VADIN implants

Hip Product Catalog

more to life™

Leader
HIP SYSTEM

POROUS COATING

The Leader Stem encourages osseointegration and bone in-growth with a successful and well-established surface treatment. The entire proximal portion of the implant is porous-coated with titanium microspheres to promote host bone in-growth.

RIBS

The Leader Stem has been designed with a series of well-defined proximal ribs to increase the fixation and stability in the femur. It has an optimal number of ribs to handle the stress imparted by the rotational and torsional forces yet still allow for the implant to be safely removed, if necessary.

Grit blasted diaphyseal region achieves bone ongrowth and implant fixation.

DISTAL TIP REDUCTION

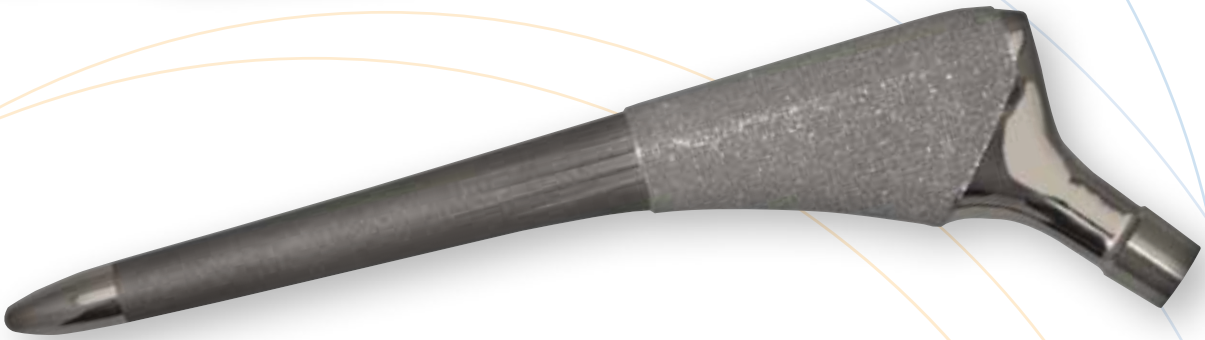
The Leader Stem's increased proximal fixation allows for a reduction in the distal portion of the implant. Vadin recognizes a long distal tip may cause stress shielding and severe thigh pain. By reducing the distal tip can help to alleviate these problems when combined with a compact implant. With a shorter implant we can decrease the overall impact on the patient.

MATERIALS

The Leader Hip Stem is manufactured from titanium Ti6Al4V alloy. Titanium has been used in load-bearing biomedical applications for over 50 years. This material is known to have high strength, optical density, excellent biocompability and a low modulus of elasticity compared to other implant metals.
The strength of titanium gives it the ability to withstand the high stresses applied across the hip joint. The low density significantly decreases the weight of the Leader Hip Stem when compared to the other implants.
Titanium is classified as a biologically inert material. Titanium's comparatively low modulus of elasticity is more in-line with that of bone allowing the implant to behave more like bone and reduce stress shielding and atrophy.

