Aesculap Orthopaedics

Metha®

Short Hip Stem System

Evolving the State of Arthroplasty.

B BRAUN
SHARING EXPERTISE

Metha®. Evolving the State of Arthroplasty.

CONTENTS

Contents

Metha®. Short Hip Stem System.

SYSTEM

The Metha® Short Hip Stem prosthesis represents a new generation of implants for hip endoprosthesis. It combines three key advantages facilitating surgeries that are as minimally invasive as possible: modular design, minimal stem size and a circumferencial coating. It is particularly suitable for young patients with good bone quality.

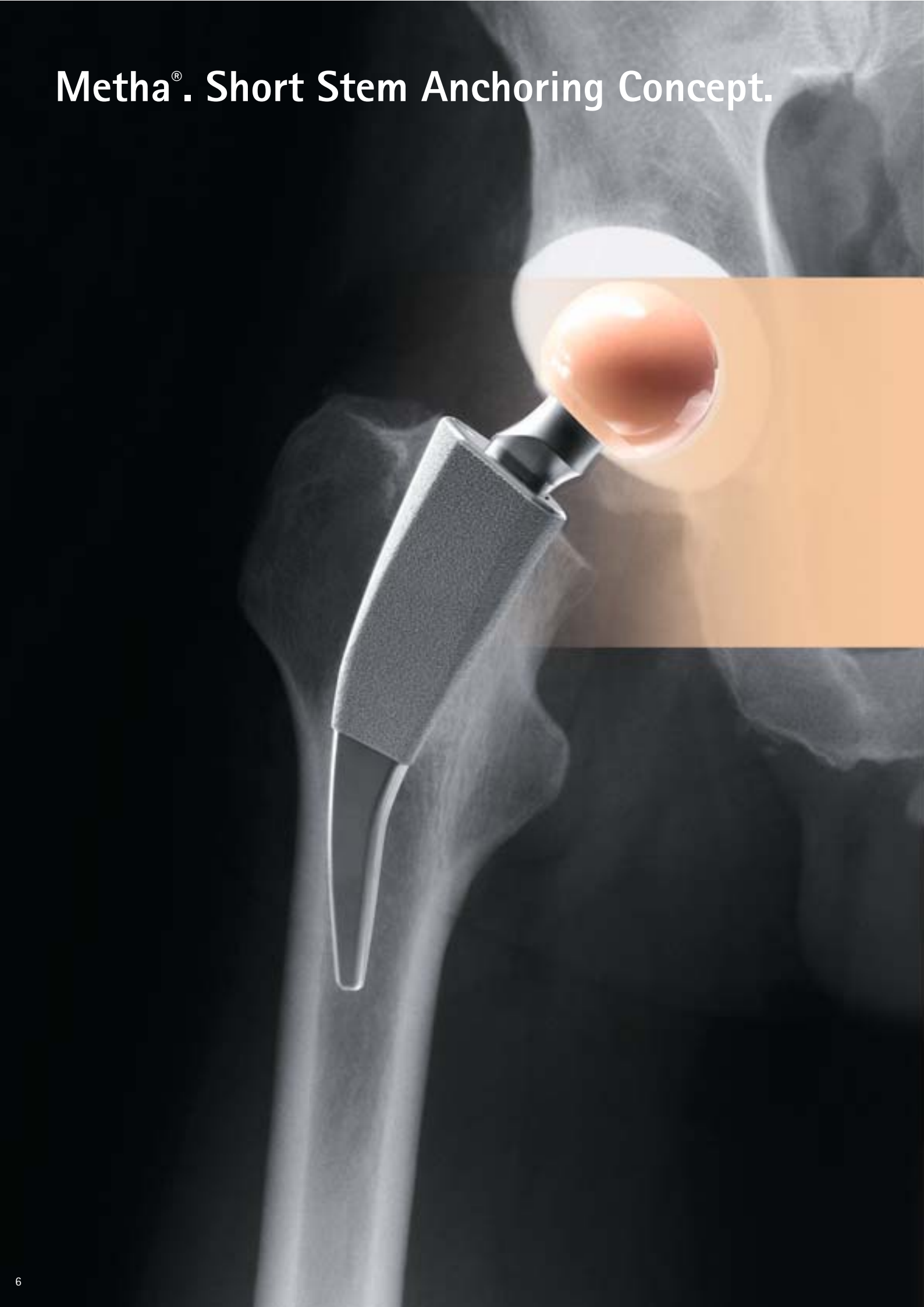
The design continues on the positive experience with non-cemented stems fixated by metaphyseal anchoring. The prosthesis concept allows implantation via the base of the femoral neck, with conservative treatment of the bone in the femoral neck and in the greater trochanter region, preserving the bone, soft tissue and muscle. While the position of the Metha® stem ensures primary load stability, the Plasmapore® µ-CaP coating of the entire proximal surface supports rapid secondary fixation.

One of the special advantages of the system is its modular design with various neck adapters. This solution decouples the stem position from that of the head, which makes it possible to a large extent to adapt the stability and mobility of the joint to the individual patient. The Metha® system still also includes non-modular standard short stems with two neck angles.

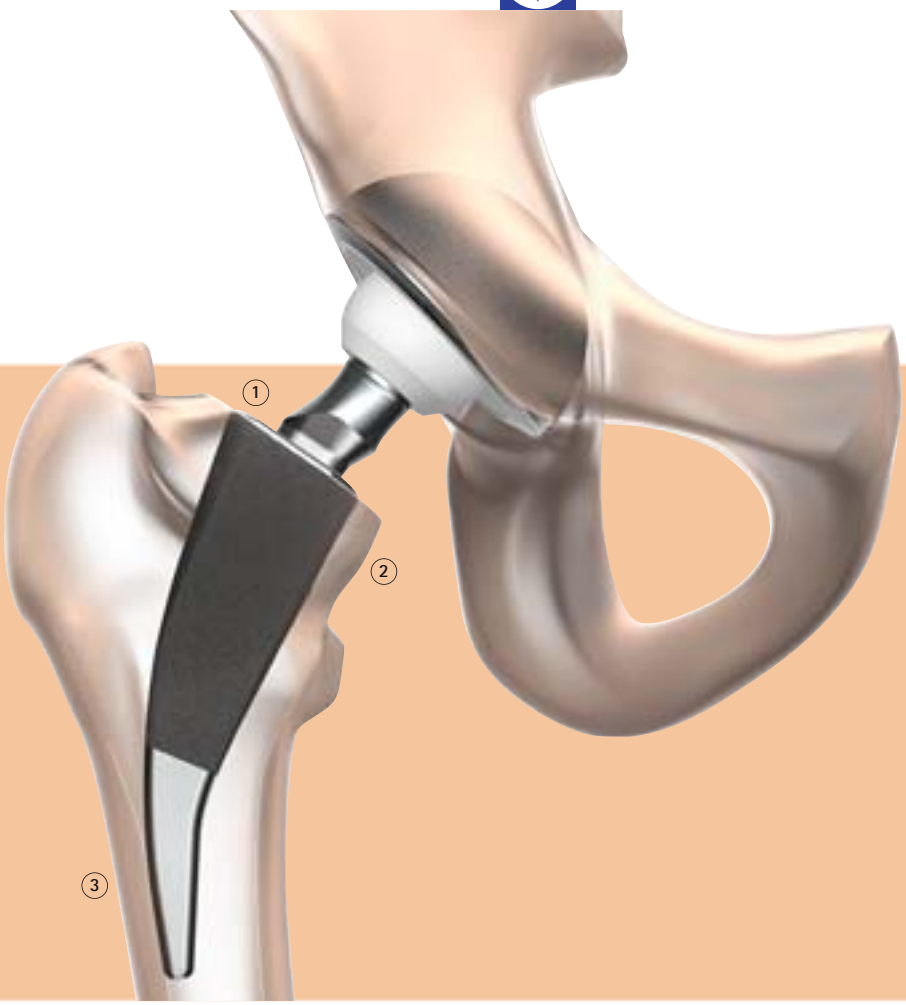
The implantation instruments are as sophisticated as they are simple. Metha® is at the leading edge of technology. Combining the modular stem with the OrthoPilot® navigation technology expands the possibilities for hip replacement surgery even further. The sequential order of cup and stem implantation can be chosen by the surgeon.

The Plasmacup® articular cup system allows 36-mm ceramic-on-ceramic large head articulation with Biolox® delta components.

Metha®. Short Stem Anchoring Concept.



