MATHYS
European Orthopaedics

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Surgical technique / Product information

CCA Stem

***Preservation** in motion*

Building on our heritage
Moving technology forward
Step by step with our clinical partners
Towards a goal of preserving mobility

***Preservation** in motion*

As a Swiss company, Mathys is committed to this guiding principle and pursues a product portfolio with the goal of further developing traditional philosophies with respect to materials or design in order to address existing clinical challenges. This is reflected in our imagery: traditional Swiss activities in conjunction with continuously evolving sporting equipment.

Table of contents

Remark
Please make yourself familiar with the handling of the instruments, the product-related surgical technique and the warnings, the safety notes as well as the recommendations of the instruction leaflet before using an implant manufactured by Mathys Ltd Bettlach. Make use of the Mathys user training and proceed according to the recommended surgical technique.

Introduction

Implantation of artificial hip joints is one of the most successful standard procedures in orthopaedics. The aim of joint replacement is to eliminate pain and to restore the normal function of the hip joint optimally. Due to the demographic development of the population and the increasing importance of physical activity and sports even in advanced age, the number of such surgeries is expected to increase further.

The collaboration of Maurice Müller and Robert Mathys, Sr., led to the development of one of the most successful cemented prosthesis systems of the past 40 years – the Müller prostheses. Due to this success, they were frequently imitated over the past decades.
Mathys produced these successful implants from 1976 to 1996 for Protek and later Centerpulse. Since the separation of the two companies, Mathys has been offering this system under the name of CCA Stem (Müller straight stem), CCB Cup (cemented Müller cup) and CCE Ring (Müller acetabular roof reinforcement ring), where design, materials and quality of the original have remained essentially unchanged.

One of the most widely used stem and cup concepts globally
The good clinical results of the Müller straight stem have been documented in many publications. [1, 2, 3, 4, 5, 6] Registry data [7, 8] of the CCA Stem and clinical data [9] demonstrate the reliability of this concept in practice.
The CCA Stem is awarded a 10A* (10 years of high evidence) in the British ODEP ratings. [10]

CCA Stem

- Cemented, matte straight stem
- Available in two materials, CoCrMo and stainless steel (FeCrNiMnMoNbN)
- For each material, there are two versions: Standard and Lateral
  – The centre of rotation of the two versions moves along the horizontal line, the offset differs by 8.6 mm. The selection of the offset does not affect leg length.

Design features and advantages of the Müller philosophy

- Cemented stem
- Filling the medullary cavity (shape-closed, composite beam) [11] in the antero-posterior plane
- Flattened in the sagittal plane (no complete filling of the medullary cavity)
- Self-centring thanks to 6° wedge angle and broad tip (no centraliser required) [1]
- Fin structure for improving the stability of rotation [12]
- Small collar for cement compression [12]
- Extraction hole, simplifies implant removal for revision
- 135° CCD angle. Lateralisation by shifting, not via the CCD angle (Maurice Müller philosophy)
- 12/14 cone. Compatible with all femoral heads from Mathys's portfolio

1. Indications and contraindications

Indications

- Primary or secondary osteoarthritis of the hip
- Femoral head and femoral neck fractures
- Necrosis of the femoral head

Contraindications

- Presence of factors jeopardising stable anchoring of the implant:
  – Bone loss and/or bone defects
  – Insufficient bone substance
  – Medullary canal not suitable for the implant
- Local and/or general infection
- Hypersensitivity to any of the materials used
- Severe soft tissue, nerve or vessel insufficiency that jeopardise the function and long term stability of the implant
- Patients in whom a different type of reconstruction surgery or treatment is likely to be successful

For further information, please refer to the instructions for use or ask your Mathys representative.

2. Preoperative planning

Preoperative templating can be performed on standard radiographs or with a digital planning system. The main goal is to plan the appropriate implant as well as its size and position, in order to restore the individual biomechanics of the hip joint. That way, potential problems can be anticipated already before surgery. In most cases, restoring hip biomechanics can be achieved by reconstructing the original hip rotation centre and the leg length as well as the femoral and acetabular offset. [13]
It is recommended to document the preoperative planning in the patient's file.

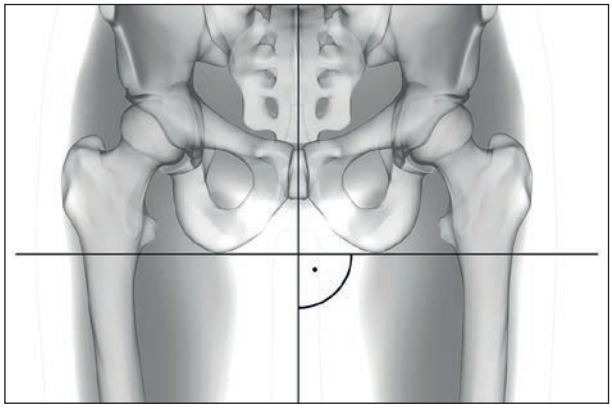


Fig. 1

Hip templating can best be performed on a pelvic radiograph taken in supine or standing position. The radiograph needs to be symmetrical, centred on the symphysis of the pubis and with both femora in about 20° of internal rotation. The magnification factor of the radiograph can be controlled with a calibration object or by using a fixed film-to-focus distance and positioning the patient at a fixed distance between film and X-ray source (Fig. 1).

Remark
If the affected hip is severely damaged, templating on the unaffected side and transposing the planning to the affected side should be considered.

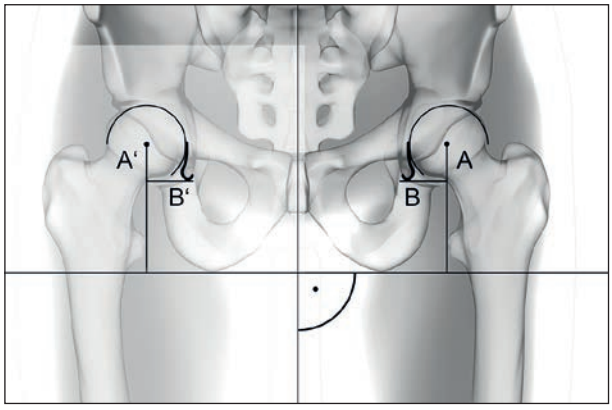


Fig. 2

Estimation of the acetabular offset
The rotation centres of the healthy (A) and affected hip (A') are defined as the center of a circle that fits the femoral head or the acetabular cavity.
A first, horizontal line is drawn tangent to both ischial tuberosities, and a second, perpendicular line is plotted through the center of the symphysis of the pubis.

Remark
In case of leg length correction, the adjustment of the leg length can already be considered already now, using the ischial tuberosities as a reference.

