

**The information contained in this document
is intended for healthcare professionals only.**

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

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