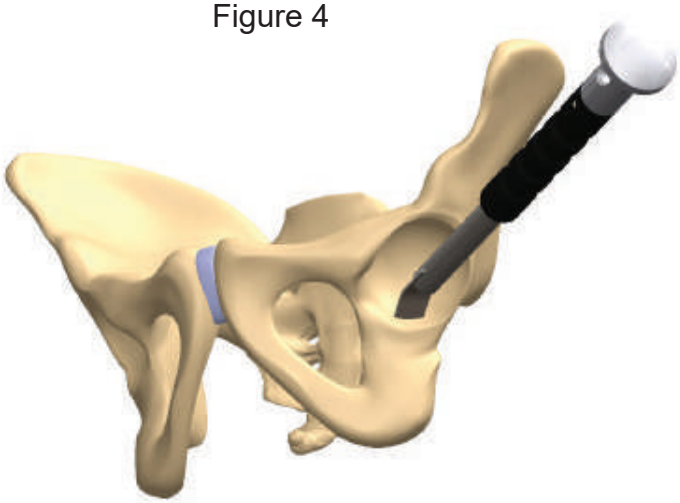


Figure 5

Before impacting the RS cup implant the flange and the plate may be bend to adapt the geometry to the anatomy of the patient.

Attach the cup inserter to the cup first. Please note that bending weakens fatigue strength of the implant (Fig. 6, 7 and 8).
Thus the flange and the plate can be bend only to the same direction twice.

Forth and back bending may lead to breakage of the implant!

Figure 6

Figure 7

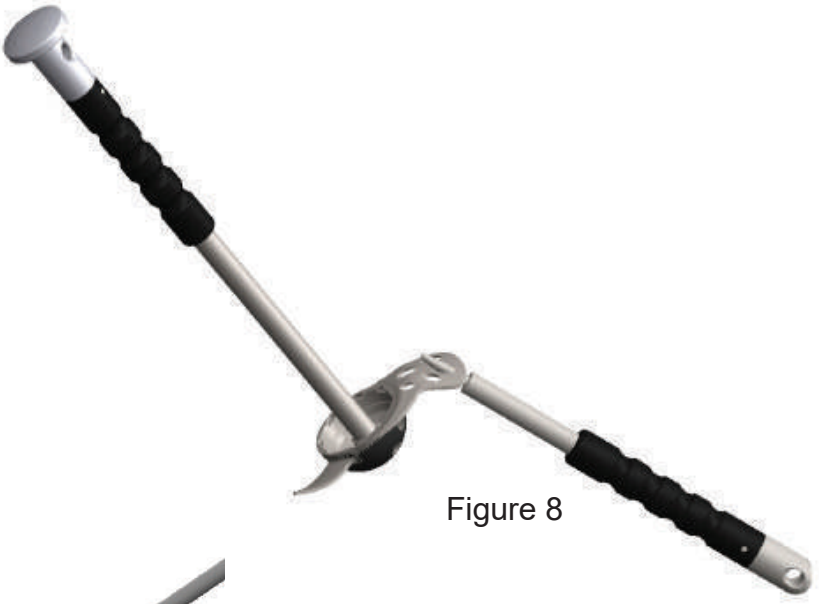


Figure 8

Use the bending instrument to bend the flange or the plate (Fig. 6 and 7). The bending thorn is only used to bend the plate (Fig. 8).

Figure 9

Insert the cup inserter use of the appropriate size in the RS cup and rotate the inserter until the oblique hole is targeting to the caudal flange (Fig. 9). Secure the inserter in this position by the locking the special screw (Fig. 9).

Figure 10

Screw the impactor into the oblique hole of the inserter (Fig. 10).

Make sure that the RS cup is locked stable on the impactor.
Start impacting the caudal flange and push the whole implant in the appropriate position (Fig. 11).

