Two distinct shapes for men and women.
Industry-leading Gender Solutions technology. The proven success of the Natural-Knee System. Innovative high-flex designs. We’re putting it all together.

Zimmer was the first to recognize that when it comes to knees, men and women are different. Our ground-breaking research demonstrated that the differences are less about size—and more about shape. Now, Zimmer is applying industry-leading Gender Solutions technology to the clinically successful Natural-Knee System. The future of total knee arthroplasty is here: the all new Gender Solutions Natural-Knee Flex System.

The Gender Solutions Natural-Knee Flex System is an ideal choice for the growing number of patients who wish to return to an active lifestyle. The system is compatible with muscle-sparing Zimmer® Minimally Invasive Solutions™ procedures and offers high-flexion capability up to 155 degrees and delamination-resistant Prolong® Highly Crosslinked Polyethylene tibial and patellar articular surfaces. The system features the proven clinical success of Zimmer’s asymmetric tibial component, CSTi™ porous coating and the Ultracongruent articular surface.

For surgeons, the Gender Solutions Natural-Knee Flex System is a flexible, comprehensive solution. For patients—both male and female—it offers the opportunity for an active and independent future.
Zimmer's groundbreaking research using three-dimensional CT data revealed two distinct populations with different anatomies. Data revealed that female femurs are more trapezoidal in shape and are narrower in the M/L dimension when compared to male femurs of the same A/P dimension.\textsuperscript{2,3}

\textit{Gender Solutions Natural-Knee Flex} System male and female implants have a three degree difference in the trochlear groove angle. Male/female differences in the anterior condyles result in bone resections that differ in both thickness and width.\textsuperscript{3,8}

Two distinct populations.
Two distinct anterior flange designs.

Female and Male Aspect Ratios

Two distinct populations.
Two distinctive implant shapes.

Two distinct populations.
Two distinct patellar tracks.

Patellar maltracking has long been a concern following total knee arthroplasty—particularly in female patients.\textsuperscript{4} Research has documented that women have a statistically higher Q-angle than men\textsuperscript{5,6,7} and a distinct patellar track.
### Anterior Flange Thickness

- **Male resection**
- **Female resection**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral condyle height (mm)</td>
<td>10.9</td>
<td>10.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Medial condyle height (mm)</td>
<td>6.4</td>
<td>5.1</td>
<td>1.3</td>
</tr>
</tbody>
</table>

- Gender Solutions Natural-Knee Flex (GSM) (GSF)

### Asymmetric Tibial Trays

- Asymmetrical tibial insert shape corresponds to the shape of natural tibia.

- Zimmer was first to market the innovative asymmetric baseplate design.
- Matching the asymmetric tibial shape provides cortical coverage and helps avoid overhang and soft tissue impingement.
- Deep, beveled posterior notch helps to prevent impingement of the PCL.
- Spiked keel design provides bone-sparing fixation; smooth pegs offer rotational stability.

### Anterior Flange Width

- **Male resection**
- **Female resection**

- Gender Solutions Natural-Knee Flex (GSM) (GSF)
Cancellous-Structured Titanium™ (CSTi™) Porous Coating

- CSTi porous coating option for stable fixation in active patients
- Combines the excellent biocompatibility of titanium with an optimal structure for bone ingrowth
- Interconnected pores resemble human cancellous bone and fine micro-roughness provides enhanced fixation

**Magnified 100:1**

*Human Cancellous Bone*

*Pore size: 400-500 µm. Pore volume: 60-77%.*

*CSTi Coating*

*Pore size: 480-560 µm. Pore volume: 52-58%.*

Ultracongruent Tibial Articular Surface

- *Gender Solutions Natural-Knee* Flex System includes an Ultracongruent tibial articular surface
- Ultracongruent's published long-term clinical results demonstrate its viability as an alternative to traditional posterior stabilizing designs
- Allows for easy intraoperative conversion from a PCL retaining to a PCL sacrificing solution
- Maximum intraoperative flexibility with minimized bone loss

Zimmer Minimally Invasive Solutions (MIS) Posterior Referencing Procedure

- *Gender Solutions Natural-Knee* Flex System is compatible with the Zimmer MIS procedures
- MIS procedures are less invasive with smaller incisions, reduced blood loss, less pain and shorter hospital stays

4-in-1 Femoral Finishing Guide

Natural-Knee Flex Sizing Guide
Advanced Technologies for Today’s More Demanding Patients.

High-Flexion Design

- Accommodates activities requiring up to 155 degrees flexion\textsuperscript{15,16,17}
- Allows contact area to remain high in deep flexion
- Reduces the potential for impingement of the femoral shaft on the tibial articular surface\textsuperscript{18}

Zimmer Prolong Highly Crosslinked Polyethylene

\textit{Prolong Highly Crosslinked Polyethylene is specifically designed to provide:}

- Minimization of free radicals
- Oxidation resistance\textsuperscript{22}
- Delamination resistance\textsuperscript{19,21}
- Significant wear reduction\textsuperscript{20,23}

![Greater Contact Area](image)

3. Data on file at Zimmer
24. Maher SA, Furman BD, Wright TM: Reduced fracture toughness of enhanced cross-linked polyethylene is not associated with increased wear damage. \textit{Society for Biomaterials 28th Annual Meeting Transaction, 542, 2002.}