

VEGA System®

PS Knee Replacement Technology



Aesculap Orthopaedics

AESCULAP
Implant Systems

A pivotal breakthrough in knee replacement.

VEGA System[®] PS Knee Replacement Technology

Based on a patent-pending post-cam design that optimizes pivotal motion while greatly reducing surface stress, the VEGA System represents a whole new way to think about PS knee replacement.

The VEGA System's groundbreaking design concept works hand in hand with a unique 7-layer Advanced Surface (AS) coating, delivering exceptional kinematics, reduced wear rates, and excellent jump distances.

Aesculap Implant Systems aims to provide Innovations for Better Patient Outcomes.



The all-new VEGA System was designed with equal emphasis on surgical efficiency and long-term performance.

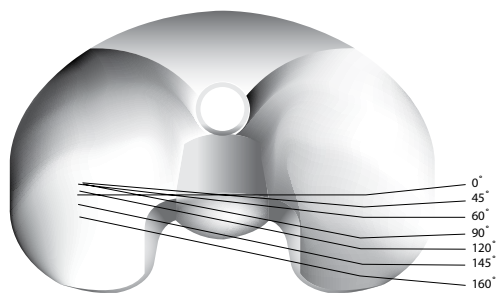




Unique Post-Cam Design: Enables pivotal motion while reducing bearing surface stress.



Dorsal Fin Polyethylene Post: Facilitates a smooth gliding surface and reduces dislocation risks.



Posterior femoral condyle and polyethylene articulation at varying degrees of flexion. The VEGA System's unique design of these articulating surfaces facilitates natural kinematics and prevents posterior condyle floating.

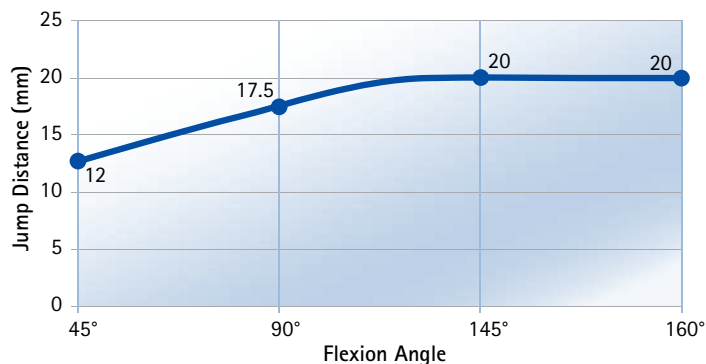
Patent-Pending Post-Cam Design

Designed to mimic natural knee kinematics by enabling a physiological pivot around the medial condyle, the VEGA System's distinctive post-cam design facilitates a large range of motion and optimized surface contact between the femoral and gliding surfaces. The surface contact between the articulating components maximizes bearing surface stress distribution, reducing the risk of delamination.

- Enables pivotal motion, helps avoid excessive loading on posterior condyle edges, and reduces stress on bearing surfaces
- Dorsal fin polyethylene post and cam interactivity reconstructs natural knee kinematics
 - Posterior inclination of the polyethylene post design prevents anterior impingement with the extensor mechanism and increases resistance to dislocation
 - Deepened anterior cutout facilitates smooth articulation of the patellar tendon
 - In combination with unique cam engineering, allows for rollback and a pivot motion around the medial condyles that greatly mimics natural knee kinematics
- Soft-tissue-friendly: Anterior and posterior narrowing combined with minimal box resection minimizes interference with surrounding soft tissues

Excellent Jump Distances

In conjunction with the height and inclination of the polyethylene post, the design of the VEGA System's post-cam mechanism results in excellent jump distances, which increase with flexion and can reduce subluxation risks.



Unique 7-Layer AS Coating

Imagine a surface coating that delivers unparalleled surface hardness, substantially decreased wear rate, and greatly improved scratch resistance. Now imagine the performance of a unique 7-layer Advanced Surface (AS) coating.

Unmatched Surface Hardness

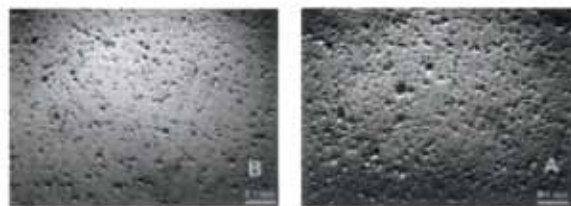
Small scratches in CoCrMo implants are common and can lead to surface damage and higher PE wear. Conversely, the AS coating's zirconium nitride top surface layer yields unmatched surface hardness:¹⁻⁶

- Improved scratch resistance
- Excellent wettability
- Better articulation between bearing surfaces
- Minimizes mechanical ablation risk⁷
- No damage after extreme wear test with bone chips and cement particles:

