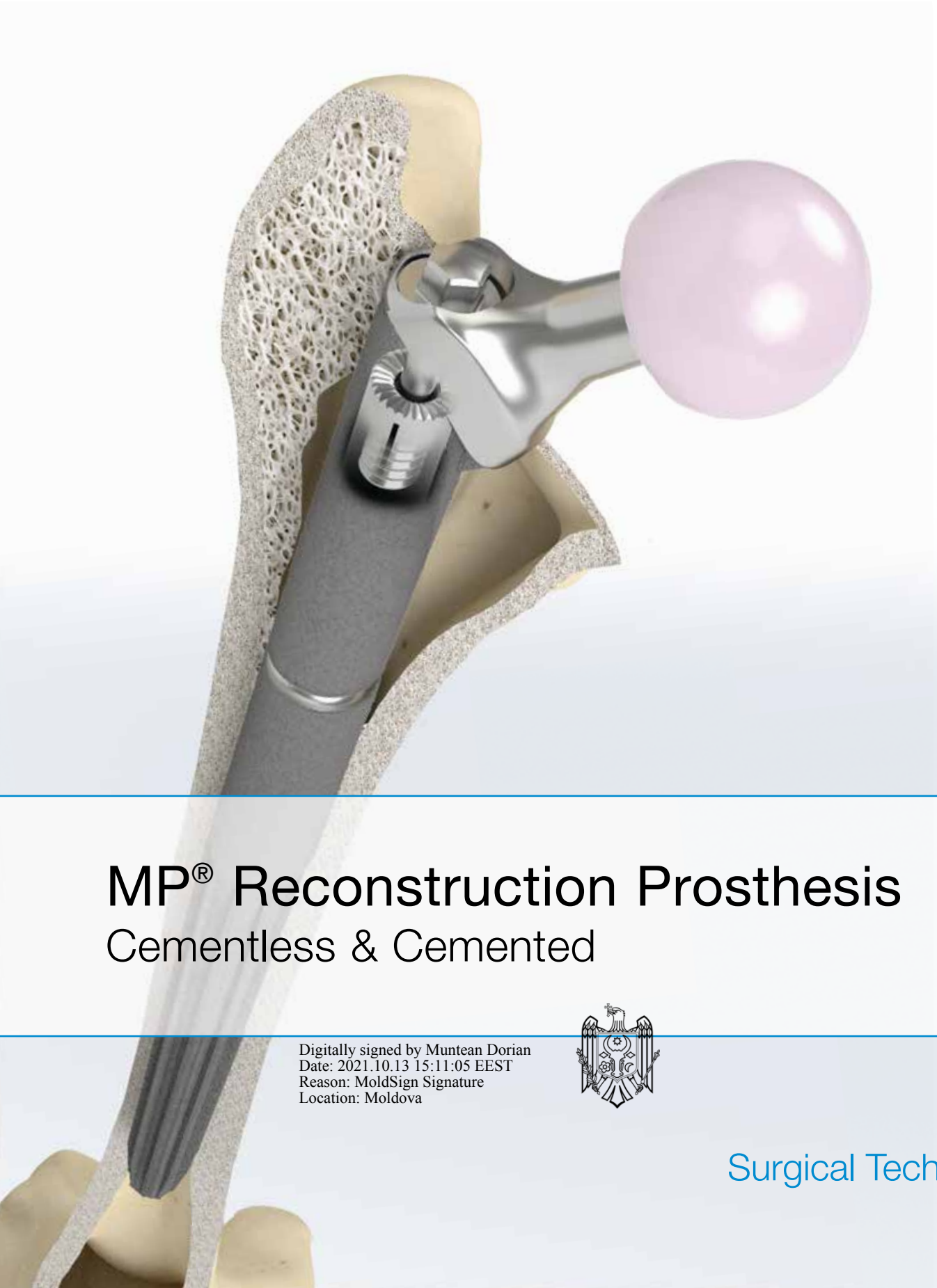

MP® Reconstruction Prosthesis

Cementless & Cemented

Surgical Technique

Presented by:

CE 0482

Waldemar Link GmbH & Co. KG

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MP® Reconstruction Prosthesis
Cementless & Cemented

System Overview

Prosthesis heads A
BIOLOX® delta*
4 Head-neck lengths
Ø 28, 32, 36, 40** mm

Prosthesis heads B
CoCrMo alloy
4 Head-neck lengths
Ø 28, 32, 36 mm

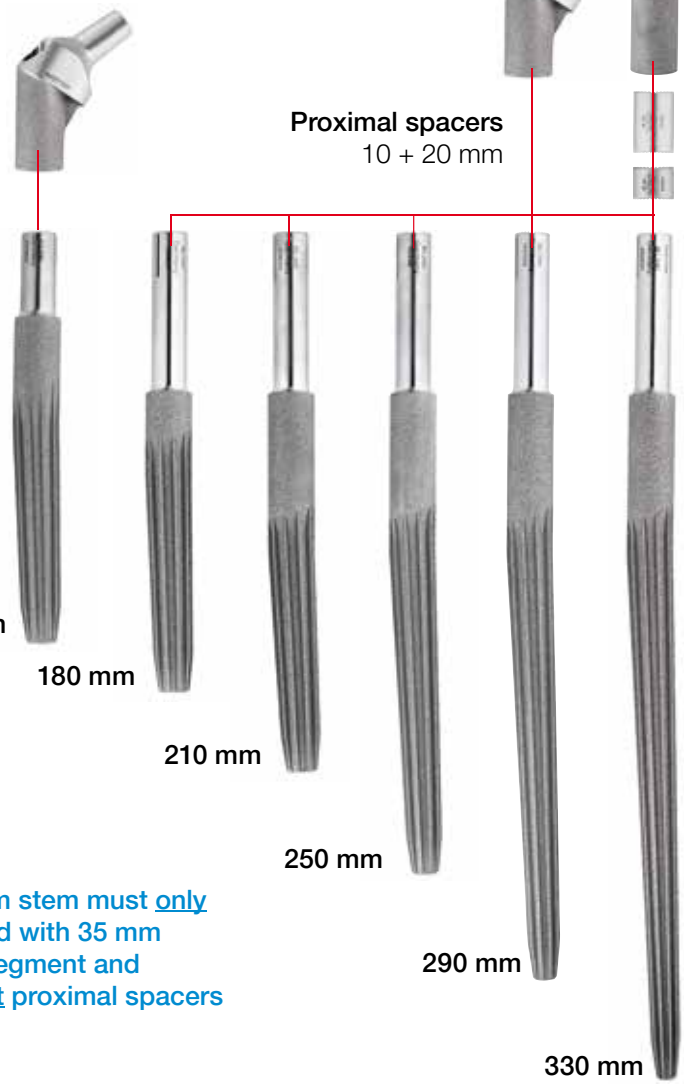
Prosthesis heads A
BIOLOX® forte*
4 Head-neck lengths
Ø 28, 32, 36 mm

* BIOLOX® delta and BIOLOX® forte are products from CeramTec GmbH, Plochingen, Germany
** Only on request

Expansion bolts
41 + 61 mm

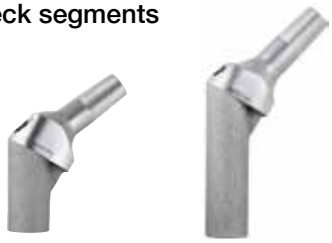
Prosthesis stems, cementless
160 - 250 mm - Ø 12 mm
160 - 330 mm - Ø 14, 16, 18, 20, 22.5, 25 mm

Proximal spacers
10 + 20 mm



160 mm stem must only be used with 35 mm neck segment and without proximal spacers

Neck segments



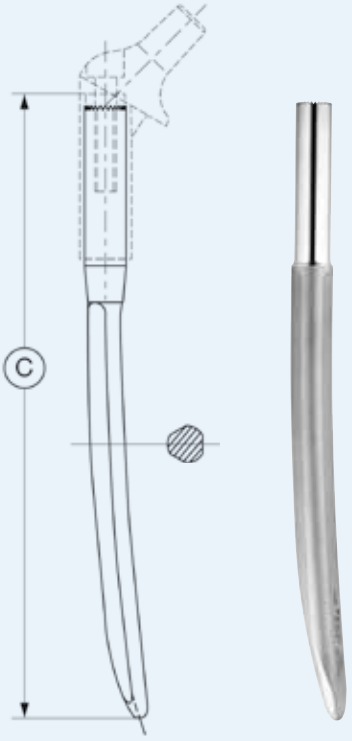
XXL
35 + 65 mm, CCD 126° and 135°

Neck segments with suture holes
35 + 65 mm, CCD 126°

Neck segments, standard
35 + 65 mm, CCD 126° and 135°

35 mm neck segments must only be used without proximal spacers

Prosthesis stems, cemented
Material: CoCrMo alloy
see page 20



Preoperative Planning

In the interests of quality assurance, preoperative planning is advantageous and important, both in terms of the surgical procedure and for determining suitable prosthesis components for the particular situation. The goal is the anatomically correct positioning of the center of rotation, the correct leg length, and the preservation or restoration of sufficient musculature by avoiding medialization of the femur.

Attention to the anatomically correct CCD angle for the particular situation and the head-neck length are of major importance. The neck segments are available with CCD angles of 126° and 135° and the prosthesis heads with up to four head-neck lengths.

The suitable prosthesis size is determined with the aid of X-ray templates. This is done by positioning the templates on the X-ray or drawing in such a way that it is possible to obtain both the necessary distal fixation length of the prosthesis stem in the diaphysis and the proximal prosthesis length required to achieve the anatomically correct leg length.

As general rule, the prosthesis stem should be measured in such a way that a positive-fit anchoring of the prosthesis is created over a length of at least 80 mm. To this end, it is necessary to make allowance for reaming of the cortical bone. The reduction of the cortical wall thickness caused by the reaming should not exceed 1.5 mm in the planning.

The basis for the planning is two X-rays:
a full pelvic view and a mediolateral view of the hip to be treated For the full pelvic X-ray, it is important to ensure that:

1. Both femurs are depicted with sufficient length;

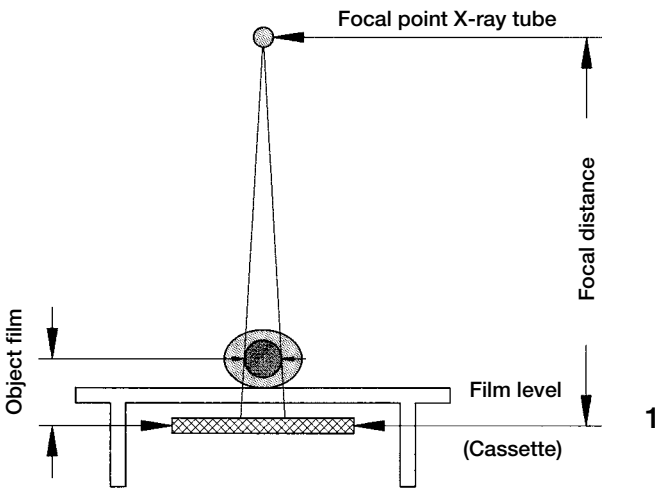
2. The femurs are parallel to each other and, if possible, in about 5° internal rotation;

3. The gonads are shielded carefully, but so sparingly that the important skeletal landmarks required for the planning – inferior borders of the obturator foramen / inferior borders of the pelvic teardrops – are not concealed.

Measurements based on the X-rays must take into account the distortion in the X-ray. This is determined by two factors:

1) Focal distance
Focal point X-ray tube ⟷ x ⟶ Film cassette
A focal distance of 100 cm leads to magnification of the structures by about 10%.
The available X-ray templates are designed accordingly.

