

**For the Educational Use of Howmedica Osteonics
Employees Only. Not for Reproduction or Distribution.**

Restoration™ GAP II

Revision Acetabular System

The **Restoration™ GAP II Acetabular Cup** is designed to achieve stable and lasting fixation of the severely deficient acetabulum, such as AAOS Class III combined segmental and cavitary defects, with minimal additional bone removal. Typical indications include acetabular revision, tumor, and CDH cases.



FEATURES

- **Commercially pure titanium shell**
for superior biocompatibility
- **Two superior bone plates can be bent and trimmed intraoperatively**
for additional stabilization of the cup through attachment to the ilium with screws
- **Inferior Crimping Hook**
restores normal hip center and further stabilizes the cup
- **Multiple dome screw holes**
superiorly and inferiorly located in cluster style for optional screw placement into ilium, ischium and pubis; all other open holes for incorporating cement with bone graft
- **Modular UHMWPE insert**
enables proper positioning of insert and the option of cementing a wide range of Howmedica Osteonics' inserts into the shell
- **Patented* superior / posterior lip**
provides optimal support and allows for natural anteversion of the insert
- **Threaded dome hole**
for instrument attachment



Surgical Technique

1 Exposing the Acetabulum

The acetabulum should be exposed through any of the usual approaches to the hip. If present, old components are removed along with any cement and/or osteolytic membrane which may also be present. The bony anatomy of the acetabulum is examined for the presence of cavitory and segmental defects.

Placement of the inferior hook of the prosthesis requires clear exposure of the inferior margin of the acetabulum. The superior pubic ramus should be palpable anteriorly and the ischium should be palpable posteriorly. Between those two landmarks, the medial wall of the acetabulum is followed inferiorly, removing any overlying scar tissue or osteophytes. At the inferior edge of the acetabulum the bone will end, curving medially. This landmark is seen radiographically as the teardrop. A curved elevator follows the bone medially through the obturator foramen and into the pelvis along the inside of the medial wall of the acetabulum. The acetabular branch of the obturator artery is located in this area and may have to be sacrificed. Care is taken to avoid injury to the superior gluteal vessels and nerve. Exposure is adequate when a finger can be placed around the teardrop and along the medial wall of the acetabulum inside the pelvis.

2 Preparing the Acetabulum

The acetabulum is then sequentially reamed with hemispherical reamers (fig. 1). Cavitory defects are filled with morselized bone graft. Some large segmental defects may be spanned by mesh to contain the graft, others may require block bone graft. The morselized bone graft is compacted using the last size Spherical Reamer in reverse.

Restoration™ GAP II Compatibility Chart

Restoration™ GAP II Catalog No.	GAP Shell OD (mm)	GAP Shell ID (mm)	Series II Insert*		Polyethylene Acetabular Cup	
			Trial OD (mm)	Implant OD (mm)	Trial Catalog No.	Implant Catalog No.
2082-0048L,R	48	45	46-48	46-48	2207-XX44	61-XX44
2082-0052L,R	52	49	50-52	50-52	2207-XX48	61-XX48
2082-0056L,R	56	53	54-56	54-56	2207-XX52	61-XX52
2082-0060L,R	60	56	58-60	58-60	2207-XX56	61-XX56
2082-0064L,R	64	61	62-64	62-64	2207-XX61	61-XX61
2082-0068L,R	68	64	66-68	66-68	2207-XX61	61-XX61
2082-0072L,R	72	69	70-72	70-72	2207-XX61	61-XX61

*see back cover for cat. #'s (XX) indicates head size

3 Inserting the Implant

Select a left or right implant which corresponds in size to the last size reamer used. The shell is inserted by sliding the superior plates under the abductor musculature along the ilium. Plates may be bent and cut to closely conform to the bone (fig. 2 and 3). The plates are positioned such that the more posterior plate goes straight superiorly or slightly anteriorly. It is important that the plates not be placed too far posteriorly, as this will result in excessive anteversion of the shell. The inferior hook is then placed around the teardrop. A bone tamp and mallet may be used to lightly tap the hook to fully seat it against the bone. The hook is then tightened against the bone with the hook crimper (fig. 4). In cases where a large amount of bone graft is used or the bone graft covers more than 50% of cup diameter, the shell may be cemented in the acetabulum.



Figure 1



Figure 2



Figure 3



Figure 4

4 Implanting Bone Screws

Dome screws are placed first, followed by the bone plate screws. Select the screw hole location which allows the screws to be placed into the best available superior bone. As the dome screws are inserted, the shell will be further seated into the acetabulum, and the hook will be pulled against the strong inferior bone.

Use a 3.3mm diameter Drill Bit to drill a hole using the 3.3mm Drill Guide (fig. 5 and 6). Use the Wire Depth Gauge to determine bone screw length. Select a bone screw length that seats within the bone. Insert the selected bone screw into the prepared hole using the Ratchet Handle and Screw Driver Shaft (fig. 7 and 8).



