LINK®

Dysplasia Prosthesis Stems

LINK®

Presented by:

CE 0123

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Contents

LINK® Dysplasia Prosthesis Stems

System Description

The dysplasia stem is a straight, slender stem for use in cases with a history of hip dysplasia. The bilateral longitudinal grooves increase the surface area and ensure enhanced rotational stability in the cement.

LINK® Dysplasia prostheses are made from cobalt-chromium alloy (CoCrMo).

LINK® Dysplasia prostheses possess the following features:

- **four** stem thicknesses
- **12/14 taper**
- collar ensures **physiological transfer of forces** to the femur
- **bone resection is minimal** thanks to special rasp stems designed for use with LINK® Dysplasia prostheses
- specially adapted instruments allow an **even cement coating**

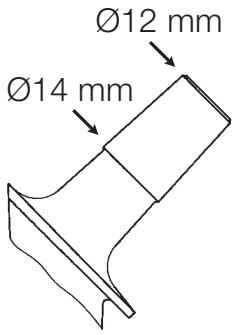
Indications/Contraindications

Note:
See page 29 for specific indications/contraindications.

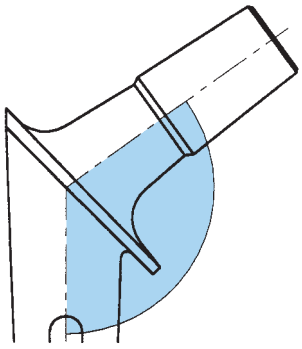
LINK® Dysplasia Prosthesis Stems

Material: CoCrMo

Taper



CCD ∢ 126°



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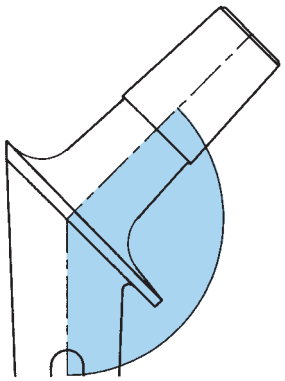
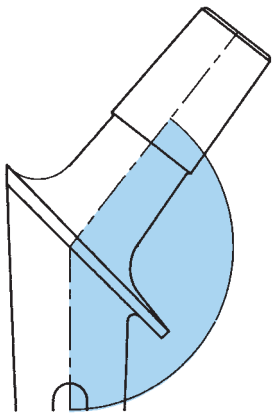


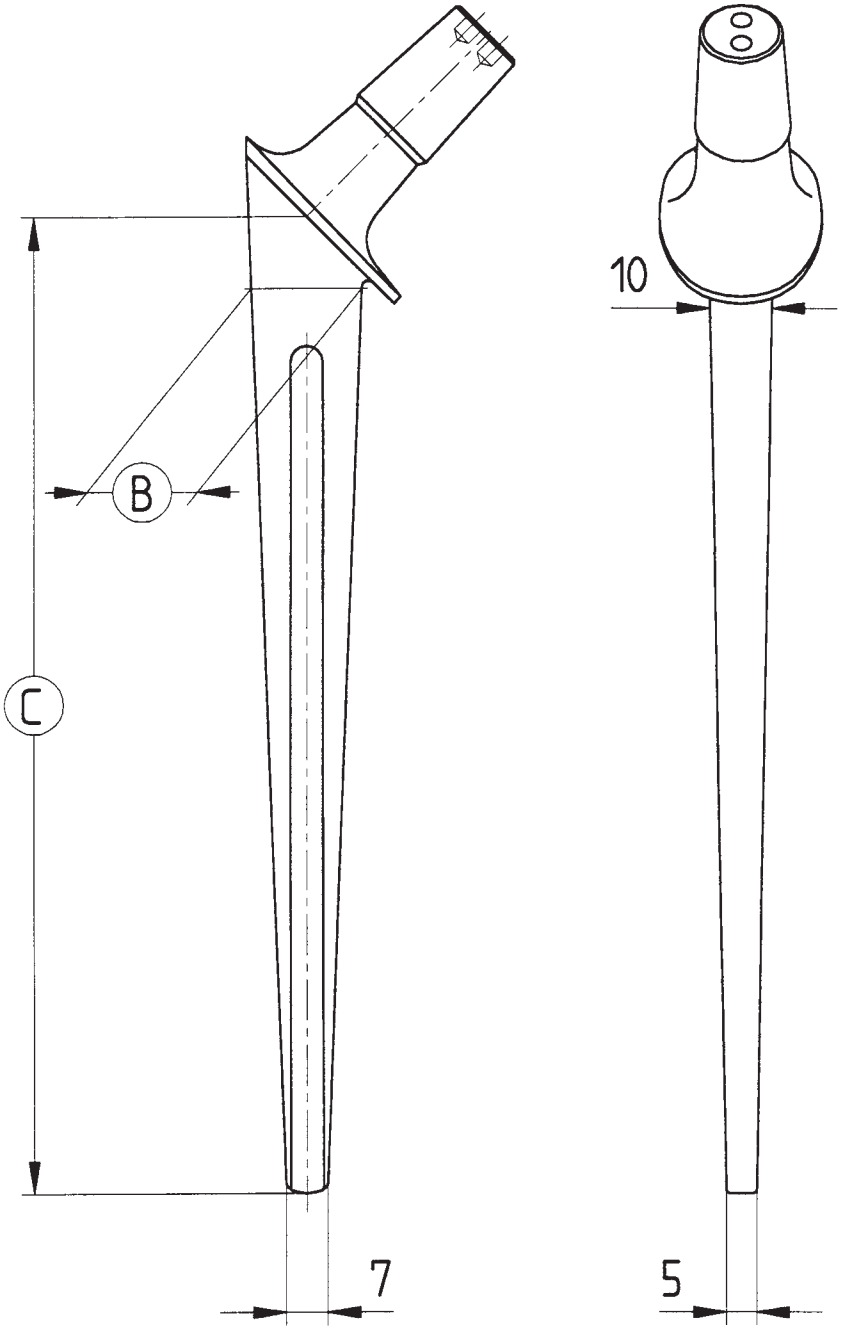
CCD ∢ 142°



LINK® Dysplasia Prosthesis Stems

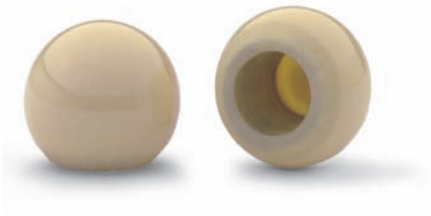
Material: CoCrMo

CCD ∢ 126°	CCD ∢ 135°	CCD ∢ 142°	Measurements			
Item no.	Item no.	Item no.	Stem size		Ⓒ mm	Ⓑ mm
124-401/26	124-401/35	124-401/42	1	extra large	150	17
124-402/26	124-402/35	124-402/42	2	large	150	16
124-403/26	124-403/35	124-403/42	3	medium	150	15
124-404/26	124-404/35	124-404/42	4	narrow	150	14



Prosthesis Heads

Prosthesis heads A - Ceramic
Material: BIOLOX® forte*



Item no.	Head Ø mm	Taper mm	Neck length (mm)
128-928/01	28	12/14	short (-3.5)
128-928/02	28	12/14	medium (0)
128-928/03	28	12/14	long (+3.5)
128-932/01	32	12/14	short (-4)
128-932/02	32	12/14	medium (0)
128-932/03	32	12/14	long (+4)
128-936/01	36	12/14	short (-4)
128-936/02	36	12/14	mittel (0)
128-936/03	36	12/14	lang (+4)

Prosthesis heads A - Ceramic
Material: BIOLOX® delta*

All BIOLOX® forte* and BIOLOX® delta* components are intercompatible.

