



LIBRA[®]

**SURGICAL
TECHNIQUE**

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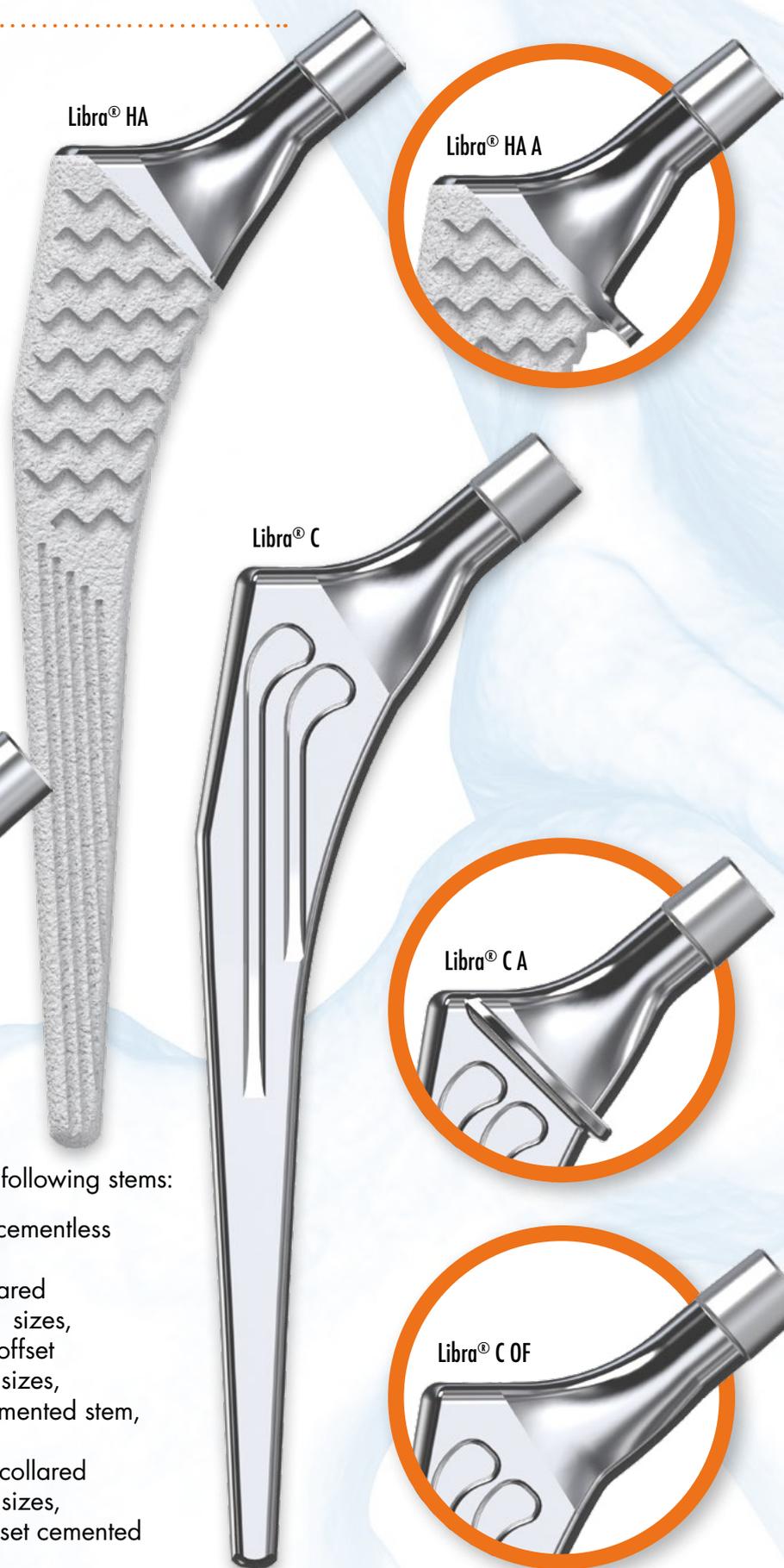


Libra® stem implants range

The range of **Libra®** implants consists of primary femoral stems available in cemented and cementless versions.

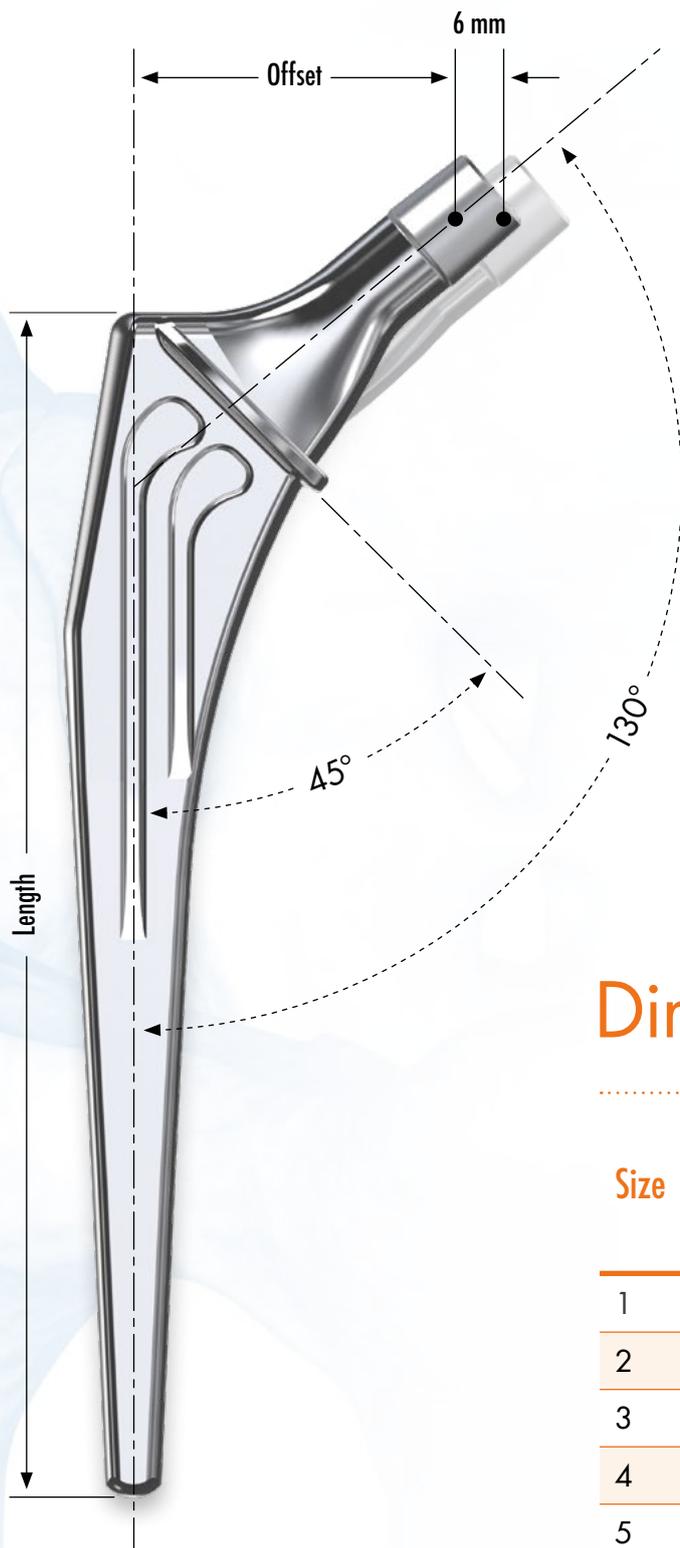
The design of the stems is based on a self-locking concept with a conical shape in the anteroposterior and mediolateral planes. It has a quadrangular cross-section.

