 **smith&nephew**
REFLECTION[®]
Cemented All Polyethylene /
All Polyethylene XLPE
Acetabular Components



REFLECTION[◇] Cemented All Polyethylene / All Polyethylene XLPE Acetabular Components

designed in conjunction with
Ramon B. Gustilo, M.D.
Richard F. Kyle, M.D.
Hennepin County Medical Center
Minneapolis, Minnesota

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Nota Bene

This technique description herein is made available to the healthcare professional to illustrate the authors' suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the patient.

Design Features

The Reflection Cemented Acetabular Component uses design features provided to maximize stability and durability in cemented acetabular cups.

The outer surface of the cup is designed to improve the bond strength of the PE-cement-bone interface. The cup exterior is ridged in the radial direction and grooved in the polar direction. This design incorporates cement-thickness equalizing pods and a continuous flange that provides a uniform thickness of cement around the cup to even the load transfer to the cement and bone. With the extended flange, eccentric cup placement is prevented. The flange also increases cement intrusion pressure and penetration into cancellous bone during cup insertion. The polar grooves increase torque resistance by creating an interlock between the cement and cup. The grooves, ridges, and cement equalizing pods have been designed to reduce the risk of cup loosening. A wire marker along the cup equator is a reference for radiographic cup orientation and wear measurement.

The Reflection Cemented All Polyethylene Acetabular Component is available in 3 mm outer diameter increments with inner diameters of 22, 28, and 32 mm. The Reflection Cemented All Polyethylene XLPE Acetabular Component is also available in 3 mm outer diameter increments with inner diameters of 22, 28, 32, and 36 mm.



The Reflection All Polyethylene Acetabular cup is sterilized by a nondegrading method to eliminate damage associated with gamma sterilization.

Design Features

The articulating surface of the polyethylene cup has distinctive design features for stability of the hip joint. Because the natural abduction angle of the acetabulum is about 60°, the positioned cup is usually precipitous which can cause superoposterior dislocation of the femoral head component. In order to prevent dislocation, the cup has to be positioned at a more horizontal angle and the cup will be exposed outside of the bony acetabulum, particularly superoposteriorly. To avoid these problems, the articulating surface of the polyethylene cup is angled 20° toward the horizontal plane. This provides more coverage on the superoposterior aspect while keeping the center of hip rotation the same as the geometric center of the outer shell. The resulting abduction face angle of the polyethylene cup is a stable 40° (See Figure 1 on page 4).

Inner diameter sizes:
All Poly: 22, 28, & 32 mm
All Poly XLPE: 22, 28, 32, & 36 mm

20° Overhang design



Outer diameter sizes:
40 mm to 64 mm in
3 mm increments

Design Features

The Reflection cup does not lateralize the center of the natural acetabulum, an important design feature for reconstruction of hip geometry (Figure 1). Some competitive designs can lateralize the natural center of the joint (see Figure 2). When the center of hip rotation is lateralized, the body weight moment arm is increased and the abductor moment arm is relatively decreased. Thus, joint force is increased and the resultant joint force direction is lateralized. This acts on the overhang portion of the cup which will tend to rock the implant and cause plastic deformation and may lead to eventual early loosening of the implant (Figure 2).

In addition, the laterally protruded large overhang that other systems employ makes reduction of the femoral head extremely difficult during the reduction maneuver. The Reflection All Polyethylene cup design minimizes these problems.