METAPHYSEAL



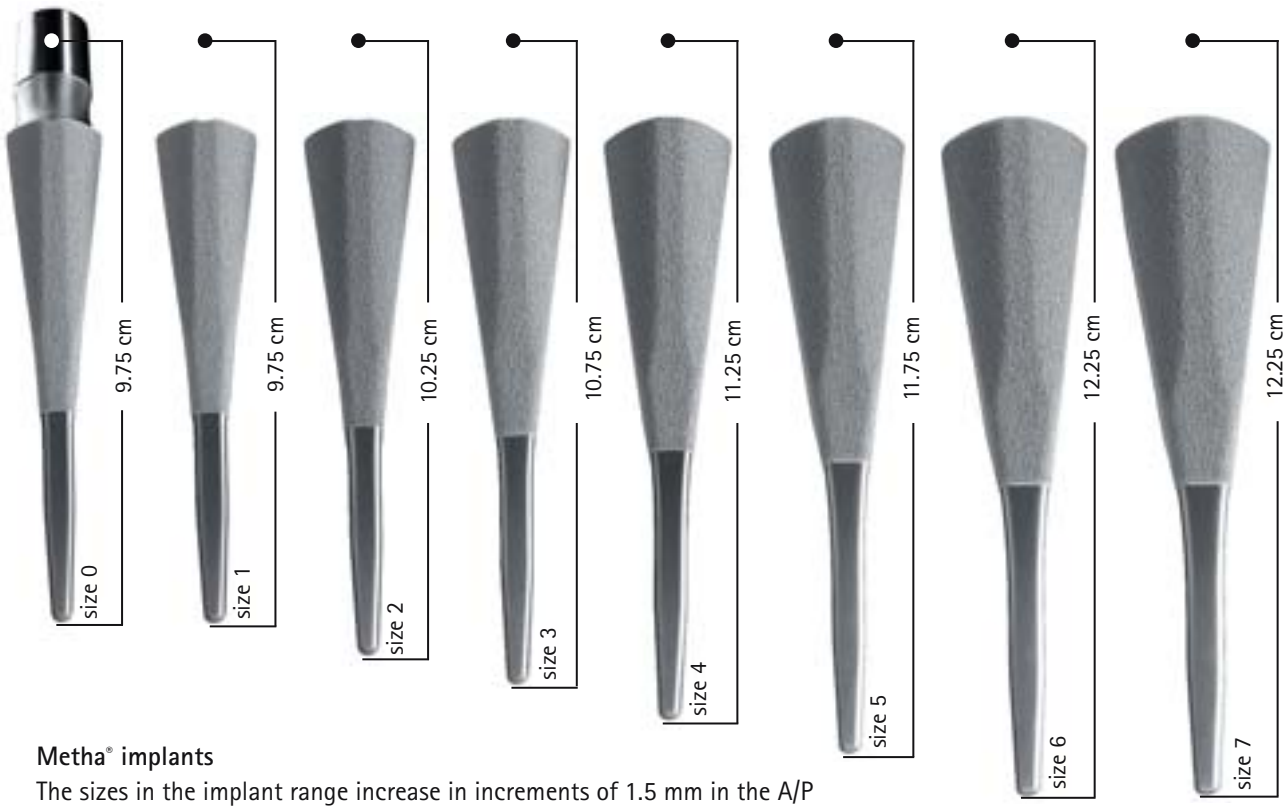
To support osteointegration, the Metha® Stem carries a circumferencial Plasmapore® µ-CaP coating. Through a special process, a thin 20 µm layer of very pure calcium phosphate, µ-CaP, is applied on the proven microporous titanium Plasmapore® surface. This additional layer has an osteoconductive effect and accelerates contact between the bone and the prosthesis stem.

The non-cemented stem is fixated by metaphyseal anchoring within the closed ring of the femoral neck. The greater trochanter region remains completely untouched. Bone and muscle structures are preserved – a particular bonus for young and active patients with good bone structure. The conical shape supports primary stability and proximal force transfer. ②
The high primary stability is further enhanced by the rounded tip of the stem guided along the dorso-lateral cortex. ③

Metha®. Variable Implant Options.

IMPLANTS

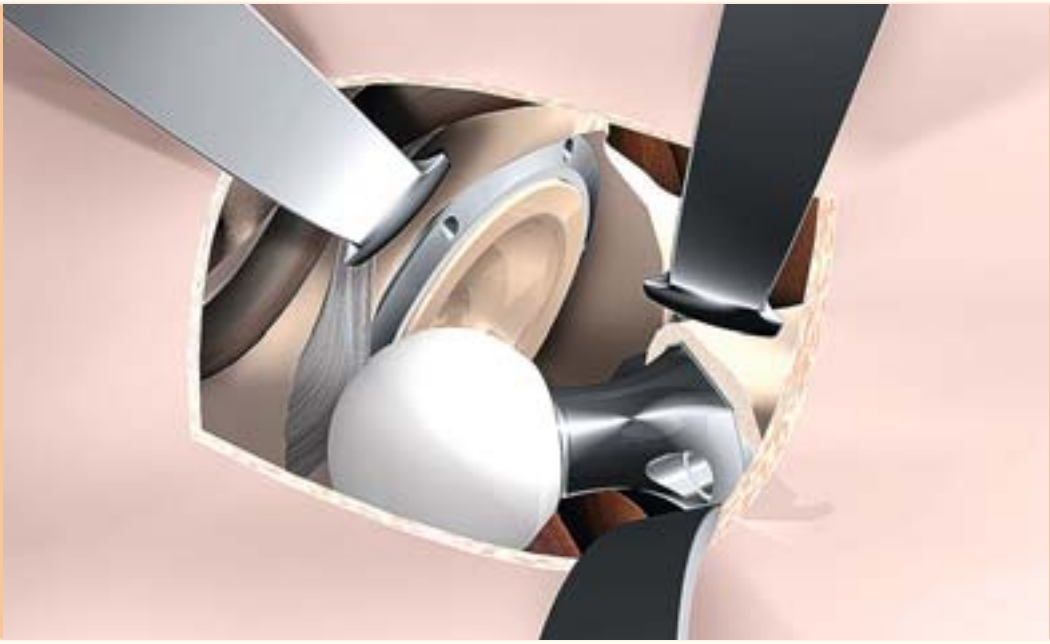
Metha® variability.
The nine modular neck adapters allow a variety of offset and torsion options for the stem implantation. The CCD angle specifications of 130°, 135° and 140° relate to a stem position at a 50° osteotomy plane. The Metha® stem position allows approximately 20° of varus-valgus variability. The implant range also allows for balancing with respect to leg length (Δ 10 mm) and antetorsion or retrotorsion respectively (± 7.5°).

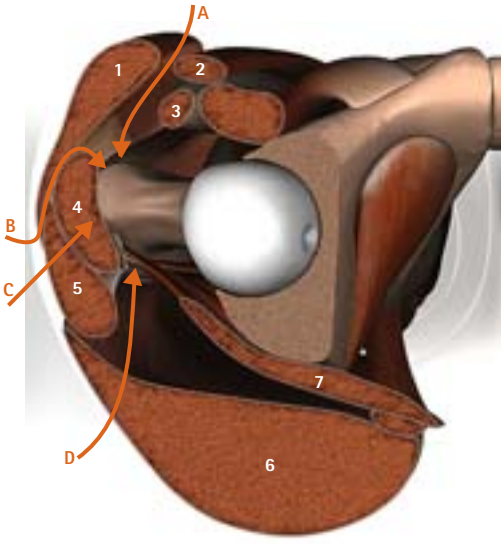


Metha® implants
The sizes in the implant range increase in increments of 1.5 mm in the A/P projection and 1.2 mm in the lateral projection. Anchorage in the closed femoral neck is supported by the conical shape in the lateral view. The difference in nominal length between the smallest and largest implant is only 2.5 cm.

Metha®. Less Invasive Surgery.