It is available in standard and offset models, with and without a collar.



The **Libra®** range is made of the following stems:

- **Libra® "HA"**, Standard offset cementless stem, available in 11 sizes,
- **Libra® "HA A"**, Standard collared cementless stem, available in 11 sizes,
- **Libra® "HA OF"**, Lateralized offset cementless stem, available in 9 sizes,
- **Libra® "C"**, Standard offset cemented stem, available in 10 sizes,
- **Libra® "C A"**, Standard offset collared cemented stem, available in 11 sizes,
- **Libra® "C OF"**, Lateralized offset cemented stem, available in 9 sizes,



Geometry

The taper of **Libra**® stems was designed for optimal assembly with Novae® dual mobility cups, CHIBF E bipolar cups and Hype® cups.

Libra® stems have a 130° neck-shaft angle.

The neck length increases with the stem's size, which allows the patient's leg length to be adjusted precisely.

Dimensions

Size	Length (mm)	Standard offset (mm)	Lateralized offset (mm)
1	115	38	-
2	130	39	45
3	140	40	46
4	145	41	47
5	150	42	48
6	155	43	49
7	160	44	50
8	165	45	51
9	170	46	52
10	175	48	-
11	180	48	-

Average taper angle:



Libra[®] cementless stems

Libra[®] cementless stems are made of titanium alloy (TA6V). They have a HA coating (100 +/- 30 µm) over the entire bone contact surface.

The cementless stems are available in three neck configurations: standard offset (HA) standard offset with (HA A) and lateralized (HA OF).

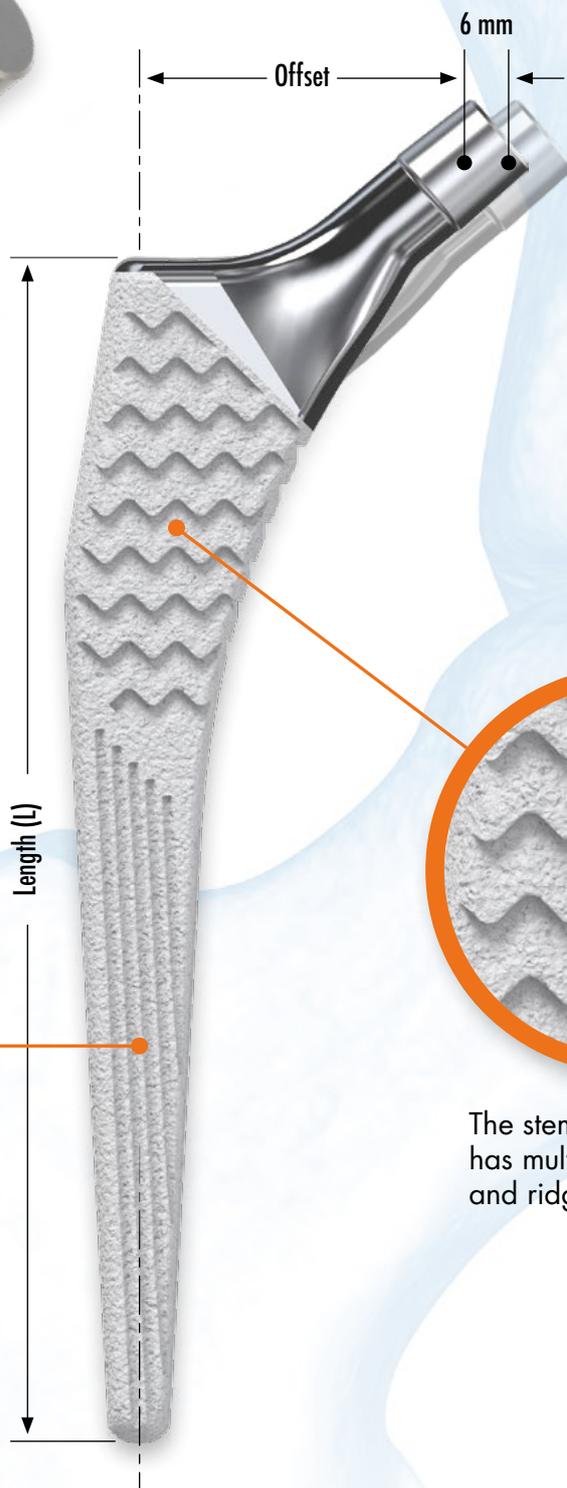


The stem's shoulder has an indentation to help with alignment and impaction.

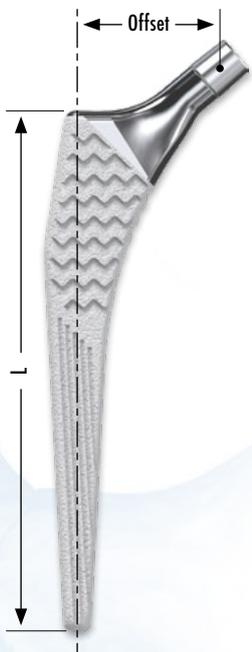
The neck's geometry was designed to ensure good mechanical strength and joint amplitude.



Longitudinal grooves on the anteroposterior and mediolateral sides of the stem were added to prevent torsional and rotational stresses.

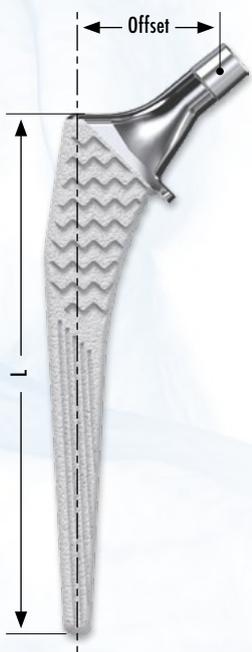


The stem's surface has multiple ripples and ridges.



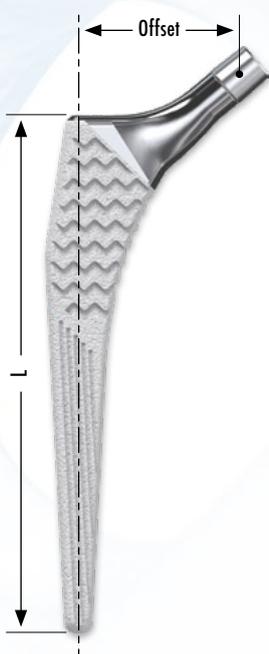
STANDARD OFFSET

Size	Designation	L (mm)	Offset (mm)	Reference
1 ⁽¹⁾	LIBRA HA 1	115	38	RM11300001
2 ⁽²⁾	LIBRA HA 2	130	39	RM11300002
3	LIBRA HA 3	140	40	RM11300003
4	LIBRA HA 4	145	41	RM11300004
5	LIBRA HA 5	150	42	RM11300005
6	LIBRA HA 6	155	43	RM11300006
7	LIBRA HA 7	160	44	RM11300007
8	LIBRA HA 8	165	45	RM11300008
9	LIBRA HA 9	170	46	RM11300009
10	LIBRA HA 10	175	47	RM11300010
11 ⁽³⁾	LIBRA HA 11	180	48	RM11300011



