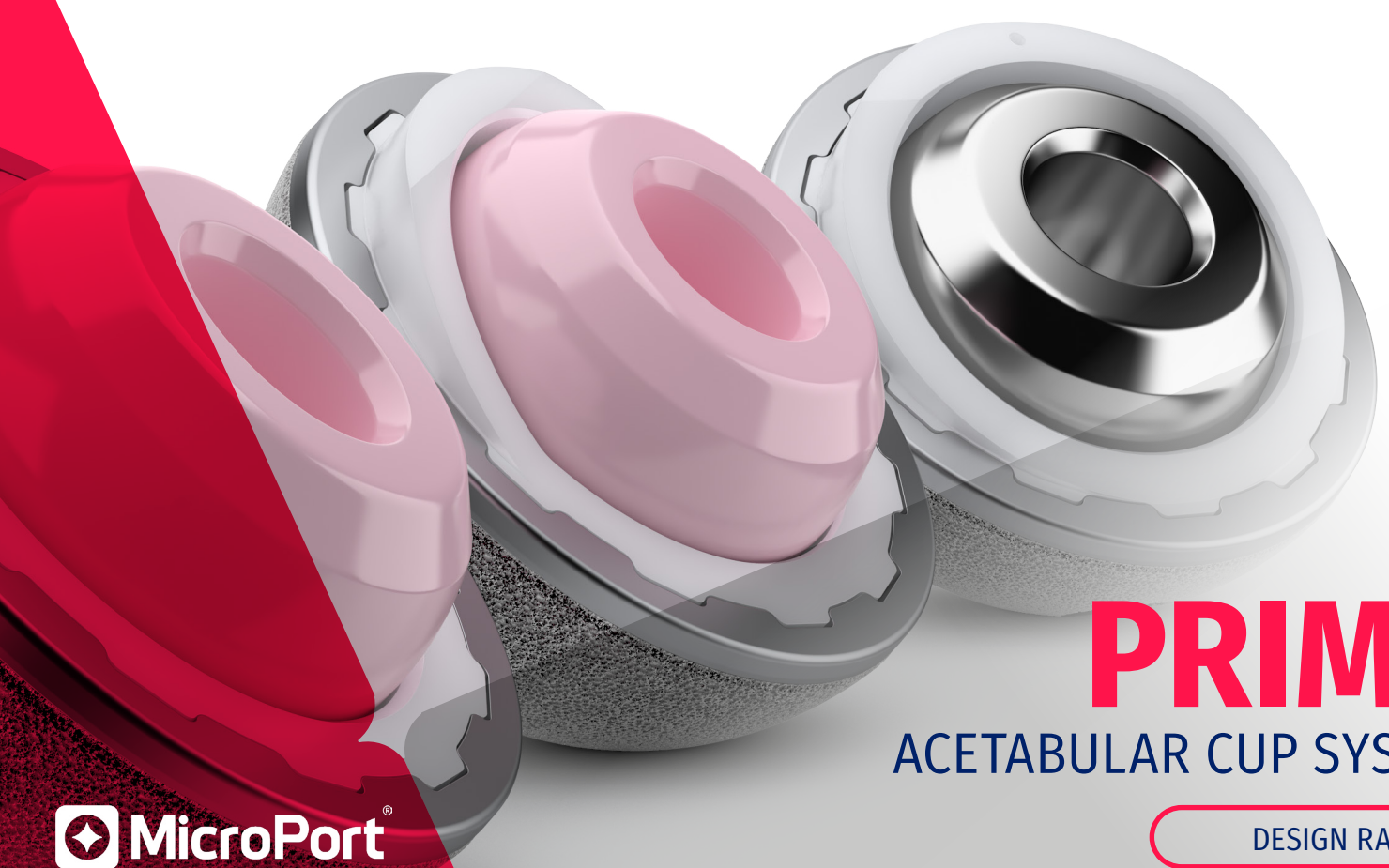


PRIME®

ACETABULAR CUP SYSTEM

DESIGN RATIONALE

MicroPort®

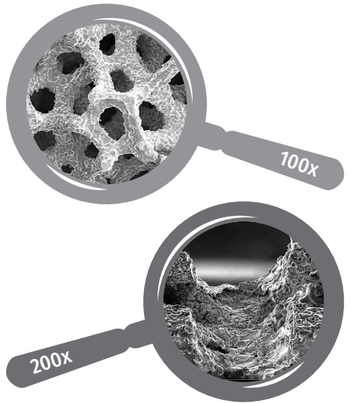
Introduction

The Prime Acetabular Cup System is the next step in the evolution of the successful Dynasty® Acetabular Cup System. It is the first system that supports a variety of surgical approaches and is optimized for a highly cross-linked polyethylene bearing surface, eliminating the compromises associated with alternative bearings.