The acetabular offset can be defined as the distance between Köhler's teardrop (B or B') and a vertical line through the hip rotation centre (A or A') (Fig. 2).

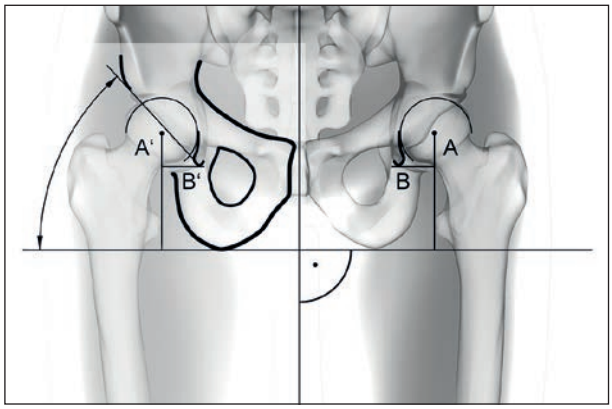


Fig. 3

Planning of the cup

The cup position in relation to the pelvis will take into account the acetabular contours, the hip rotation centre, Köhler's teardrop and the required cup inclination angle (Fig. 3).

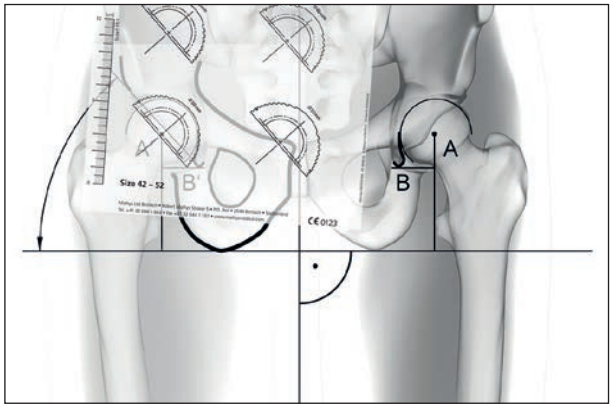


Fig. 4

To find an appropriate cup size, various cup templates are positioned at the level of the acetabular cavity with the goal of restoring the native hip rotation centre while having sufficient bone contact, both at the level of the acetabular roof and Köhler's teardrop (Fig. 4).

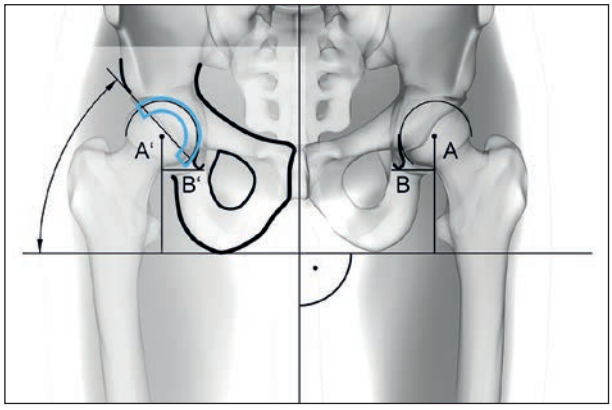


Fig. 5

The cup is positioned into the acetabulum aiming for an inclination angle of 40°. The implant position is established in relation to the anatomical landmarks (acetabular roof, Köhler's teardrop) and the implantation depth is marked down (Fig. 5).

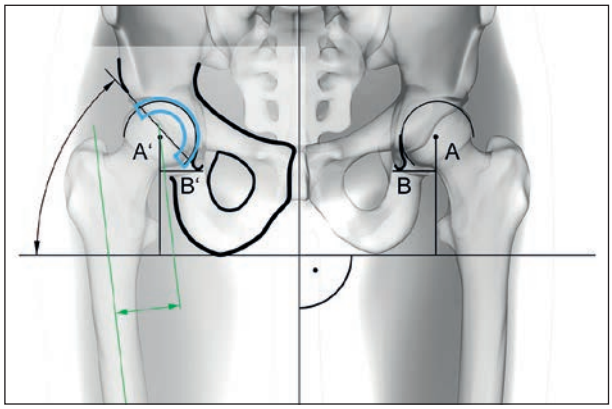


Fig. 6

Estimation of the femoral offset

The femoral offset is defined as the smallest distance between the central longitudinal axis of the femur and the hip rotation centre (Fig. 6).

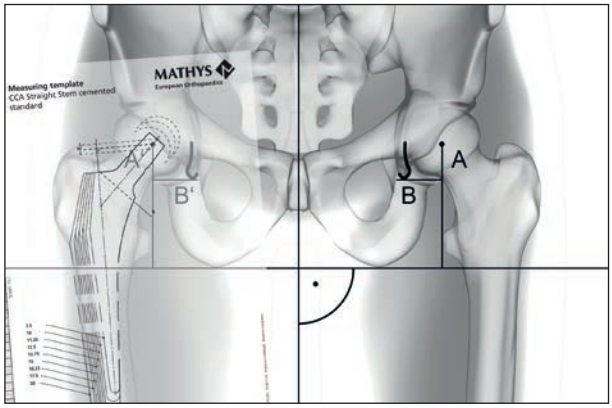


Fig. 7

Planning of the CCA Stem

Determination of the stem size using the measuring templates on the femur to be operated on. The template is to be aligned to the centre of rotation and the central axis (Fig. 7).

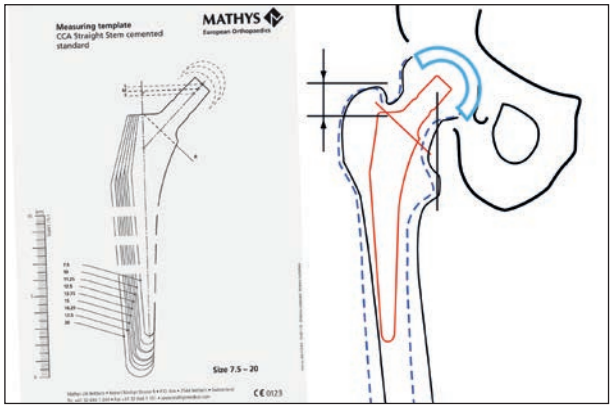


Fig. 8

On the planning sheet, the matching stem is delineated in the form of dotted lines with the measuring template in the same abduction/adduction position as the femur of the healthy side. (Fig. 8).
The femur to be operated on is plotted over the selected stem.

