



## Surgical Technique



# Summary

Concept and Range .....	5
Surgical Technique Overview.....	8
Step 1 - Pre-operative Planning.....	10
Step 2 - Acetabulum Preparation .....	11
Step 3 - Verification of Reaming.....	12
Step 4 - Trials with Trial Cup.....	13
Step 5 - Final Cup Prehension .....	14
Step 5 - Final Cup Impaction.....	15
Step 6 - Insertion of Fixation Screws (Optional) .....	16
Step 7 - Trials with Final Cup Implanted .....	17
Step 7 - Introduction of Final Liner .....	18
Step 7 - Impaction of Final Liner and Final Trials .....	19
Optional : Hooded Liner Impaction Plate .....	20
Extraction : Ceramic Liner Removal .....	21
Instrumentation.....	23
Appendix A .....	26



# Concept and Range

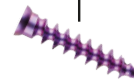


Cementless

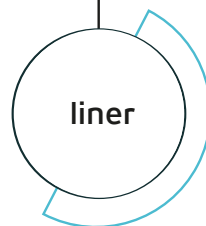
Press-fit with Holes



12 sizes  
44 to 66 mm



Ø6mm screws  
Length 20 to 30mm  
Length 35 to 50mm on request only  
(5mm increments)



liner

BIOLOX® Delta  
heads Ø32-36 mm

PEXEL®-E  
heads Ø32-36 mm

PEXEL® hooded  
heads Ø28 mm



sizes  
46 to 66mm



sizes  
46 to 66mm



sizes  
44 to 66mm

STELLAR® SYSTEM

Ceramic

Polyethylene

	Ø44 mm	Ø46 mm	Ø48 mm	Ø50 mm	Ø52 mm	Ø54 mm	Ø56 mm	Ø58 mm	Ø60 mm	Ø62 mm*	Ø64 mm*	Ø66 mm*
Cup												
BIOLOX® Delta Ø32 mm												
BIOLOX® Delta Ø36 mm												*
PEXEL®-E Ø32 mm									*			*
PEXEL®-E Ø36 mm												*
PEXEL® Ø28 mm												*

\* Option, sizes available on request

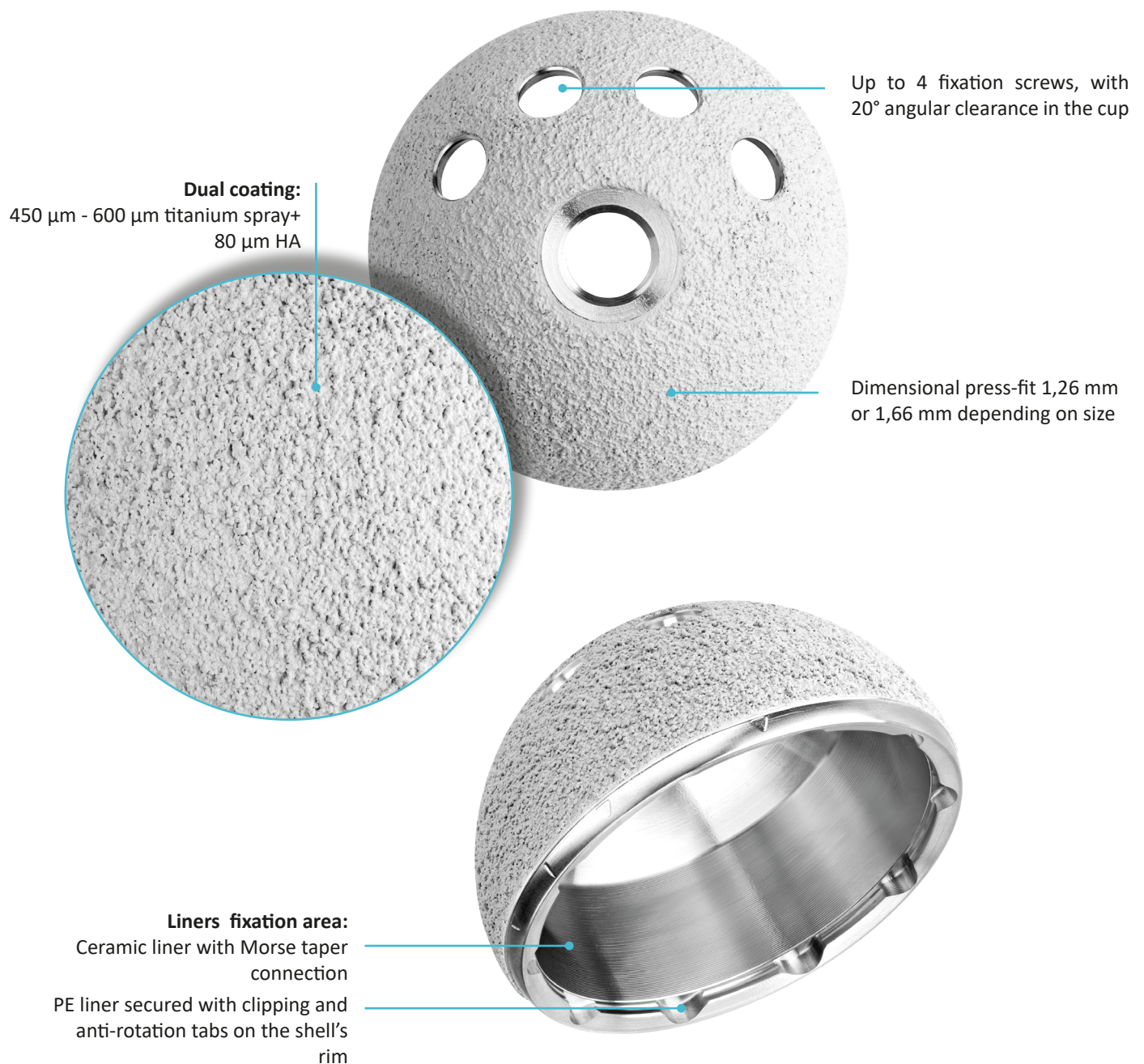
---

# 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 induced by coating thickness and shell oversizing
- ▶ Additional fixation with cancellous bone screws



