

Echo[®] Femoral Hip System

The Echo Femoral Hip System

The Echo Femoral Hip System offers a modern metaphyseal loading, fit and fill design to address increasing hospital demands for both primary and fracture applications. Four stem options with various fixation modes address the distinct needs of each patient, while the customizable instrumentation platform provides enhanced surgical workflow.



Echo FX™
Fracture Stem

Echo Bi-Metric®
Primary Stem



Echo Bi-Metric Microplasty®
Primary Stem



Echo PF
Fracture Stem



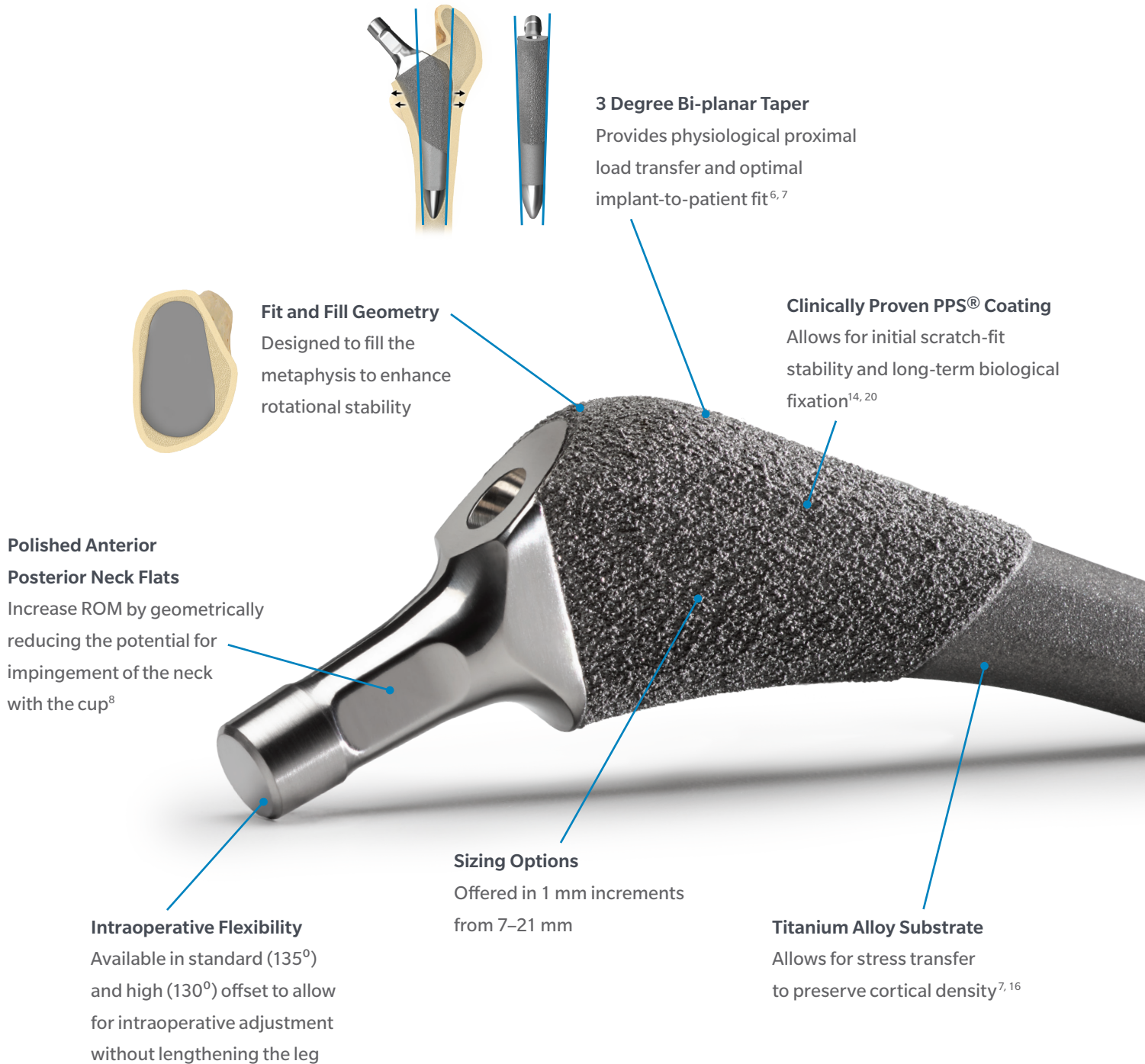
Clinically Proven Heritage

The Echo stem options are built upon the heritage of two clinically proven implants: the Integral® and Bi-Metric femoral components. Backed by over 20 years of clinical success,¹⁻³ the Echo Bi-Metric stems enhance existing features of each and offer additional benefits to better meet patient needs.