2) Object distance
Femoral axis ⟷ x ⟶ Film cassette

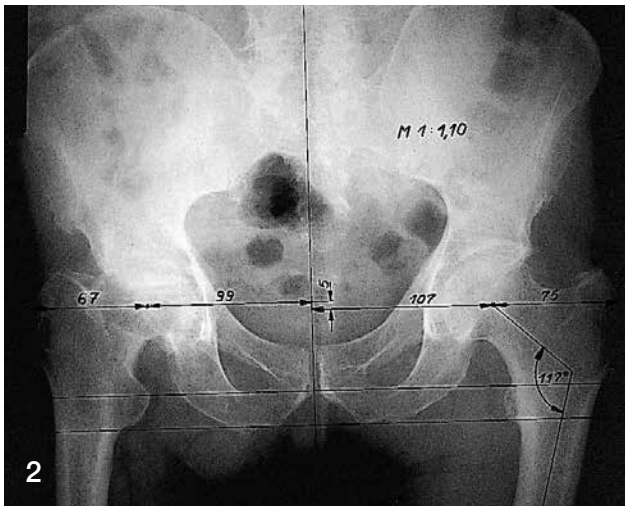


1

Procedure

First, geometrical measurements of the situation are taken on the basis of the full pelvic X-ray. This can be done on the X-ray itself or with a suitable planning software (Fig. 2). Alternatively, the skeletal contours can be traced onto tracing paper (Fig. 3). First, a horizontal reference line is drawn, e.g., at the inferior border of the obturator foramen, then a vertical reference line through the center of the pubic symphysis. Taking these lines as a basis, all the other important measurements for the pivot/head, leg length difference, left/right femoral distances, distance between the left/right muscle T lever arms, etc., are entered using the parallel displacement technique.

This gives an overview, which also provides information for the surgical procedure, e.g., transfer of dimensional references to the bone, in the form of landmarks. It must always be remembered, however, that the measurements on the X-ray include a magnification effect, which must be allowed for when the measurements are transferred to the bone. If the magnification is 10%, measurements taken from the X-ray must be divided by 1.1; e.g., 60 mm apparent ÷ 1.1
≠= 54.5 mm actual measurement.
Other magnifications must be similarly allowed for, e.g., at 15% magnification a measurement of 60 mm on the X-ray ÷ 1.15 = 52.2 mm actual measurement.



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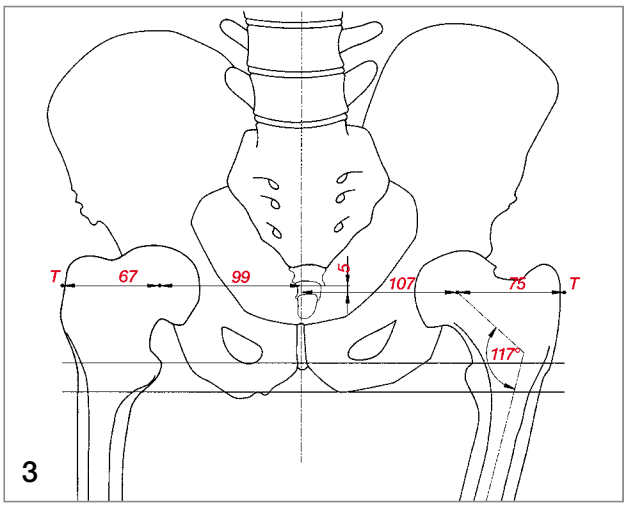

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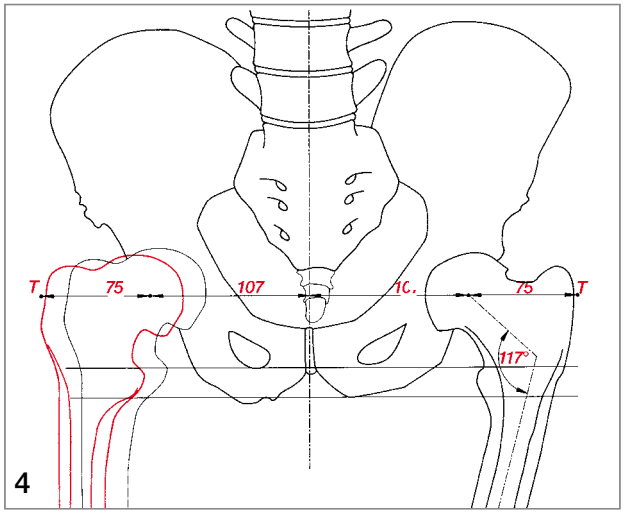
Once the dimensions have been entered, the X-ray templates are used to select the best implant components for the particular case.
The X-ray template is positioned in such a way that the center of rotation of the head coincides with the anatomical center of rotation as determined in the drawing. When selecting the prosthesis components, attention must also be paid to selecting items which sufficiently correct any anatomical insufficiencies identified from the measurements.
In addition to the A-P full pelvic view X-ray, the mediolateral X-ray is used to determine the stem design and size of the femoral prosthesis as seen from the side.

The planned result becomes clearer when the transparent sheet with the traced skeletal contours, measurements, and sketched-in position of the acetabular element is placed on top of the X-ray and adjusted so that the femur in the X-ray is in the desired outcome position in relation to the drawing of the pelvis.
This position is then traced onto the tracing paper, preferably in a different color (Fig. 4).
The same procedure can also be performed using planning software.

The divergences on the planning documentation, e.g., actual and planned positions of the femurs, provide the visual overview required both for surgical planning and for precise selection of the prosthetic components using the X-ray templates or for custom-designing prostheses if necessary (Fig. 5).

Materials required:
1. Transparent paper
2. Transparent rule 1:1
3. Transparent protractor
4. Transparent radius/hole template
   Ø 24 to 58 mm in 2 mm increments or suitable planning software

Note:
Preoperative planning may be time-consuming, but the time spent results in better intraoperative support and enhanced quality assurance.



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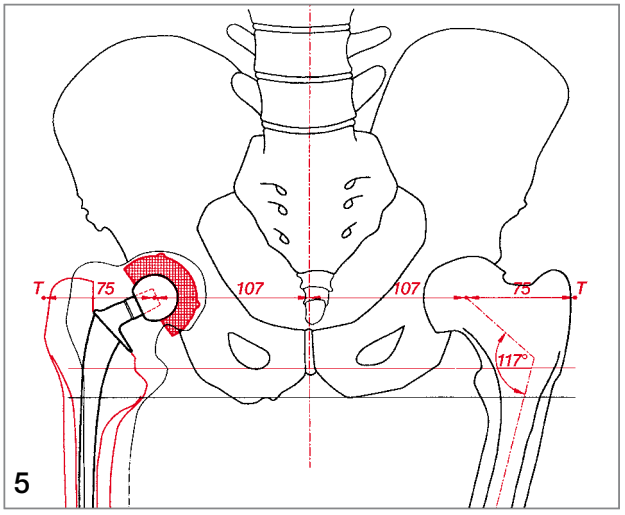

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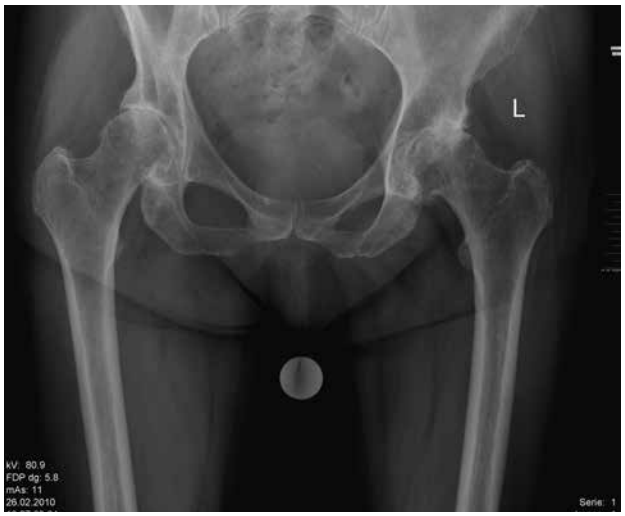
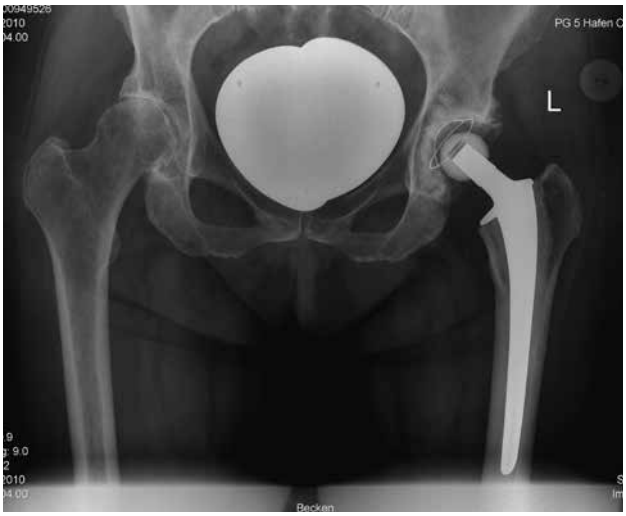




The surgical instructions below for reconstructing a damage hip joint using the MP® Reconstruction Prosthesis depict an idealized surgical situation. However, every revision procedure has individual particularities, and the surgeon decides during the surgery which method can be expected to achieve the most success in the current case.

Prosthesis Removal

In-situ implants and the bone cement must be completely removed before implanting an MP® Reconstruction Prosthesis. When doing so, always use the instruments specifically designed for the implant being revised or the Link® Revision Instrument Set **130-698/01**.

Reaming of Medullary Canal

The reaming of the femoral canal begins with a **tapered reamer** corresponding to the planned prosthesis stem length (A), but with a diameter 1-2 sizes smaller than the planned stem diameter; this does not apply when using the smallest diameter (Ø12 mm 160-250 mm).

The reaming depth is determined by the position of the ring markings on the shaft of the tapered reamer. The marking should be in relation to an anatomical landmark on the bone, determined during the preoperative planning.

If no proximal spacers are used, the position of the lower marking ring should be at the medial level of the original femoral neck resection (Fig. 6). This landmark can be easily identified on the X-ray, enabling a reference marking to be determined for the surgery.

Tip:
The fourth ring is approximately at the level of the tip of the greater trochanter, and the lower ring a thumb's breadth above the lesser trochanter – always without the use of proximal spacers.

The tapered reamers should only ever be screwed into the femoral canal as far as indicated by the position of the marking ring to the specified landmark.

The reaming must be performed carefully. The tapered reamer must not become hot to the touch. For this reason, we urgently recommend performing the reaming by hand.

The last tapered reamer is used to prepare the medullary canal until contact is made with the endosteal cortical bone. The minimum contact height of 80 mm targeted for stable fixation of the prosthesis stem in the bone must be verified intraoperatively by means of radioscopic control (Fig. 6).

In addition, the surgeon can check whether contact surface is sufficiently large when the last tapered reamer is carefully removed clockwise. Bone particles on the tapered reamer shaft can provide information on the reaming distance, which should generally not be below 80 mm.
The last reaming step must always be performed with a diameter identical to that of the implant stem. For example, if an implant with Ø 18 mm is used, the last reaming step must be performed with a Ø 18 mm tapered reamer.

