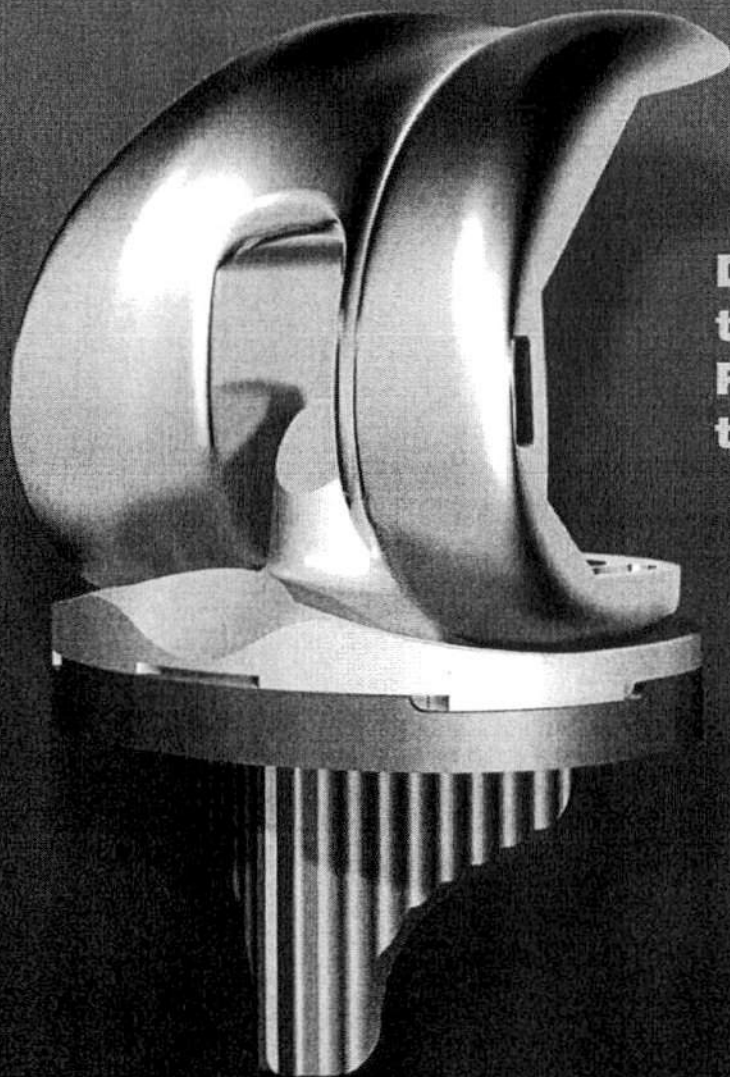


stryker®

Orthopaedics

# Triathlon®

## Design Rationale



**Don't just replace  
the knee.  
Replace the way  
the knee moves.<sup>1-3</sup>**

*Pr*

# Design

Since its first use in surgery in 2004, Triathlon has demonstrated what a knee replacement system can offer patients.<sup>5,26</sup> Triathlon's distinction as a modern knee with a wealth of clinical support offers surgeons modern advancements in motion with confidence in implant selection.

When Triathlon was designed, Stryker examined the leading reasons why knee replacements require revision<sup>25</sup> and designed the features of Triathlon to address Early and Late Failure modes.

Clinical studies<sup>1,3,9,17,26</sup> orthopedic registry results<sup>5</sup> and laboratory studies<sup>2,15,43,44</sup> have demonstrated the potential performance and functional benefits of the Triathlon Knee System.

## Early Failures Modes<sup>3</sup>

Revision Cause	Design Feature
Instability <b>2, 3.1.7</b>	Single Radius <sup>1-3,26</sup> Anatomic Cam/Post Engagement <sup>11</sup>
Extensor Mechanism Deficiency	Single Radius <sup>1,4,9</sup>
Malposition	FlexRod <sup>12</sup>

## Late Failures Modes<sup>3</sup>

Revision Cause	Design Feature
Polyethylene Wear	X3 Polyethylene, <sup>16</sup> Locking Mechanism, <sup>15</sup> Anterior Post Design, <sup>44</sup> Appropriate Contact Area <sup>39,40</sup>
Loosening	Tibial Keel, <sup>43</sup> Post Geometry, <sup>44</sup> Rotary Arc <sup>17</sup>

When evaluating a knee system, the clinical questions to ask are the following:

### 1. Can it improve implant survivorship?

A 2013 study showed implant survivorship was 99.7% at a final follow-up of 7 years with Triathlon.<sup>67</sup>

### 2. Can it improve patient recovery and function?

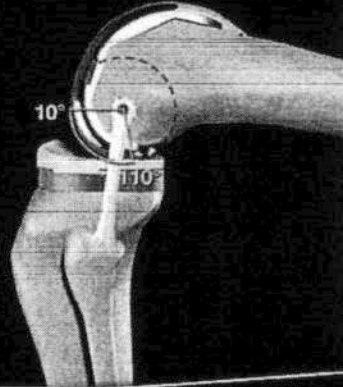
Clinical studies have shown reduction in physiotherapy sessions,<sup>1</sup> more rapid abandonment of crutches,<sup>1</sup> and less anterior knee pain<sup>9,26</sup> comparing single radius to multi radius knees.

