



**NEXGEN
CR-FLEX
FIXED BEARING
KNEE**



CR-Flex
ADVANCING CR KNEE IMPLANT SOLUTIONS

FOR THE CR SURGEON...

*Who seeks a prosthesis
that emulates both the
anatomy and function
of the natural knee.*

*Who strives to give TKA
patients every opportunity
to resume the activities
that define their lifestyle.*



THE INCREASING DEMAND FOR HIGH FLEXION

Designing knee implants for a changing patient population means accommodating the opportunities that the patient brings to the table. Today, many patients have the ability and desire to resume high-flexion activities after TKA. A design of a knee implant should enhance, not inhibit, those opportunities.

While high flexion may be possible with traditional cruciate retaining implants, their design may not be optimized for safe flexion that exceeds 120°. The *NexGen CR-Flex Fixed Knee* is designed to safely accommodate flexion up to 155° for patients with the ability and desire to do so, while maintaining the kinematic function that allows natural rollback in a cruciate retaining knee prosthesis.



150° THE SPECIFIC DEMANDS OF THE CR SURGEON

Specifically designed for the CR surgeon, the CR-Flex Knee represents an enhancement of the highly successful *NexGen CR Knee*. It's a good choice for all CR patients because it offers new design elements that address not only high flexion, but all the important issues faced by CR surgeons. Consider the knee that is tight in flexion and acceptable in extension. CR-Flex offers Minus size femoral components which are 2mm smaller in the A/P dimension. Without removing additional bone, the Minus size options help the CR surgeon balance the flexion and extension gaps.

180°

DESIGNED SPECIFICALLY FOR THE CR SURGEON



ACCOMMODATING FLEXION TO 155° WITH KINEMATIC ROLLBACK

With traditional TKA designs, the contact area between the posterior femoral condyles and the tibial articular surface decreases as the knee moves into higher flexion angles. Also, high flexion may be somewhat limited by impingement of the quadriceps mechanism on the front of the tibial articular surface.

Specific design features of the CR-Flex Knee help maintain adequate tibiofemoral contact during high flexion and provide greater clearance for the patellar tendon. These features allow the kinematics of the *NexGen* CR design to continue into deep flexion angles.

LOWERED HEIGHT OF THE LATERAL CONDYLE

decreases the tightness of the lateral retinacular ligament during high flexion.

WIDER INTERCONDYLAR OPENING

optimizes internal/external rotation during high flexion and provides more space for the PCL.

LATERAL DISTAL RADIUS EXTENDED POSTERIORLY

to further aid natural anteroposterior rollback when the PCL is present. Posterior femoral radius is extended further in flexion to provide greater femoral/tibial contact area in high flexion.

DEEPER ANTERIOR CUTOUT

Minimizes the potential for patella impingement during high flexion.

NARROWER M/L WIDTH

allows more flexibility in mediolateral positioning of the component, and helps maintain optimal patellar tracking.



ENHANCED CR-FLEX DESIGN FEATURES

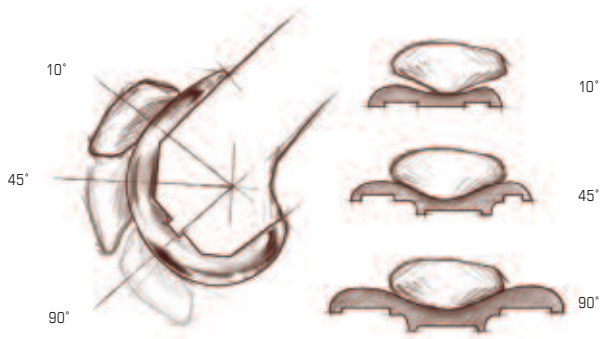
CONTINUING THE NEXGEN CR TRADITION



TIBIOFEMORAL KINEMATICS

Asymmetrical femoral condyles work in concert with the PCL to facilitate normal asymmetric rollback of the femur on the tibia during flexion.¹

The lateral distal radius of CR-Flex is extended posteriorly to further aid natural anteroposterior rollback when the PCL is present.