**Material:** Titanium Alloy (Ti6Al4V)

# Concept and Range

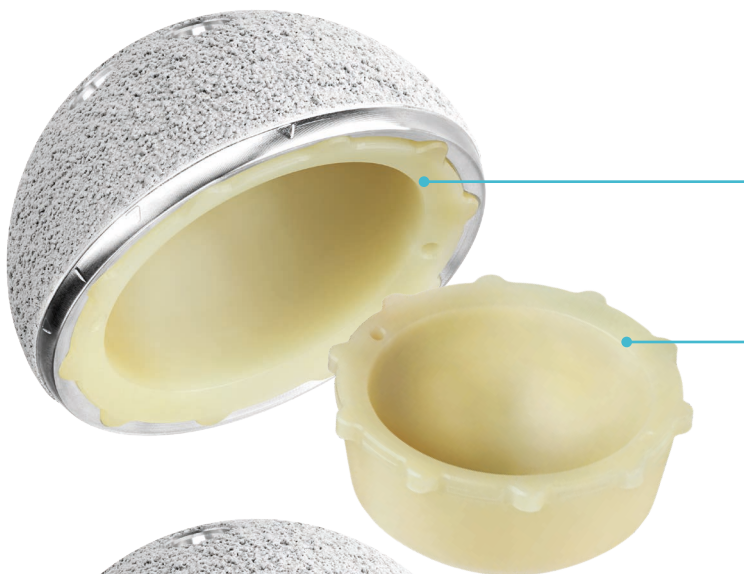
## Ceramic Liner



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

BIOLOX® delta liner for ceramic-on-ceramic bearing option

## Polyethylene Liners



20° peripheral chamfer

PEXEL®-E : Vitamin E highly crosslinked UHMWPE

Crosslinking obtained with 100 kGy gamma ray dose



6 mm/20° anti-dislocation posterior hood

32° anterior chamfer

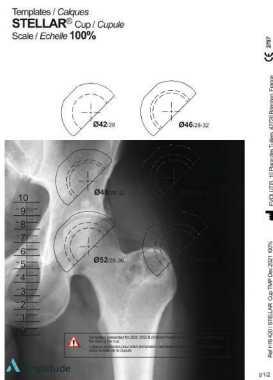
PEXEL® : Moderately crosslinked UHMWPE

Crosslinking obtained with 40 kGy gamma ray dose

# Surgical Technique Overview

1

## Pre-operative Planning



2

## Acetabulum Preparation



3

## Verification of Reaming



4

## Trials





# Surgical Technique Overview

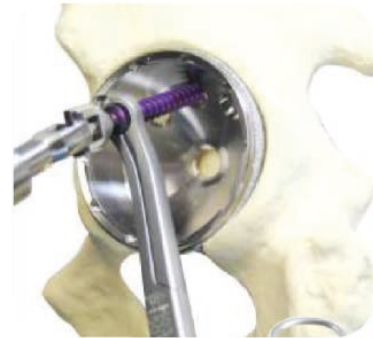
5

Final Cup Impaction



6

Insertion of Fixation Screws

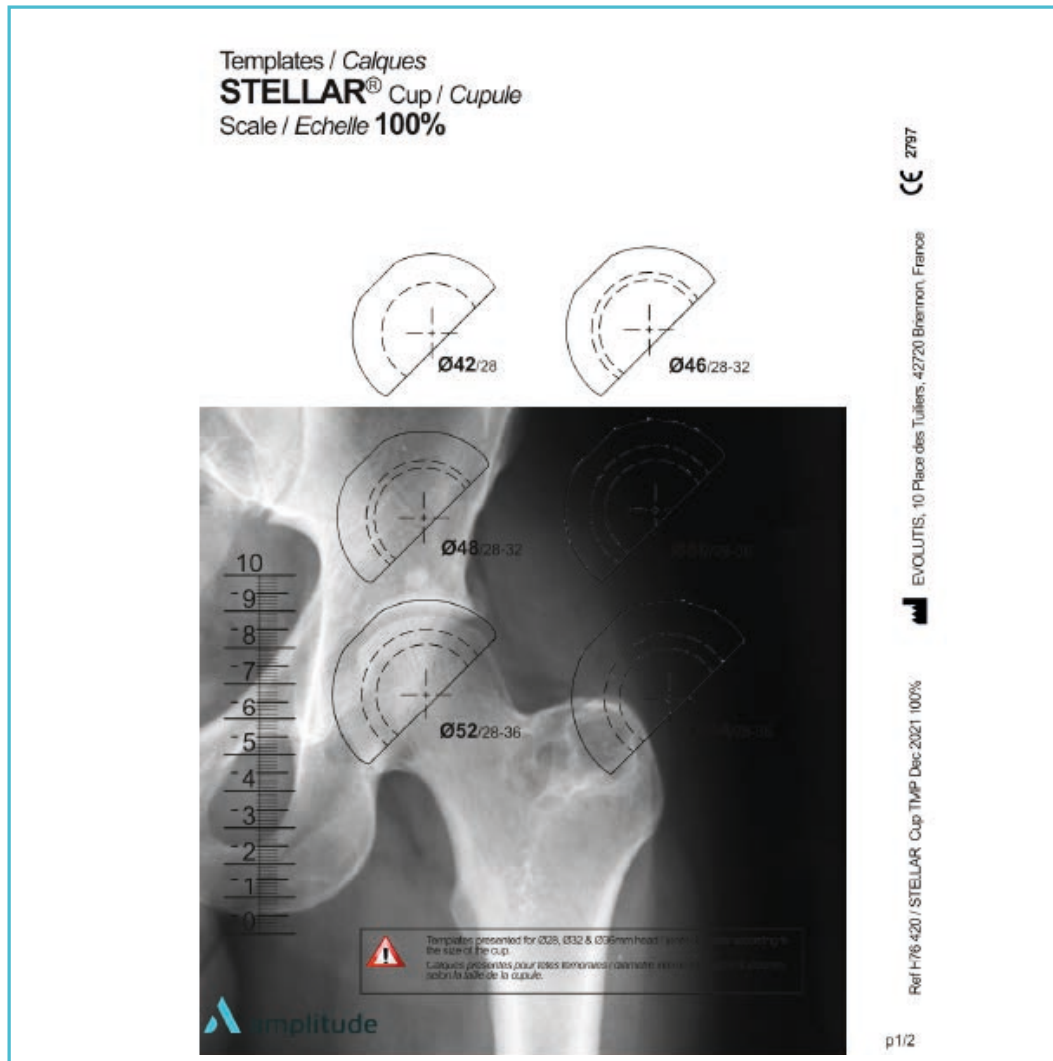


7

Trials and Impaction of Final Liner



# 1 Pre-operative Planning



Using the radiographs and templates:

- Determine the centre of rotation of the implant with these landmarks:
  - Inferior position of the acetabulum relative to the pelvic tear-drop
  - Maximum depth on the acetabular fossa (external lamina)
  - Coverage (inclination)
- Estimate the cup size

## 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

The provided templates have a 115 % scale but are also available with other scaling upon request.



## 2 Acetabulum Preparation



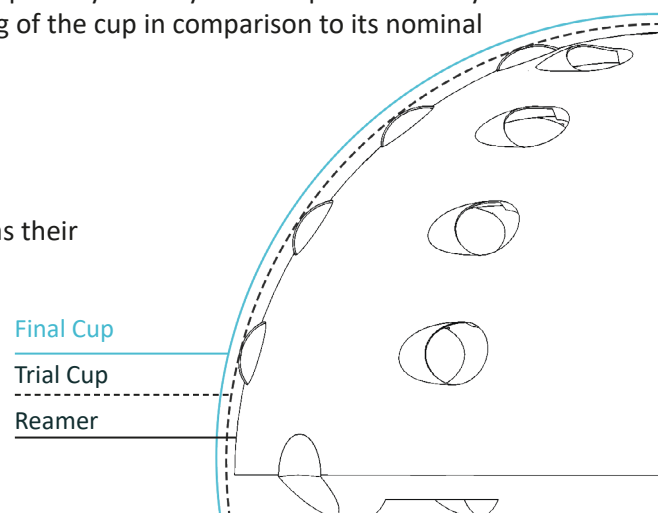