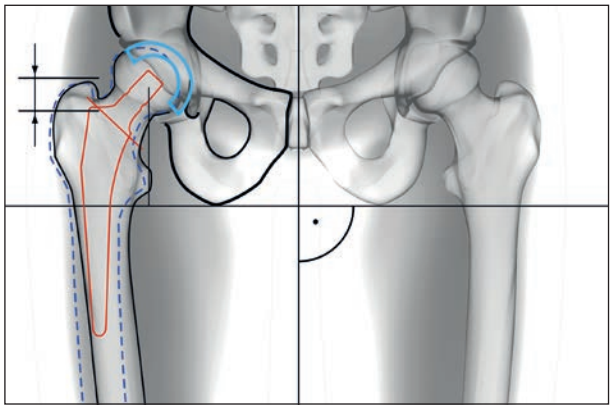


Fig. 9

The distance between the proximal end of the stem cone and the lesser trochanter as well as the one between the shoulder and the greater trochanter are measured.

Plotting of the resection plane and determination of the intersection between the trochanteric massive and the lateral demarcation of the prosthesis stem (Fig. 9).

3. Surgical technique

The CCA Stem can be implanted through both, conventional and so called «minimal invasive» approaches. The choice of a specific approach should be based on patient anatomy, personal experience and preference of the operating surgeon.

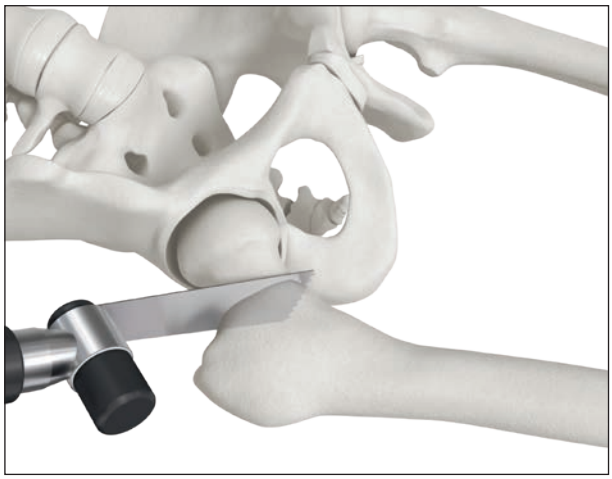


Fig. 10

Femoral osteotomy
The femoral neck resection level is related to the distance between the lesser and the greater trochanter and marked according to the preoperative planning (Fig. 10).

Remark
When anatomical conditions prevent head removal after a single neck cut, it is advisable to perform a double osteotomy of the femoral neck and remove the free bone block first. Then the femoral head is removed with a Femoral head extractor.

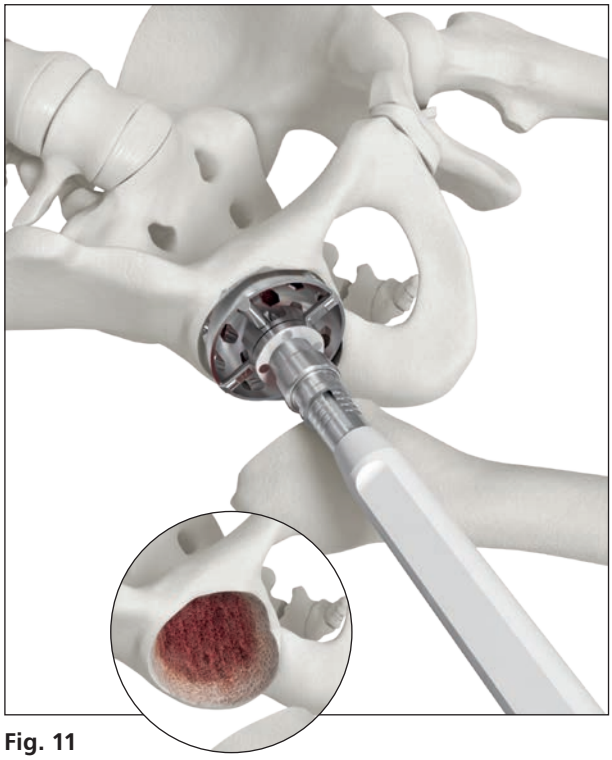


Fig. 11

Preparation of the acetabulum
After exposure of the acetabulum, the joint capsule is resected and osteophytes are removed. Using spherical Acetabular reamers of increasing sizes, the acetabular cartilage and a small amount of subchondral bone are removed until some bleeding appears in the acetabular bed and the implantation level defined during preoperative planning is reached (Fig. 11).

Remark
Ensure that the acetabulum is reamed to the implant depth defined in the preoperative planning.

Remark
The implantation of the cup is described in a separate surgical technique, which can be downloaded from the Mathys Ltd Bettlach website or requested from your local Mathys representative.

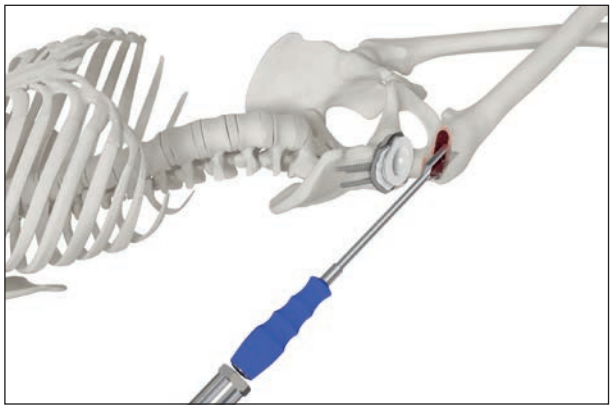


Fig. 12

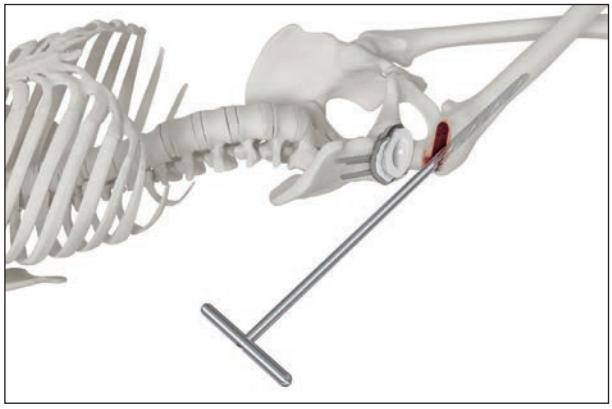


Fig. 13

Insertion of the CCA Stem

Orthograde implantation is possible only after sufficient lateral opening of the femoral canal.
Therefore, the box chisel (Fig. 12) must be applied slightly medially of the piriform fossa and introduced in a parallel direction to the dorsolateral femoral cortex with careful hammer strokes.

This should be done carefully so that there is no fracture of the greater trochanter.

Remark

Pay attention to the desired anteversion of the stem of approximately 10°– 15° during this step.