- 100% Survivorship at 7 years¹** – Echo Bi-Metric Femoral Stem
- 98% Survivorship at 12 years⁴** – Integral Femoral Stem
- 100% Survivorship at 20 years⁵** – Bi-Metric Femoral Stem

Short, Simple and Stable

The Echo Bi-Metric Microplasty stem is a metaphyseal loading, fit and fill femoral prosthesis with a simple, broach only surgical technique. Evolved from the clinically proven Bi-Metric brand³, the Echo Bi-Metric Microplasty option is approximately 30% shorter than the full length stem to conserve bone and accommodate minimally invasive surgical approaches.



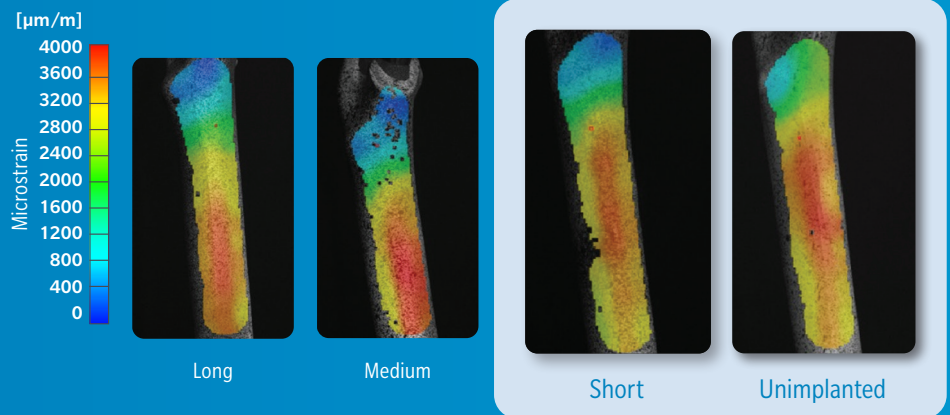
Echo Microplasty Stem Length^{15*}

The Joint Replacement Surgeons of the Indiana Research Foundation in Mooresville, IN conducted strain and micromotion mechanical testing on various stem lengths in an effort to determine the best length for the Echo Bi-Metric Microplasty stem option.

Strain Mechanical Test

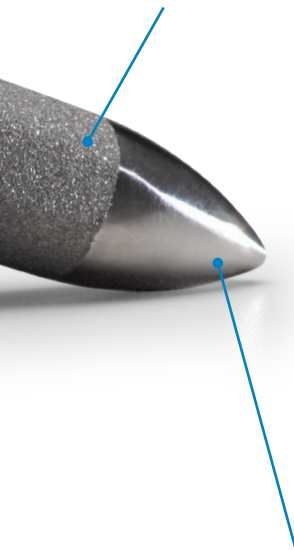
Short (96 mm), medium (118 mm) and long (151 mm) Echo Bi-Metric stems were implanted in composite femur models, designed to replicate the mechanical properties of cadaveric specimens, and loaded with the joint reaction force needed to simulate a single-legged stance. Results were then compared to the strain response of an unimplanted femur (control). The test indicated that the short stem prosthesis exhibited loading distribution most closely matching the unimplanted femur.

Digital Image Strain Correlation Analysis (Medial View)



Short Stem Length

Optimal for minimally invasive surgical approaches and reduces the need for multiple proximal profile options

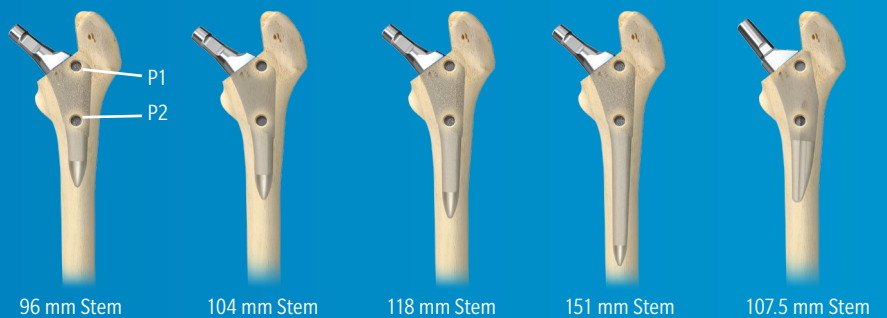


Polished Bullet-shaped Distal Tip

Provides a gradual separation from the cortex to reduce distal stresses

Micromotion Mechanical Test

Short (96 mm), medium (118 mm), long (151 mm) and a reduced lateral shoulder (104 mm) Echo Bi-Metric stem was compared to the commercially available and clinically successful Taperloc[®] Microplasty stem (107.5 mm)⁹⁻¹¹ to determine if stem length and implant design had an effect on primary axial and rotational stability. Digital image correlation was used to track and record the motion as a result of axial and torsional load application in the proximal (P1) and distal (P2) aspect of the porous coating. No statistically significant differences in primary stability were apparent between the various stem lengths.