After exposure of the coxo-femoral joint, dislocation and resection of the femoral head, excision of the labrum and of the residues of the ligamentum teres, begin the reaming of the acetabulum with the smallest size reamer available.

Increase the reamer sizes down to the sub-chondral bone while avoiding reducing the thickness of the anterior and posterior walls of the acetabulum.

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

- For cup sizes 44 and 46 mm: 1,36 mm
- For cup sizes 48 and above: 1,66 mm

The actual diameter of the reamer and the trial cup is the same as their given diameter, they do not include an oversizing.



### 3 Verification of Reaming



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

Screw the trial cup on the straight or the curved impaction handle according to the one being used (instructions on how to assemble and use the curved impactor in Appendix 1).

Assemble the 45° inclination axis on the impactor being used:

#### Using a straight handle:

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

Check that the tip of the 45° is oriented towards the blue grip

Pull the 45° axis 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 45° axis by 90° to lock it on the curved handle.

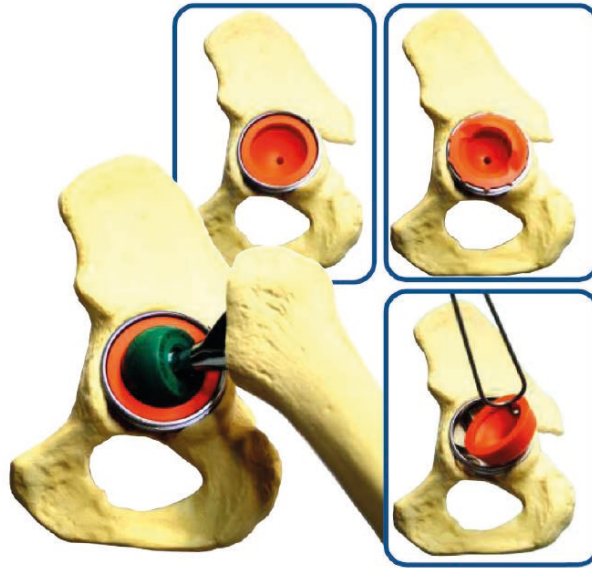


Rotate

Introduce and impact the trial cup in the acetabulum in order to evaluate:

- Cup size
- Depth of the reamed cavity
- Primary stability of the final cup

## 4 Trials with Trial Cup



Unscrew the impaction handle being used from the trial cup by untightening the handle (straight version) or the screw (curved version).