Reaming depth without proximal spacer(s)

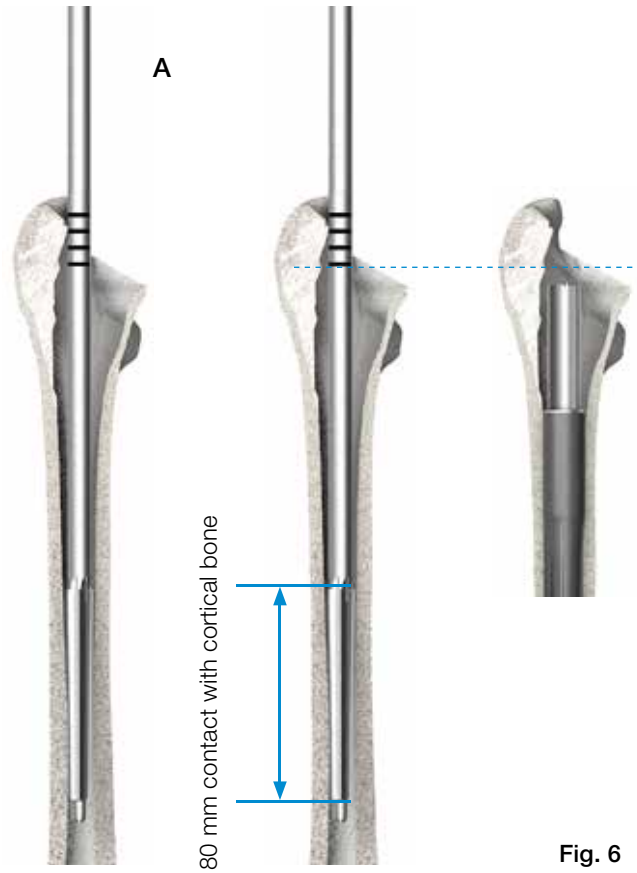


Fig. 6

Insertion of the Prosthesis Stem
The selected **MP® stem** (B), which corresponds to the size of the last tapered reamer used, is screwed tightly to the **inserter for stems** (C).

The line marking on the stem identifies the side of the stem which indicates the 3° angle (Fig. 8, center). The orientation of the marking is used for a better overview when inserting the stem. The arrow on the striking surface now indicates where the angle of the stem is. This makes it possible to insert the MP® stem into the femoral canal precisely aligned to the natural curvature of the femur (Fig. 8/with curvature).

The stem is then carefully driven in to the final depth using a mallet. The final position must be verified by means of radioscopic control (Figs. 9 and 10).

The MP® stem must not be driven in deeper than intended in the preoperative planning.
Should it prove impossible to achieve stable fixation of the stem at the intended depth due to poor bone quality, any shortening of the leg that results from driving the stem in deeper can be compensated by using proximal spacers of up to 30 mm (10 mm, 20 mm, or 20+10 mm).
Intentional lengthening of the leg is also possible with a proximal spacer (see Fig. 7).

Secure fixation of the MP® prosthesis stem in the medullary canal is always given utmost priority.

Use of proximal spacers:

Leg length:	± 0 mm	± 0 mm	± 0 mm	+ 10 mm

Fig. 7

Fig. 8

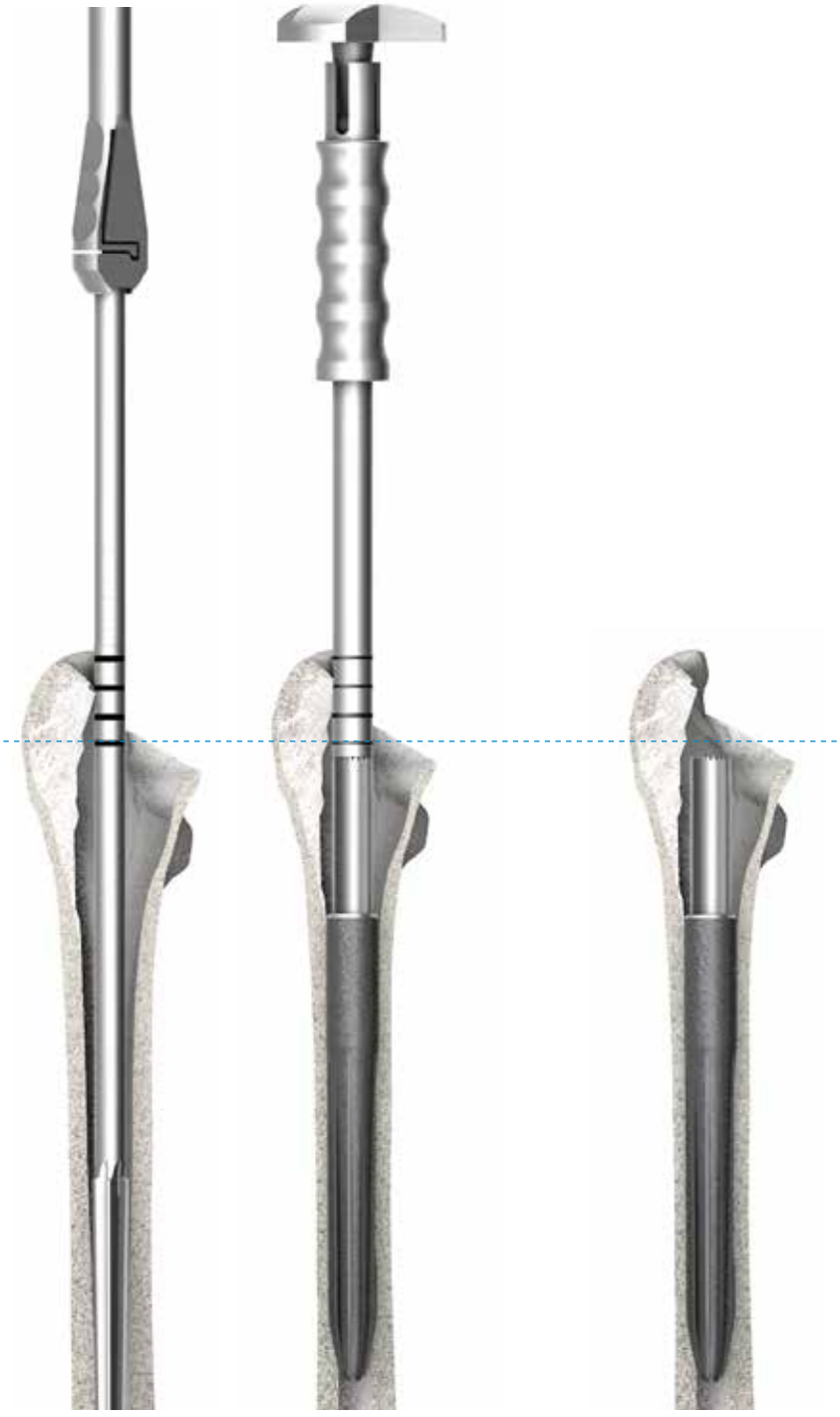


Fig. 9

Fig. 10

Preparation of the Metaphyseal Medullary Space
If required, a special **hollow reamer (134-200/00)** is used to prepare the implant bed for the neck segment (Fig. 12).

There are **two guides and stops** available for positioning the reamer on the in-situ stem. Their length must be selected according to the neck segment being used (Fig. 11).

Short reamer guide --> long neck segment (x)
Long reamer guide --> short neck segment (y)

The reamer guide can be screwed into the stem by hand or using the hex screwdriver.

The reamer guide also serves as a stop to avoid the teeth of the hollow reamer from coming into contact with the edge of the lower portion of the stem.

Irrigation is recommended to avoid overheating of the bone.

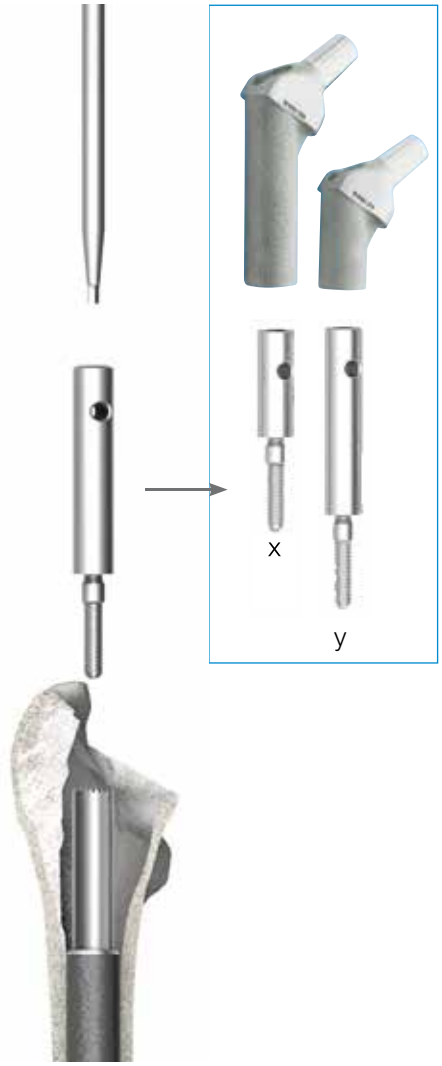


Fig. 11

Fig. 12

Trial Reduction

The **guide rod** (G), which simplifies positioning of the **trial neck segment** (H) and, where used, the trial proximal spacers, is screwed into the thread of the implanted stem and fixed in place using a hex screwdriver (Fig. 13).

For the functional test, a **trial neck segment** (H) is mounted on the **inserter** (I), then pushed over the **guide rod** (G) and onto the implanted prosthesis stem. The teeth inside the trial neck segment must fit into the toothing on the stem.

The trial neck segment can be simply tested by turning it backward and forward (Fig. 14).

The secure seating should be checked with the **caliper** (K), which is placed on the **trial neck segment** (H). The connection is secure if – when no trial proximal spacers are used – the "0" **gauge mark** on the scale of the guide rod is visible in the recess on the caliper.
The same applies accordingly for the **"10" gauge mark** when a 10 mm trial proximal spacer is used (Fig. 15).

The caliper and the guide rod are removed once the trial neck segment is in position. Depending on whether/which trial proximal spacers are used, a short trial screw (for no trial proximal spacer or a 10 mm trial proximal spacer) or a long trial screw (for a 20 mm trial proximal spacer or a combination of 10 mm and 20 mm trial proximal spacers) is screwed through the neck segment and into the stem and tightened with a screwdriver (Fig. 16), ensuring that the neck segment is aligned in the correct antetorsion.

Following positioning of a colored **trial head** (P), the hip can be reduced and its function checked (Fig. 17):

- **Joint stability**
- **Range of movement**
- **Impingement**

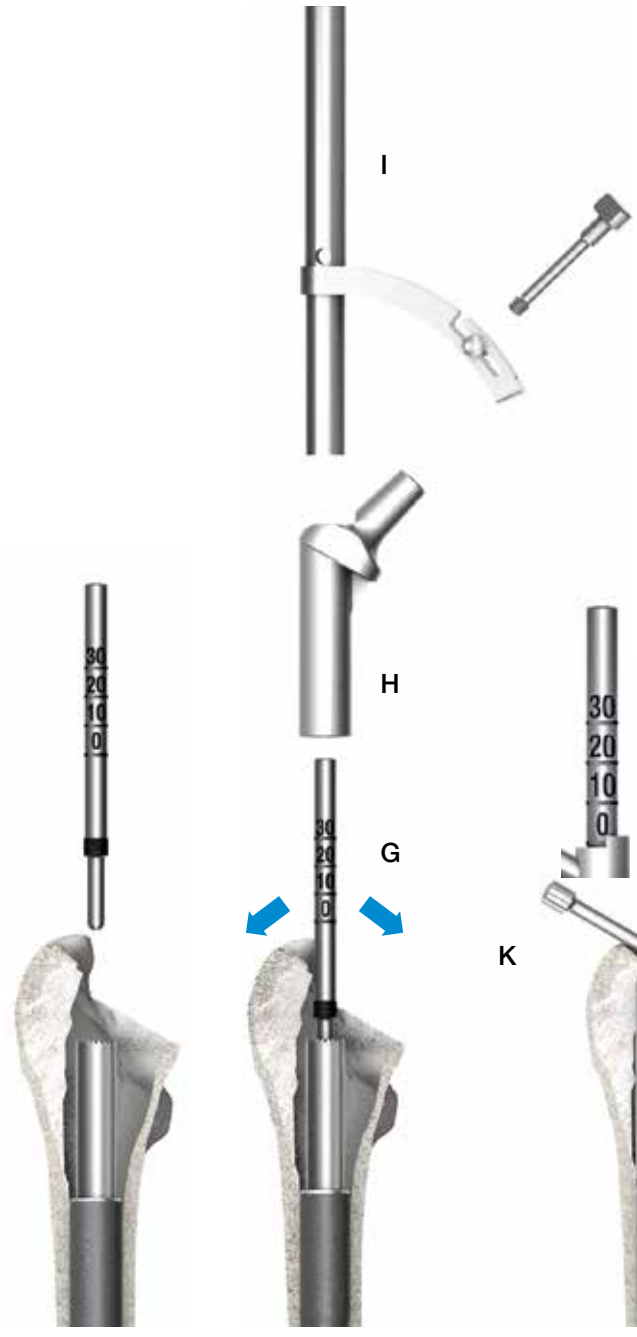


Fig. 13

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Leg Length and Lateralization
Leg length can be corrected by 10 mm, 20 mm, or 30 mm (combination of 10 mm and 20 mm proximal spacers) by using trial proximal spacers (Fig. 18 +19).