"This study suggests that, in the patient with high quality proximal bone, short stems may provide more physiological loading without sacrificing primary implant stability."¹⁵

With this in mind, traditional clinical evaluations were conducted to determine the ideal length of the Echo Bi-Metric Microplasty stem. It was determined that the 104 mm stem provided improved guidance into the femoral canal during implantation, while maintaining implant stability.

Addressing Difficult Anatomies

In addition to its rich clinical heritage, a key benefit of the Echo Bi-Metric full length stem is its two profile options: full proximal profile and reduced proximal profile. The reduced profile option is smaller in the proximal/medial region of the implant by 2 mm compared to the full profile stem. This allows for a full length stem to maximize fit in smaller femoral canals or Dorr Type C femurs, reducing the need to force or undersize the implant to achieve the desired press-fit.



3 Degree Bi-planar Taper

Provides physiological proximal load transfer and optimal implant-to-patient fit^{6,7}

Titanium Alloy Substrate

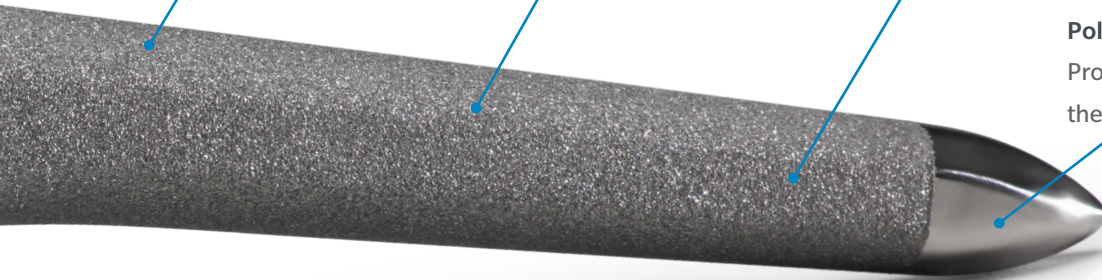
Allows for stress transfer to preserve cortical density^{7,16}

Sizing Options

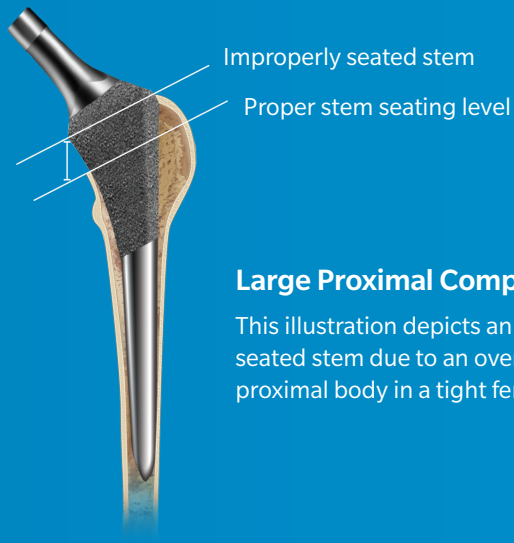
Offered in 1 mm increments from 7-21 mm

Polished Bullet-shaped Distal Tip

Provides a gradual separation from the cortex to reduce distal stresses

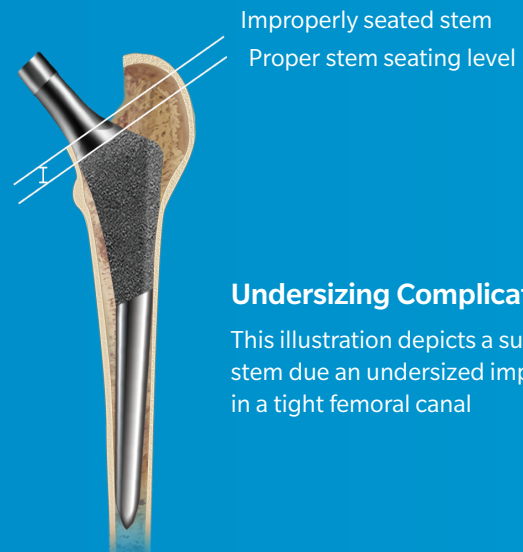


Complications Addressed with a Reduced Proximal Profile Stem Option



Large Proximal Complications

This illustration depicts an improperly seated stem due to an oversized proximal body in a tight femoral canal