STANDARD OFFSET COLLARED

Size	Designation	L (mm)	Offset (mm)	Reference
1 ⁽¹⁾	LIBRA HA 1 A	115	38	RM11700001
2 ⁽²⁾	LIBRA HA 2 A	130	39	RM11700002
3	LIBRA HA 3 A	140	40	RM11700003
4	LIBRA HA 4 A	145	41	RM11700004
5	LIBRA HA 5 A	150	42	RM11700005
6	LIBRA HA 6 A	155	43	RM11700006
7	LIBRA HA 7 A	160	44	RM11700007
8	LIBRA HA 8 A	165	45	RM11700008
9	LIBRA HA 9 A	170	46	RM11700009
10	LIBRA HA 10 A	175	47	RM11700010
11 ⁽³⁾	LIBRA HA 11 A	180	48	RM11700011



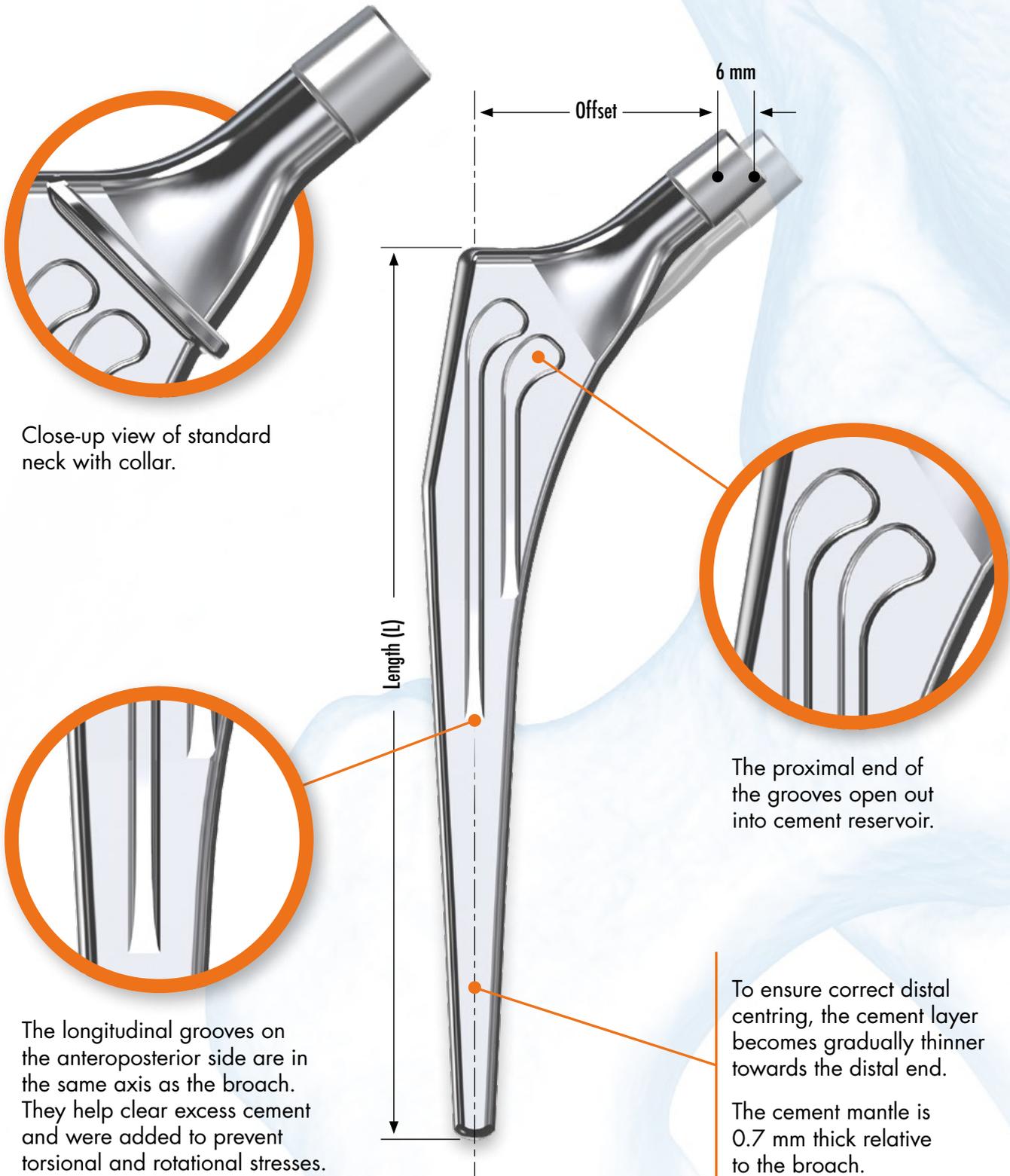
LATERALIZED OFFSET

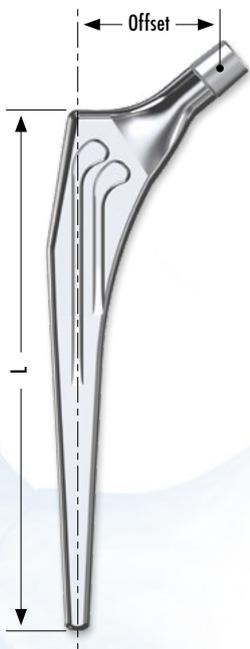
Size	Designation	L (mm)	Offset (mm)	Reference
2 ⁽²⁾	LIBRA HA OF 2	130	45	RM11400002
3	LIBRA HA OF 3	140	46	RM11400003
4	LIBRA HA OF 4	145	47	RM11400004
5	LIBRA HA OF 5	150	48	RM11400005
6	LIBRA HA OF 6	155	49	RM11400006
7	LIBRA HA OF 7	160	50	RM11400007
8	LIBRA HA OF 8	165	51	RM11400008
9	LIBRA HA OF 9	170	52	RM11400009

- (1) Size 1 must only be used in patients weighing less than 55 kg.
 (2) Size 2 must only be used in patients weighing less than 70 kg.
 (3) Available on request.

Libra[®] cemented stems

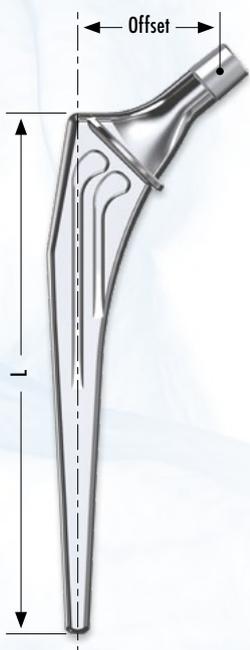
Libra[®] cemented stems are made of highly polished stainless steel. They are entirely polished smooth and have a surface roughness of less than 0.05 μm . The cemented stems are available in three neck configurations: standard offset (C), standard offset collared (C A) and lateralized offset (C OF).