Item no.	Head Ø mm	Taper mm	Neck length (mm)
128-791/01	28	12/14	kurz (-3.5)
128-791/02	28	12/14	medium (0)
128-791/03	28	12/14	long (+3.5)
128-792/01	32	12/14	short (-4)
128-792/02	32	12/14	medium (0)
128-792/03	32	12/14	long (+4)
128-792/04**	32	12/14	extra long (+7)
128-793/01	36	12/14	short (-4)
128-793/02	36	12/14	medium (0)
128-793/03	36	12/14	long (+4)
128-793/04**	36	12/14	extra long (+8)

* BIOLOX® delta and BIOLOX® forte are made by Ceramtec GmbH, Plochingen, Germany

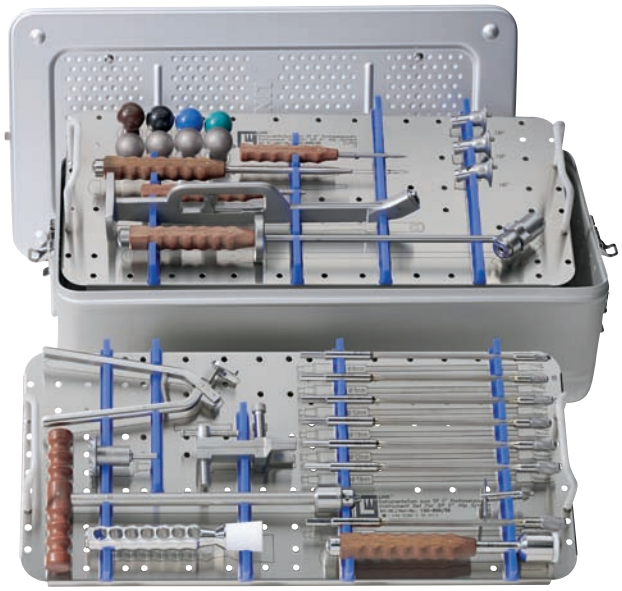
Prosthesis heads B
Material: CoCrMo alloy

Item no.	Head Ø mm	Taper mm	Neck length (mm)
128-826/01	26	12/14	short (-3.5)
128-826/02	26	12/14	medium (0)
128-826/03	26	12/14	long (+3.5)
128-828/01	28	12/14	short (-3.5)
128-828/02	28	12/14	medium (0)
128-828/03	28	12/14	long (+3.5)
128-828/04**	28	12/14	extra long (+10.5)
128-832/01	32	12/14	short (-4)
128-832/02	32	12/14	medium (0)
128-832/03	32	12/14	long (+4)
128-832/04**	32	12/14	extra long (+8.5)
128-836/01	36	12/14	short (-4)
128-836/02	36	12/14	medium (0)
128-836/03	36	12/14	long (+4)
128-836/04**	36	12/14	extra long (+8)

** on request

Instrument Set for LINK® Dysplasia Prosthesis Stems

Container 1



Container 2

Instrument set for LINK® Dysplasia Prosthesis Stems in 2 containers on 3 trays with product illustrations and storage inserts. The content of the instrument sets depends on the choice of stem length and head diameter.

Item no.	Instrument set, complete, container
130-940/01	Instrument set, complete, stem 150 mm, head Ø 28 mm
130-940/02	Instrument set, complete, stem 150 mm, head Ø 32 mm

Item no.	Container, separate, complete
130-940/03	Container 2, complete, stem 150 mm
130-940/13	Container 1, complete, head Ø 28 mm
130-940/14	Container 1, complete, head Ø 32 mm

Optional fitting: Jacobs Chuck A, Hudson B, Harris C, AO or D
(How to order: 130-940/01B = with Hudson fitting)

Container 1

consisting of: Qty.

05-2003/03 N31 Standard container
575 x 275 x 170 mm
with aluminum lid and closed aluminum base,
including set of 5 disposable filters
and 10 disposable seals 1

130-899/53 Lower tray only
perforated stainless steel, 550 x 265 x 50 mm 1

130-899/59 Upper tray only
perforated stainless steel, 550 x 265 x 50 mm 1

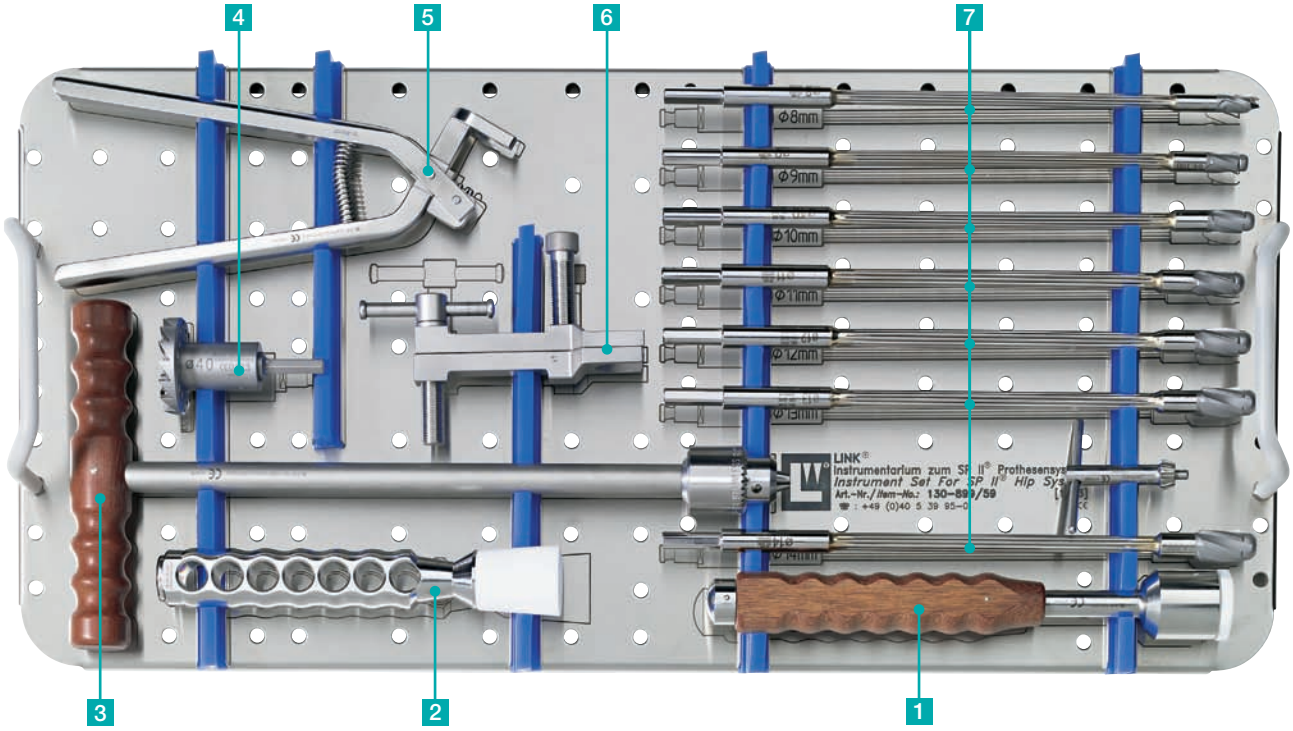
Container 2

consisting of: Qty.

05-1001/03 H11 Semi-container
275 x 275 x 100 mm 1

130-940/04 Tray only
perforated stainless steel, 265 x 265 x 50 mm 1

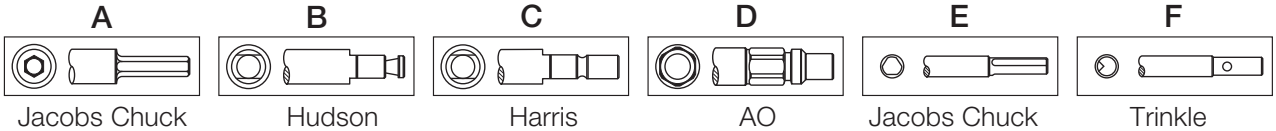
130-899/59 Upper tray only, Container 1



1	131-597	**Impactor** with replaceable plastic insert, 220 mm (**131-598** Replacement plastic insert)	
2	130-600	**Driver for prosthesis heads** with exchangeable plastic tip, 170 mm	
3	130-408/05	**Handle** for calcar reamer, 300 mm Optional fitting: Jacobs Chuck **A**, Hudson **B**, Harris **C**, AO **D** (How to order: **130-408/05B** = with Hudson fitting	
4	130-406/01 175-606/01*	**Calcar reamer** to plane resection surface, Ø 40 mm *Calcar reamer, Ø 46 mm Optional fitting: Jacobs Chuck **A**, Hudson **B**, Harris **C**, AO **D** (How to order: **130-406/01D** = with AO fitting)	
5	131-830/01	**Inserting forceps** for modular stems, 200 mm	
6	130-959	**Disassembly instrument** for pushing tightly fixed heads off the stem taper	
7		**Femoral reamers**, flexible for medullary canal opening, 250 mm Optional fitting: Hudson **B**, Harris **C**, AO **D**, Jacobs Chuck **E**, Trinkle **F** (How to order: **130-408/05B** = with Hudson fitting)	
	130-360	Ø 8 mm	front cutting
	130-368	Ø 9 mm	side cutting
	130-361	Ø 10 mm	side cutting
	130-362	Ø 11 mm	side cutting
	130-363	Ø 12 mm	side cutting
	130-364	Ø 13 mm	side cutting
	130-365	Ø 14 mm	side cutting
	130-367*	Ø 16 mm	side cutting