INSTRUMENTS





1 *Tensor fascia latae*
2 *Sartorius*
3 *Rectus femoris*
4 *Gluteus minimus*
5 *Gluteus medius*
6 *Gluteus maximus*
7 *Piriformis*

A *Direct anterior*
B *Antero-lateral*
C *Direct-lateral, transgluteal*
D *Posterior*

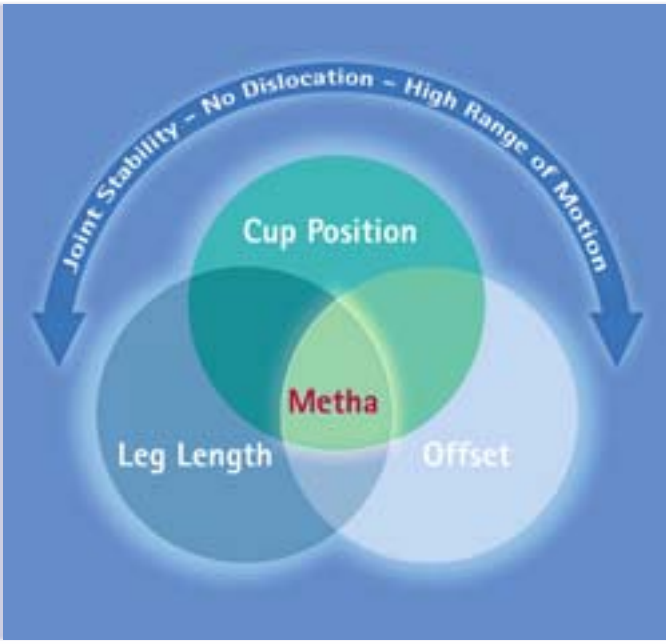
Simple and clear instrumentation is a distinguishing feature of the Metha® Stem. Because of the more medial location of the femur opening, and the medially tilted insertion angle, the Metha® prosthesis is ideally suited for minimally invasive and less invasive implantation techniques.

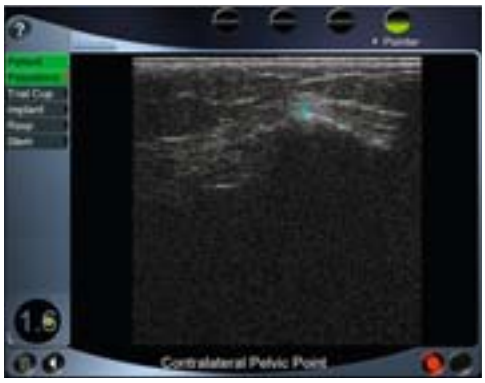
The MIOS® – Minimally Invasive Orthopaedic Solutions – instrument range has been specially designed for less invasive procedures and for Metha®. MIOS® special retractors, curved instrument profiles and the Metha® rasp handles (see page 25) facilitate all widely used approaches to the hip joint.

In supine position the direct lateral approach, the antero-lateral approach and the direct anterior approach are possible.
The lateral position allows the direct lateral, antero-lateral and posterior approaches.

Metha®. Navigation with OrthoPilot®.

NAVIGATION





Naturally, Metha® can be implanted using the OrthoPilot® navigation system. The clinically proven standard navigation software THA 3.0 allows complete navigation of the articular parameters of the cup and stem components to optimize the range of movement.

The modularity of the Metha® system helps with the intraoperative selection of implants by offering a multitude of options for CCD angle and relative ante-torsion and retrotorsion angles in relation to the cup component and the selected head diameter.

The new THAplus software only needs one transmitter on the pelvis for the entire navigation procedure, and it supports all minimally invasive approaches. The functions of the kinematic cup navigation are extended by leg length and offset controls. The position of the femur is palpated intraoperatively to register the leg length and offset parameters for optimal implant selection.

The new OrthoPilot® system platform is ready for the future of navigation. As the leading navigation system, it even supports ultrasound technology for the precise registration of the anatomic orientation points on pelvis and femur.

Metha®. Planning and Surgical Technique.

OP. TECHNIQUE

Indications and bone morphology

The Metha® Stem is a modern, cementless implant. The spectrum of indications includes degenerative coxarthrosis and femoral head necrosis. Good bone quality is a prerequisite for a successful implantation.

A significant coxa vara and dysplastic coxarthroses with extreme coxa vara or a short femoral neck are less suitable bone shapes for this therapy.

The preoperative assessment should also look out for a wide femoral neck, especially in the presence of other concerns regarding the osteotomy level or the implant size. An undersized stem could lead to reduced primary stability. The preoperative assessment with the planning template is of particular importance.

Any strong antetorsion of the femoral neck can complicate the implantation for even short stems. Therefore, the preoperative planning must also include a lateral x-ray.

Preoperative planning

X-ray templates at a scale of 1.15:1 are available for planning the size of the Metha® Short Hip Stem prosthesis. In addition to filling the femoral neck area, the aim is to achieve support on the calcar as well as surface contact between the distal end of the stem and the lateral cortex.

In addition to the position of the joint centre and the leg length, the planning of the resection height also takes into account the preservation of the approx. 5 - 10 mm thick ring of cortex around the femoral neck that is important for anchorage. The osteotomy of the femoral neck is performed ideally at an angle of 50° to the femoral shaft axis. To aid intraoperative orientation, the distance from the lesser trochanter can be measured medially.

In the lateral x-ray, the objective is to wedge firmly in the proximal femur. The Metha® Short Hip Stem is ideally positioned in the direction of the femoral neck and shaft.

Metha®. Femoral Osteotomy.

Flat osteotomy (A) and optimum stem position at the level of the osteotomy

Steep osteotomy (B) and higher stem position with lateral contact at the osteotomy

Steep osteotomy (B) and stem inserted too deeply, without lateral contact at the osteotomy

Femoral osteotomy

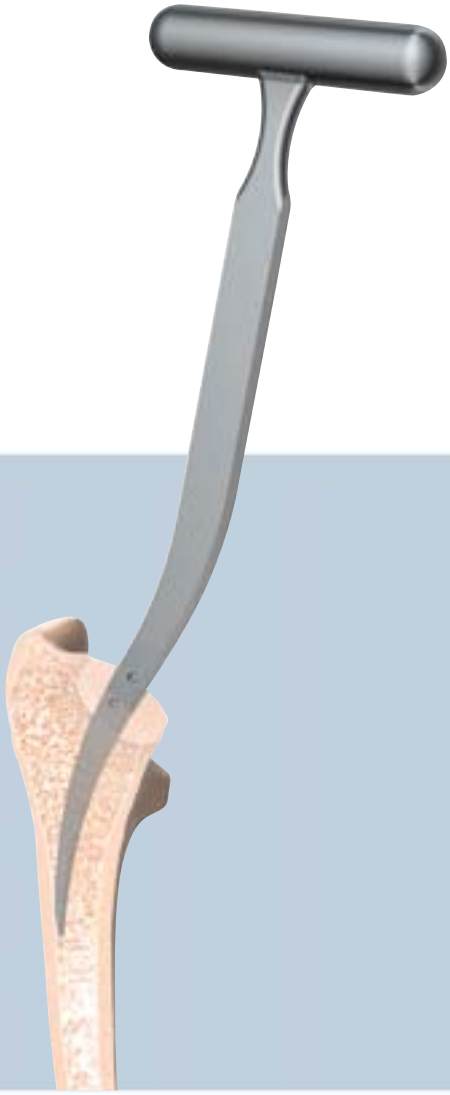
The femoral neck resection is performed according to preoperative planning, usually starting approx. 10 mm above the junction of the greater trochanter and the femoral neck, and is ideally carried out at an angle of 50° to the femoral axis.
Care must be taken that a closed cortical ring of the femoral neck of at least 5 mm lateral width is left intact.
Any lower resection than described above, can compromise the prosthesis anchoring and therefore demonstrates a contraindication against the implantation.

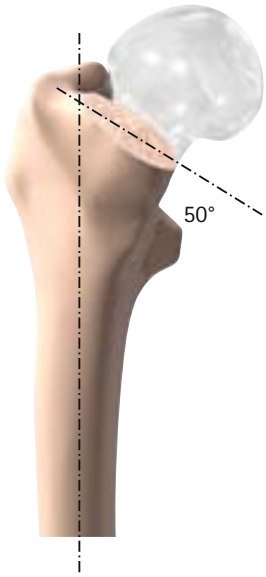
If the osteotomy is applied too low medially or, in other words, the osteotomy is too steep, the stem will have to rest on a smaller medial bone surface. For this stem position, the primary stability arises from the cortical lateral support in the closed ring of the femoral neck.

If the osteotomy is too steep, and there is insufficient support on the proximal lateral cortex, then there is a risk that the stem moves into valgus.

The orientation of the implantation depth on a too deep calcar osteotomy can increase the risk of a stem position without lateral support. This can result in a tendency to move the rasp or prosthesis stem into valgus.