The box chisel should be introduced only 1 – 2 cm proximally into the medullary cavity, otherwise there is a risk of perforation.
If in doubt, a sharp spoon may be used to explore the inner lateral femoral cortex before use of the box chisel. In this way, the risk of varus or valgus malposition of the implant is reduced.

Further opening with the reamer facilitates insertion and centring of the subsequent rasps (Fig. 13).

It must be ensured that the reamer retains its central position aligned to the femoral axis along the inner cortex of the femur as a guide element for preparation of the orthograde reaming.
The cancellous bone is removed only in the frontal plane.

Fig. 14

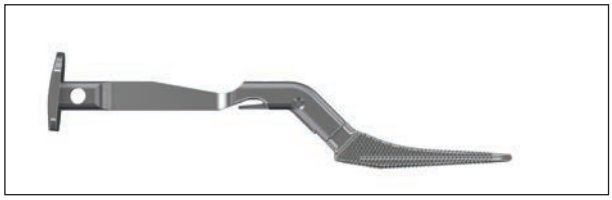


Fig. 15

Locking and securing of the smallest rasp in the rasp handle (Figs. 14 and 15).

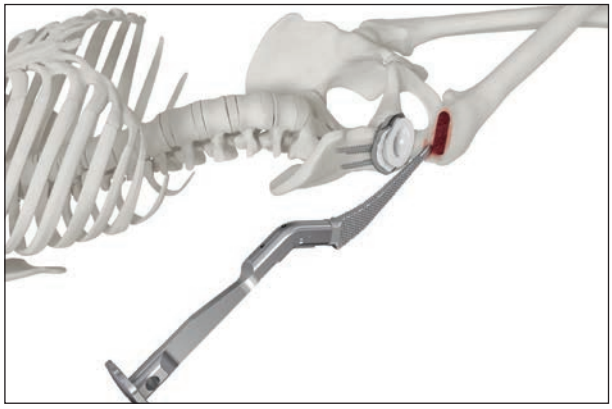


Fig. 16

Stepwise rasping of the femur. It is recommended to start with the smallest rasp and then gradually open the femoral canal up to the preoperatively planned size (Fig. 16).
The rasps are introduced along the lateral cortex with moderate hammer strokes into the femoral canal.

Remark
The drive direction of the rasp needs to be in line with the femur axis, to reduce a risk of an undersizing or malalignment of the final implant.

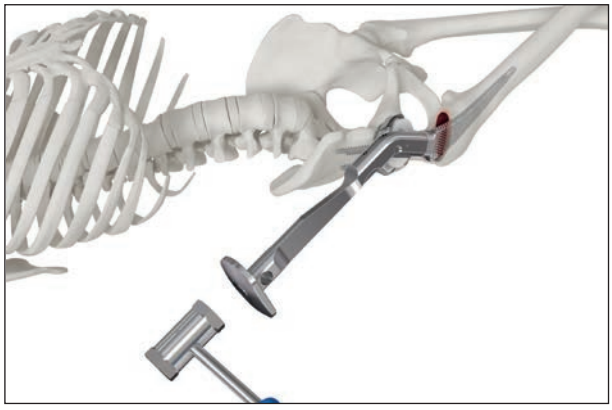


Fig. 17

In the gradual expansion of the medullary canal using rasps of ascending sizes, congruence of the direction of advancement with the axis of the femur must be ensured (Fig. 17).

Fig. 18 Incorrect

Fig. 19 Correct

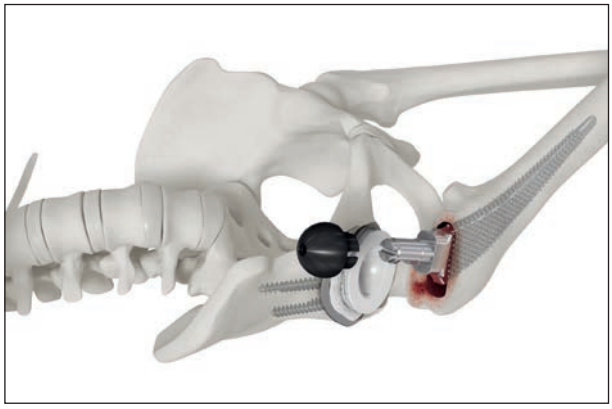


Fig. 20

Remark

Each rasp should be completely inserted up to the level of the resection plane in order to avoid length differences (Figs. 18 and 19).

Once the largest rasp has reached the level of the femoral resection plane and cannot be driven further in with moderate hammer strokes, the rasp is detached from the rasp handle.

If the implanted rasp is smaller than the corresponding stencilled stem size, premature sticking of the rasp during the femoral preparation may have one of the following causes:

1) incorrect alignment of the rasp with the femoral axis (i. e. in varus or valgus position)
2) a tulip-shaped femoral form that requires distal extension in the diaphyseal region.

Remark

The size markings of the rasps match the implant sizes. Correct fit of the rasp in the femur can additionally be checked under image intensification.

When using the modular CCA rasps, the one inserted last is used as a trial prosthesis (Fig. 20).

Remark

Trial heads for trial reductions are available in the following diameter sizes: 28 mm, 32 mm and 36 mm, each with S, M, L, XL and XXL neck lengths.
To simulate the lateral CCA straight stem, use the eccentric lateral CCA trial head.

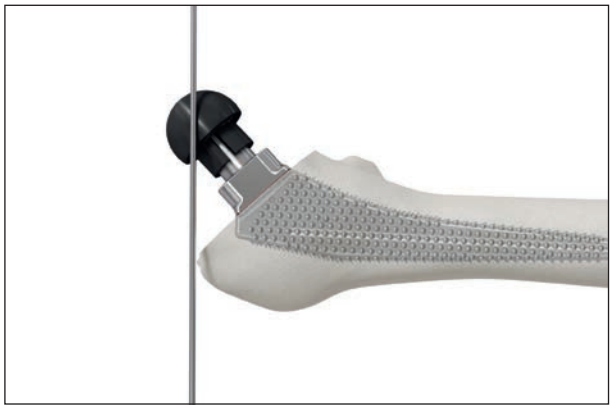


Fig. 21

Eventual verification of the trochanteric distance T (distance from the trochanter tip to the level of the head centre) using a Kirschner wire (Fig. 21).

The final size of the head is defined with the inner diameter of the cup.