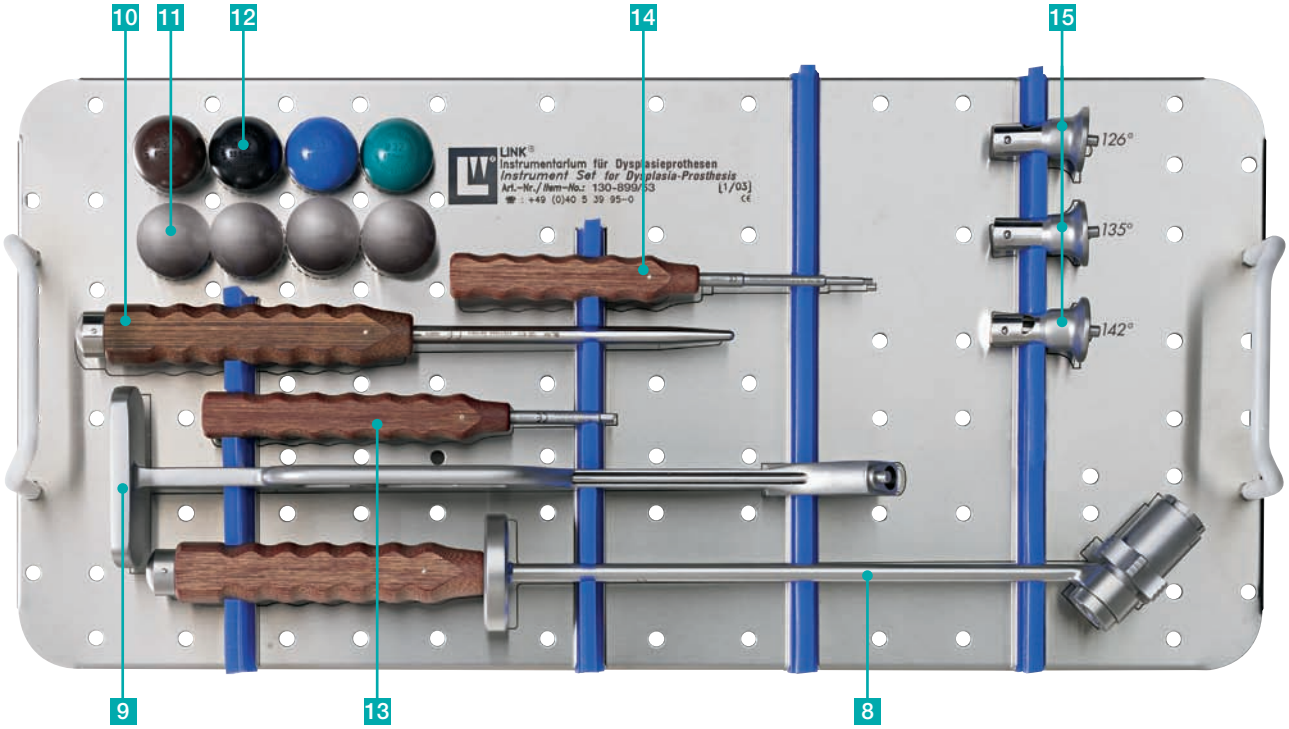
*not included in instrument set

Fittings:



Instruments

130-899/53 Lower tray only, Container 1



8	130-608/01	**Stem extractor** for prosthesis stems with narrow neck, 450 mm
9	130-393/60	Quick coupling **handle** for attachment to broaches, 330 mm
10	130-611	**Impactor**, 280 mm
11		**Grey trial heads** to fit neck sections, with guide pin
12		**Colored plastic trial heads**, taper 12/14 mm
13	130-609	**Hex screwdriver** for stem extractor, size 4 mm, 175 mm
14	10-5373	**Hex screwdriver**, size 2.5 mm, for handle 130-393/60, 180 mm
15		**Neck sections** with pin and snap-fit
	131-522/26	CCD∢126° straight
	131-522/35	CCD∢135° straight
	131-522/42	CCD∢142° straight

11 Grey trial heads
(for further information see next page)

12 Colored plastic trial heads
(for further information see next page)

* not included in instrument set
**on request

Grey Trial Heads for taper

11 Grey trial heads for rasp stems

Item no.	Head Ø	Neck length	Head-neck length mm	Qty
131-826/01*	26	short	-3.5	1
131-826/02*	26	medium	0	1
131-826/03*	26	long	+3.5	1
131-828/01	28	short	-3.5	1
131-828/02	28	medium	0	1
131-828/03	28	long	+3.5	1
131-828/04**	28	extra long	+10.5	1
131-832/01	32	short	-4	1
131-832/02	32	medium	0	1
131-832/03	32	long	+4	1
131-832/04**	32	extra long	+8.5	1
131-836/01*	36	short	-4	1
131-836/02*	36	medium	0	1
131-836/03*	36	long	+4	1
131-936/04**	36	extra long	+8	1

Colored Plastic Trial Heads

12 Colored plastic trial heads, taper 12/14 mm

Item no.	Head Ø	Neck length	Head-neck length mm	Colour	Qty
131-926/01*	26	short	-3.5	green	1
131-926/02*	26	medium	0	blue	1
131-926/03*	26	long	+3.5	black	1
131-928/01	28	short	-3.5	green	1
131-928/02	28	medium	0	blue	1
131-928/03	28	long	+3.5	black	1
131-928/04**	28	extra long	+10.5	brown	1
131-932/01	32	short	-4	green	1
131-932/02	32	medium	0	blue	1
131-932/03	32	long	+4	black	1
131-932/04**	32	extra long	+8.5	brown	1
131-936/01*	36	short	-4	green	1
131-936/02*	36	medium	0	blue	1
131-936/03*	36	long	+4	black	1
131-936/04**	36	extra long	+8	brown	1

* not included in instrument set, optional

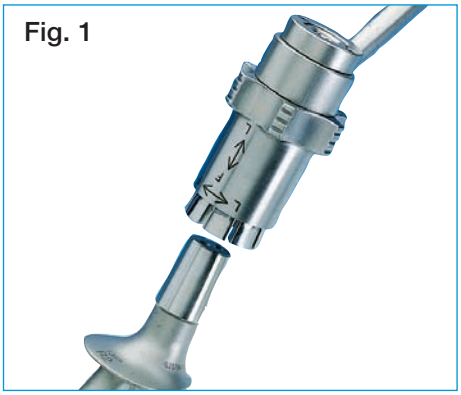
** only on request

Description of Instruments

130-608/01 Stem extractor, Description

To connect the instrument to a prosthesis stem, the front jaws must first be opened by turning the threaded ring on the head of the extractor to the left (towards “L”) (Fig.1).

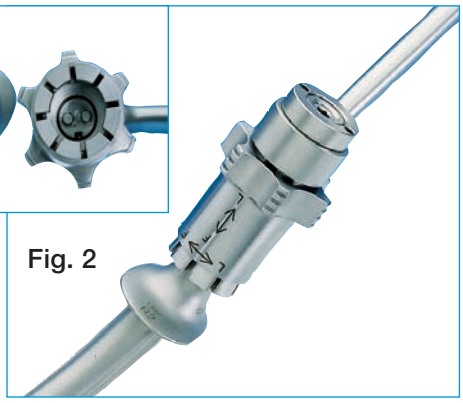
Fig. 1



Then the head of the extractor is slid over the taper of the prosthesis stem, until the two pins inside the extractor head engage in the corresponding frontal holes on the stem taper (Fig. 2a and 2).

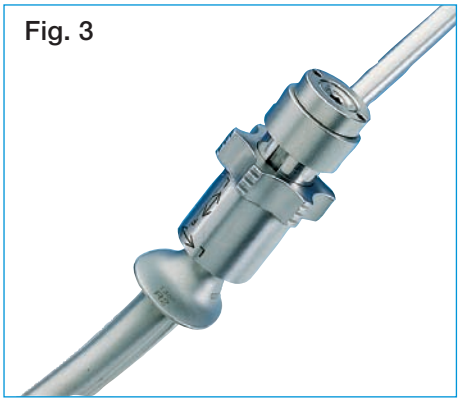
Fig. 2a

Fig. 2



The jaws of the instrument head are tightened by turning the threaded ring to the right (towards “F”). The instrument head is now attached to the stem taper (Fig. 3).