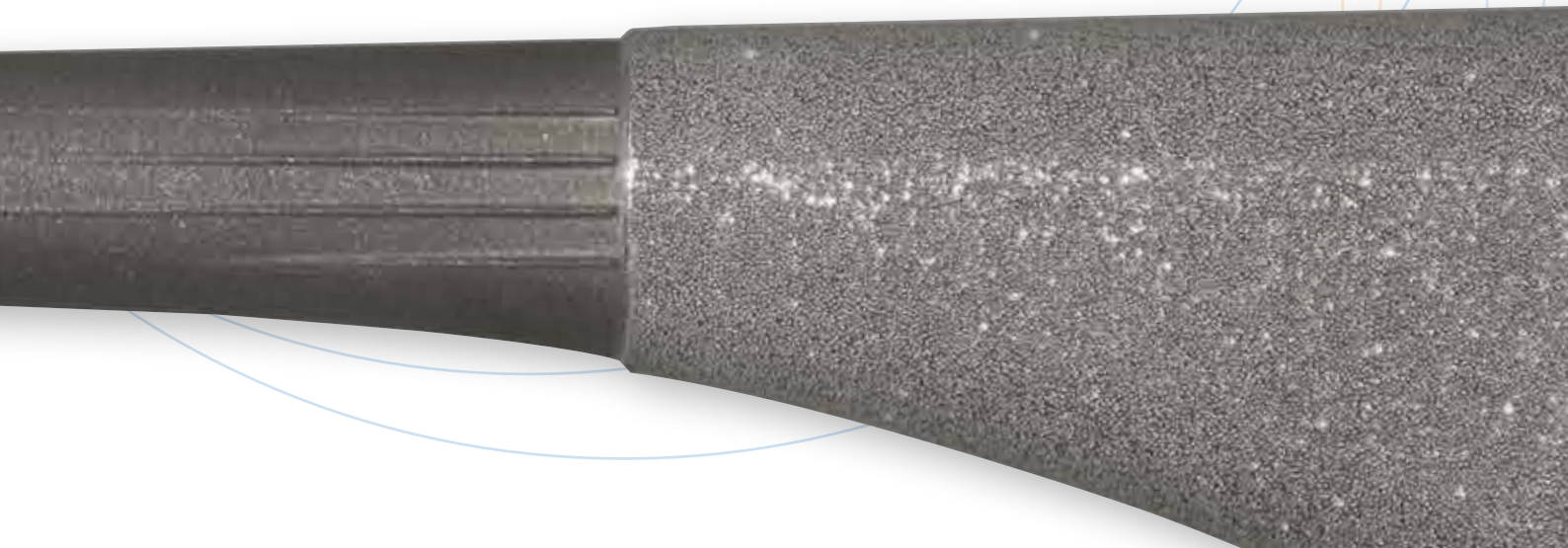
Note:
Weight-bearing forces on a tapered stem are off-loaded gradually to the bone of the proximal femur, minimizing stress-shielding impact of the patient.