### 3. Can it introduce any new failure mode?

X3 achieves oxidation resistance without the use of additives.<sup>16,18,19</sup> Multiple attempts by manufacturers to combine additives into polyethylene have yielded unfavorable results including additive leaching and polyethylene damage.<sup>37,38</sup>

### Ligament Balance

While femoral components of most knee systems create multiple turning radii during movement, the Stryker Triathlon system is built around a circular, Single Radius design. It's rotation is designed to mimic natural knee kinematics, allow for constant ligament balance, and offer enhanced stability throughout the active range of motion.<sup>1-3</sup> Knee replacement has finally come full circle.



3.1.5

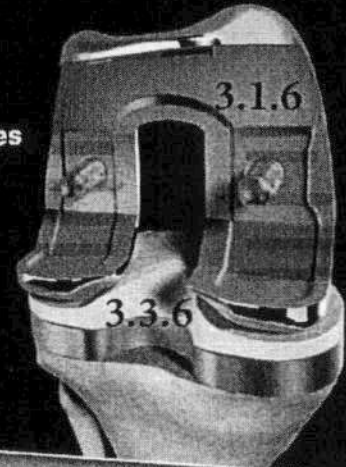
### Shorter Posterior Condyle

The shorter posterior condyles facilitate the relaxation of the soft tissues to enable deep flexion<sup>4</sup>



### Flared Posterior Condyles

Designed to accommodate 20 degrees of internal/external rotation throughout the range of motion<sup>1</sup>



3.1.6

3.3.6

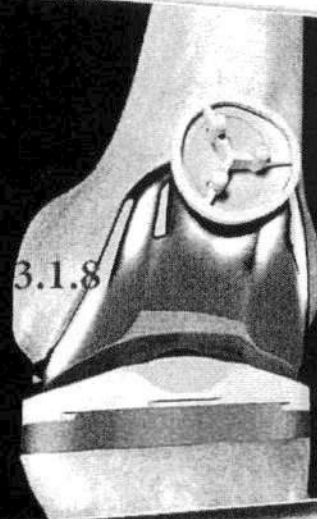
### Rotary Arc

Precision machined surface facilitates internal/external rotation<sup>1</sup>



### Anatomic Patellofemoral Track

Designed with a deepened trochlear groove to help relax the extensor mechanism, enable deeper flexion, and reduce contact stresses exerted across the patella<sup>1</sup>



3.1.8

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### Rotating platform TKA

Triathlon is designed to accommodate up to 20° of internal and external rotation.<sup>6,7</sup> Triathlon and X3 have also demonstrated 97% reduced wear versus mobile bearing designs.<sup>48</sup> The full periphery locking rim, locking wire and anti-rotation island have demonstrated less micromotion than other fixed-bearing designs.<sup>84</sup>

Furthermore, a clinical study of twenty prostheses (nine mobile-bearing and eleven fixed-bearing) conducted in Europe showed no kinematic advantages of a Triathlon mobile-bearing versus **Triathlon fixed-bearing implant.**<sup>103</sup>

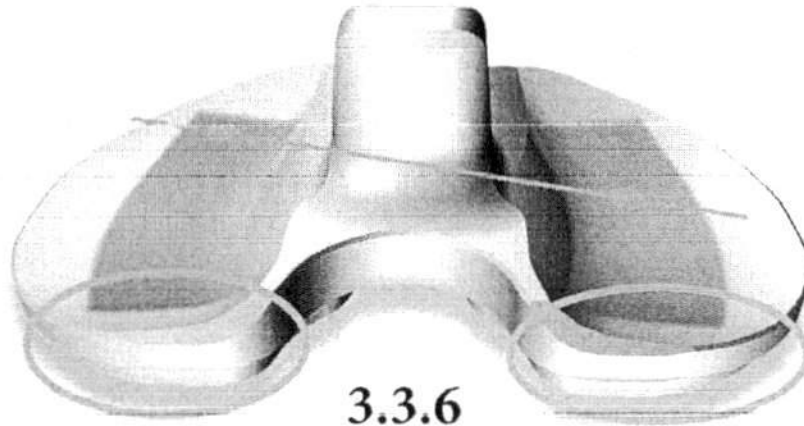
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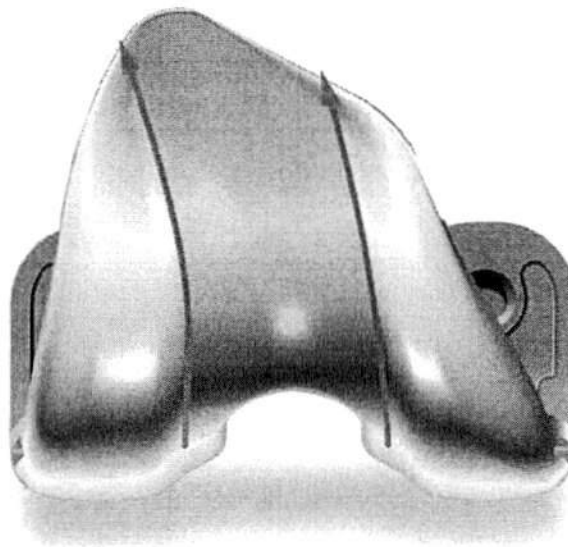
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**Rotary arc 3.3.5**

The Triathlon rotary arc design allows for +/- 20° of internal/external rotation and reduces contact stresses.<sup>6</sup> This may lessen the potential for wear and loosening.<sup>44</sup>