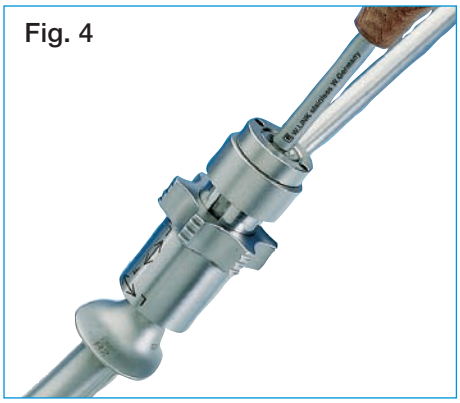
Fig. 3



To secure the connection between the extractor and stem, the hex screw at the upper end of the extractor head is tightened using the hex screwdriver **130-609** in a clockwise direction (Fig. 4).

To undo the extractor, the steps should be followed in reverse order.

Fig. 4



130-393/60 Handle for Rasp Stems

Quick-coupling handle for attachment to rasp stems, with impact plate, 330 mm

10-5371 Hex keys for disassembly

To connect rasp and handle, the catch is retracted fully (arrow). Then, the rasp stem fitting is inserted into the mount on the front of the handle (Fig. 5).

Fig. 5

To secure the connection between rasp stem and handle, the catch is pushed forwards (arrow) (Fig. 6).

Fig. 6

Rasp stem with secured handle (Fig. 6a).

Fig. 6a

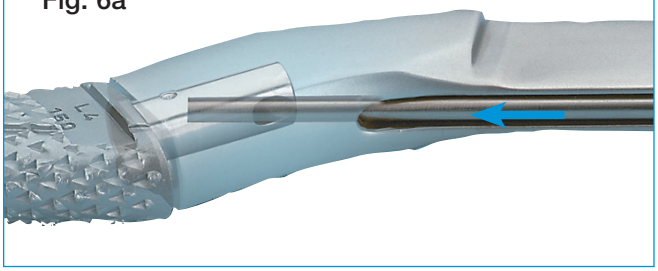
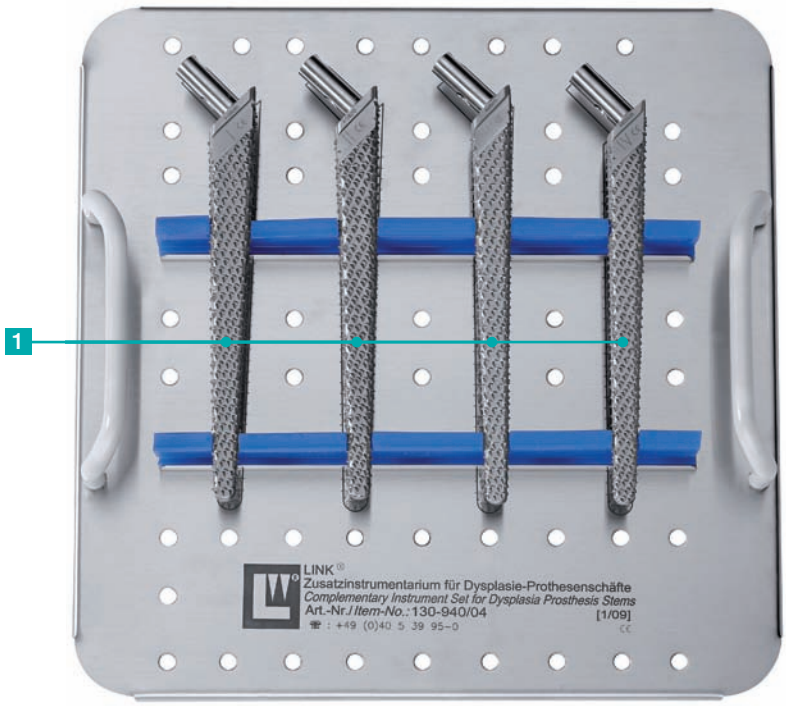


Fig. 7

To disengage the catch is pulled back fully (arrow) (Fig. 7). The handle can then be detached from the rasp stem.

Rasp Stems

130-940/04 Tray only, Container 2



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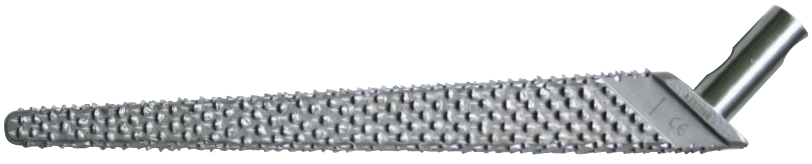
Rasp stems - straight, 150 mm
for Prosthesis stems made of CoCrMo

Item no.	Length	Stem size	
130-936/60	150 mm	1	extra large
130-937/60	150 mm	2	large
130-938/60	150 mm	3	medium
130-939/60	150 mm	4	narrow



Rasp stems with coupling mechanism

The rasp stems listed in the table are approximately equivalent in size to the corresponding prostheses.

To create a cement bed that is 2-3 mm thick on all sides, the rasp used should be one size larger than the stem.

Additional Instruments for Implantation of Hip Prostheses

(not included in SPII® instrument set)

130-393/15
Handle for rasp stems
right hip, angled

130-393/25
Handle for rasp stems
left hip, angled

The angled rasp handles are designed to aid femoral preparation during minimally invasive surgery via the frontal approach.

Hohmann retractor

Item no.	Version	Width	Length
130-100	small	10 mm	240 mm
130-105	medium	22 mm	260 mm
130-110	wide	43 mm	240 mm

Dederich bone retractor with hollow handle
The design makes the instrument comfortable to hold over an extended period.

Item no.	Version	Width	Length
15-1032	medium	18 mm	150 mm
15-1033	wide	43 mm	195 mm

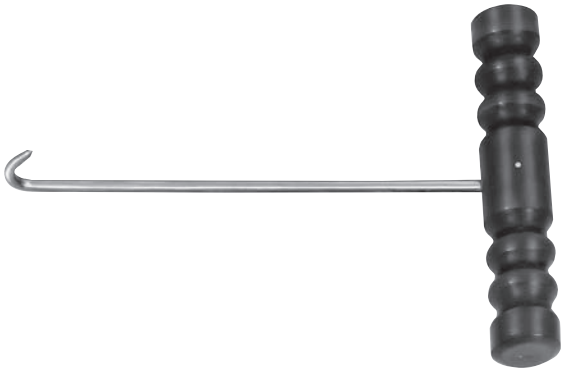
Instruments

Soft tissue retractors
with retrograde bend

Item no.	Version	Width	Length
66-3470	small	22 mm	325 mm
66-3472	wide	43 mm	325 mm

130-114
LINK® Bone retractor
with grip handle
30 mm wide, 260 mm

130-120
Bone hook
1 prong, with T-handle, 210 mm

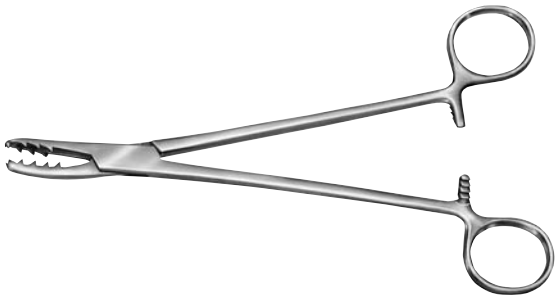


130-150
Femoral head extractor, 270 mm

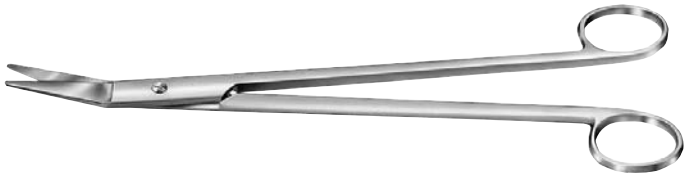
130-155
LINK® Femoral head grasping forceps
285 mm

The forceps have triangular jaws, each with three sharp spikes placed at the corners, at the ends of the arms. The jaws are movable and snugly fit the femoral head contours. The handle has supports for the surgeon's hand. The fold-in lock means the instrument can be used with or without the locking mechanism. It is robust, and copes well with heavy tasks.

68-1475
Birchner meniscus/Cartilage clamp
with teeth in jaws, 200 mm



130-139
Cartilage scissors
250 mm



50-2562
Cartilage scissors
straight, 220 mm

Instruments

50-2564
Cartilage scissors
curved, 220 mm

130-160
Lubinus Steinmann pin
with impact head and extraction hole
Ø 5 mm, 185 mm

For use as a self-retaining retractor one pin is driven into the ischium and another one is driven in approximately 2 cm above the cranial edge of the acetabulum.

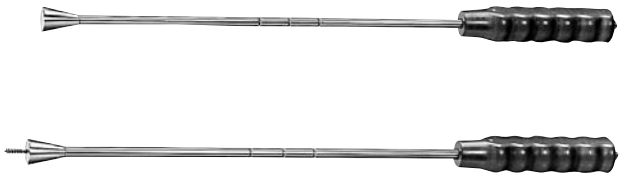
For removal, another pin is slid through the hole in the impact head and the Steinmann Pin is then easily unscrewed.

