



Surgical Technique

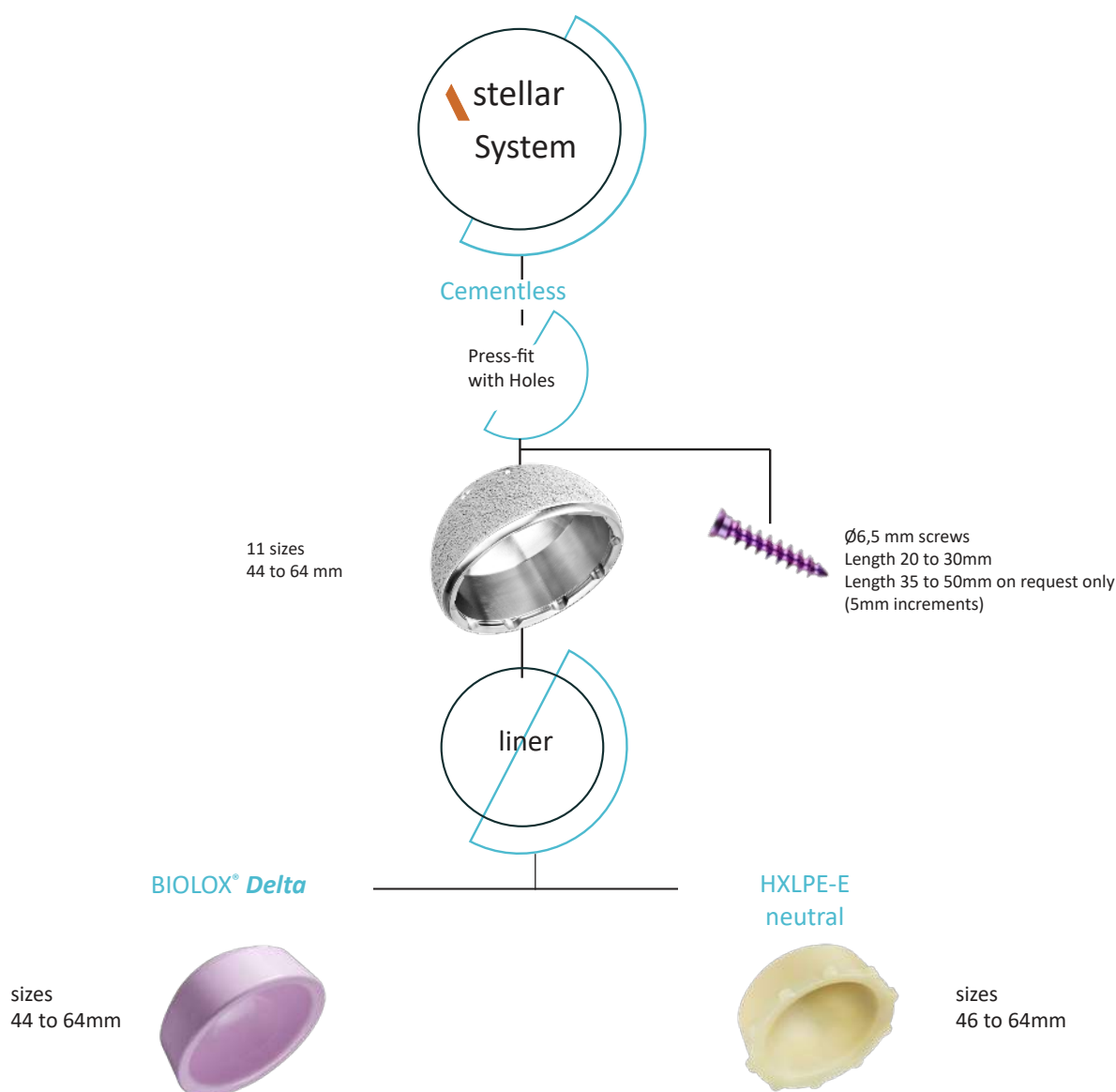


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Concept and Range



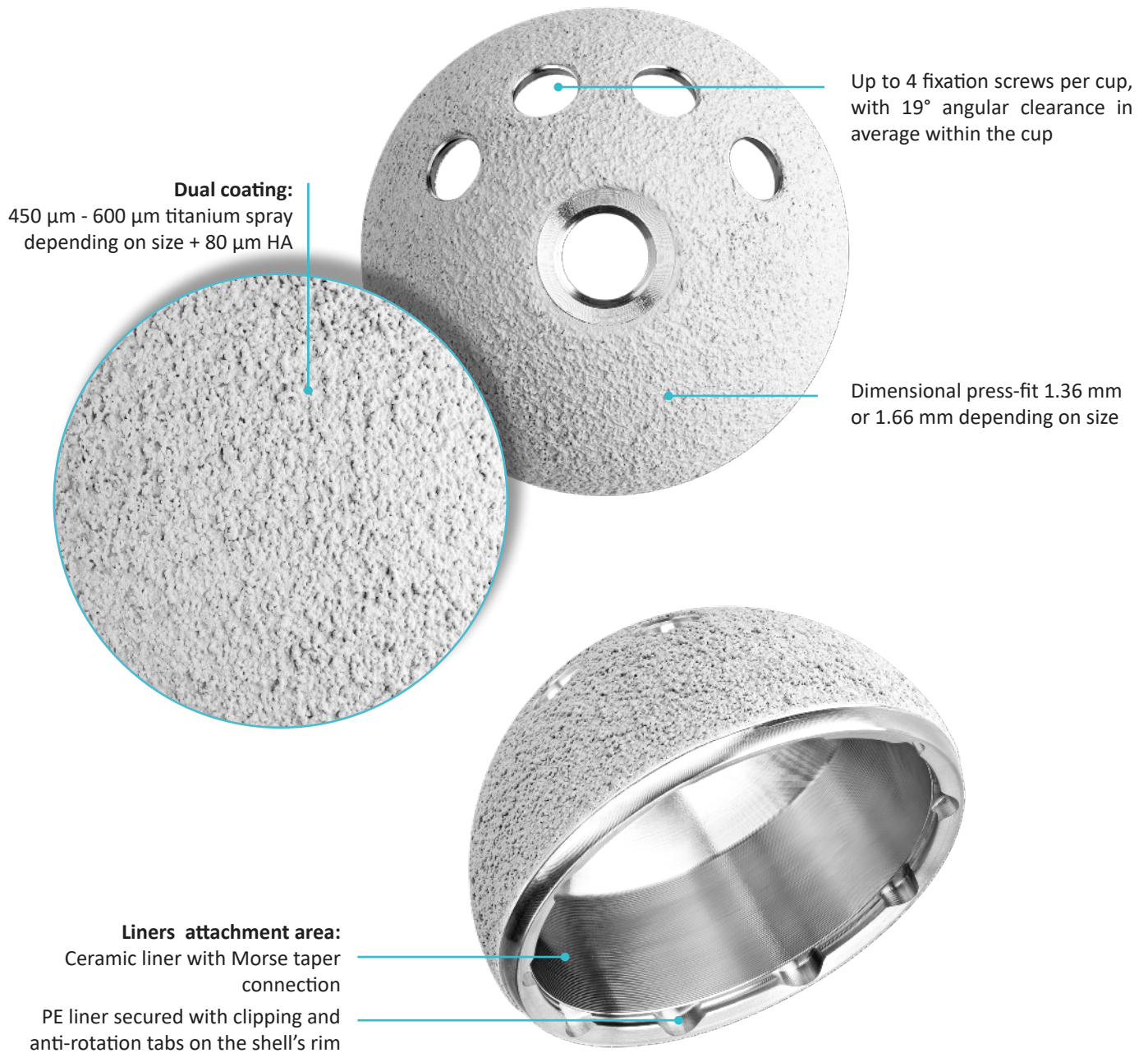
		Ø44 mm*	Ø46 mm	Ø48 mm	Ø50 mm	Ø52 mm	Ø54 mm	Ø56 mm	Ø58 mm	Ø60 mm	Ø62 mm*	Ø64 mm*
STELLAR SYSTEM	Cup											
	BIOLOX® Delta Ø28 mm <i>Not covered by FDA approval</i>											
	BIOLOX® Delta Ø32 mm <i>Not covered by FDA approval</i>											
	BIOLOX® Delta Ø36 mm <i>Not covered by FDA approval</i>											
	HXLPE-E - neutral Ø32 mm											
	HXLPE-E - neutral Ø36 mm											