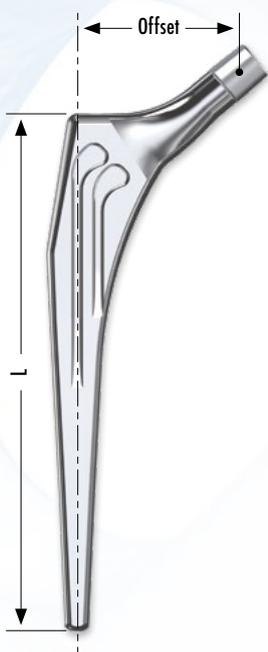
STANDARD OFFSET

Size	Designation	L (mm)	Offset (mm)	Reference
1 ⁽¹⁾	LIBRA C 1	115	38	RM11100001
2 ⁽²⁾	LIBRA C 2	130	39	RM11100002
3	LIBRA C 3	140	40	RM11100003
4	LIBRA C 4	145	41	RM11100004
5	LIBRA C 5	150	42	RM11100005
6	LIBRA C 6	155	43	RM11100006
7	LIBRA C 7	160	44	RM11100007
8	LIBRA C 8	165	45	RM11100008
9	LIBRA C 9	170	46	RM11100009
10	LIBRA C 10	175	47	RM11100010
11 ⁽³⁾	LIBRA C 11	180	48	RM11100011



STANDARD OFFSET COLLARED

Size	Designation	L (mm)	Offset (mm)	Reference
1 ⁽¹⁾	LIBRA C 1 A	115	38	RM11500001
2 ⁽²⁾	LIBRA C 2 A	130	39	RM11500002
3	LIBRA C 3 A	140	40	RM11500003
4	LIBRA C 4 A	145	41	RM11500004
5	LIBRA C 5 A	150	42	RM11500005
6	LIBRA C 6 A	155	43	RM11500006
7	LIBRA C 7 A	160	44	RM11500007
8	LIBRA C 8 A	165	45	RM11500008
9	LIBRA C 9 A	170	46	RM11500009
10	LIBRA C 10 A	175	47	RM11500010
11 ⁽³⁾	LIBRA C 11 A	180	48	RM11500011



LATERALIZED OFFSET

Size	Designation	L (mm)	Offset (mm)	Reference
2 ⁽²⁾	LIBRA C OF 2	130	45	RM11200002
3	LIBRA C OF 3	140	46	RM11200003
4	LIBRA C OF 4	145	47	RM11200004
5	LIBRA C OF 5	150	48	RM11200005
6	LIBRA C OF 6	155	49	RM11200006
7	LIBRA C OF 7	160	50	RM11200007
8	LIBRA C OF 8	165	51	RM11200008
9	LIBRA C OF 9	170	52	RM11200009

- (1) Size 1 must only be used in patients weighing less than 55 kg.
 (2) Size 2 must only be used in patients weighing less than 70 kg.
 (3) Available on request.

Compatible femoral heads

11
13

Libra® stems must only be used with femoral heads that have a 11/13 taper. The entire list of compatible heads is given below:

Materials	Ø (mm)	Designation	Reference
 Stainless steel (ISO 5832-9)	Ø 22.2	SI 22.2/0 (0)	RM30050010
		SI 22.2/+4 (+4 mm)	RM30050011
	Ø 28	SI 28/-4 (-4 mm)	RM30050031
		SI 28/0 (0)	RM30050032
		SI 28/+4 (+4 mm)	RM30050033
 Cobalt-Chromium (ISO 5832-12)	Ø 22.2	SCC 22.2/0 (0)	RM30300010
		SCC 22.2/+4 (+4 mm)	RM30300015
	Ø 28	SCC 28/-4 (-4 mm)	RM30300051
		SCC 28/0 (0)	RM30300055
		SCC 22.2/+4 (+4 mm)	RM30300059
 BioloX® delta ceramic (ISO 6474-2)	Ø 28	SD 28/-4 (-4 mm)	RM30750001
		SD 28/0 (0)	RM30750002
		SD 28/+4 (+4 mm)	RM30750003
	Ø 32	SD 32/-4 (-4 mm)	RM30750004
		SD 32/0 (0)	RM30750005
		SD 32/+4 (+4 mm)	RM30750006
	Ø 36	SD 36/-4 (-4 mm)	RM30750007
		SD 36/0 (0)	RM30750008
		SD 36/+4 (+4 mm)	RM30750009

Compatible acetabular cups

Libra® stems are compatible with the following acetabular cups:



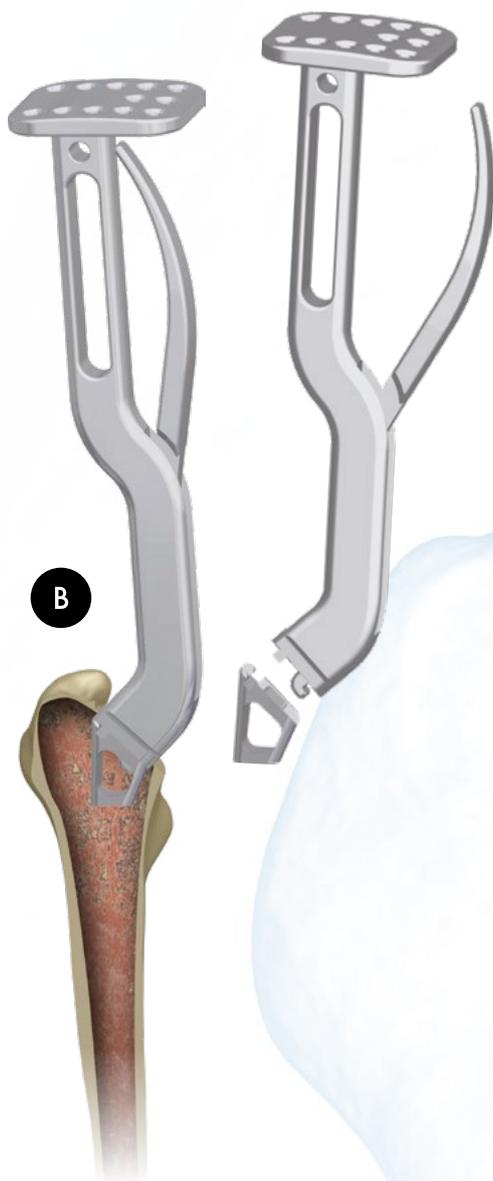
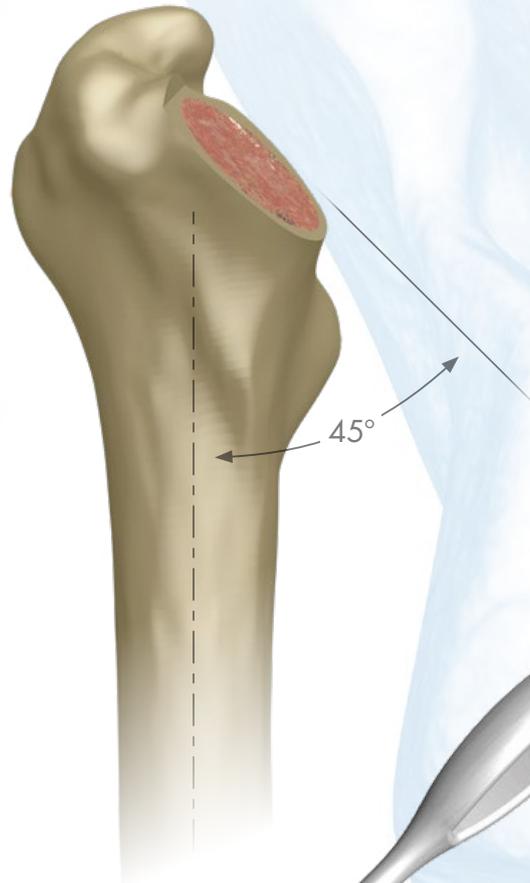
Surgical technique

1 Femoral neck resection

The level of the femoral neck resection is determined during preoperative planning using radiographic templates.