**Patellofemoral joint**

Triathlon's deepened trochlear groove is designed to help relax the extensor mechanism, enable deeper flexion and reduce contact stresses exerted across the patella.<sup>8</sup> Triathlon incorporates the same patellofemoral design as Duracon, which demonstrated <1% patellofemoral complication rates in multiple studies.<sup>41,42</sup>



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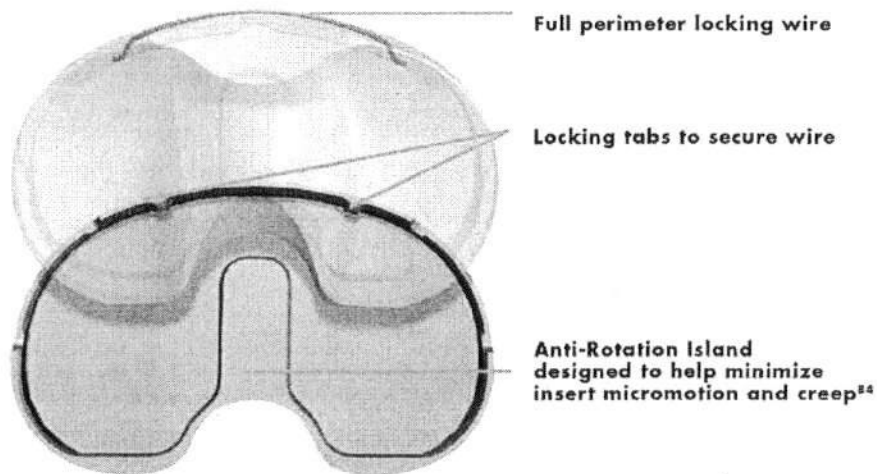
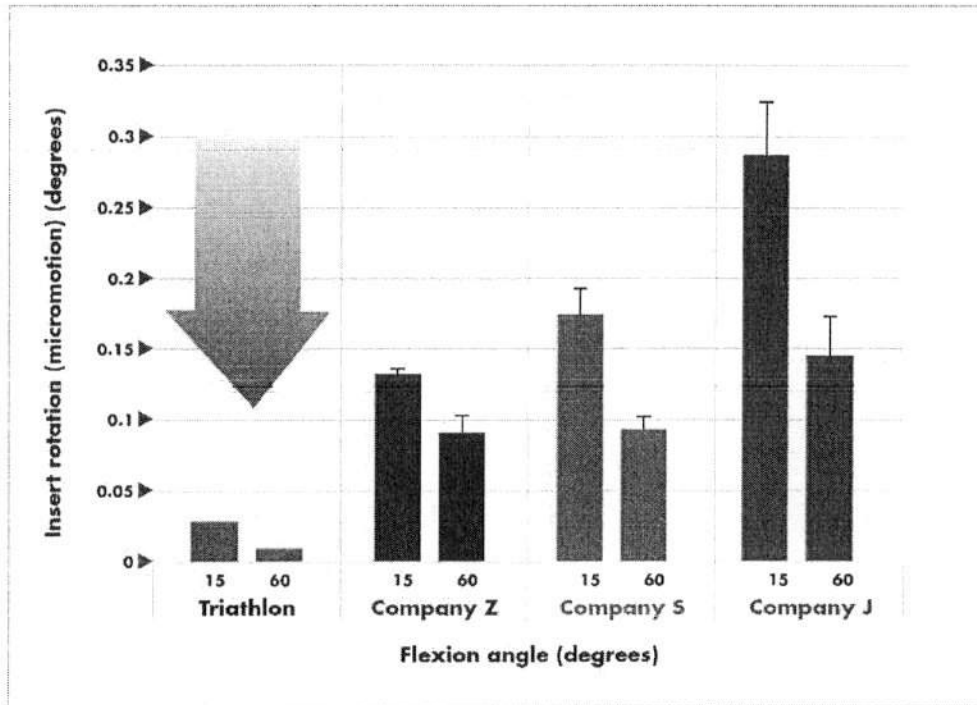
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## Micromotion and backside wear

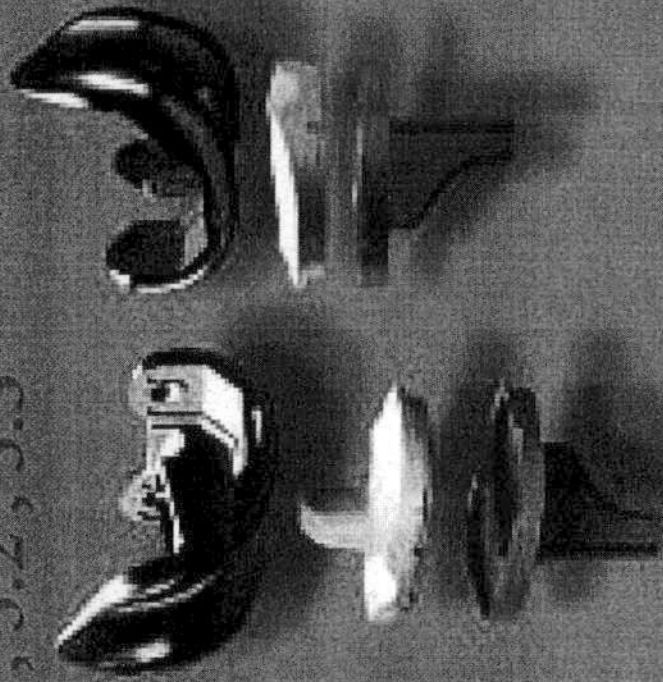
Micromotion is a factor that contributes to backside wear.<sup>85</sup> Triathlon's full periphery locking rim, locking wire and anti-rotation island have demonstrated less micromotion than other designs.<sup>84</sup>