The Prime Acetabular Cup System is the fifth generation of MicroPort Orthopedics' acetabular cup systems and is built on over 25 years of clinical heritage.

BioFoam® cancellous titanium newest generation of cementless fixation

Magnification of trabecular structure of BioFoam® Cancellous Titanium



- The structure of the BioFoam® Cancellous Titanium acts as a biological scaffold designed to enhance bone apposition to support long-term implant strength and stability.[1]
- Porosity between 60–70% mimics natural trabecular architecture.
- Pore cell size averages 530µm and diameter of interconnecting pores averages 200µm providing a macrostructure for vascularization and bone apposition.
- Coarse titanium struts bite into bone providing initial scratch-fit and enhancing immediate rigid fixation.
- Compressive modulus will withstand impaction and repeated load and potentially transfer applied load to native bone, discouraging stress-shielding.[2, 3]
- High abrasion resistance to withstand surgical impaction while still maintaining a 70% porous structure to allow osseous interdigitation.[4]

Radiused shell edges
Minimize soft-tissue irritation

Robust locking mechanism
Allows for multiple liner configuration options, promotes easy liner insertion, and maximizes push-out strength

Optimized screw hole locations
Create divergent fixation and allow for 18° of screw angulation

Square impaction dimple
Provides rotational control during implantation and functions with a quick release impactor mechanism

Optimized head to shell ratio
Allows the use of a 36mm head and liner in a 50mm shell with no compromise to liner thickness

Self-positioning anti-rotation tabs
Create an interference fit with the liner to maximize rotational stability while allowing ease of insertion

BioFoam® cancellous titanium
Provides immediate fixation and promotes bone apposition

Minimized shell thickness
Decreases stiffness, discourages stress-shielding, and allows for optimized liner thickness

A-Class® Highly Cross-Linked Polyethylene

- No oxidation[5]
- Undetectable free radicals[6]
- 92% or greater reduction in wear[7]

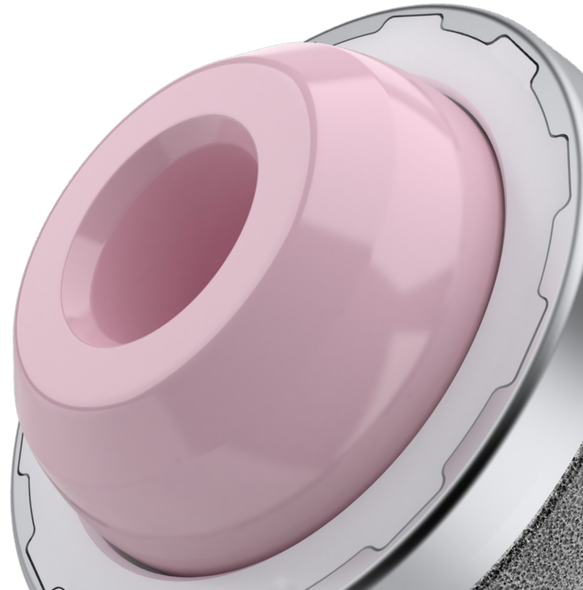
92% or greater reduction in WEAR[7]

Conventional Poly A-Class® Poly

Optimized head to shell ratio

The importance of head diameter and its effect on dislocation has been widely recognized in the industry. Clinical data demonstrates that the use of larger femoral heads decrease the risk of dislocation and impingement while increasing range of motion.[8-9]

The Prime Acetabular Cup System offers optimized head to shell ratios and increased jump distance without any compromise to liner thickness. This promotes greater joint stability.