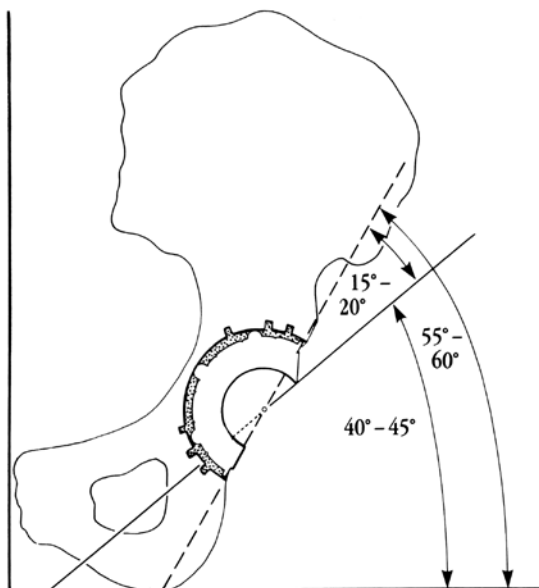


Figure 1

Reflection
All Poly
Cup Design

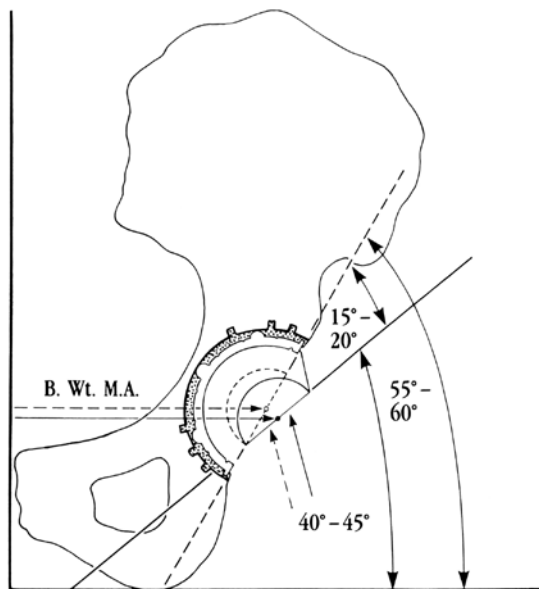


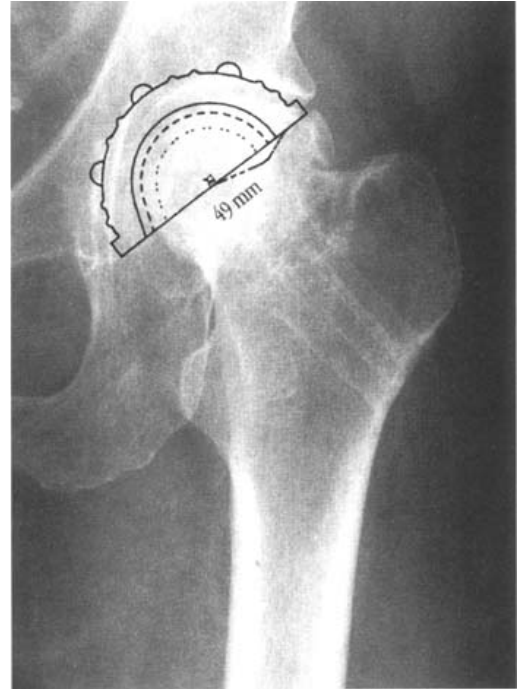
Figure 2

All Poly
Competitive
Cup Design

Surgical Technique/Preoperative Planning

Preoperative templating is essential to the precise reconstruction of the hip joint. Suggested preoperative X-rays include an A-P of the pelvis and hips, a 14" x 17" A-P view of the affected hip and femur, and a lateral view of the affected hip.

The acetabular component may be templated using the contralateral normal hip, if available, or templated directly on the affected hip. The acetabular component and cement pods should congruently fit the subchondral bone and the medial aspect of the acetabulum, as indicated by the teardrop. Mark the center of rotation of the acetabular component through the template for subsequent reference.



Acetabular Exposure and Reaming

Complete exposure of the acetabulum is necessary to ensure a satisfactory surgical result. Resect the acetabular labrum circumferentially in order to define the landmarks of the bony acetabulum. Clean the soft tissue of osteophytes from the acetabular fovea in order to define the limits of the medial wall. Retract surrounding soft tissues to protect them during the reaming process. This will help avoid injury to critical structures.

To expose the acetabular rim, first place a double angled, sharp Hohman retractor in the 3 o'clock position (for the right hip) over the anterior acetabular rim, taking care to maintain the top of the retractor against the anterior aspect of the pelvis.

Acetabular Exposure and Reaming *continued*

Place an inferior retractor in approximately the 7 o'clock position adjacent to the ischium. If desired, place a sharp, straight Hohman retractor in the 12 o'clock position beneath the abductors, approximately 2.5 cm above the superior rim of the acetabulum, and impact into the bone to enhance retraction of the abductors.

Restoration of natural anatomy is the general goal of acetabular preparation. The acetabulum is medialized to restore the normal center of hip rotation. Additionally, remaining cartilage and weak osteophytes are removed to prepare bone surface for cement interdigitation.

After performing the femoral osteotomy, an initial sizing of the acetabulum can be performed by using the trial shells and trial handle (Figure 3).

Using the existing anatomy as the reamer guide, ream the acetabulum concentrically, starting with a reamer two sizes smaller than the estimated final size. Proceed with reaming to expand the acetabulum until bleeding subchondral bone is reached (Figure 4).

The outer diameter of the last reamer used should be equal to the size of the cup to be implanted. A final confirmation of acetabular size can be made after reaming by using the trial shell and trial handle.



Figure 3



Figure 4



Acetabular Preparation

Multiple small anchoring holes in the pubic, ischial, and iliac portions of the acetabulum will provide greater fixation and torsional resistance for the cement mantle. Use an angled, depth-controlled drill, taking care not to penetrate into the pelvis (Figure 5).

Irrigate the acetabulum with antibiotic solution. Remove bone and blood debris with an acetabular brush connected to a power drill.