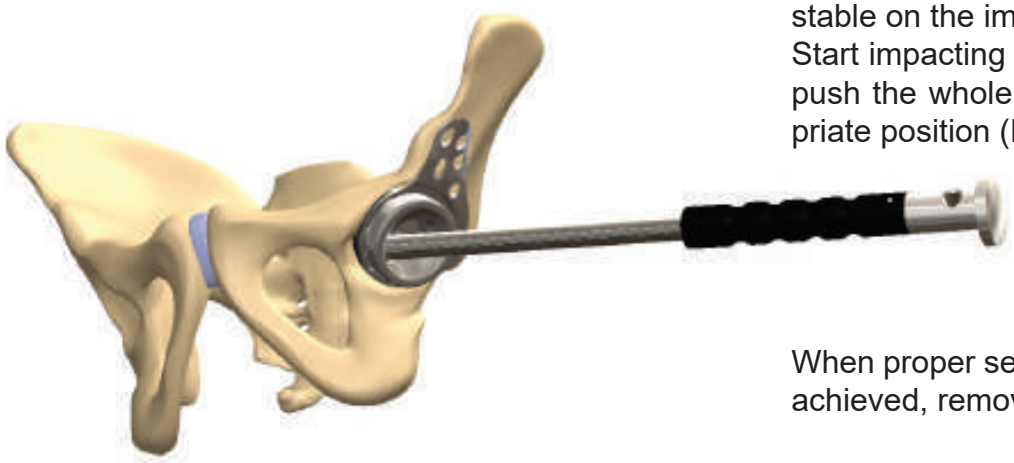


Figure 11

When proper seating of the RS Cup is achieved, remove the impactor.

To enhance the primary stability of the RS cup, please use the impaction head combined with the shell impactor (Fig. 12).

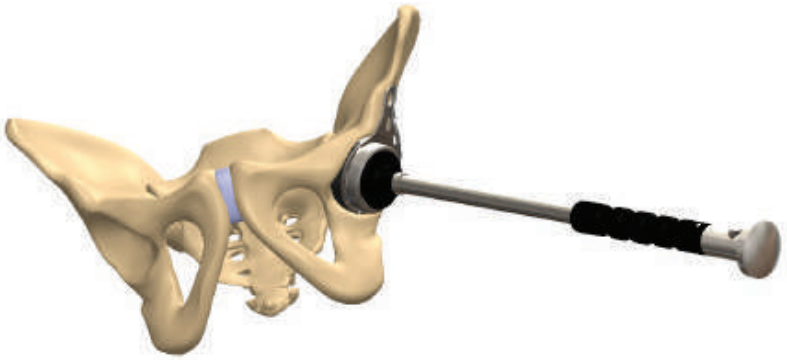


Figure 12

Optionally you can screw the positioner to the shell impactor and push the RS cup slightly in an optimised position (Fig. 13).

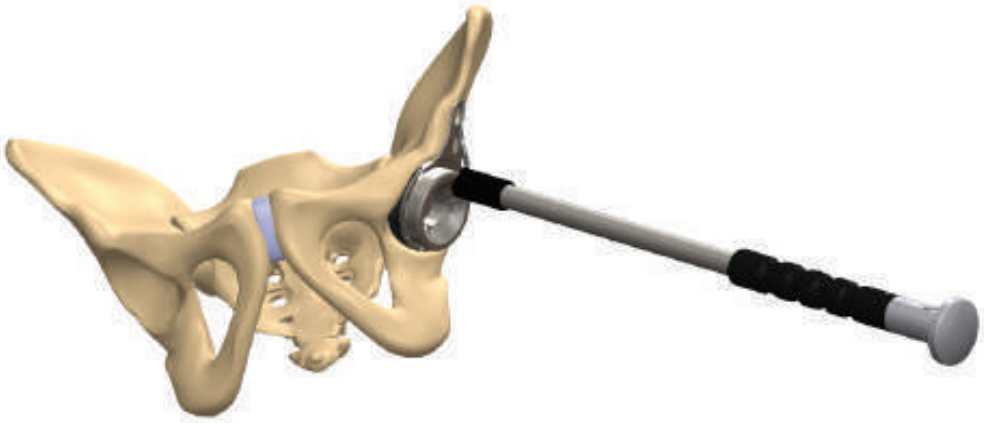


Figure 13

When the RS cup is seated correctly and stable, unlock the special screw and remove the inserter (Fig. 14).

