

NexGen^{PS}

**POSTERIOR
STABILIZED**

The Complete
Knee Solution



ISSUES

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

The Milling Option

employs an innovative technique in which a template is fitted over the femoral and tibial surfaces and the bone is milled away. Milling eliminates saw blade skiving and provides accurate, consistent bone cuts. Additionally, milling reduces the amount of heat generated on the bone.¹



The 5-in-1 Sawblade Option

provides an alternative to milling, utilizing a single guide for all five femoral cuts, thereby reducing the number of setups. This, in turn, reduces the inaccuracies associated with multiple setups. The newly designed 1.3mm-thick saw blade minimizes skiving, producing flatter surfaces.

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 NexGen[®] Complete Knee Solution* 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 today's most distinguished surgeons and design engineers. Drawing upon their collective clinical experience from more than 20,000 total knee surgeries, the team built upon the strengths of Zimmer's proven technologies to create the next generation of innovative total knee prostheses and instrumentation.

These issues, at the left, are references to the NexGen Design Rationale, which provides a comprehensive discussion of how the NexGen knee was designed to meet these challenges. These symbols will appear in this brochure next to the information that addresses each specific issue. ■

Specifically Designed For Posterior Cruciate Substituting Applications

The NexGen PS Knee is intended for use in patients who, in the surgeon's judgment, have adequate bone stock and varus-valgus stability, and/or when the surgeon elects to substitute for the posterior cruciate ligament. It can also be used in patients who would benefit from enhanced stabilization due to inadequate or marginal mediolateral and/or anteroposterior ligament functionality.

To approximate anatomic function, the NexGen PS Femoral component utilizes different radii of curvature on the distal and posterior condyles and a cruciate substituting cam/spine mechanism. These features closely reproduce natural anteroposterior rollback of the femur on the tibia during the full range of knee motion and are designed to provide optimal stability by working in concert with the soft tissues.

In the frontal plane, the NexGen PS Knee features dished articulating geometries which provide large contact area on the loaded condyle without edge loading, even in 3 degrees of varus/valgus lift-off. ■

Advanced Technology For Intraoperative Flexibility

Size interchangeability of the femoral, tibial base plate, patellar, and tibial articular surface components allows for close anatomic fit and intraoperative flexibility. Independent sizing of femoral and tibial components reduces the potential for overstuffing or undersizing the joint. For all sizes of femoral components, at least four tibial base plate sizes may be utilized to match patient need without kinematic compromise. Further, size interchangeability is achieved with no significant compromise to tibio-femoral contact area.

In addition to size interchangeability of components, the NexGen Complete Knee Solution takes the concept of intraoperative flexibility one step further with the Micro-Mill[®] Instrumentation System. This new instrument technology provides a simple, precise, and reproducible technique with Milling and 5-in-1 Sawblade Options for resecting the femoral and tibial surfaces. ■

**COMPLETE
KNEE SOLUTION**

¹ Test data on file at Zimmer.
² Indicated for use with home content in the United States.

INTEGRATED SYSTEM PERFORMANCE

The NexGen® PS Knee is part of a complete, integrated system, offering both primary and revision capabilities in cruciate retaining and posterior stabilizing designs. The NexGen System consists of an extensive offering of femoral and tibial base plate styles, Zimmer®-certified UHMWPE articular surfaces and patellar components, and femoral and tibial augmentation components. ■



- **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.



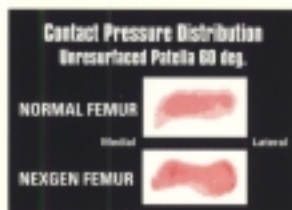
- **W** Extended patellar groove is designed to provide full patella contact in high load areas up to 85 degrees of flexion, thus maximizing contact area and reducing contact stresses on the patella.
- **K** Deep, anatomic patellar groove is designed to improve tracking and reduce pressure on the patella.

- **P** Zimaky® Cobalt-Chromium-Molybdenum Alloy femoral components are available in up to eight sizes with porous, PMMA precoat, and non-coated option surfaces to best meet patient requirements.

- **K** Implant geometries optimize tibio-femoral stability while approximating normal kinematic function.

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

- **K** An extensive offering of seven articular surface thicknesses, especially at the low end of the thickness range where the thicknesses are provided at 1 and 2mm increments, enables the surgeon to optimize kinematic function by fine-tuning the joint tension.
- **M** Tibial articular surfaces are front loading for surgical ease.