Fine tuning of the leg length and different lateralization of the prosthesis stem can be achieved by selecting:

- Neck segment with 126° or 135° CCD angle (Fig. 19) in standard neck length or XXL neck length (Fig. 20) or

- Trial head with suitable head-neck length (Fig. 21)

A long trial neck segment is obligatory when trial proximal spacers are used.

Short trial neck segments must not be used with trial proximal spacers (Fig. 19).

Antetorsion
The antetorsion angle can be corrected by turning the trial neck segment after loosening the fixation screw. The desired position should then be marked on the bone so that the final neck segment can be positioned correctly.

Trial fixation screws
A short trial fixation screw is required if no trial proximal spacer or a 10 mm trial proximal spacer is used. If a 20 mm trial proximal spacer, or a combination of a 20 mm and a 10 mm proximal spacer, is used, then only the long trial fixation screw may be used (Fig. 22).

Use of a Longer Trial Neck Segment
Replacing an originally used 35 mm trial neck segment with a 65 mm trial neck segment can require the use of the hollow reamer due to the longer tubular neck of the 65 mm segment.

Once the leg length, antetorsion and joint stability have been checked, the trial prostheses can be removed.

Fig. 18

Fixation screws (trial + implant)
Proximal spacers (trial + implant)

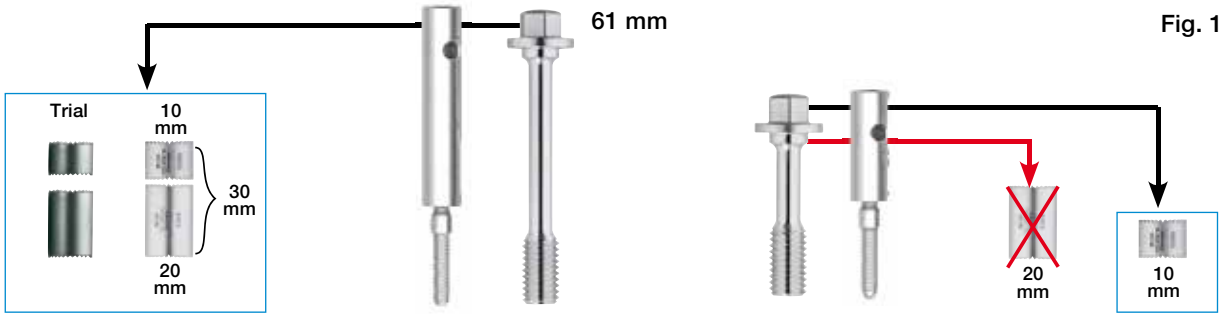


Fig. 19

Neck segments (trial + implant)
Proximal spacers (trial + implant)

Fig. 20

Final Assembly

Assembly of Neck Segment

The guide rod (G) is screwed onto the stem again (Fig. 21).

The neck segment and proximal spacers (if used) are placed over the **guide rod** (G) onto the stem using the **inserter** (I) (Fig. 18). A marking made on the bone during the trial run is used to align the neck segment in the correct antetorsion position.

Only the 65 mm neck segment may be used in combination with proximal spacers. A 35 mm neck segment may only be used without proximal spacers.

It is imperative to ensure that the teeth of the proximal stem interlock with the teeth of the proximal spacers or (in the absence of proximal spacers) the neck segment. This can easily be checked by turning the neck segment gently to and fro with the aid of the inserter. There must be no bone particles or soft tissue between the teeth.

The secure seating of the neck segment is checked with the **caliper** (K) in the same way as for the trial implant (Fig. 23). The connection is secure if, when no proximal spacers are used, the “0” mark on the scale of the guide rod is visible in the “window” of the caliper.
The “10”, “20”, or “30” scale marking must be visible when 10 mm, 20 mm, or a combination of 10 mm and 20 mm, proximal spacers are used.

Fig. 21

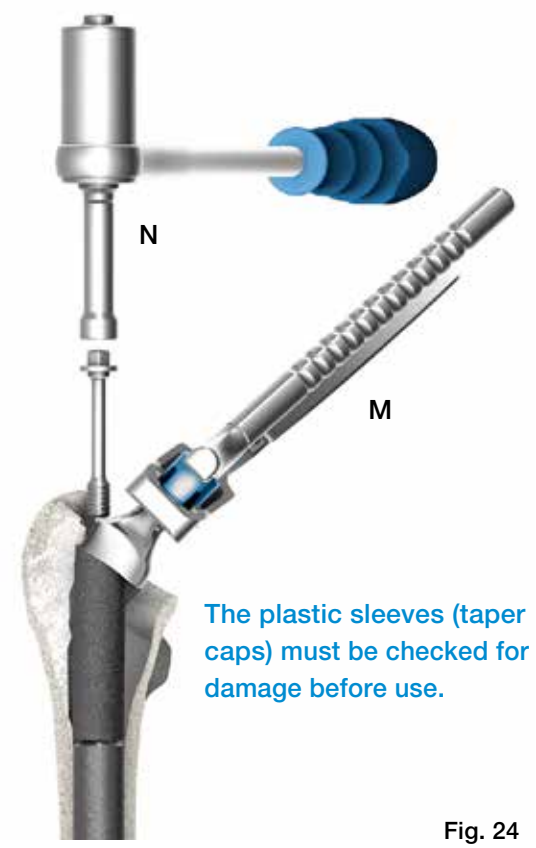
Fig. 22

Fig. 23

Expansion Bolts

The stem, proximal spacers if used, and neck segment are connected with a short (41 mm) or long (61 mm) expansion bolt (M), depending on the selected neck segment length and the number of proximal spacers (Fig. 24). The bolt fixes the MP® neck segments securely to the modular MP® prosthesis stems.

LINK® implants and expansion bolts can only be used once. It is not possible to reuse them because no expansion occurs when the bolt is tightened a second time. The torque wrench (N) is supplied with a calibration certificate and separate instructions for use, and must be subjected to a functional test after 250 uses.
To this end, the instrument should be sent to Waldemar Link GmbH & Co. KG.
The torque wrench must never be used to loosen screw connections, as this could have a negative effect on its function.



The plastic sleeves (taper caps) must be checked for damage before use.

Fig. 24

Important
There are two screw lengths available:
41 and 61 mm
- Use of the short screw (41 mm):
  no proximal spacer or a 10 mm proximal spacer
- Use of the long screw (61 mm):
  a 20 mm proximal spacer or combination of
  a 10 mm and a 20 mm proximal spacer (30 mm in total)

The screwdriver (page 13) is used to screw the expansion bolt in all the way and tighten it gently (Fig. 24). The neck segment is then gripped by the taper using the insertion forceps (M) and the expansion bolt is tightened using the torque wrench (N).

Once the necessary torque is reached, the torque wrench emits a loud snap.

A final trial reduction with a suitable trial head is then performed to determine the final head-neck length.

The final prosthesis head is positioned on the carefully cleaned and dried taper of the neck segment and secured in place with a gentle blow on the inserter (Fig. 25).

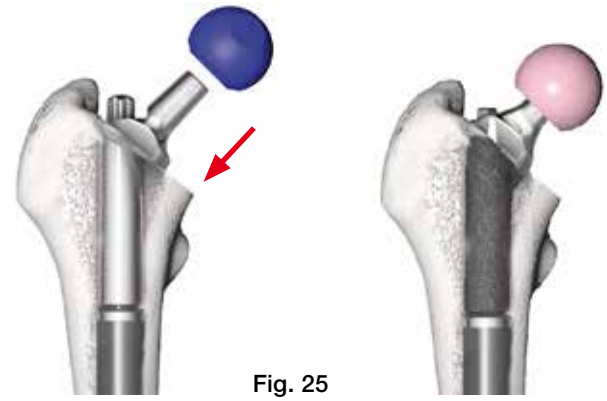
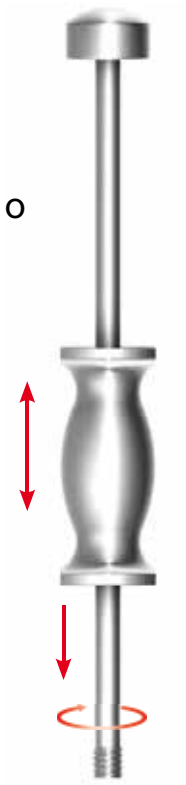


Fig. 25



O

Rod with slap hammer

P

Inserter for stems

MP® stem

Fig. 26

Stem Extraction

Should it prove necessary to remove the MP® stem during the surgery or later revision, the **inserter (P)** is mounted on the in-situ **stem** and screwed to the **rod with slap hammer (O)**.

The MP® stem can be driven out of the medullary canal safely by applying measured blows to the upper stop with the slap hammer.

Procedure

If use of a cemented stem is planned, the 180 mm long MP trial stems (**134-070/00**), the additional instrument set for the cemented surgical technique (**134-110/00**), and an insertion sleeve, UHMWPE (**134-212/00)** are required in addition to the basic instrument set.

The medullary canal is prepared with flexible medullary space drills or ball reamers to accept the prosthesis stem. It is recommended to start with the smallest diameter and open up the medullary canal millimeter by millimeter until contact with the cortical bone is identified distally around the circumference.

To achieve an even cement coating of 1 mm all the way around, the medullary space must be excavated to a diameter at least 2 mm larger than the stem used.

Fig. 27

Once the medullary space has been prepared to the required diameter, a trial stem measuring 180 mm in length is inserted, corresponding to the diameter of the last medullary space reamer used.

The trial stem is secured on the inserter (P) as described on page 07, and then inserted up to the planned proximal marking.

Tip:
Do not exert too much pressure, as the trial stem is not intended to achieve a press fit, and can thus be driven further into the femur than planned.

Tip:
Secure the stem in such a way that the arrow points to the radius.

The **short** guide is screwed onto the trial stem as described on page 16, and then the proximal bone reamed for the cemented preparation with the hollow reamer (**134-211/00**).

Fig. 28

The guide is then unscrewed again and the trial stem is removed from the femur with the aid of the inserter. This can be done using the slide hammer.

The plastic sleeves must be checked for damage before use.

The plastic sleeve is screwed to the insertion sleeve, pushed onto the proximal section of the implant stem, and then screwed to the inserter (Fig. 29).