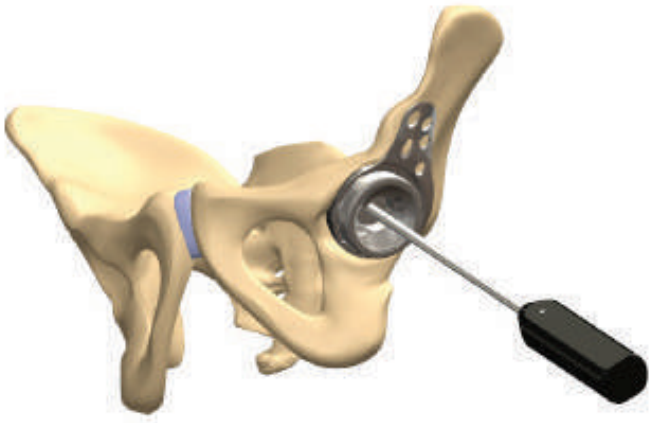


Figure 14

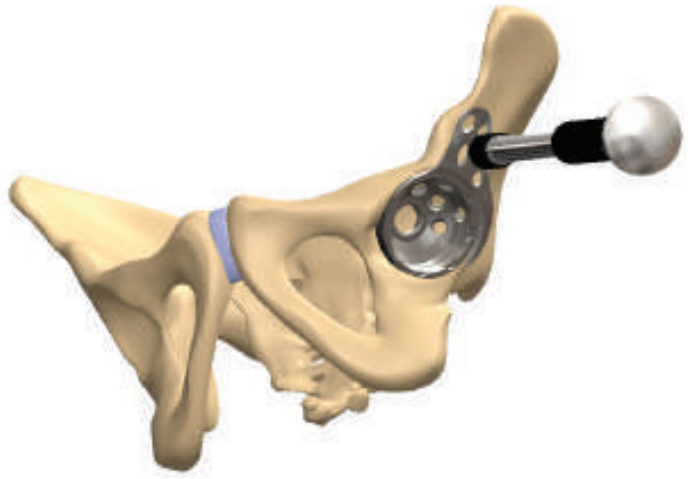


Figure 15

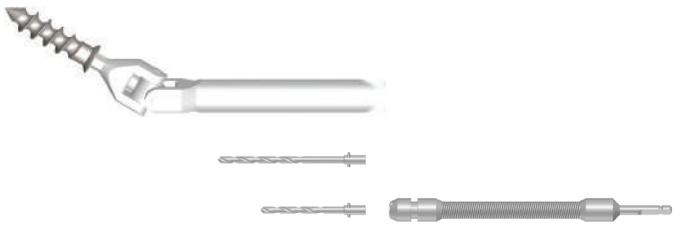
Position the flange of the implant with the help of the impactor head for the cranial flange (Fig. 15).

If the seating of the implant is satisfying insert the screws first into the dome and after that into the flange. While screwing please make sure that the screw head is completely countersinked into the bore hole of the cup.

NOTE:
Insert the dome screws first!

When screwing the cranial flange pay attention to the direction of the screw. Do not screw crosswise but always in the direction of the oval shape of the holes and use the shim!

To ensure optimal function of the components use only cancellous screws provided by implantcast!



Surgical technique usage of implacross® PE insert 15°

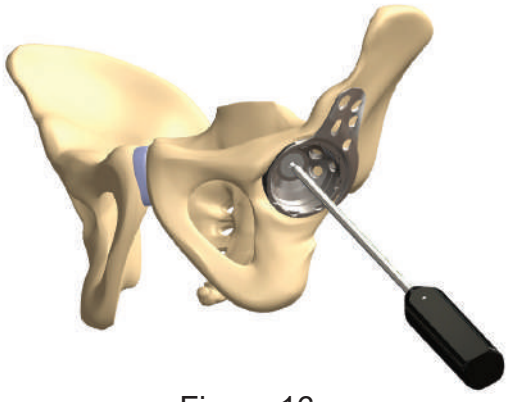


Figure 16

After the screw fixation is completed, please close the central hole by the central hole cover (02200216) with the help of the hexagon socket (Fig. 16).

For placing the insert assemble the impactor with the appropriate insert positioner (Fig. 17).

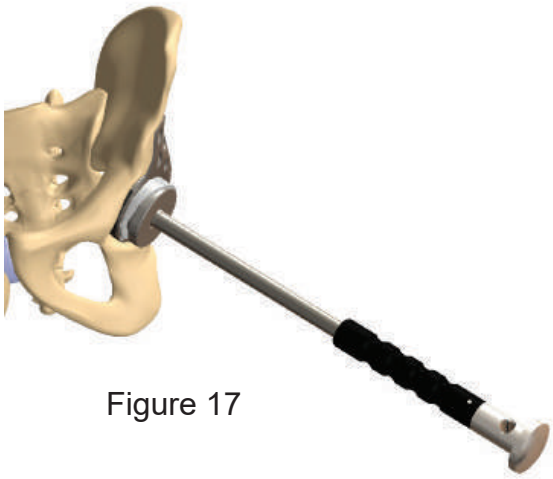


Figure 17

The implantation of the MUTARS® RS cup with implacross® PE insert is finished (fig. 18).