Concept and Range

Cementless Cup With Holes

Cementless hemispherical cup coated with Ti + HA:

- Versatile cup: compatible with either polyethylene or ceramic liner
- Dimensional press-fit mainly induced by coating thickness
- Additional fixation with acetabular bone screws $\varnothing 6.5\text{mm}$



Material: Titanium Alloy (Ti6Al4V)

Concept and Range

Ceramic Liner



The ceramic liner's clipping area results in the equatorial rim being 2.6 mm higher than the ceramic liner and prevents the stem's neck from impinging the edge of the liner.

BIOLOX® *Delta* liner ceramic-on-ceramic bearing for heads Ø28 mm, Ø32 mm and Ø36 mm.

Ø36 mm starting at size 50 mm.

Liner secured to the cup through a Morse taper.

Polyethylene Liners



Vitamin E highly crosslinked PE liners (HXLPE-E) in neutral variant.

A ridge snaps into the cup's inner groove for fixation, then stabilized by anti-rotation tabs.

HXLPE-E for heads Ø32 mm, Ø36 mm.

Ø36 mm starting at size 50 mm

Crosslinking obtained with 75 kGy gamma ray dose

20° peripheral chamfer

Surgical Technique Overview

1

Pre-operative Planning



2

Acetabular Preparation



3

Reaming Inspection



4

Holding the Cup



Surgical Technique Overview

5

Final Cup Impaction



6

**Insertion of Fixation
Screws**

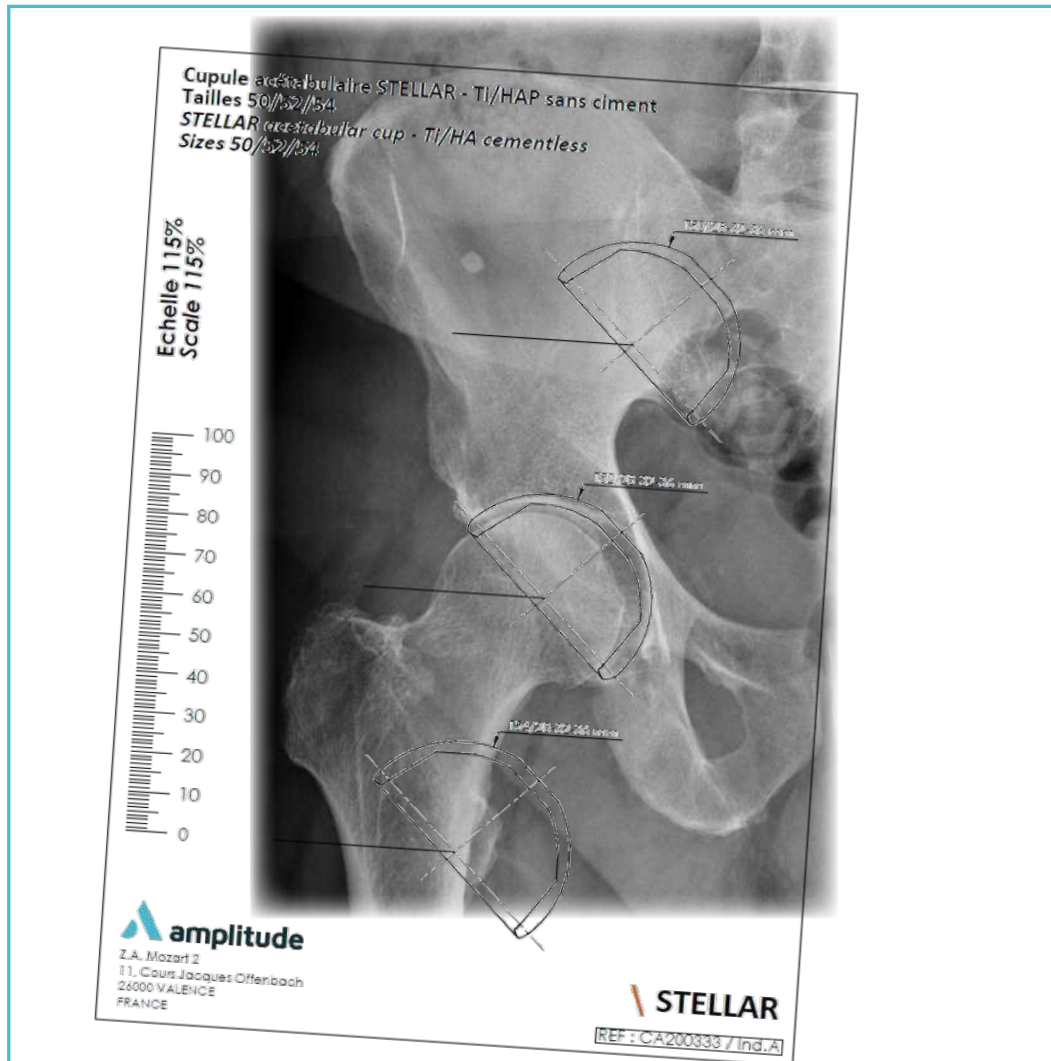


7 - 8

**Trials and Impaction of
Final Liner**



1 Pre-operative Planning



Using the radiographs and templates:

- Determine the centre of rotation of the implant using the following landmarks:
 - Lower position of the acetabulum relative to the pelvic teardrops;
 - Maximum depth on the acetabular fossa (external lamina);
 - Coverage (inclination);
- Estimate the cup size,
- Assess the position of the cup.

REMINDER

The purpose of this surgical technique description is to provide instructions on how to use the instrumentation properly. The surgeon is fully responsible for choosing and performing the approach and surgical technique.

NOTE

Templates are provided at a 115% scale and can be provided with other scaling on request or in digital format.

2 Acetabular Preparation



Remove any peripheral osteophytes and resect the labrum. Make sure to remove any posterior and inferior osteophytes that could hinder cup placement.

Prepare the acetabulum using the reamers starting with a small acetabular reamer, typically 6–8 mm smaller than the anticipated acetabular component. The reamers can be used with either a straight or offset reamer handle.

Gradually increase the reamer diameter until good peripheral support is achieved and bleeding subchondral bone is exposed. Make sure not to go past the acetabular fossa (external lamina). The reamed cavity must be completely hemispherical, the acetabulum entry circular.

Clean out the bottom of the acetabulum, making sure to remove any bone fragments that could interfere with placement of the trial cup.