Prepare the femur by following the surgical technique for the chosen stem.

Select the trial liner corresponding to the size of the trial cup and of the desired head diameter (check p.5 for size chart and p.20-21 for the list of trial liners available in the tray).

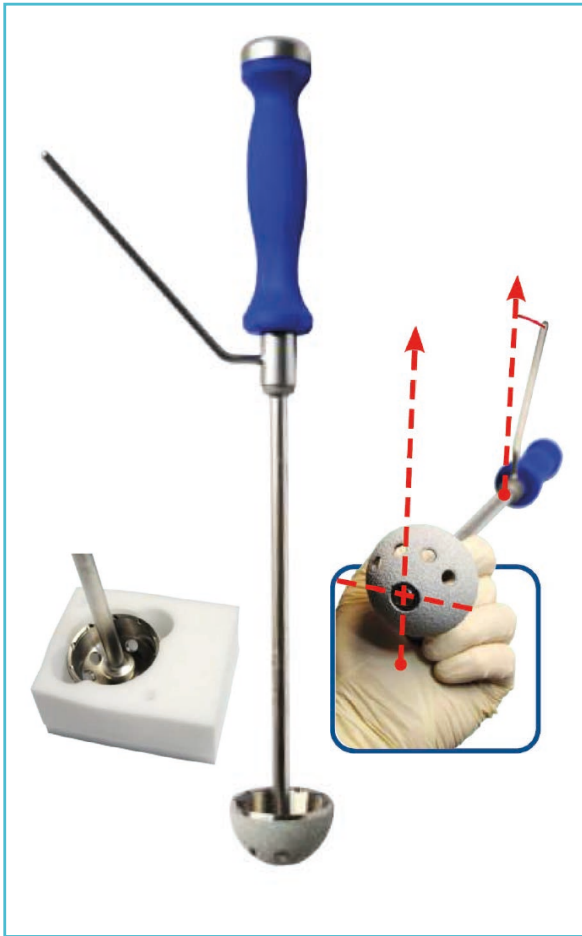
Place the trial liner by hand into the trial cup. The peg at the apex of the liner fits into the threaded hole of the trial cup.

Make sure the diameter of the trial head and the inner diameter of the liner are the same.

Reduce the hip joint, perform stability trials and check leg length.

After trials, use the hook present at the end of the drill guide to easily remove the trial liner.

## 5 Final Cup Prehension



For most indications, after reaming the acetabulum to a given diameter, the cup size to be selected will correspond to the same diameter as the trial cup (size for size).

STELLAR® labels feature a matching color coding between the trial liner color and the color highlight of the size on the label for compatible components.

*Example : A 52 mm cup is validated with a blue trial liner and the sizes on the packaging (for cups and compatible liners) are highlighted in blue.*

Open the sterile packaging of the cup, remove the pouches, and leave the cup in the white foam pack. Assemble the 45° axis on the impactor being used, following the instructions given in p.12.

### Using a straight handle:

Introduce the tip of the straight impactor into the cup, and screw the handle into the threaded apex hole of the cup. Firmly tighten the assembly.

Orient the 45° axis so that it is aligned with the superior quadrant of the cup and its 4 screw holes.

### Using a curved handle:

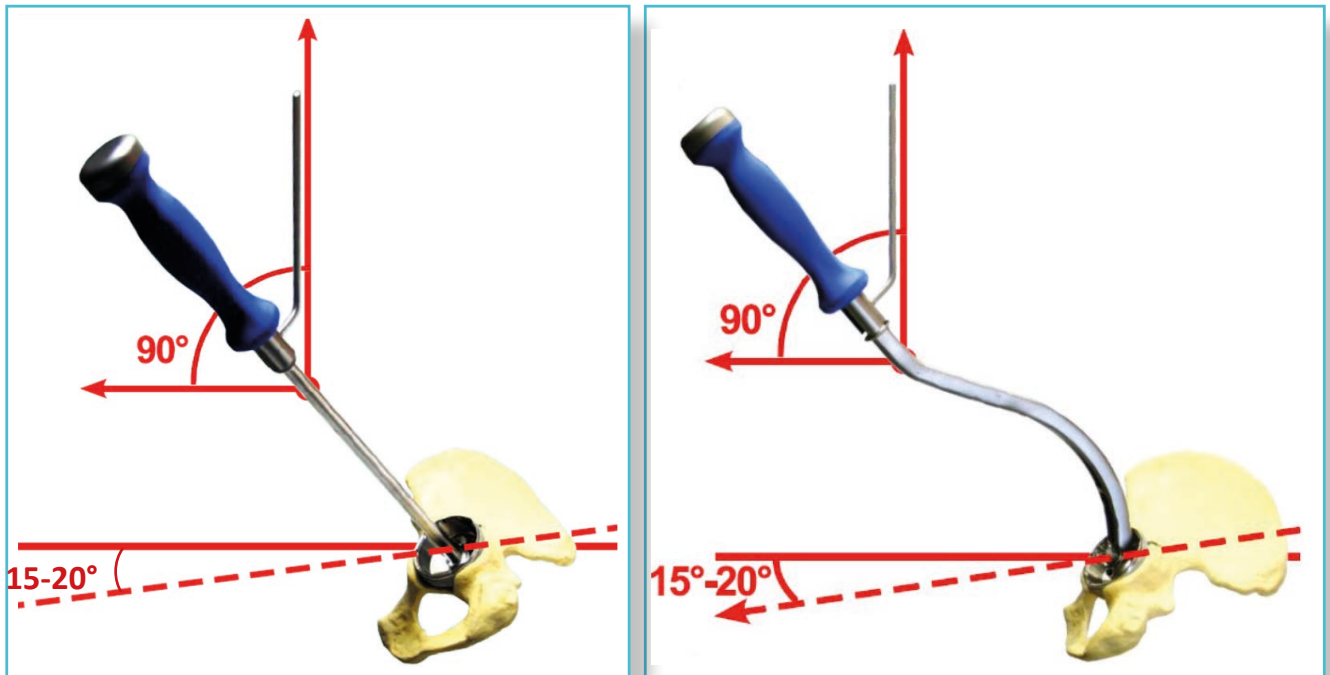
**See instructions on how to assemble and use the curved impactor in Appendix 1.**