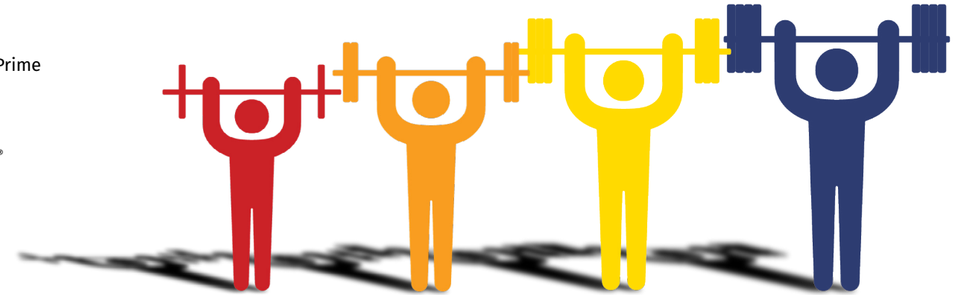
Robust locking mechanism

The robust locking mechanism coupled with low-profile, self-positioning anti-rotation tabs maximize push-out strength while allowing for easy liner impaction with less than 270 pounds of impaction force required.

- Twelve anti-rotation tabs on the polyethylene liner maximize torque resistance and rotational stability and allow for self-correction during impaction
- Accepts multiple liner configuration options

Push-out strength

- MicroPort Orthopedics' Prime
- Stryker Trident®
- Smith & Nephew R3™
- Depuy Synthes Pinnacle®

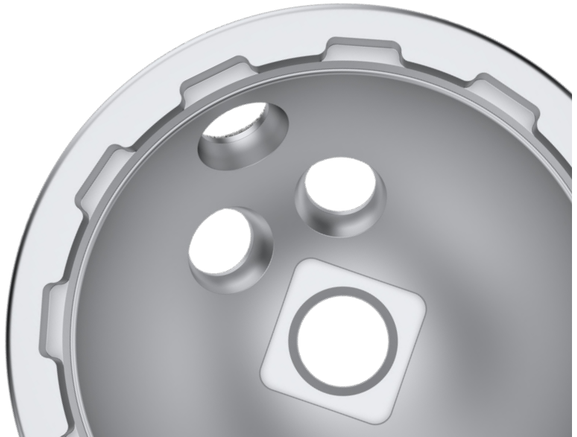


Pinnacle is a registered trademark of DePuy Synthes, R3 is a trademark of Smith & Nephew, Trident is a registered trademark of Stryker.

Optimized screw hole locations

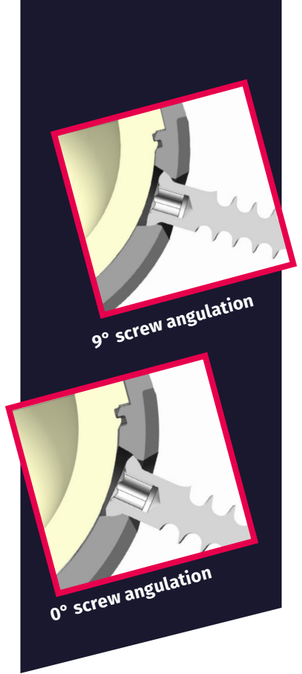
Two screw holes are positioned close to the dome hole and one screw hole is positioned close to the periphery, which:

- Allows for divergent screw fixation
- Eliminates the need to adjust inclination or version to avoid vascular injury



Enhanced Screw Hole Design

- Conical screw hole entry coupled with a spherical screw head allows for poly-axial positioning of the screw anywhere within an 18° cone (9° off-axis)
- Screw holes are recessed to ensure that screws do not sit proud and prevent liner seating at any degree of screw angulation



Simple, versatile instrumentation

The Prime Acetabular System was designed for compatibility with a variety of surgical approaches, including the following modern, soft tissue-sparing MicroPort surgical approaches:

- Anterior Path®
- SuperPath®
- Path®
- SuperCap®
- Direct Anterior
- Anterolateral
- Posterior