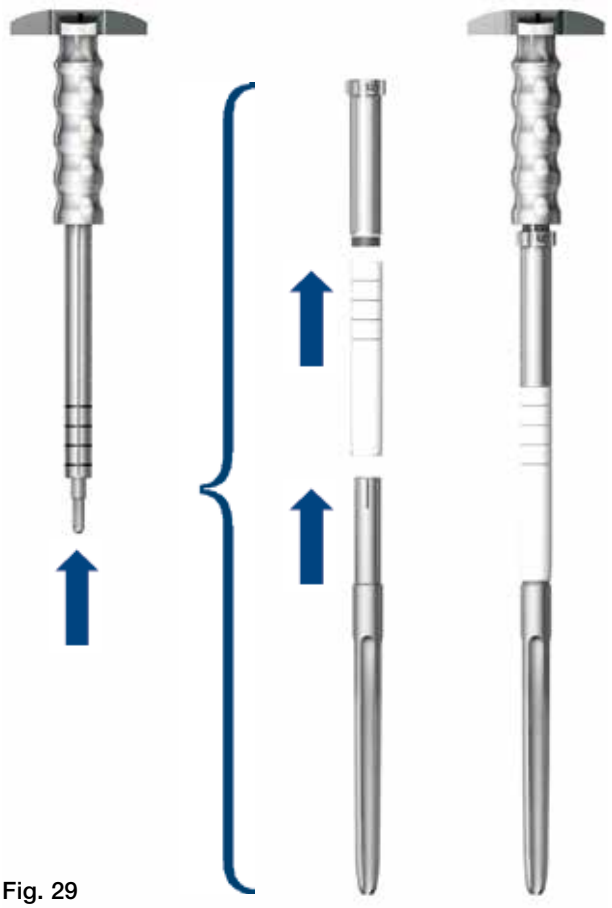


Fig. 29

The medullary space is then sealed with a bone dowel or a medullary plug a little below the intended position of the stem tip. Following application of the cement, the prosthesis stem is introduced into the medullary space. The markings on the plastic sleeve correspond to the markings on the inserter used in the cementless surgical technique. As such, the lowest line marks the proximal end of the stem.

Tip:
When applying the cement, it is essential to ensure secure fixation of the distal end of the stem. Proximal oozing of the cement should be avoided and any escaping cement removed before it sets.

The stem is held in the required position with the inserter until the cement sets. The plastic sleeve prevents excess cement from coming into contact with the proximal portion of the stem (Fig. 30). Once the cement has completely set, the inserter is disconnected from the implant and removed along with the plastic sleeve.

Fig. 30

To remove the plastic sleeve, the extractor is inserted in the sleeve and the bayonet mount is locked. The plastic sleeve can now be twisted free from the cement and removed (Fig. 31).

Fig. 31

The guide is screwed onto the prosthesis stem again and the further preparation of the proximal femur can continue as shown on page 09.

Any excess cement is then removed from the area of the proximal femur at the next reaming stage and with the hollow reamer **(134-200/00)**.

Tip:
We recommend checking the cement application and the associated prosthesis positioning with radioscopic control.

Prosthesis Stems

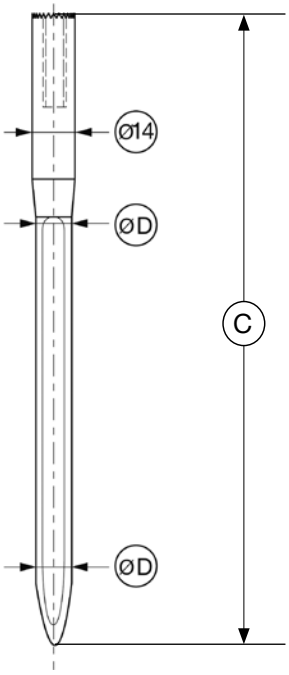
160 mm long stems must only be used with short neck segments and without proximal spacers.

Prosthesis stems, cementless
Material: Tilastan®-S

Item no. microporous	Size	Prox. stem-Ø mm	Dist. stem-Ø mm	Length mm
172-916/12	X S-0	12.0	10.0	160
172-916/14	X S-1	14.0	12.0	160
172-916/16	X S-2	16.0	14.0	160
172-916/18	X S-3	18.0	16.0	160
172-916/20	X S-4	20.0	18.0	160
172-916/22	X S-5	22.5	21.0	160
172-916/25	X S-6	25.0	23.0	160
172-918/12	S-0	12.0	10.0	180
172-918/14	S-1	14.0	12.0	180
172-918/16	S-2	16.0	14.0	180
172-918/18	S-3	18.0	16.0	180
172-918/20	S-4	20.0	18.0	180
172-918/22	S-5	22.5	21.0	180
172-918/25	S-6	25.0	23.0	180
172-921/12	00	12.0	10.0	210
172-921/14	001	14.0	12.0	210
172-921/16	002	16.0	14.0	210
172-921/18	003	18.0	16.0	210
172-921/20	004	20.0	18.0	210
172-921/22	005	22.5	21.0	210
172-921/25	006	25.0	23.0	210
172-925/12	0	12.0	9.0	250
172-925/14	01	14.0	11.0	250
172-925/16	02	16.0	13.0	250
172-925/18	03	18.0	15.0	250
172-925/20	04	20.0	17.0	250
172-925/22	05	22.5	19.0	250
172-925/25	06	25.0	22.0	250
172-929/14	1	14.0	9.0	290
172-929/16	2	16.0	11.0	290
172-929/18	3	18.0	13.0	290
172-929/20	4	20.0	15.0	290
172-929/22	5	22.5	18.0	290
172-929/25	6	25.0	20.0	290
172-930/14	7	14.0	8.0	330
172-930/16	8	16.0	10.0	330
172-930/18	9	18.0	12.0	330
172-930/20	10	20.0	14.0	330
172-930/22	11	22.5	16.0	330
172-930/25	12	25.0	19.0	330

Prosthesis Stems

Modular Revision Prosthesis Stems, anatomically curved, cemented



Prosthesis Stems, cemented
Material: EndoDur® (CoCrMo alloy)

Item no.	for stem length (C) mm	Stem Ø (D) mm
172-900/12	200	12
172-900/14	200	14
172-900/16	200	16
172-901/12	240	12
172-901/14	240	14
172-901/16	240	16
172-902/12	280	12
172-902/14	280	14
172-902/16	280	16
172-903/12	320	12
172-903/14	320	14
172-903/16	320	16

The modular revision prosthesis stems are suitable for combining with all MP® neck segments (page 21).

Neck Segments

Standard Neck Segments
Taper 12/14 mm, material: Tilastan®

Item no. microporous	Length mm	CCD angle	Offset mm
172-964/26	65	126°	31
172-964/35	65	135°	29
172-965/26	35	126°	31
172-965/35	35	135°	29

XXL Standard Neck Segments
(with 40 mm femoral axis offset)
Material: Tilastan®, taper 12/14 mm

Item no. microporous	Length mm	CCD angle	Offset mm
172-984/26	65	126°	40
172-984/35	65	135°	40
172-985/26	35	126°	40
172-985/35	35	135°	40

Neck Segments with Suture Holes
Material: Tilastan®, taper 12/14 mm

Item no. microporous	Length mm	CCD angle	Offset mm
99-0984/30	65	126°	31
99-0984/32	35	126°	31

XXL Neck Segments with Suture Holes
Material: Tilastan®, taper 12/14 mm

Item no. microporous	Length mm	CCD angle	Offset mm
99-0984/26	65	126°	40
99-0984/28	35	126°	40

Proximal Spacers and Expansion Bolts

Proximal Spacers

Material: CoCrMo alloy

Item no.	Length (mm)
172-950/10	10
172-950/20	20

Expansion Bolts

Material: CoCrMo alloy

Item no.	Length (mm)
172-947/38	41
172-947/58	61

Possible Combinations:

Neck Segments	Proximal Spacers		Extension	Expansion bolt
Length (mm)	10 mm	20 mm	mm	Length (mm)
65	-	-	**0**	41
65	10	-	**10**	41
65	-	20	**20**	61
65	10	20	**30**	61
35[1)]	-	-	**-**	41

1) Combination with proximal spacer(s) not possible.

Prosthesis Heads

Prosthesis Heads A – delta
Material: BIOLOX® delta*

Item no.	Head-Ø	Taper	Neck length (mm)
128-791/01	28 mm	12/14 mm	short (-3.5)
128-791/02	28 mm	12/14 mm	medium (0)
128-791/03	28 mm	12/14 mm	long (+3.5)
128-792/01	32 mm	12/14 mm	short (-4.0)
128-792/02	32 mm	12/14 mm	medium (0)
128-792/03	32 mm	12/14 mm	long (+4.0)
128-792/04	32 mm	12/14 mm	extra long (+7)
128-793/01	36 mm	12/14 mm	short (-4.0)
128-793/02	36 mm	12/14 mm	medium (0)
128-793/03	36 mm	12/14 mm	long (+4.0)
128-793/04	36 mm	12/14 mm	extra long (+8.0)

Prosthesis Heads A – forte
Material: BIOLOX® forte*

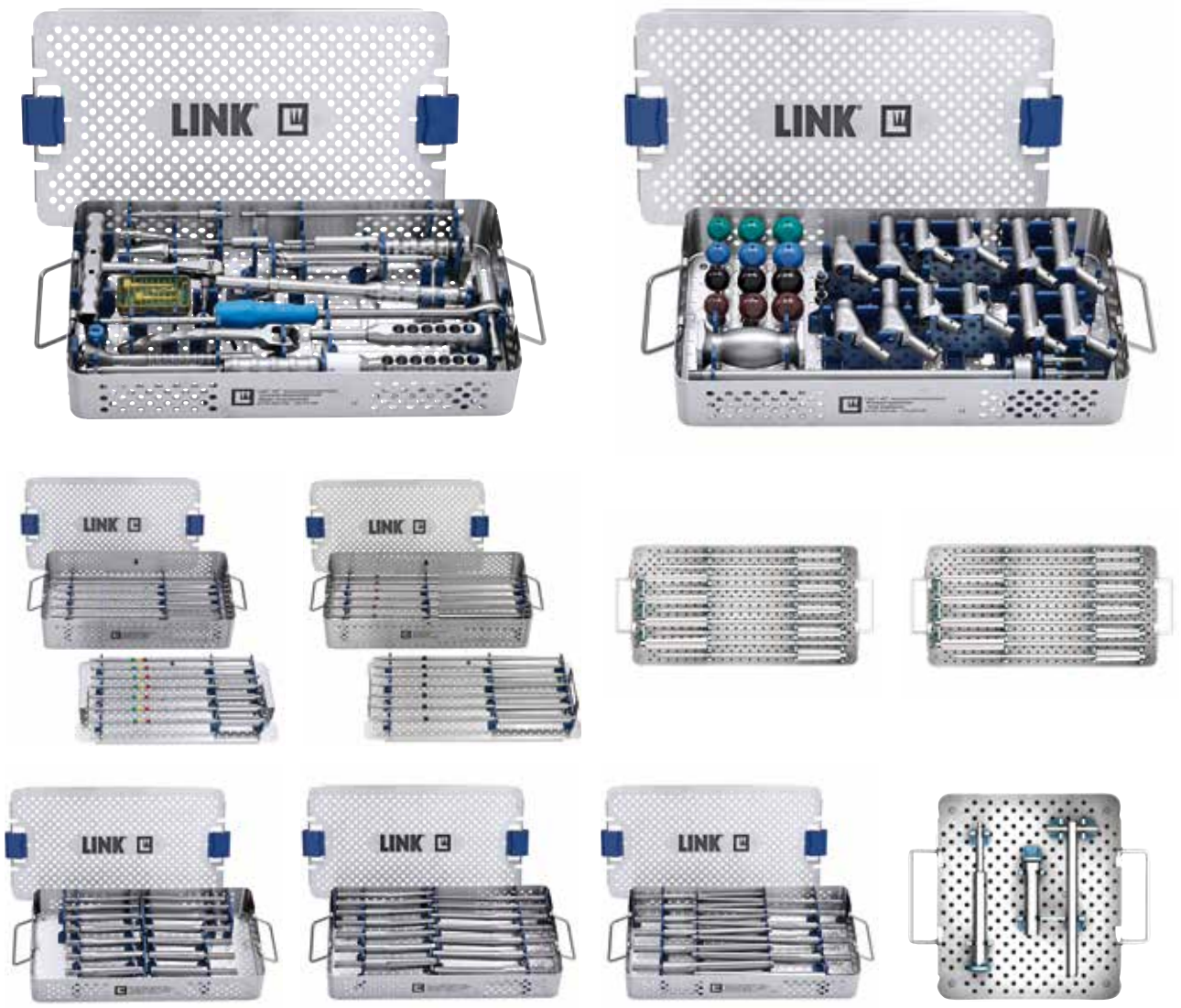
All BIOLOX® forte* and BIOLOX® delta* components are compatible with each other.

