

# The RHK™ System

Cemented Stems  
80mm and 120mm

Uncemented Maxim Stems  
80mm, 120mm and 160mm



Anatomic Femoral Components  
Small and Standard\*



Anatomic Femoral Augments  
10mm, 20mm and 30mm



Rotating Bearings  
12mm to 20mm in 2mm increments

Tibial Components

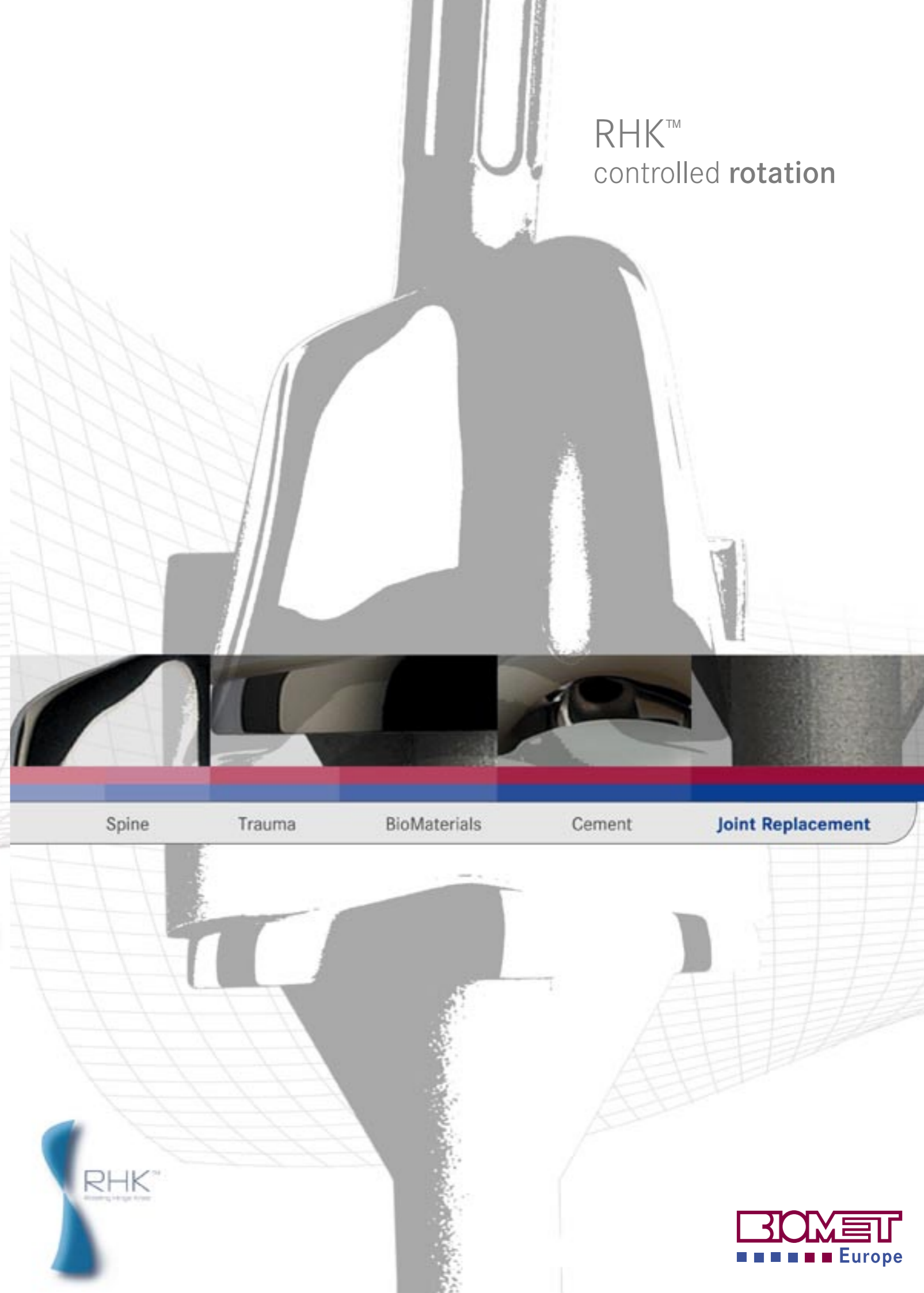
Modular Stemmed Tibia  
(63mm, 67mm, 71mm, 75mm and 79mm)