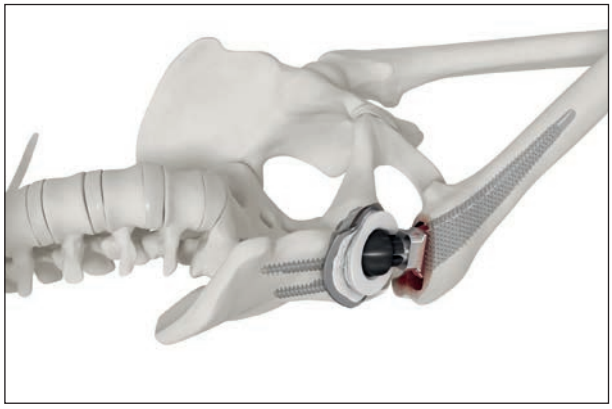


Fig. 22

Trial reduction (Fig. 22).

Fig. 23

After reduction, the range of movement is checked. Particular attention must be paid to the proneness to luxation and range of motion of the joint, to the balancing of the soft tissue tension, and to leg length (Fig. 23).

Insertion of the medullary plug
Using the measuring cone positioner, the position and size of the medullary plug are determined.

Remark
The measurement is performed on the medial line indicating the resection plane.
The medullary plug should be placed 1 cm distally to the tip of the prosthesis.

The medullary plug consisting of autologous cancellous bone, polyethylene or resorbable synthetic material is used according to the height of the test implantation.

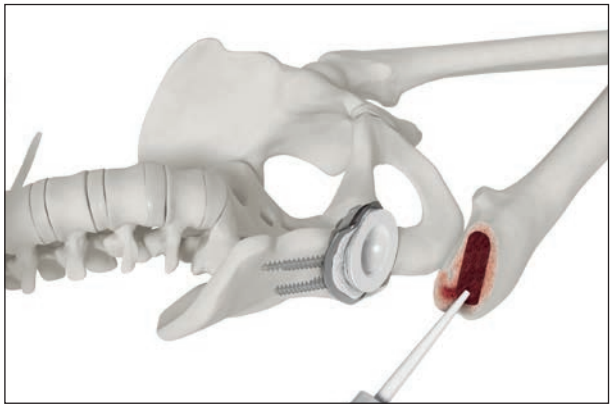


Fig. 24

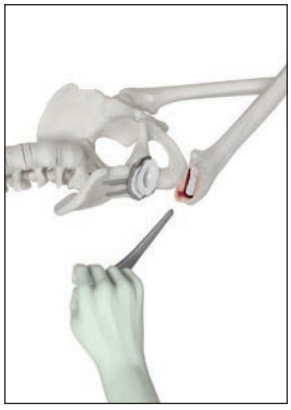


Fig. 25

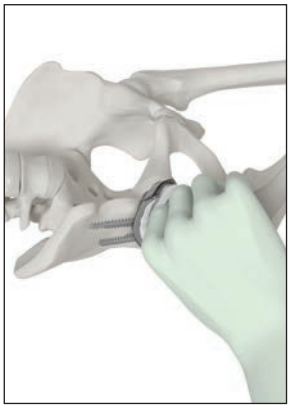


Fig. 26

Remark
The instruments to be used to determine the size of the medullary plug are not included in the standard instrument set and must therefore be ordered separately. For more information about the Mathys medullary plug, please contact your Mathys representative.

Implantation of the CCA Stem
Rinse the implant bed with the jet lavage.

Subsequently the prosthetic bed is carefully aspirated and dried. Concomitantly, the bone cement is mixed.

Remark
The cementing technique requires special precautions (preparation of the bone cavity, cementing technique, collaboration with the anaesthetist, etc.) which are described in the specific instructions for use of the cement.

Retrograde application of the prepared bone cement (Fig. 24).

The selected stem is implanted slowly with continuous pressure, optionally with the aid of the positioning instrument, down to the depth of the last rasp used (Figs. 25 and 26).

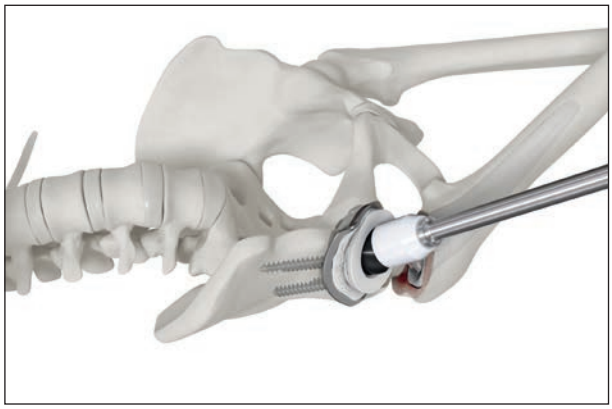


Fig. 27

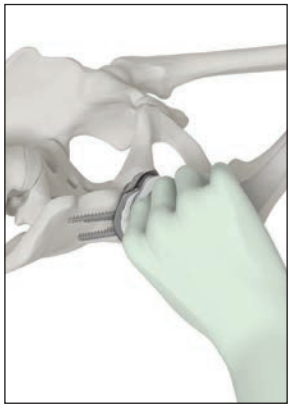


Fig. 28

Fig. 29

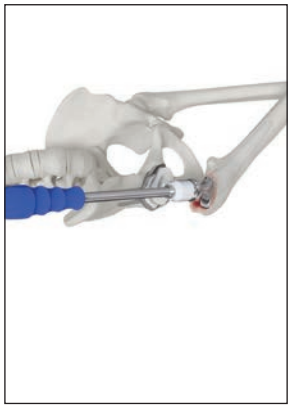


Fig. 30

Fig. 31

Any overflowing bone cement is removed.

Until the complete curing of the bone cement, the stem must be kept in position with slight pressure.

After the curing of the cement, the trial heads of different lengths for testing the range of motion and the ligament tension can be used to perform another trial reduction (Fig. 27).

Remark
An overview of the neck lengths of heads and trial heads can be found in chapter Implants and Instruments.

The head diameter must always match the inner diameter of the cup.

To avoid complications at the stem/head interface, the cone is to be cleaned and dried before the final prosthesis head is mounted (Figs. 28 and 29).

Reduction of the joint (Figs. 30 and 31).

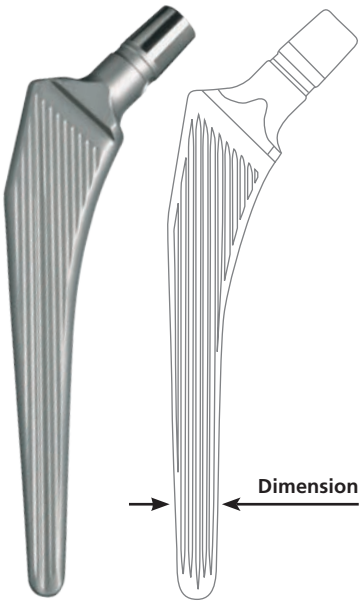
Remark
Correct fit of the implants can additionally be checked under image intensification.