130-686 Slotted driver for handle (for rasp stems) and stem extractor, 270 mm

130-165 Mallet
Ø 30 mm, 270 mm, 600 g

130-610
Cement packer
Ø 10 mm, 300 mm

Bone plug packer to insert bone plugs into the medullary cavity, 400 mm



Item No.	Ø
Unthreaded	
131-200	8 mm
131-202	10 mm
131-204	12 mm
131-206	14 mm
131-208	16 mm
131-210	18 mm
Threaded	
131-220	8 mm
131-222	10 mm
131-224	12 mm
131-226	14 mm
131-228	16 mm
131-230	18 mm

Medullary Plugs

Item no.	Ø
109-130/12	12 mm
109-130/13	13 mm
109-130/14	14 mm
109-130/15	15 mm
109-130/16	16 mm
109-130/17	17 mm
109-130/18	18 mm
109-130/19	19 mm
109-130/20	20 mm

131-250/23
T-Handle for inserter 131-250/26

131-250/26 **Inserter**
for medullary plugs, graduated, 355 mm, includes 2 inserters

Preoperative Planning

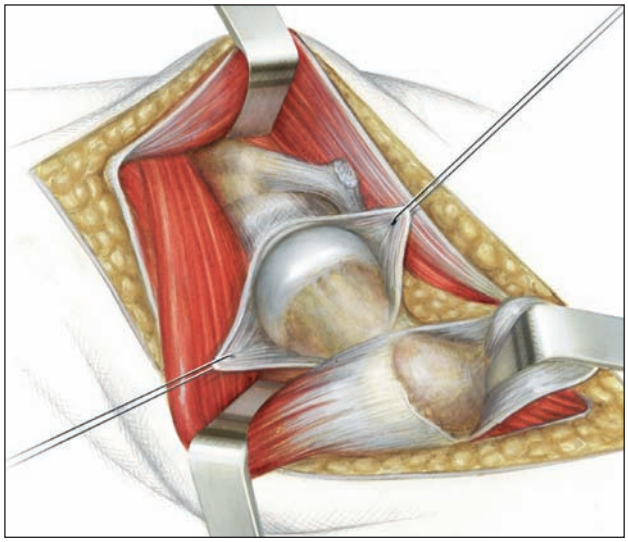
The aim in preoperative planning is to establish the approximate size of implant required and the optimal position in which to place it.

For the best possible results the appropriate implant should be selected using LINK® Dysplasia Prosthesis Stem X-ray templates, which are available at a scale of 1.1:1. When used in combination with recent pelvic X-rays (A/P and M/L views) these templates serve as a useful aid in planning operative procedure and determining implant size.

In planning the resection level, the centre of rotation must be considered along with leg length, which should remain intact as far as possible so that the original anatomy can be reconstructed.

The choice of implant should ensure that an appropriate thickness of the cement coating is achieved.

Surgical Approaches

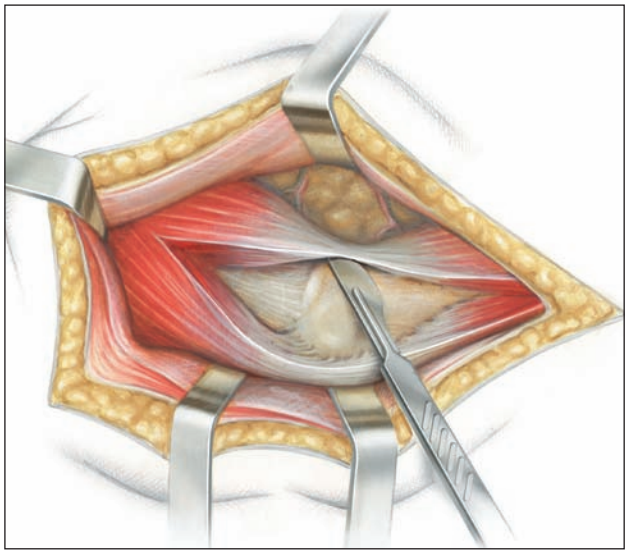


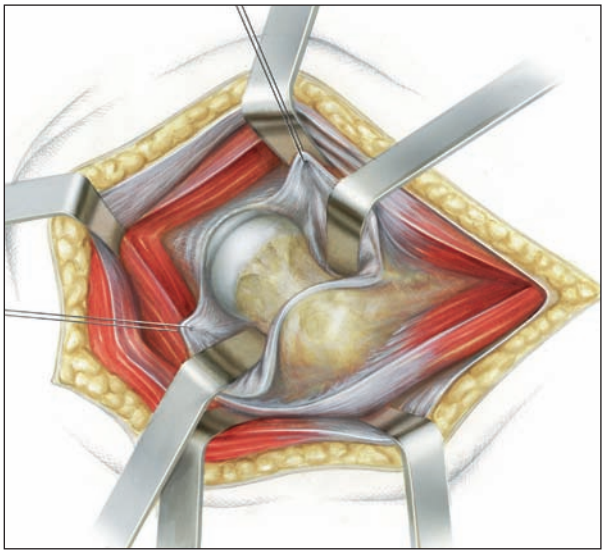
A: Watson Jones

The choice depends on the surgeon‘s experience and his/her decision based on the individual situation.

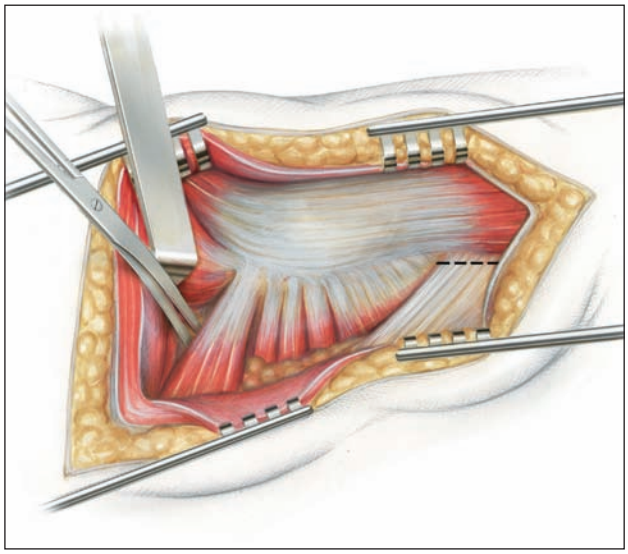
The following approaches are usual:

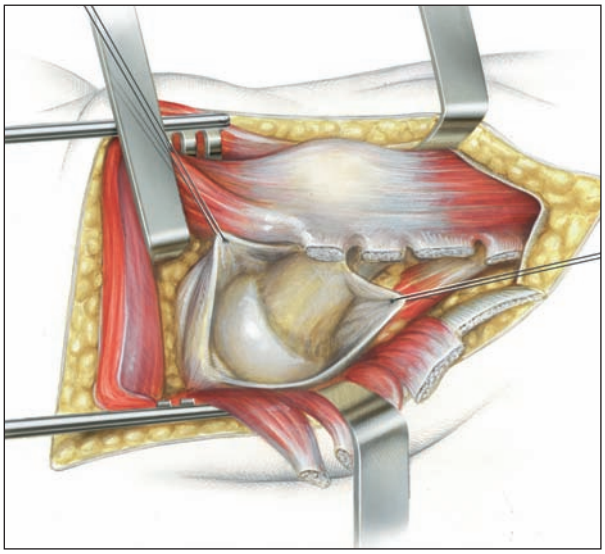
- antero-lateral **– Watson Jones** (A)
- direct lateral **– Hardinge** (B)
- postero-lateral **– Moore** (C)