### 3.2.2



WJ

2, 3.1, 3.2, 3.3



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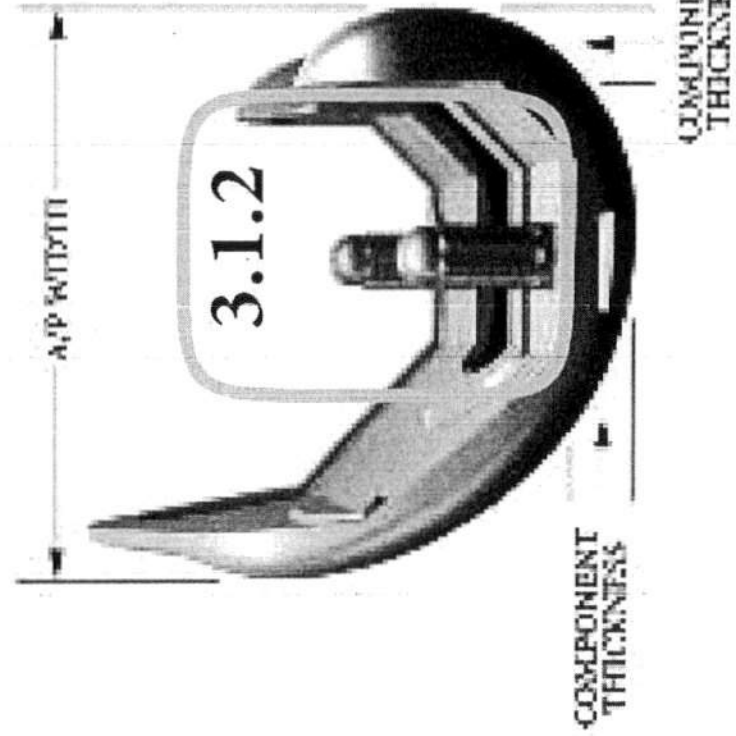
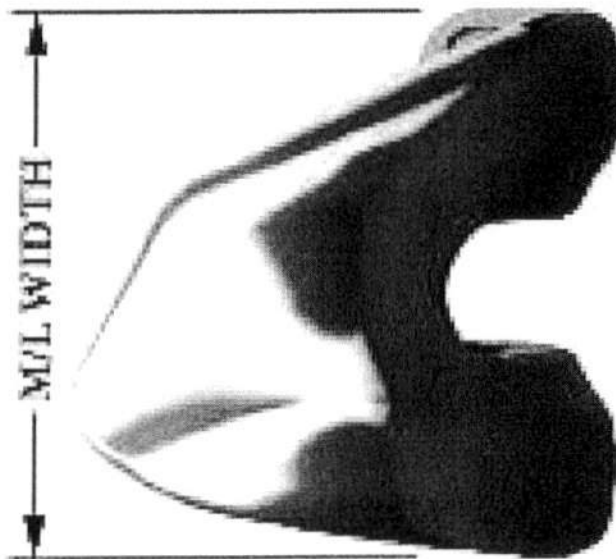
Orthopaedics

# Triathlon<sup>®</sup> Knee System

Product Catalog

2

### 3.1



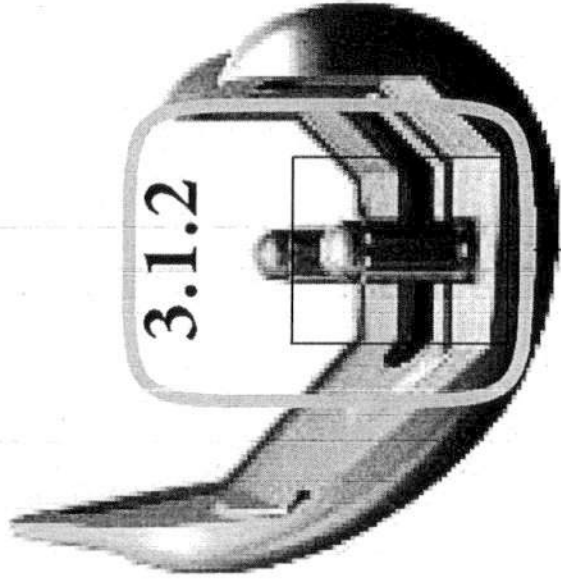
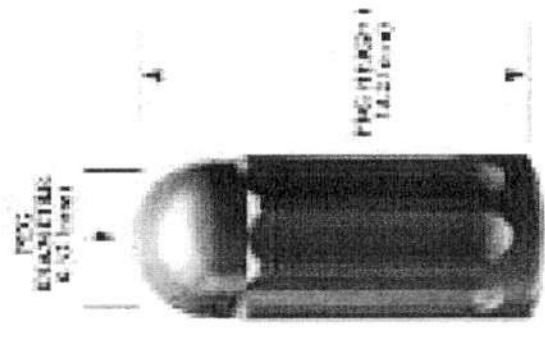
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# 3.1