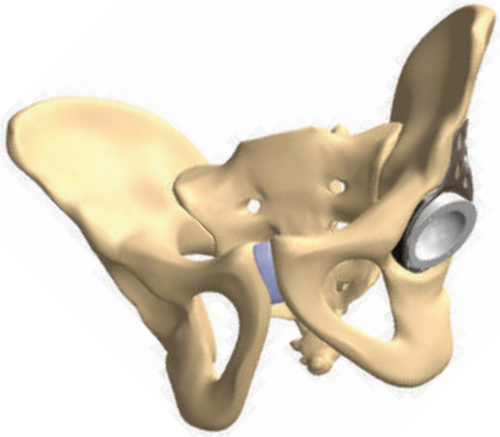
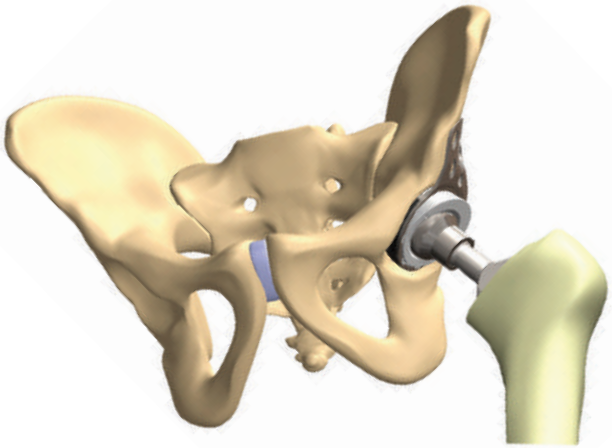


Figure 18

Reduct the joint and perform the final stability check.



surgical technique 2M insert 15° (tripolar combination)

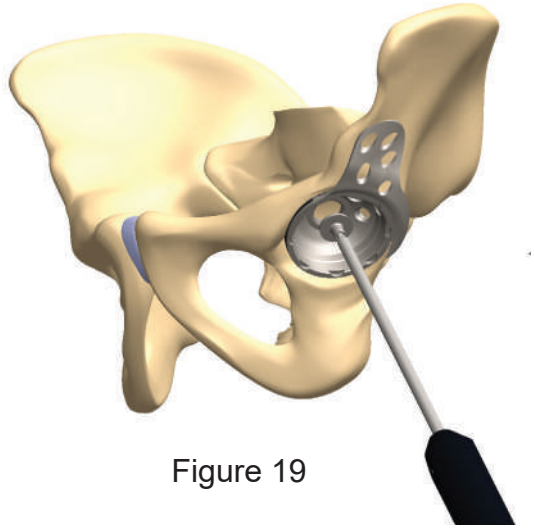


Figure 19

When using an EcoFit 2M head a 2M insert 15° for MUTARS RS cup has to be used. Before placing the 2M insert 15° close the central hole of the cup with the fastening bold 57120000. (Fig. 19).

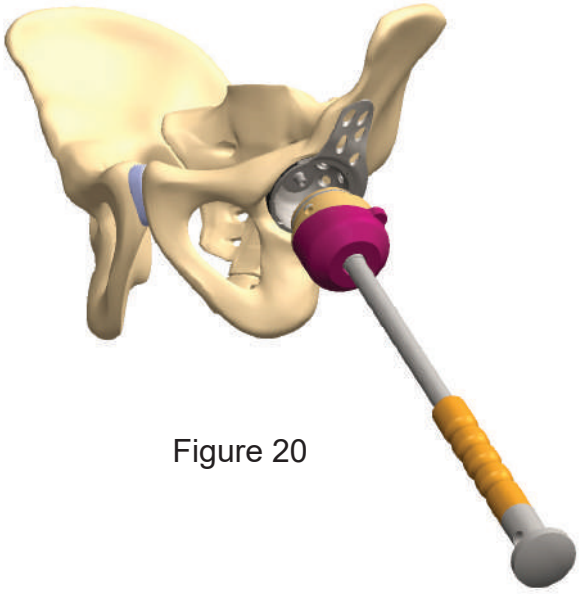
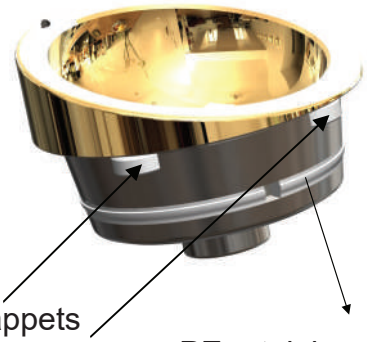


Figure 20



Four antirotation tappets which are seizing into the notches of the MUTARS® RS cup.

