SERENITY®
The new generation of dual-mobility cups
Conceptualised in France by Prof. Bousquet in the 1970s, the dual-mobility cup combines both the advantages of a small femoral head in terms of wear and tear\(^\text{[1]}\) and the stability of a large-diameter head\(^\text{[2]}\) thanks to the mobile insert. It is commonly recognized as a way of reducing dislocation risk during total hip arthroplasty\(^\text{[3][4][5]}\). Based on this concept, the SERENITY® cup is indicated for total hip arthroplasty as primary treatment or revision in patients with a high dislocation risk.

Furthermore, the SERENITY® cup is part of a new generation of dual-mobility cup, as it benefits from multiple key design adjustments compared to previous generations:

- Pressfit force proportional to cup diameter
- Anti-dislocation equatorial extension with non-invasive design for soft tissues
- New compact instrumentation compatible with all Symbios cups and all surgical approaches

The HIP-PLAN® software provided by Symbios allows surgeons to use 3D planning for their patients in order to best assess anatomical risks and configurations where simulated reconstruction would call for the use of SERENITY® rather than a fixed-insert cup from the range.
OPTIMIZED PRIMARY ANCHORAGE

The design of the pressfit is based on the clinical experience of the APRIL® cup, with some key adjustments:

- 0.2 mm reduction to adapt to target population likely to be more elderly
- Progressively concentrated pressfit intensity starting from 36° and reaching up to 1.2 mm at the equator.
- Pressfit force progressing with cup diameter
- Gradual reduction of the cup radius to refine the polar part and prevent bottoming out at the acetabulum that could compromise pressfit stability

Pressfit intensity is proportional to cup size: sensation of impaction is identical regardless of the size of cup implanted.

OPTIMUM OSTEOINTEGRATION

The SERENITY® Cup is manufactured from M30NW stainless steel, coated with porous titanium (350 µm) and hydroxyapatite (75 µm) leading to high granulometry, favorable for bone regrowth and thus long-term implant stability. 

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Increase joint stability
REINFORCED HEAD RETENTIVITY
Since the insert is extended beyond a half-sphere, the action on the femoral head creates a retentive mechanism that prevents femoral head dislocation.

THE SAFETY OF A LARGE DIAMETER
With the same cup size, the SERENITY® cup with a large-diameter mobile insert adds more stability than the fixed-insert APRIL® cup by increasing the decoaptation distance.

EQUATORIAL ANTI-DISLOCATION NON-INVASIVE EXTENSION
- Equatorial cup extension to increase insert stability and thereby contribute to reducing dislocation risk.
- Chamfers on cup edges « softened » to limit risk of conflict with soft tissues and especially with the iliopsoas muscle.
- Non-aggressive mirror-polished edges in cases of contact to reduce the risk of damaging the insert during reduction.
A combination of mobility and durability

MAXIMISED HEAD MOBILITY

The first movement takes place between the femoral head and the insert, until there is stem neck contact with the insert. This contact is created by low-intensity movements such as walking.

The gap between the centers of rotation of the insert and of the head causes the insert to rotate around the femoral head under pressure: the head/insert articulation, which is smaller in diameter, is thus more often under load keeping wear and tear to a minimum.

RESTORE NATURAL KINEMATICS

The gap between the rotation center of the femoral head in relation to the cup partially compensates for medialization linked to reaming and impaction in order to remain as close to the natural rotation center as possible and to allow a wider range of movement.

• Center of insert
• Center of head

OPTIMIZED INTERFACES TO CONTROL WEAR

• Insert chamfer designed to increase the insert’s contact surface on the femoral neck, to control polyethylene wear.
• Inner surface of the mirror-polished cup (without screws) to reduce wear during articulation of the insert on cup.
• Precise tolerances of sphericity and gap between the components guarantee optimized implant function.
With equal cup and head sizes*, the SERENITY® cup gives patients increased mobility with better stability during high-intensity movements compared to the APRIL® cup, where such mobility would create a dislocation risk for the patient.

STABILITY AT THE LIMITS OF RANGE OF MOTION
Stem neck contact with the insert causes the insert to move inside the cup, which extends the joint’s range of movement until the stem makes contact with the cup. This second articulation is caused by high-intensity movements such as crouching down and standing back up.

* Modeling completed with Ø52 APRIL® and SERENITY® cups, a size 14 HARMONY® stem and a Ø28 head (0 mm offset)
Simple and flexible modern instrumentation

A single tray for all symbios cups

ULTRA COMPACT
- Just a single tray for all Symbios cups
- SERENITY® addition only for dual-mobility instruments
- Saves space and improves logistics management in the operating theatre

EASY TO USE
- Instruments are placed in an order consistent with the surgical steps
- Easy, quick instrument storage thanks to laser marking to scale at the base of the tray
and the SERENITY® addition

SURGICAL FLEXIBILITY

- Instrumentation designed for all surgical approaches
- Straight and offset instruments for flexibility during surgery
- The SERENITY® adapter allows surgeons to use the same impactor for all Symbios cups, regardless of their impaction method

Assembled by threading at the cup base
Assembled by spreading plate inside the cup

APRIL® CERAMIC
APRIL® POLY
SERENITY®
HILOCK LINE

APRIL® - HILOCK CONFIGURATION
SERENITY® CONFIGURATION
Enhanced design for enhanced efficacy

**EFFECTIVE IMPACTION**
Impaction in axis via the very rigid impactor frame: good force transmission with straight or offset configuration.