Item no.	Head-Ø	Taper	Neck length (mm)
128-928/01	28 mm	12/14 mm	short (-3.5)
128-928/02	28 mm	12/14 mm	medium (0)
128-928/03	28 mm	12/14 mm	long (+3.5)
128-932/01	32 mm	12/14 mm	short (-4.0)
128-932/02	32 mm	12/14 mm	medium (0)
128-932/03	32 mm	12/14 mm	long (+4.0)
128-936/01	36 mm	12/14 mm	short (-4.0)
128-936/02	36 mm	12/14 mm	medium (0)
128-936/03	36 mm	12/14 mm	long (+4.0)

*BIOLOX® delta and BIOLOX® forte are products from CeramTec GmbH, Plochingen, Germany

Prosthesis Heads B
Material: CoCrMo alloy

Item no.	Head-Ø	Taper	Neck length (mm)
128-828/01	28 mm	12/14 mm	short (-3.5)
128-828/02	28 mm	12/14 mm	medium (0)
128-828/03	28 mm	12/14 mm	long (+3.5)
128-828/04	28 mm	12/14 mm	extra long (+10.5)
128-832/01	32 mm	12/14 mm	short (-4)
128-832/02	32 mm	12/14 mm	medium (0)
128-832/03	32 mm	12/14 mm	long (+4)
128-832/04	32 mm	12/14 mm	extra long (+8.5)
128-836/01	36 mm	12/14 mm	short (-4)
128-836/02	36 mm	12/14 mm	medium (0)
128-836/03	36 mm	12/14 mm	long (+4)
128-836/04	36 mm	12/14 mm	extra long (+8)



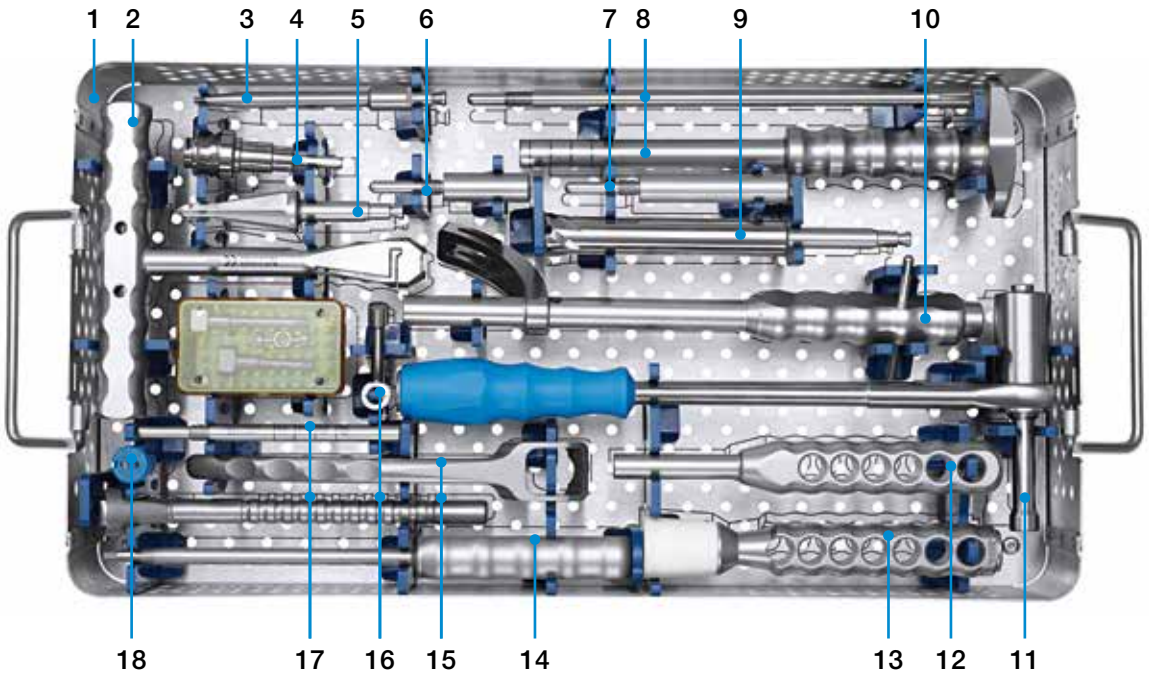
Additional Instrument Set

Item no.	Complete instrument set (incl. trays 1, 2, 3 and 4)
	Set in 4 instrument trays, comprising:
134-010/00	Instrument tray 1, basic instrument set
134-020/00	Instrument tray 2, trial implants
134-030/00	Instrument tray 3, tapered reamers 160 - 250 mm
134-040/00	Instrument tray 4, tapered reamers 290 - 330 mm

Item no.	Additional instruments, trays 5, 6, 7, 8, 9 and 10
134-050/00	Instrument tray 5, tapered reamers, uneven, 160 - 250 mm
134-060/00	Instrument tray 6, tapered reamers, uneven, 290 - 330 mm
134-070/00	Instrument tray 7, trial stems 160 - 180 mm
134-080/00	Instrument tray 8, trial stems 210 - 250 mm
134-090/00	Instrument tray 9, trial stems 290 - 330 mm
134-110/00	Instrument tray 10, cemented technique

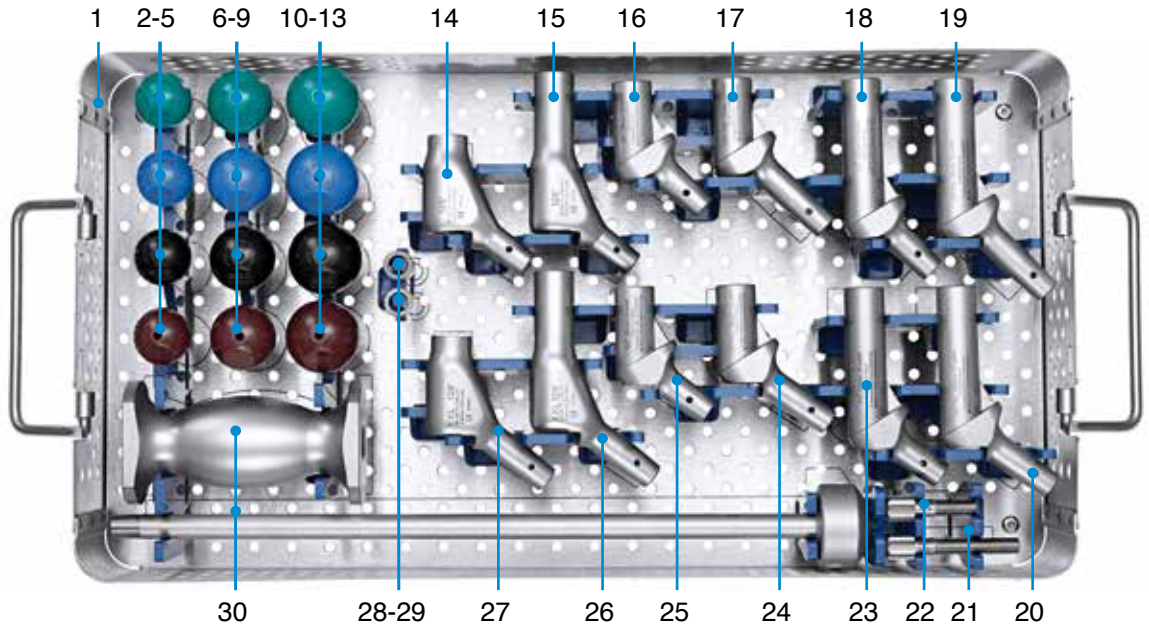
*Not included in “Complete instrument set”

134-010/00 Instrument tray 1, basic instrument set



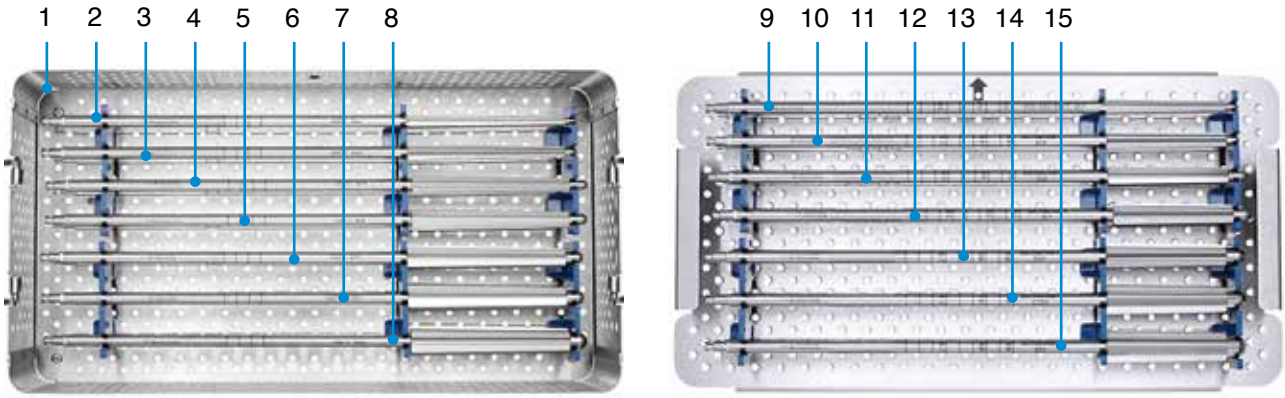
	Item no.	Description
1	134-011/00	**Instrument tray 1,** empty, 485 x 253 x 80 mm
2	15-6053/00	**T-handle,** Hudson
3	134-105/00	**Screwdriver**, size 3.5, Hudson
4		**Adapter**, optional
	16-3283/00	**Adapter**, Hudson female / triangular male
	16-3284/00	**Adapter**, Hudson female / AO male
	16-3286/00	**Adapter**, Hudson female / Harris male
5	15-6037/00	**Start drill**
6	134-204/35	**Reamer guide**, for standard neck segment
7	134-204/65	**Reamer guide**, for short neck segment
8	134-210/00	**Inserter** for stems
9	134-200/00	**Hollow reamer**, Hudson
10	131-379/00	**Inserter** for neck segments, plus box
11	134-140/00	**Torque wrench**, size 8 mm, 380 mm
12	131-385/01	**Screwdriver**, size 8 mm, 185 mm
13	130-600	**Driver** for prosthesis heads
14	64-8008/02	**Screwdriver**, size 3.5 mm
15	134-141/00	**Insertion forceps** for MP® neck segments
16	134-202/00	**Caliper**
17	134-201/00	**Guide rod**
18	131-830/04	**Taper cap**