*PATENT PENDING

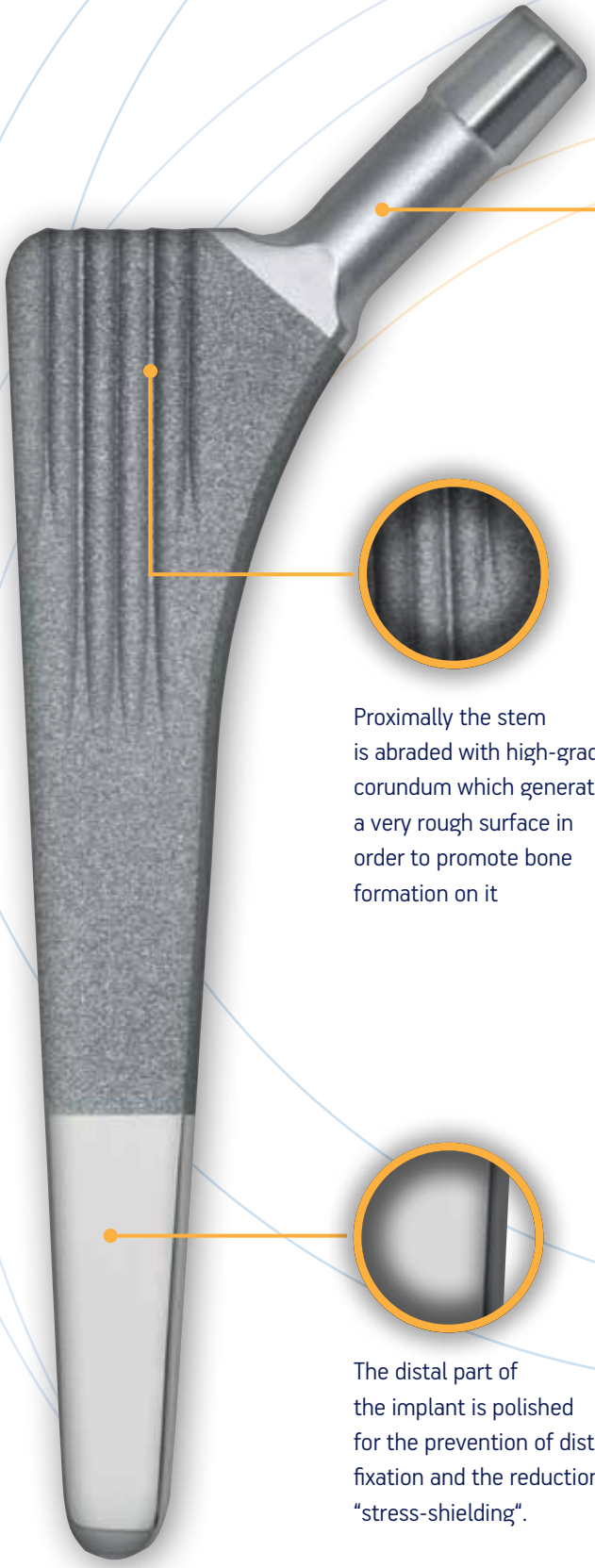


Leader

HIP SYSTEM



ArtiFlex Hip System



The neck and shoulder are bead blasted to generate a matt finish

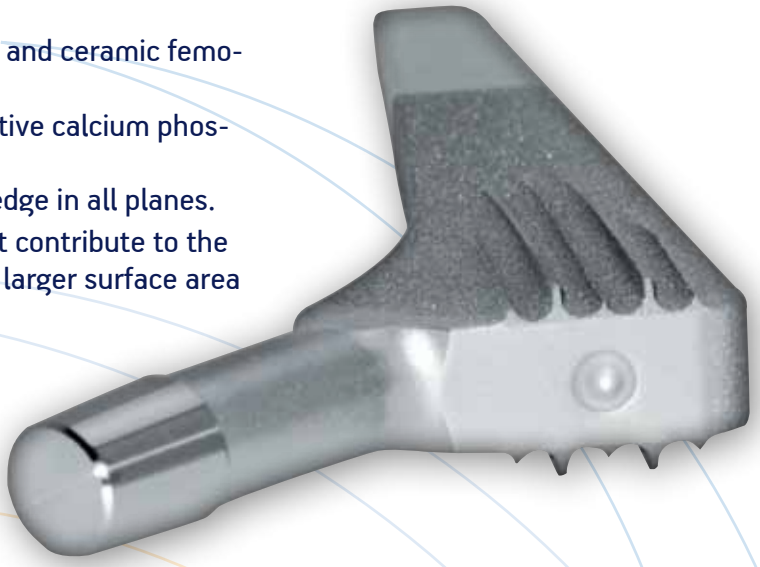
Proximally the stem is abraded with high-grade corundum which generates a very rough surface in order to promote bone formation on it

The distal part of the implant is polished for the prevention of distal fixation and the reduction of "stress-shielding".

The ArtiFlex hip stem is a tapered straight press-fit prosthesis manufactured from Titanium alloy. Its design relies on the "Spotorno Philosophy" which has excellent long term clinical results. The implant achieves initial stability by wedging its proximal fluted part into a retained bed of femoral trabecular and cortical bone. Due to the rectangular cross section design, the stem provides excellent rotational stability. The surface of the implant is treated with corundum blasting to create a surface roughness enabling bone on-growth of newly formed osseous tissue for biological fixation and secondary stabilization.