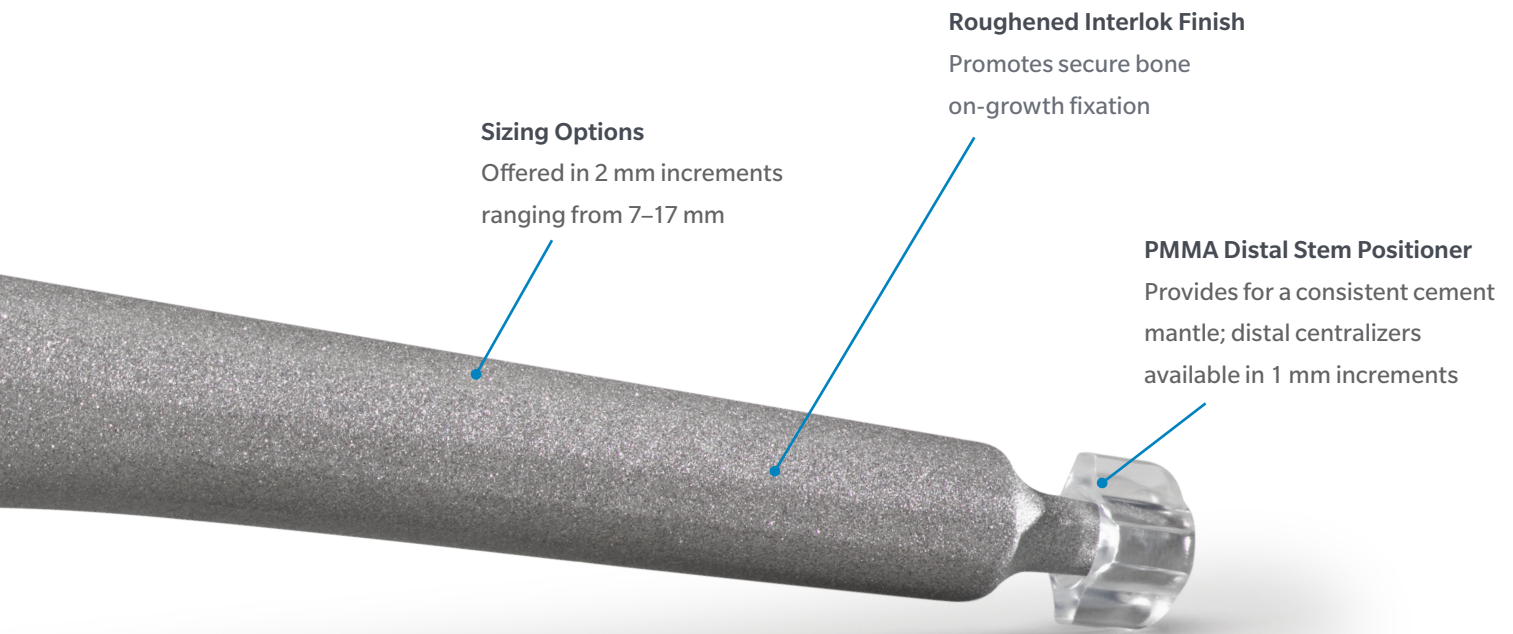
Undersizing Complications

This illustration depicts a subsided stem due to an undersized implant in a tight femoral canal

Versatile Fracture Treatment

The Echo FX femoral component is a cobalt chrome substrate with an Interlok® surface finish, allowing for cemented or press-fit application. Modern design features are included to provide a versatile, dual-purpose implant option for the hip fracture market.





Sizing Options
Offered in 2 mm increments
ranging from 7-17 mm

Roughened Interlok Finish
Promotes secure bone
on-growth fixation

PMMA Distal Stem Positioner
Provides for a consistent cement
mantle; distal centralizers
available in 1 mm increments

Bone Cement Options

PALACOS® Bone Cement

- Long history of clinical success¹⁷
- Excellent handling characteristics
- Formulation with superior antibiotic release^{18**}
- Contrasting green color for high visualization



HiVac7™

- Vacuum Mixing System
- Vacuum mixing in a highly visible cartridge
- Easy to use, few components and simple to assemble
- Safer working environment - meets modern safety standards¹⁹



** The FDA has cleared the use of antibiotic loaded bone cement only for use in the second stage of a two stage revision for infection.