Proper osteotomy level may be achieved through two osteotomies





To achieve an optimum osteotomy position, the osteotomy can be applied in two steps. A first, subcapital osteotomy can be carried out in situ. The second osteotomy is guided by the planned implantation depth and stem position. A trapezoidal second osteotomy (higher at the posterior side ① than at the anterior side ② , see illustration on page 16) allows the influence of the antetorsion position and facilitates the insertion of the rasps.

Opening the medullary cavity

The medullary cavity is opened with a curved awl. The opening point is at the center of the osteotomy plane. The awl is advanced to the lateral cortex with light twisting movements. It can be helpful to insert the awl in a slightly varus first, then straighten it on reaching the lateral cortex before pushing it distally along the lateral cortex. The marker dots on the awl are for depth orientation and correspond to the resection height for the small (size 1) or larger (size 6) Metha® Stem. The curvature of the awl resembles the lateral profile of the implant, so that it produces a first impression of the subsequent implant bed. The awl also defines the working direction for the rasps.

A second awl with a thicker anterior-posterior profile is available for easier bone preparation in harder structures. As a general rule, the awls are for manual application only and must not be impacted with a mallet.

Metha®. Implant and Rasp Position.

Valgus / Varus variability

The Metha® Short Hip Stem can be implanted at various relative valgus or varus positions to fit the respective bone shape and implant size. The neutral position is defined as parallel to a 50° femoral osteotomy.

Other implant positions are up to 15° relative valgus or 5° relative varus.

When preparing the medullary cavity, a position change of the rasp can be detected by intraoperative comparison with the osteotomy plane.

Femur preparation

The implant bed is prepared in stages, beginning with the smallest rasp.
The rasp is introduced centrally into the opening in the medullary canal, observing the antetorsion. During insertion the tip of the rasp should touch the lateral cortex and run along it.

To control the tendency towards valgus of the instrument, it helps to apply slight varus pressure when inserting the rasps. The position and alignment of the osteotomy can be checked after inserting the first rasp. Valgus positioning of the rasp can cause unintended leg lengthening. This has to be considered when carrying out the preoperative planning and during the intraoperative selection of the next rasp size.

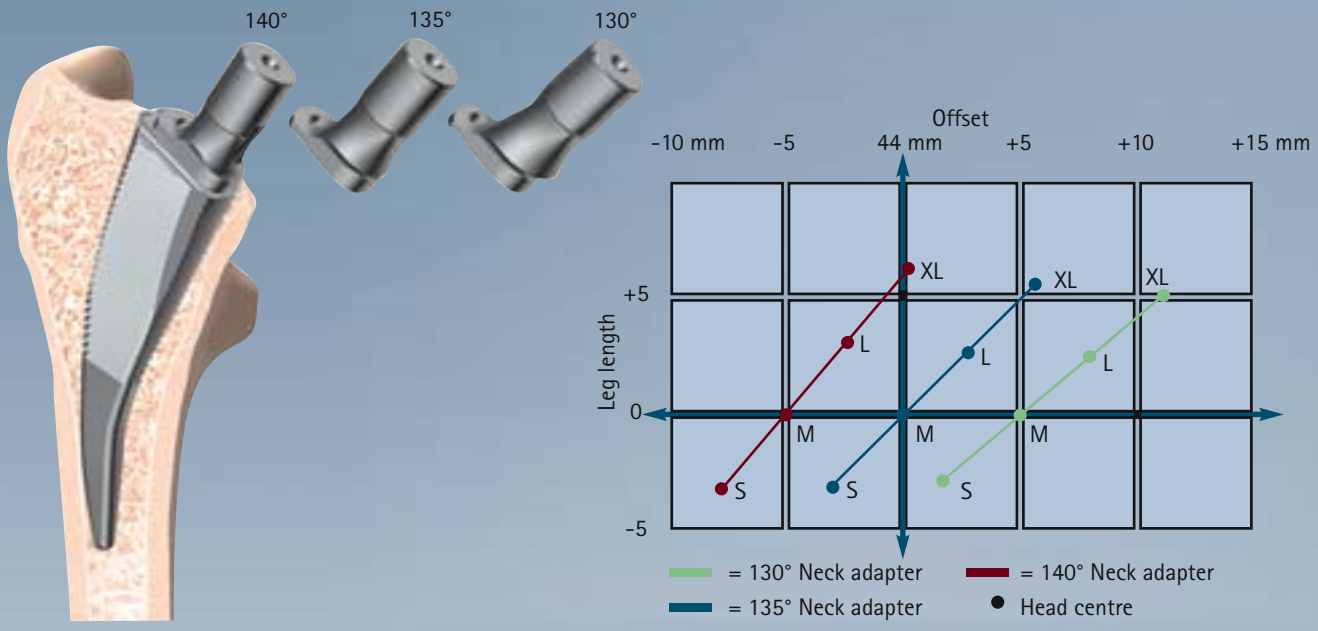
The lateral boundary of the osteotomy must never be removed by any additional resection. To assess such a resection, a proper visibility of the lateral femoral neck is essential.

The implant bed is of the correct size as soon as the rasp touches the lateral cortex, sits firmly in the femoral neck, and can not rotate anymore. The teeth of the rasp should be ideally aligned to the resection level, but never below the osteotomy plane.

The position of the rasp can be checked with the image intensifier.

If the rasp is not in contact with the dorsolateral cortex in any plane (I.I. radiography with internal rotation), the position should be corrected by carefully inserting a bigger rasp under slight varus pressure.

Metha®. Trial Reduction and Stem Implantation.



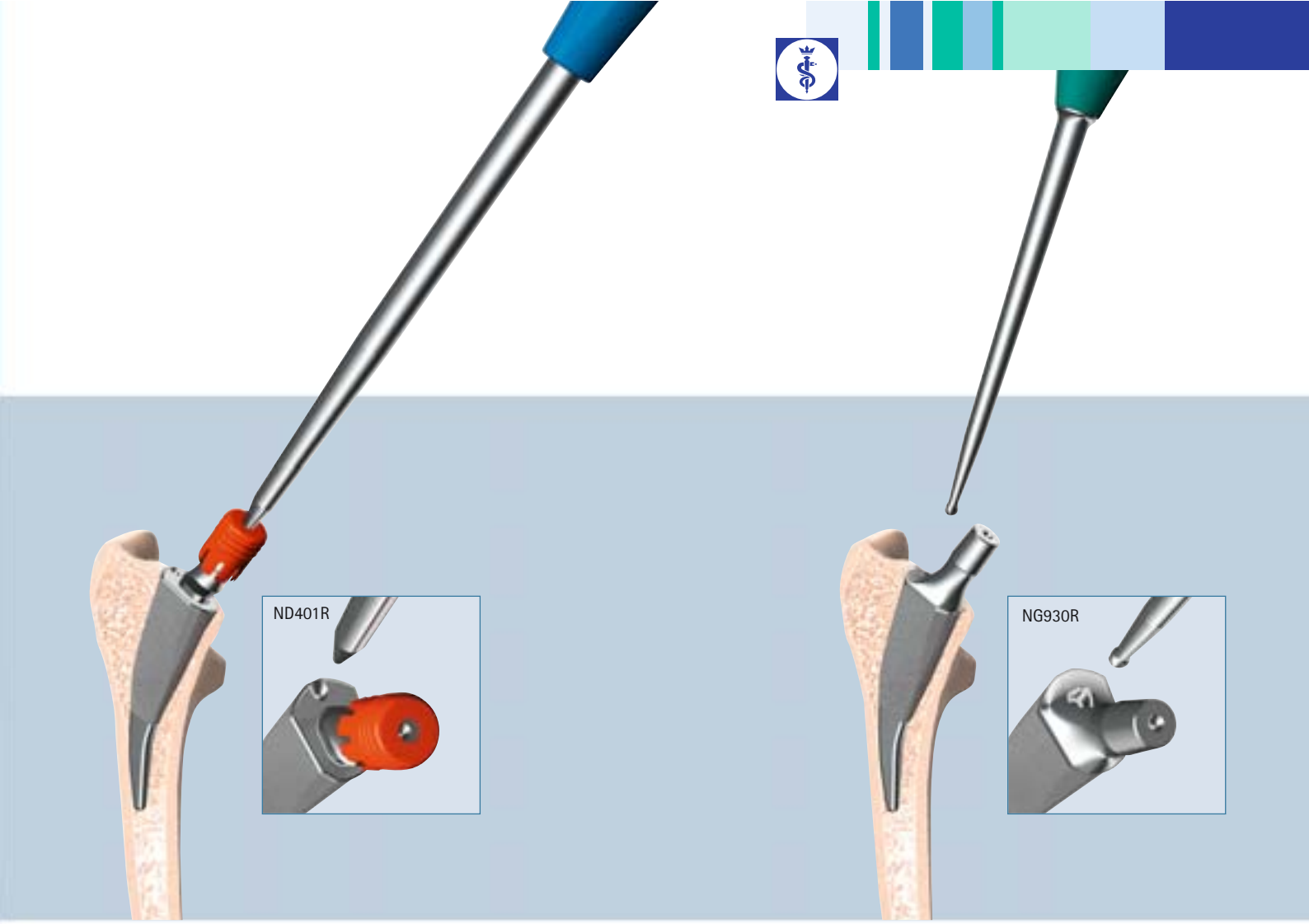
Trial reduction

The trial reduction is carried out with modular trial neck adapters, which are clipped on the rasp. There are nine neck adapters available with various CCD angles (130°, 135°, 140°) and antetorsion options (7.5° ante, 0°, 7.5° retro).