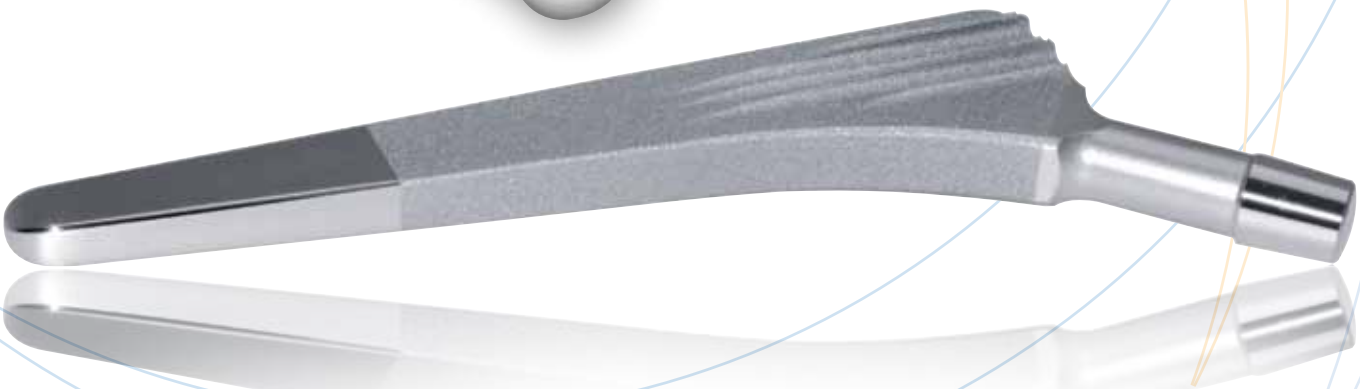
Product Characteristics

• Manufactured from Titanium Aluminium Niobium alloy (Ti6Al7Nb) according to ISO 5832-11.
• Available in 13 different perfectly synchronized sizes at a CCD angle of 135 degrees
• Universal 12/14 taper for use with both metal and ceramic femoral heads
• An alternative version is available with a bioactive calcium phosphate coating BONIT®
• The prosthesis is a three dimensional taper wedge in all planes.
• The wedges at the proximal part of the implant contribute to the tapered shape of the implant and also provide a larger surface area of contact between metal and cancellous bone.