PE retaining ring

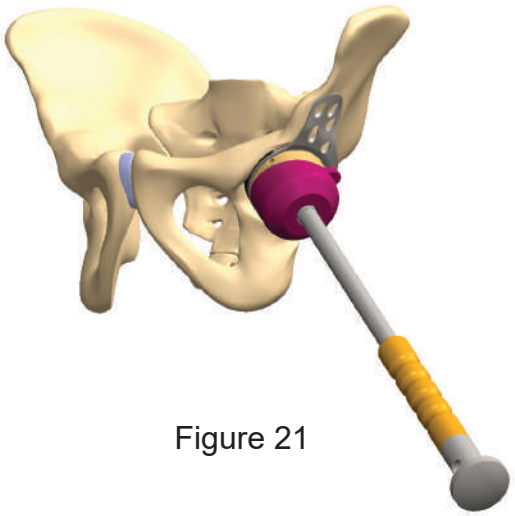


Figure 21

Assemble the insert positioner with the introducer. Adapt the 2M insert 15° with the insert positioner, adjust the roofing of the insert and secure the insert by impacting (Fig. 20 and 21).

Remove the insert positioner and the introducer.

The implantation of the MUTARS® RS cup with 2M insert 15° is finished (Fig. 22).

NOTE: After impacting the 2M insert 15° a gap of 1-2mm between MUTARS® RS cup and 2M insert 15° is persisting (Fig. 22a).

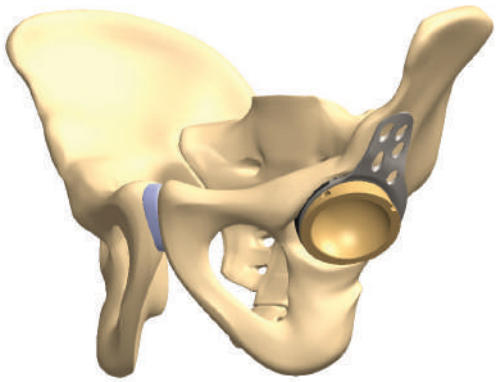


Figure 22

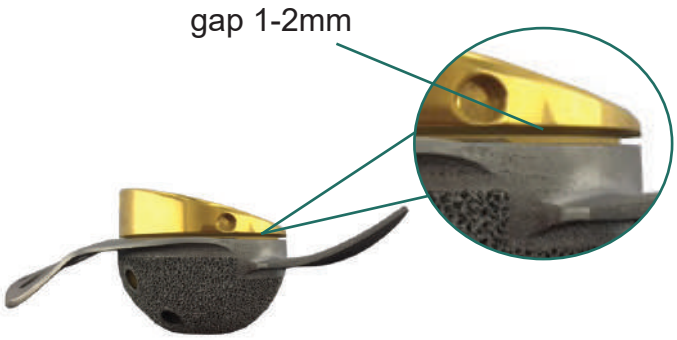


Figure 22a

Combine the 2M implacross® E head with the correct required ic-head with the help of the assembling aid by turning (Fig. 23).

With the head impactor and some slightly strokes the combined heads can be fixed on the taper of the femoral stem.

Reduct the joint and perform the final stability check.

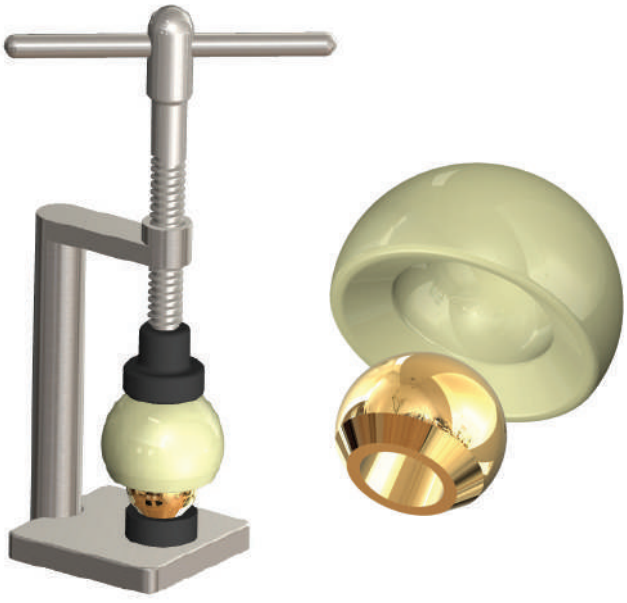


Figure 23

MUTARS® RS cup

IMPLANTS

MUTARS® RS cup

mat.: EPORE®, $TiAl_6V_4$

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

The MUTARS® RS cup is delivered without central plug!