The different CCD angles allow changing the offset by -5 mm / +5 mm without changing the leg length. The neutral offset is 44 mm.

The appropriate neck adapter is selected by assessing the possibility of a luxation tendency, the range of movement and the soft tissue or ligamentary tension. The leg length is corrected by choosing a prosthesis head of the required neck length.

The OrthoPilot® navigation system helps you select the best possible implant combination and adapt it to the individual articular situation. The system computes and displays the parameters of mobility, any implant impingement, the antetorsion position and any changes in offset and leg length associated with each of the possible combinations.



Selection of stem size and neck adapter

The prosthesis stem to be inserted is selected according to the size of the final rasp. The selection of the neck adapter is guided by the trial reduction performed with the implantation rasp and finished by a reduction check of the selected prosthesis head length.

Assembling the modular adapter prior to implantation

The modular implant components (Metha® stem and neck adapter) are assembled prior to the implantation. They are joined together by impacting on the recess in the neck adapter center (with the orange protective cap in place, using the ND401R stem impactor).

Then the Metha® Stem is inserted by hand and implanted by impacting on the recess in the neck adapter, using the ND401R stem impactor .

Once the adapter is securely and firmly fixed in the Metha® Stem, the stem can be implanted by applying the same stem impactor in the lateral recess of the Metha® Stem. This is followed by a trial reduction with modular heads.

Inserting the Metha® Mono Stem

The Metha® Mono Short Stems are available with CCD angles of 130° and 135°, without antetorsion or retrotorsion. Their implantation is carried out with the NG930R stem impactor (green handle) or with the ND401R stem impactor applied in the adapter recess (with the orange protective cap in place).
If necessary, the stem can be extracted intraoperatively with the ND656R instrument, which grips around the 12/14 trunnion. The stem must not be reused after such an extraction procedure (see page 24).

Implanting the head

The final trial reduction is followed by the implantation of the head. Careful cleaning and drying of the 12/14 trunnionhead interface is absolutely essential.

Metha®. Modular Stem Implantation.

Careful cleaning of the cone surfaces

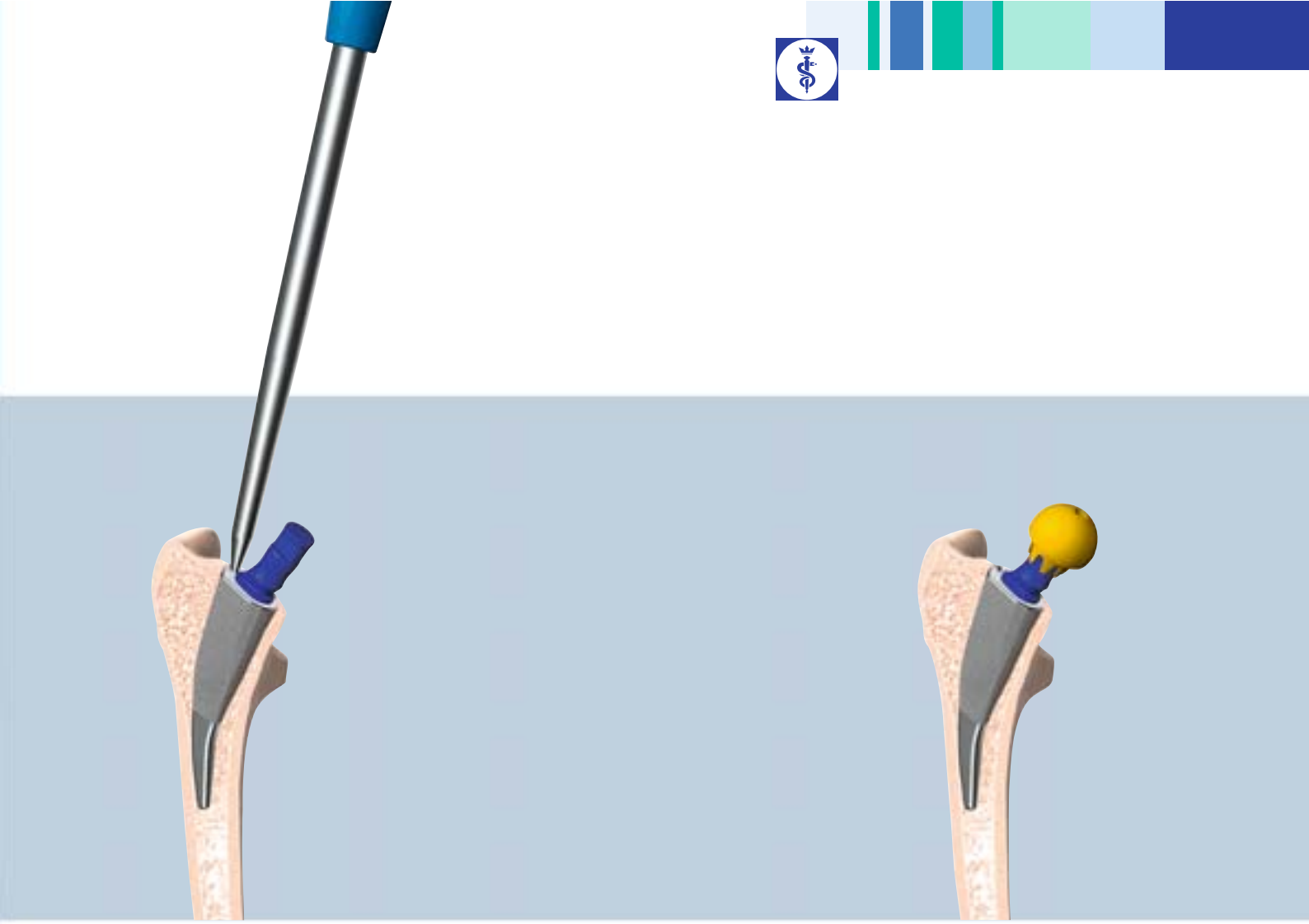
Before the neck adapter can be inserted, the inner socket of the stem must be carefully rinsed, cleaned and dried with two cleaning swabs (ND622 – see page 27). The surfaces of the neck adapter must be also clean and dry.

Inserting the neck adapter

The selected neck adapter is inserted into the prosthesis stem with the marker arrow pointing towards medial (▼) and driven in lightly but firmly with the stem impacter. To avoid damage to the trunnion, the protective cap is only removed after the neck adapter has been driven firmly into place.
A trial reduction is performed with trial prosthesis heads. After cleaning and drying of the prosthesis cone adapter the final head is inserted and the joint reduced. Finally the joint mobility, the range of movement, the articular tension and the leg length are checked.

Caution

The cone surfaces must be cleaned and dried under all circumstances, as unclean or damaged connecting surfaces can lead to implant failure. Always follow the instructions for use supplied with the implant components. We recommend assembling the Metha® Stem and the modular neck adapters prior to implantation.



Option: Trial reduction with Metha® Stem

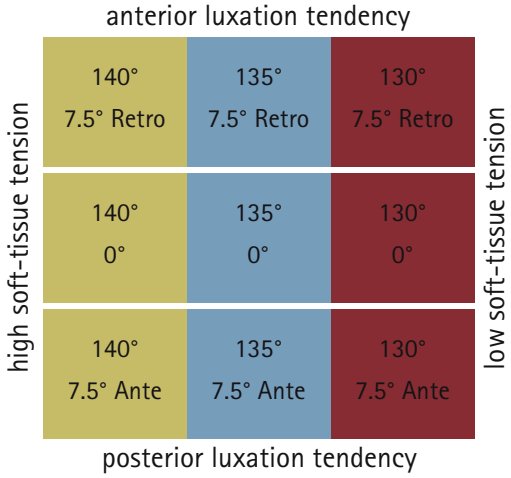
The Metha® Stem is inserted as deep as possible by manual pressure and then driven with the stem impacter (ND401R) into its final, fixed position. The prosthesis does not need to be guided as it is aligning itself with the rasped cavity.

