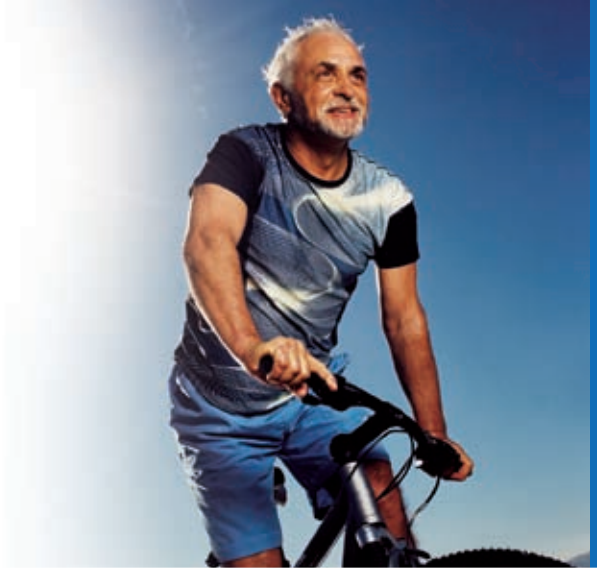


Zimmer® NexGen® RH Knee

The next generation of rotating hinge knees

zimmer

Function
That Hinges on Innovative Design

The *NexGen* RH Knee is designed to address the key issues that relate to many conventional rotating hinge knee designs. The design of the *NexGen* RH Knee features a modular hinge mechanism that results in **95%** of the load being carried by the tibial condyles[1], similar to the loading pattern of a primary implant design.

Because the femoral condyles remain centered on the tibia throughout the range of motion and the shape of the patella groove is similar to the *NexGen* design, **patella tracking is similar to a primary knee design.**

For the more challenging arthroplasty procedures, the *NexGen* RH Knee can be used in conjunction with the *Trabecular Metal*™ tibial and femoral cones* that address those most difficult bone loss scenarios.

Since the RH Knee takes advantage of modular design by using *NexGen* Augments, the basic bone cuts are the same as those made for *NexGen* primary system components. This helps to **minimize bone loss** and allows the use of instrumentation commonly used in primary implant procedures.

Trabecular Metal **Technology adds the benefit of added stability.**

*Must be used with bone cement when used in conjunction with the *NexGen* RH Knee.

Contact Area/Loading Analysis

The test evaluated the amount of contact that occurs between the RH Knee femoral component and articular surface. The large condylar contact patches confirm that the load stays toward the central portion of the tibial articular surface throughout ROM.


0˚


10˚


45˚


90˚


120˚

In many conventional rotating hinge knee designs, the hinge bears the majority of the compressive load until full extension is achieved. Designs that have the center of rotation located posteriorly can cause "booking" of the joint, which may result in stress on the cement interfaces or accelerated polyethylene-bearing wear in the hinge. The *NexGen* RH Knee addresses these concerns, as the RH Knee femoral component and articular surface are designed to maintain centralized contact throughout ROM (from -3˚ of hyperextension to 120˚ of flexion). The patented hinge design feature **passes 95% of the load through the tibial condyles[1].**

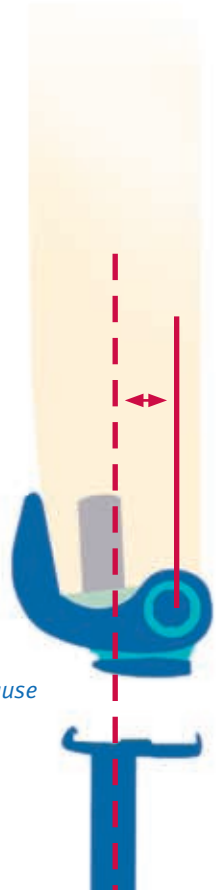
Bone Conservation & Simple Instrumentation

Many rotating hinge knee designs require significant bone removal to accommodate the bulky hinge mechanism. The *NexGen* RH Knee uses *NexGen* Primary or Revision Instrumentation Systems and standard *NexGen* femoral A/P bone cuts to help conserve bone. Although a variety of modular augmentation options are available for the RH Knee femoral and tibial components, none are required by the construct; therefore, good bone does not have to be removed to accommodate built-in augmentation or a bulky hinge mechanism.