central plug M16 x 1

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

REF	size
0220-0216	M16 x 1

fastening bolt for MUTARS® RS cup

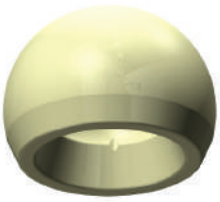
mat.: implatan®, $TiAl_6V_4$ acc. to ISO 5832-3

REF
5712-0000

2M insert 15° for MUTARS® RS cup and LUMiC® TiN

mat.: implavit®, CoCrMo acc. to ISO 5832-4 with TiN coating; UHMWPE acc. to ISO 5834-2

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



2M implacross® E head

mat.: implacross® E, crosslinked UHMWPE with Vitamin E

REF	size
2905-2238	Ø 22/38
2905-2842	Ø 28/42
2905-2844	Ø 28/44
2905-2846	Ø 28/46

IMPLANTS

EcoFit® 2M head

mat.: UHMWPE acc. to ISO 5834-2

REF	size
2906-2238	Ø 22/38
2906-2842	Ø 28/42
2906-2844	Ø 28/44
2906-2846	Ø 28/46

implacross® PE-insert 15° neutral 0mm

mat.: implacross®, crosslinked UHMWPE

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

implacross® PE-insert 15° Offset 4mm

mat.: implacross®, crosslinked UHMWPE

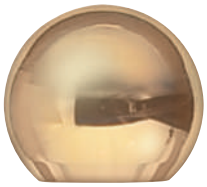
REF	size
0228-3239	Ø 32/39
0228-3644	Ø 36/44
0228-3648	Ø 36/48
0228-3652	Ø 36/52

CoCrMo
implavit® CoCrMo
acc. to ISO 5832-12

ic-head

Titan
implatan® $TiAl_6V_4$
acc. to ISO 5832-3
with TiN-coating

REF	size	REF
2312-2200	22mm, S	-
2312-2205	22mm, M	-
2312-2210	22mm, L	-
2387-2800	28mm, S	2787-2800
2387-2805	28mm, M	2787-2805
2387-2810	28mm, L	2787-2810
2387-2815	28mm, XL	2787-2815
2387-3200	32mm, S	2787-3200
2387-3205	32mm, M	2787-3205
2387-3210	32mm, L	2787-3210
2387-3215	32mm, XL	2787-3215
2387-3600	36mm, S	2787-3600
2387-3605	36mm, M	2787-3605
2387-3610	36mm, L	2787-3610
2387-3615	36mm, XL	2787-3615



IMPLANTS

BIOLOX® forte Al_2O_3 acc. to ISO 6474-1 — **ic-head** — **BIOLOX® delta** Al_2O_3 and ZrO_2 acc. to ISO 6474-2

REF	size	REF
2587-2800	28mm, S	2586-2800
2587-2805	28mm, M	2586-2805
2587-2810	28mm, L	2586-2810
2587-3200	32mm, S	2586-3200
2587-3205	32mm, M	2586-3205
2587-3210	32mm, L	2586-3210
-	32mm, XL	2586-3215
25873600	36mm, S	2586-3600
25873605	36mm, M	2586-3605
25873610	36mm, L	2586-3610
-	36mm, XL	2586-3615

CoCrMo — **ic-head**

implavit® CoCrMo
acc. to ISO 5832-12
with TiN-coating

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

cancellous screw flat head Ø 6,5 mm

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

REF	size
0280-1015	15mm
0280-1020	20mm
0280-1025	25mm
0280-1030	30mm
0280-1035	35mm
0280-1040	40mm
0280-1045	45mm

The cancellous screw flat heads are included in the delivery till length 50mm. On request we can provide cancellous screw flat head till size 80mm.