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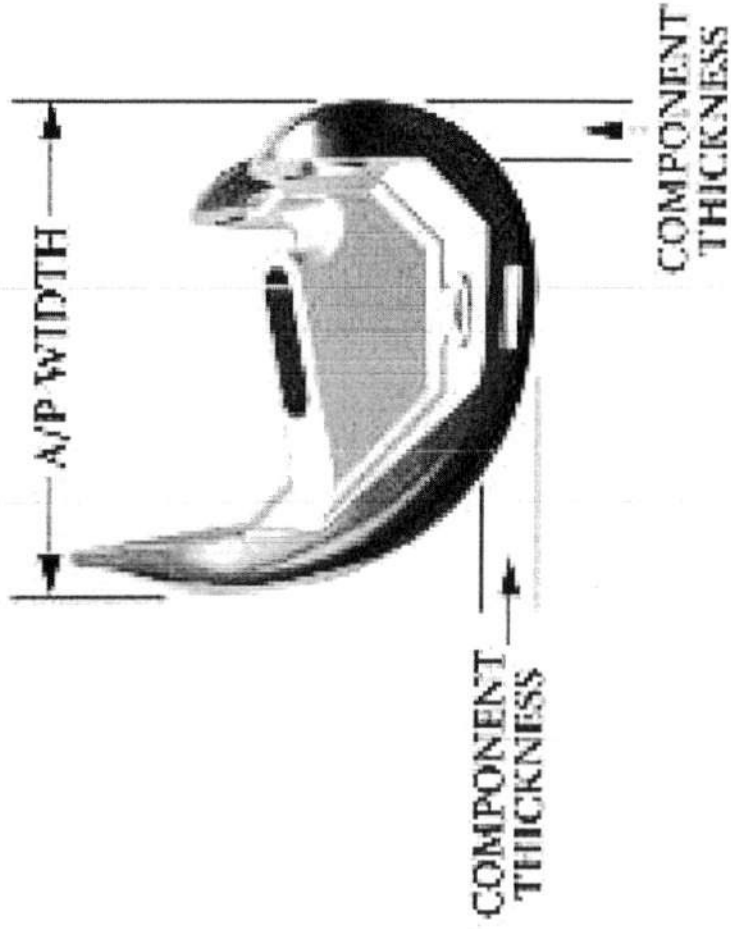
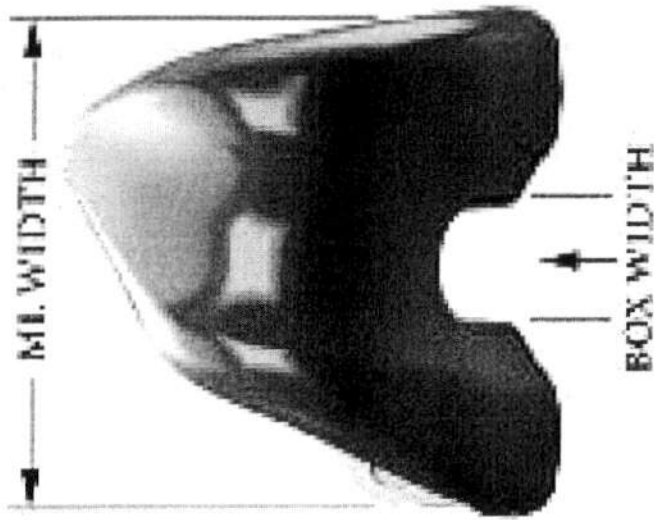
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Catalog #	Description	Size
5510-F-101	CR Femoral Component - Cemented	# 1 Left
5510-F-102	CR Femoral Component - Cemented	# 1 Right
5510-F-201	CR Femoral Component - Cemented	# 2 Left
5510-F-202	CR Femoral Component - Cemented	# 2 Right
5510-F-301	CR Femoral Component - Cemented	# 3 Left
5510-F-302	CR Femoral Component - Cemented	# 3 Right
5510-F-401	CR Femoral Component - Cemented	# 4 Left
5510-F-402	CR Femoral Component - Cemented	# 4 Right

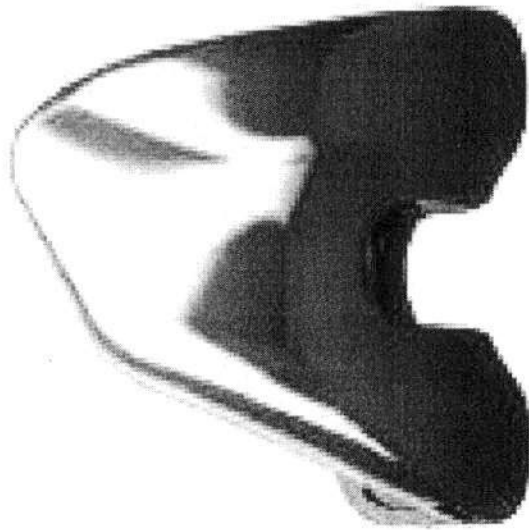
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Catalog #	Description	Size
5510-F-501	CR Femoral Component - Cemented	# 5 Left
5510-F-502	CR Femoral Component - Cemented	# 5 Right
5510-F-601	CR Femoral Component - Cemented	# 6 Left
5510-F-602	CR Femoral Component - Cemented	# 6 Right
5510-F-701	CR Femoral Component - Cemented	# 7 Left
5510-F-702	CR Femoral Component - Cemented	# 7 Right
5510-F-801	CR Femoral Component - Cemented	# 8 Left
5510-F-802	CR Femoral Component - Cemented	# 8 Right