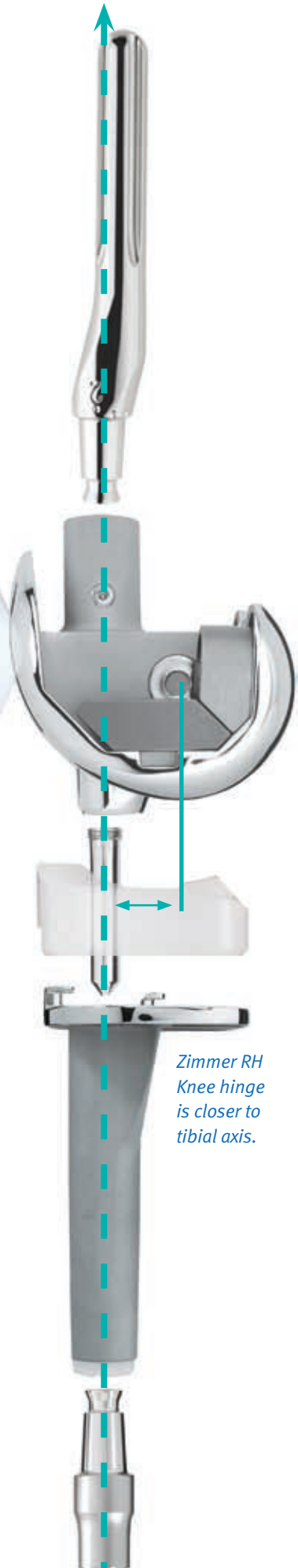
To further simplify the surgical technique, a complete set of provisionals is available for all components of the RH Knee, including the hinge mechanism and hinge post. The femoral provisionals also double as femoral cutting guides to help facilitate accurate placement of the components, joint balancing, bone coverage, and positioning of the joint line.

Designed to Make the Minimal Cut

***NexGen* RH Knee Design**



Conventional posteriorly located hinge design can cause booking and joint stress.



Zimmer RH Knee hinge is closer to tibial axis.

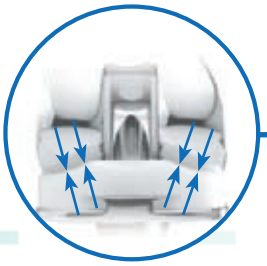
Patellofemoral Tracking Like NexGen Femoral Components

The RH Knee Femoral Component has a similar patellofemoral design as the other *NexGen* Femoral Components. The groove allows the patella to track deeply–similar to an anatomic patella. This maximizes the patellofemoral contact area, increases the resistance to lateral subluxation, and provides a smooth transition from flexion to extension.

The central location of the hinge axis keeps the femoral condyles in a consistent sagittal plane. This allows for more normal patellar tracking since the patella does not shift posteriorly during flexion.

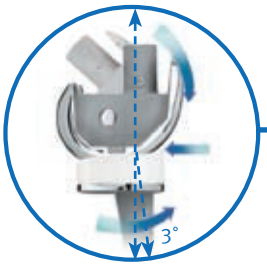
Resistance To Subluxation

To resist subluxation, the RH Knee locking mechanism design offers a minimum “jump height” of 40mm regardless of thickness of articular suface.



Conformity Throughout Range Of Motion

The ratio of conformity between the femoral condyles and the highly dished tibial articular surface is virtually 1-to-1. By maximizing contact area, the stresses in the polyethylene are distributed across a larger surface area.



Impact Dampening Extension Stop

Contact occurs on the frontal radius of the RH Knee Femoral Component with the articulating surface just as the implant moves to hyperextension. This will cause the knee to distract slightly, dampening the extension impact. This interaction was designed to dissipate the hyperextension force.

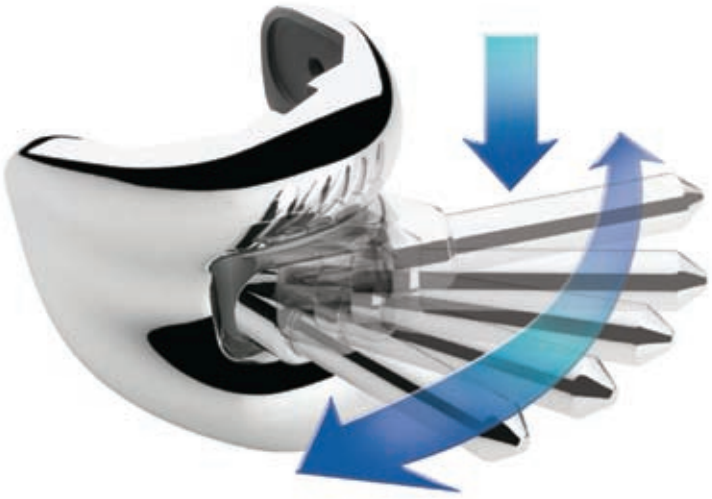
A More Natural Pivot/Rotation

The central location of the RH Knee hinge mechanism is placed closer to the axis of the tibial component, resulting in more natural and consistent tibiofemoral kinematics when compared to posterior hinge knee designs. The rotation of the *NexGen* RH Knee platform is designed to displace torsional loads from the cement interfaces to the soft tissues, since it allows up to 25˚ of movement in internal and external rotation.

