



**MOBILE
BEARING
KNEE**

Rotational Freedom
Anatomic Function



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DESIGNED FOR CRUCIATE RETAINING/CRUCIATE SACRIFICING APPLICATIONS

The Mobile Bearing Knee (MBK™)* design provides enhanced stability and kinematic function with or without a functional PCL. The MBK System is intended for use in patients who, in the surgeon's judgment, have adequate mediolateral, anteroposterior, and varus-valgus ligamentous stability.



INTEGRATED SYSTEM PERFORMANCE

The anterior rail on the tibial plate, the articular surface "saddle," and the one-to-one ratio of radii between the femoral and articular surface components provide increased joint stability. To approximate anatomic function, the MBK System allows 4.5mm of anteroposterior motion and 53 degrees of rotational freedom of the articular surface on the tibial plate.

A unique feature of the femoral component is the constant sagittal radius on the distal and posterior condyles. This constant radius allows for full femoral/articular surface contact from five degrees of hyperextension through 105 degrees of extension, significantly reducing the contact stresses below the yield strength of polyethylene. 

ADVANCED TECHNOLOGY FOR INTRAOPERATIVE FLEXIBILITY


Size interchangeability of the femoral, tibial base plate, patellar, and tibial articular surface components allows for anatomic fit and intraoperative flexibility. Independent sizing of femoral

and tibial components reduces the potential for overstuffing or undersizing the joint. Further, size interchangeability is achieved with no compromise to tibio-femoral contact area since femoral and articular surface components are matched size for size. For all sizes of femoral components, up to three tibial base plate sizes can be utilized to match patient anatomy without kinematic compromise.

In addition to size interchangeability of components, the MBK System takes the concept of intraoperative flexibility one step further by offering the full line of NexGen® Complete Knee Solution Instrumentation options: Epicondylar Instruments, the Micro-Mill® Instrumentation System with Milling and 5-in-1 Sawblade Options, Intramedullary Instruments, and V-STAT™ Instrumentation. These instrument systems provide simple, precise, and reproducible techniques for resecting the femoral and tibial surfaces, and allow for easy crossover between the MBK and NexGen systems. 

* Investigational use only in the U.S.

ADDRESSING THE ISSUES

A number of compelling issues continue to challenge the orthopaedic community in achieving acceptable long-term knee restoration and function. The goal of the MBK™ was to incorporate advanced surgical concepts and technology to create a system designed to address these issues. Critical to achieving this goal was a knowledgeable and experienced design team comprised of some of the most distinguished surgeons and design engineers. Drawing upon their collective clinical and design experience, the team built upon the strengths of Zimmer's proven technologies to create an innovative total knee prosthesis which utilizes familiar NexGen Instrumentation. The MBK design goals were four-fold: 

- Reduction of polyethylene wear
- Improved kinematic function
- Increased patient proprioception
- Compatible with all NexGen instrumentation

ISSUES

- W** = Wear
- P** = Patient Specificity
- K** = Kinematics
- M** = Materials/Design
- F** = Fixation
- I** = Instrumentation

K The femoral anterior chamfer has a trochlear recess to provide a deep patellar groove. This is designed to decrease compressive forces on the patella and provide a smooth transition from flexion to extension.

W Wide femoral condyles with radii matched to corresponding tibial articular surfaces achieve a one-to-one ratio of conformity in both the frontal and sagittal planes throughout the full range of motion, thereby maximizing contact area and reducing contact stresses to below the yield strength of polyethylene.

F The eight symmetrical perimeter profiles of the base plates are designed to optimize coverage of the proximal tibia and minimize the potential for tibial subsidence. Available in PMMA and non-coat-

K Unique articular surface "saddle" design provides enhanced stability through the full range of motion. The medial wall is radiused to match the femoral component and maintains full contact in up to 10 degrees of lateral lift-off. The lateral wall prevents medial translation of the femur.

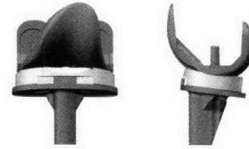
K Articular surface components in left and right configurations are kinematically matched to femoral components. Tibio-femoral interchangeability is achieved with no compromise in the tibio-femoral contact area.