Monoblock Stemmed Tibia  
(63mm, 67mm and 71mm)

Anatomic Tibial Augments  
10mm, 15mm and 20mm



RHK™  
controlled rotation



Spine

Trauma

BioMaterials

Cement

Joint Replacement

\* Increased Extensor Moment Arm



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# Welcome

To the RHK™ knee, providing a clinically proven solution to the most difficult cases of instability and bone loss.

## Rotating Hinge Knee (RHK™)

### Background

Based on the highly successful Dual Articular Knee<sup>1,2,3</sup> with the addition of the rotating hinge, the RHK™ is a class III or salvage knee prosthesis that addresses most revision or oncological indications for knee arthroplasty where hinged constraint is required.

The RHK™ design directly evolved from the custom DA RHK™ knee which has been implanted in over 100 knees since 1998, of which none have been revised<sup>4</sup>.

The RHK™ builds on the experience from the successful custom design, further decreasing bone resections, providing an improved patella track and the option for greater extensor moment arm efficiency.

Where patients require very large bone resections, a mega prosthetic or whole bone replacement, then a custom implant can be patient matched to optimise anatomy with function.

### Design Rationale

The RHK™ combines the ultimate in stability from a hinge, but also provides controlled rotation by incorporating the patented bi-helical surface.

The result is a knee which is both self-aligning and self-centering. The high contact areas minimise component stress, maximising longevity.

**Femur** - The patella track has been optimised to provide the best in patella friendly engagement and tracking, whilst the extensor moment arm has been increased by 19% to maximise kinematic function in what are often kinematically weak patients. Distal femoral resection has been decreased by more than one third, both minimising bone loss and increasing distal femoral stability.



**Articulation** - Both the femur and bearing have large contact areas, with an enhanced range of motion maintaining full contact area up to 155° degrees of flexion. The result is decreased stresses both at the articulation and on the axle mechanism, with most load passing directly through the bearing.

**Arcom™** polyethylene is also used to protect all other articulating surfaces around both the hinge and the yoke. Arcom™ - has a 47% increase in wear resistance compared to traditionally manufactured polyethylene<sup>5</sup> and 42% compared to EtO sterilised polyethylene<sup>6</sup>.

**Tibia** - The weight-bearing meniscal bearing has a helical design which articulates on the highly polished cobalt chrome tibial tray. The unique, patent protected geometry, controls rotation providing a centralising torque under axial load, mimicking the natural screw home mechanism of the normal knee.

The anti-rotation fins on the tibia have been designed using data from radiographic studies to minimise the risk of cortical impingement in smaller tibia, maintaining high stability in the cortical shell. Tibial component thickness has been minimised with the bearing to produce the least possible tibial resection.

### Clinical Indications

Indications for the RHK™ knee include:

- Significant bone loss
- Gross ligamentous deficiencies
- Oncological bone replacement - primary or metastatic
- Salvage knee arthroplasty
- Trauma
- Connective tissue disorders

1. Goddard N. "Revision TKR using the Dual-Articular Knee - Minimum 5 year results". EFORT, 0396, June 1999.
2. Hamanen et al. "Dual Articular Knee in demanding primary and revision replacements in patients with rheumatic diseases". Int Orth. 26:92-97, 2002.
3. Drobny TK et al. "A two stage procedure for the treatment of the infected knee prosthesis". Orthopade, 24:360-366 (1995).
4. Customs Implants, Biomet-Merck Ltd, Swindon UK. June 2003.
5. Clarke IC et al. 43rd ORS San Francisco, CA Feb 1997.
6. Shroeder DW, Pozorski KM. 42nd ORS Atlanta, GA, Feb 1996.

controlled rotation