### 3.1

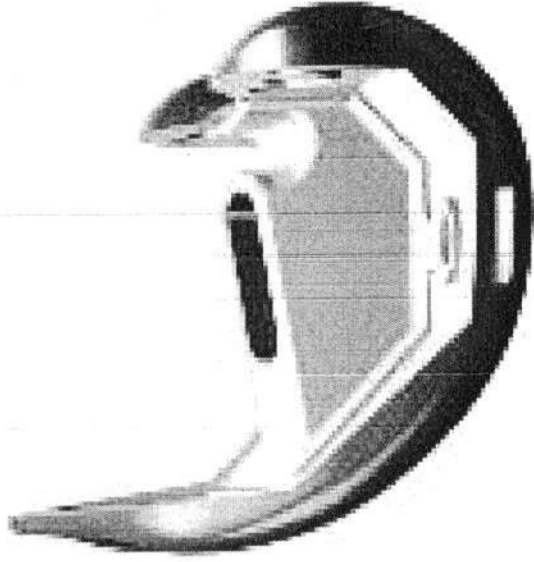
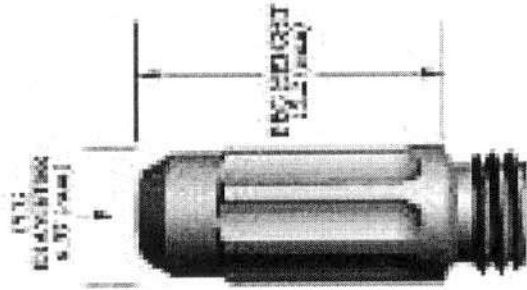


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### 3.1



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# 3.1, 3.1.3

Catalog #	Description	Size
5515-F-101	PS Femoral Component - Cemented	# 1 Left
5515-F-102	PS Femoral Component - Cemented	# 1 Right
5515-F-201	PS Femoral Component - Cemented	# 2 Left
5515-F-202	PS Femoral Component - Cemented	# 2 Right
5515-F-301	PS Femoral Component - Cemented	# 3 Left
5515-F-302	PS Femoral Component - Cemented	# 3 Right
5515-F-401	PS Femoral Component - Cemented	# 4 Left
5515-F-402	PS Femoral Component - Cemented	# 4 Right

Catalog #	Description	Size
5515-F-501	PS Femoral Component - Cemented	# 5 Left
5515-F-502	PS Femoral Component - Cemented	# 5 Right
5515-F-601	PS Femoral Component - Cemented	# 6 Left
5515-F-602	PS Femoral Component - Cemented	# 6 Right
5515-F-701	PS Femoral Component - Cemented	# 7 Left
5515-F-702	PS Femoral Component - Cemented	# 7 Right
5515-F-801	PS Femoral Component - Cemented	# 8 Left
5515-F-802	PS Femoral Component - Cemented	# 8 Right

Note:

1) Two Femoral Distal Fixation Pegs are included in each pack

DE

**Femoral Components**

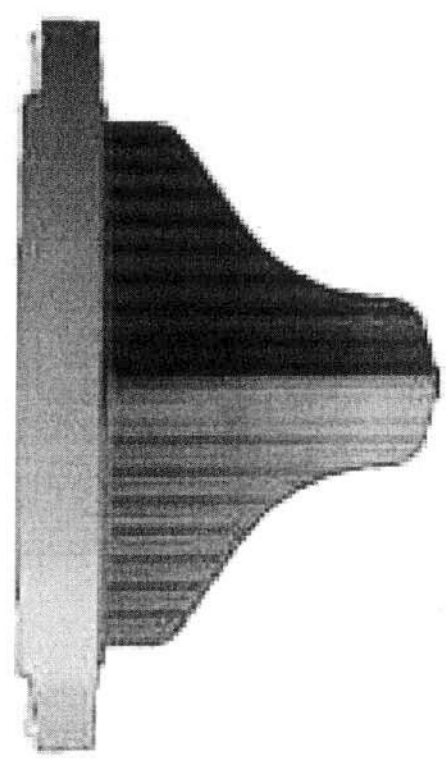
### 3.2



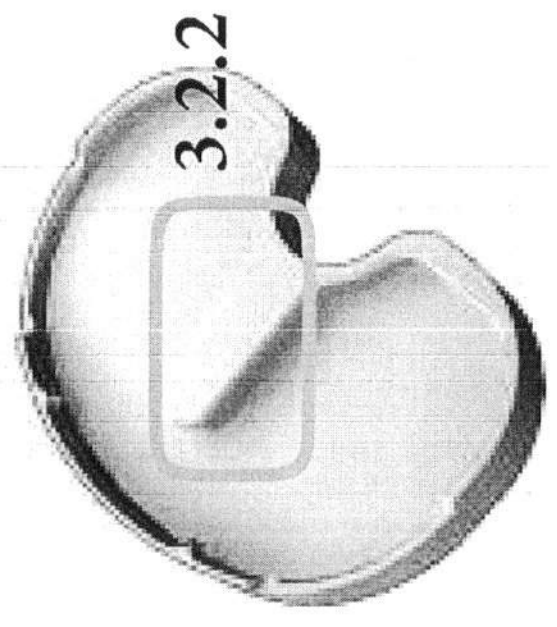
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# 3.2.2

