

# A clinically successful baseplate design

## Fixed in Historical Performance

For over 30 years, Smith & Nephew has offered a world class tibial baseplate design which has been ahead of its time by providing:



Anatomic design



Optimal fixation



Proven performance



GENESIS<sup>®</sup> I



GENESIS II



LEGION<sup>®</sup> TKS



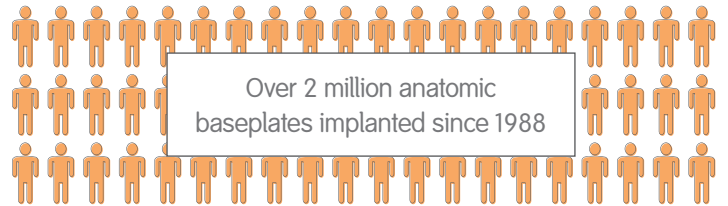
JOURNEY<sup>®</sup> BCS



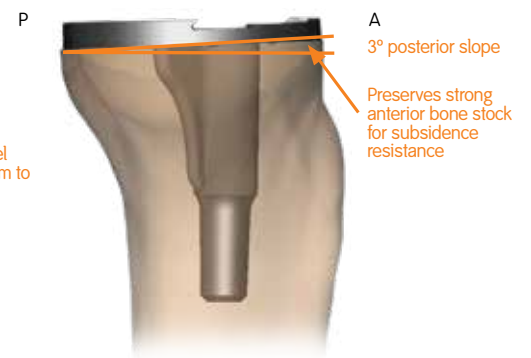
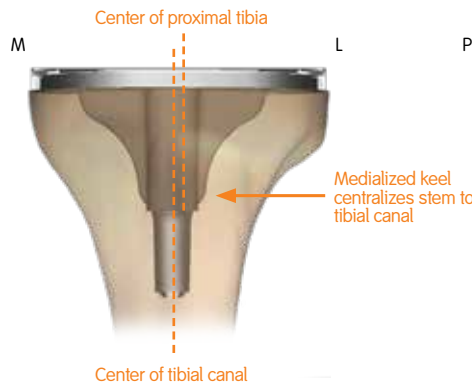
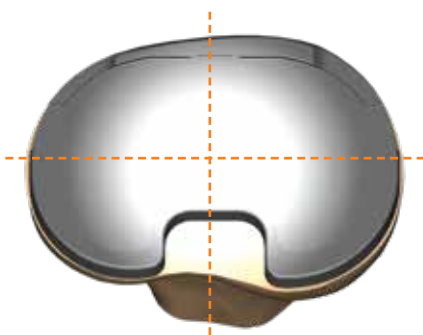
JOURNEY II BCS

1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

Baseplates used with the JOURNEY II and LEGION Total Knee Systems incorporate the GENESIS II design which has over 20 years of clinical history.



## Anatomic design



### Asymmetric footprint

- Designed to match anatomy of the tibia for optimal cortical rim coverage and even stress distribution<sup>1,2</sup>
- Designed to minimize tibia rotational errors and baseplate overhang<sup>3,4,5</sup>
- Achieves >90% bony coverage on average<sup>6</sup>

### Anatomic keel

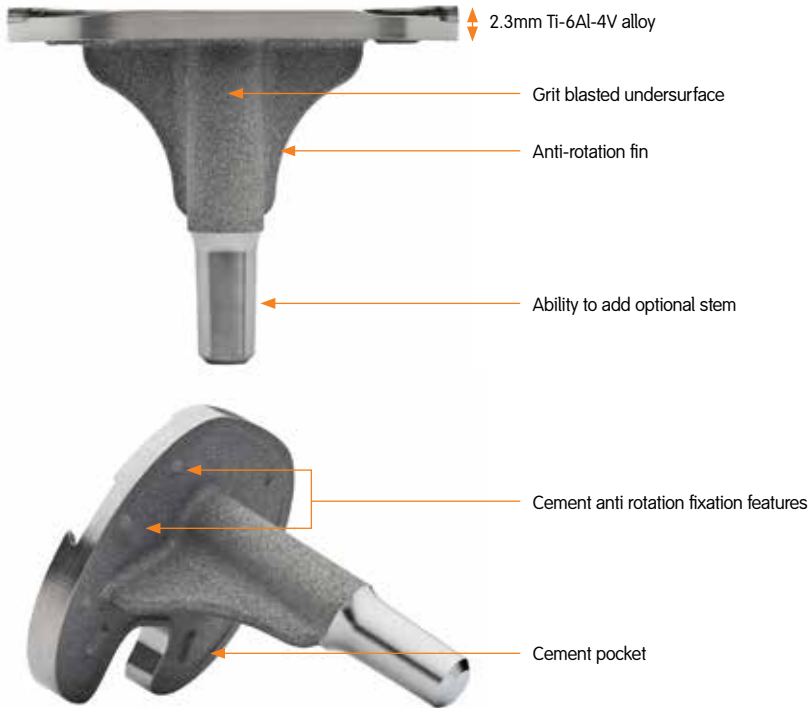
- Proportionally medialized on the proximal tibia to align with the intramedullary canal<sup>7</sup>
- Fin location and shape were designed to be stress absorbing while providing rotational resistance when the prosthesis is implanted<sup>8,9</sup>

### Optimal tibial position

- A posterior sloped baseplate design allows for optimal loading of the tibial bone and good range of motion<sup>10,11</sup>
- Cutting the tibia with a posterior slope, as opposed to a 0° cut, provides stronger bone that may help reduce the chance of tibial baseplate subsidence<sup>12,13</sup>



## Optimal fixation



### The right material

Ti-6Al-4V alloy is used to more closely represent the bone modulus of elasticity, provides less risk of stress shielding, and improves cement bonding strength<sup>14</sup>

### The right texture

The grit blasting has been shown to improve cement interdigitation and bonding strength through its optimized surface roughness

### The right features

The cement pocket design has been shown to be optimal for cement penetration into bone and improving tibial baseplate fixation stability



## Proven performance

### National Joint Registry for England, Wales, Northern Ireland and the Isle of Man 2017 Report<sup>15</sup> GENESIS<sup>®</sup> II CR Cemented

- 42,087 baseplates implanted
- Cumulative % Revision of Cemented GENESIS II CR is 2.72 (2.43–3.05) at 13 years; compared to a cemented knee class average of 4.16 (4.03–4.29) at 13 years
- Second lowest revision rate of all cemented knees at 13 years

### AOANJRR 2017 Annual Report<sup>16</sup> GENESIS II CR Cemented and Hybrid

- 20,934 baseplates implanted
- Cumulative % Revision of Cemented and Hybrid GENESIS II CR is 6.0 (5.0,7.1) at 16 years; compared to a class average of 6.9 (6.5,7.3) and 7.0 (6.4,7.6) respectively

### Peer Reviewed Article *Tibial Tray Thickness Significantly Increases Medial Tibial Bone Loss in Cobalt-Chromium Total Knee Arthroplasty*

Martin et al: the Journal of Arthroplasty 32 (2017) 79 to 82

- Thicker CoCr tibial trays were associated with significantly more medial bone loss than thinner Titanium designs

### Peer Reviewed Article *Migration of a Cemented Fixed-Bearing, Polished Titanium Tibial Baseplate at Ten Years*

Teeter et al: the Bone and Joint Journal 2016; 98-B:616-21

- The mean migration of the tibial component was less than 0.1mm and 0.1 deg in all planes relative to the post-operative RSA exam

With their anatomic design, optimal fixation and proven performance, Smith & Nephew has set the bar for tibial baseplates.

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for over 150 years

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