The STELLAR cup external geometry is a coated hemisphere. The primary stability of the cup is ensured by the roughness of the macro-porous thick coating and by the oversizing of the cup in comparison to its nominal diameter. The total oversize at diameter is:

- 1,36 mm for cup sizes 44 and 46 mm
- 1,66 mm for cup sizes 48 and above.

The diameter of both the reamer and the trial cup is the one indicated, they do not include any oversizing.

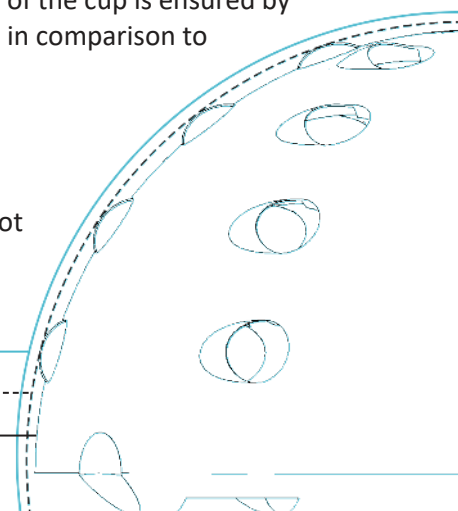
NOTE

Please refer to appendices B and C for reamer handles assembly.

Final Cup

Trial Cup

Reamer



3 Reaming Check

Instrumentation with first generation of impactors



Select a trial cup corresponding to the size of the last reamer used.

Completely screw the trial cup onto the straight or curved impactation handle according to the one being used (instructions on how to assemble and use the curved impactor in Appendix A).

Assemble the 45° alignment guide onto the impactor:

Using a straight handle:

Introduce the ring of the 45° guide on the long and narrow cylindrical segment of the handle.

Check that the tip of the guide is oriented towards the blue grip.

Pull the guide towards the blue grip until it is tightly fixed on the cylindrical and rough area of the impactor.



Using a curved handle:

Introduce the ring tip on the thinner side of the quadrangular section.



Introduce

Push the ring tip entirely on the quadrangular section.



Push-on

Rotate the guide by 90° to lock it on the curved handle.



Rotate

Clean out the bottom and the rim of the acetabulum to prevent small bone or tissue fragments from interfering with cup impaction. Impact the trial cup while maintaining the inclination and anteversion providing the best bone coverage. The cup is typically placed at 45° inclination and 15° to 20° anteversion, depending on the patient anatomy. It must make contact with the entire perimeter of the acetabulum and be stable and without protruding. Remove the trial cup when reaming is validated.

Unlock and disassemble the alignment guide and the trial cup from the impactor.

3 Reaming Check

Instrumentation with second generation of impactors

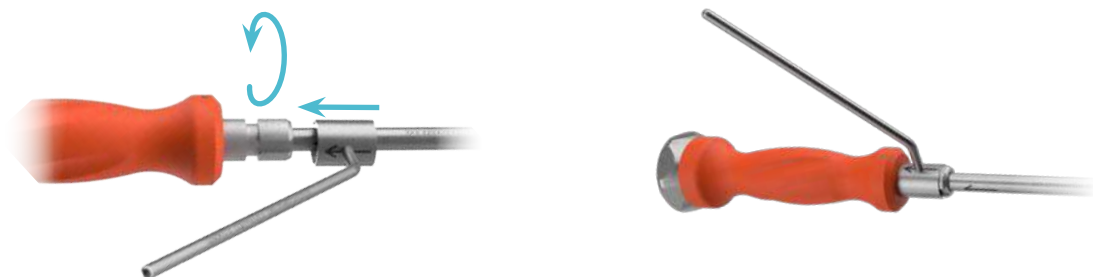


The chosen trial cup size must be based on the last reamer used.

Completely screw the trial cup onto the straight impactor handle. The provisional cup has the same dimensions as the implant, without press-fit.

The alignment guide can be assembled on the impactor to help reproduce a 45° inclination.

Insert the 45° alignment guide onto the largest cylindrical segment of the impactor, sliding the small orientor pin into the longitudinal groove in the rough cylindrical area of the impactor until stop (align the arrows).



Check that the tip of the alignment guide is pointing towards the handle.

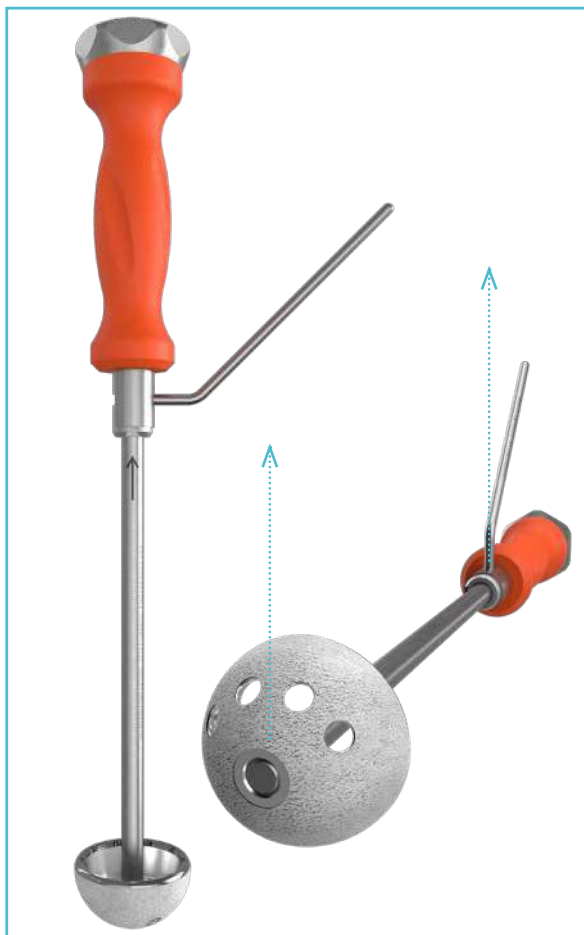
Then turn it on the cylindrical area a quarter to lock it onto the handle. The guide's pin thus engages in the cylindrical groove.

Clean out the bottom and the rim of the acetabulum to prevent small bone or tissue fragments from interfering with cup impaction. Insert the trial cup while maintaining the inclination and anteversion providing the best bone coverage. The cup is typically placed at 45° inclination and 15° to 20° anteversion, depending on the patient anatomy. It must make contact with the entire perimeter of the acetabulum and be stable and without protruding.

Remove the trial cup when reaming is validated.

Unlock and disassemble the alignment guide and the trial cup from the impactor.

4 Holding Final Cup



Assemble the 45° alignment guide on the impactor being used, following the instructions given in p.12 or 13.

Remove the final cup from its packaging, corresponding to the size validated by the trial cup.

Using a straight impactor handle, first or second generation:

Insert the tip of the straight impactor into the shell and screw the impactor into the threaded apical hole of the shell. Tighten the assembly securely.

Position the alignment guide so that it is aligned with the upper quadrant of the cup and its 4 screw holes.

Using a curved impactor handle:

See instructions on how to assemble and use the curved impactor in Appendix A.

Introduce the tip of the curved impactor into the cup, and tighten the screw into the threaded apical hole of the shell. Make sure the curvature of the handle is oriented properly relative to the cup holes, to ensure their correct orientation during impaction.

Firmly tighten the assembly.

5 Final Cup Impaction



Insert the cup into the acetabulum, making sure to respect the inclination and anteversion defined during the trials:

- The alignment guide is vertical to indicate a 45° cup inclination. **Any verticalization of the cup (>45°) is not recommended.**
- The impactor handle is oriented with a 15° to 20° angle relative to the patient's body axis.