To achieve good cement intrusion into cancellous bone and anchor holes, the acetabulum must be clean and dry. Pack gauze into the socket until cement is ready to be introduced.

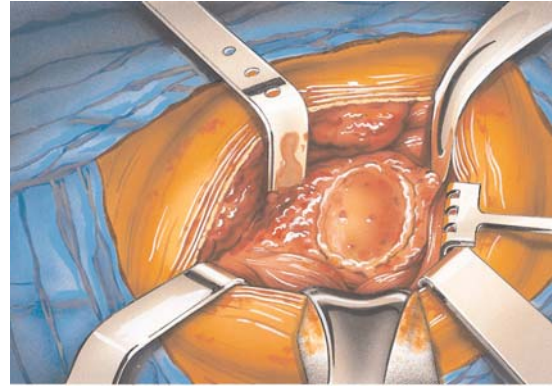


Figure 5

Cement Compression

Remove gauze and introduce cement as a bolus. Using a cement compressor larger than the acetabular mouth, apply sustained, firm pressure for 15 seconds (Figure 6).

Remove extruded cement from the periphery of the compressor and twist compressor end out of cement. Any blood oozing onto the surface of the cement should be dried with a sponge before inserting the acetabular component.

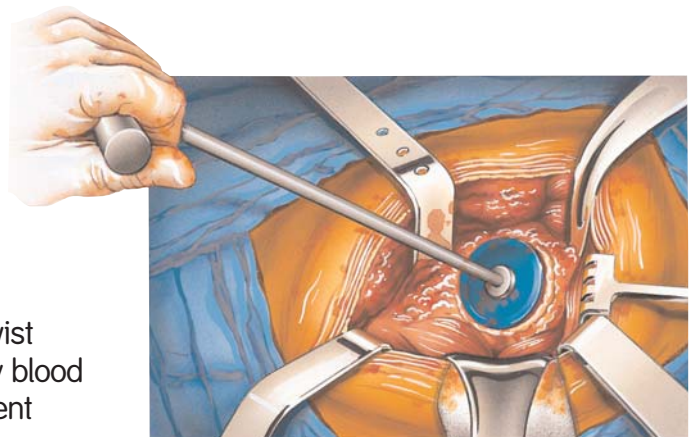


Figure 6



Acetabular Cement
Compressor
Cat. No. 11-1430

Acetabular Cement
Compressor Cap
Cat. No. 11-1431

Acetabular Cup Insertion

Select an acetabular component equal in size to the last reamer used.

Position the cup onto the Positioner/ Placement Head. Orient the Positioner/ Placement Head to indicate left or right THA. Engage the two pins on the placement head into the corresponding holes of the cup to firmly hold it in place (Figure 7).



Figure 7

Vertical orientation of the X-bar and alignment of the appropriate cross bar with the body axis provides 45° of abduction and 20° of anteversion.

Insert the cup into the cement and fully seat, positioning the overhang in the posterosuperior position to provide greatest stability (Figure 8). The PMMA spacer pods provide a uniform 2.5 mm cement mantle. Trim away excess cement from the periphery of the cup once it has become doughy.

Disengage the cup by pushing the button on the cup positioner.

Cover the acetabular area with a sponge while preparing the femur and inserting the femoral prosthesis.