**Introduce the tip of the curved impactor into the cup, and tighten the screw into the threaded apex hole of the cup. Make sure the curvature of the handle is oriented properly relative to the cup holes, to ensure their correct orientation once the impaction process starts.**

**Firmly tighten the assembly.**



## 5 Final Cup Impaction



Introduce the cup into the acetabulum making sure:

- The 45° inclination axis is perfectly vertical. Verticalization of the cup (>45°) is strictly forbidden.
- The impaction handle is oriented with a 15° to 20° angle relative to the body axis of the patient.

Once the impaction handle is correctly aligned, impact the cup by striking onto the strikeplate 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 risks of conflict with the psoas.

Special cases: in sclerotic bone, after reaming the acetabulum to a given diameter, the cup could be difficult to position or may seat imperfectly into the acetabulum. In such cases, the cup should be removed and either:

- If the anterior and posterior walls are thick enough, introduce an acetabular reamer one size above (+2 mm) at the entry of the acetabulum and ream the acetabular rim only.
- If the bone stock allows it, deepen the acetabulum with the last reamer introduced without increasing its diameter, and then re-introduce and impact the cup.

Remove the impactor by untightening the handle (straight version) or the screw (curved version).

## 6 Insertion of Fixation Screws



If the primary fixation of the cup does not appear to be satisfactory after impaction, a complementary fixation with up to 4 cancellous screws is possible.

The complementary fixation screws should only be positioned in the posterior quadrants of the acetabulum. The anterior quadrants of the acetabulum should be avoided in standard primary THA cases. Drill the desired screw holes with the 25 mm or 45 mm drill bit assembled on the flexible shaft, and with the drill guide.

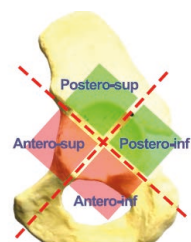
Note : The lengths of the drill bits are calculated to include the length of the drill guide. In cases where the drill bit is not long enough for a bi-cortical drilling, and once the first oriented drill hole has been performed, remove the drill guide and continue drilling directly with the drill bit alone. This allows for an additional 15 mm depth.

Measure the length of the screw with the screw gauge.

Select the appropriate screw, place it into the forceps and screw it into dedicated hole using the H3.5 screwdriver.

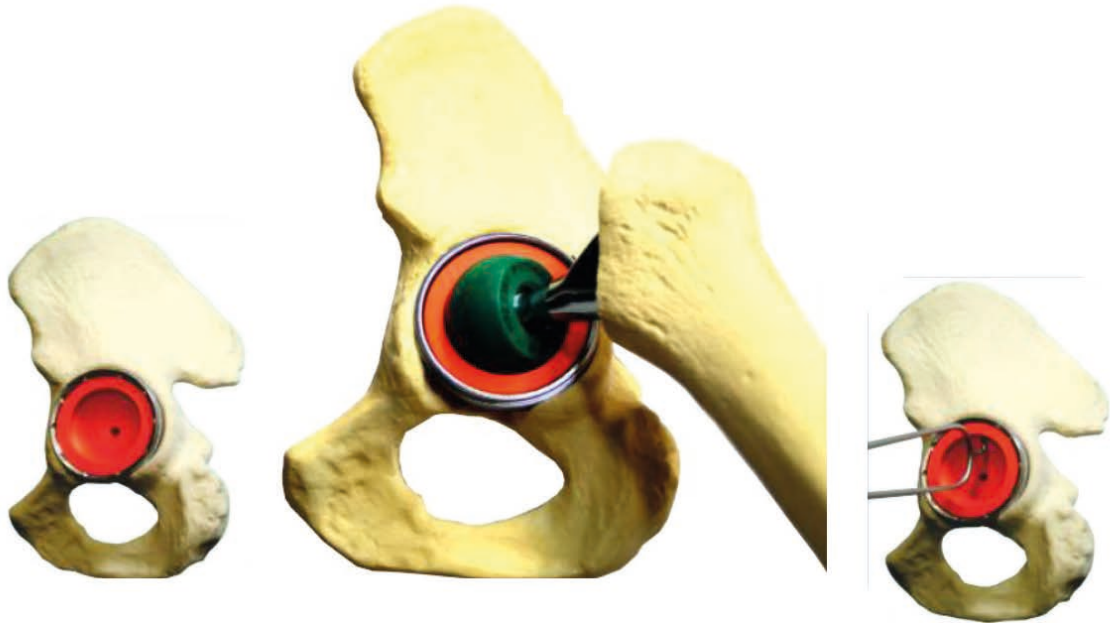
### IMPORTANT

Make sure the screw heads are completely embedded inside the cup and that they do not interfere with liner placement. If that is not the case, the screw should either be tightened further or removed and introduced in another angle.