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### 3.2, 3.2.3

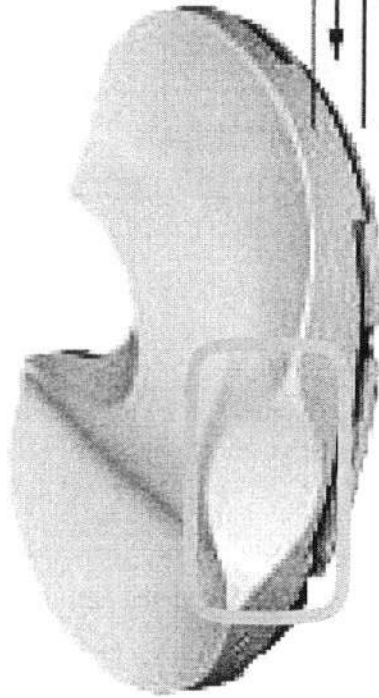
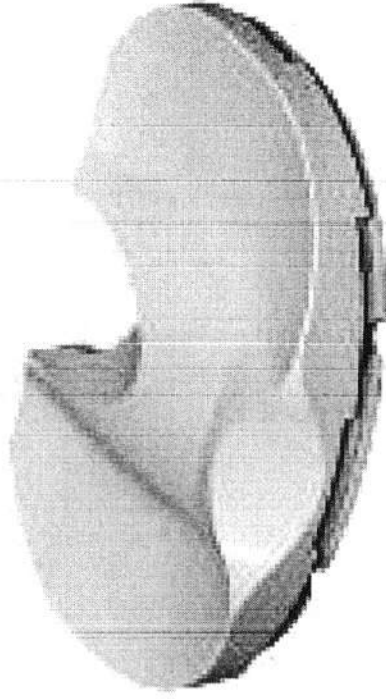
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Catalog #	Description	Size
5520-B-100	Primary Tibial Baseplate - Cemented	#1
5520-B-200	Primary Tibial Baseplate - Cemented	#2
5520-B-300	Primary Tibial Baseplate - Cemented	#3
5520-B-400	Primary Tibial Baseplate - Cemented	#4
5520-B-500	Primary Tibial Baseplate - Cemented	#5
5520-B-600	Primary Tibial Baseplate - Cemented	#6
5520-B-700	Primary Tibial Baseplate - Cemented	#7
5520-B-800	Primary Tibial Baseplate - Cemented	#8

### Tibial Baseplates



### 3.3



INSERT  
THICKNESS  
(with Baseplate)

### 3.3.4

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## 3.3, 3.3.1

Catalog #	Description	Size
5530-P-109	CR Tibial Insert	# 1 - 9mm
5530-P-111	CR Tibial Insert	# 1 - 11mm
5530-P-113	CR Tibial Insert	# 1 - 13mm
5530-P-116	CR Tibial Insert	# 1 - 16mm
5530-P-119	CR Tibial Insert	# 1 - 19mm
5530-P-209	CR Tibial Insert	# 2 - 9mm
5530-P-211	CR Tibial Insert	# 2 - 11mm
5530-P-213	CR Tibial Insert	# 2 - 13mm
5530-P-216	CR Tibial Insert	# 2 - 16mm
5530-P-219	CR Tibial Insert	# 2 - 19mm

Catalog #	Description	Size
5530-P-309	CR Tibial Insert	# 3 - 9mm
5530-P-311	CR Tibial Insert	# 3 - 11mm
5530-P-313	CR Tibial Insert	# 3 - 13mm
5530-P-316	CR Tibial Insert	# 3 - 16mm
5530-P-319	CR Tibial Insert	# 3 - 19mm
5530-P-409	CR Tibial Insert	# 4 - 9mm
5530-P-411	CR Tibial Insert	# 4 - 11mm
5530-P-413	CR Tibial Insert	# 4 - 13mm
5530-P-416	CR Tibial Insert	# 4 - 16mm
5530-P-419	CR Tibial Insert	# 4 - 19mm

**Tibial Inserts**

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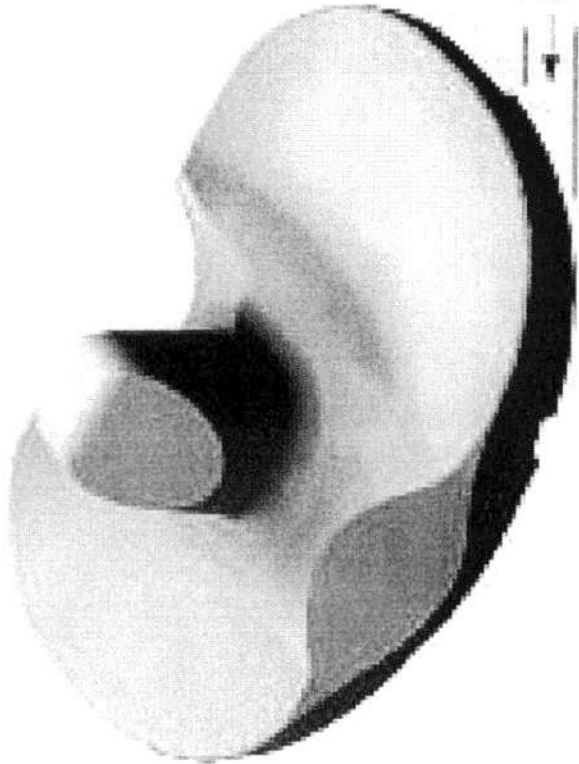
# 3.3, 3.3.1