It is confirmed intraoperatively based on anatomical landmarks.

The cut must be angled 45 degrees relative to the femur's anatomical axis.



2 Greater trochanter and metaphyseal preparation

Start by opening the femoral canal and hollowing out the greater trochanter with a femoral preparation broach (A) or a femoral osteotome (B).

The medial portion of the greater trochanter may need to be reshaped to avoid varus positioning of the subsequent broaches and final implant.

3

Broaching

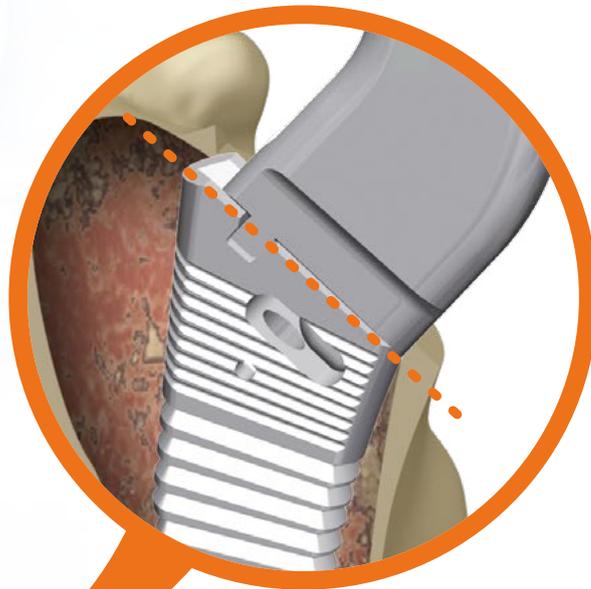
The **Libra**[®] broaches are connected to the appropriate broach handle to progressively compact the cancellous bone until the broach reaches the level of the bone cut.

The stem orientation rod can be used with the handle to check the anteversion.

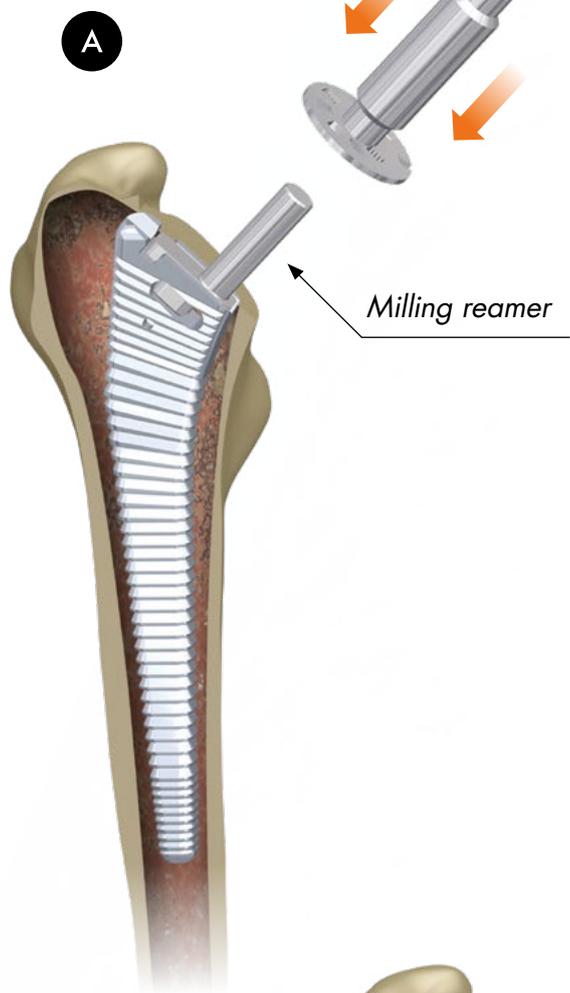
The broach that provides proper rotational stability indicates the definitive implant size.

Important:

The handle/broach junction acts as the depth reference mark for the broach relative to the femoral cut.



There are several types of broach handles available, depending on the surgical approach.



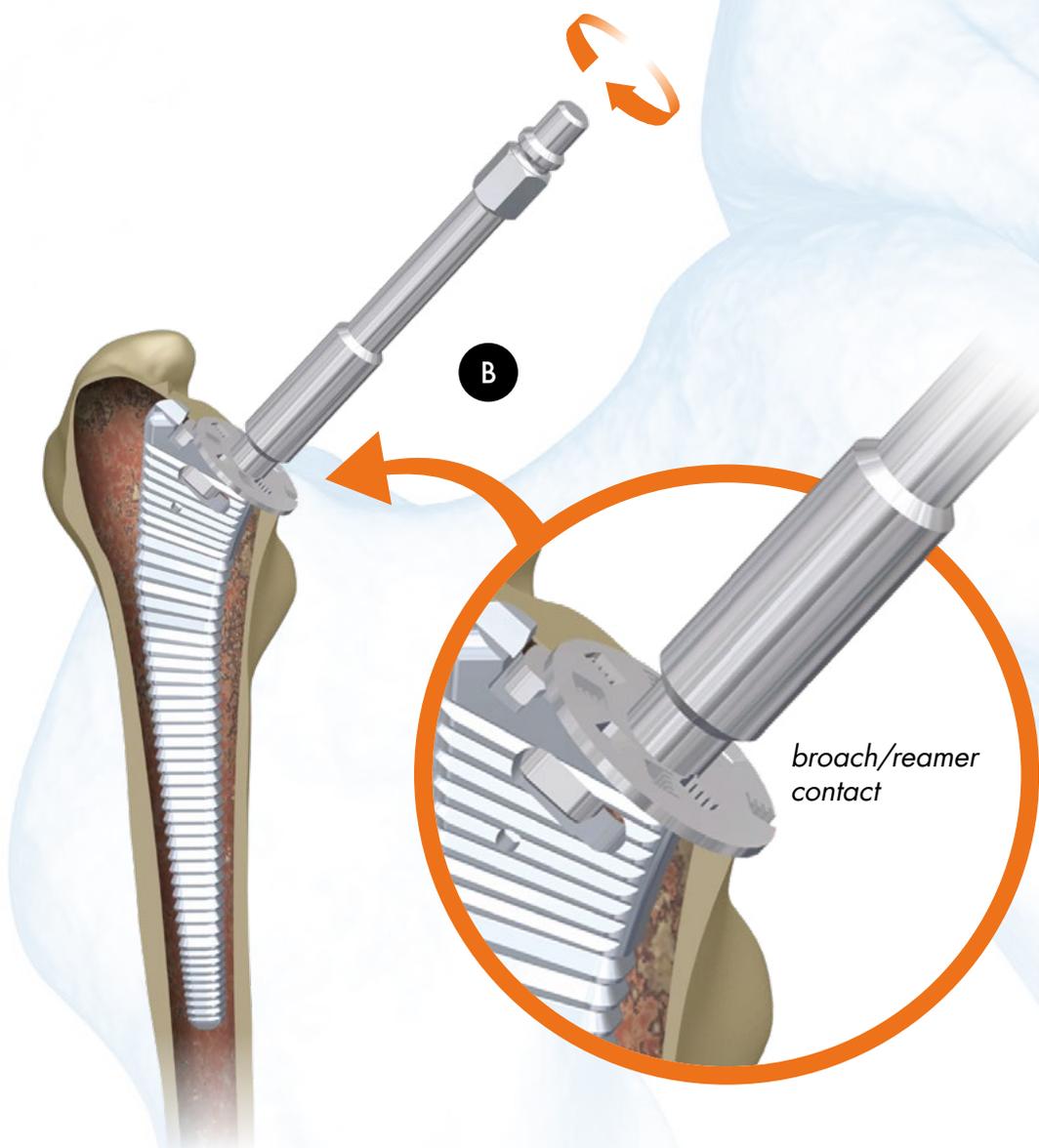
4 Calcar reaming (collared stems)

Place the calcar milling reamer adapter on the rasp **A**

Assemble the calcar milling reamer with the surgical drill. Place the reamer on the adapter and use it to cut bone away until it contacts the broach (**B**).