## 7 Trials with Final Cup Implanted



If trials have not been performed previously or if they need to be repeated, place a trial liner in the implanted cup : the peg at the apex of the liner must sit in the threaded hole in the cup.

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

Remove the trial liner. The hook end of the drill guide can be placed in the groove on the inner rim of the trial liner to help with removal.

## 7 Introduction of the Final Liner



Select the final liner corresponding to the one validated during trials.  
Open the sterile packaging keeping the liner in the packaging foam.

### Using a ceramic liner:

Position the insertion plunger in the ceramic liner and press it against the liner to achieve prehension through vacuum.

Handle the assembly with care to prevent the plunger from releasing the liner and have it fall off.

Carefully clean and dry the inside of the cup.  
Introduce the liner into the cup.

Check visually, and by a touch of the finger, that the liner is correctly positioned within the cup.  
The liner should be flush with the groove that runs inside the cup. Any misalignment of the liner during its introduction can jeopardize its fixation and compromise its resistance during impaction or for its functional loading in post-surgery use.

If the liner is badly inserted, remove it following the instructions given in p.21.

Slightly and gently impact on the extremity of the plunger.

Release the liner from the plunger by pulling on the trigger, releasing the vacuum.

### Using a PE liner:

#### **Carefully clean and dry the inside of the cup.**

Introduce the liner into the cup by hand.

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

If using a PEXEL® Ø28 mm hooded liner : make sure the hood is oriented in the postero-superior quadrant of the acetabulum.

The PEXEL-E® neutral liners do not require any specific orientation.

## 7 Impaction of Final Liner and Final Trials



Attach the spherical impaction sphere of the same diameter as the liner's inner diameter, on either the straight or curved impactor.

Impact the liner with a hammer blow on the handle.

Confirm visually, and by a touch of the finger, that the liner is correctly impacted:

- The ceramic liner should be flush with the inner groove of the cup
- The PE liner has all its tabs flush with the cup's rim

After the final femoral stem has been implanted, perform final stability trials.

Using a trial head of the same diameter as the liner's inner diameter, and of the desired neck length, reduce the joint and check joint stability and leg length.

If necessary change the neck length until the proper result is achieved.

### IMPORTANT

The PEXEL-E and PEXEL hooded 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.

---

# Optional: PEXEL Hooded Liner

## Impaction Plate



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

Open the sterile packaging keeping the liner in the packaging foam.

Carefully clean and dry the inside of the cup.

Assemble the  $\varnothing 28$  mm impaction head on the impaction plate, then mount the assembly on either the straight or curved impactor.

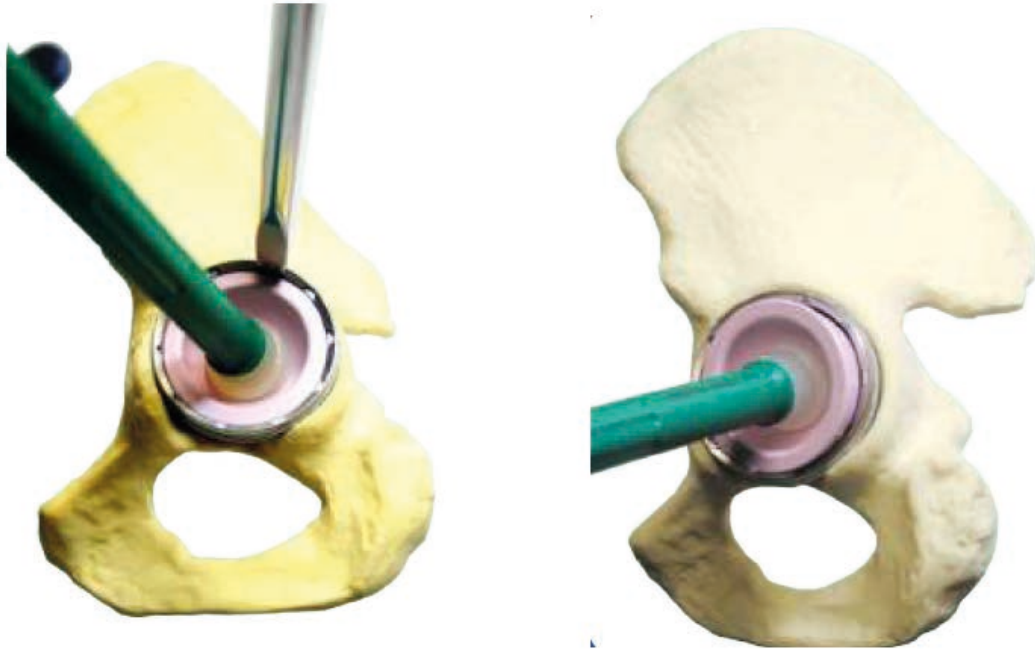
If using the curved impactor, make sure the curvature of the handle is oriented properly relative to the hooded area, to ensure its proper orientation once the impaction process starts.

Position the plate and tip directly on the  $\varnothing 28$  mm hooded liner, making sure the 2 pegs of the impaction plate are inserted in the 2 holes of the liner. The beveled plan of the impaction plate should match the posterior wall of the liner.