134-020/00 Instrument Tray 2, trial implants



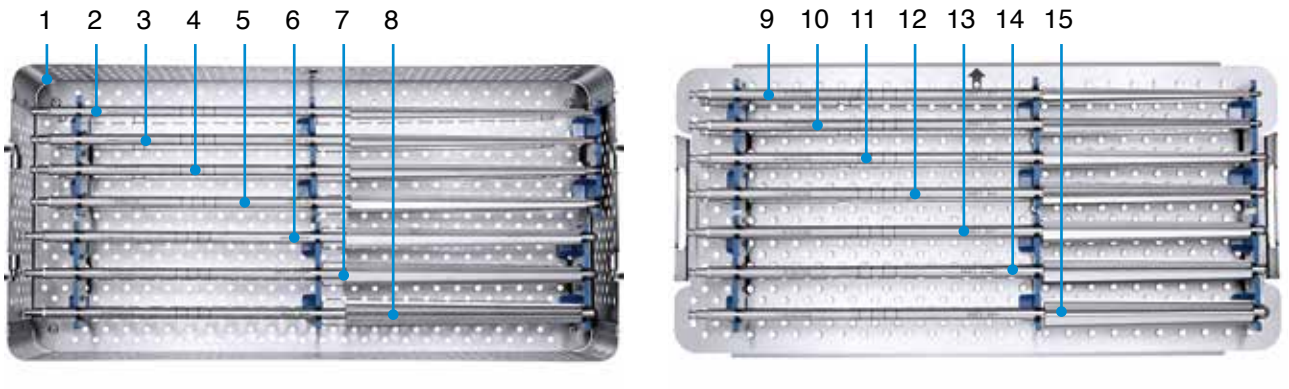
	Item no.	Description
1	134-021/00	**Instrument tray 1,** empty
2	175-928/11	**Trial head,** 28 mm, S
3	175-928/12	**Trial head,** 28 mm, M
4	175-928/13	**Trial head,** 28 mm, L
5	175-928/14	**Trial head,** 28 mm, XL
6	175-932/11	**Trial head,** 32 mm, S
7	175-932/12	**Trial head,** 32 mm, M
8	175-932/13	**Trial head,** 32 mm, L
9	175-932/14	**Trial head,** 32 mm, XL
10	175-936/11	**Trial head,** 36 mm, S
11	175-936/12	**Trial head,** 36 mm, M
12	175-936/13	**Trial head,** 36 mm, L
13	175-936/14	**Trial head,** 36 mm, XL
14	99-0984/33	**Trial neck segment**, 35 mm, 126° with suture hole
15	99-0984/31	**Trial neck segment**, 65 mm, 126° with suture hole
16	131-395/35	**Trial neck segment**, 35 mm, 135°
17	131-393/35	**Trial XXL neck segment**, 35 mm, 135°
18	131-396/35	**Trial neck segment**, 65 mm, 135°
19	131-394/35	**Trial XXL neck segment**, 65 mm, 135°
20	131-394/26	**Trial XXL neck segment**, 65 mm, 126°
21	134-100/61	**Trial fixation screw**, long
22	134-100/41	**Trial fixation screw**, short
23	131-396/26	**Trial neck segment**, 65 mm, 126°
24	131-393/26	**Trial XXL neck segment**, 35 mm, 126°
25	131-395/26	**Trial neck segment**, 35 mm, 126°
26	99-0984/27	**Trial XXL neck segment**, 65 mm, 126° with suture hole
27	99-0984/29	**Trial XXL neck segment**, 35 mm, 126° with suture hole
28	131-398/10	**Trial proximal spacer**, 10 mm
29	131-398/20	**Trial proximal spacer**, 20 mm
30	317-661	**Threaded rod with slap hammer**

134-030/00 Instrument Tray 3, tapered reamers 160-250 mm



	Item no.	Description
1	134-031/00	**Instrument tray 3**, empty
2	134-600/00	**Tapered reamer, Ø 12 mm**, for stem size 250 mm
3	134-600/01	**Tapered reamer, Ø 14 mm**, for stem size 250 mm
4	134-600/02	**Tapered reamer, Ø 16 mm**, for stem size 250 mm
5	134-600/03	**Tapered reamer, Ø 18 mm**, for stem size 250 mm
6	134-600/04	**Tapered reamer, Ø 20 mm**, for stem size 250 mm
7	134-600/05	**Tapered reamer, Ø 22.5 mm**, for stem size 250 mm
8	134-600/06	**Tapered reamer, Ø 25 mm**, for stem size 250 mm
9	134-500/00	**Tapered reamer, Ø 12 mm**, for stem size 160-210 mm
10	134-500/01	**Tapered reamer, Ø 14 mm**, for stem size 160-210 mm
11	134-500/02	**Tapered reamer, Ø 16 mm**, for stem size 160-210 mm
12	134-500/03	**Tapered reamer, Ø 18 mm**, for stem size 160-210 mm
13	134-500/04	**Tapered reamer, Ø 20 mm**, for stem size 160-210 mm
14	134-500/05	**Tapered reamer, Ø 22.5 mm**, for stem size 160-210 mm
15	134-500/06	**Tapered reamer, Ø 25 mm**, for stem size 160-210 mm

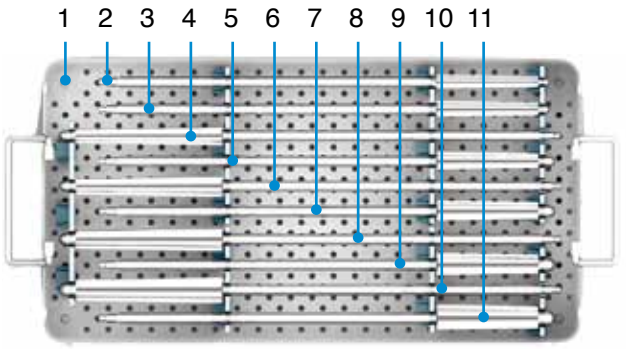
134-040/00 Instrument Tray 4, tapered reamers 290-330 mm



	Item no.	Description
1	134-041/00	**Instrument tray 4**, empty
2	134-800/00	**Tapered reamer, Ø 12 mm**, for stem size 330 mm
3	134-800/01	**Tapered reamer, Ø 14 mm**, for stem size 330 mm
4	134-800/02	**Tapered reamer, Ø 16 mm**, for stem size 330 mm
5	134-800/03	**Tapered reamer, Ø 18 mm**, for stem size 330 mm
6	134-800/04	**Tapered reamer, Ø 20 mm**, for stem size 330 mm
7	134-800/05	**Tapered reamer, Ø 22.5 mm**, for stem size 330 mm
8	134-800/06	**Tapered reamer, Ø 25 mm**, for stem size 330 mm
9	134-700/00	**Tapered reamer, Ø 12 mm**, for stem size 290 mm
10	134-700/01	**Tapered reamer, Ø 14 mm**, for stem size 290 mm
11	134-700/02	**Tapered reamer, Ø 16 mm**, for stem size 290 mm
12	134-700/03	**Tapered reamer, Ø 18 mm**, for stem size 290 mm
13	134-700/04	**Tapered reamer, Ø 20 mm**, for stem size 290 mm
14	134-700/05	**Tapered reamer, Ø 22.5 mm**, for stem size 290 mm
15	134-700/06	**Tapered reamer, Ø 25 mm**, for stem size 290 mm

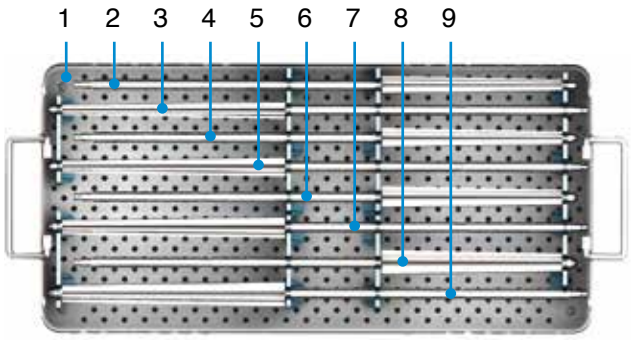
Additional Instrument Set, tapered reamers 5 and 6, uneven

134-050/00 Instrument tray 5
Tapered reamers, uneven
160-250 m



	Item no.	Description
1	134-051/00	**Instrument tray 5**, empty
2	134-500/07	**Tapered reamer, Ø 13 mm** for stem size 160 mm-210 mm
3	134-500/08	**Tapered reamer, Ø 15 mm** for stem size 160 mm-210 mm
5	134-500/09	**Tapered reamer, Ø 17 mm** for stem size 160 mm-210 mm
7	134-500/10	**Tapered reamer, Ø 19 mm** for stem size 160 mm-210 mm
9	134-500/11	**Tapered reamer, Ø 21 mm** for stem size 160 mm-210 mm
11	134-500/12	**Tapered reamer, Ø 24 mm** for stem size 160 mm-210 mm
4	134-600/09	**Tapered reamer, Ø 17 mm** for stem size 250 mm
6	134-600/10	**Tapered reamer, Ø 19 mm** for stem size 250 mm
8	134-600/11	**Tapered reamer, Ø 21 mm** for stem size 250 mm
10	134-600/12	**Tapered reamer, Ø 24 mm** for stem size 250 mm

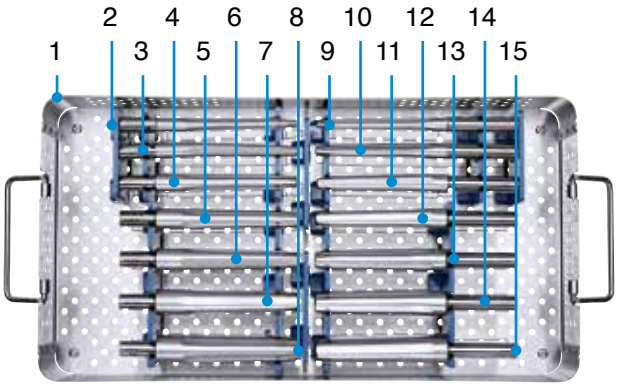
134-060/00 Instrument tray 6
Tapered reamers, uneven
290-330 mm



	Item no.	Description
1	134-061/00	**Instrument tray 6**, empty
2	134-700/09	**Tapered reamer, Ø 17 mm** for stem size 290 mm
4	134-700/10	**Tapered reamer, Ø 19 mm** for stem size 290 mm
6	134-700/11	**Tapered reamer, Ø 21 mm** for stem size 290 mm
8	134-700/12	**Tapered reamer, Ø 24 mm** for stem size 290 mm
3	134-800/09	**Tapered reamer, Ø 17 mm** for stem size 330 mm
5	134-800/10	**Tapered reamer, Ø 19 mm** for stem size 330 mm
7	134-800/11	**Tapered reamer, Ø 21 mm** for stem size 330 mm
9	134-800/12	**Tapered reamer, Ø 24 mm** for stem size 330 mm

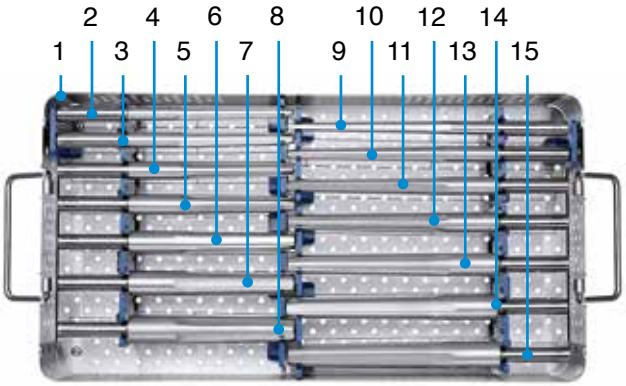
Additional Instrument Sets

134-070/00 Instrument Tray 7, trial stems 160-180 mm



	Item no.	Description
1	134-071/00	**Instrument tray 7**, empty
2	134-900/12	**Trial stem, Ø 12 mm**, 160 mm
3	134-900/14	**Trial stem, Ø 14 mm**, 160 mm
4	134-900/16	**Trial stem, Ø 16 mm**, 160 mm
5	134-900/18	**Trial stem, Ø 18 mm**, 160 mm
6	134-900/20	**Trial stem, Ø 20 mm**, 160 mm
7	134-900/22	**Trial stem, Ø 22.5 mm**, 160 mm
8	134-900/25	**Trial stem, Ø 25 mm**, 160 mm
9	99-0155/12	**Trial stem, Ø 12 mm**, 180 mm
10	99-0155/14	**Trial stem, Ø 14 mm**, 180 mm
11	99-0155/16	**Trial stem, Ø 16 mm**, 180 mm
12	99-0155/18	**Trial stem, Ø 18 mm**, 180 mm
13	99-0155/20	**Trial stem, Ø 20 mm**, 180 mm
14	99-0155/22	**Trial stem, Ø 22.5 mm**, 180 mm
15	99-0155/25	**Trial stem, Ø 25 mm**, 180 mm