Enhanced Fixation

The Echo PF (Press Fit) femoral component is a titanium alloy, press-fit stem with an Interlok finish and anterior/posterior metaphyseal fins. It is specifically designed for surgeons who prefer to perform hemiarthroplasty or total hip arthroplasty operations while avoiding bone cement. The Interlok surface promotes secure bone on-growth fixation, while the metaphyseal fins allow for additional rotational stability and fixation.



Press-fit Application

Implant is oversized 1.2 mm relative to the broach in the anterior/posterior region to accommodate a true press-fit

Sizing Options

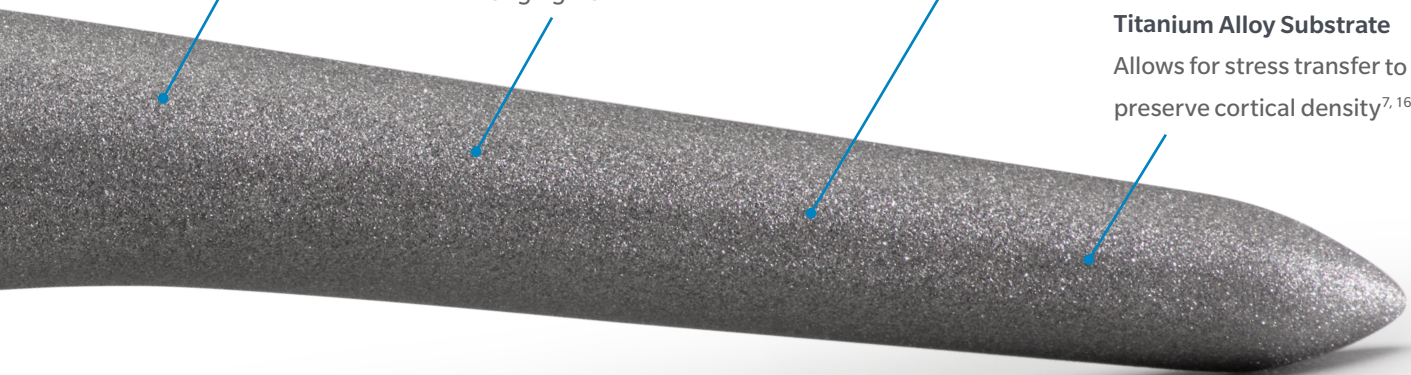
Offered in 1 mm increments ranging from 7–17 mm

Roughened Interlok Finish

Promotes secure bone on-growth fixation

Titanium Alloy Substrate

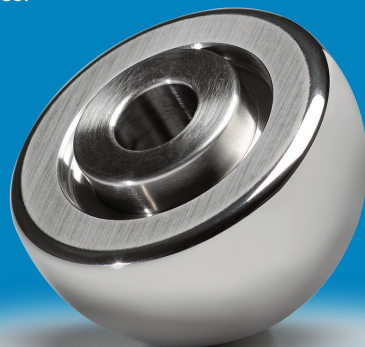
Allows for stress transfer to preserve cortical density^{7,16}



Hemiarthroplasty Options

Zimmer Biomet offers multiple articulation options designed for ease of use during hemiarthroplasty. A wide range of sizes provides the flexibility necessary to address individual patient anatomies.

Endo II Femoral Head



RingLoc® Bi-Polar Acetabular Cup



Advancing Total Hip Replacement

From simple primary to complex revision arthroplasty, Zimmer Biomet offers a comprehensive portfolio of hip constructs that combine rich clinical heritage with modern technological advancements. Each of these is designed to address the distinct needs of individual patients, while simplifying surgical workflow.

**Echo PF Femoral Stem
with Endo II CoCr
Femoral Head**



**Echo Bi-Metric
and G7® Acetabular
Total Hip System**



**Echo FX Femoral Stem
and RingLoc Bi-Polar
Acetabular Cup**



**Echo Bi-Metric Microplasty
and Continuum® Acetabular
Total Hip System**



* Biomet has evaluated the compatibility of Biomet devices with implants and components from Zimmer orthopedic companies. Only authorized combinations should be used. To determine whether these devices have been authorized for use in a proposed combination with Zimmer products, please contact your sales representative and reference the following website: <http://www.productcompatibility.zimmer.com>.

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*Bench testing is not necessarily indicative of clinical performance.





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