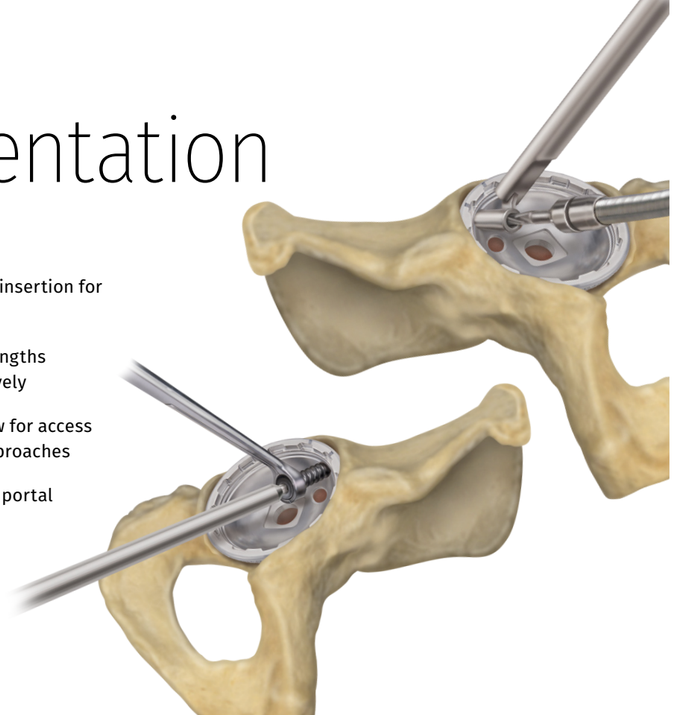
Modular impaction instrumentation

- Modular impactor handle is compatible with both straight and curved shell and liner impactors
- Shell impactors mate with both a threaded adapter and a quick release adapter that facilitates easy disengagement of the impactor from the shell

Screw Instrumentation

Screw instrumentation has multiple options to facilitate screw insertion for various surgical approaches and patient anatomies.

- Drill shafts and screw drivers come in standard and long lengths to accommodate standard and high BMI patients, respectively
- Flexible drill shafts and angled screw-holding forceps allow for access through surgical interval in soft tissue-sparing surgical approaches
- Special drills and screw drivers available for use through a portal



Shell, Liner, and Head Options

Available in 46 – 68mm diameters in 2mm increments

The Prime Acetabular Cup System offers various cup and liner options to allow intraoperative flexibility and address a wide variety of patient anatomies.

STANDARD

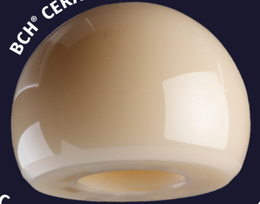
LIPPED

+4MM LATERALIZED, 10° FACE-CHANGING

Available in 22, 28, 32, 36, 40, and 44mm diameters

NOTE: All liners are available in both A-Class® Highly Cross-Linked Polyethylene and E-Class™ Vitamin E Blended Highly Cross-Linked Polyethylene.

COBALT CHROME METAL



BCH® CERAMIC HEAD

BIOLOX® DELTA® CERAMIC

BIOLOX® DELTA® OPTION

A-CLASS® COBALT CHROME METAL

References:

1. Woodell-May, J.E., Kumar, M. In vitro comparison of cell proliferation on Ti6Al4V and Tantalum Metal. Poster No. 1578 presented at 53rd Annual Meeting of the Orthopaedic Research Society
2. Benchtop data on file at MicroPort Orthopedics.
3. J.D. Bobyn. JBJS [Br] 1999;81-B:907-14.
4. Dyson, E.D., Jackson, C.K. and Whitehouse, W. J., Scanning electron microscope studies of human trabecular bone, Nature, 225, 957-959, 1970.
5. Benchtop data on file at MicroPort Orthopedics.
6. Benchtop data on file at MicroPort Orthopedics.
7. Compared to conventional poly. Benchtop data on file at MicroPort Orthopedics.
8. Benchtop data on file at MicroPort Orthopedics.
9. Bartz, RL et al. The effect of femoral component head size on posterior dislocation of the artificial hip joint. J Bone Joint Surg Am. 2000 Sep; 82 (9): 1300-7.

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The CE-Marking of Conformity is applied per catalog number and appears on the outer package label, if applicable.