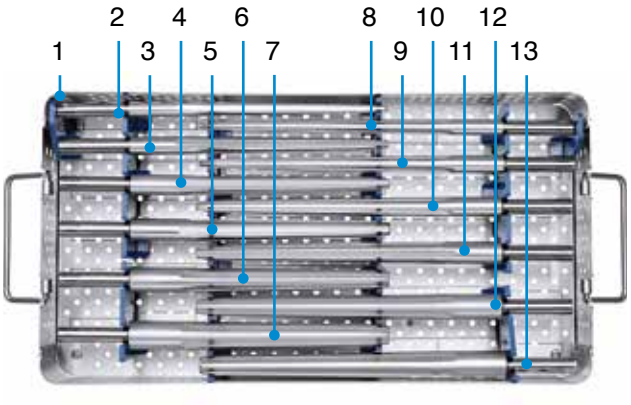
134-080/00 Instrument Tray 8, trial stems 210-250 mm



	Item no.	Description
1	134-081/00	**Instrument tray 8**, empty
2	99-0142/12	**Trial stem, Ø 12 mm**, 210 mm
3	99-0142/14	**Trial stem, Ø 14 mm**, 210 mm
4	99-0142/16	**Trial stem, Ø 16 mm**, 210 mm
5	99-0142/18	**Trial stem, Ø 18 mm**, 210 mm
6	99-0142/20	**Trial stem, Ø 20 mm**, 210 mm
7	99-0142/22	**Trial stem, Ø 22.5 mm**, 210 mm
8	99-0142/25	**Trial stem, Ø 25 mm**, 210 mm
9	99-0143/12	**Trial stem, Ø 12 mm**, 250 mm
10	99-0143/14	**Trial stem, Ø 14 mm**, 250 mm
11	99-0143/16	**Trial stem, Ø 16 mm**, 250 mm
12	99-0143/18	**Trial stem, Ø 18 mm**, 250 mm
13	99-0143/20	**Trial stem, Ø 20 mm**, 250 mm
14	99-0143/22	**Trial stem, Ø 22.5 mm**, 250 mm
15	99-0143/25	**Trial stem, Ø 25 mm**, 250 mm

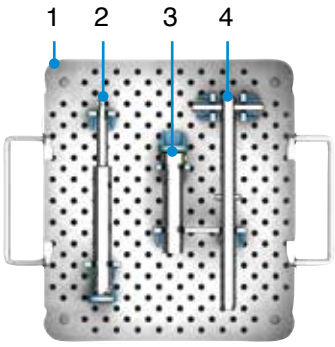
Additional Instrument Set, cemented

134-090/00 Instrument Tray 9, trial stems 290-330 mm



	Item no.	Description
1	134-091/00	**Instrument tray 9**, empty
2	99-0144/14	**Trial stem, Ø 14 mm**, 290 mm
3	99-0144/16	**Trial stem, Ø 16 mm**, 290 mm
4	99-0144/18	**Trial stem, Ø 18 mm**, 290 mm
5	99-0144/20	**Trial stem, Ø 20 mm**, 290 mm
6	99-0144/22	**Trial stem, Ø 22.5 mm**, 290 mm
7	99-0144/25	**Trial stem, Ø 25 mm**, 290 mm
8	99-0145/14	**Trial stem, Ø 14 mm**, 330 mm
9	99-0145/16	**Trial stem, Ø 16 mm**, 330 mm
10	99-0145/18	**Trial stem, Ø 18 mm**, 330 mm
11	99-0145/20	**Trial stem, Ø 20 mm**, 330 mm
12	99-0145/22	**Trial stem, Ø 22.5 mm**, 330 mm
13	99-0145/25	**Trial stem, Ø 25 mm**, 330 mm

134-110/00 Instrument Tray 10



	Item no.	Description
1	134-111/00	**Instrument tray 10**, empty
2	134-211/00	**Hollow reamer**, Ø 19 mm
3	134-213/00	**Insertion sleeve**
4	134-214/00	**Extractor**

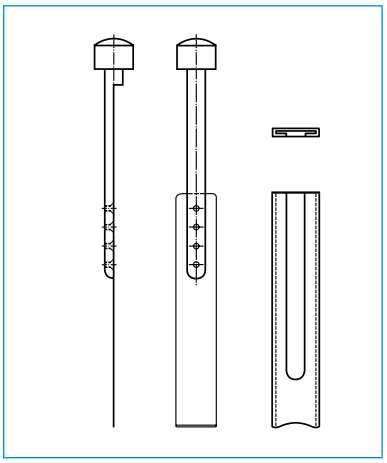
134-212/00 Insertion sleeve, UHMWPE

Accessories

Additional Instruments
(not included in instrument set)

Blade Chisel with Sheath, 250 mm

Item no.	Width mm	Working length mm
65-1700/20	20	65
65-1700/25	25	65



X-ray Templates

X-ray Templates for MP® reconstruction prosthesis
110% natural size, taper 12/14 mm, set of 7 plates

(X-ray templates 120% natural size available on request)

Item no.	CCD angle	Head-Ø mm	Neck length	for stem length mm	Set
175-870/02	126°	32	Short (S)	160	7 plates
175-870/05	135°	32	Short (S)	160	7 plates
175-870/08	126°	32	Medium (M)	180	7 plates
175-870/11	135°	32	Medium (M)	180	7 plates
175-870/14	126°	32	Long (L)	210-330	7 plates
175-870/17	135°	32	Long (L)	210-330	7 plates

Cleaning and Care Instructions

Corresponding instructions for the instrument sets are available from customer@linkhh.de on request.

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Minimum 5-Year Follow-Up of a Cementless, Modular, Tapered Stem in Hip Revision Arthroplasty
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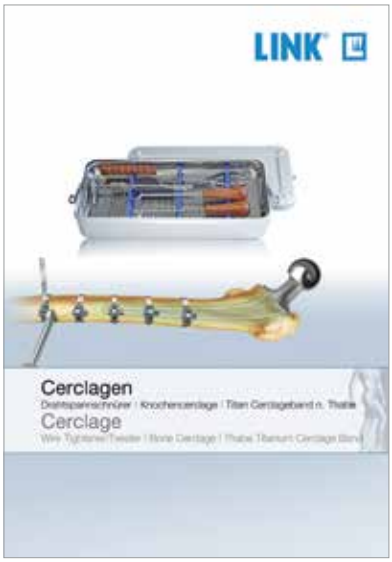
909_MEGASYSTEM-C_Impl-Instr_en

909_MEGASYSTEM-C_OP_en



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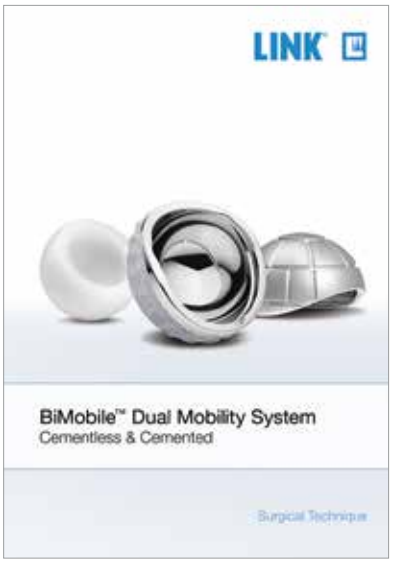

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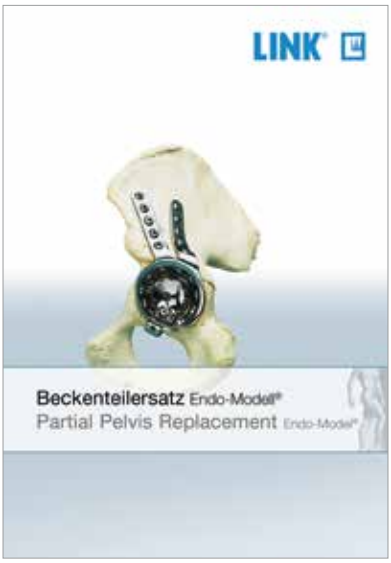

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688_MobileLink_Impl-Instr-OP_en

For more information please register for our LINK Media Library (linkorthopaedics.com)

Indications/Contraindications	Products: MP® Reconstruction System	Products: MEGASYSTEM-C®
General indications		
Mobility-limiting diseases, fractures or defects of the hip joint and the proximal femur which cannot be treated by conservative or osteosynthetic procedures.	X	
Mobility-limiting diseases, fractures or defects of the hip joint, the proximal and distal femur through the proximal tibia (only in combination with Endo-Model® rotational and hinge knee SL or modular) which cannot be treated by conservative or osteosynthetic procedures.		X
Indications		
Revision arthroplasty due to juxta-articular bone defects	X	X
Revision of loosened femoral prosthesis components involving extensive bone resorption of the proximal femur and widening of the medullary cavity or marked thinning of proximal femoral cortical bone	X	X
Revision of loosened femoral prosthesis components with periprosthetic/subprosthetic fracture	X	X
Deformed proximal femur due to fractures or osteotomies	X	X
Correction of bone deficiencies, e.g. due to tumors	X	X
Large post-revision and post-trauma segmental bone defects	X	X
Oncological and revision surgery from tibial to hip area (in conjunction with Endo-Model® SL Rotational and Hinge Knee Prostheses)		X
Contraindications		
Acute or chronic infections, local and systemic	X	X
Allergies to (implant) materials	X	X
Revision in septic environment	X	X
For preparation of the prosthesis bearing insufficient length of intact diaphysis (less than 80 mm)	X	X
Distinctive muscular, nerve, vascular or other diseases which put the affected limb at risk.	X	X
Insufficient bone integrity which prevents a stable anchorage of the prosthesis.	X	X
Relative contraindications		
Adiposity	X	X
Lacking or foreseeable not assured compliance	X	X
Foreseeable overload/overstressing of joint prosthesis	X	X

The above indications and contraindications are based on standard cases. The final decision regarding an implant must be made by the surgeon for each patient on the basis of the surgeon's individual analysis and experience.

Important Information

Please note the following regarding the use of our implants:

1. **Choosing the right implant is very important.**
   The size and shape of the human bone determine the size and shape of the implant and also limit the load capacity. Implants are not designed to withstand unlimited physical stresses.
   Demands should not exceed normal functional loads.

2. **Correct handling of the implant is very important.**
   Under no circumstances should the shape of a finished implant be altered, as this shortens its lifespan. Our implants must not be combined with implants from other manufacturers.

   The instruments indicated in the Surgical Technique must be used to ensure safe implantation of the components.

3. **Implants must not be reused.**
   Implants are supplied sterile and are intended for single use only. Used implants must not be reused.

4. **After-treatment is also very important.**
   The patient must be informed of the limitations of the implant's strength, which cannot be compared with that of healthy bone!

5. **Unless otherwise indicated, the implants are supplied in sterile packaging.**
   Note the following conditions for storage of packaged implants:

- Avoid extreme or sudden changes in temperature.
- Sterile implants in their original, intact protective packaging may be stored up until the expiration date indicated on the packaging.
- Store implants in a permanent building.
- Protect against frost, dampness, direct sunlight and mechanical damage.
- Implants may be stored in their original packaging for up to 5 years from the date of manufacture. The expiration date is indicated on the product label.
- Do not use an implant if the packaging is damaged.

6. **Traceability is important.**
   Please use the documentation stickers provided to ensure traceability.

7. **Further information** on the material composition is available on request from the manufacturer.

   Follow the instructions for use!

Waldemar Link GmbH & Co. KG, Hamburg, Germany

The Surgical Technique described has been written to the best of our knowledge and belief, but it does not relieve the surgeon of responsibility to duly consider the particularities of each individual case.

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