This step ensures the spacing is perfect between the femoral neck cut and the superior side of the broach.

The calcar cutter is used to even out the neck cut. when using a collared stem.





5 Trial reduction with final broach

Both standard and offset trial necks are available to determine the position of the hip joint centre (A).

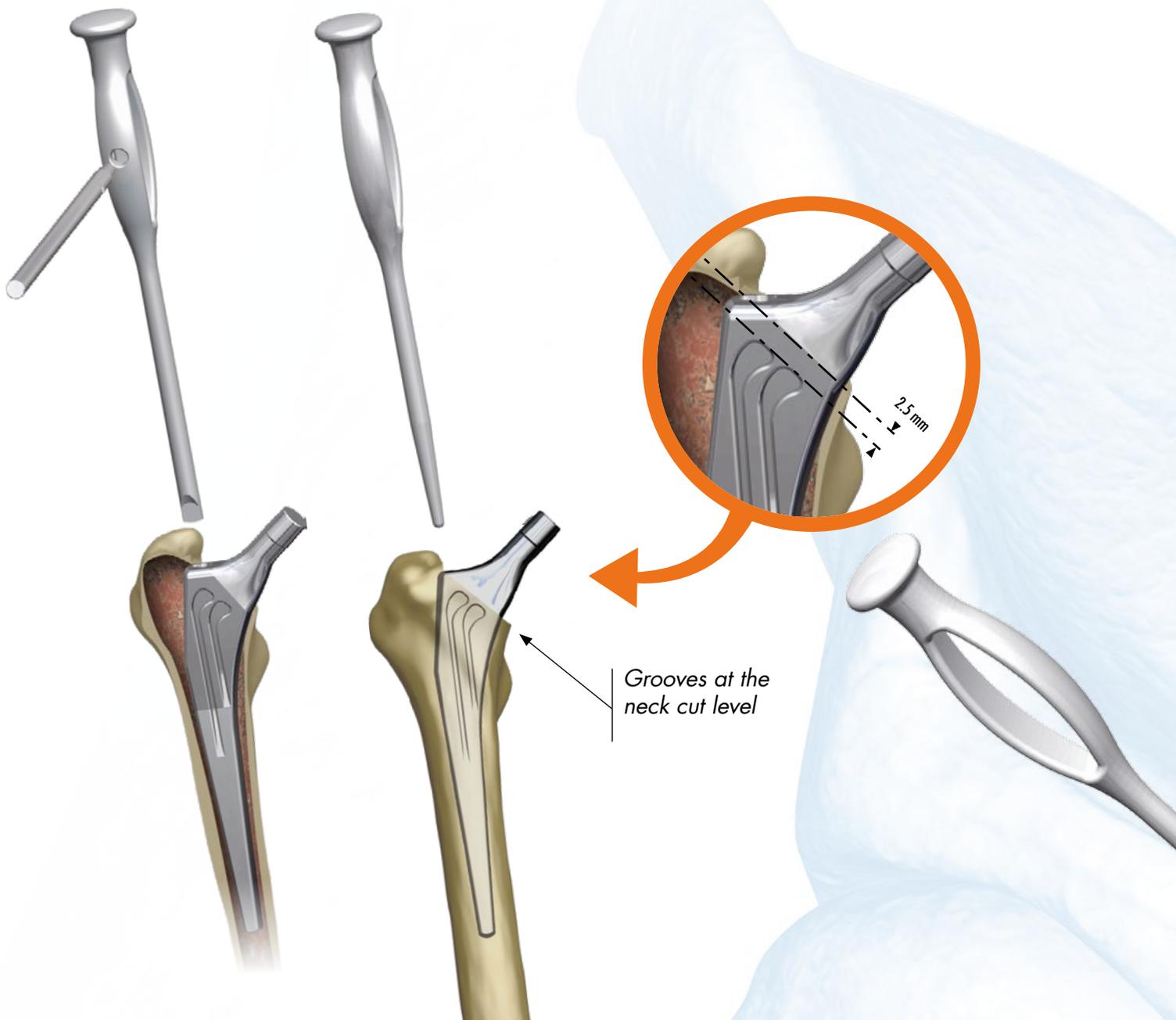
The neck length increases as the stem size increases.

Push on the taper until the trial neck stops to ensure the correct length has been achieved and the neck is locked (B).

Combine various trial heads with the trial neck to carry out joint reduction trials (C).

After validation of the best head diameter and/or neck length, remove the trial head.

The trial necks can be disassembled for cleaning (see page 19).



6 Femoral stem insertion

Cemented stem:

The stem is progressively inserted into the cement mantle by applying manual pressure.

The constraint impactor placed into the housing (stem shoulder) helps adjust the definitive stem orientation. The alignment rod connected to the handle will indicate stem anteversion.

With a cemented stem, the correct insertion depth is achieved when the two grooves on the metaphyseal portion of the stem are 2.5 mm below the neck cut.

The non-constraint impaction punch will maintain pressure on the stem during cement setting

Cementless stem:

Lower the stem into the femoral canal without excessive pressure using the centre punch or angled stem impactor (supplemented with the stem orientation rod as needed).

The correct insertion depth is achieved when the HA coating is level with the femoral neck cut.

Trialing on implant:

Trial heads can be used to check joint stability directly on the definitive stem (same trials can be performed on broach and the trial neck).

The alignment rod for trial head should be used to assess the position of the joint center, compared to the greater trochanter.

Place the rod in the holes on the trial head.

Nb: The identification of the joint center with the alignment rod is only valid for standard offset stems and lateralized offset stems.