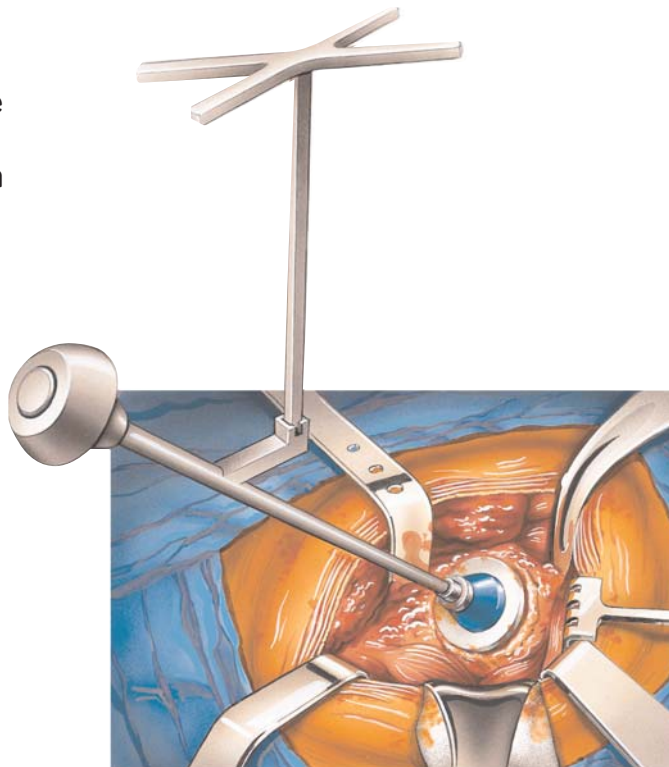


Figure 8



X-Bar
Cat. No. MT-2201



Positioner
Cat. No. MT-2200



Placement Head
Cat. No. MT-2222

Catalog Information

REFLECTION® Cup Catalog Numbers

All Poly	All Poly XLPE	O.D.	I.D.
7135-2240	7135-8001	40 mm	22 mm
7135-2243	7135-8002	43 mm	22 mm
7135-2246	7135-8003	46 mm	22 mm
7135-2249	7135-8004	49 mm	22 mm
7135-2252	7135-8005	52 mm	22 mm
7135-2255	7135-8006	55 mm	22 mm
7135-2258	7135-8007	58 mm	22 mm
7135-2261	7135-8008	61 mm	22 mm
7135-2846	7135-8023	46 mm	28 mm
7135-2849	7135-8024	49 mm	28 mm
7135-2852	7135-8025	52 mm	28 mm
7135-2855	7135-8026	55 mm	28 mm
7135-2858	7135-8027	58 mm	28 mm
7135-2861	7135-8028	61 mm	28 mm
N/A	7135-8029	64 mm	28 mm
7135-3249	7135-8034	49 mm	32 mm
7135-3252	7135-8035	52 mm	32 mm
7135-3255	7135-8036	55 mm	32 mm
7135-3258	7135-8037	58 mm	32 mm
7135-3261	7135-8038	61 mm	32 mm
N/A	7135-8039	64 mm	32 mm
N/A	7135-8065	52 mm	36 mm
N/A	7135-8066	55 mm	36 mm
N/A	7135-8067	58 mm	36 mm
N/A	7135-8068	61 mm	36 mm
N/A	7135-8069	64 mm	36 mm



REFLECTION Trial Shell

Cat. No.	Size
7136-2340	40 mm
7136-2341	41 mm
7136-2342	42 mm
7136-2343	43 mm
7136-2344	44 mm
7136-2345	45 mm
7136-2346	46 mm
7136-2347	47 mm
7136-2348	48 mm
7136-2349	49 mm
7136-2350	50 mm
7136-2351	51 mm
7136-2352	52 mm
7136-2353	53 mm
7136-2354	54 mm
7136-2355	55 mm
7136-2356	56 mm
7136-2357	57 mm
7136-2358	58 mm
7136-2359	59 mm
7136-2360	60 mm
7136-2361	61 mm
7136-2362	62 mm
7136-2363	63 mm
7136-2364	64 mm



Catalog Information

REFLECTION® Trial Shell Handle

Cat. No. 7136-2297



REFLECTION Reamer Domes

Cat. No.	Size
7136-2738	38 mm
7136-2739	39 mm
7136-2740	40 mm
7136-2741	41 mm
7136-2742	42 mm
7136-2743	43 mm
7136-2744	44 mm
7136-2745	45 mm
7136-2746	46 mm
7136-2747	47 mm
7136-2748	48 mm
7136-2749	49 mm
7136-2750	50 mm
7136-2751	51 mm
7136-2752	52 mm
7136-2753	53 mm
7136-2754	54 mm
7136-2755	55 mm
7136-2756	56 mm
7136-2757	57 mm
7136-2758	58 mm
7136-2759	59 mm
7136-2760	60 mm
7136-2761	61 mm
7136-2762	62 mm
7136-2763	63 mm
7136-2764	64 mm



REFLECTION Reamer Handle

Cat. No. 7136-2279



REFLECTION Ratchet Handle

Cat. No. 7136-2294



Power Adapters

Cat. No.	Description
7136-2781	Synthes
7136-2782	Aesculap
7136-2783	Hudson

Positioner

Cat. No. MT-2200



X-Bar

Cat. No. MT-2201



Placement Heads

Cat. No.	Size
MT-2222	22 mm
MT-2228	28 mm
MT-2232	32 mm
7136-7436	36 mm



Acetabular Brush

6 per box

Cat. No. 11-0032



Concise Cement Sculps Kit

Cat. No. 11-1000



Disposable Acetabular Cement Compressor Cap with Shield

5 per box

Cat. No.	Size
11-1431	Small, 54 mm dia.
11-1432	Medium, 62 mm dia.
11-1433	Large, 70 mm dia.



Acetabular Cement Compressor

6 per box

Cat. No. 11-1430



Catalog Information

REFLECTION All Poly
Instrument Tray

Cat. No. 7136-7006

REFLECTION[®] Trial Shell Tray

Cat. No. 7136-2282

REFLECTION Primary Reamer Tray

Cat. No. 7136-2281



REFLECTION Small Reamer/
Trial Tray

Cat. No. 7136-2286



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