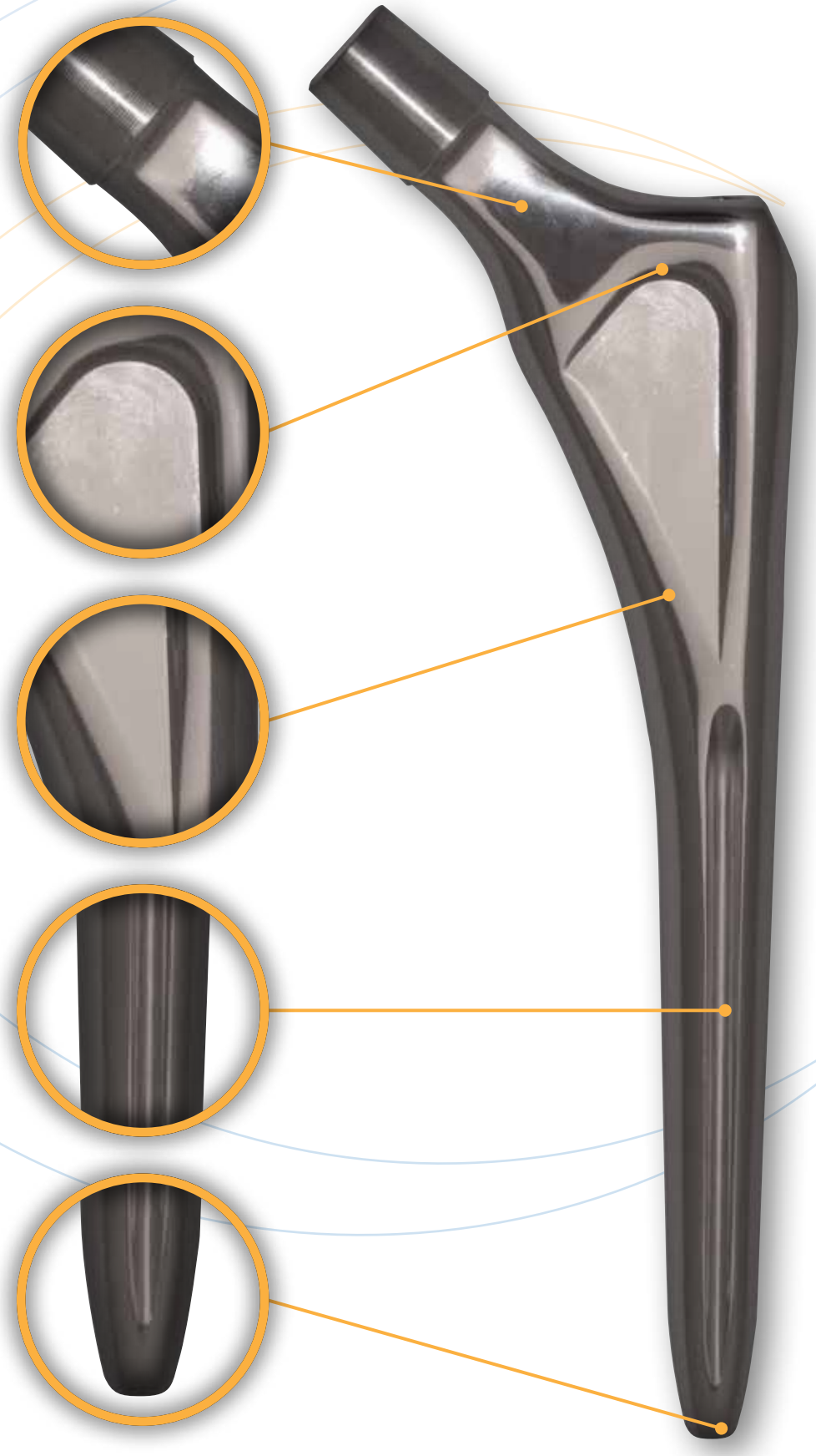


ArtiFlex HA

The HA version of the stem has the proximal part coated with an electrochemically deposited thin CaP BONIT® coating, resulting in accelerated bone apposition and biological fixation of the implant.



Optifit Cemented Femoral Stem



Tapered neck geometry and optimized range of motion

Flange for cement pressurization

Highly polished surface finish which doesn't interdigitates with the cement, protecting the cement-metal interface

Vertical groove for rotational stability

Distal centralizer for production of uniform cement mantle

OptiFit Cemented Femoral Stem charactheristics:

- Manufactured from Cobalt-Chromium-Molybdenum Casting Alloy according to ISO5832-4 and from advanced nickel-reduced, high-strength stainless steel according to ISO 5832-9
- Available in six sizes.
- Designed for uniform force transmission to the cement mantle.
- 12/14 Morse Taper.

Biomechanical Superiority

The neck shaft angle of the OptiFit Femoral Stem is 130 degrees. The normal anatomic CCD angle of a healthy hip is between 120 and 135 degrees. The value of the CCD of the OptiFit Femoral Stem provides optimized range of motion of the affected hip joint and enables soft tissue tensioning without compromising the length of the leg. The neck of the OptiFit Femoral Stem has been designed to provide increased range of motion in flexion and extension.

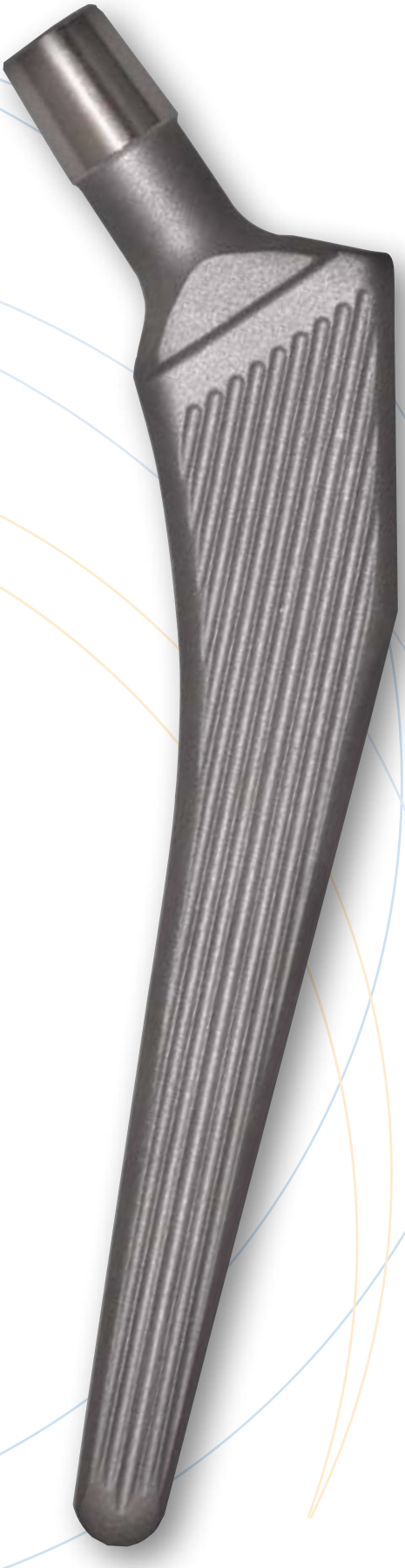
Product Philosophy

Unlike cementless femoral fixation, modern cemented femoral fixation has numerous advatages; it is versatile, durable, and can de used regardless of the diagnosis, proximal femoral goemetry, anteversion, or bone quality. The design of th OptiFit Cemented Femoral Stem relies on the geometry of the original Charnley stem with excellent clinical results.