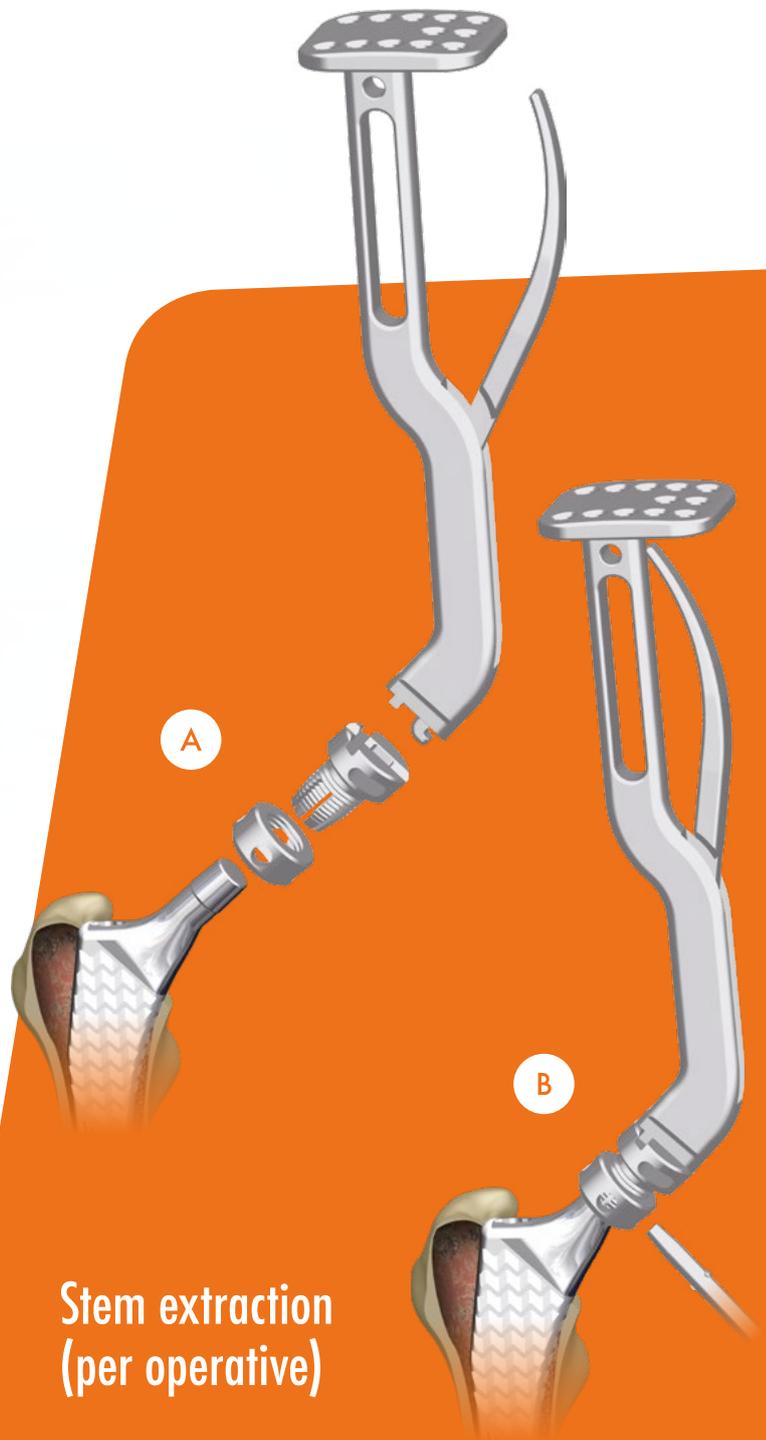
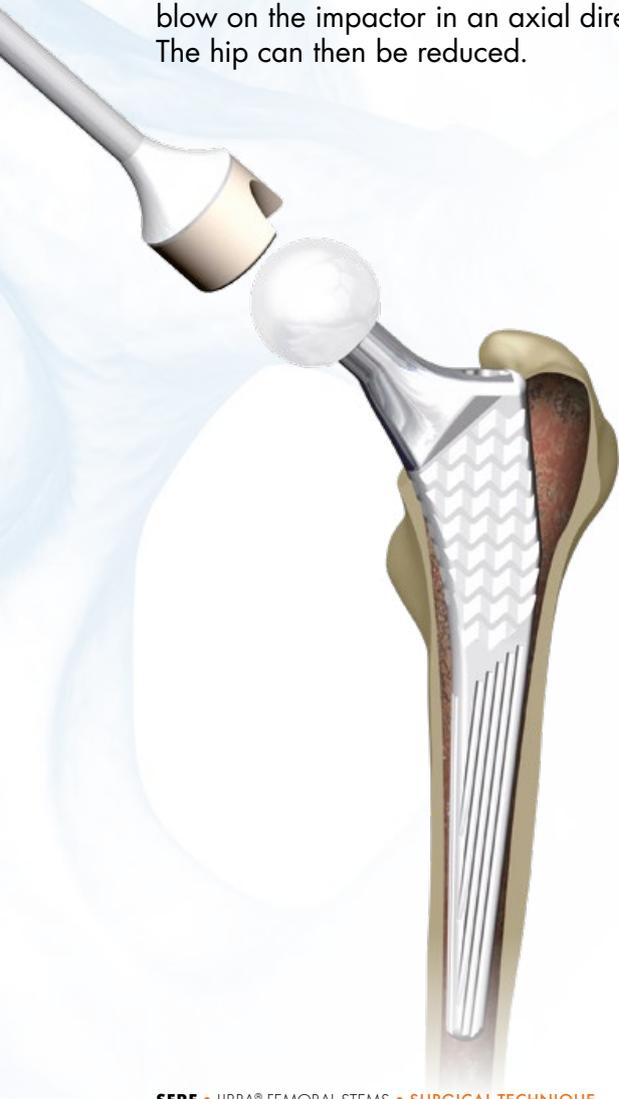
After validation of the diameter and/or length of the neck, remove the trial head.

Femoral head impaction:

The taper should be carefully cleaned and dried.

The definitive femoral head is mounted on the stem taper with a rotational movement.

The head is firmly seated with one mallet blow on the impactor in an axial direction. The hip can then be reduced.

**Stem extraction (per operative)****Assembly:**

The clamp is assembled to the stem taper (the taper flat surface abuts against the bottom of the clamp (A)), tighten the nut using the alignment guide then connect the broach handle (B). The femoral stem can then be extracted. Do not re-use this implant since the Morse taper might have been damaged.

Disassembly:

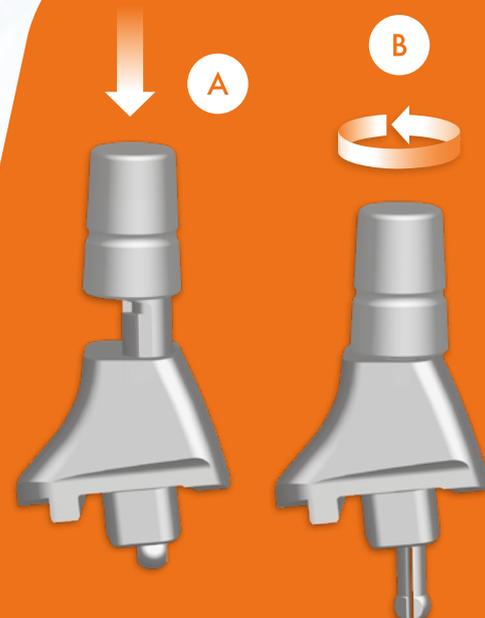
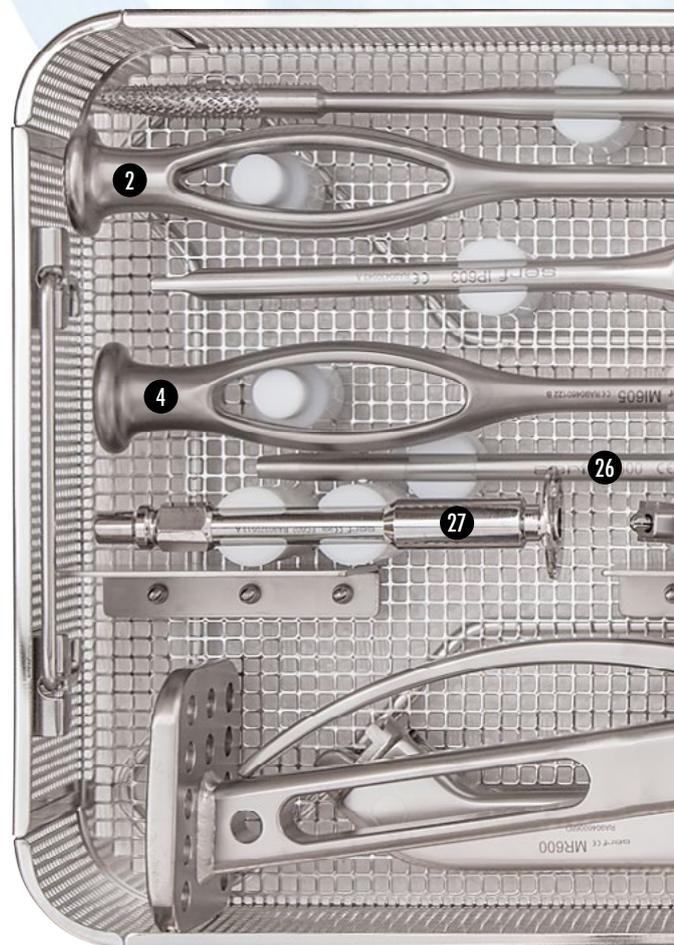
Unscrew the nut using the alignment guide during disassembly.