Modular Design Minimizes Distraction

The modularity of the hinge post extension pin allows the implantation to proceed without requiring the knee to be excessively distracted or held while the components are assembled. The RH Knee femoral and tibial components are cemented into position, and with minimal distraction, the tibial articular surface is rotated into position. The hinge post extension is inserted into the tibial baseplate and tightened. It’s that simple.

Designed with Durability in Mind



Tibial Base Plate Fatigue Test[1]

The strength of the Rotating Hinge Knee tibial baseplate was evaluated under extreme conditions by placing a cyclical load on the component, with no bony support under the baseplate. All samples completed the 10 million cycles without evidence of fracture or cracking.

Hinge Pin Loosening Test[1]

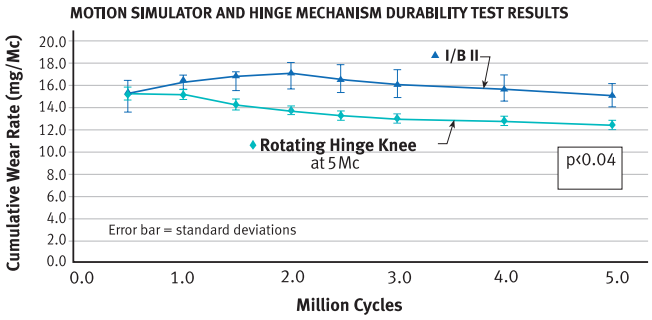
The hinge construct was tested under load for 5 million cycles to determine if the hinge pin would loosen. The results showed that the hinge pin did not loosen as a result of the cyclical movement.

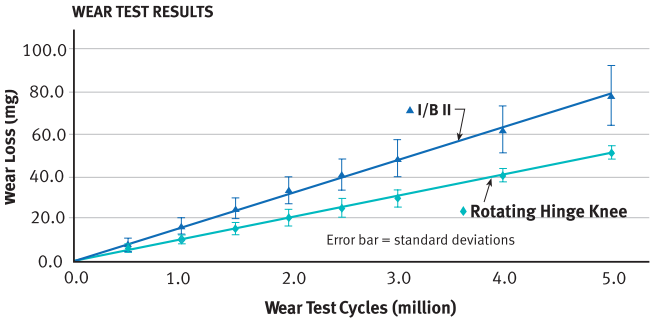
Articular Surface Pull Off Test[1]

The capture mechanism was tested to assess its resistance to separation of the articular surface from the tibial plate. All samples completed the test without separating.

Patella Deformation Test[1]

The polyethylene deformation characteristics of the *NexGen* All-Poly, Primary Porous and Augmentation Patellas were tested under severe loading conditions. Size 32mm and greater patellas can be used in onlay or inset mode. Size 26 and 29mm can only be used in inset mode.





Knee Motion Simulator and Polyethylene Wear Test[1]

As loads were applied to the implant, the amount of wear that occurred in all polyethylene components was measured. The results indicate that the RH Knee components resisted wear even better than the I/B II primary knee implant.

Combined Load Fatigue Test[1]

The mechanical integrity of the Rotating Hinge Knee implant assembly was tested, at three peak loading modes (varus moment, hyperextension moment, and A/P shear force) were applied simultaneously. At 5 million cycles, each test specimen successfully completed the rigorous test without fracture or metal-on-metal contact.

Surgeon Choice is the Operative Word

A comprehensive offering of femoral and tibial components, combined with stem extensions and augments, provide for true interchangeability and patient specific solutions.

Zimmer NexGen RH Knee Size B

Size 1 Non-Modular Tibial Base Plate

The Size B Femoral Component is used with the Size 1 Rotating Hinge Knee Tibial Base Plate. This base plate is only available in a non-modular design.

Size B Tibial Articular Surface

The Size B Tibial Articular Surfaces are used with the Size B Femoral Component.

RH Knee Femoral and Hinge Post Extension Components

RH Knee Tibial /Segmental Articulation Surface

RH Knee Tibial Base Plate

RH Knee Non Modular Tibial Base Plate

3-Peg All-Polyethylene Patella

Primary Porous Patella

Augmentation Patella

Trabecular Metal
Tibial and Femoral Cone Augments

Modular Femoral Augments

Partial Tibial Augments

Segmental One-Piece Hinge Post

Straight and Offset Stem Extensions

1. Data on file at Zimmer. The results of these tests have not been shown to correlate with clinical mechanisms.

Contact your Zimmer representative or visit us at www.zimmer.com

zimmer

+H124975880001001/$091208R4L096

97-5880-001-00 Rev. 4 0907-K39 2.5ML Printed in USA