Once the position of the cup has been validated, proceed with the impaction by striking the impaction plate with the hammer.

Visually check that:

- The back side of the cup is in contact with the acetabulum, through the screw holes.
- The cup is correctly oriented in the acetabulum and the anterior edge is not protruding, to avoid any risk of conflict with the psoas.

When the cup is fully seated, remove the impactor handle by unscrewing the handle (straight version) or the screw (curved version).

NOTE

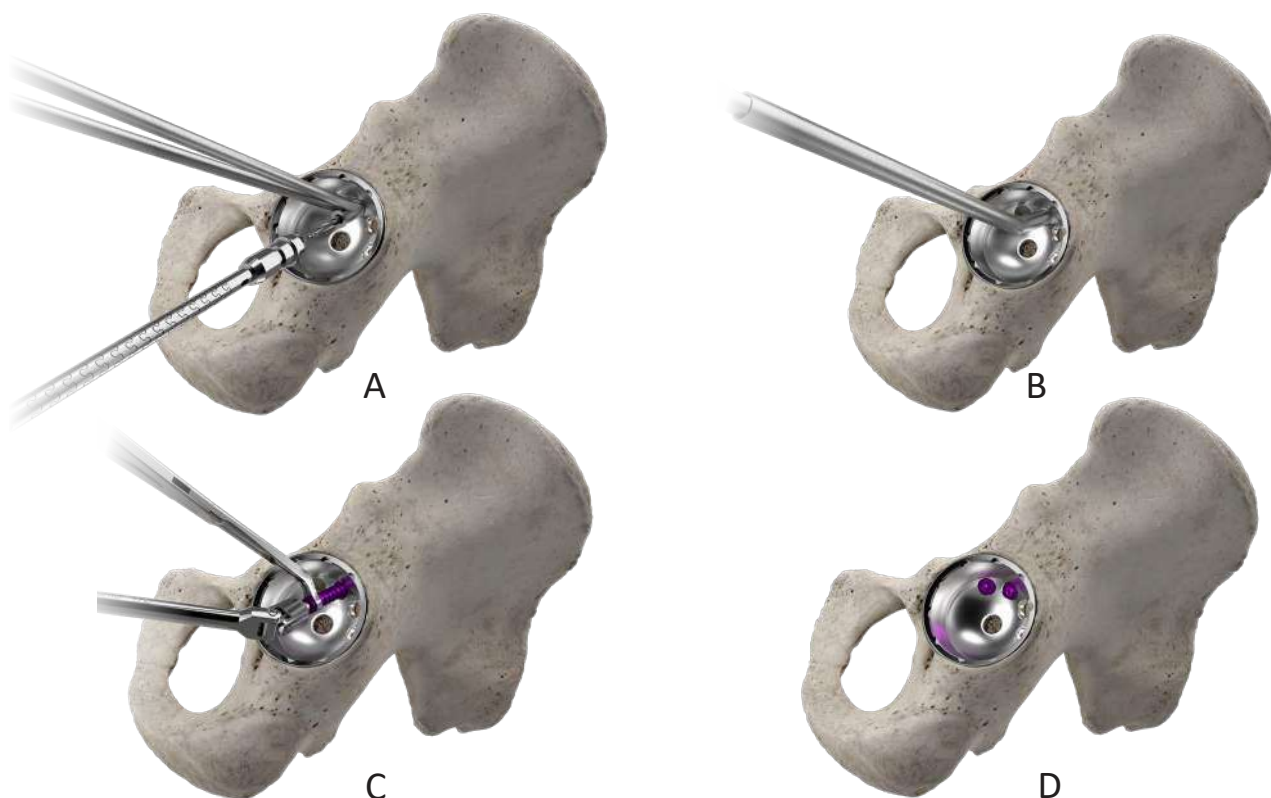
In cases of sclerotic bone, after reaming the acetabulum to a given diameter, the cup may be difficult to position or may not seat properly. In this case, remove the cup and:

- If the anterior and posterior rims are thick enough, ream the **acetabular rim** with a larger reamer (+2 mm).
- If bone stock allows, deepen the acetabulum with the last reamer used without increasing its diameter.

Reinsert and impact the cup.

6

Insertion of Fixation Screws (optional)



If the primary fixation of the cup is not satisfactory after impaction, it can be reinforced using up to 4 fixation screws.

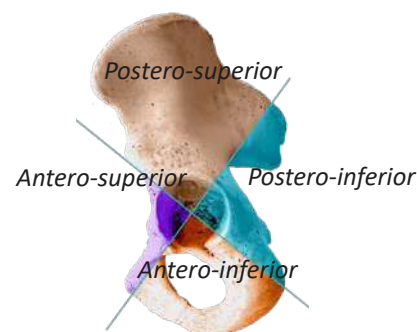
Additional screws should only be positioned in the posterior quadrants of the acetabulum. The anterior quadrants should be avoided in primary cases.

Attach the flexible shaft to the motor, assembled with the Ø3.2 mm drill bit of the appropriate length. Drill one of the holes in the cup using the drilling guide (A).

Measure the required screw length using the screw gauge (B).

IMPORTANT

Do not bend the flexible shaft to its maximum angulation during drilling.



Select the appropriate final screw, position it in the screw holder clamp, and screw it directly into the dedicated hole using the H3.5 screwdriver, in the straight or angled position (C). To use the screwdriver in the straight position, slide the sleeve toward the end of the screwdriver. This will lock the cardan. To use it in the cardan position, slide the sleeve back up.

IMPORTANT

Ensure that the screw heads are completely embedded in the shell and that they do not interfere with the positioning of the liner (D). If this is not the case, the screw must be screwed in further or removed and inserted at a different angle.

NOTE

In cases where the drill bit is not long enough for a bicortical drilling, once the hole has been drilled, remove the drilling guide and keep drilling directly with the drill bit alone. This allows for additional drilling depth.

7 Trials with Final Cup Implanted



Perform femoral preparation according to the surgical technique dedicated to the femoral implant.

Select the trial liner of the same size as the final cup and featuring an internal diameter equivalent to the desired femoral head size.

Insert the trial liner into the implanted cup.

Color code for trial heads and trial liners



Ø28mm

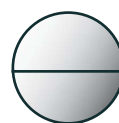


Ø32mm

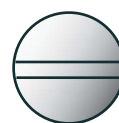


Ø36mm

Code for trial heads' neck length



Short
Neck



Medium
Neck



Long
Neck



Extra-long
Neck

Perform mobility and stability trials with the femoral stem in place.

Once trials are satisfying, remove the trial liner using the hook at the end of the drill guide. Place it into the inner groove of the trial liner and pull gently to remove it.



Select the final liner corresponding to the one validated during trials.

Carefully clean and dry the internal area of the cup.

Using a ceramic liner:

Position the insertion suction pad in the ceramic liner:

- First generation of suction pad (green): press it against the liner to create a vacuum grip.
- Second generation of suction pad (beige): the metallic rod must be locked in bottom position. Press it against the liner to create a vacuum grip.

Handle the assembly with care to avoid the release and fall of the liner.

Introduce the liner into the cup by sliding it along the Morse taper, in the same axis as the cup.

Visually check and feel with a finger to confirm that the liner is correctly seated into the cup.

The liner should be flush with the groove inside the cup. Any misalignment of the liner during its introduction could jeopardize its resistance during impaction or during post-operative weight-bearing.

If the liner is poorly inserted, remove it following the instructions given on page 20.