ProvenFit Stem

ProvenFit Stem

Cemented fixation has excellent clinical results in a long term clinical follow up. It is a durable, reproducible and cost-effective technique. In the 1970s Maurice Muller designed one of the most successful cemented prosthesis, "The Muller stem". Vadin Implants offers a generic version of the prosthesis in CoCr and SS medical alloys.



Prosthesis Geometry:

- Standard and lateral versions available
- Cone 12/14
- CCD-angle 135 degrees
- Conical design

Material:

- FeCrNiMnMoNbN (ISO 5832-9): advanced nickel-reduced, high-strength stainless steel
- CoCrMo (ISO 5832-12): Cobalt material without nickel as alloying element

The material should be selected according to patient's individual needs. CoCrMo decreases the risk of the potential allergic reactions. The mechanical properties such as strength and Young's modulus are comparable to other materials.

Features and Benefits of the ProvenFit Stem:

- "Proven concept"-philosophy: stem geometry and fixation.
- Several million of stems have been implanted worldwide over the last 30 years.
- Excellent long-term clinical results and scientific publications in well respected journals.
- Cemented stem is "gold standard", especially in older patients.
- Easy, reproducible and proven surgical technique.
- Extraordinary cost-performance ratio.

Aptera Cup

The Aptera acetabular shell is a third generation press-fit shell which has been developed in consultation with an experienced surgeon design team. It is a modular shell giving the option to the surgeon to decide intra-operatively the inlay type: A Polyethylene (UHMWPE) Insert or a Ceramic Liner may be used.

The Aptera shell is Coated with Titanium Plasma Spay (TPS) featuring a porosity of 20-35% with maximum thickness of 400μm, enhancing microlock between bone and implant and osseointegration.

Product Characteristics

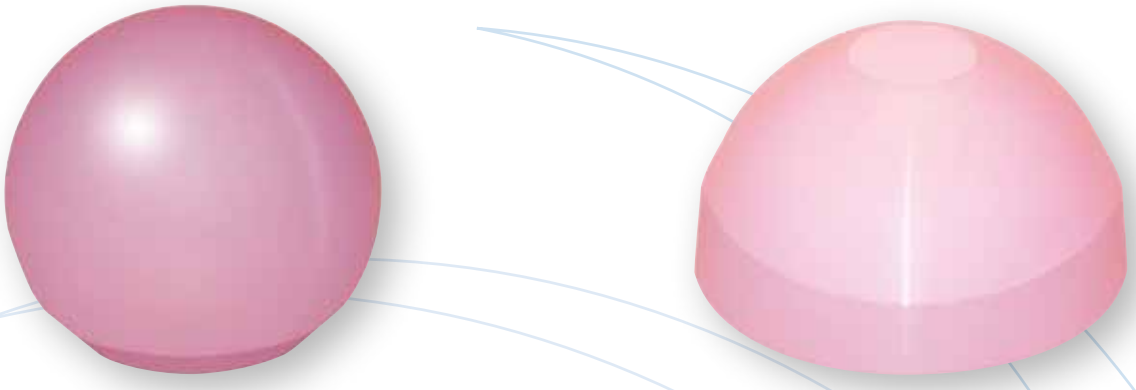
1. Manufactured from Titanium 6 Aluminium 4 Vanadium alloy in accordance with ISO 5832-3. Ti6Al4V is a proven biocompatible low modulus material.
2. Available in the following product range 42-68mm (in 2mm increment)
3. Hemispherical shell with three holes for screw fixation
4. Internal polished surface for the prevention of wear
5. Internal anti-rotational locking mechanism for the prevention of micromotion between the shell and the inlay, providing rotational stability and resistance to torsional loads for polyethylene inserts
6. Provided with sealing plugs for the closure of the interface space
7. Position markers on the shell's plane surface allow the screw holes to be aligned in a cranio-lateral direction.

ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE (UHMWPE)

Individual polyethylene inlays (standard and hooded) are designed for each size of the shell providing the maximum thickness of the polyethylene and the minimum thickness of the shell.

Vadin implants pays considerable attention to the manufacturing method, quality control and sterilization of the polyethylene inserts. All UHMWPE inserts are sterilized with **Gamma irradiation** in a vacuum environment to avoid oxidation during the process.
The UHMWPEs are available with internal diameter:
22 mm, 28mm, 32mm and 36mm (only for the std. version)
in two different types: ***Standard*** and ***Hooded*** (10 degrees).

CERAMIC ON CERAMIC ARTICULATION



Vadin Implants uses the newest ceramic material which is an alumina matrix composite, labeled BIOLOX® Delta. BIOLOX® delta is a zirconia-toughened, platelet-reinforced alumina ceramic (ZPTA), designed to incorporate the wear properties and stability of alumina with vastly improved material strength and toughness. BIOLOX® delta contains approximately 74% alumina and 25% zirconia. Additives of chromium dioxide and strontium oxide enhance the performance of the material.

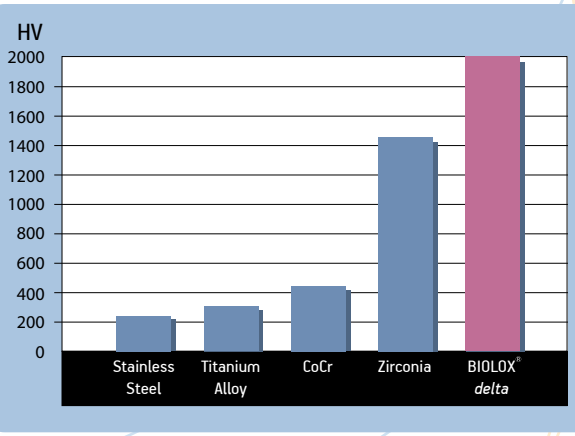
The Strengths of BIOLOX® *delta*

- Increased fracture toughness
- Increased fracture strength
- Crack-stopping function
- Excellent diocompatibility

BIOLOX® *delta* is clearly superior when it comes to the following crucial parameters: grain size, bending strength, and fracture toughness.

In order to minimize wear at the articular surface of a total hip replacement, it is essential to use femoral heads with a smooth surface finish. An exceptionally smooth surface can be achieved with high hardness materials such as BIOLOX® *delta* through precise polishing processes.

MATERIAL HARDNESS



APTERA SLIM SHELL

The Aptera Slim Shell is a cost effective solution for surgeons who do not consider the use of ceramic inlays. The shell has the same outer geometry as the Aptera std shell but the internal design is spherical in order to provide more thickness to the polyethylene insert. The spherical outer shell has a flattened polar area to increase the contact surface between the shell and the bone. It ensures transmission of the forces to the rim of the shell in a manner similar to the physiological load transmission.
The surface of the cup is especially rough treated after being abraded. Bone on-growth is achieved through osseointegration in the same pattern as in the standard Aptera shell.

The shell is available in two versions

- with grit blasted surface and
- with BONIT® coating

ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE

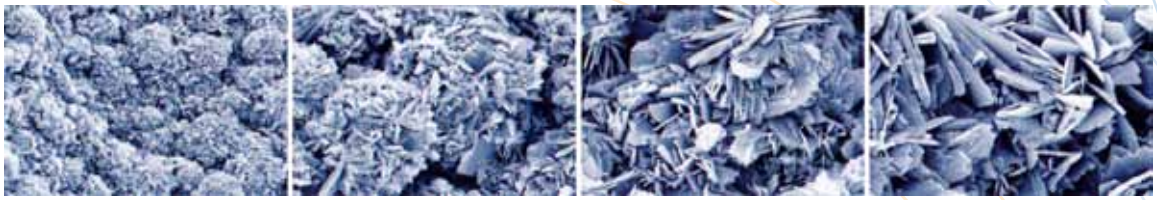
Vadin pays considerable attention to the manufacturing method, quality control and sterilization of the polyethylene inserts. All UHMWPEs are sterilized with Gamma irradiation in a vacuum environment to avoid oxidation during the process. The UHMWPEs are available with internal diameter 28mm and 32mm in two different types: ***Standard*** and ***Hooded*** (10 degrees).