Catalog #	Description	Size
5530-P-509	CR Tibial Insert	# 5 - 9mm
5530-P-511	CR Tibial Insert	# 5 - 11mm
5530-P-513	CR Tibial Insert	# 5 - 13mm
5530-P-516	CR Tibial Insert	# 5 - 16mm
5530-P-519	CR Tibial Insert	# 5 - 19mm
5530-P-609	CR Tibial Insert	# 6 - 9mm
5530-P-611	CR Tibial Insert	# 6 - 11mm
5530-P-613	CR Tibial Insert	# 6 - 13mm
5530-P-616	CR Tibial Insert	# 6 - 16mm
5530-P-619	CR Tibial Insert	# 6 - 19mm

Catalog #	Description	Size
5530-P-709	CR Tibial Insert	# 7 - 9mm
5530-P-711	CR Tibial Insert	# 7 - 11mm
5530-P-713	CR Tibial Insert	# 7 - 13mm
5530-P-716	CR Tibial Insert	# 7 - 16mm
5530-P-719	CR Tibial Insert	# 7 - 19mm
5530-P-809	CR Tibial Insert	# 8 - 9mm
5530-P-811	CR Tibial Insert	# 8 - 11mm
5530-P-813	CR Tibial Insert	# 8 - 13mm
5530-P-816	CR Tibial Insert	# 8 - 16mm
5530-P-819	CR Tibial Insert	# 8 - 19mm

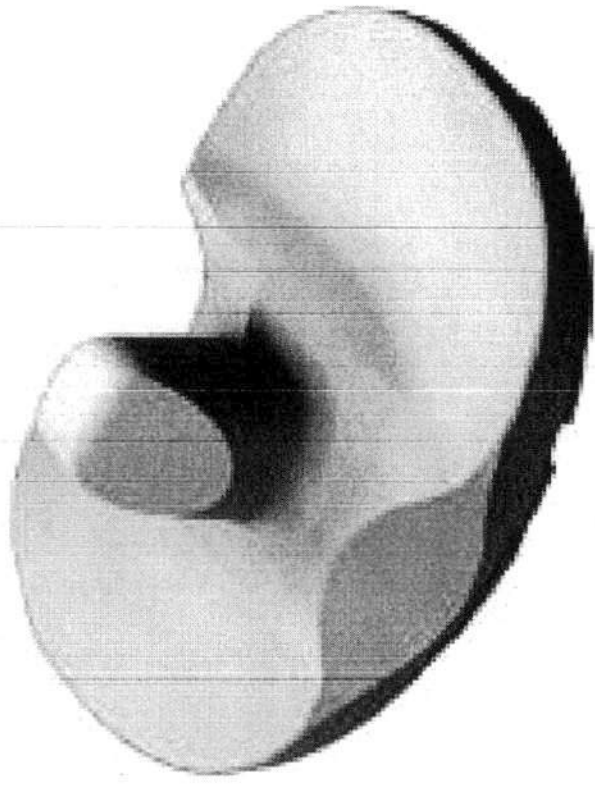
**Tibial Inserts**

### 3.3



DE

INSERT THICKNESS  
(with Baseplate)



2

# 3.3, 3.3.1

Catalog #	Description	Size
5532-P-109	PS Tibial Insert	# 1 - 9mm
5532-P-111	PS Tibial Insert	# 1 - 11mm
5532-P-113	PS Tibial Insert	# 1 - 13mm
5532-P-116	PS Tibial Insert	# 1 - 16mm
5532-P-119	PS Tibial Insert	# 1 - 19mm
5532-P-122	PS Tibial Insert	# 1 - 22mm
5532-P-125	PS Tibial Insert	# 1 - 25mm

Catalog #	Description	Size
5532-P-309	PS Tibial Insert	# 3 - 9mm
5532-P-311	PS Tibial Insert	# 3 - 11mm
5532-P-313	PS Tibial Insert	# 3 - 13mm
5532-P-316	PS Tibial Insert	# 3 - 16mm
5532-P-319	PS Tibial Insert	# 3 - 19mm
5532-P-322	PS Tibial Insert	# 3 - 22mm
5532-P-325	PS Tibial Insert	# 3 - 25mm

5532-P-209	PS Tibial Insert	# 2 - 9mm
5532-P-211	PS Tibial Insert	# 2 - 11mm
5532-P-213	PS Tibial Insert	# 2 - 13mm
5532-P-216	PS Tibial Insert	# 2 - 16mm
5532-P-219	PS Tibial Insert	# 2 - 19mm
5532-P-222	PS Tibial Insert	# 2 - 22mm
5532-P-225	PS Tibial Insert	# 2 - 25mm

5532-P-409	PS Tibial Insert	# 4 - 9mm
5532-P-411	PS Tibial Insert	# 4 - 11mm
5532-P-413	PS Tibial Insert	# 4 - 13mm
5532-P-416	PS Tibial Insert	# 4 - 16mm
5532-P-419	PS Tibial Insert	# 4 - 19mm
5532-P-422	PS Tibial Insert	# 4 - 22mm
5532-P-425	PS Tibial Insert	# 4 - 25mm

## Tibial Inserts

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