PATELLOFEMORAL ARTICULATION

The intercondylar geometry is identical to *NexGen* CR with current *NexGen* CR patellar instrumentation and implants.



CR-Flex Conformity Area (1.07:1)

TIBIOFEMORAL CONFORMITY

Contact stresses are distributed over a wide area and slightly dished curvature to avoid unnecessary constraint.



OPTIONS TO FIT SPECIFIC NEEDS

MINUS SIZING OPTIONS

One common problem faced by CR surgeons is a knee that is tight in flexion, but fine in extension.

Using a thinner tibial articular surface may address the flexion problem, but it may result in a knee that is loose in extension.

Many surgeons will balance the joint either by performing a ligament release, or by removing more bone from the posterior condyles.

The CR-Flex Knee offers Minus sizing options to provide an additional means of adjusting the flexion gap without affecting the extension gap. The Minus size femoral components, which are 2mm smaller in the A/P dimension only, help balance the gaps without removing more bone from the posterior condyles or additional soft tissue release.



PRECOAT



POROUS



OPTION

PROLONG™ HIGHLY CROSSLINKED POLYETHYLENE

Tibial articular surfaces are available in a choice of net-shape compression molded polyethylene or *Prolong* Highly Crosslinked Polyethylene, which helps to reduce surface wear by 81% in laboratory tests² and resist compression and tensile stresses that can cause subsurface fatigue.

In laboratory testing, accelerated aged *Prolong* polyethylene CR articular surfaces showed no evidence of delamination at 8 million cycles. Delamination is a separation into layers that can be characterized by pitting.*

INTERCHANGEABILITY

Interchangeability allows the surgeon to switch from a cruciate retaining design to a posterior stabilized design intraoperatively. Also, interchangeability is possible between the standard *NexGen* Components and the *NexGen* Flex Components. The same instrumentation systems can be used for all *NexGen* CR designs.

FIXATION OPTIONS

Fixation surface options include commercially pure titanium fiber metal, PMMA precoating, and a noncoated surface, all for cemented fixation.



References:

1. Bertin KC, Komistek RD, Dennis DA, Hoff WA, Anderson DT, Langer T. In vivo determination of posterior femoral rollback for subjects having a *NexGen* posterior cruciate-retaining total knee arthroplasty. *J Arthroplasty*. December, 2002;17(8):1040-1048.
 2. Wear reduction of 81% when compared to standard Zimmer knee polyethylene. The results of *in vitro* wear tests have not been shown to correlate with clinical wear mechanisms. These highly crosslinked components are designed for posterior ligament retention and are intended to be used as part of a cemented knee system.
- * Data on file. The results of *in vitro* delamination tests have not been shown to correlate with clinical delamination mechanisms.

For more information about the CR-Flex Knee, contact your Zimmer representative or visit us at www.zimmer.com.

World Headquarters – Zimmer, Inc., 345 East Main Street, Warsaw, IN 46580, U.S.A.

Regional Headquarters – Zimmer Pty. Ltd., Unit 1/1 Skyline Place, Frenchs Forest, N.S.W. 2086, Australia • Zimmer of Canada Limited, 2323 Argenta Road, Mississauga, Ontario, L5N 5N3, Canada • Zimmer Ltd., The Courtyard, Lancaster Place, South Marston Park, Swindon, Wiltshire SN3 4UQ, United Kingdom • Zimmer Latin America, 2400 E. Commercial Blvd., Fort Lauderdale, FL 33308, U.S.A. • Zimmer Pte. Ltd., 315 Alexandra Road, #03-03 Performance Centre, Singapore 159944 • Zimmer K.K., Shinjuku i-Land Tower, 6-5-1 Nishishinjuku, Shunjuku-Ku, Tokyo 163-13, Japan.



97-5952-401-00 1.5ML Printed in USA ©2003, 2006, 2008 Zimmer, Inc.