BONIT® Coating Technology

BONIT® is a bone-like surface coating. The microcrystalline structure of the calcium phosphate (CaP) coating maintains substrate surface roughness, providing a large area for bone integration. BONIT® is designed to enhance rapid osseointegration.

BONIT® is a composite of two thin microcrystalline CaP phases that have differing solubility characteristics. The more soluble phase (brushite) promotes short term bone synthesis, whereas the inner phase (microcrystalline hydroxyapatite) is resorbed more slowly and releases ions over a relatively long period. This promotes bone formation.

The co-ordinated bioactivity of these two phases greatly improves the healing process and fosters long –term implant tolerability. The closely packed and almost perpendicular CaP crystals offer a large, open implant surface with a potent capillary effect on blood, beneficial for the adsorption of the growth factors and for the attachment of the bone cells. The BONIT® coating process modifies the properties of the implant surface but has no effect on the chemical and physical properties or the biomechanical functionality of the implant material itself.



SEM pictures of BONIT® coated surface

Coating thickness	20+ - 10mm
Ca/P ratio	1.1+/-0.1
Phase composition	Brushite and hydroxyapatite
Fatigue strength	BONIT® has no measurable impact on this parameter
Biocompatibility	Heavy metal content lower than ASTM F 1185 and ASTM1609 standards

Advatages at a glance

- Outstanding biocompatibility
- Thin coating
- Microcrystalline structure, large open surface
- High solubility and controlled resoption area
- No particle shedding or flaking

LongFit Cup

LongFit Cemented Cup

Cemented acetabular fixation is an extremely successful procedure with better clinical results compared to non-cemented options. It remains a durable, reproducible and cost effective technique.

The Vadin cemented cup is made of ultra-high molecular weight polyethylene, sterilized by gamma irradiation.

The LongFit cemented All-Poly cup is offered in a wide range of internal and external diameters in order to cover a broad scope of indications. It is available with an outer diameter in 2mm increments. All sizes feature the minimum wall thickness of 6mm required by ISO standards.

The outer geometry of the cup is hemispherical allowing 2 to 5mm depth of cement penetration which is believed to be the optimal mantle thickness. The uniform design prevents the generation of thin cement mantle layers and interruptions around the cup which are cause of cement cracking and polyethylene wear.

The cup is available in four different types:

- *Standard*
- *Flat profile*
- *Dysplasia 10 degrees*
- *Snap-Fit*

To ensure radiographic visibility all implants are equipped with a metal ring (manufactured from Stainless Steel-ISO 5832-1). The dysplasia version has an added notch and x-ray pin at its uppermost point. The snap-fit cup is offered for the prevention of hip dislocation. Its internal contour has been designed so that the connection with the push-on head can be released only with considerable force.

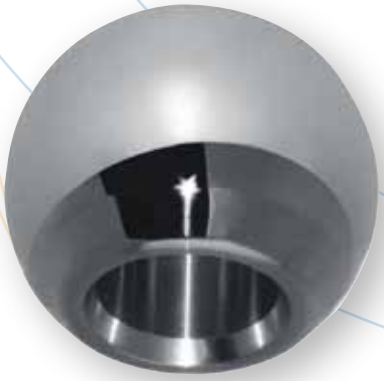
Bipolar Head

BIPOLAR HEAD available in:
- CoCrMo 22mm and 28mm or
- Stainless Steel 28mm

Unipolar Head

UNIPOLAR HEAD
Available in Small, Medium, Large size, material Stainless Steel

Supremum Femoral Head



SUPREMUM FEMORAL HEAD
Available in 28mm and 32mm, in two different types Stainless Steel or CoCrMo

BIOLOX® Delta Femoral Head

BIOLOX® DELTA FEMORAL HEAD
Available in 28mm, 32mm and 36mm, material Al_2O_3

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