Should guidance of the prosthesis stem become necessary during the implantation, this can be provided with the ND655R instrument, taking care that the inner socket of the prosthesis stem is not damaged under any circumstances. The same instrument can also be used for extracting the stem (see page 24).

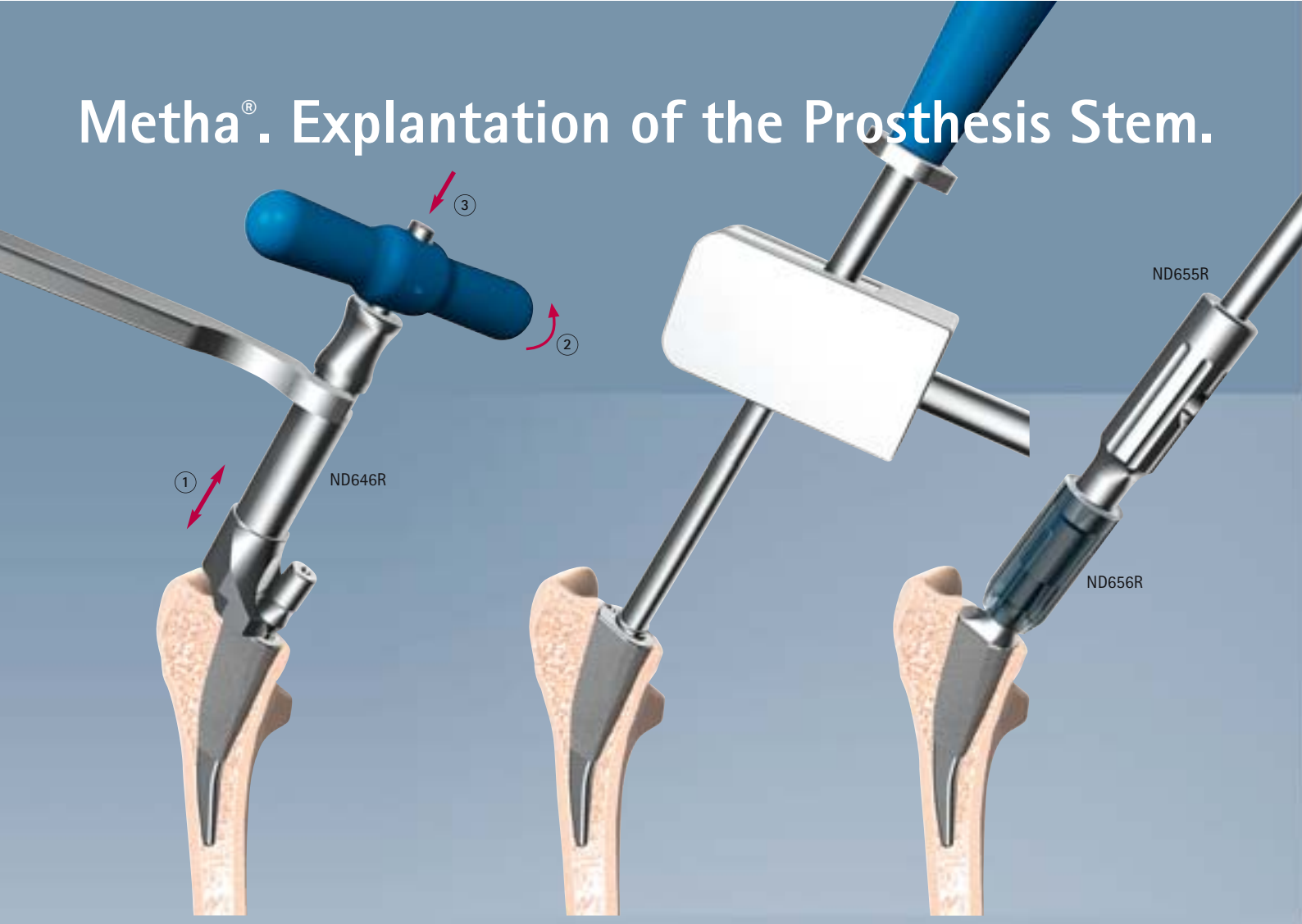
If necessary, an additional trial reduction can be carried out even after the implantation of the Metha® Stem, using the color-coded modular trial neck adapters and trial heads. The instructions with regard to cleaning the modular adapter prior to its insertion (see page 22) must be closely followed.

The relative antetorsion or retrotorsion position of the trial adapter can be corrected by 7.5°. Note that the marking of the adapters are depending on the implantation side. The CCD angle influences the soft-tissue tension by changing the offset.

The relative retrotorsion or antetorsion can also be selected according to the position or cup coverage of the trial prosthesis head after the trial reduction.



Metha®. Explantation of the Prosthesis Stem.



Removing the neck adapter

To remove the modular Metha® Stem, first the modular neck component is extracted from the stem. The extractor is applied and tightened between the surface of the stem ① and the modular neck component. ②

The connection between the two components is loosened by pulsed impacts with a hammer on the extractor. ③ The extractor is carrefully retightened between the hammer blows. ②