The joint space is rinsed to remove any cement or bone particles present.

Depending on the approach, the muscle insertions are reattached, and the wound is closed layer by layer.

Removal of the CCA Stem
In case of revision, the CCA Stem can be removed with the curved extractor or a universal stem extraction instrument. For further information about stem revision and extraction instruments contact your local Mathys representative.

4. Implants



CCA Stainless Steel Stem – Standard

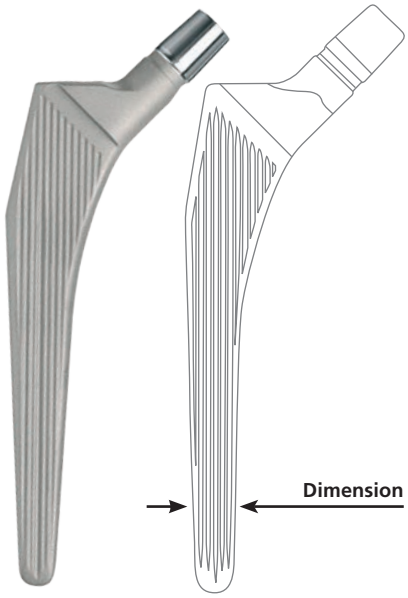
Item no.	Description
2.30.330	CCA SS Stem std. 7.50 cem.
2.30.331	CCA SS Stem std. 10.00 cem.
2.30.332	CCA SS Stem std. 11.25 cem.
2.30.333	CCA SS Stem std. 12.50 cem.
2.30.334	CCA SS Stem std. 13.75 cem.
2.30.335	CCA SS Stem std. 15.00 cem.
2.30.336	CCA SS Stem std. 16.25 cem.
2.30.337	CCA SS Stem std. 17.50 cem.

Material: FeCrNiMnMoNbN
Cone: 12/14 mm
CCD angle: 135°

CCA CoCrMo Stem – Standard

Item no.	Description
2.30.350	CCA CoCrMo Stem std. 7.50 cem.
2.30.351	CCA CoCrMo Stem std. 10.00 cem.
2.30.352	CCA CoCrMo Stem std. 11.25 cem.
2.30.353	CCA CoCrMo Stem std. 12.50 cem.
2.30.354	CCA CoCrMo Stem std. 13.75 cem.
2.30.355	CCA CoCrMo Stem std. 15.00 cem.
2.30.356	CCA CoCrMo Stem std. 16.25 cem.
2.30.357	CCA CoCrMo Stem std. 17.50 cem.
2.30.358	CCA CoCrMo Stem std. 20.00 cem.

Material: CoCrMo
Cone: 12/14 mm
CCD angle: 135°



CCA Stainless Steel Stem – Lateral

Item no.	Description
2.30.340	CCA SS Stem lat. 7.50 cem.
2.30.341	CCA SS Stem lat. 10.00 cem.
2.30.342	CCA SS Stem lat. 11.25 cem.
2.30.343	CCA SS Stem lat. 12.50 cem.
2.30.344	CCA SS Stem lat. 13.75 cem.
2.30.345	CCA SS Stem lat. 15.00 cem.
2.30.346	CCA SS Stem lat. 16.25 cem.
2.30.347	CCA SS Stem lat. 17.50 cem.

Material: FeCrNiMnMoNbN
Cone: 12/14 mm
CCD angle: 135°

CCA CoCrMo Stem – Lateral

Item no.	Description
2.30.360	CCA CoCrMo Stem lat. 7.50 cem.
2.30.361	CCA CoCrMo Stem lat. 10.00 cem.
2.30.362	CCA CoCrMo Stem lat. 11.25 cem.
2.30.363	CCA CoCrMo Stem lat. 12.50 cem.
2.30.364	CCA CoCrMo Stem lat. 13.75 cem.
2.30.365	CCA CoCrMo Stem lat. 15.00 cem.
2.30.366	CCA CoCrMo Stem lat. 16.25 cem.
2.30.367	CCA CoCrMo Stem lat. 17.50 cem.
2.30.368	CCA CoCrMo Stem lat. 20.00 cem.

Material: CoCrMo
Cone: 12/14 mm
CCD angle: 135°

Head, Stainless Steel

Item no.	Outside diameter	Neck length	
54.11.1031	22.2 mm	S	-3 mm
54.11.1032	22.2 mm	M	0 mm
54.11.1033	22.2 mm	L	+3 mm
2.30.410	28 mm	S	-4 mm
2.30.411	28 mm	M	0 mm
2.30.412	28 mm	L	+4 mm
2.30.413	28 mm	XL	+8 mm
2.30.414	28 mm	XXL	+12 mm
2.30.400	32 mm	S	-4 mm
2.30.401	32 mm	M	0 mm
2.30.402	32 mm	L	+4 mm
2.30.403	32 mm	XL	+8 mm
2.30.404	32 mm	XXL	+12 mm

Material: FeCrNiMnMoNbN
Cone: 12/14 mm

Head, CoCrMo

Item no.	Outside diameter	Neck length	
52.34.0125	22.2 mm	S	-3 mm
52.34.0126	22.2 mm	M	0 mm
52.34.0127	22.2 mm	L	+3 mm
2.30.010	28 mm	S	-4 mm
2.30.011	28 mm	M	0 mm
2.30.012	28 mm	L	+4 mm
2.30.013	28 mm	XL	+8 mm
2.30.014	28 mm	XXL	+12 mm
2.30.020	32 mm	S	-4 mm
2.30.021	32 mm	M	0 mm
2.30.022	32 mm	L	+4 mm
2.30.023	32 mm	XL	+8 mm
2.30.024	32 mm	XXL	+12 mm
52.34.0686	36 mm	S	-4 mm
52.34.0687	36 mm	M	0 mm
52.34.0688	36 mm	L	+4 mm
52.34.0689	36 mm	XL	+8 mm
52.34.0690	36 mm	XXL	+12 mm

Material: CoCrMo
Cone: 12/14 mm

Hip Head, ceramys

Item no.	Outside diameter	Neck length	
54.47.0010	28 mm	S	-3.5 mm
54.47.0011	28 mm	M	0 mm
54.47.0012	28 mm	L	+3.5 mm
54.47.0110	32 mm	S	-4 mm
54.47.0111	32 mm	M	0 mm
54.47.0112	32 mm	L	+4 mm
54.47.0113	32 mm	XL	+8 mm
54.47.0210	36 mm	S	-4 mm
54.47.0211	36 mm	M	0 mm
54.47.0212	36 mm	L	+4 mm
54.47.0213	36 mm	XL	+8 mm

Material: ZrO_2-Al_2O_3
Cone: 12/14 mm

ceramys femoral heads can be combined with the Mathys polyethylenes and all Mathys ceramics.
For ceramic-on-ceramic pairings, use only ceramic heads with ceramic inlays by Mathys.