Manually press on the extremity of the suction pad to stabilize the liner.

Release the suction cup to clear the vacuum:

- First generation (green): pull the trigger;
- Second generation (beige): turn a quarter turn and then pull on the metal rod.

Using a polyethylene liner:

Introduce the liner into the cup by hand.

Make sure the tabs are correctly aligned with the indentations on the cup's rim.

The neutral liners do not require any specific orientation.



8 Impaction of Final Liner and Final Trials



Fully screw the liner impaction sphere of the same diameter as the liner's inner diameter, onto either the straight or curved impactor.

Impact the liner with a hammer blow on the strike of the impactor.

Confirm visually, and by a touch, that the liner is correctly seated:

- Ceramic liner: it must be flush with the inner groove of the cup;
- Polyethylene liner: all its tabs must be flush with the rim of the cup.

Once the final femoral stem has been implanted, it is possible to perform new stability tests: using a trial head with the same diameter as the internal diameter of the insert and the desired neck length, reduce the joint and check mobility and stability, as well as leg length.

If necessary, change the neck length of the head until a satisfying result is achieved.

IMPORTANT

The neutral polyethylene liners can be paired with either a metal or ceramic femoral head. The BIOLOX® *Delta* ceramic liners can only be paired with BIOLOX® *Delta* femoral head.

Extraction: Ceramic Liner Removal



In case of cup revision or if the ceramic liner has been misaligned during insertion, removal of the liner is necessary.

Clean and dry the liner from any liquid or debris and place the suction pad in the ceramic liner.

- First generation of suction pad (green part): press down the suction pad to create vacuum for prehension
- Second generation of suction pad (beige part): the metallic rod must be locked in bottom position. Press it against the liner to create a vacuum grip.

Place the ceramic liner extractor or any smooth metallic part on the external rim of the cup.

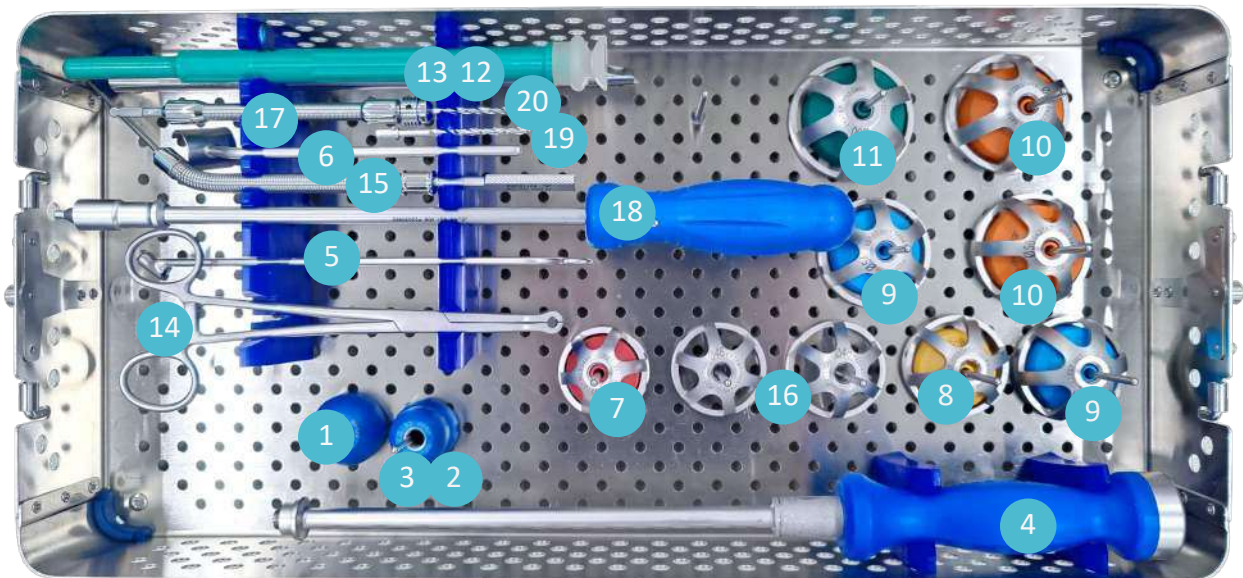
While pulling on the suction cup, tap the edge of the cup with the liner extractor / metallic part using a hammer until the liner is released by resonance.





Instrumentation

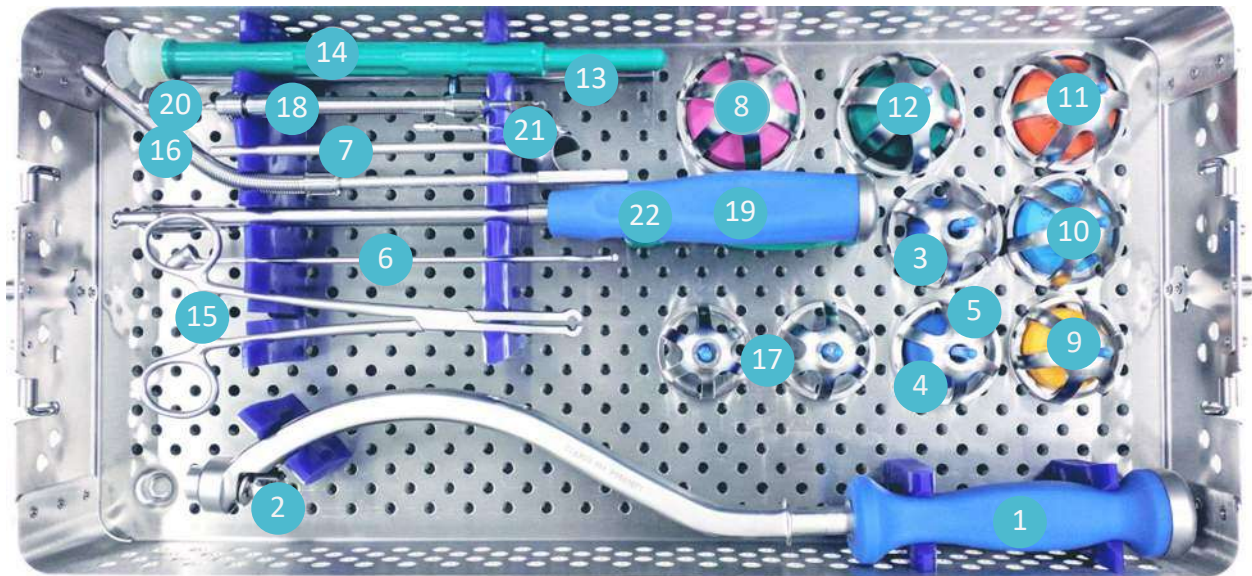
Straight Impactor Handle Instrumentation Set