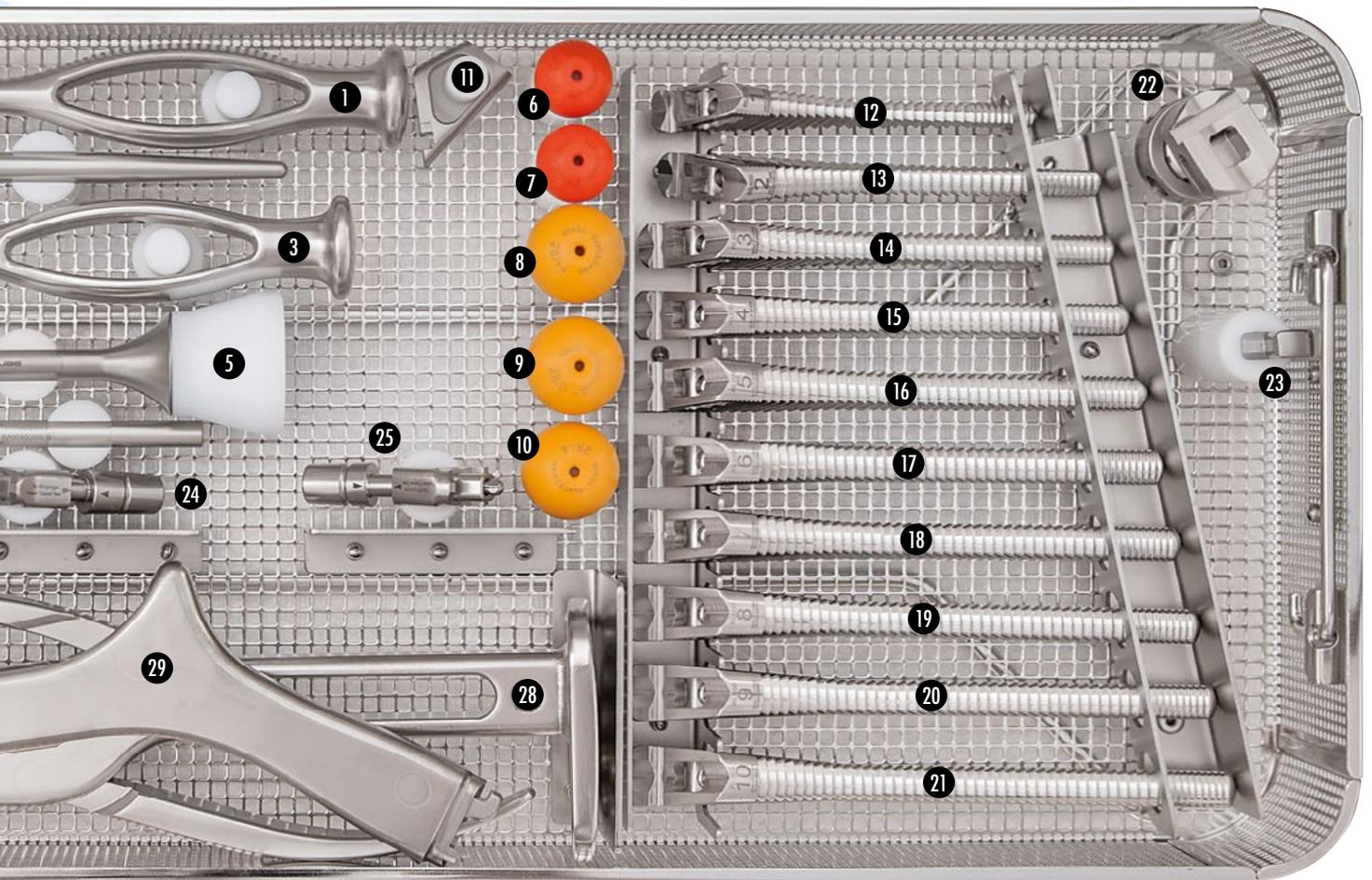
In case of difficulty, please return the extractor + cleaned stem assembly.

Instrumentation

Libra® stem - VARALBO1

No.	Designation	Description
1	RP602	Femoral preparation broach
2	PI600	Impaction centre punch
3	IP603	Stem impactor
4	MI605	Handle for head impaction tip
5	EI604-36	Head impaction tip
6	TE606 22.2/+4	Ø22.2 mm long trial head
7	TE606 22.2/0	Ø22.2 mm medium trial head
8	TE606 28/+4	Ø28 mm long trial head
9	TE606 28/0	Ø28 mm medium trial head
10	TE606 28/-4	Ø28 mm short trial head
11	Ost600	Femoral osteotome
12	RL600 1	LIBRA broach 1
13	RL600 2	LIBRA broach 2
14	RL600 3	LIBRA broach 3
15	RL600 4	LIBRA broach 4
16	RL600 5	LIBRA broach 5
17	RL600 6	LIBRA broach 6
18	RL600 7	LIBRA broach 7
19	RL600 8	LIBRA broach 8
20	RL600 9	LIBRA broach 9
21	RL600 10	LIBRA broach 10
22	ET601	Stem extractor adapter
23	FC 602 ADAPTATEUR	Calcar milling reamer adapter
24	COE628ST	Trial neck for Libra Standard stem
25	COE629OF	Trial neck for Libra Lateralized stem
26	OR600	Stem orientation rod
27	FC 602	Calcar milling reamer
28	MR600	Broach handle for posterior and anterolateral approach
29	MR605	Broach handle for anterior approach





Cleaning of trial necks

- A Push
- B Turn
- C Pull

Trial necks can be disassembled for cleaning and to prevent accumulation of bone debris or other substances that would hinder their function.

When assembling the trial neck for use, make sure the two arrows are lined up.



Arrows lined up



All the medical devices mentioned in this document are CE marked in accordance with Medical Device Directive 93/42/EEC and its amendments unless they are specifically identified as "not CE marked".

The medical devices mentioned in this document are class I, IIa and III devices.

Class IIa and III medical devices are marked "CE 0459" by LNE/G-MED.

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