Hip Head, symarec

Item no.	Outside diameter	Neck length	
54.48.0010	28 mm	S	-3.5 mm
54.48.0011	28 mm	M	0 mm
54.48.0012	28 mm	L	+3.5 mm
54.48.0110	32 mm	S	-4 mm
54.48.0111	32 mm	M	0 mm
54.48.0112	32 mm	L	+4 mm
54.48.0113	32 mm	XL	+8 mm
54.48.0210	36 mm	S	-4 mm
54.48.0211	36 mm	M	0 mm
54.48.0212	36 mm	L	+4 mm
54.48.0213	36 mm	XL	+8 mm

Material: Al_2O_3-ZrO_2
Cone: 12/14 mm

symarec femoral heads can be combined with the Mathys polyethylenes and all Mathys ceramics.
For ceramic-on-ceramic pairings, use only ceramic heads with ceramic inlays by Mathys.

Hip Head, Bionit2

Item no.	Outside diameter	Neck length	
5.30.010L	28 mm	S	-3,5 mm
5.30.011L	28 mm	M	0 mm
5.30.012L	28 mm	L	+3,5 mm
5.30.020L	32 mm	S	-4 mm
5.30.021L	32 mm	M	0 mm
5.30.022L	32 mm	L	+4 mm
5.30.030	36 mm	S	-4 mm
5.30.031	36 mm	M	0 mm
5.30.032	36 mm	L	+4 mm

Material: Al_2O_3
Cone: 12/14 mm

Bionit2 femoral heads can be combined with the Mathys polyethylenes and all Mathys ceramics.
For ceramic-on-ceramic pairings, use only ceramic heads with ceramic inlays by Mathys.

Revision head, ceramys

Item no.	Outside diameter	Neck length	
54.47.2010	28 mm	S	-3.5 mm
54.47.2020	28 mm	M	0 mm
54.47.2030	28 mm	L	+3.5 mm
54.47.2040	28 mm	XL	+7 mm
54.47.2110	32 mm	S	-3.5 mm
54.47.2120	32 mm	M	0 mm
54.47.2130	32 mm	L	+3.5 mm
54.47.2140	32 mm	XL	+7 mm
54.47.2210	36 mm	S	-3.5 mm
54.47.2220	36 mm	M	0 mm
54.47.2230	36 mm	L	+3.5 mm
54.47.2240	36 mm	XL	+7 mm

Material: ZrO_2-Al_2O_3, Ti6Al4V
Cone: 12/14 mm

ceramys Revision Heads can be used with all Mathys shaft systems with a «12/14 cone».

The ceramys Revision Heads can be combined with the Mathys polyethylenes and all Mathys ceramics.

Bipolar head, CoCrMo and Stainless Steel

CoCrMo	Stainless Steel	Outside diameter	Head diameter
52.34.0090	–	39 mm	22.2 mm
52.34.0091	–	40 mm	22.2 mm
52.34.0092	–	41 mm	22.2 mm
52.34.0093	–	42 mm	22.2 mm
52.34.0094	–	43 mm	22.2 mm
52.34.0100	54.11.0042	42 mm	28 mm
52.34.0101	–	43 mm	28 mm
52.34.0102	54.11.0044	44 mm	28 mm
52.34.0103	–	45 mm	28 mm
52.34.0104	54.11.0046	46 mm	28 mm
52.34.0105	–	47 mm	28 mm
52.34.0106	54.11.0048	48 mm	28 mm
52.34.0107	–	49 mm	28 mm
52.34.0108	54.11.0050	50 mm	28 mm
52.34.0109	–	51 mm	28 mm
52.34.0110	54.11.0052	52 mm	28 mm
52.34.0111	–	53 mm	28 mm
52.34.0112	54.11.0054	54 mm	28 mm
52.34.0113	–	55 mm	28 mm
52.34.0114	54.11.0056	56 mm	28 mm
52.34.0115	–	57 mm	28 mm
52.34.0116	54.11.0058	58 mm	28 mm
52.34.0117	–	59 mm	28 mm

Material CoCrMo: CoCrMo; UHMWPE
Material stainless steel: FeCrNiMnMoNbN; UHMWPE

Hemihead, Stainless Steel
Sizes 38 – 44 mm

Item no. / S -4 mm	Item no. / M 0 mm	OD
2.30.420	67092	38 mm
2.30.421	67093	40 mm
2.30.422	67094	42 mm
2.30.423	67095	44 mm

Material: FeCrNiMnMoNbN
Cone: 12 / 14 mm

Hemihead, Stainless Steel
Sizes 46 – 58 mm

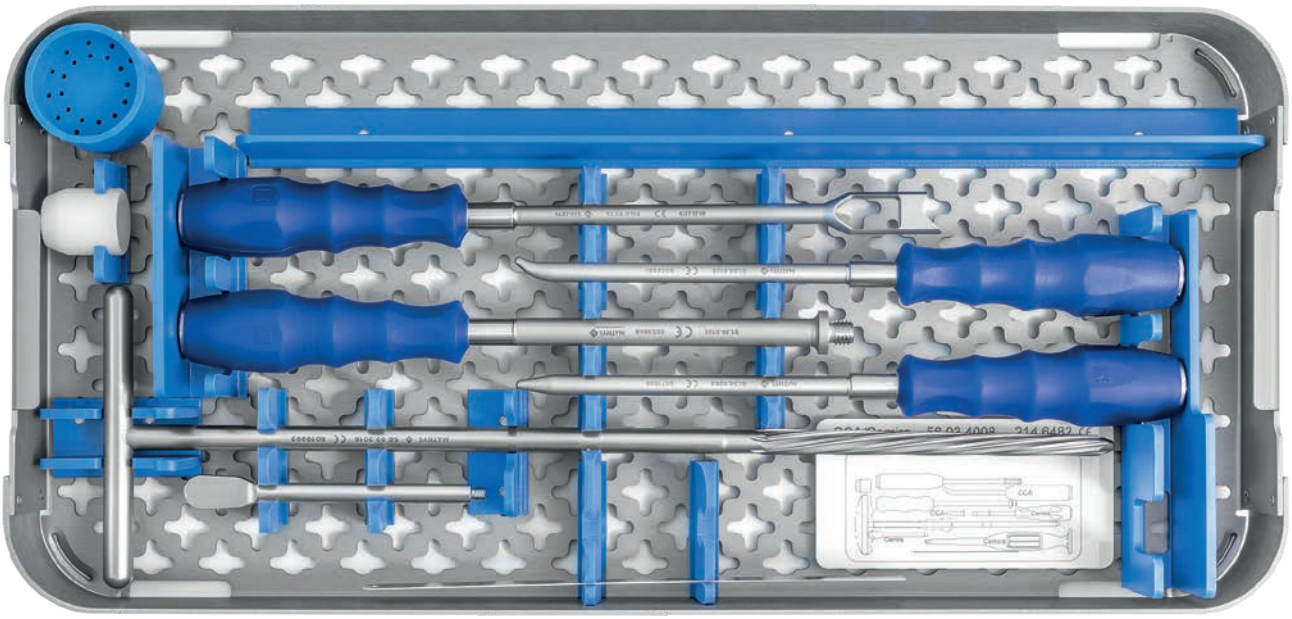
Item no. / S -4 mm	Item no. / M 0 mm	OD
2.30.424	67096	46 mm
2.30.425	67097	48 mm
2.30.426	67098	50 mm
2.30.427	67099	52 mm
2.30.428	67100	54 mm
2.30.429	67101	56 mm
2.30.430	67102	58 mm

