



Surgical Technique
CS₂TM Cup System

INDICATIONS AND USAGE

Indications for the use of the CS2 ACETABULAR CUP SYSTEM must be carefully considered with respect to the patient's entire evaluation and alternative procedures. The selection of the CS2 ACETABULAR CUP SYSTEM is based on the judgment of the surgeon as to the needs of the patient and the expected post-operative conditions. Patient selection is dependent on age, general health, available bone stock and quality, and any prior surgery or anticipated future surgery.

Indications for use are:

The CS2 ACETABULAR CUP SYSTEM should be used in accordance with the indications, etc. of the hip system it is being mated with.

- A. Significantly impaired joints resulting from rheumatoid, osteo and posttraumatic arthritis.
- B. Revision of failed femoral head replacement, cup arthroplasty or other hip procedures.
- C. Proximal femoral fractures.
- D. Avascular necrosis of the femoral head.
- E. Non-union of proximal femoral neck fractures.
- F. Other indications such as congenital dysplasia, arthrodesis conversion, coxa magna, coxa plana, coxa vara, coxa valga, developmental conditions, metabolic and tumorous conditions, osteomalacia, osteoporosis, pseudarthrosis conversion, and structural abnormalities.

CS2TM Cup

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Table of Contents

The CS2TM Acetabular Cup System 1

Acetabular Preparation for Shell Insertion 2

The CS2™ Acetabular Cup System

Developed from the highly successful Consensus® Acetabular Cup, the CS2 Acetabular Cup System incorporates an advanced porous coating of irregular sintered titanium beads. This innovative design offers enhanced initial fixation with an aggressive “scratch-fit” to provide stability and encourage long-term biological fixation. CS2 Acetabular shells are intended for cementless use, or for cemented use at the discretion of the surgeon.

CS2 Acetabular Shells are offered in Hemispherical and Flared Rim styles, and No-Hole, Three Hole and Multi Hole options for using 6.5 mm cancellous screws for additional fixation.

Clinically successful Cross-Linked UHMWPE liner options are available in 28mm, 32mm, and 36mm internal diameters. Neutral and Hooded liners are available to maximize ROM and stability. CS2 Plus liners are also available with a head center that has been lateralized 5mm allowing the surgeon more intraoperative flexibility to medialize the cup, or lateralize the head center. The Consensus® Acetabular liner-locking mechanism provides a secure and stable locked-liner, with 12 liner positions for maximum ROM.





Acetabular Reamers



Reamer Handle

Acetabular Preparation for Shell Insertion

Acetabular Reamers are easily secured to the Reamer Handle using the rotating cross-bars, spring loaded attachment (Figure 1). All reamer sizes attach to the same Reamer Handle. Progressive reaming of the acetabulum should commence with a reamer two sizes smaller than the preoperative templated size.

Begin reaming transversely toward the cotyloid notch. The ridges of the “horseshoe” and any remaining small osteophytes in the notch should be removed by the first reamer. Always take care not to medialize the acetabulum past the medial bony wall. Reaming can then proceed with the second reamer to form the hemisphere in a manner which provides the proper amount of anteversion. Make sure that the reamer does not sink below the rim of the bony acetabulum. Cancellous bone should be evident where the “horseshoe” was. Superiorly there should be bleeding subchondral bone. Care should be taken to avoid invading the medial wall. The third reamer is used only to assure proper size and placement of the acetabular implant. Try not to toggle or move the reamer in a circular fashion to avoid improper forming of the acetabulum.



Figure 1



Figure 2



Figure 3



Figure 4

Acetabular Shell Trial sizing can now be accomplished using the **Shell Holder/Impactor**. The shell trial selected should correspond with the diameter of the final reamer used. Thread the Shell Holder/Impactor into the trial by aligning the key (Figure 2) into the slots in the trial and thread the trial to the Shell Holder/Impactor (Figure 3 and Figure 4). The trial can then be positioned in the acetabulum by applying pressure to the head of the impactor rod while making angular adjustments. Proper positioning and fit can now be determined by inserting the shell trial into the reamed acetabulum with one hand wrapped around the shaft of the assembly and the other applying light even pressure to the head of the impactor rod. Anteversion can be checked by sliding the **Abduction/Anteversion Alignment Guide** onto the Shell Holder/Impactor (Figure 5). Properly positioned, the Abduction/Anteversion Alignment Guide main shaft will be perpendicular to the floor for 45° of abduction. Anteversion is determined to be at 20° when the anteversion crossbar points toward the shoulder.

To release the holder from the trial, unscrew the Shell Holder/Impactor. The trial should be fairly snug and resist movement with light hand pressure.