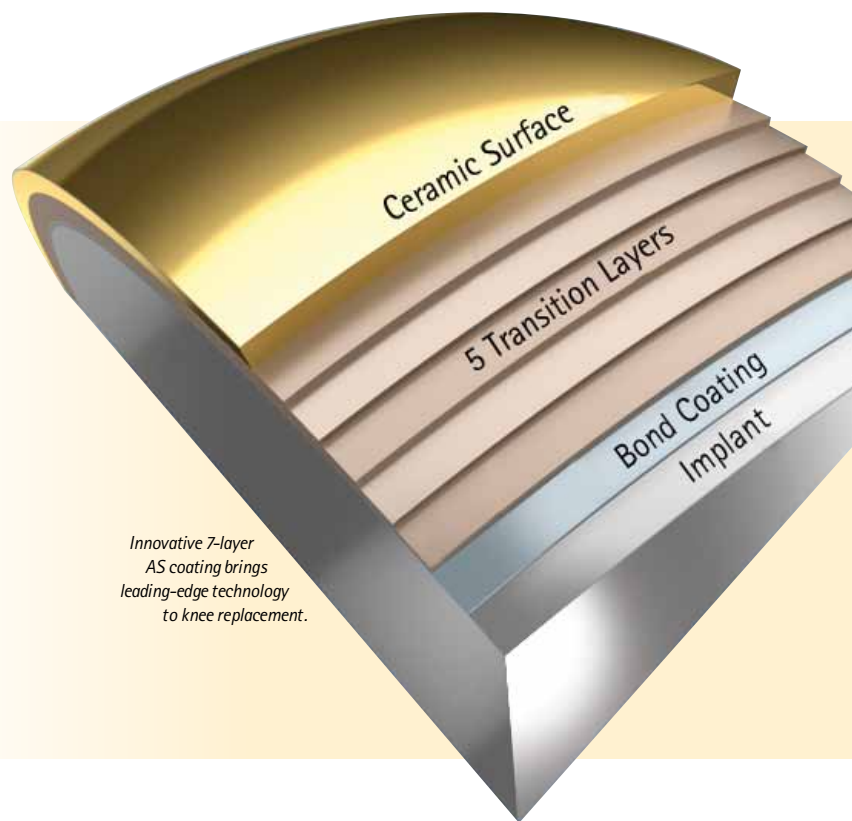


Inside Articulation

Outside Articulation



Wear simulation under extreme conditions⁷



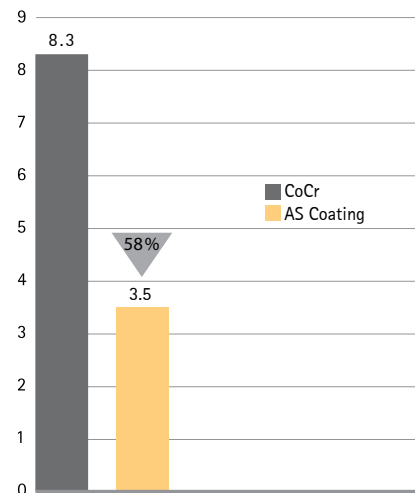
Innovative 7-layer AS coating brings leading-edge technology to knee replacement.

60% Wear Rate Reduction

Wear is the number-one reason for long-term knee replacement revisions.⁹ To combat this issue, the AS coating can deliver up to a 60% reduction in wear when compared to a CoCr prosthesis, as demonstrated in testing with other Aesculap knee designs.^{9, 10}

Wear Rate (mg/Mc)

Wear reduction with AS coating on a Columbus Knee design after 5 Mio cycles according to ISO Standard 14243-1/3^{7, 9, 10}



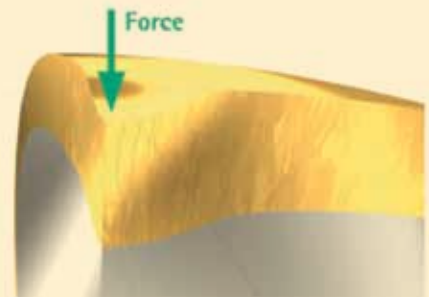
Exceptional Mechanical Integrity

A hard surface on top of a relatively soft base material (CoCr) can lead to a higher risk of surface breakage (eggshell effect). The AS coating is designed to reduce hardness from top to bottom in a gradient-like fashion, resulting in an improved elastic modulus. This makes it extremely stable against mechanical stresses and strains.¹¹

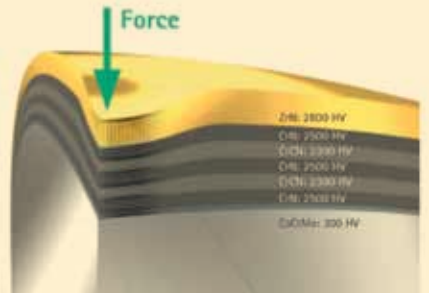
The transition zone within the AS coating compensates for changes in surface hardness and results in a more resilient product. A powerful bonding layer between the base material and subsequent layers forms an alloy compound that ensures strong adhesion.

Hardness Gradient

Monolayer Coating
Column structure of crystallines



7-Layer AS Coating:
Improved Elastic Modulus
Small grain sizes



Reduced Metal Ion Release

With the AS coating, metal ion concentration is near the level of detection and below any biological threshold.⁷

Beta Radiation Sterilization

All of Aesculap's polyethylenes are sterilized under Beta radiation, which reduces oxidation, decelerates the aging process, and yields better wear rates.¹²



1 medthin.com. Coating Portfolio. 30.3.2011.