B: Hardinge





C: Moore

Surgical Technique

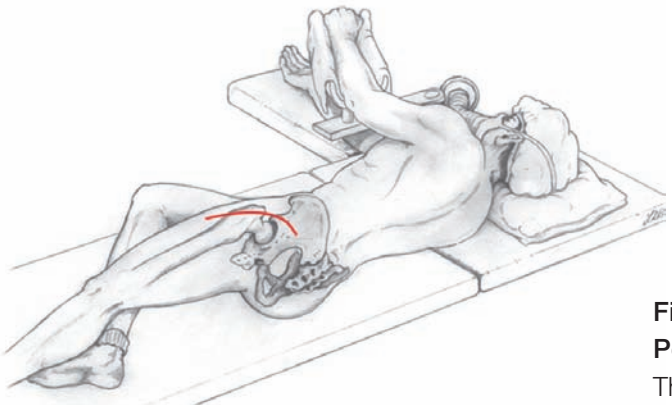
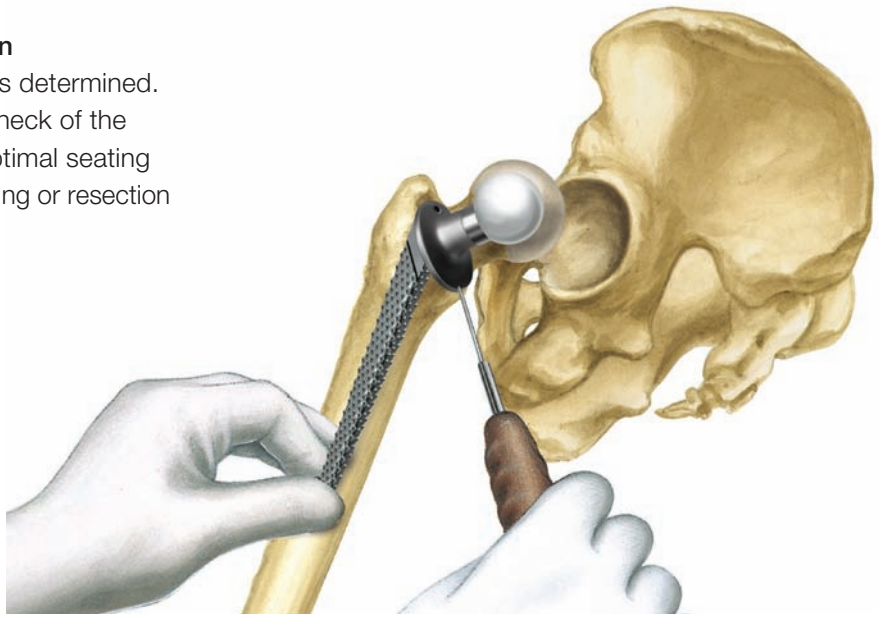


Fig. 8
Positioning of the Patient
The patient is placed on his/her side, in the dorso-lateral position. A different approach may be used depending on the surgeon's experience.

Fig. 9
Luxation of Femoral Head
The femoral head is luxated using internal rotation and 90° flexion of the femur.

Fig. 10
Level of Femoral Head Resection
The femoral neck resection plane is determined. It will be approximately 90° to the neck of the femur. Sparing resection allows optimal seating of the prosthesis as additional reaming or resection remains possible.



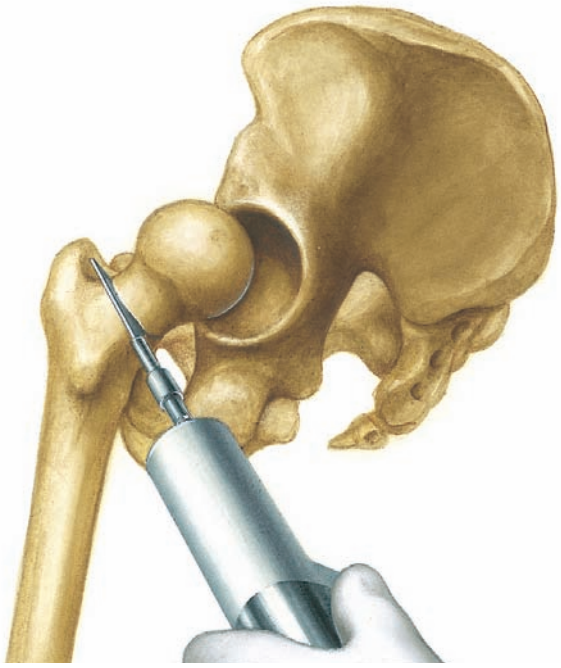


Fig. 11
Resection of Femoral Head
Resection of the femoral head according to preoperative planning.

Fig. 12
Exposure of the Acetabulum
The acetabulum is exposed after femoral head resection.

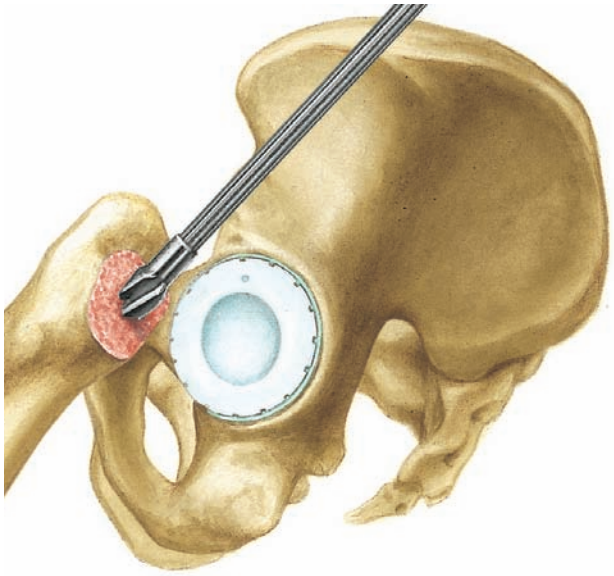
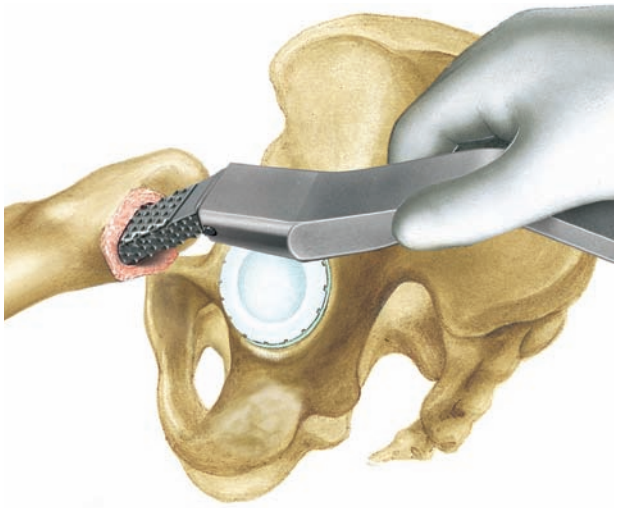


Fig. 13
The medullary canal is prepared for the prosthesis stem with flexible femoral reamers.
The smallest reamer is used first and the canal is drilled millimeter by millimeter until distal circular contact is made with the cortical bone.

Fig. 14
Driving in the rasp stem with the handle attached.
The smallest rasp stem (Item no. 130-939/60) is always used first. The implant bed may then be extended with successively larger rasp stems if required, as decided during preoperative planning. Attention should be paid to the order of the rasp stems when this process is carried out. The rasp stems are approximately equivalent to the corresponding prosthesis sizes. To create a cement bed about 2-3 mm thick on all sides the prosthesis stem should be one size smaller that the last rasp stem used (e.g. last rasp stem size Large = prosthesis stem size Medium).



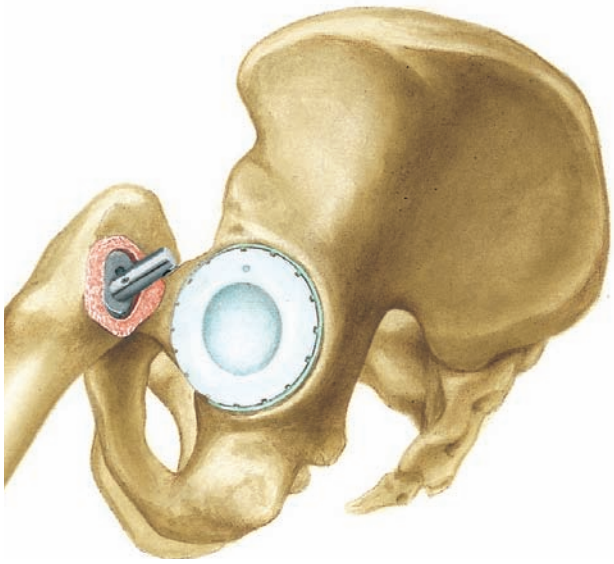


Fig. 15
Rasp Stem seated in the Femur
The rasp is then left in situ. The rasp stem sits slightly lower than the lowest point of the resection level.

Abb. 16
Fitting of Rasp Stem
A calcar reamer is used to prepare the resection zone above the rasp stud.