Material: FeCrNiMnMoNbN
Cone: 12 / 14 mm

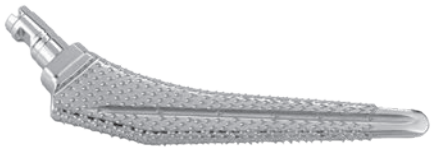
The implantation of Bipolar- and Hemiheads is described in a separate surgical technique. Please contact your local Mathys representative for further details.

5. Instruments

CCA Instrumentation Set 56.01.0025A



Item no.	Description
56.03.4007	CCA/Cemira tray
56.03.4008	CCA/Cemira insert
56.03.4015	CCA lid



Item no.	Description
3.30.350	CCA rasp modular 7.5
3.30.351	CCA rasp modular 10
3.30.352	CCA rasp modular 11.25
3.30.353	CCA rasp modular 12.5
3.30.354	CCA rasp modular 13.75
3.30.355	CCA rasp modular 15
3.30.356	CCA rasp modular 16.25
3.30.357	CCA rasp modular 17.5
3.30.358	CCA rasp modular 20

Item no.	Description
51.02.4122	Impact handle f/modular rasp

Item no.	Description
3.30.552	Crossbar long

Item no.	Description
51.34.0134	Box chisel silicone

Item no.	Description
56.02.2016	Reamer, narrow

Item no.	Description
51.34.0263	Impactor/extractor silicone

Item no.	Description
51.34.0135	Head impactor silicone

Item no.	Description
3.30.536	Top f/head impactor

Item no.	Description
3.30.130	Ruler length 20

Item no.	Description
51.34.0136	Extractor curved silicone

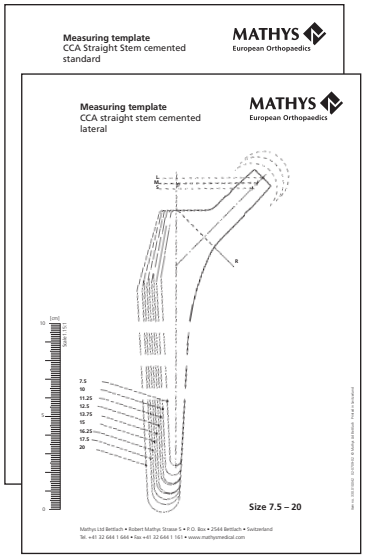
Item no.	Description
51.02.4121	Impact handle mod. f/IMT impactor

Item no.	Description
58.02.4130	CBC rasp handle MIS L
58.02.4131	CBC rasp handle MIS R

Item no.	Description	Neck length
3.30.100	Trial head 28 S blue	-4 mm
3.30.101	Trial head 28 M blue	0 mm
3.30.102	Trial head 28 L blue	+4 mm
3.30.106	Trial head 28 XL blue	+8 mm
3.30.107	Trial head 28 XXL blue	+12 mm
3.30.103	Trial head 32 S green	-4 mm
3.30.104	Trial head 32 M green	0 mm
3.30.105	Trial head 32 L green	+4 mm
3.30.108	Trial head 32 XL green	+8 mm
3.30.109	Trial head 32 XXL green	+12 mm
54.02.1215	Trial head 36 S	-4 mm
54.02.1216	Trial head 36 M	0 mm
54.02.1217	Trial head 36 L	+4 mm
54.02.1218	Trial head 36 XL	+8 mm
54.02.1219	Trial head 36 XXL	+12 mm

Item no.	Description	Neck length
54.02.1200	CCA/Cemira trial head lat. 28 S	-4 mm
54.02.1201	CCA/Cemira trial head lat. 28 M	0 mm
54.02.1202	CCA/Cemira trial head lat. 28 L	+4 mm
54.02.1203	CCA/Cemira trial head lat. 28 XL	+8 mm
54.02.1204	CCA/Cemira trial head lat. 28 XXL	+12 mm
54.02.1205	CCA/Cemira trial head lat. 32 S	-4 mm
54.02.1206	CCA/Cemira trial head lat. 32 M	0 mm
54.02.1207	CCA/Cemira trial head lat. 32 L	+4 mm
54.02.1208	CCA/Cemira trial head lat. 32 XL	+8 mm
54.02.1209	CCA/Cemira trial head lat. 32 XXL	+12 mm
54.02.1210	CCA/Cemira trial head lat. 36 S	-4 mm
54.02.1211	CCA/Cemira trial head lat. 36 M	0 mm
54.02.1212	CCA/Cemira trial head lat. 36 L	+4 mm
54.02.1213	CCA/Cemira trial head lat. 36 XL	+8 mm
54.02.1214	CCA/Cemira trial head lat. 36 XXL	+12 mm

6. Measuring templates



Item no.	Description
330.010.041	CCA straight Stem cemented standard
330.010.042	CCA straight Stem cemented lateral

7. References

1) Clauss et al (2009) Fixation and loosening of the cemented Muller straight stem: a long-term clinical and radiological review, J Bone Joint Surg Br. 2009 Sep;91(9):1158-63

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9) Erivan R et al (2016) RM Pressfit® cup: good preliminary results at 5 to 8 years follow-up for 189 patients. Hip Int, Vol. 25;26(4):386-91

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12) Nowakowski AM et al (2008) Cement collar and longitudinal groove: the effects on mechanical stability with aseptic loosening in Müller straight-stem implants. Arch Orthop Trauma Surg. 2008 Jul;128(7):745-50.

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8. Symbols


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Correct


Incorrect


Caution

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