Position the liner into the cup, making sure the hood is oriented in the postero-superior quadrant of the acetabulum, and that the tabs of the liner are correctly aligned with the indentation on the cups rim. Proceed to impaction with a sharp hammer blow on the handle.

Confirm visually, and by a touch of the finger, that the liner is correctly impacted: the liner should have all its tabs flush with the cup rim

# 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 plunger in the ceramic liner. Press down the plunger to create a vacuum for prehension.

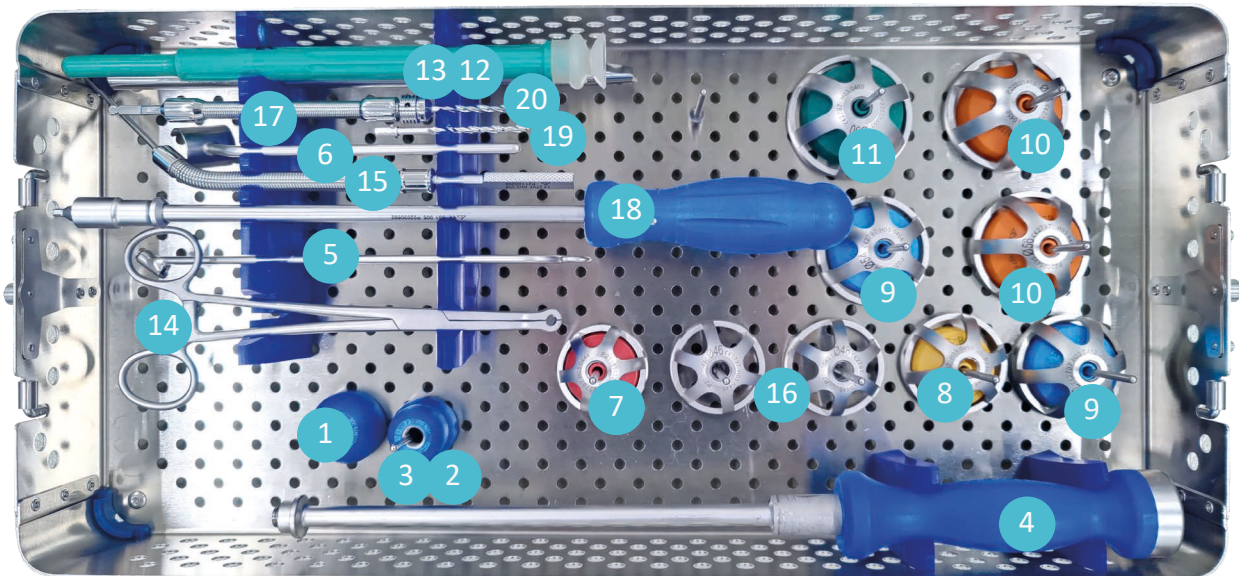
Place the ceramic liner extractor on the external rim of the cup.

While applying traction with the plunger, give a slight hammer blow on the liner extractor, until the liner is released.



# Instrumentation

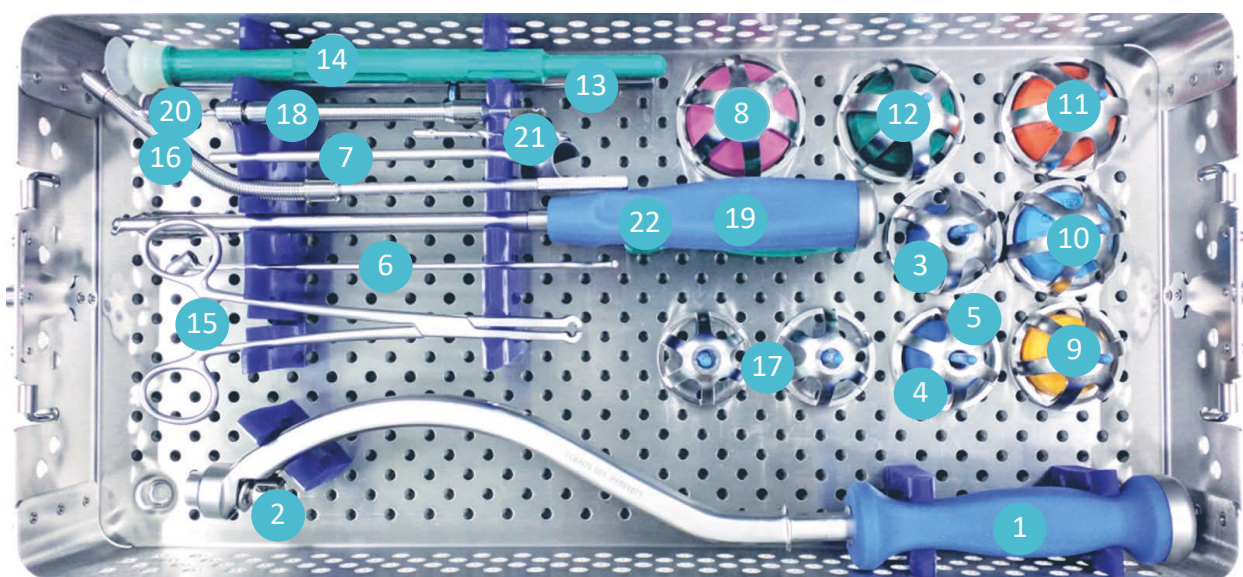
## Straight Impactor Handle Instrumentation Set