**DESIGN ADAPTED TO MINIMALLY INVASIVE APPROACHES**
Precise positioning of the cup during impaction, keeping pressure on soft tissues at a minimum.

**BETTER IMPACTION FORCE**
Easy impaction thanks to the trigger system that produces a lot of force with slight pressure from the user.

**MORE EFFICACY WITH LESS EFFORT**
Greener impaction force

**ERGONOMIC HANDLE**
Better stability during impaction of the head in the insert.

**FLAT IMPACTION ON TABLE OR DIRECTLY IN THE PATIENT**
Stability during impaction of the head in the insert.
DESIGN ADAPTED TO MINIMALLY INVASIVE APPROACHES

Precise positioning of the cup during impaction, keeping pressure on soft tissues at a minimum.

**SOLID GRIP**

**IMPACTOR CONTROL**
Using the T handle for the straight or offset impactor allows the user to freely apply gripping force to obtain the best possible impaction.

**IMPACTION VIA PLATE SPACING**
The plate separates in the cup via the locking system for effective impaction regardless of diameter.

**OPTIMAL IMPACTION WITH EACH PROCEDURE**
The impaction plate is single-use, which guarantees reliable impaction and optimal tolerance with each impaction.

**EASY REPOSITIONING OF THE CUP**
Thanks to the repositioning device, or alternatively using the plate gripped in the cup, the cup’s position can easily be changed.
ADVANTAGES OF 3D CUP PLANNING

- Precisely determine the positioning of the cup in 3 dimensions, as well as its size, inclination and anteversion.
- Examine the functional behavior of implants thanks to the combination of multi-plan views with the surface view of the pelvis, in order to guard against oversizing which can cause conflict with the iliopsoas muscle during the postoperative period.
- Estimate the stability of reconstructed joint (cup and stem) by evaluating the functional outcome of reaming, position and size of chosen implants.
- Three-dimensional view of the acetabulum and of the SERENITY® cup
- Surface view of the pelvis

REPRODUCIBLE SIMULATION AND DECISION-MAKING ASSIST

The surgeon can define the surgical strategy and choice of implants by using a realistic 3D preoperative simulation. In addition to the clinical indications defined by the surgeon, HIP-PLAN® is particularly useful for selecting the optimal component choice from the range of Symbios implants.
SERENITY®
Dual-mobility pressfit cementless cup.
M30NW stainless steel, porous titanium and hydroxyapatite coating.

Cobalt-Chrome Head
Cobalt-Chrome head (CrCoMo-ISO 5832-12), compatible with 12/14 5°40’ taper.

Sizes 
\[\begin{array}{c|c|c}
\text{Size} & \text{Offset in mm} & \\
\hline
\text{Ø}22.2 & - & - \\
\text{Ø}28 & 2010 2801 & 2010 2802 2010 2803** \\
\end{array}\]

Alumina Head
Ceramic alumina head (Al2O3-ISO 6474-1), compatible with 12/14 5°40’ taper.

Sizes 
\[\begin{array}{c|c|c|c}
\text{Size} & \text{Offset in mm} & \\
\hline
\text{Ø}22.2 & -3.5 & +0 & +3.5 \\
\text{Ø}28 & 2009 2801 & 2009 2802 & 2009 2803** \\
\end{array}\]

** Not recommended with the use of Symbios CUSTOM HIPTM and SPS® HA stems.

SERENITY® Insert
Mobile insert. Polyethylene (UHMWPE, ISO 5834-2).

Cup
Sizes 
\[\begin{array}{c|c|c}
\text{Size} & \text{Ø}22.2 & \text{Ø}28 \\
\hline
42* & 1530 4210* & \\
44* & 1530 4410* & \\
46 & 1530 4610 & \\
48 & 1530 4820 & \\
50 & 1530 5020 & \\
52 & 1530 5220 & \\
54 & 1530 5420 & \\
56 & 1530 5620 & \\
58 & 1530 5820 & \\
60 & 1530 6020 & \\
62 & 1530 6220 & \\
64 & 1530 6420 & \\
\end{array}\]

BIOLOX® Delta Head
Ceramic head (Al2O3 + ZrO2-ISO 6474-2), compatible with 12/14 5°40’ taper.

Sizes 
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\text{Size} & \text{Offset in mm} & \\
\hline
\text{Ø}22.2 & -3.5 & +0 & +3.5 \\
\text{Ø}28 & 2014 2801 & 2014 2802 & 2014 2803** \\
\end{array}\]

Stainless Steel Head
Stainless steel head (ISO 5832-9), compatible with 12/14 5°40’ taper.

Sizes 
\[\begin{array}{c|c|c|c}
\text{Size} & \text{Offset in mm} & \\
\hline
\text{Ø}22.2 & -3.5 & +0 & +3.5 \\
\text{Ø}28 & 2011 2801 & 2011 2802 & 2011 2803** \\
\end{array}\]

* Available to order only.

** Not recommended with the use of Symbios CUSTOM HIPTM and SPS® HA stems.
7231 0000
Cup Instrumentation

7232 0000
SERENITY® Add-On Instrumentation
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<td>3</td>
<td>T handle</td>
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<td>4</td>
<td>Offset cup impactor</td>
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<td>5</td>
<td>Cardan-shaft hex screwdriver end-cap</td>
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<td>Straight hex screwdriver end-cap</td>
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References


(4) The use of a dual-articulation acetabular cup system to prevent dislocation after primary total hip arthroplasty: analysis of 384 cases at a mean follow-up of 15 years. Philippot et al. Int Orthop 2009; 33: 927-932