Rep	Description	Reference	Qty
1	Ø28 spherical pusher tip M10 anterior approach	H76 004	1
2	Ø32 spherical pusher tip M10 anterior approach	H76 005	1
3	Ø36 spherical pusher tip M10 anterior approach	H76 006	1
4	M10 straight impactor	H76 009	1
5	Drill guide Ø3.2 anterior approach	H76 010	1
6	Snap in version rod	H76 019	1
7	Trial liner hooded Ø28 for Ø44 cup (red)	H76 031	1
8	Trial liner neutral Ø32 for Ø46-48 cup (yellow)	H76 022	1
9	Trial liner neutral Ø32 for Ø50-52 cup (blue)	H76 042	1
9	Trial liner neutral Ø36 for Ø50-52 cup (blue)	H76 023	1
10	Trial liner neutral Ø32 for Ø54-56 cup (orange)	H76 043	1
10	Trial liner neutral Ø36 for Ø54-56 cup (orange)	H76 024	1
11	Trial liner neutral for Ø58-60 cup (green)	H76 025	1
12	Ceramic insert extractor	H30 001	1
13	Ceramic liner extractor - Suction cup device	H30 002	1
14	Forceps for Ø6 screws	H03 003	1
15	Screw gauge	H03 004	1
16	Trial cup Ø46 to Ø60 (no slit) (2mm increments)	H03 0446 to H03 0460	1 of each
17	AO connector Ø8	H0010050099	1
18	H3,5mm screwdriver with universal joint	S01 005	1
19	Ø3.2 drill bit with pin length 25 mm	S01 010	1
20	Ø3.2 drill bit with removable pin length 45 mm	S01 003	1

Instrumentation

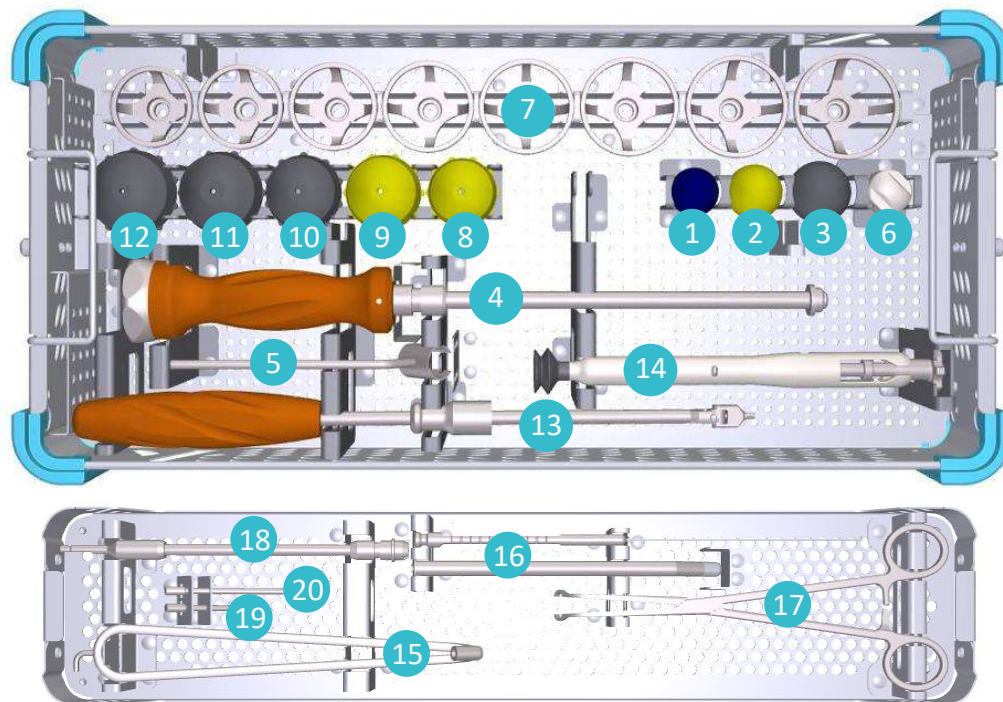
Curved Impactor Handle Instrumentation Set



Rep	Description	Reference	Qty
1	Curved cup impactor handle anterior approach	H76 001	1
2	Screw curved cup impactor anterior approach	H76 002	1
3	Ø28 spherical pusher tip M10 anterior approach	H76 004	1
4	Ø32 spherical pusher tip M10 anterior approach	H76 005	1
5	Ø36 spherical pusher tip M10 anterior approach	H76 006	1
6	Drill guide Ø3.2 anterior approach	H76 010	1
7	Snap in version rod	H76 019	1
8	Trial liner hooded Ø28 for Ø44 cup (red)	H76 031	1
9	Trial liner hooded Ø28 for Ø44 cup (red)	H76 022	1
10	Trial liner neutral Ø32 for Ø46-48 cup (yellow)	H76 042	1
10	Trial liner neutral Ø32 for Ø50-52 cup (blue)	H76 023	1
11	Trial liner neutral Ø36 for Ø50-52 cup (blue)	H76 043	1
11	Trial liner neutral Ø32 for Ø54-56 cup (orange)	H76 024	1
12	Trial liner neutral Ø36 for Ø54-56 cup (orange)	H76 025	1
13	Trial liner neutral for Ø58-60 cup (green)	H30 001	1
14	Ceramic liner extractor - Suction cup device	H30 002	1
15	Forceps for Ø6 screws	H03 003	1
16	Screw gauge	H03 004	1
17	Trial cup Ø46 to Ø60 (no slit) (2mm increments)	H03 0446 to H03 0460	1 of each
18	AO connector Ø8	H0010050099	1
19	H3,5mm screwdriver with universal joint	S01 005	1
20	Ø3.2 drill bit with removable pin length 25 mm	S01 010	1
21	Ø3.2 drill bit with removable pin length 45 mm	S01 003	1
22	T handle for screw to lock curved cup holder	H76 003	1

Instrumentation

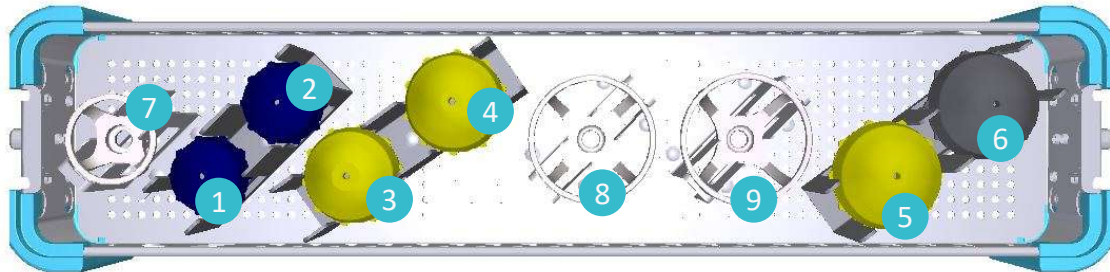
Straight Handle Set Second Generation



Rep	Designation	Reference	Qty
1	Liner impactor - M10 - Ø28	2-0182528	1
2	Liner impactor - M10 - Ø32	2-0182532	1
3	Liner impactor - M10 - Ø36	2-0182536	1
4	Cup Impactor - M10 Thread - Straight	2-0182400	1
5	Alignment guide for M10 Cup impactor	2-0182800	1
6	Cup realigner	2-0182900	1
7	Trial Cup - M10 thread - Size 46 mm to 60 mm (2mm increment)	2-0182102 to 109	1 of each
8	Trial liner - Neutral - Size 46-48/32	2-0182007	1
9	Trial liner - Neutral - Size 50-52/32	2-0182008	1
10	Trial liner - Neutral - Size 50-52/36	2-0182012	1
11	Trial liner - Neutral - Size 54-56/36	2-0182013	1
12	Trial liner - Neutral - Size 58-60/36	2-0182014	1
13	Screwdriver 2 in 1 - H3,5	2-0182200	1
14	Liner Handling Suction pad	2-0182600	1
15	Ø3.2 Drill guide - Liner remover	2-0182700	1
16	Depth Gauge with Hook - 23°	2-0189100	1
17	Screw holder Clamp	2-0102800	1
18	Flexible Drive Shaft	2-0182300	1
19	Short drill bit Ø3.2 length 50 mm	2-0102500	1
20	Long drill bit Ø3.2 length 70 mm	2-0102600	1