Rep	Description	Reference	Qty
1	Spherical impaction tip $\varnothing 28$ M10 for straight or curved impactor	H76 004	1
2	Spherical impaction tip $\varnothing 32$ M10 for straight or curved impactor	H76 005	1
3	Spherical impaction tip $\varnothing 36$ M10 for straight or curved impactor	H76 006	1
4	Straight impactor M10	H76 009	1
5	Drilling guide $\varnothing 3.2$	H76 010	1
6	Alignment guide (clip-on)	H76 019	1
7	Hooded trial liner $\varnothing 28$ for $\varnothing 44$ cup (red)	H76 031	1
8	Flat trial liner $\varnothing 32$ for $\varnothing 46$ and 48 cup (yellow)	H76 022	1
9	Flat trial liner $\varnothing 32$ for $\varnothing 50$ and $\varnothing 52$ cup (blue)	H76 042	1
9	Flat trial liner $\varnothing 36$ for $\varnothing 50$ and 52 cup (blue)	H76 023	1
10	Flat trial liner $\varnothing 32$ for $\varnothing 54$ and 56 cup (orange)	H76 043	1
10	Flat trial liner $\varnothing 36$ for $\varnothing 54$ and 56 cup (orange)	H76 024	1
11	Flat trial liner $\varnothing 36$ for $\varnothing 58$ and 60 cup (green)	H76 025	1
12	Ceramic liner extractor	H30 001	1
13	Plunger tip for ceramic liner	H30 002	1
14	Holder for cup fixation screw $\varnothing 6$ mm	H03 003	1
15	Screw length gauge	H03 004	1
16	Trial cup $\varnothing 46$ to $\varnothing 60$ (no slit) (2mm increments)	H03 0446 to H03 0460	1 of each
17	AO connector $\varnothing 8$	H0010050099	1
18	Hex screwdriver 3.5 mm	S01 005	1
19	$\varnothing 3.2$ drill bit with removable pin length 25 mm	S01 010	1
20	$\varnothing 3.2$ drill bit with removable pin length 45 mm	S01 003	1

# Instrumentation

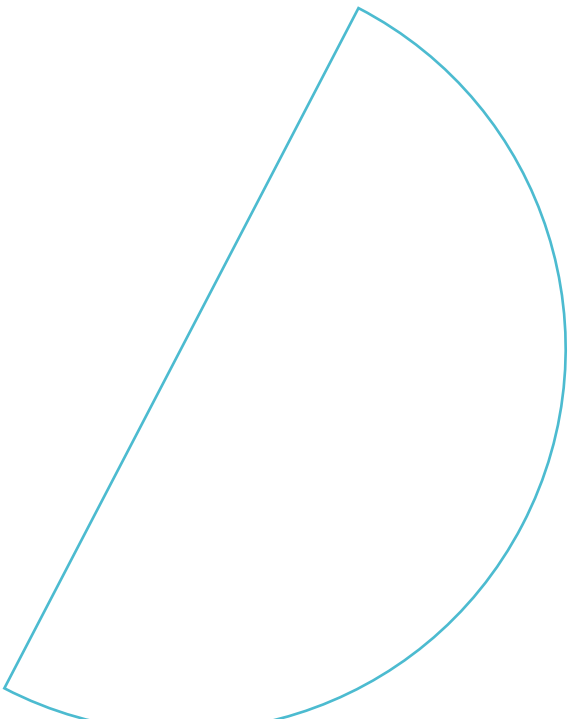
## Curved Impactor Handle Instrumentation Set



Rep	Description	Reference	Qty
1	Curved impactor (threaded)	H76 001	1
2	Screw for curved impactor	H75 002	1
3	Spherical impaction tip $\varnothing 28$ M10 for straight or curved impactor	H76 004	1
4	Spherical impaction tip $\varnothing 32$ M10 for straight or curved impactor	H76 005	1
5	Spherical impaction tip $\varnothing 36$ M10 for straight or curved impactor	H76 006	1
6	Drilling guide $\varnothing 3.2$	H76 010	1
7	Alignment guide (clip-on)	H76 019	1
8	Hooded trial liner $\varnothing 28$ for $\varnothing 44$ cup (red)	H76 031	1
9	Flat trial liner $\varnothing 32$ for $\varnothing 46$ and 48 cup (yellow)	H76 022	1
10	Flat trial liner $\varnothing 32$ for $\varnothing 50$ and $\varnothing 52$ cup (blue)	H76 042	1
10	Flat trial liner $\varnothing 36$ for $\varnothing 50$ and 52 cup (blue)	H76 023	1
11	Flat trial liner $\varnothing 32$ for $\varnothing 54$ and 56 cup (orange)	H76 043	1
11	Flat trial liner $\varnothing 36$ for $\varnothing 54$ and 56 cup (orange)	H76 024	1
12	Flat trial liner $\varnothing 36$ for $\varnothing 58$ and 60 cup (green)	H76 025	1
13	Ceramic liner extractor	H30 001	1
14	Plunger tip for ceramic liner	H30 002	1
15	Holder for cup fixation screw $\varnothing 6$ mm	H03 003	1
16	Screw length gauge	H03 004	1
17	Trial cup $\varnothing 46$ to $\varnothing 60$ (no slit) (2mm increments)	H03 0446 à H03 0460	1 of each
18	AO connector $\varnothing 8$	H0010050099	1
19	Hex screwdriver 3.5 mm	S01 005	1
20	$\varnothing 3.2$ drill bit with removable pin length 25 mm	S01 010	1
21	$\varnothing 3.2$ drill bit with removable pin length 45 mm	S01 003	1
22	Orientating screwdriver	H76 003	1







---

# 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.







*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](mailto: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](http://www.amplitude-ortho.com)