Figure 5



Figure 6

A. Dome Screws

Howmedica Osteonics 2080 titanium 6.5mm Cancellous Restoration™ GAP Plate Bone Screws may be used in the dome of the cup shell to provide additional cup and bone graft stability.

B. Bone Plate Screws

Secure the superior bone plates in place by using the 2080 titanium 6.5mm Cancellous Restoration™ GAP Plate Bone Screws. Screw hole placement is based on either the availability of sufficient bone stock to anchor the screw, or the location of the bone graft to be secured by the screw.



Figure 7

5 Assessing Head Center Placement

A trial reduction may be performed by utilizing the Series II Cup Trial Insert to assess joint mechanics and appropriate head center placement. Refer to the Compatibility Chart (on opposite page) for the appropriate size trial insert..

6 Cementing the Insert in Place

Mix one pack of bone cement according to the manufacturer's specifications and lavage the inside of the cup shell. Dry thoroughly prior to the introduction of the bone cement.



Figure 8

Note: In cases where large segmental defects are present, inferior screws are used for maximum cup fixation (fig. 9).
If the implant is cemented, the screws should be placed prior to the curing of bone cement.

Select the appropriate Howmedica Osteonics Omnifit® Series II Cup Insert or the Howmedica Osteonics polyethylene cup insert of choice (See Compatibility Chart - opposite page). Assemble the cup insert to the appropriate Cup Insert Impactor and implant it into the prepared shell (fig.10). Care must be taken to ensure the locking grooves in the cup insert are completely covered by bone cement. Do not remove the locking wire on the insert as it functions as a marker wire to assess component position radiographically.



Figure 9



Figure 10

Omnifit® Series II Cup Inserts

Catalog Number	Description	Inner Diameter	GAP Outer Diameter	Trial Catalog Number
2041-XX46	10°	22, 26, 28mm	48mm	2205-XX46
2041-XX50	10°	22, 26, 28, 32mm	52mm	2205-XX50
2041-XX54	10°	22, 26, 28, 32mm	56mm	2205-XX54
2041-XX58	10°	22, 26, 28, 32mm	60mm	2205-XX58
2041-XX62	10°	22, 26, 28, 32mm	64mm	2205-XX62
2041-XX66	10°	22, 26, 28, 32mm	68mm	2205-XX66
2041-XX70	10°	22, 26, 28, 32mm	72mm	2205-XX70
2042-XX46	20°	22, 26, 28mm	52mm	2206-XX46
2042-XX50	20°	22, 26, 28, 32mm	52mm	2206-XX50
2042-XX54	20°	22, 26, 28, 32mm	56mm	2206-XX54
2042-XX58	20°	22, 26, 28, 32mm	60mm	2206-XX58
2042-XX62	20°	22, 26, 28, 32mm	64mm	2206-XX62
2042-XX66	20°	22, 26, 28, 32mm	68mm	2206-XX66
2042-XX70	20°	22, 26, 28, 32mm	72mm	2206-XX70
2043-XX46	0°	22, 26, 28mm	48mm	2206-XX46
2043-XX50	0°	22, 26, 28, 32mm	52mm	2213-XX50
2043-XX54	0°	22, 26, 28, 32mm	56mm	2213-XX54
2043-XX58	0°	22, 26, 28, 32mm	60mm	2213-XX58
2043-XX62	0°	22, 26, 28, 32mm	64mm	2213-XX62
2043-XX66	0°	22, 26, 28, 32mm	68mm	2213-XX66
2043-XX70	0°	22, 26, 28, 32mm	72mm	2213-XX70

Restoration™ GAP II Acetabular Shell

Catalog Number	Description
2082-0048L,R	48mm OD
2082-0052L,R	52mm OD
2082-0056L,R	56mm OD
2082-0060L,R	60mm OD
2082-0064L,R	64mm OD
2082-0068L,R	68mm OD
2082-0072L,R	72mm OD

Restoration™ GAP Plate Screws

Catalog Number	Description
2080-00XX	6.5mm dia. 15-60mm length (in 5mm increments)

Instrumentation

Instrument	Catalog Number
Mini Bone Plate Bender	2107-5004
Inferior Hook Crimper	2107-5010
Superior Plate Cutter	2107-5020

Important:

- Use only Restoration™ GAP Plate Screws (Series 2080) for all screw holes
- Avoid repeated bending and sharp notch for inferior hook and superior plates
- The position of the obturator artery should be identified and avoided prior to the placement of the inferior hook

*U.S. Patent No. 5,702,477

Stryker® is a registered trademark of Stryker Corporation

Omnifit® is a registered trademark of Howmedica Osteonics Corp.

Restoration™ is a trademark of Howmedica Osteonics Corp.

©Howmedica Osteonics 2002 Printed in USA Lit. No. LRST-2 2.5M 04/02 MC/01

stryker®

**Howmedica
OSTEONICS**

59 Route 17 South
Allendale, NJ 07401
howost.com