M Snap fit capture of the articulating surface onto the tibial tray D-shaped mushroom provides secure attachment and prevents dislocation.

W The highly polished tibial base plate is designed to reduce the coefficient of friction with the articular surface.

M Tibial articular surfaces are front loading for surgical ease.

K Anterior rail on tibial base plate provides resistance to posterior subluxation, and enhanced stability in full extension, and permits 53 degrees of rotational freedom of the articular surface on the plate.



K Reduced width and thickness of the anterior femoral flange is designed to relieve tension on the extensor mechanism. Theoretically, this reduced tension will provide for more normal motion and fewer lateral retinacular releases.



P NexGen Patella Components are utilized and are available in six diameters to optimize implant-to-bone fit.

K MBK Femoral Components are designed to accept an unresurfaced patella.

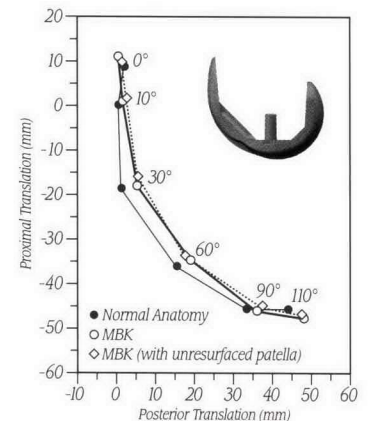
W Extended patellar groove is designed to provide full patella contact in high load areas up to 85 degrees of flexion, thus maximizing contact area and reducing contact stresses on the patella.



W Femoral "dimple" provides maximum contact area of both the patellar and articular surface components.

W Articular surface and patellar components are manufactured from compression molded UHMWPE, which undergoes extensive testing and is certified to meet stringent Zimmer standards for performance and purity. All MBK UHMWPE components are then packaged in a nitrogen environment.

K An extensive offering of up to six articular surface thicknesses enables the surgeon to optimize kinematic function by fine-tuning the joint tension and stability.



K Deep, anatomic patellar groove is designed to improve tracking and reduce pressure on the patella.



W Constant radii of curvature on the distal and posterior condyles provides full contact during the full range of knee motion.

F Zimaloy® Cobalt-Chromium-Molybdenum Alloy femoral components are available in eight sizes and left and right configurations with Porous* and non-coated option surfaces, and are precision-ground and robotic-polished to precisely maintain component geometries.

* Porous femoral component available 4th QTR, 1998



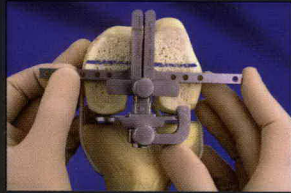
K Rotational freedom plus 4.5mm of anteroposterior translation permit natural rollback and axial rotational movement of the femur on the tibia during the full range of motion.

INSTRUMENTATION OPTIONS



INTRAMEDULLARY OPTION

combines optimal alignment accuracy with a simple, straight forward technique. Used with Zimmer Knee Systems for more than 10 years, the IM Instrumentation has become the industry standard. Enhancements such as spring pins and a thicker sawblade have further improved bone cut accuracy and component fit.



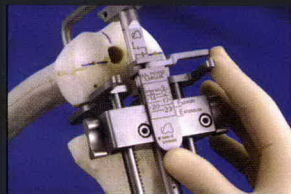
EPICONDYLAR OPTION

provides an instrumented approach for using the epicondylar axis to set external rotation of the femoral component. In addition, both the anterior cortex and posterior condyles are used in a "multi-referencing" technique to determine the optimal A/P location of the femoral component.