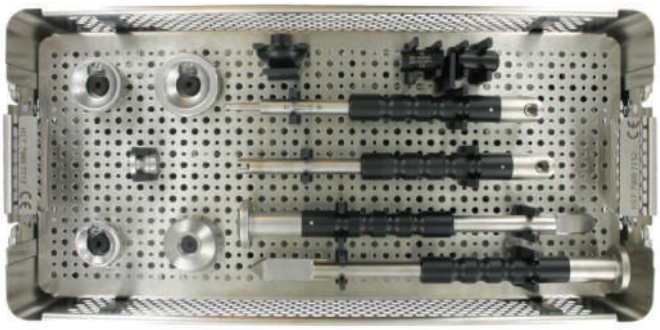
shim for cancellous bone screw 6,5mm

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

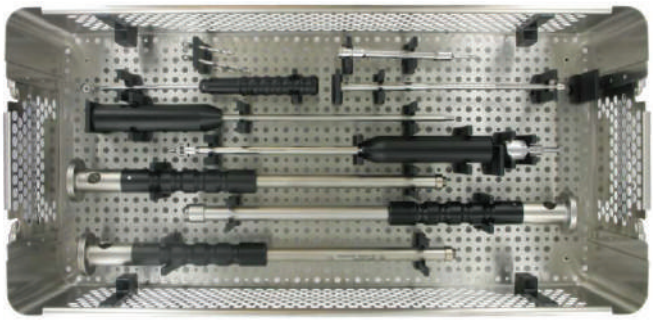
REF
0296-0000

INSTRUMENTS

7999-7712 **MUTARS® RS cup container (top)**



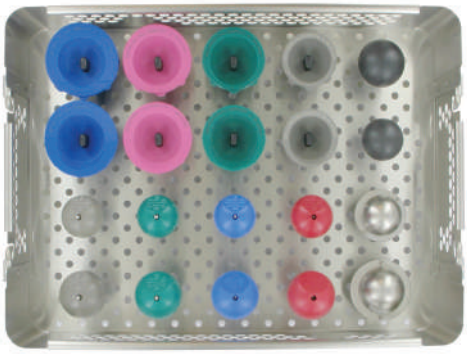
7999-7712 **MUTARS® RS cup container (bottom)**



7999-7713 **MUTARS® RS cup trial cup container left**

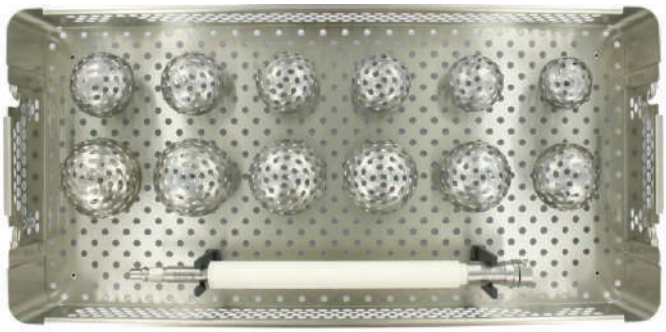
7999-7714 **MUTARS® RS cup trial cup container right**

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



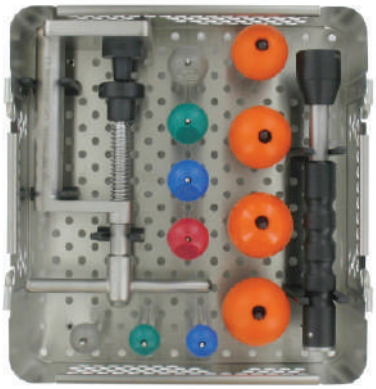
MUTARS® RS cup

INSTRUMENTS



0282-0001 **acetabulum reamer container**

2950-1067 **trial insert 15° container MUTARS® cup / LUMiC®**



7999-7717 **MUTARS® RS Cup container 2M trials**

container 7999-7715

trial liner 15° neutral 0mm

0230-3239	ø 32/39 mm
0230-3644	ø 36/44 mm
0270-3648	ø 36/48 mm
0270-3652	ø 36/52 mm

trial liner 15° offset 4mm

0231-3239	ø 32/39 mm
0231-3644	ø 36/44 mm
0271-3648	ø 36/48 mm
0271-3652	ø 36/52 mm

positioner for PE-insert 15°

0282-1532	ø 32 mm
0282-1536	ø 36 mm

trial head snap taper 12/14mm

7962-3200 / 7965-3200 ø 32 mm short
7962-3205 / 7965-3205 ø 32 mm medium
7962-3210 / 7965-3210 ø 32 mm long
7962-3215 / 7965-3215 ø 32 mm x-long
7962-3600 / 7965-3600 ø 36 mm short
7962-3605 / 7965-3605 ø 36 mm medium
7962-3610 / 7965-3610 ø 36 mm long
7962-3615 / 7965-3615 ø 36 mm x-long