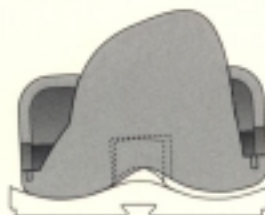


- **K** NexGen PS femoral components were designed to accept the unresurfaced patella.

- **K** Kinematically matched femoral and articular surface components with increased femoro-tibial interchangeability enhance function and intraoperative flexibility with no significant compromise in tibio-femoral contact area.



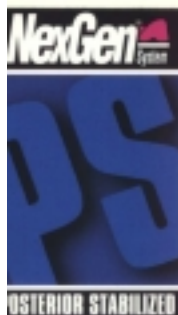
- **W** Wide femoral condyles with radii matched to corresponding tibial articular surfaces achieve a 1.07-to-1 ratio of conformity in the frontal plane throughout the full range of motion, thereby maximizing contact area and reducing stress that can lead to premature polyethylene wear.



- **W** Dished articulating geometries provide large contact area on the loaded condyle in situations of 3 degrees of varus/valgus tilt.
 - High degree of conformity
 - Reduced likelihood of edge loading
 - Low contact stress



- **P** An extensive offering of straight and patented offset stem extensions allow for a canal-filling stem without compromising tibial bone coverage.





K The large distal radius and smaller posterior radius, together with the cam/spine mechanism, facilitate normal anteroposterior rollback of the femur on the tibia during the full range of knee motion.

K Building on Zimmer's 15 years of clinical success^{1,2,3}, the transverse posterior cam on the femoral component interacts with the tibial spine on the articular surface. This mechanism is designed to provide enhanced tibial posterior subluxation resistance, controlled rollback to provide motion in excess of 120°, and femoral/tibial plate interchangeability without compromising kinematic function or tibio-femoral contact area.

1 Malloy TH, Sydney S. Six year survival analysis of the Insall-Burstein posterior stabilized knee. Read before the 55th American Academy of Orthopaedic Surgeons, Atlanta, GA, Feb. 8, 1988.

2 Scuderi GR, Insall JN, Windsor RE, et al. Survivorship of cemented total knee replacement. Read before the 101st American Orthopaedic Association, Hot Springs, VA, June, 1988.

3 Stern SH, Insall JN. Posterior stabilized prosthesis: Results after follow-up of nine to twelve years. JBS. 1992;74A: 980-984.

W Tibial baseplate rail provides peripheral containment of the polyethylene articular surface, which is beneficial in restricting polyethylene cold flow.



P Extensive offering of modular tibial augmentation components enhances intraoperative flexibility and patient-specific customization. Tibial augmentation is available in both wedges and blocks, allowing for screw fixation or enhanced cement fixation with PMMA precoat.

P Enhanced "double-dovetail" locking mechanism provides a secure attachment of the polyethylene articular surface to the base plate.

W 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.

M The "drop box" design provides clearance for the tibial spine, yet requires minimal intercondylar bone resection.

K The lower box allows extension of the patella groove for full patellar support deep in flexion.

P Stabilization fins are designed to enhance strength and rotational stability.

P To accommodate the specific needs of each patient, multiple tibial component styles are available:

- Stemmed, Titanium[®] Alloy with porous, PMMA precoat, or non-coated option surfaces
- Stemmed all-polyethylene

P The ten symmetrical perimeter profiles of the base plates are designed to optimize coverage of the proximal tibia and minimize the potential for tibial subsidence.





The NexGen® Posterior Stabilized Knee (PS) is part of the NexGen Complete Knee Solution that utilizes a true integrated system approach to total knee arthroplasty.

For more information about the NexGen Complete Knee Solution, talk with your Zimmer Representative.

Various components of the NexGen Complete Knee Solution and Micro-Mill Instrumentation are covered by one or more of the following: U.S. Patents 4,281,420; 4,336,618; 4,491,987; 4,524,766; 4,759,300; 4,979,957; 4,997,445; 5,192,323; 5,255,838; 5,290,313; 5,326,362; 5,344,423; 5,383,875; 5,387,241; 5,395,377; 5,405,396; 5,431,660; 5,443,518; 5,458,643; 5,474,559; 5,484,446; 5,486,180; 5,492,671; D 346,979; D 365,396; D 367,396; D 367,706; D 369,863/ Other U.S. and foreign patents pending.