Instrumentation

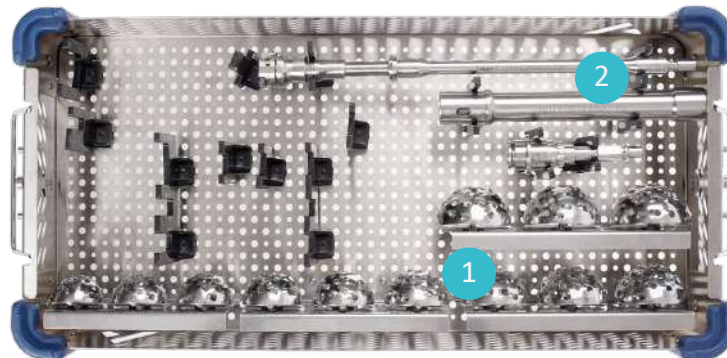
Extreme Sizes Set



Rep	Designation	Reference	Qty
1	Trial liner - Neutral - Size 44/28	2-0182001	1
2	Trial liner - Neutral - Size 46-48/28	2-0182002	1
3	Trial liner - Neutral - Size 54-56/32	2-0182009	1
4	Trial liner - Neutral - Size 58-60/32	2-0182010	1
5	Trial liner - Neutral - Size 62-64/32	2-0182011	1
6	Trial liner - Neutral - Size 62-64/36	2-0182015	1
7	Trial Cup - M10 thread - Size 44 mm	2-0182101	1
8	Trial Cup - M10 thread - Size 62 mm	2-0182110	1
9	Trial Cup - M10 thread - Size 64 mm	2-0182111	1

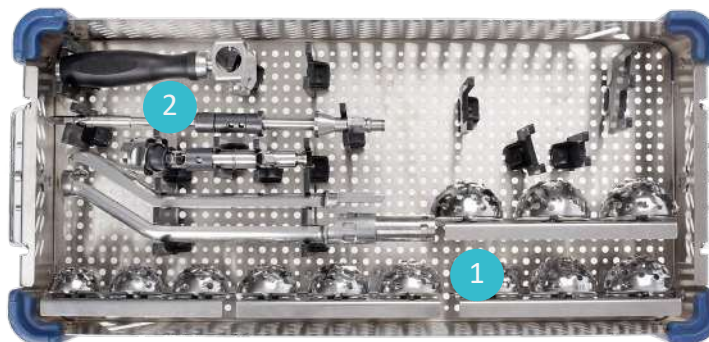
Instrumentation

Acetabular reamers set - Straight Handle



Rep	Designation	Reference	Qty
1	Acetabular reamer Ø42 to Ø64	2-0192942 to 2-0192964	1 each
2	Metallic Reamer handle - Straight + Connection Tip reamer Handle - Power Tool - Large AO	2-0131001 + 2-0131003	1 each

Acetabular reamers set - Offset Handle



Rep	Designation	Reference	Qty
1	Acetabular reamer Ø42 to Ø64	2-0192942 to 2-0192964	1 each
2	Metallic Reamer handle - Offset + Connecting Shaft Assembly - Large AO	2-0131002 + 2-0131005	1 each



Appendix A

Assembly and Use of Curved Impactor



Instrument Assembly

The instrument is composed of 3 parts:

- The screw for curved impactor
- The curved impaction handle
- The orientatign screwdriver

Make sure the screw is assembled with its washer and insert it into the distal end of the impaction handle, until its threaded end protrudes from the opening.

Insert the screw handle through the opening on the handle and place the pins into the screw head.



How to use the impactor

Screw the component (trial cup, final cup or impaction plate for hooded liner) with the orientating screwdriver, and remove it from the opening before inserting the impactor into the acetabulum.

For the final cup and the impaction plate for hooded liner, always make sure to orient the components properly with regard to the curvature of the handle.

To leave the trial or final cup in place, unscrew the screw using the orientating screwdriver, inserted in situ through the opening of the handle.



Appendix B

Straight reamer handle assembly

The acetabular reamer handle is composed of three elements:

▸ The rod



▸ The sleeve

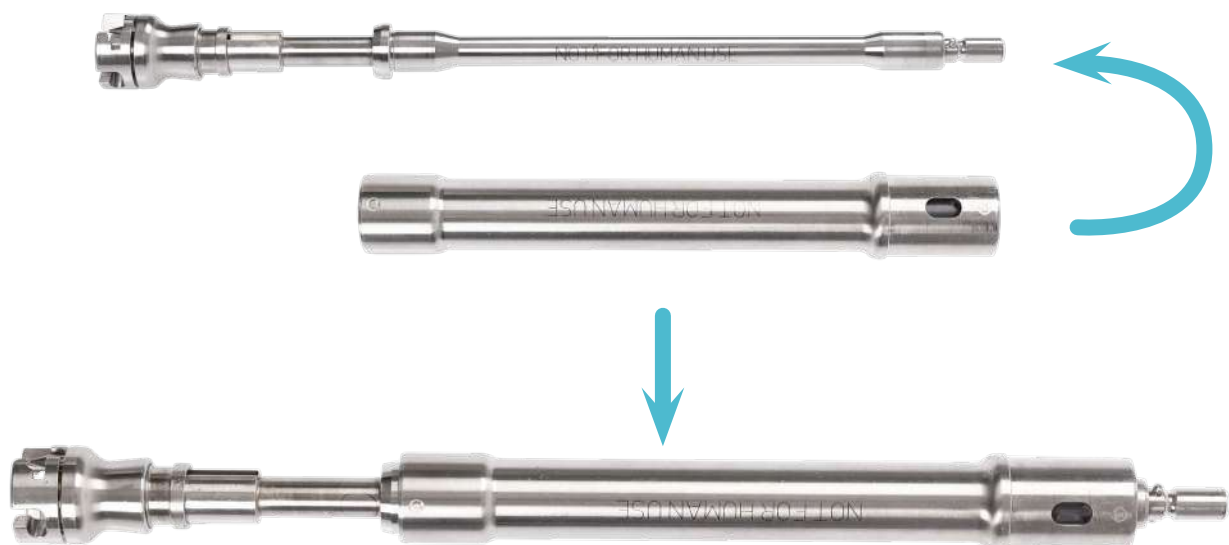


▸ The connection tip to power tool



Instructions for the assembly of the three parts:

- 1 The sleeve tip with the oblong hole should be oriented towards the power tool. If assembled in the wrong position, it will be impossible to join the connector to the power tool at a later stage. It is therefore crucial that this hole is on the same side as the power tool connection tip. The oblong hole is designed to accommodate the navigation tip in the case of navigated surgery.