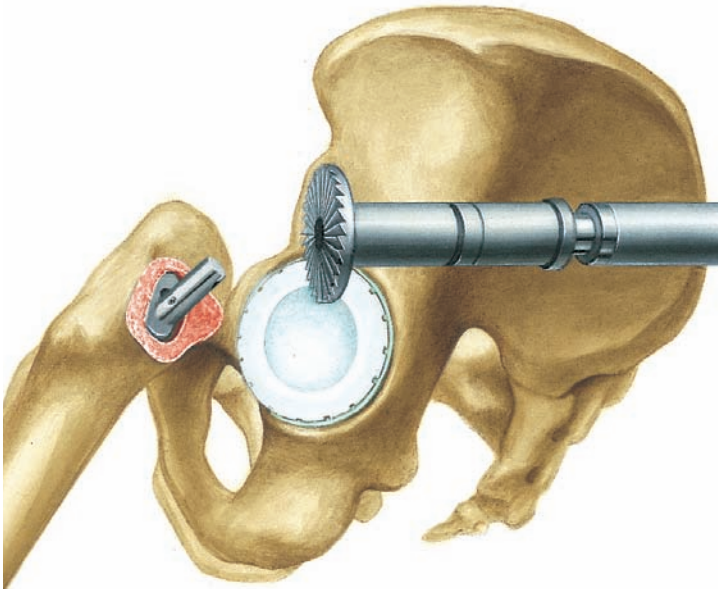
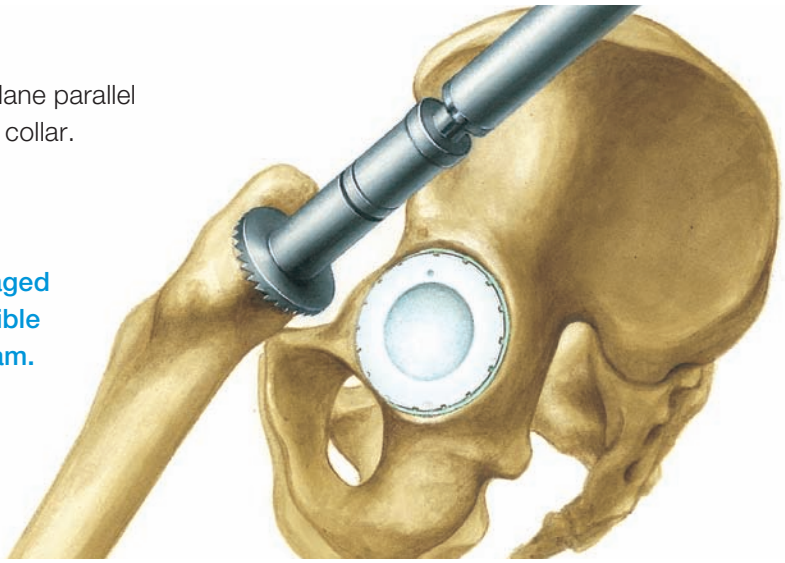


Abb. 17
Levelling of Surface
The calcar reamer is now used to create plane parallel seat on the proximal femur to allow for the collar.

Attention:
To prevent the reamer from being damaged it must always be pushed as far as possible onto the guide pin before starting to ream.



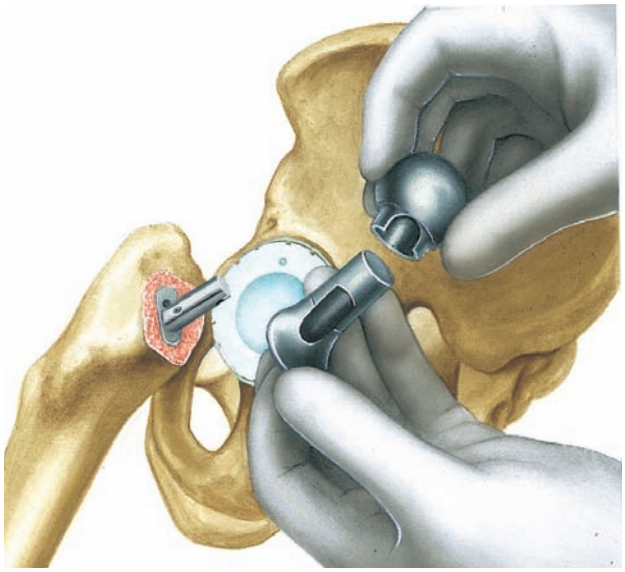


Abb. 18
Preparation of Trial Reduction
The rasp now serves as trial stem. A trial neck section is fitted on the rasp guide pin and, on top of that, a trial head.

Abb. 19
Trial Reduction
The trial reduction checks the stability and range of motion of the joint. If necessary the neck can be further resected using the calcar reamer. The optimal head-neck length can be determined by using trial heads with different head-neck lengths.

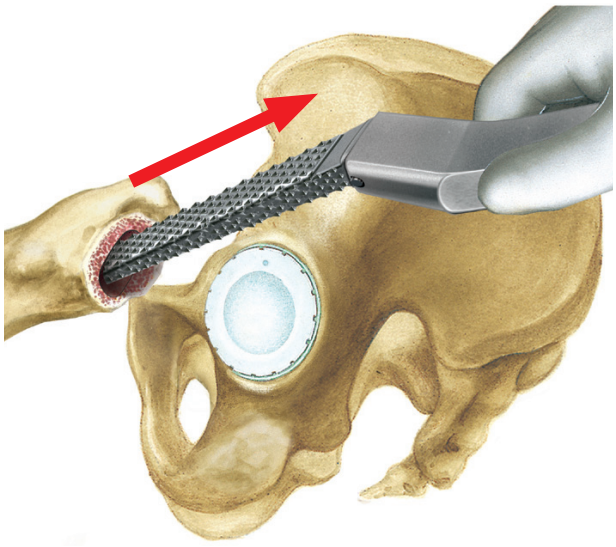
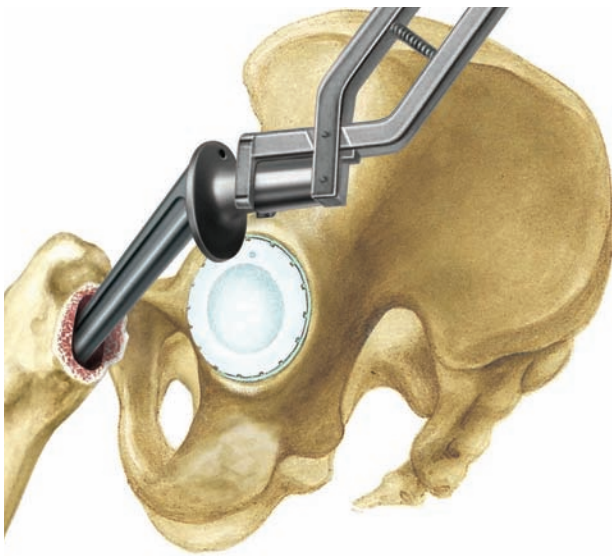


Abb. 20
Removing of Rasp
After the trialing the rasp is removed using the rasp handle.

Abb. 21
Implantation of Stem
The improved cementing technique requires an inserting forceps to place the femoral component into the femur. The inserting forceps avoids damage to the taper and allows the femoral component to be securely inserted into its cement bed.

The medullary space is blocked a few centimeters below the planned position of the tip of the femoral stem using either a bone plug or a medullary plug made of polyethylene. After cement application, the stem is introduced into the femoral cavity as far as possible by using the inserting forceps.



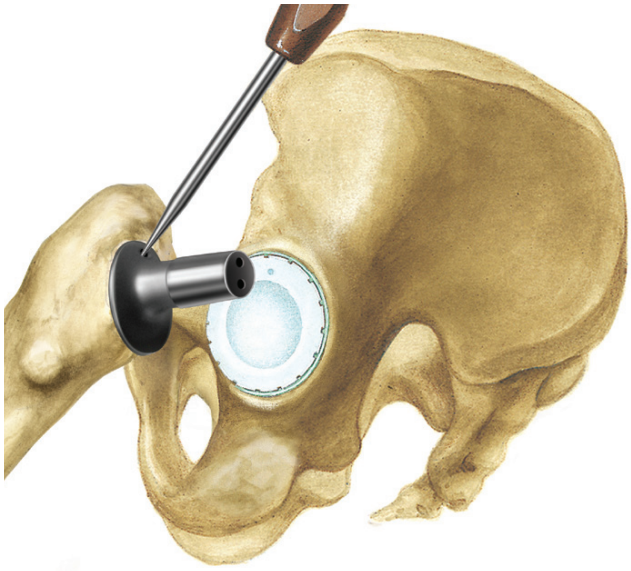
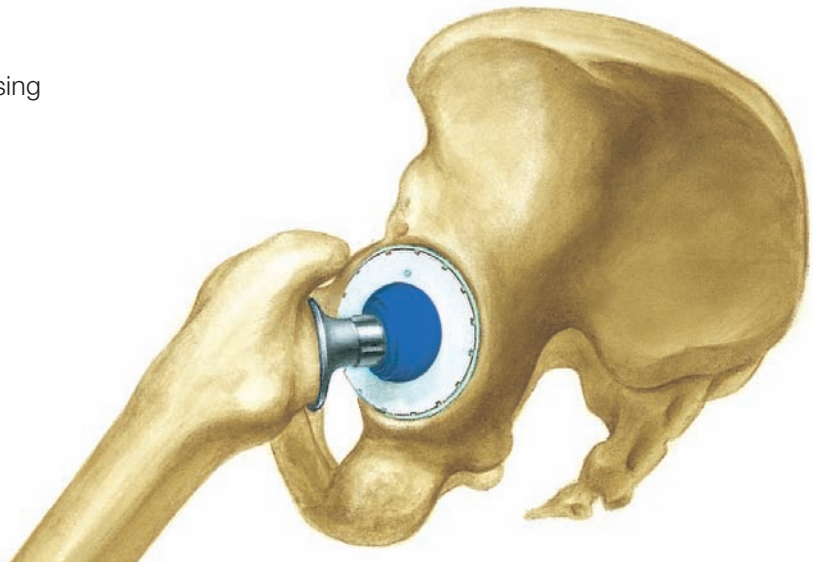