impactor for cup insert

0282-0007	ø 32 mm
0282-0009	ø 36 mm

MUTARS® RS cup

container 7999-7712

screw for MUTARS® RS Cup inserter M16x1
7712-0161

MUTARS® RS cup inserter

7712-0039	ø 39 mm
7712-0044	ø 44 mm
7712-0048	ø 48 mm
7712-0052	ø 52 mm

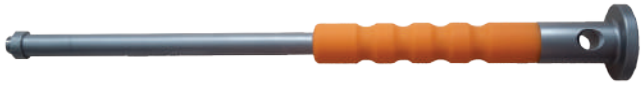
impaction head
7512-1020

positioner
7512-1021

positioner for plate
7512-1025

bending instrument
7512-1022

shell impactor
0282-0020



shell impactor (optional)
0282-0030

cup impactor M16x1
0220-1012

bending thorn
7512-1023

chisel small
7512-1024

chisel large
7512-1026

drill bit ⌀ 3,2mm

0282-1005	56 mm
0282-1070	70 mm
alternative:	
0282-3240	40 mm
0282-3260	60 mm

flexible drill shaft
0282-1000
alternative: 0282-2110

angled drill guide ⌀ 3,2mm
0282-1001

depth gauge
0282-1007

screw driver long 3,5 mm
0280-1006

cardan screw driver 3,5mm
0270-1002

trial insert extractor
1260-0009

container 7999-7713 / 7999-7714

MUTARS ® RS cup trial implant

7712-0046	ø 46 mm	right
7712-0050	ø 50 mm	right
7712-0054	ø 54 mm	right
7712-0058	ø 58 mm	right
7712-0062	ø 62 mm	right
7712-0546	ø 46 mm	left
7712-0550	ø 50 mm	left
7712-0554	ø 54 mm	left
7712-0558	ø 58 mm	left
7712-0562	ø 62 mm	left

container 02820001

acetabulum reamer low profile

2950-3046 / 2960-3046	ø 46 mm
2950-3048 / 2960-3048	ø 48 mm
2950-3050 / 2960-3050	ø 50 mm
2950-3052 / 2960-3052	ø 52 mm
2950-3054 / 2960-3054	ø 54 mm
2950-3056 / 2960-3056	ø 56 mm
2950-3058 / 2960-3058	ø 58 mm
2950-3060 / 2960-3060	ø 60 mm
2950-3062 / 2960-3062	ø 62 mm
2950-3064 / 2960-3064	ø 64 mm
2950-3066 / 2960-3066	ø 66 mm
2950-3068 / 2960-3068	ø 68 mm

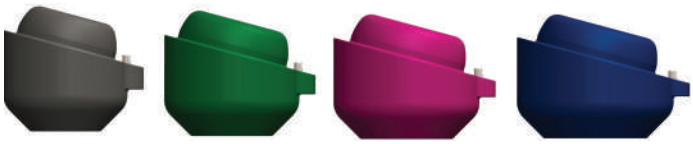
handle for acetabulum reamer A/O long

2950-2010

container 2950-1067

2M trial insert 15° for
MUTARS® RS cup and LUMiC®
0262-3839 size 38/39mm
0262-4244 size 42/44mm
0262-4448 size 44/48mm
0262-4652 size 46/52mm

2M trial insert positioner 15° for
MUTARS® RS cup and LUMiC®
2950-3839 size 38/39mm
2950-4244 size 42/44mm
2950-4448 size 44/48mm
2950-4652 size 46/52mm



cup impactor without rim
2950-0338 size 38mm
2950-0342 size 42mm
2950-0344 size 44mm
2950-0346 size 46mm

container 7999-7717

optional

2M trial head

2950-2238	22/38mm
2950-2842	28/42mm
2950-2844	28/44mm
2950-2846	28/46mm

assembling aid
2900-2000

femoral head impactor
2950-0039

trial head snap taper 12/14

7962-2200 / 7965-2200	Ø 22mm short
7962-2205 / 7965-2205	Ø 22mm medium
7962-2210 / 7965-2210	Ø 22mm long
7962-2800 / 7965-2800	Ø 28mm short
7962-2805 / 7965-2805	Ø 28mm medium
7962-2810 / 7965-2810	Ø 28mm long
7962-2815 / 7965-2815	Ø 28mm x-long

NOTES

implantcast GmbH
Lüneburger Schanze 26
21614 Buxtehude
phone.: +49 4161 744-0
fax: +49 4161 744-200
e-mail: info@implantcast.de
internet: www.implantcast.de

CE 0482

Your local distributor:

RSCUPOPE-151220