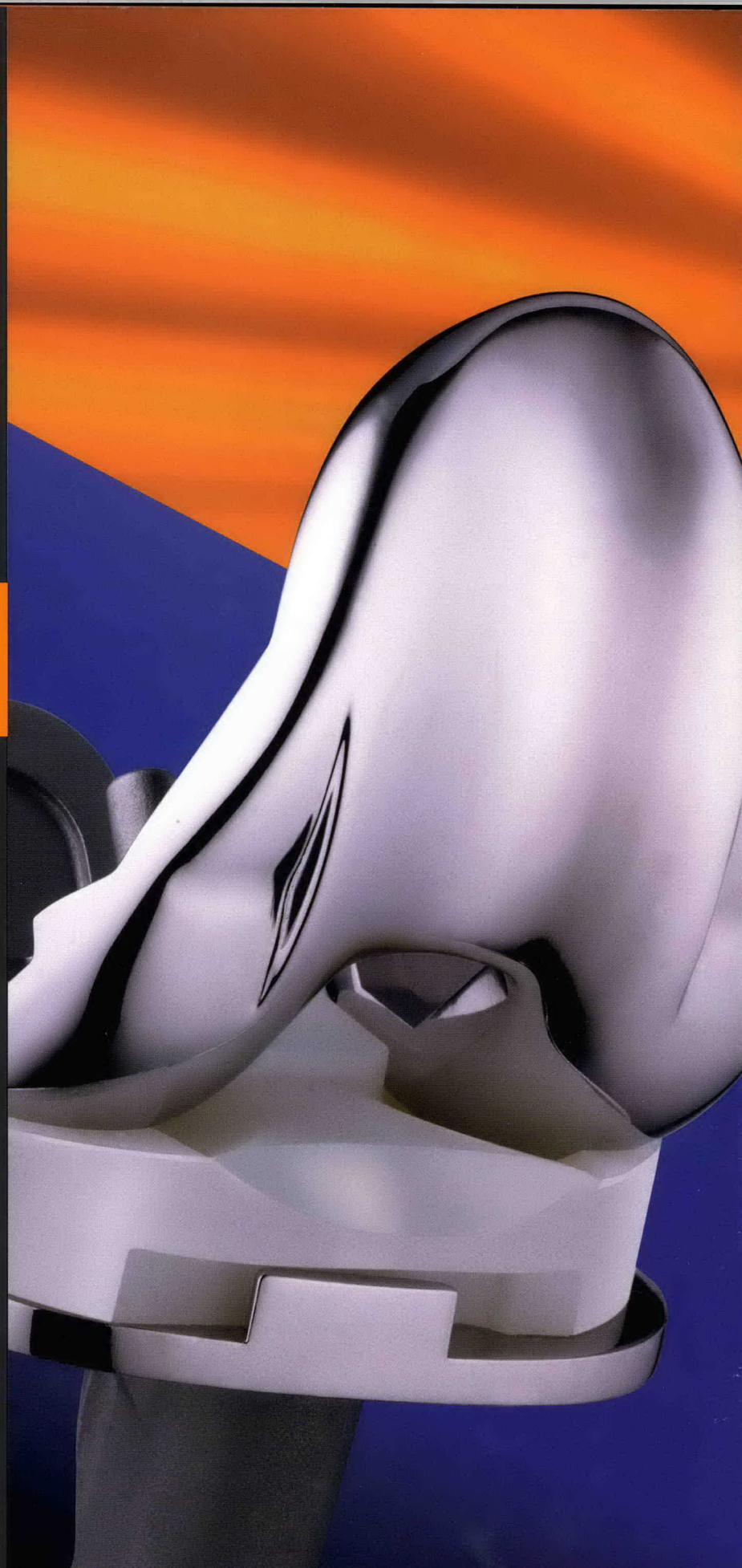
MILLING AND 5-IN-1 SAWBLADE OPTION.

The Milling Option fits a template over the femoral and tibial surfaces to mill the bone away, eliminating skiving, reducing heat generated on the bone, and providing accurate, consistent cuts. The 5-in-1 Sawblade Option utilizes a single guide for all five femoral cuts, reducing the number of setups and associated inaccuracies. A new 1.3mm-thick blade minimizes skiving and produces flatter surfaces.



V-STAT™ OPTION

can be utilized in combination with the Epicondylar, Milling and 5-in-1 Sawblade options to facilitate both bony resection and soft tissue balance decisions. In addition, femoral A/P placement can be fine-tuned to balance flexion and extension gaps.



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