2 TiN&N & TiN dot-coating.de/dotimplantsource/beschichtung.html. 30.3.2011.

3 Biolox Delta: BIOLOX® delta – Noverbundwerkstoff für die Endoprothetik, Ceramtec 07/10.

4 Smith & Nephew: OXINIUM™: Made for Life Image Brochure.

5 Zimmer PM Newsletter 11/2006.

6 Aesculap data on file.

7 Reich J, Hovy L, Lindenmaier HL, Zeller R, Schwiesau J, Thomas P, Grupp TM. Präklinische Ergebnisse beschichteter Knieimplantate für Allergiker. Orthopäde.2010 Mai;39(5):495-502.

8 Sharkey PF, Hozack WJ, Rothman RH, Shastri S, Jacoby SM. Insall Award paper. Why are total knee arthroplasties failing today? Clin Orthop Relat Res. 2002 Nov;(404):7-13.

9 Affatato S, Spinelli M, Lopomo N, Grupp TM, Marcacci M, Toni A. Can the method of fixation influence the wear behaviour of Zn coated unicompartamental mobile knee prostheses? Clin Biomech (Bristol, Avon). 2011 Feb; 26(2): 152-8. Epub 2010 Oct 8.

10 Grupp TM, Schwiesau T. Determination of the wear behaviour of the UNIVATION mobile knee system T018, Mar 2007.

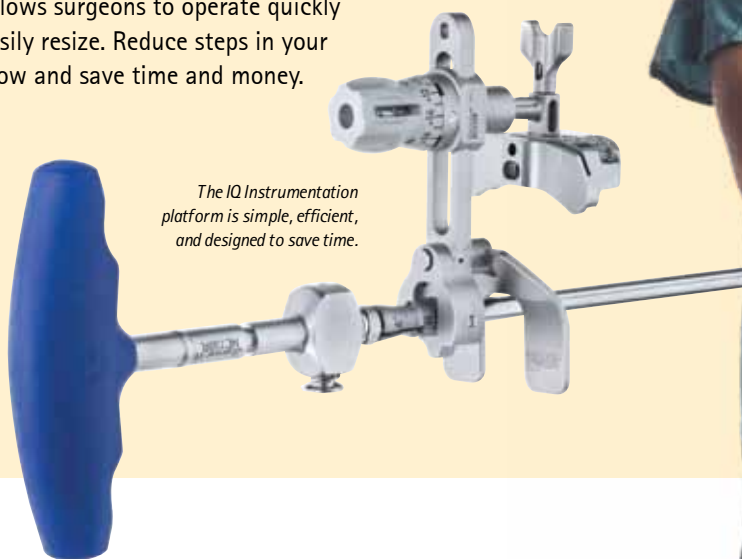
11 Santana AE. Relating hardness-curve shapes with deformation mechanisms in TiAlN thin films indentation. Materials Science and Engineering A 406(2005) 11-18.

12 Bell CJ, Walker PS, Abeyundera MR, Simmons JM, King PM, Blunn GW. Effect of oxidation of delamination of ultrahighmolecular-weight polyethylene tibial components. J Arthroplasty 1998 Apr;13(3):280-90.

Innovation that moves you.

Quick, Intuitive Instrumentation

The VEGA System's IQ Instrumentation platform is highly intuitive, with dual-purpose instruments, fewer trays, and a simplistic design that allows surgeons to operate quickly and easily resize. Reduce steps in your workflow and save time and money.



Award-Winning Navigation

Aesculap's award-winning OrthoPilot® Navigation System enables excellent implant alignment without the need for CT/MRI scans. Combine the VEGA System with OrthoPilot, and you've got today's fastest, most versatile, most efficient navigated PS knee replacement system at your fingertips.



Better Bone Fit

13 femoral sizes, including standard and narrow design, and 11 tibial sizes, including standard and AP+ sizes, offer a wide range of soft-tissue-friendly implants for a better bone fit regardless of gender, size, morphotype, or race. Additionally, the VEGA System's low-profile box helps preserve more bone.



You need a knee replacement system that moves you quickly through your workflow and delivers accurate, efficient operation. Your patients need a knee replacement system that delivers lasting mobility. You both need the VEGA System.

Visit aesculapimplantsystems.com/VEGA today and see where the VEGA System can take you.



All rights reserved. Technical alterations are possible. This leaflet may be used for no other purposes than offering, buying and selling of our products. No part may be copied or reproduced in any form. In the case of misuse we retain the right to recall our catalogs and price lists and to take legal actions.

©2012 AESCULAP. ALL RIGHTS RESERVED. PRINTED IN THE USA.

Aesculap is an equal opportunity employer.

Aesculap Implant Systems, LLC | 3773 Corporate Parkway | Center Valley, PA | 18034
Phone 866-229-3002 | Fax 610-984-9096 | www.aesculapimplantsystems.com

Aesculap Implant Systems, LLC - a B. Braun company

DOC1027 1M 05/12