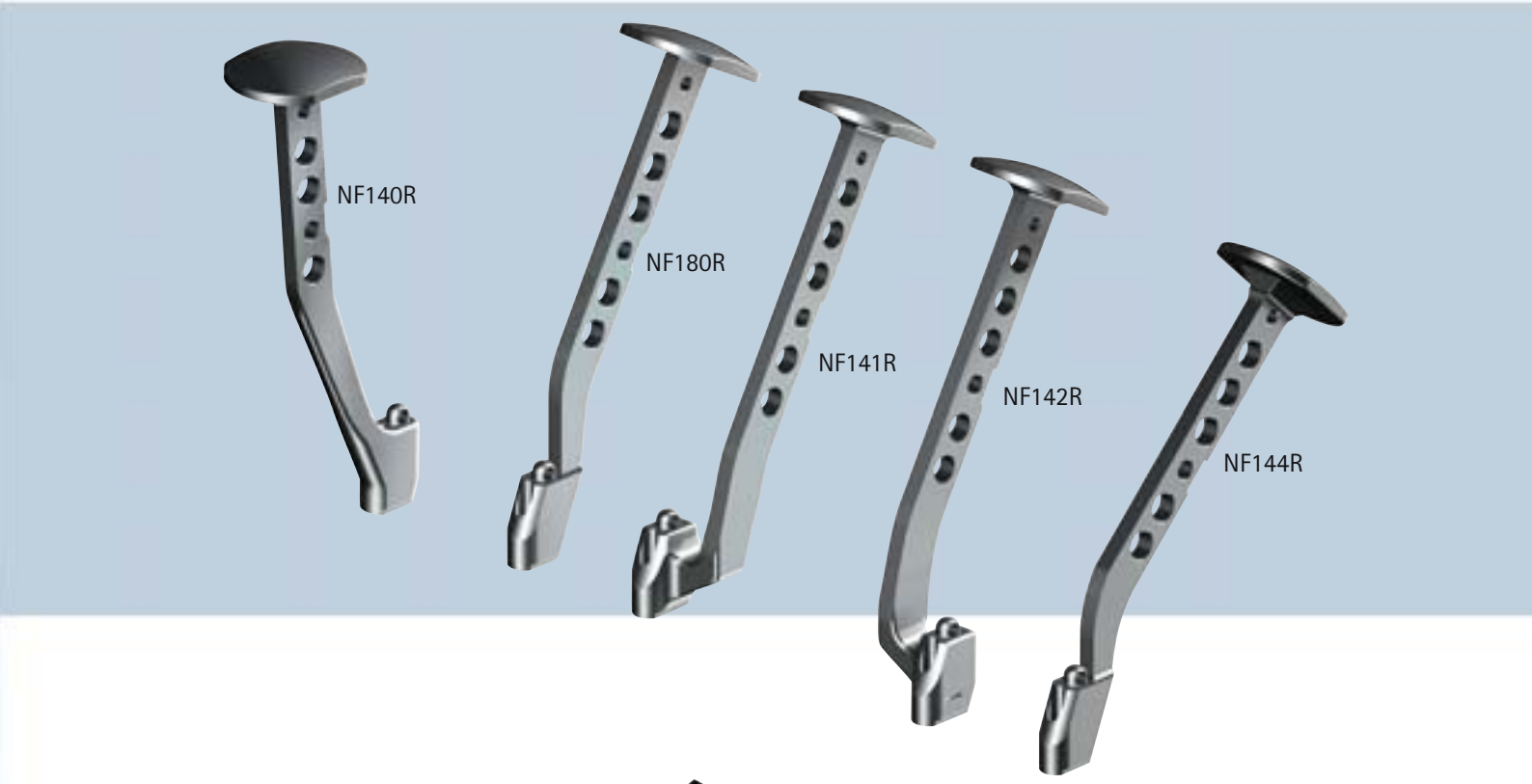
Explanting the stem

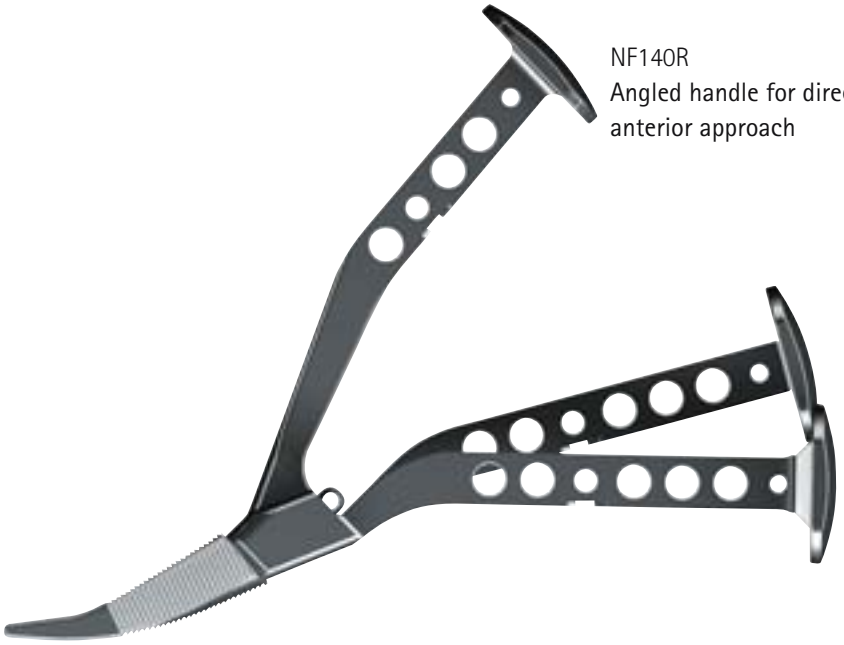
Once the modular neck adapter has been removed, the stem explantation instrument is screwed firmly into the thread in the stem. The stem can then be explanted using a slotted hammer. If the prosthesis stem has become strongly ingrown in the bone, a chisel is applied around the prosthesis in the coating area. The chisel is best applied step by step, beginning with anterior, then posterior, then lateral and finally medial.
As the surfaces are straight, it is also possible to use an oscillating saw (blade width 10 mm, depth 30 mm).

Extraction of the Metha® Mono Stem

The Metha® Mono Stem can be extracted intraoperatively, if necessary, with the ND656R instrument. This instrument, which grips around the 12/14 trunnion, is connected to the ND655R extraction instrument. The stem must not be reused after such an extraction, because the cone could be damaged during this procedure.
The revision of a strongly ingrown Metha® Mono Stem is carried out in the same way as for the standard hip stems, using a stem extractor for the 12/14 trunnion. This instrument, however, is not included in the Metha® instrument set.

Handles for different approaches





NF140R
Angled handle for direct anterior approach

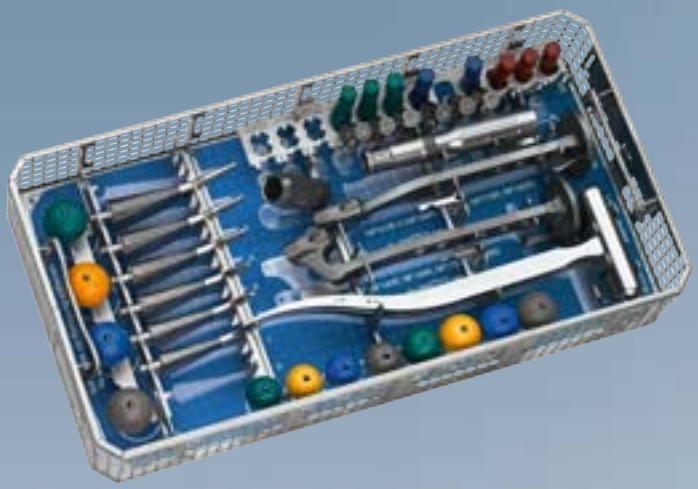
NF180R
Straight handle for lateral and anterolateral approaches

NF141R, NF142R
Offset handles*

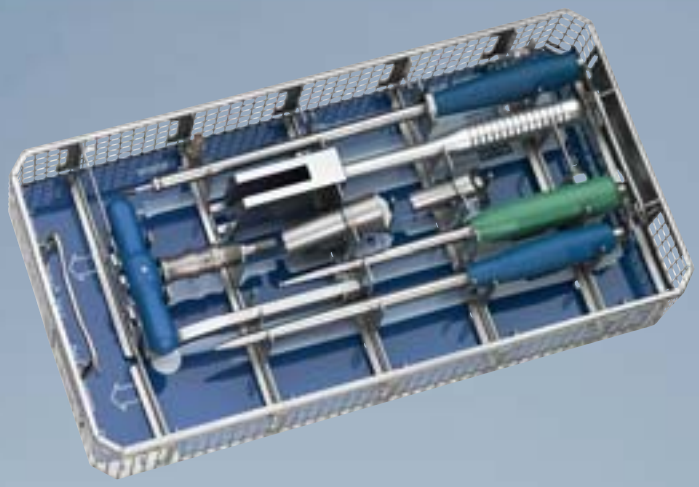
NF144R
Curved handle for posterior approach

* Note:
NF141R for the left hip (lateral and anterolateral approaches) or right hip (posterior approach) respectively
NF142R for the right hip (lateral and anterolateral approaches) or left hip (posterior approach) respectively

Metha® System.
Instruments and Implants.



ND611
Metha System set 1



ND612
Metha System set 2

comprising:

ND613R	Perforated tray for system set 1 (489 x 253 x 74 mm)
TE928	Packing template for set 1
JH217R*	Lid
ND644R	Metha® awl narrow
ND645R	Metha® awl wide
ND656R	Metha® extraction instrument for 12/14 trunnion

Metha® rasps

Size	0	1	2	3
	NF090R*	NF181R	NF182R	NF183R
Size	4	5	6	7
	NF184R	NF185R	NF086R	NF087R*

Metha® rasp trial neck adapters

	130°	135°	140°
7.5° L Ante R Retro	ND714R	ND724R	ND734R
0°	ND715R	ND725R	ND735R
7.5° L Retro R Ante	ND716R	ND726R	ND736R

Metha® trial neck adapters

	130°	135°	140°
7.5° L Ante R Retro	ND627	ND637	ND647
0°	ND628	–	ND648
7.5° L Retro R Ante	ND629	ND639	ND649

Trial heads 12/14

	28 mm	32 mm	36 mm
Neck length S	NG296*	NG306*	NG326*
Neck length M	NG297*	NG307*	NG327*
Neck length L	NG298*	NG308*	NG328*
Neck length XL	NG299*	NG309*	NG329*

comprising:

ND614R	Perforated tray for system set 2 (489 x 253 x 74 mm)
TE929	Packing template for set 2
JH217R*	Lid
ND655R	Metha® impactor/extractor instrument
NG930R*	Metha® Mono impactor
ND401R	Metha® Standard impactor
ND646R	Metha® modular neck extractor
NF275R	Slotted hammer, slot W = 12 mm

Metha® rasp handle

NF180R*	straight, lateral approach
NF144R*	curved, posterior approach
NF141R*	offset, left/right (also see page 25)
NF142R*	offset, right/left (also see page 25)
NF140R*	angled, anterior approach