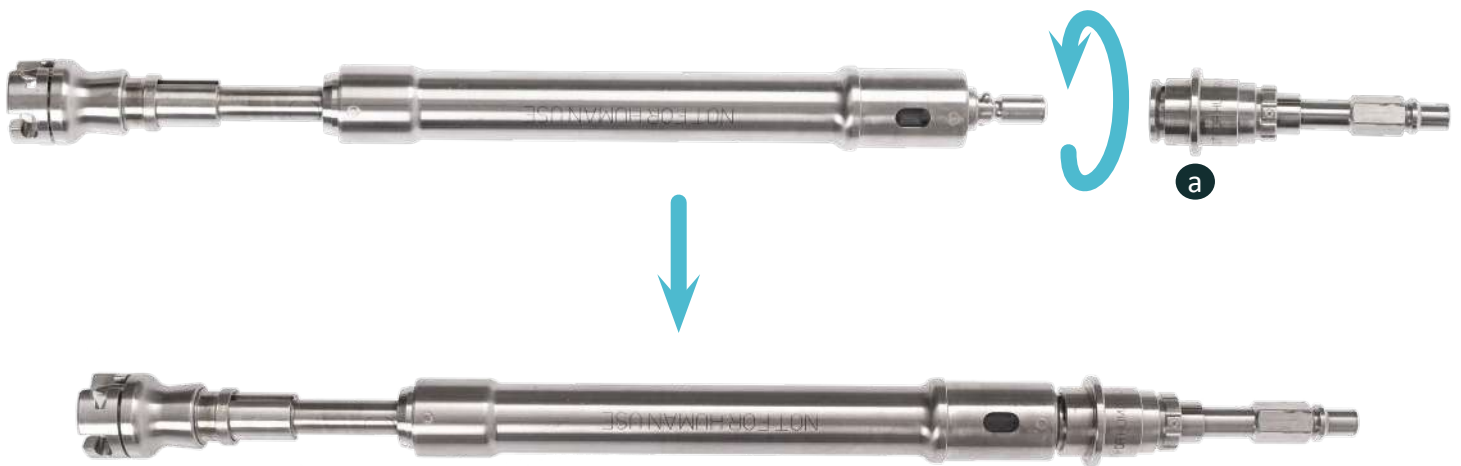


Appendix B

Straight reamer handle assembly

2 Assembly of the connection tip to the power tool:

Pull out the small ring (a) of the connection tip to the motor and position it on the previous assembly, turning it through a quarter-turn and then releasing the ring. Note that the instrument set is made up of either the Large AO option **(2-0131003)** or the Zimmer Hall option **(2-0131004)**.



Check that the sleeve rotates freely around the rod.

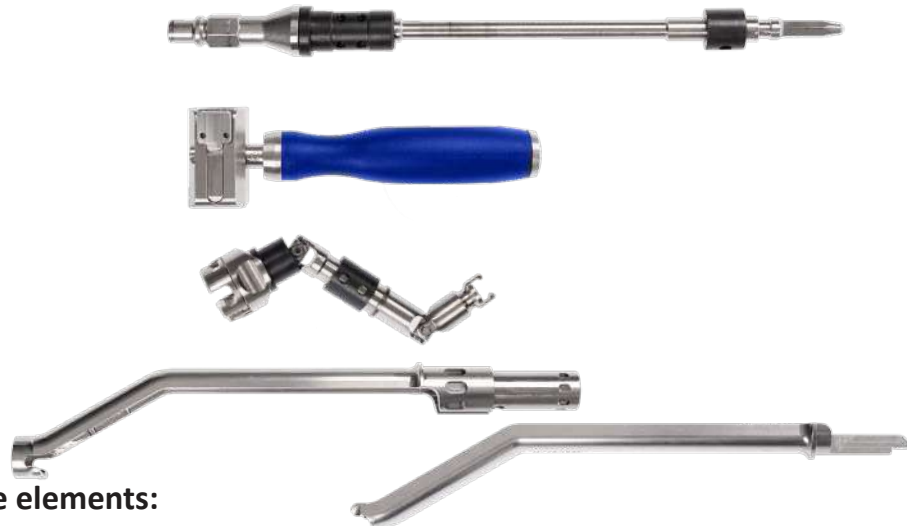
For disassembly, follow the steps in reverse order.

Appendix C

Offset reamer handle assembly

The Offset acetabular reamer handle is composed of five elements:

- The power tool linking rod
(Large AO or Zimmer-Hall)
- The handle
- The reamer locking system
- The sleeve and the cover



Assembly instructions for these five elements:

- 1 Insert the reamer locking mechanism into the dedicated sleeve. The ring in peek should be positioned into the dedicated hole.

This mechanism features in option a disengaged position, allowing you to place the reamer in the acetabulum manually, position the reamer handle onto the reamer without locking, ream, and remove the handle while leaving the reamer into the bone. In this case, the reamer has to be removed manually. In order to use this option, simply pull and turn the ring.



- 2 Insert the power tool linking rod into the sleeve. Ensure that it is well clipped (a small click should be heard). Additionally, make sure to properly place the PEEK bearings: the one for the rod must be flush at the bottom. If the PEEK bearings are not correctly positioned, you will not be able to close the cover.

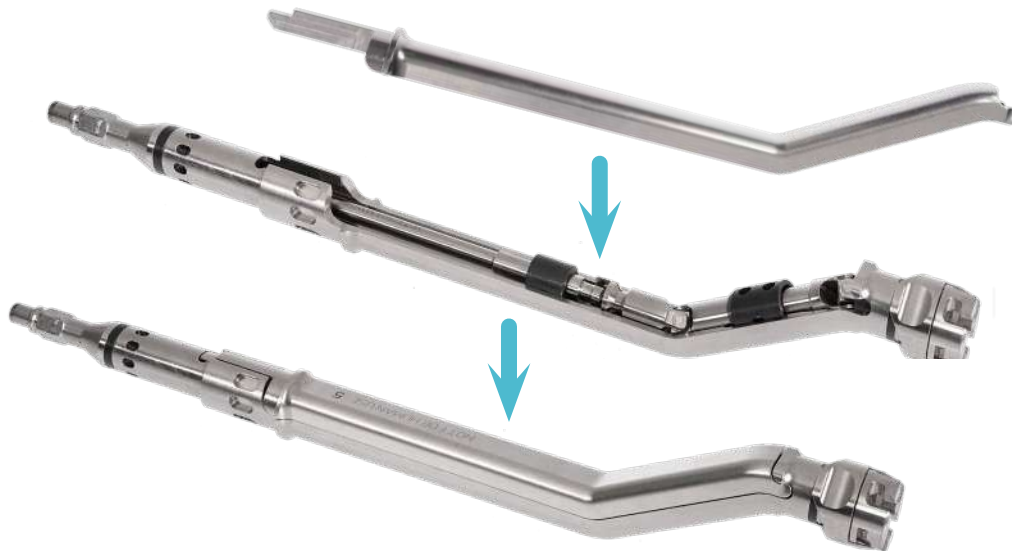
Please note that the linking rod can be either a Large AO tip (**2-0131005**) or a Zimmer Hall tip (**2-0131006**).



Appendix C

Offset reamer handle assembly

- 3 Clip the cover onto the sleeve, beginning by the end located close to the reamer.



- 4 Secure the handle onto the sleeve by pressing the ratchet and locking it into one of the oblong holes for a secure assembly. Once assembled, the handle shouldn't turn without pressing the ratchet.

In case of navigated surgery, first assemble the navigation tip on one of the oblong holes of the handle before positioning the handle.

The handle is equipped with a ratchet system to allow an adequate orientation. It securely locks into the oblong holes of the handle.





[illegible]



Product availability may vary depending on the country. Please check with your local representative for availability.

Service Clients – France :

Porte du Grand Lyon,
01700 Neyron – France
Tél. : **+33 (0)4 37 85 19 19**
Fax : +33 (0)4 37 85 19 18
E-mail : amplitude@amplitude-ortho.com

Customer Service – Export :

11, cours Jacques Offenbach, ZA
Mozart 2,
26000 Valence – France
Tél. : **+33 (0)4 75 41 87 41**
Fax : +33 (0)4 75 41 87 42

www.amplitude-ortho.com



<https://eifu.amplitude-ortho.com>