Figure 5



Acetabular Shell Trial



Shell Holder/ Impactor



Abduction/Anteversion Alignment Guide



Angled Drill Guide



Angled Depth Gage



Ratchet

Size selection of the **Acetabular Shell Implant** is based on preoperative planning and intraoperative outcome. The implant selected should be one size (1mm) larger than the final reamer used (Table 1). This will provide a 1mm press-fit. In dense acetabular bone, a one-to-one press-fit can be used.

Attachment of the implant to the Shell Holder/Impactor and positioning of the implant is accomplished in the same manner as with the trial. Thread the implant to the Shell Holder/Impactor snugly, but do not over-tighten to assist in unthreading after impacting the shell implant.

Align the key into the slot in the implant and thread the implant to the Shell Holder/Impactor. Holding the implant in the hand, or placing the implant on the back-table will assist in aligning the tabs into the corresponding slots of the implant before threading the Shell Holder/Impactor to the implant. The shell implant should be inserted as far into the reamed acetabulum as possible and the cluster holes positioned superiorly if utilizing screw fixation. The Abduction/Anteversion Alignment Guide can be used to aid in alignment. Once positioned, a **Mallet** is used to impact the rod through the assembly until the shell implant is fully seated in the acetabulum.

The **6.5mm Ti Bone Screws** may now be optionally inserted to augment the fixation of the shell. Additional screw holes may be necessary to increase fixation using the Multi-Hole shell. Utilizing the **Angled Drill Guide**, the screw holes are first pre-drilled (Note: 2 drill lengths are provided: 3.2 mm x 35mm and 3.2mm x 56mm). Once drilling is completed, the hole depth is verified utilizing the provided **Angled Depth Gage** and the desired screw length is chosen. **The Bone Screws** are available in 5mm increments, ranging from 15mm to 50mm lengths. Insertion of the screws is achieved in a typical fashion, utilizing the **Ratchet**

Acetabular Reamers	Press-Fit Shell**
41 mm	42 mm
43 mm	44 mm
45 mm	46 mm
47 mm	48 mm
49 mm	50 mm
51 mm	52 mm
53 mm	54 mm
55 mm	56 mm
57 mm	58 mm
59 mm	60 mm
61 mm	62 mm
63 mm	64 mm
65 mm	66 mm
67 mm	68 mm

Table 1

* Acetabular Reamers are available in sizes 40-68 mm.

** If cemented fixation is desired, ream such that the resulting cement mantle will be at least 1 mm on either side of the shell (e.g. use a 44 mm reamer for a 42 mm shell).



Figure 6



Figure 7



Figure 8

Handle, coupled with any of the three provided **Hex Screw Driver Shafts**: a solid type; a universal joint type, and a flexible shaft type. A **Screw Holding Forcep** is also provided to assist insertion. Carefully evaluate the bone quality and avoid over-tightening the screws.

Note: It is important to assure that each screw is completely inserted, with the screw head fully seated and below the interior cup surface, so as not to allow the screw head to interfere with the complete insertion and locking of the acetabular insert. Once all desired screws have been fully inserted, an **Apical Dome Hole Plug** may also be used, with insertion occurring in a typical fashion, and again, using care to assure that complete, proper seating is achieved

Insertion of the **Acetabular Insert** can be accomplished now or an **Insert Trial** can be put in place in preparation for reduction with femoral trials. The surgeon may elect to implant the insert at this time. The insert's peripheral scallops allow the surgeon to dial the hood into the desired position. Care should be taken to ensure that the rims of the shell and insert are parallel, and that their scallops mate. Once positioned, the **Liner Impactor** with the selected inner diameter impactor head attached is placed into the inner diameter of the insert. Then the **Impactor Handle** is struck to firmly seat and lock the insert into the shell (Figure 8). The edges of the insert are checked to make sure that it is in full contact with the entire circumference of the shell. If it is not, check for any foreign objects between the shell and insert and remove them and impact the insert again; re-check to be sure it is in full contact with the shell.



Hex Screw Driver Shaft



Screw Holding Forcep



Insert Trials



Insert Trials



Insert Trials



Liner Impactor



Liner Impactor



Liner Impactor



Liner Impactor



Shalby
Advanced
Technologies, Inc.
Restoring Mobility, Improving Lives.

USA

Shalby Advanced Technologies, Inc.
1115 Windfield Way, Suite 100,
El Dorado Hills, CA 95762,
Ph: +1 916 355 7100

Singapore

Shalby Global Technologies Pte. Ltd.
Regus One Fullerton, 1 Fullerton Rd,
#02-01, One Fullerton, Singapore- 049231
Ph: +65 88707885 /+60 125065062

India

Mars Medical Devices Ltd.
Mondeal Heights, B-301 & 302,
Sarkhej - Gandhinagar Highway,
Ahmedabad, Gujarat-380015
Ph: +91 91671 20390