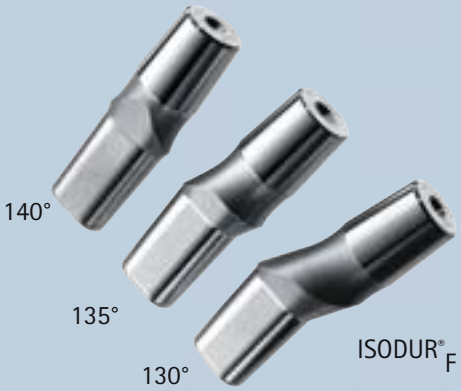
Metha® system tray 1 can store 2 rasp handles

FS903R*	Metha® implant pointer for supine position
FS904R*	Metha® implant pointer for lateral position, posterior
FS905R*	Metha® implant pointer for lateral position, anterior

Items marked with * must be ordered separately

Recommended container for ND611 and ND612
Aesculap Basic container 592 x 274 x 187 mm

Cone 12/14



Metha® Stems
with trial neck adapter 135°/0°

Stem size	modular
0	–
1	NC081T
2	NC082T
3	NC083T
4	NC084T
5	NC085T
6	NC086T
7	NC080T

Implant materials:

ISOTAN® F	Titanium forged alloy (Ti6Al4V / ISO 5832-3)
Plasmapore® µ-CaP	Pure titanium surface with 20-µm coating dicalcium phosphate dihydrate ($CaHPO_4x2H_2O$)
ISODUR® F	Cobalt-Chromium forged alloy (CoCr29Mo / ISO 5832-12)

Modular neck adapters
12/14 trunnion

Correction Antetorsion \ CCD angle Offset	130° + 5 mm	135° 0 mm	140° - 5 mm
7.5° L Ante / R Retro	NC077K	NC087K	NC097K
0°	NC078K	NC088K	NC098K
7.5° L Retro / R Ante	NC079K	NC089K	NC099K

Please order separately:

ND622	10 Cleaning swabs for inner cone

Note:
Each Metha® Stem is supplied with three cleaning swabs.

Metha® Mono.
Instruments and Implants.

ND608
Metha® Mono set (130° / 135°)

comprising:

ND609R	Perforated tray for Mono set (489 x 253 x 74 mm)
TE931	Packing template for Mono set
JH217R*	Lid
ND644R	Metha® awl narrow
ND645R	Metha® awl wide
ND656R	Metha® extraction instrument for 12/14 trunnion
ND655R	Metha® impactor/extractor instrument
NG930R	Metha® Mono stem impactor

Metha® rasps

Size	0	1	2	3
	NF090R*	NF181R	NF182R	NF183R
Size	4	5	6	7
	NF184R	NF185R	NF086R	NF087R*

ND715R	Rasp trial neck adapter 130°/0°
ND725R	Rasp trial neck adapter 135°/0°

Trial heads 12/14

	28 mm	32 mm	36 mm
Head length S	NG296*	NG306*	NG326*
Head length M	NG297*	NG307*	NG327*
Head length L	NG298*	NG308*	NG328*
Head length XL	NG299*	NG309*	NG329*

Metha® rasp handles, also for navigation

NF180R*	straight, lateral approach
NF144R*	curved, posterior approach
NF141R*	offset, left/right (also see page 25)
NF142R*	offset, right/left (also see page 25)
NF140R*	angled, anterior approach

The Metha® Mono tray can store 2 rasp handles

Items marked with * must be ordered separately

Recommended container for ND608
Aesculap Basic container 592 x 274 x 90 mm

Metha® Stems
with 12/14 trunnion

Stem size	CCD = 130°	CCD = 135°
0	NC270T	NC280T
1	NC271T	NC281T
2	NC272T	NC282T
3	NC273T	NC283T
4	NC274T	NC284T
5	NC275T	NC285T
6	NC276T	NC286T
7	NC277T	NC287T

Implant materials:

ISOTAN® F	Titanium forged alloy (Ti6Al4V / ISO 5832-3)
Plasmapore® µ-CaP	Pure titanium surface with 20 µm coating dicalcium phosphate dihydrate ($CaHPO_4x2H_2O$)

Plasmacup®. Implants.

Plasmacup® SC

40 mm	NH040T
42 mm	NH042T
44 mm	NH044T
46 mm	NH046T
48 mm	NH048T
50 mm	NH050T
52 mm	NH052T
54 mm	NH054T
56 mm	NH056T
58 mm	NH058T
60 mm	NH060T
62 mm	NH062T
64 mm	NH064T
66 mm	NH066T
68 mm	NH068T

ISOTAN $^{®}_{F}$

Plasmacup® NSC

40 mm	NH340T
42 mm	NH342T
44 mm	NH344T
46 mm	NH346T
48 mm	NH348T
50 mm	NH350T
52 mm	NH352T
54 mm	NH354T
56 mm	NH356T
58 mm	NH358T
60 mm	NH360T
62 mm	NH362T
64 mm	NH364T
66 mm	NH366T
68 mm	NH368T

ISOTAN $^{®}_{F}$

Plasmacup® MSC

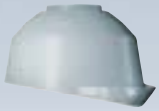
40 mm	NH140T
42 mm	NH142T
44 mm	NH144T
46 mm	NH146T
48 mm	NH148T
50 mm	NH150T
52 mm	NH152T
54 mm	NH154T
56 mm	NH156T
58 mm	NH158T
60 mm	NH160T
62 mm	NH162T
64 mm	NH164T
66 mm	NH166T
68 mm	NH168T

ISOTAN $^{®}_{F}$

Implant materials:

ISOTAN® F	Titanium forged alloy (Ti6Al4V / ISO 5832-3)
Plasmapore®	Pure titanium (Ti / ISO 5832-2)
Biolox® forte	Aluminum oxide ceramics (Al_2O_3 / ISO 6474)
Biolox® delta	Al_2O_3 matrix composite ceramics
ISODUR® F	Cobalt-Chromium forged alloy (CoCr29Mo / ISO 5832-12)
UHMWPE	Ultra-high molecular weight polyethylene (ISO 5834-2)

SC Polyethylene cup liners



	symmetric			posterior wall			asymmetric	
	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 28 mm	ø 32 mm
40 mm 42 mm	NH170	–	–	NH300	–	–	–	–
44 mm 46 mm	NH171	NH191	–	NH301	NH401	–	NH471	–
48 mm 50 mm	NH172	NH192	NH202	NH302	NH402	–	NH472	–
52 mm 54 mm	NH173	NH193	NH203	NH303	NH403	NH413	NH473	NH323
56 mm 58 mm	NH174	NH194	NH204	NH304	NH404	NH414	NH474	NH324
60 mm 62 mm	NH175	NH195	NH205	NH305	NH405	NH415	NH475	NH325
64 mm 66 mm 68 mm	NH176	NH196	NH206	NH306	NH406	NH416	NH476	NH326

UHMWPE

Plasmacup® delta

		Liner
48 mm	NH648D	ø 36 mm
50 mm	NH650D	ø 36 mm
52 mm	NH652D	ø 36 mm
54 mm	NH654D	ø 36 mm

BIOLOX® delta

Plasmacup® delta implants complete the Plasmacup® SC program with 36 mm ceramic liners. These liners can not be combined with Plasmacup® SC components and are only supplied together with the Biolox® delta cup component. Special liners with shoulder are available for revision operations.

Plasmacup® delta	PE cup liner
48 mm	NH417 (32 mm)
50/52/54 mm	NH418 (32 mm)

SC ceramic liners

	symmetric		symmetric	
	ø 28 mm	ø 32 mm	ø 32 mm	ø 36 mm
40 mm 42 mm	–	–	–	–
44 mm 46 mm	NH091	–	–	–
48 mm 50 mm	–	–	NH102D	–
52 mm 54 mm	–	NH103	NH103D	–
56 mm 58 mm	–	NH104	NH104D	NH109D
60 mm 62 mm	–	NH105	NH105D	NH110D
64 mm 66 mm 68 mm	–	NH106	NH106D	NH111D

BIOLOX® forte BIOLOX® delta

Heads

12/14

12/14

	28 mm	32 mm	32 mm	36 mm
short	NK460	NK560	NK560D	NK650D
medium	NK461	NK561	NK561D	NK651D
long	NK462	NK562	NK562D	NK652D
x-long0	–	–	NK563D	NK653D

BIOLOX® forte BIOLOX® delta

12/14

	22.2 mm	28 mm	32 mm
kurz	–	NK429K	NK529K
mittel	NK330K	NK430K	NK530K
lang	NK331K	NK431K	NK531K
x-lang	–	NK432K	NK532K

ISODUR®F

AESCULAP®

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