Fig. 22
Hardening of Cement
The stem is driven into its final position using the impactor. While the cement hardens, the stem is pressed firmly into the cement bed with the tip of the impactor located in the hemispherical depression on the lateral collar, thus avoiding transmission of the surgeon's movements to the stem.

Fig. 23
Final Trial Reduction with Trial Head
For certainty a final trial is carried out using coloured plastic trial heads.



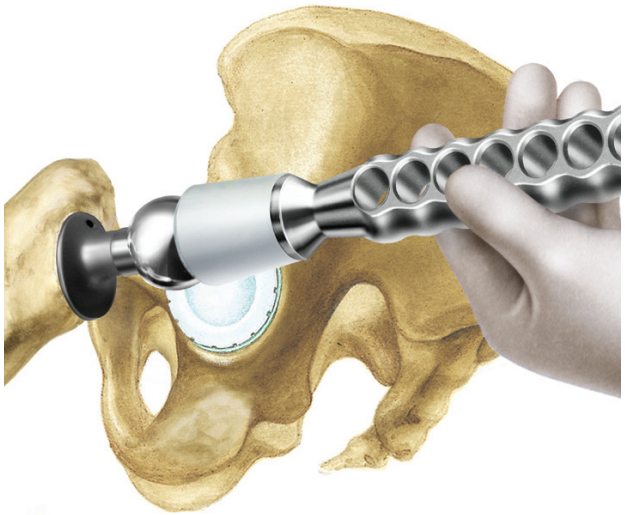


Fig. 24
Positioning of Prosthesis Head
The femoral head is placed on the carefully cleaned taper of the stem and fixed with a light tap on the impactor.

Attention:
To prevent damage to the sliding surface of the prosthesis head the plastic part of the driver for prosthesis heads has to be clean and undamaged. The plastic part of the driver should be replaced if necessary.

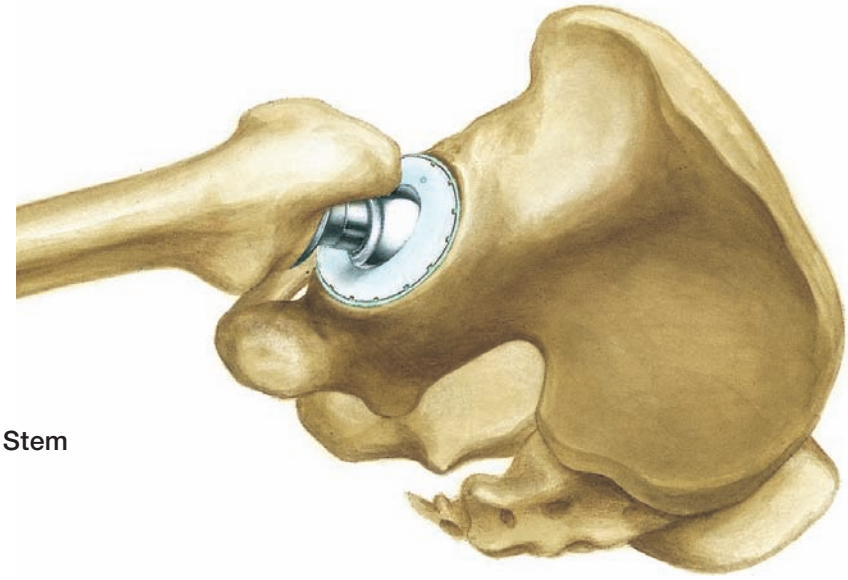


Fig. 25
The LINK® Dysplasia Prosthesis Stem in situ.
Final trial reduction with permanent implant components.

X-ray Templates

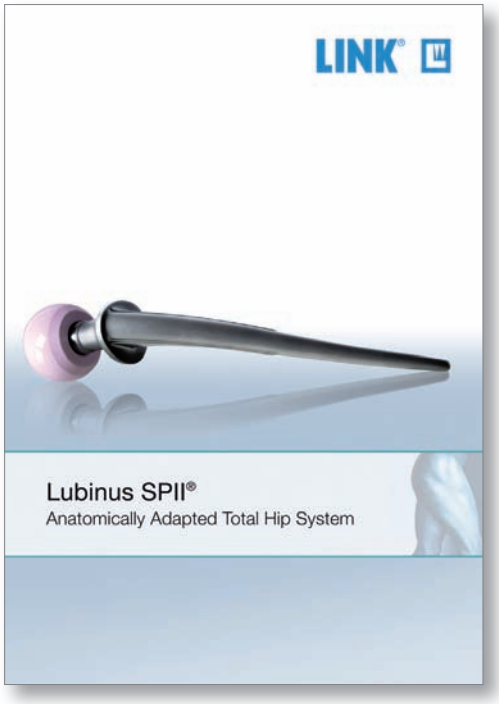
X-ray templates for LINK® Dysplasia prosthesis stems
Material: CoCrMo, neutral head-neck length, taper 12/14 mm, 110 % natural size

Item no.	CCD ∢	Head Ø mm	for stem length	Set of sheets
131-401/26	126°	28/32	150	4
131-401/35	135°	28/32	150	4
131-401/42	142°	28/32	150	4

Instructions for Cleaning and Maintenance

Specific instructions for instruments are available on request from customer@linkhh.de

Literature



642_SPII_Impl. Instr. OP_en

609_Acetabular Cups_cementable_OP Impl. Instr._en

Indications/Contraindications

Products	Stems	Prosthesis heads			
	Dysplasia Prosthesis Stems	BIOLOX® forte* + delta* Prosthesis Heads	Prosthesis Head B	Vario-Cup Endoprosthesis System	Prosthesis Head, large
General Indications					
Mobility-limiting diseases, fractures or defects which cannot be treated by conservative or osteosynthetic procedures.	X	X	X	X	X
Indications					
Primary and secondary coxarthrosis	X	X	X		
Osteoarthritis		X	X		
Necrosis of the femoral head		X	X	X	X[1)]
Femoral neck fractures		X	X	X	X[1)]
Revision after implant loosening		X	X		
Contraindications					
Poor general state of health	X	X	X	X	X
Acute and chronic infections, local and systemic	X	X	X	X	X
Allergies to (implant) materials	X	X	X	X	X
Distinctive muscular, nerve, vascular or other diseases which put the affected limb at risk.	X	X	X	X	X
Insufficient / inadequate bone mass- or quality which prevents a stable anchor of the prosthesis.	X	X	X	X	X
Acetabulum fracture				X	X
Relative Contraindications					
Adiposity	X	X	X	X	X
Lacking or foreseeable not assured compliance	X	X	X	X	X
Foreseeable overload/overstressing of the joint prosthesis	X	X	X	X	X
Acetabular defects				X	X

1) for older, less mobile up to immobile patients

Please note:
These indications/contraindications refer to standard cases. The ultimate decision on whether or not an implant is suitable for a patient must be made by the surgeon based on his/her individual analysis and his/her experience.

* BIOLOX® forte and BIOLOX delta are products made by CeramTec AG, Plochingen, Germany

Index of Item Numbers

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 stress. 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 life span.
   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. The load capacity of an implant cannot compare with that of healthy bone!

5. **Unless otherwise indicated, 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 in permanent buildings up until the “Use by” date indicated on the packaging.
- They must not be exposed to frost, dampness or direct sunlight, or mechanical damage.
- Implants may be stored in their original packaging for up to 5 years after the date of manufacture. The “Use by” 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

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

Unless otherwise indicated, all instruments are made of surgical stainless steel.

Waldemar Link GmbH & Co. KG

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